Note: This material is related to a section in *AP42, Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources.* AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

The file name refers to the file number, the AP42 chapter and then the section. The file name "rel01_c01s02.pdf" would mean the file relates to AP42 chapter 1 section 2. The document may be out of date and related to a previous version of the section. The document has been saved for archival and historical purposes. The primary source should always be checked. If current related information is available, it will be posted on the AP42 webpage with the current version of the section.

AP42 Section:	4.12, draft 1997
Related:	6
Title:	Proposed addition to AP42, Rubber Products Manufacture Rubber Manufactures Association June 1995

PROPOSED

ADDITION TO AP42

RUBBER PRODUCTS MANUFACTURE

RUBBER MANUFACTURES ASSOCIATION

JUNE 1995

6.X RUBBER PRODUCTS

6.X.1 Process Description

The manufacture of a rubber product involves all or some of six common processes, i.e., rubber mixing, milling, extruding calendering, curing and grinding as shown in Figure 6.X-1. Emission factors have been developed for volatiles that are released during these common processes.

Curing is accomplished in a variety of equipment such as platen presses, autoclaves (steam pressure vessels) and hot air ovens.

The majority of rubber products produced in the United States are composed of one or more of twenty-three basic rubber compounds shown in Table 6.X-1. Emissions factors were derived from the specific compound recipes shown in Table 6.X-2. Emissions from manufacturing aids such as solvents, adhesives and mold release compounds ARE NOT included in these emission factors.

6.X.2 Emissions and Controls

The mechanically created or externally added heat utilized during the six common processes cause volatile organic chemicals (VOCs) and hazardous air pollutants (HAPS) to be emitted. Particulate matter is primarily emitted from the dry chemicals utilized in mixing and as a result of grinding.

Dust collectors (baghouses, fabric filters) are commonly used to control particulate matter from mixing. Cyclone separators in combination with dust collectors or electrostatic precipitators are used in grinding applications.

6.X.3 Emission Factors

The following is common to each of the Emission Factors tables:

1) Total VOCs were analyzed by EPA reference method 25A/FID.

2) Total speciated organics were analyzed by EPA reference methods TO-14/GC-MS (speciated volatiles), TO-14/GC-FID (volatile ozone precursors) and M8270 (semi volatiles).
   Note: Results from Method 25A and results from the total speciated organics reference methods are not directly comparable due to the inherent differences in the method of analysis.

3) Total Organic HAPs are hazardous air pollutants as defined by the Clean Air Act of 1990, Section 301 and were analyzed by EPA reference methods TO-14/GC-MS and M8240 (Volatiles), M8270 (semi volatiles), and TO-14/GC/FPD (Sulfur compounds).

4) Total Metal HAPs are hazardous air pollutants as defined by the Clean Air Act of 1990, Section 301 and were analyzed by EPA reference methods M6010 and M7000 (metals)

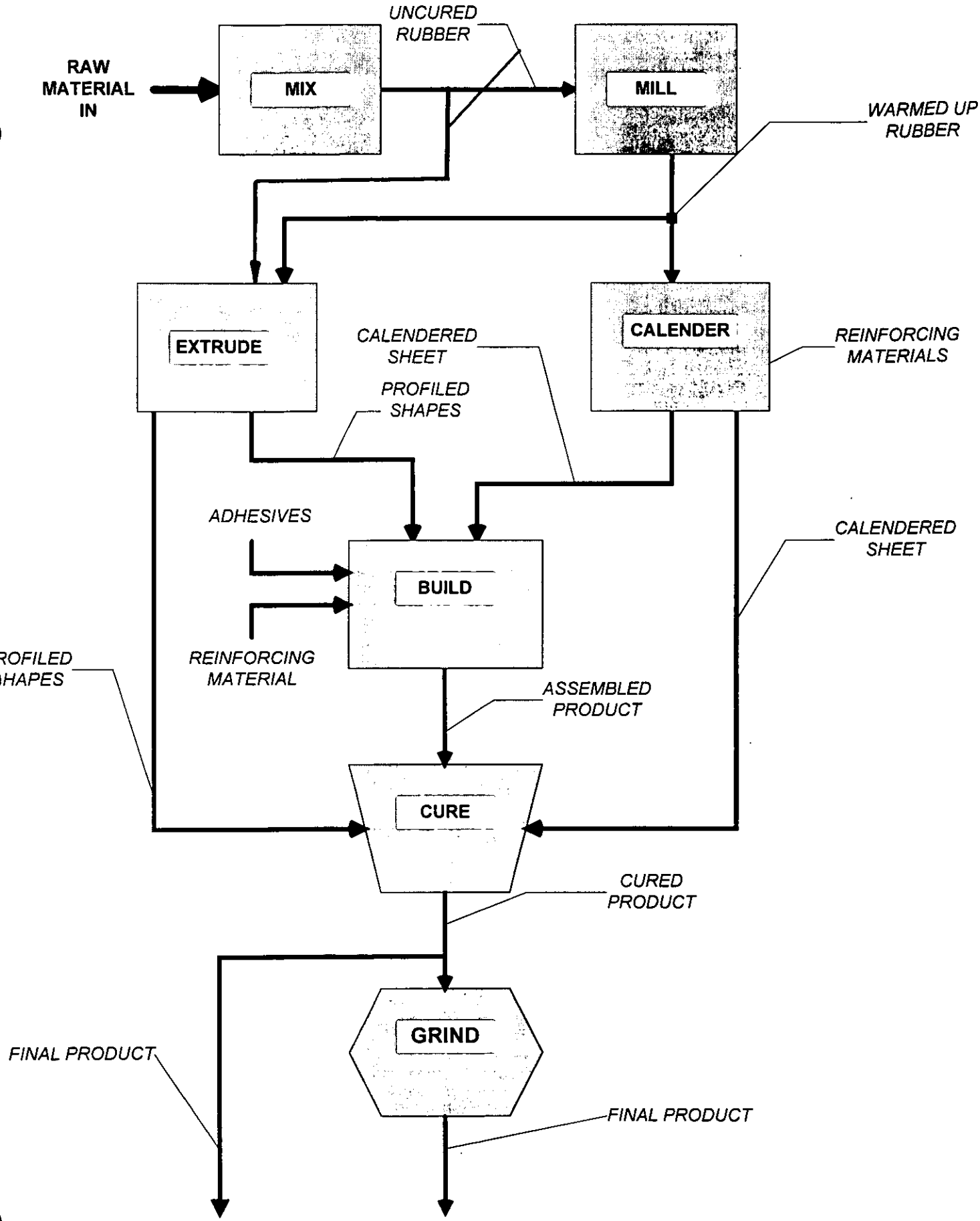
5. Total HAPs are the sum of total organic HAPs and total metal HAPs.

6. Total Particlulate Matter (PM) was analyzed by reference method 5/Gravimetric.

7. HAPs known to be present, but not detected in actual testing of a particular process, are assumed to be present at the detection level in all processes where not detected. The "<" notation in the table indicates that the compound was not observed in all measurements for a given process or was below the detection limit. The method detection limit was therefore used as a conservative default value.

   It should also be noted that, if a HAP was not found during any testing of the individual rubber products tested even though it was suspected to be present, and that HAP is not known to exist in the manufacture of that rubber product, then it is not included in the reported data, even as a "<" value.

8. Metals were expected to be detected in the particulate matter emitted during rubber mixing but were not expected to be a significant emission in any other process. To confirm this assumption, metals were analyzed in the extruder emission. Metals emitted proved to be so small that they could be within the margin of error of the analytical procedure. Metal emissions were therefore considered to be insignificant in other processes.



FIQURE 6.x-1. RUBBER PRODUCTS MANUFACTURING PROCESS

TABLE 6.X-1. RUBBER COMPOUNDS

Compound #1: Tire Inner Liner (BrIIR/NR)

Compound #2: Tire Ply Coat (Natural Rubber/Synthetic Rubber)

Compound #3: Tire Belt Coat (Natural Rubber)

Compound #4: Tire Base/Sidewall (Natural Rubber/Polybutadiene Rubber)

Compound #5: Tire Apex (Natural Rubber)

Compound #6: Tire Tread (Styrene Butadiene Rubber/Polybutadiene Rubber)

Compound #7: Tire Bladder (Butyl Rubber)

Compound #8: EPDM 1 (EPDM Sulfur Cure)

Compound #9: EPDM 2 (Peroxide Cure)

Compound #10: EPDM 3 (Non–black EPDM Sulfur Cure)

Compound #11: CRW (Polychloroprene W Type)

Compound #12: CRG (Polychloroprene G Type)

Compound #13: Paracryl OZO (NBR/PVC)

Compound #14: Paracryl BLT (NBR)

Compound #15: Hypalon (CSM)

Compound #16: Fluoroelastomer (FKM)

Compound #17: AEM (Vamac)

Compound #18: Hydrogenated Nitrile (HNBR)

Compound #19: Silicone (VMQ)

Compound #20: Acrylate Rubber (ACM)

Compound #21: Chlorinated Polyethylene (CPE)

Compound #22: Emulsion SBR (SBR 1502)

Compound #23: Epichlorohydrin (ECO)

TABLE 6.X-2. RUBBER COMPOUND RECIPES

Compound #1: Tire Inner Liner (BrIIR/NR)

Recipe:

Brominated IIR X-2	85.00
SMR 20 Natural Rubber	15.00
GPF Black	60.00
Stearic Acid	1.00
Paraffinic Medium Process Oil	15.00
Unreactive Phenol formaldehyde type resin (Arofene 8318, SP1068)	5.00
Zinc Oxide	3.00
Sulfur	.50
MBTS	1.50
	186.00

Number of Passes/Temperature:
1 (NP Temperature: 320°F; Chlorobutyl or 290°F Bromobutyl
2 (P) Temperature: 220°F

Compound #2: Tire Ply Coat (Natural Rubber/Synthetic Rubber)

Recipe:

50472 Natural Rubber

SMR-GP Natural Rubber	70.00
Duradene 707	30.00
N330	36.50
Sundex 790	20.00
Flectol H	1.50
Santoflex IP	2.30
Sunproof Super Wax	1.20
Zinc Oxide	5.00
Stearic Acid	1.00
Sulfur	2.30
CBS	.80
	170.60

Number of Passes/Temperature:
1 (NP) Temperature: 330°F
2 (P) Temperature: 220°F

Compound #3: Tire Belt Coat (Natural Rubber)

Recipe:

#1RSS Natural Rubber	100.00
HAF Black (N330)	55.00
Aromatic Oil	5.00
N-(1,3 dimethylbutyl) -N-phenyl-P-phenylene diamine (Santoflex 13)	1.00
Zinc Oxide	10.00
Stearic Acid	2.00
n-tertiary -butyl-2-benzothiazole disulfide (Vanax NS)	.80
Sulfur	4.00
Cobalt Neodecanate (20.5% cobalt)	2.50
	180.30

Number of Passes/Temperatures:
1 (NP) Temperature: 330°F; add 1/2 black, add 1/2 oil
2 (NP) Temperature: 330°F; add remainder of black and oil
3 (remill) Temperature 300°F
4 (P) Temperature: 220°F

TABLE 6.X-2. RUBBER COMPOUND RECIPES

Compound #4: Tire Base/Sidewall (Natural Rubber/Polybutadiene Rubber)

Non-Productive Recipe:

NR-SMR-5 CV	50.00
Taktene 1220	50.00
N330 Carbon Black	50.00
Zinc Oxide	1.50
Stearic Acid	2.00
Agerite Resin D	2.00
Vulkanox 4020	3.00
Vanwax H Special	3.00
Flexon 580 Oil	10.00
	171.50

Productive Recipe:

Non Productive	171.50
Zinc Oxide	1.50
Rubber Maker Sulfur	1.75
DPG	0.10
CBS	0.60
	175.45

Number of Passes/Temperatures:
1 (NP) Temperature: 330°F
2 (P) Temperature: 220°F

Compound #5: Tire Apex (Natural Rubber)

Recipe:

TSR 20 Natural Rubber	100.00
HAF Black (N330)	80.00
Aromatic Oil	8.00
Stearic Acid	1.00
Resorcinol	3.00
Hexamethylenetetramine	3.00
Zinc Oxide	3.00
N-tertiary-butyl-2-benzothiazole disulfide (Vanax NS)	1.50
n-cyclohexylthiopthalimide (Santogard PVI)	.30
Sulfur	3.00
	202.80

1 (NP) Temperature: 330°F; add 60 parts black, add 6 parts oil
2 (NP) Temperature: 330°F; add Resorcinol, add 20 parts black, add 2 parts oil
3 (P) Temperature 200°F; add Hexam.

TABLE 6.X-2. RUBBER COMPOUND RECIPES

Compound #6: Tire Tread (Styrene Butadiene Rubber/Polybutadiene Rubber)

Non-Productive Recipe #1:

SBR 1712C	110.00
N299 Carbon Black	60.00
Taktene 1220	20.00
Zinc Oxide	1.50
Stearic Acid	3.00
Vulkanox 4020	2.00
Wingstay 100	2.00
Vanox H Special	2.50
Sundex 8125 Oil	20.00
	221.00

Non-Productive Recipe #2:

Non-Productive #1:	221.00
N299 Carbon Black	20.00
Sundex 8125 Oil	5.00
	246.00

Productive Recipe:

Non Productive #2	246.00
Zinc Oxide	1.50
Rubber Maker Sulfur	1.60
TMTD	0.20
CBS	3.00
	252.30

Number of Passes/Temperatures:
1 (NP) Temperature: 330°F; add 60 parts black, add 20 parts oil
2 (NP) Temperature: 330°F; add 20 parts black; add 5 parts oil
3 (P) Temperature: 220°F

Compound #7: Tire Bladder

Recipe:

BUTYL 268	100.00
N330	55.00
Castor Oil	5.00
SP 1045 Resin	10.00
Zinc Oxide	5.00
Neoprene W	5.00
	180.00

Number of Passes/Temperatures:
NP 1 All Butyl, Castor Oil, Zinc Oxide, 45 phr N330, discharge approx 330°F/340°F
+Resin, 10 phr N330, discharge approx 270/280°F DO NOT EXCEED 290°F
PROD NP2 = neoprene, discharge approx 250F/260°F

Compound #8: EPDM 1 (EPDM Sulfur Cure)

Non-Productive Recipe:

Vistalon 7000	50.00
Vistalon 3777	87.50
N650 GPF-HS Black	115.00
N762 SRF-LM Black	115.00
Process Oil Type 104B (Sunpar 2280)	100.00
Zinc Oxide	5.00
Stearic Acid	1.00
	473.50

Productive Recipe:

Non-Productive	473.50
Sulfur	0.50
TMTDS	3.00
ZDBDC	3.00
ZDMDC	3.00
DTDM	2.00
	485.00

Number of Passes/Temperatures
1 (NP) Temperature: 340°F; upside down mix, rubber then black and oil
2 (P) Temperature: 220°F

Compound #9: EPDM 2 (Peroxide Cure)

Non-Productive Recipe:

Royalene 502	100.00
N 762 Carbon Black	200.00
Sunpar 2280 Oil	85.00
Zinc Oxide	5.00
Stearic Acid	1.00
	391.00

Productive:

Non-Productive	391.00
DICUP 40C	6.00
SARET 500 (on carrier/2 parts active)	2.56
	399.56

NP Temperature: 330°F
P Temperature: 240°F

Compound #10: EPDM 3 (Non-black EPDM Sulfur Cure)

Recipe:

Vistalon 5600	50.00
Vistalon 3777	87.50
Hard Clay (Suprex)	180.00
Mistron Vapor Talc	100.00
Atomite Whiting	40.00
Process Oil Type 104B (Sunpar 2280)	60.00
Silane (A-1100)	1.50
Paraffin Wax	5.00
Zinc Oxide	5.00
Stearic Acid	1.00
Sulfur	1.50
Cupsac	0.50
TMTD	3.00
	535.00

Number of Passes/Temperatures:
1 (NP) Temperature: 330°F
2 (P) Temperature: 220°F, add Sulfur, Cupsac, and TMTDS

TABLE 6.X-2. RUBBER COMPOUND RECIPES

Compound #11: CRW (Polychloroprene W Type)

Recipe:

Non Productive:

Neoprene WRT	100.00
N 550	13.20
N 762	15.70
Agerite Staylite S	2.00
Sunproof Super Wax	2.00
Santoflex IP	1.00
Magnesium Oxide	4.00
Stearic Acid	0.50
PlastHall Doz	15.00
	153.40

Productive Recipe:

Non-Productive	153.40
Zinc Oxide	5.00
TMTD	0.50
Dispersed Ethylene Thiourea	1.00
	159.90

Number of Passes/Temperatures:
1 pass at 240°F; add accelerator package at 200°F

Compound #12: CRG (Polychloroprene G Type)

Non Productive Recipe:

Neoprene GN	100.00
SRF	50.00
Sundex 790	10.00
Octamine	2.00
Stearic Acid	1.00
Maglite D	4.00
	167.00

Productive Recipe:

Non-Productive	167.00
TMTM	0.50
Sulfur	1.00
DOTG	0.50
Zinc Oxide	5.00
	174.00

Number of Passes/Temperatures:
1 (NP) Temperatures: 240°F; add zinc oxide and cureatives late at 200°F
2 (P) Temperature: 200°F

TABLE 6.X-2. RUBBER COMPOUND RECIPES

Compound #13: Paracryl OZO (NBR/PVC)

Recipe:

PARACRIL OZO	100.00
Zinc Oxide	5.00
OCTAMINE	2.00
Hard Clay	80.00
FEF (N-550) Black	20.00
Stearic Acid	1.00
MBTS	2.50
TUEX	1.50
ETHYL TUEX	1.50
DOP	15.00
KP-140	15.00
Spider Sulfur	0.20
	243.70

Number of Passes:
(NP) Temperature: 330°F
(P) Temperature: 220°F; add MBTS, TUEX, ETHYL TUEX, Spider Sulfur

Compound #14: Paracryl BLT (NBR)

Recipe:

PARACRIL BLT	100.00
Zinc Oxide	5.00
SRF (N-774) Black	100.00
TP-95	15.00
Paraplex G-25	5.00
AMINOX	1.50
Stearic Acid	1.00
ESEN	0.50
MONEX	1.50
Sulfur	0.75
	230.25

Number of Passes/Temperatures:
(NP) Temperature: 280°F
(P) Temperature: 220°F; add sulfur, MONEX, and possibly ESEN

Compound #15: Hypalon (CSM)

Recipe:

Hypalon 40	100.00
CLS 4 PBD	3.00
Carbo wax 4000	3.00
PE 617A	3.00
Mag Lite D	5.00
PE 200	3.00
Whiting (Atomite)	100.00
N650	100.00
TOTM Oil	70.00
MBTS	1.00
Tetrone A	1.50
NBC	0.50
HVA-2	0.50
	390.50

Uses of Formulas/Temperatures:
Number of Passes:
1 (P) Temperature: 280°F

TABLE 6.X-2. RUBBER COMPOUND RECIPES

Compound #16: Fluoroelastomer (FKM)

Recipe:

Viton E60C	100.00
N990 Black	20.00
Calcium Hydroxide	6.00
Maglite D	3.00
	129.00

Compound #17: AEM (Vamac)

Recipe:

VAMAC*B-124 Masterbatch	124.00
ARMEEN 18D	.50
Stearic Acid	.20
SRF Carbon Black (N-774)	10.00
DIAK #1	4.00
DPG	4.00
	142.70

Compound #18: Hydrogenated Nitrile (HNBR)

Non-Productive Recipe:

HNBR Zetpol 2020	100.00
N650 Black	45.00
Flexone 7P	1.00
Agerite Resin D	1.00
ZMTI	1.00
Kadox 911 C	5.00
Stearic Acid	1.00
Trioctyl trimellitate (TOTM)	7.00
	161.00

Productive Recipe:

Sulfur	0.50
MBTS	1.50
TMTD	1.50
MTD Monex	.50
	165.00

Number of Passes/Temperatures:
1 (NP) Temperature: 275°F
2 (P) Temperature: 210°F

Compound #19: Silicone (VMQ)

Recipe:

Silicone Rubber	70.00
Silastic NPC-80 silicone rubber	30.00
5 Micron Min-U-Sil	68.00
Silastic HT-1 modifier	0.80
Vulcanizing agent: Varox DBPH 50	1.00
	169.80

TABLE 6.X-2. RUBBER COMPOUND RECIPES

Compound #20: Acrylate Rubber (ACM)

Non-Productive Recipe:

Hytemp AR71	100.00
Stearic Acid	1.00
N 550	65.00
	166.00

Productive Recipe:

Non-Productive	166.00
Sodium Stearate	2.25
Potassium Stearate	0.75
Sulfur	0.30
	169.30

Number of Passes/Temperatures:
1 (NP) Temperature: 260°F
2 (P) Temperature: 220°F

Compound #21: Chlorinated Polyethylene (CPE)

Recipe:

CM 0136	100.00
Maglite D	10.00
N 774 Black	30.00
Sterling VH	35.00
DER 331 DLC	7.00
Agerite Resin D	0.20
TOTM Oil	35.00
Triallyl Isocyanurate Cure 5223 (provided by Gates)	2.90
Trigonox 17/40	10.00
	230.10

Number of Passes/Temperatures:
Single pass mixed to 240°F; add Triallyisocyanurate, Triganox 17/40 at 200°F.

Compound #22: Emulsion SBR (SBR 1502)

Non-Productive Recipe:

SBR 1502	100.00
N330 Carbon Black	58.50
Zinc Oxide	10.00
Stearic Acid	2.00
Agerite Resin D (Naugard Q)	2.00
Flexone 7P	1.00
Sunproof Super Wax	1.50
Sundex 790 Oil	7.00
	182.00

Productive Recipe:

Non-Productive	182.00
Rubber Makers Sulfur	2.00
TBBS	1.80
	185.80

Number of Passes/Temperatures:
Non-productive pass mixed to 330°F,
Second pass mixed to 220°F.

TABLE 6.X-2. RUBBER COMPOUND RECIPES

Compound #23: Epichlorohydrin (ECO)

Recipe:

Hydrin 2000	100.00
N330 Carbon Black	50.00
Stearic Acid	1.00
Vulkanox MB-2/MG/C	1.00
Calcium Carbonate	5.00
Zisnet F-PT	1.00
Diphenylguanadine	0.50
Santogard PVI	0.50
	159.00

Number of Passes/Temperatures:

1 Pass at 240°F

ANNOTATED: References typically refer to a Volume of the "Development of Emissions factors for the Rubber Manufacturing Industry" by TRC

6.X RUBBER PRODUCTS

6.X.1 Process Description

Vol. 1 Sec 2.1 Pg 2-1

The manufacture of a rubber product involves all or some of six common processes, i.e., rubber mixing, milling, extruding calendering, curing and grinding as shown in Figure 6.X-1. Emission factors have been developed for volatiles that are released during these common processes.

Curing is accomplished in a variety of equipment such as platen presses, autoclaves (steam pressure vessels) and hot air ovens.

Vol. 1 Sec 2.3 last ¶ Pg 2-4 & Vol 2 Sec A1 & A3

The majority of rubber products produced in the United States are composed of one or more of twenty-three basic rubber compounds shown in Table 6.X-1. Emissions factors were derived from the specific compound recipes shown in Table 6.X-2. Emissions from manufacturing aids such as solvents, adhesives and mold release compounds ARE NOT included in these emission factors.

6.X.2 Emissions and Controls

Vol 1 Sec 2.3 Pg 2-4

The mechanically created or externally added heat utilized during the six common processes cause volatile organic chemicals (VOCs) and hazardous air pollutants (HAPS) to be emitted. Particulate matter is primarily emitted from the dry chemicals utilized in mixing and as a result of grinding.

Common Practice

Dust collectors (baghouses, fabric filters) are commonly used to control particulate matter from mixing. Cyclone separators in combination with dust collectors or electrostatic precipitators are used in grinding applications.

6.X.3 Emission Factors

Vol. 1 Sec 2.4 Pg 2-9

The following is common to each of the Emission Factors tables:

1) Total VOCs were analyzed by EPA reference method 25A/FID.

2) Total speciated organics were analyzed by EPA reference methods TO-14/GC-MS (speciated volatiles), TO-14/GC-FID (volatile ozone precursors) and M8270 (semi volatiles).
   Note: Results from Method 25A and results from the total speciated organics reference methods are not directly comparable due to the inherent differences in the method of analysis.

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Sec. 2.4
pg 2-9

3) Total Organic HAPs are hazardous air pollutants as defined by the Clean Air Act of 1990, Section 301 and were analyzed by EPA reference methods TO-14/GC-MS and M8240 (Volatiles), M8270 (semi volatiles), and TO-14/GC/FPD (Sulfur compounds).

4) Total Metal HAPs are hazardous air pollutants as defined by the Clean Air Act of 1990, Section 301 and were analyzed by EPA reference methods M6010 and M7000 (metals)

5. Total HAPs are the sum of total organic HAPs and total metal HAPs.

6. Total Particlulate Matter (PM) was analyzed by reference method 5/Gravimetric.

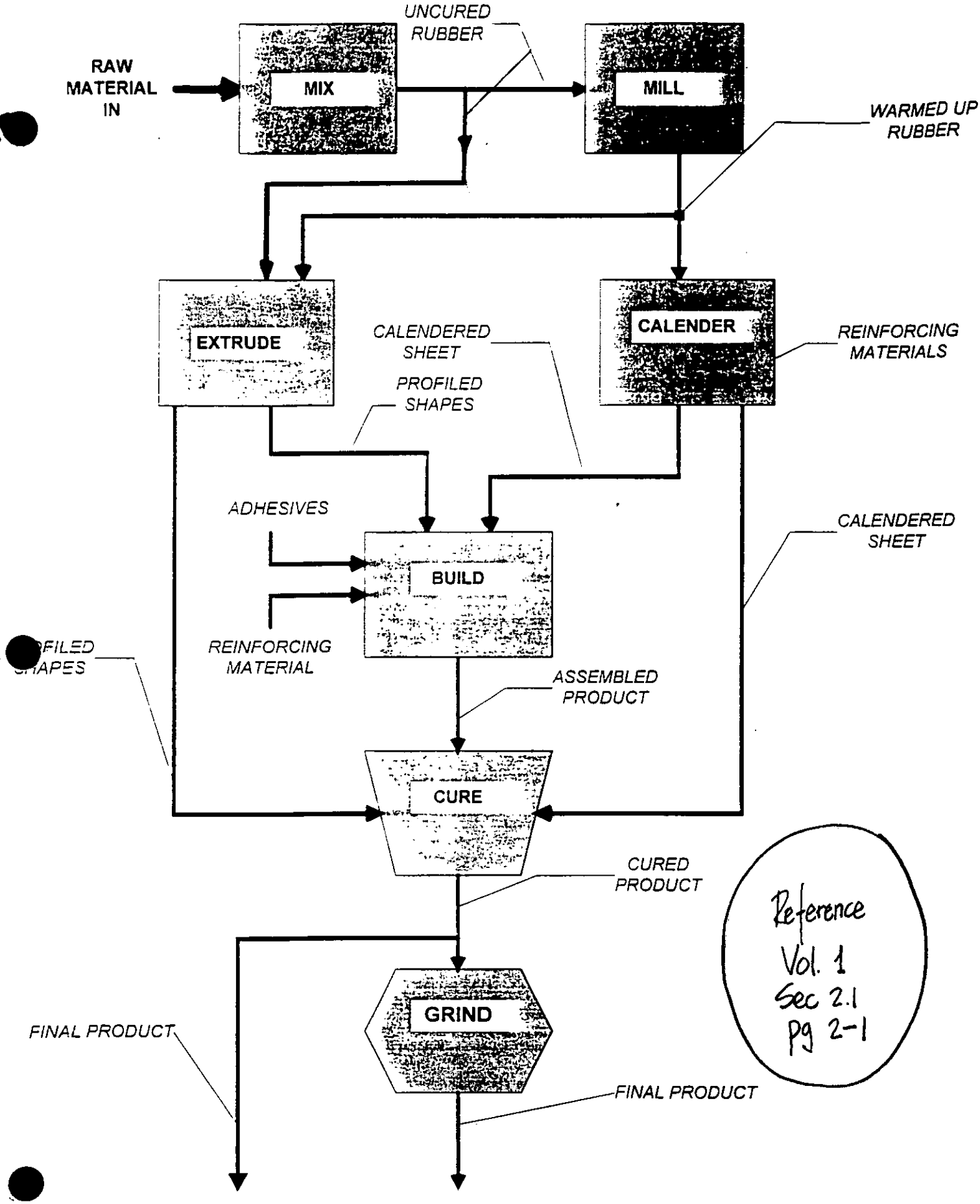
Vol. 4
Sec 2.2.7B
pg 11

7. HAPs known to be present, but not detected in actual testing of a particular process, are assumed to be present at the detection level in all processes where not detected. The "<" notation in the table indicates that the compound was not observed in all measurements for a given process or was below the detection limit. The method detection limit was therefore used as a conservative default value.

It should also be noted that, if a HAP was not found during any testing of the individual rubber products tested even though it was suspected to be present, and that HAP is not known to exist in the manufacture of that rubber product, then it is not included in the reported data, even as a "<" value.

8. Metals were expected to be detected in the particulate matter emitted during rubber mixing but were not expected to be a significant emission in any other process. To confirm this assumption, metals were analyzed in the extruder emission. Metals emitted proved to be so small that they could be within the margin of error of the analytical procedure. Metal emissions were therefore considered to be insignificant in other processes.

RMA SUBCOMMITTEE OF RUBBER COMPOUNDERS TECHNICAL OPINION



Reference
Vol. 1
Sec 2.1
Pg 2-1

FIQURE 6.x-1. RUBBER PRODUCTS MANUFACTURING PROCESS

Ref: Vol. 1 Table 4-1 pg. 42

TABLE 6.X-1. RUBBER COMPOUNDS

Compound #1: Tire Inner Liner (BrIIR/NR)
Compound #2: Tire Ply Coat (Natural Rubber/Synthetic Rubber)
Compound #3: Tire Belt Coat (Natural Rubber)
Compound #4: Tire Base/Sidewall (Natural Rubber/Polybutadiene Rubber)
Compound #5: Tire Apex (Natural Rubber)
Compound #6: Tire Tread (Styrene Butadiene Rubber/Polybutadiene Rubber)
Compound #7: Tire Bladder (Butyl Rubber)
Compound #8: EPDM 1 (EPDM Sulfur Cure)
Compound #9: EPDM 2 (Peroxide Cure)
Compound #10: EPDM 3 (Non-black EPDM Sulfur Cure)
Compound #11: CRW (Polychloroprene W Type)
Compound #12: CRG (Polychloroprene G Type)
Compound #13: Paracryl OZO (NBR/PVC)
Compound #14: Paracryl BLT (NBR)
Compound #15: Hypalon (CSM)
Compound #16: Fluoroelastomer (FKM)
Compound #17: AEM (Vamac)
Compound #18: Hydrogenated Nitrile (HNBR)
Compound #19: Silicone (VMQ)
Compound #20: Acrylate Rubber (ACM)
Compound #21: Chlorinated Polyethylene (CPE)
Compound #22: Emulsion SBR (SBR 1502)
Compound #23: Epichlorohydrin (ECO)

TABLE 6.X-2. RUBBER COMPOUND RECIPES

Ref: Vol. 3 Appdx B

Compound #1: Tire Inner Liner (BrIIR/NR)

Recipe:

Brominated IIR X-2	85.00
SMR 20 Natural Rubber	15.00
GPF Black	60.00
Stearic Acid	1.00
Paraffinic Medium Process Oil	15.00
Unreactive Phenol formaldehyde type resin (Arofene 8318, SP1068)	5.00
Zinc Oxide	3.00
Sulfur	.50
MBTS	1.50
	186.00

Number of Passes/Temperature:
1 (NP Temperature: 320°F: Chlorobutyl or 290°F Bromobutyl
2 (P) Temperature: 220°F

Compound #2: Tire Ply Coat (Natural Rubber/Synthetic Rubber)

Recipe:

50472 Natural Rubber

SMR-GP Natural Rubber	70.00
Duradene 707	30.00
N330	36.50
Sundex 790	20.00
Flectol H	1.50
Santoflex IP	2.30
Sunproof Super Wax	1.20
Zinc Oxide	5.00
Stearic Acid	1.00
Sulfur	2.30
CBS	.80
	170.60

Number of Passes/Temperature:
1 (NP) Temperature: 330°F
2 (P) Temperature: 220°F

Compound #3: Tire Belt Coat (Natural Rubber)

Recipe:

#1RSS Natural Rubber	100.00
HAF Black (N330)	55.00
Aromatic Oil	5.00
N-(1,3 dimethylbutyl) -N-phenyl-P-phenylene diamine (Santoflex 13)	1.00
Zinc Oxide	10.00
Stearic Acid	2.00
n-tertiary -butyl-2-benzothiazole disulfide (Vanax NS)	.80
Sulfur	4.00
Cobalt Neodecanate (20.5% cobalt)	2.50
	180.30

Number of Passes/Temperatures:
1 (NP) Temperature: 330°F: add 1/2 black, add 1/2 oil
2 (NP) Temperature: 330°F: add remainder of black and oil
3 (remill) Temperature 300°F
4 (P) Temperature: 220°F

Ref: Vol. 4 Table 3-1

TABLE 6.X-3. UNCONTROLLED EMISSION FACTORS FOR AN INTERNAL MIXER AND ITS DROP MILL OR ROLLER DIE EXTRUDER [d]

Pollutant Category	CAS #	Cmpd. #1 lbs/lb rubber	Cmpd. #2 lbs/lb rubber	Cmpd. #3 lbs/lb rubber	Cmpd. #4 lbs/lb rubber	Cmpd. #5 lbs/lb rubber	Cmpd. #6 lbs/lb rubber	Cmpd. #7 lbs/lb rubber	Cmpd. #8 lbs/lb rubber	Cmpd. #9 lbs/lb rubber	Cmpd. #10 lbs/lb rubber	Cmpd. #11 lbs/lb rubber	Cmpd. #12 lbs/lb rubber	Cmpd. #13 lbs/lb rubber
TOTAL VOCs		6.11E-05	3.86E-05	1.37E-04	3.86E-05	2.15E-04	3.96E-05	1.20E-04	1.55E-05	2.84E-05	2.90E-04	3.22E-05	1.59E-05	2.28E-04
TOTAL SPECIATED ORGANICS		< 8.08E-05	< 6.61E-05	< 1.09E-04	< 6.09E-05	< 7.36E-05	< 1.25E-04	< 1.16E-04	< 6.04E-05	< 6.53E-05	< 3.13E-04	< 4.21E-05	< 6.70E-05	< 1.83E-04
TOTAL PARTICULATE MATTER (PM)		1.75E-04	4.02E-04	8.99E-04	3.00E-04	9.25E-04	4.00E-04	5.66E-04	2.22E-04	4.92E-05	3.58E-04	7.82E-05	1.83E-04	2.46E-04
TOTAL ORGANIC HAPS		< 4.03E-05	< 1.85E-05	< 7.12E-05	< 2.97E-05	< 5.05E-05	< 6.76E-05	< 6.57E-05	< 5.99E-05	< 2.02E-05	< 1.40E-04	< 1.60E-05	< 5.90E-05	< 1.91E-05
TOTAL METAL HAPs		< 8.67E-08	< 3.76E-08	< 1.74E-07	< 7.07E-08	< 7.73E-08	< 4.90E-08	< 1.86E-07	< 3.91E-08	< 3.32E-08	< 5.18E-08	< 2.51E-08	< 2.87E-08	< 4.85E-08
TOTAL HAPS		< 4.04E-05	< 1.86E-05	< 7.14E-05	< 2.98E-05	< 5.05E-05	< 6.76E-05	< 6.58E-05	< 5.99E-05	< 2.03E-05	< 1.40E-04	< 1.60E-05	< 5.90E-05	< 1.82E-05
Individual HAPs														
1,1-Dichloroethane	00075-34-3	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
1,1-Dichloroethene	00075-35-4	< 4.64E-07	< 1.31E-07	< 2.57E-07	5.47E-07	< 2.04E-07	< 4.60E-07	< 4.75E-07	1.00E-07	1.90E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
1,1,1-Trichloroethane	00071-55-6	< 4.64E-07	8.03E-08	3.19E-07	4.23E-08	1.84E-07	< 4.60E-07	< 4.75E-07	2.67E-08	7.30E-08	1.34E-07	< 9.87E-08	2.94E-08	5.32E-08
1,1,2-Trichloroethane	00079-00-5	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
1,1,2,2-Tetrachloroethane	00079-34-5	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
1,2-Dibromo-3-Chloropropane	00096-12-8	< 9.27E-07	< 2.62E-07	< 5.15E-07	< 1.99E-07	< 4.08E-07	< 9.19E-07	< 9.49E-07	< 2.14E-07	< 2.54E-07	< 9.76E-07	< 1.97E-07	< 1.68E-07	< 3.55E-07
1,2-Dibromoethane	00106-93-4	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
1,2-Dichloroethane	00107-06-2	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
1,2-Dichloropropane	00078-87-5	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
1,2,4-Trichlorobenzene	120-82-1	< 7.42E-09	< 4.60E-09	< 1.24E-08	< 3.65E-09	< 6.86E-09	< 9.57E-09	< 1.17E-08	< 5.61E-09	< 5.44E-09	< 5.70E-09	< 4.65E-09	< 3.74E-09	< 4.96E-09
1,3-Butadiene	00106-99-0	9.78E-08	< 1.84E-08	< 3.62E-08	2.17E-07	< 1.15E-08	< 8.46E-08	4.67E-07	1.13E-07	1.70E-07	< 8.86E-08	3.82E-07	8.57E-08	1.12E-07
1,4-Dichlorobenzene	00106-46-7	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
1,4-Dioxane	00123-91-1	< 1.85E-06	< 5.25E-07	< 1.03E-06	< 3.98E-07	< 8.16E-07	< 1.84E-06	< 1.90E-06	< 4.27E-07	< 5.08E-07	< 1.95E-06	< 3.95E-07	< 3.36E-07	< 7.10E-07
1,4-Phenylenediamine	106-50-3	< 1.59E-08	< 9.34E-09	< 3.67E-08	< 1.26E-08	< 1.46E-08	< 1.72E-08	< 2.47E-08	< 1.36E-08	< 1.33E-08	< 1.02E-08	< 8.31E-09	< 9.11E-09	< 8.89E-09
2-Butanone	00078-93-3	5.91E-06	1.50E-06	9.01E-07	2.74E-06	1.53E-06	4.40E-07	1.40E-06	5.08E-07	4.92E-07	1.18E-06	8.64E-08	8.20E-07	3.22E-07
2-Butene [b]	00126-99-8							1.19E-06						
2-Methylphenol	95-48-7	< 8.31E-09	< 5.50E-09	8.63E-08	8.34E-10	1.30E-08	6.09E-09	< 1.29E-08	< 7.35E-09	< 6.50E-09	< 6.55E-09	< 5.26E-09	< 4.53E-09	< 5.77E-09
2,4-Dinitrophenol	51-28-5	< 2.97E-08	< 2.88E-08	< 7.51E-08	< 2.82E-08	< 2.87E-08	< 4.83E-08	< 4.48E-08	< 2.94E-08	< 3.10E-08	< 2.95E-08	< 2.42E-08	< 2.15E-08	< 2.61E-08
2,4-Dinitrotoluene	121-14-2	< 9.45E-09	< 6.91E-09	< 1.92E-08	< 5.52E-09	< 9.14E-09	< 1.23E-08	< 1.41E-08	< 6.03E-09	< 8.32E-09	< 7.49E-09	< 6.15E-09	< 4.40E-09	< 6.63E-09
2,4,5-Trichlorophenol	95-95-4	< 1.00E-08	< 7.04E-09	< 1.92E-08	< 5.68E-09	< 9.67E-09	< 1.38E-08	< 1.50E-08	< 7.47E-09	< 7.88E-09	< 8.43E-09	< 6.95E-09	< 5.46E-09	< 7.44E-09
2,4,6-Trichlorophenol	88-06-2	< 1.01E-08	< 7.42E-09	< 1.90E-08	< 5.63E-09	< 9.71E-09	< 1.40E-08	< 1.52E-08	< 7.82E-09	< 8.26E-09	< 8.53E-09	< 7.04E-09	< 5.72E-09	< 7.55E-09
3,3'-Dichlorobenzidine	91-94-1	< 2.07E-08	< 3.54E-09	< 7.11E-08	< 1.01E-08	< 2.21E-08	< 5.05E-09	< 3.80E-08	< 3.23E-09	< 3.88E-09	< 2.93E-09	< 2.98E-09	< 2.02E-09	< 3.56E-09
3,3'-Dimethoxybenzidine	119-90-4	< 2.20E-08	< 6.01E-09	< 9.02E-08	< 1.57E-08	< 2.35E-08	< 7.13E-09	< 4.14E-08	< 4.72E-09	< 5.63E-09	< 4.17E-09	< 4.18E-09	< 2.95E-09	< 5.07E-09
3,3'-Dimethylbenzidine	119-93-7	< 8.62E-09	< 2.04E-09	< 2.70E-08	< 5.58E-09	< 9.26E-09	< 2.87E-09	< 1.63E-08	< 1.65E-09	< 2.19E-09	< 1.69E-09	< 1.69E-09	< 1.14E-09	< 2.05E-09
3/4-Methylphenol	108-39-4/106-44-5	1.01E-08	< 5.12E-09	2.37E-07	< 4.07E-09	1.11E-07	1.12E-08	< 1.24E-08	< 6.87E-09	< 6.13E-09	1.54E-09	< 5.07E-09	< 4.27E-09	< 5.55E-09
4-Aminobiphenyl	92-67-1	< 4.12E-09	< 2.37E-09	< 7.29E-09	< 2.92E-09	< 3.81E-09	< 3.83E-09	< 6.32E-09	< 2.21E-09	< 2.38E-09	< 2.23E-09	< 1.83E-09	< 1.50E-09	< 1.94E-09
4-Methyl-2-Pentanone	00108-10-1	< 4.64E-07	1.97E-07	1.26E-05	1.49E-05	< 2.04E-07	3.06E-05	< 4.75E-07	1.27E-07	1.24E-07	4.15E-07	6.79E-08	< 8.41E-08	9.87E-08
4-Nitrobiphenyl	92-93-3	< 8.94E-09	< 4.73E-09	< 1.64E-08	< 6.62E-09	< 8.21E-09	< 7.22E-09	< 1.37E-08	< 4.42E-09	< 4.75E-09	< 4.22E-09	< 3.43E-09	< 2.95E-09	< 3.81E-09
4-Nitrophenol	100-02-7	< 2.50E-08	< 2.19E-08	< 5.85E-08	< 1.41E-08	< 2.41E-08	< 3.25E-08	< 3.77E-08	< 1.88E-08	< 1.97E-08	< 1.98E-08	< 1.63E-08	< 1.37E-08	< 1.75E-08
4,4'-Methylenedianiline	101-77-9	< 1.63E-08	< 4.48E-09	< 4.79E-08	< 1.12E-08	< 1.75E-08	< 8.00E-09	< 3.07E-08	< 3.82E-09	< 4.57E-09	< 3.52E-09	< 3.52E-09	< 2.42E-09	< 4.26E-09
4,6-Dinitro-2-methylphenol	534-52-1	< 2.25E-08	< 1.03E-08	< 4.73E-08	< 2.14E-08	< 2.07E-08	< 2.63E-08	< 3.45E-08	< 1.54E-08	< 1.64E-08	< 1.53E-08	< 1.23E-08	< 1.03E-08	< 1.32E-08
Acetaldehyde [b]	00075-07-0	8.95E-07												
Acetonitrile	75-05-8	< 9.27E-07	< 2.62E-07	< 5.15E-07	< 1.99E-07	< 4.08E-07	< 9.19E-07	< 9.49E-07	< 2.14E-07	< 2.54E-07	< 9.76E-07	< 1.97E-07	< 1.68E-07	< 3.55E-07
Acetophenone	98-86-2	4.24E-08	2.13E-08	5.13E-08	3.75E-09	1.85E-08	7.67E-08	1.23E-07	1.29E-08	1.47E-06	8.46E-08	2.29E-07	3.45E-07	5.21E-08
Acrolein	00107-02-8	< 9.27E-07	< 2.62E-07	< 5.15E-07	< 1.99E-07	< 4.08E-07	< 9.19E-07	< 9.49E-07	< 2.14E-07	< 2.54E-07	< 9.76E-07	< 1.97E-07	< 1.68E-07	7.10E-07
Acrylonitrile	00107-13-1	< 9.27E-07	< 2.62E-07	< 5.15E-07	< 1.99E-07	< 4.08E-07	< 9.19E-07	< 9.49E-07	6.81E-08	< 2.54E-07	< 9.76E-07	< 1.97E-07	< 1.68E-07	9.54E-07
Allyl Chloride	00107-05-1	< 9.27E-07	< 2.62E-07	< 5.15E-07	< 1.99E-07	< 4.08E-07	< 9.19E-07	< 9.49E-07	< 2.14E-07	< 2.54E-07	< 9.76E-07	< 1.97E-07	< 1.68E-07	< 3.55E-07
Aniline	62-53-3	< 5.71E-09	4.80E-07	< 1.30E-08	4.30E-07	< 5.33E-09	9.97E-08	< 8.91E-09	7.70E-09	5.13E-09	4.71E-09	2.39E-08	< 2.55E-09	< 3.56E-09
α,α,α-Trichlorotoluene	98-07-7	< 5.07E-09	< 3.77E-09	< 9.58E-09	< 3.13E-09	< 4.69E-09	< 7.83E-09	< 7.95E-09	< 4.54E-09	< 4.38E-09	< 4.61E-09	< 3.75E-09	< 3.04E-09	< 4.04E-09
Benzene	00071-43-2	5.46E-08	4.62E-08	1.13E-07	1.14E-07	2.98E-07	< 6.22E-08	9.13E-08	< 1.45E-08	4.90E-08	< 8.61E-08	< 1.34E-08	3.64E-08	8.61E-07
Benzidine	92-87-5	< 1.12E-08	< 2.94E-09	< 2.75E-08	< 7.77E-09	< 1.20E-08	< 4.35E-09	< 2.11E-08	< 2.75E-09	< 3.25E-09	< 2.53E-09	< 2.53E-09	< 1.72E-09	< 3.07E-09
Benzyl Chloride	00100-44-7	< 9.27E-07	< 2.62E-07	< 5.15E-07	< 1.99E-07	< 4.08E-07	< 9.19E-07	< 9.49E-07	< 2.14E-07	< 2.54E-07	< 9.76E-07	< 1.97E-07	< 1.68E-07	< 3.55E-07
Biphenyl	92-52-4	< 2.66E-09	< 2.30E-09	5.63E-08	5.42E-09	< 2.58E-09	1.17E-08	< 4.07E-09	< 2.45E-09	< 2.56E-09	< 2.78E-09	< 2.30E-09	< 1.80E-09	< 2.48E-09
bis(2-Chloroethyl)ether	111-44-4	< 9.26E-09	< 5.24E-09	< 1.87E-08	< 5.00E-09	< 8.73E-09	< 1.18E-08	< 1.45E-08	< 7.05E-09	< 8.25E-09	< 8.65E-09	< 5.35E-09	< 4.36E-09	< 5.88E-09
bis(2-Ethylhexyl)phthalate	117-81-7	3.91E-08	3.01E-08	1.19E-07	0.00E+00	2.29E-08	1.79E-07	3.34E-08	0.00E+00	7.07E-09	< 1.29E-09	2.69E-07	8.93E-09	7.40E-07
Bromoform	00075-25-2	2.78E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
Bromomethane	00074-83-9	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07

Ref: Vol. 1
TABLE 4-5 pg 4-49

a Particulate matter collection efficiency of 99.3% was observed on a baghouse control device used on this process.

Vol. 4 TABLE 4-1

b Compounds detected only as tentatively identified compounds (TICs) in emissions from indicated rubber compounds. No applicable data for non-detects.

c Blank correction caused a negative value. A "0" is reported for these cases, but in not included in the statistics summary.

d Emission factor is a combination of emissions from productive and nonproductive passes. Emissions from nonproductive mixing are approximately 90% of the total.

Ref: "Emissions from Non/Productive/Productive mixing" by [illegible] 5/30/95

Vol. 4
TABLE 3-2

TABLE 6.X-4. UNCONTROLLED EMISSION FACTORS FOR A MILL [a]

Pollutant Category	CAS Number	Cmpd. 2 lb/lb-rubber	Cmpd. 3 lb/lb-rubber	Cmpd. 4 lb/lb-rubber	Cmpd. 12 lb/lb-rubber	Mean lb/lb-rubber	Max. lb/lb-rubber
TOTAL VOCs		1.10E-04	1.12E-04	8.40E-05	1.71E-06	7.69E-05	1.12E-04
TOTAL SPECIATED ORGANICS		< 3.47E-05	< 4.39E-05	< 5.08E-05	< 9.61E-07	< 3.26E-05	< 5.08E-05
TOTAL HAPs		< 9.04E-06	< 2.31E-05	< 1.75E-05	< 1.49E-07	< 1.24E-05	< 2.31E-05
Individual HAPs:							
1,1,1-Trichloroethane	00071-55-6	3.32E-08	< 7.04E-08	< 6.63E-08	< 3.46E-09	< 4.33E-08	< 7.04E-08
1,2-Dibromo-3-chloropropane	96-12-8	< 9.32E-09	< 2.89E-08	< 8.82E-09	< 7.68E-11	< 1.18E-08	< 2.89E-08
1,2,4-Trichlorobenzene	120-82-1	< 5.25E-09	< 1.39E-08	< 4.33E-09	< 4.19E-11	< 5.89E-09	< 1.39E-08
1,3-Butadiene	106-99-0	< 2.08E-08	< 9.90E-09	< 9.33E-09	< 9.74E-11	< 1.00E-08	< 2.08E-08
1,4-Dichlorobenzene	106-46-7	< 4.07E-09	< 1.26E-08	< 3.84E-09	< 3.40E-11	< 5.13E-09	< 1.26E-08
2-Butanone	00078-93-3	8.12E-07	7.61E-08	4.06E-07	< 6.93E-09	< 3.25E-07	8.12E-07
2-Methylphenol	95-48-7	1.99E-08	< 1.87E-08	< 5.73E-09	2.31E-11	< 1.11E-08	1.99E-08
2,4-Dinitrophenol	105-67-9	< 3.06E-08	< 5.81E-08	< 2.01E-08	< 2.64E-10	< 2.73E-08	< 5.81E-08
2,4-Dinitrotoluene	121-14-2	< 7.74E-09	< 1.47E-08	< 5.08E-09	< 6.55E-11	< 6.89E-09	< 1.47E-08
2,4,5-Trichlorophenol	95-95-4	< 8.76E-09	< 1.66E-08	< 5.73E-09	< 6.26E-11	< 7.79E-09	< 1.66E-08
2,4,6-Trichlorophenol	88-06-2	< 8.87E-09	< 1.68E-08	< 5.83E-09	< 6.58E-11	< 7.88E-09	< 1.68E-08
3,3'-Dimethoxybenzidine	119-90-4	< 3.79E-09	< 1.08E-08	< 3.29E-09	< 7.37E-11	< 4.48E-09	< 1.08E-08
3,3'-Dimethylbenzidine	119-93-7	< 1.58E-09	< 4.49E-09	< 1.35E-09	< 2.43E-11	< 1.86E-09	< 4.49E-09
3/4-Methylphenol	108-39-4/106-44-5	5.58E-08	< 1.80E-08	1.13E-08	< 3.40E-11	< 2.13E-08	< 5.58E-08
4-Aminobiphenyl	92-67-1	< 2.49E-09	< 4.34E-09	< 1.54E-09	< 7.77E-11	< 2.11E-09	< 4.34E-09
4-Methyl-2-Pentanone	00108-10-1	1.57E-07	1.14E-06	9.12E-06	< 3.46E-09	< 2.61E-06	9.12E-06
4-Nitrobiphenyl	92-93-3	< 4.69E-09	< 8.08E-09	< 2.84E-09	< 4.32E-11	< 3.91E-09	< 8.08E-09
4-Nitrophenol	100-02-7	< 2.05E-08	< 3.89E-08	< 1.35E-08	< 2.00E-10	< 1.83E-08	< 3.89E-08
4,4'-Methylenedianiline	101-77-9	< 3.22E-09	< 9.13E-09	< 2.74E-09	< 5.31E-11	< 3.79E-09	< 9.13E-09
Acetonitrile	01722-09-4	< 2.95E-07	< 1.41E-07	< 1.33E-07	< 6.93E-09	< 1.44E-07	< 2.95E-07
Acetophenone	98-86-2	< 5.08E-09	2.80E-07	2.84E-08	3.06E-10	< 7.83E-08	2.80E-07
Acrolein	107-02-8	< 2.95E-07	< 1.41E-07	< 1.33E-07	< 6.93E-09	< 1.44E-07	< 2.95E-07
Acrylonitrile	00107-13-1	1.29E-07	< 1.41E-07	< 1.33E-07	< 6.93E-09	< 1.02E-07	< 1.41E-07
Allyl Chloride	00107-05-1	< 2.95E-07	< 1.41E-07	< 1.33E-07	< 6.93E-09	< 1.44E-07	< 2.95E-07
Aniline	62-53-3	7.50E-08	5.32E-06	3.48E-06	< 2.37E-10	< 2.22E-06	5.32E-06
Benzene	71-43-2	5.99E-08	1.76E-08	5.39E-08	3.47E-10	3.29E-08	5.99E-08
Benzidine	92-87-5	< 2.32E-09	< 6.58E-09	< 1.99E-09	< 3.19E-11	< 2.73E-09	< 6.58E-09
Benzyl Chloride	100-44-7	< 3.22E-09	< 9.88E-09	< 3.04E-09	< 6.93E-09	< 5.77E-09	< 9.88E-09
Biphenyl	92-52-4	3.55E-08	3.65E-08	4.16E-08	9.50E-11	2.84E-08	4.16E-08
bis(2-Ethylhexyl)phthalate	117-81-7	3.25E-08	3.63E-07	1.09E-07	1.41E-09	2.51E-07	8.63E-07
Bromoform	00075-25-2	< 1.48E-07	< 7.04E-08	< 6.63E-08	< 3.46E-09	< 7.19E-08	< 1.48E-07
Carbon Disulfide	00075-15-0	5.90E-07	9.67E-08	2.49E-07	1.76E-07	2.78E-07	5.90E-07
Carbon Tetrachloride	00056-23-5	< 1.48E-07	< 7.04E-08	< 6.63E-08	< 3.46E-09	< 7.19E-08	< 1.48E-07
Carbonyl Sulfide	463-58-1	8.38E-07	< 4.31E-07	< 2.40E-07	< 8.49E-10	< 3.77E-07	8.38E-07
Chlorobenzene	00108-90-7	< 1.48E-07	< 7.04E-08	< 6.63E-08	< 3.46E-09	< 7.19E-08	< 1.48E-07
Chloroform	00067-66-3	< 1.48E-07	< 7.04E-08	< 6.63E-08	< 3.46E-09	< 7.19E-08	< 1.48E-07
Cumene	98-82-8	< 2.37E-09	1.47E-08	1.44E-09	2.48E-11	< 4.63E-09	1.47E-08
Dibenzofuran	132-64-9	1.73E-08	< 4.19E-09	1.06E-08	< 3.53E-11	< 8.02E-09	1.73E-08
Dimethylphthalate	131-11-3	< 2.66E-09	7.21E-08	< 1.74E-09	< 2.08E-11	< 1.91E-08	7.21E-08
Di-n-butylphthalate	84-74-2	2.49E-09	1.37E-07	1.70E-07	2.22E-10	7.74E-08	1.70E-07
Epichlorohydrin	00106-89-8	< 2.95E-07	< 1.41E-07	< 1.33E-07	< 6.93E-09	< 1.44E-07	< 2.95E-07
Ethylbenzene	100-41-4	1.12E-07	< 9.71E-09	7.78E-08	2.81E-10	< 5.00E-08	1.12E-07
Hexachlorobenzene	118-74-1	< 7.46E-09	< 1.29E-08	< 4.58E-09	< 5.71E-11	< 6.24E-09	< 1.29E-08
Hexachlorobutadiene	87-68-3	< 8.36E-09	< 2.20E-08	< 6.88E-09	< 7.14E-11	< 9.33E-09	< 2.20E-08
Hexachlorocyclopentadiene	77-47-4	< 1.34E-08	< 2.54E-08	< 8.82E-09	< 8.55E-11	< 1.19E-08	< 2.54E-08
Hexachloroethane	67-72-1	< 8.93E-09	< 2.77E-08	< 8.42E-09	< 8.03E-11	< 1.13E-08	< 2.77E-08
Hydroquinone	123-31-9	< 7.51E-09	< 1.98E-08	< 6.18E-09	< 8.20E-11	< 8.36E-09	< 1.98E-08
Isophorone	78-59-1	6.50E-09	1.12E-05	3.07E-07	< 2.43E-11	< 2.88E-06	1.12E-05
Methylene Chloride	00075-09-2	1.01E-06	4.13E-07	6.80E-07	< 6.03E-08	< 5.42E-07	1.01E-06
m-Xylene + p-Xylene	108-38-3/106-42-3	6.11E-07	3.50E-06	2.56E-07	1.14E-09	2.26E-07	6.11E-07
Naphthalene	91-20-3	1.30E-07	3.73E-07	1.68E-07	2.87E-10	1.67E-07	3.73E-07

TABLE 6.X-4. UNCONTROLLED EMISSION FACTORS FOR A MILL [a]

Pollutant Category	CAS Number	Cmpd. 2 lb/lb-rubber	Cmpd. 3 lb/lb-rubber	Cmpd. 4 lb/lb-rubber	Cmpd. 12 lb/lb-rubber	Mean lb/lb-rubber	Max. lb/lb-rubber
n-Hexane	110-54-3	7.16E-07	1.21E-07	2.48E-07	2.94E-08	2.79E-07	7.16E-07
Nitrobenzene	98-95-3	< 5.37E-09	< 1.41E-08	< 4.38E-09	< 4.35E-11	< 5.97E-09	< 1.41E-08
n-Nitrosodimethylamine	62-75-9	< 9.94E-09	< 3.08E-08	< 9.42E-09	< 7.20E-11	< 1.26E-08	< 3.08E-08
n-Nitrosomorpholine	59-89-2	< 8.70E-09	< 2.69E-08	< 8.22E-09	< 7.18E-11	< 1.10E-08	< 2.69E-08
p-Anisidine	90-04-0	< 6.89E-09	< 1.81E-08	< 5.68E-09	< 5.59E-11	< 7.68E-09	< 1.81E-08
p-Toluidine	95-53-4	< 4.29E-09	< 1.32E-08	< 4.04E-09	< 3.41E-11	< 5.38E-09	< 1.32E-08
p-Xylene	95-47-6	3.46E-07	< 9.71E-09	1.37E-07	< 1.89E-10	< 1.23E-07	3.46E-07
Pentachloronitrobenzene	82-68-8	< 2.17E-08	< 3.74E-08	< 1.33E-08	< 1.88E-10	< 1.81E-08	< 3.74E-08
Pentachlorophenol	87-86-5	< 1.21E-08	< 2.08E-08	< 7.37E-09	< 7.82E-11	< 1.01E-08	< 2.08E-08
Phenol	108-95-2	4.65E-08	< 1.41E-08	< 4.28E-09	6.99E-10	< 1.64E-08	4.65E-08
Propylene Oxide	00075-56-9	< 2.95E-07	< 1.41E-07	< 1.33E-07	< 6.93E-09	< 1.44E-07	< 2.95E-07
Styrene	100-42-5	1.55E-07	< 9.53E-09	< 8.98E-09	< 9.38E-11	< 4.34E-08	1.55E-07
Tetrachloroethene	00127-18-4	8.39E-08	< 7.04E-08	< 6.63E-08	< 3.46E-09	< 5.60E-08	8.39E-08
Toluene	108-88-3	3.28E-07	3.71E-07	1.95E-07	3.86E-08	2.33E-07	3.71E-07
Trifluralin	1582-09-8	< 1.28E-08	< 2.44E-08	< 8.47E-09	< 1.18E-10	< 1.15E-08	< 2.44E-08
Vinyl Acetate	00108-05-4	< 1.48E-07	< 7.04E-08	< 6.63E-08	< 3.46E-09	< 7.19E-08	< 1.48E-07
Vinyl Chloride	00075-01-4	< 1.48E-07	< 7.04E-08	< 6.63E-08	< 3.46E-09	< 7.19E-08	< 1.48E-07

[a] To determine emission factors for compounds not listed in this table, multiply table 6.X-3 VOC data by 0.73, speciated organics by 0.33, and HAPs by 0.26.

Ref: "Interpolation factors" by E.W. Karger 6/2/95

TABLE 6.X-5. UNCONTROLLED EMISSION FACTORS FOR AN EXTRUDER AND ITS COOLING CONVEYOR [a]

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Pollutant Category	CAS #	Cmpd.#4 lb/lb-rubber	Cmpd. #6 lb/lb-rubber	Cmpd #9 lb/lb-rubber	Cmpd. #22 lb/lb-rubber	STATISTICS Mean lb/lb-rubber	STATISTICS Max. lb/lb-rubber
TOTAL VOC		8.35E-06	1.76E-05	1.73E-05	1.24E-05	1.39E-05	1.76E-05
TOTAL SPECIATED ORGANICS		< 1.50E-05	< 5.87E-05	< 2.77E-05	< 1.25E-05	< 2.85E-05	< 5.87E-05
TOTAL METAL HAPs		4.63E-07	1.05E-07	1.95E-07	7.57E-07	3.80E-07	7.57E-07
TOTAL ORGANIC HAPs		< 1.32E-05	< 3.70E-05	< 1.89E-05	< 9.14E-06	< 1.96E-05	< 3.70E-05
TOTAL PARTICULATE MATTER (PM)		2.38E-05	1.28E-06	5.75E-06	2.66E-05	1.44E-05	2.66E-05
TOTAL HAPs		< 1.37E-05	< 3.71E-05	< 1.91E-05	< 9.90E-06	< 2.00E-05	< 3.71E-05
Individual HAPs:							
1,1,1-Trichloroethane	71-55-6	< 8.47E-08	< 9.31E-08	< 1.08E-07	< 6.56E-08	< 8.77E-08	< 1.08E-07
1,2-Dibromo-3-Chloropropane	96-12-8	< 2.38E-07	< 2.00E-07	< 1.66E-07	< 1.32E-07	< 1.84E-07	< 2.38E-07
1,2,4-Trichlorobenzene	120-82-1	< 2.51E-08	< 6.79E-09	< 1.66E-08	< 8.57E-09	< 1.43E-08	< 2.51E-08
1,3-Butadiene	00106-99-0	< 8.92E-08	5.06E-07	< 6.01E-08	< 7.83E-08	< 1.83E-07	5.06E-07
1,4-Dichlorobenzene	106-46-7	< 1.20E-08	< 5.96E-09	< 1.36E-08	1.97E-09	< 8.36E-09	< 1.36E-08
2-Butanone	78-93-3	1.34E-07	1.17E-07	1.18E-07	9.29E-08	1.15E-07	1.34E-07
2-Chloroacetophenone	532-27-4	< 1.24E-08	< 3.54E-09	< 5.55E-09	3.70E-09	< 6.29E-09	< 1.24E-08
2-Chloronaphthalene	1335-88-2	< 1.29E-08	< 3.28E-09	< 6.43E-09	1.07E-09	< 5.93E-09	< 1.29E-08
2,4-Dinitrophenol	5-12-85	< 1.48E-07	< 3.30E-08	< 9.51E-08	< 6.64E-08	< 8.57E-08	< 1.48E-07
2,4-Dinitrotoluene	121-14-2	< 3.65E-08	< 8.85E-09	< 2.42E-08	< 1.26E-08	< 2.05E-08	< 3.65E-08
2,4,5-Trichlorophenol	95-95-4	< 4.37E-08	< 9.62E-09	< 2.82E-08	< 1.59E-08	< 2.44E-08	< 4.37E-08
2,4,6-Trichlorophenol	88-06-2	< 4.15E-08	< 3.79E-09	< 2.72E-08	< 1.57E-08	< 2.36E-08	< 4.15E-08
3,3'-Dimethoxybenzidine	119-90-4	< 5.49E-08	< 3.00E-08	< 4.69E-08	< 4.19E-08	< 4.34E-08	< 5.49E-08
3,3'-Dimethylbenzidine	119-93-7	< 2.34E-08	< 8.25E-09	< 1.74E-08	< 1.45E-08	< 1.59E-08	< 2.34E-08
3,4-Methylphenol	108-39-4/106-44-5	< 2.24E-08	< 8.85E-09	< 1.87E-08	2.87E-09	< 1.32E-08	< 2.24E-08
4-Aminobiphenyl	92-67-1	< 1.76E-08	< 4.22E-09	< 1.18E-08	< 6.53E-09	< 1.01E-08	< 1.76E-08
4-Methyl-2-Pentanone	108-10-1	5.54E-06	2.66E-06	2.85E-07	1.61E-06	2.52E-06	5.54E-06
4-Nitrobiphenyl	92-93-3	< 3.61E-08	< 9.26E-09	< 2.61E-08	< 1.35E-08	< 2.12E-08	< 3.61E-08
4-Nitrophenol	100-02-7	< 1.11E-07	< 2.80E-08	< 7.22E-08	< 6.39E-08	< 6.87E-08	< 1.11E-07
4,4'-Methylenedianiline	107-77-9	< 4.81E-08	< 1.63E-08	< 3.55E-08	< 3.08E-08	< 3.27E-08	< 4.81E-08
Acetonitrile	75-05-8	< 2.38E-07	< 3.19E-07	< 1.66E-07	< 1.32E-07	< 2.14E-07	< 3.19E-07
Acetophenone	98-86-2	2.09E-08	3.04E-06	8.18E-06	1.61E-08	2.81E-06	8.18E-06
Acrolein	107-02-8	< 3.33E-07	< 3.10E-07	< 1.75E-07	< 1.66E-07	< 2.46E-07	< 3.33E-07
Acrylonitrile	107-13-1	< 2.38E-07	< 2.00E-07	< 1.66E-07	< 1.32E-07	< 1.84E-07	< 2.38E-07
Allyl Chloride	107-05-1	< 2.38E-07	< 2.00E-07	< 4.20E-07	< 1.32E-07	< 2.48E-07	< 4.20E-07
Aniline	62-53-3	4.66E-07	1.87E-07	< 8.72E-09	2.21E-07	< 2.21E-07	4.66E-07
Benzene	00071-43-2	< 4.46E-08	2.69E-07	7.51E-08	1.22E-07	< 1.28E-07	2.69E-07
Benzidine	92-87-5	< 2.73E-08	< 9.87E-09	< 2.08E-08	< 1.71E-08	< 1.88E-08	< 2.73E-08
Benzyl Chloride	100-44-7	< 2.38E-07	< 1.83E-07	< 1.66E-07	< 1.32E-07	< 1.80E-07	< 2.38E-07
Biphenyl	92-52-4	4.61E-09	1.42E-08	3.27E-09	4.42E-09	< 6.62E-09	1.42E-08
bis(2-Ethylhexyl)phthalate	117-81-7	9.28E-08	1.00E-07	6.70E-08	1.48E-07	1.02E-07	1.48E-07
Bromoform	75-25-2	< 1.19E-07	< 1.00E-07	< 9.02E-08	< 6.60E-08	< 9.38E-08	< 1.19E-07
Carbon Disulfide	75-15-0	1.09E-07	< 2.66E-07	9.60E-08	1.16E-07	< 1.47E-07	< 2.66E-07
Carbon Tetrachloride	56-23-5	< 1.19E-07	< 1.00E-07	< 9.02E-08	< 6.60E-08	< 9.38E-08	< 1.19E-07
Carbonyl Sulfide	463-58-1	< 1.33E-07	< 2.46E-07	< 1.11E-07	< 8.77E-08	< 1.44E-07	< 2.46E-07
Chlorobenzene	108-90-7	< 1.19E-07	< 1.00E-07	< 9.02E-08	< 6.60E-08	< 9.38E-08	< 1.19E-07
Chloroform	67-66-3	< 1.19E-07	< 1.00E-07	< 8.77E-08	< 6.89E-08	< 9.39E-08	< 1.19E-07
Chloromethane	74-87-3	< 7.06E-08	6.64E-08	< 6.11E-08	1.83E-07	< 9.52E-08	1.83E-07
Cumene	98-82-8	6.35E-09	1.11E-07	1.48E-06	3.59E-08	4.09E-07	1.48E-06
Dibenzofuran	38178-38-0	< 5.50E-09	2.81E-09	< 5.22E-09	2.58E-09	< 4.03E-09	< 5.50E-09
Dimethylphthalate	131-11-13	< 1.16E-08	3.83E-09	< 6.58E-09	< 4.15E-09	< 6.55E-09	< 1.16E-08
Di-n-butylphthalate	84-74-2	8.19E-08	1.96E-07	3.65E-07	< 7.49E-08	< 1.79E-07	3.65E-07
Epichlorohydrin	106-89-8	< 2.38E-07	< 1.83E-07	< 1.66E-07	< 1.32E-07	< 1.80E-07	< 2.38E-07
Ethylbenzene	00100-41-4	< 3.30E-08	8.10E-08	3.03E-08	< 3.57E-07	< 1.25E-07	< 3.57E-07
Hexachlorobenzene	118-74-1	< 3.43E-08	< 9.35E-09	< 2.37E-08	< 1.23E-08	< 1.99E-08	< 3.43E-08
Hexachlorobutadiene	87-68-3	< 4.22E-08	< 1.04E-08	7.17E-08	< 1.46E-08	< 3.47E-08	7.17E-08
Hexachlorocyclopentadiene	77-47-4	< 4.71E-08	< 1.08E-08	< 3.08E-08	< 1.50E-08	< 2.59E-08	< 4.71E-08
Hexachloroethane	67-72-1	< 4.14E-08	< 1.22E-08	< 2.87E-08	< 1.56E-08	< 2.45E-08	< 4.14E-08
Hydroquinone	123-31-9	< 4.06E-08	< 9.51E-09	< 2.58E-08	< 1.69E-08	< 2.32E-08	< 4.06E-08

TABLE 6.X-5. UNCONTROLLED EMISSION FACTORS FOR AN EXTRUDER AND ITS COOLING CONVEYOR [a]

Pollutant Category	CAS #	Cmpd.#4 lb/lb-rubber	Cmpd. #6 lb/lb-rubber	Cmpd #9 lb/lb-rubber	Cmpd. #22 lb/lb-rubber	STATISTICS Mean lb/lb-rubber	STATISTICS Max. lb/lb-rubber
Isophorone	78-59-1	2.85E-08	< 3.78E-09	< 7.99E-09	6.35E-08	< 2.59E-08	6.35E-08
Methylene Chloride	79-09-2	1.60E-06	1.32E-05	2.44E-06	< 8.18E-08	< 4.32E-06	1.32E-05
m-Xylene + p-Xylene	00108-38-3/00106-42-3	< 7.65E-08	3.32E-07	1.53E-07	6.00E-08	< 1.55E-07	3.32E-07
Naphthalene	91-20-3	6.66E-08	1.77E-07	7.81E-07	6.04E-08	2.71E-07	7.81E-07
n-Hexane	110-54-3	1.02E-07	3.94E-07	8.38E-07	2.45E-06	9.46E-07	2.45E-06
Nitrobenzene	98-95-3	< 2.20E-08	< 6.81E-09	< 1.52E-08	< 8.14E-09	< 1.30E-08	< 2.20E-08
n-Nitrosodimethylamine	62-75-9	< 8.72E-08	< 1.79E-08	< 5.65E-08	< 2.06E-08	< 4.56E-08	< 8.72E-08
n-Nitrosomorpholine	59-89-2	< 3.77E-08	< 9.86E-09	< 2.54E-08	< 1.43E-08	< 2.18E-08	< 3.77E-08
o-Anisidine	90-04-0	< 3.34E-08	< 1.04E-08	< 2.30E-08	< 1.17E-08	< 1.96E-08	< 3.34E-08
o-Toluidine	95-53-4	< 1.84E-08	< 1.18E-07	< 1.26E-08	< 6.63E-09	< 3.89E-08	< 1.18E-07
o-Xylene	00095-47-6	4.14E-08	2.58E-07	7.55E-08	4.77E-07	2.13E-07	4.77E-07
Pentachloronitrobenzene	82-68-8	< 1.05E-07	< 2.72E-08	< 7.17E-08	< 4.10E-08	< 6.13E-08	< 1.05E-07
Pentachlorophenol	87-86-5	< 8.37E-08	< 1.89E-08	< 5.47E-08	< 3.85E-08	< 4.89E-08	< 8.37E-08
Phenol	108-95-2	1.20E-07	1.42E-07	1.73E-07	1.17E-08	1.12E-07	1.73E-07
Propylene Oxide	75-56-9	< 2.38E-07	< 1.85E-06	< 2.36E-07	< 5.04E-07	< 7.08E-07	< 1.85E-06
Styrene	00100-42-5	< 1.07E-08	7.25E-07	< 2.38E-08	< 3.93E-08	< 2.00E-07	7.25E-07
Tetrachloroethene	127-18-4	< 1.07E-07	< 9.47E-08	< 7.39E-08	< 2.02E-07	< 1.20E-07	< 2.02E-07
Toluene	00108-88-3	< 1.16E-07	9.26E-06	< 9.02E-08	< 7.09E-08	< 2.38E-06	9.26E-06
Trifluralin	1582-09-8	< 6.39E-08	< 1.45E-08	< 4.18E-08	< 1.95E-08	< 3.49E-08	< 6.39E-08
Vinyl Acetate	108-05-4	< 1.19E-07	< 1.00E-07	< 1.05E-07	< 6.60E-08	< 9.74E-08	< 1.19E-07
Vinyl Chloride	75-01-4	< 1.19E-07	< 1.00E-07	< 8.07E-08	< 6.34E-08	< 9.08E-08	< 1.19E-07
Chromium		2.45E-07	2.25E-08	7.81E-08	2.54E-07	1.50E-07	2.54E-07
Cobalt		1.90E-08	9.92E-09	1.51E-08	1.04E-08	1.36E-08	1.90E-08
Nickel		1.99E-07	7.24E-08	1.02E-07	4.93E-07	2.16E-07	4.93E-07

[a] To determine emission factors for compounds not listed in this table, multiply table 6.X-3 VOC data by 0.13, speciated organics by 0.29, metal HAPs by 6.62, organic HAPs by 0.41, PM by 0.04 and HAPs by 0.42,.

Ref: Interpolation factors by E.W. Karger 6/2/95

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TABLE 6.X-6. UNCONTROLLED EMISSION FACTORS FOR A CALENDER [a,b]

Pollutant Category	CAS Number	Cmpd. 2 lb/lb rubber	Cmpd. 12 lb/lb rubber	Mean lb/lb rubber	Max. lb/lb rubber
TOTAL VOCs		5.31E-05	4.67E-06	2.89E-05	5.31E-05
TOTAL SPECIATED ORGANICS		< 7.34E-05	< 4.49E-06	< 3.89E-05	< 7.34E-05
TOTAL HAPs		< 1.34E-05	< 3.49E-06	< 8.43E-06	< 1.34E-05
Individual HAPs:					
1,1,1-Trichloroethane	71-55-6	< 5.27E-08	< 2.12E-08	< 3.70E-08	< 5.27E-08
1,2-Dibromo-3-Chloropropane	00096-12-8	< 1.56E-07	< 4.24E-08	< 9.94E-08	< 1.56E-07
1,2-Dichloroethane	107-06-2	1.22E-07	< 2.12E-08	< 7.18E-08	1.22E-07
1,2,4-Trichlorobenzene	120-82-1	< 2.62E-09	< 3.47E-11	< 1.33E-09	< 2.62E-09
1,3-Butadiene	106-99-0	< 1.10E-08	< 1.19E-10	< 5.56E-09	< 1.10E-08
1,4-Dichlorobenzene	106-46-7	< 5.54E-08	< 2.12E-08	< 3.83E-08	< 5.54E-08
2-Butanone	78-93-3	< 2.61E-07	< 4.24E-08	< 1.52E-07	< 2.61E-07
2-Methylphenol	95-48-7	< 1.91E-09	1.86E-10	< 1.05E-09	< 1.91E-09
2,4-Dinitrophenol	51-28-5	< 1.01E-08	< 1.87E-10	< 5.16E-09	< 1.01E-08
2,4-Dinitrotoluene	121-14-2	< 3.19E-09	< 4.96E-11	< 1.62E-09	< 3.19E-09
2,4,5-Trichlorophenol	95-95-4	< 3.41E-09	< 4.19E-11	< 1.73E-09	< 3.41E-09
2,4,6-Trichlorophenol	88-06-2	< 3.60E-09	< 4.32E-11	< 1.82E-09	< 3.60E-09
3,3'-Dimethoxybenzidine	119-90-4	< 6.00E-09	< 3.54E-11	< 3.02E-09	< 6.00E-09
3,3'-Dimethylbenzidine	119-93-7	< 2.18E-09	< 1.15E-11	< 1.09E-09	< 2.18E-09
3/4-Methylphenol	108-39-4/106-44-5	< 1.76E-09	1.26E-10	< 9.41E-10	< 1.76E-09
4-Aminobiphenyl	92-67-1	< 1.94E-09	1.27E-09	< 1.61E-09	< 1.94E-09
4-Methyl-2-pentanone	108-10-1	< 6.42E-07	< 2.12E-08	< 3.31E-07	< 6.42E-07
4-Nitrobiphenyl	92-93-3	< 3.19E-09	< 2.86E-11	< 1.61E-09	< 3.19E-09
4-Nitrophenol	100-02-7	< 5.10E-09	< 1.40E-10	< 2.62E-09	< 5.10E-09
4,4'-Methylenedianiline	101-77-9	< 3.77E-09	< 2.44E-11	< 1.90E-09	< 3.77E-09
Acetonitrile	01722-09-4	< 1.56E-07	< 4.24E-08	< 9.94E-08	< 1.56E-07
Acetophenone	98-86-2	4.94E-07	1.17E-09	2.48E-07	4.94E-07
Acrolein	107-02-8	< 1.29E-07	< 4.24E-08	< 8.56E-08	< 1.29E-07
Acrylonitrile	00107-13-1	< 1.56E-07	< 4.24E-08	< 9.94E-08	< 1.56E-07
Allyl Chloride	00107-05-1	< 1.56E-07	< 4.24E-08	< 9.94E-08	< 1.56E-07
Aniline	62-53-3	< 9.44E-08	9.64E-09	< 5.20E-08	< 9.44E-08
Benzene	71-43-2	4.54E-08	1.33E-09	2.34E-08	4.54E-08
Benzidine	92-87-5	< 1.96E-09	< 1.27E-11	< 9.85E-10	< 1.96E-09
Benzyl Chloride	00100-44-7	< 1.56E-07	< 4.24E-08	< 9.94E-08	< 1.56E-07
Biphenyl	92-52-4	1.78E-08	8.88E-10	9.33E-09	1.78E-08
bis(2-Ethylhexyl)phthalate	117-81-7	7.34E-07	9.35E-10	3.68E-07	7.34E-07
Bromoform	00075-25-2	< 7.82E-08	< 2.12E-08	< 4.97E-08	< 7.82E-08
Carbon Disulfide	75-15-0	2.41E-06	2.61E-06	2.51E-06	2.61E-06
Carbon Tetrachloride	00056-23-5	< 7.82E-08	< 2.12E-08	< 4.97E-08	< 7.82E-08
Carbonyl Sulfide	463-58-1	< 9.58E-08	4.19E-08	< 6.88E-08	< 9.58E-08
Chlorobenzene	00108-90-7	< 7.82E-08	< 2.12E-08	< 4.97E-08	< 7.82E-08
Chloroform	00067-66-3	< 7.82E-08	< 2.12E-08	< 4.97E-08	< 7.82E-08
Chloromethane	74-87-3	2.18E-08	< 2.12E-08	< 2.15E-08	2.18E-08

TABLE 6.X-6. UNCONTROLLED EMISSION FACTORS FOR A CALENDER [a,b]

Pollutant Category	CAS Number	Cmpd. 2 lb/lb rubber	Cmpd. 12 lb/lb rubber	Mean lb/lb rubber	Max. lb/lb rubber
Cumene	98-82-8	6.31E-08	7.05E-10	3.19E-08	6.31E-08
Dibenzofuran	132-64-9	< 9.38E-10	< 1.97E-10	< 5.67E-10	< 9.38E-10
Di-n-butylphthalate	84-74-2	0.00E+00	2.62E-10	2.62E-10	2.62E-10
Epichlorohydrin	00106-89-8	< 1.56E-07	< 4.24E-08	< 9.94E-08	< 1.56E-07
Ethylbenzene	100-41-4	1.57E-07	2.06E-09	7.94E-08	1.57E-07
Hexachlorobenzene	118-74-1	< 2.78E-09	< 3.45E-11	< 1.41E-09	< 2.78E-09
Hexachlorobutadiene	00087-68-3	< 1.56E-07	< 4.24E-08	< 9.94E-08	< 1.56E-07
Hexachlorocyclopentadiene	77-47-4	< 5.80E-09	< 5.55E-11	< 2.93E-09	< 5.80E-09
Hexachloroethane	67-72-1	< 3.48E-09	< 6.47E-11	< 1.77E-09	< 3.48E-09
Hydroquinone	123-31-9	< 3.95E-08	< 6.47E-11	< 1.98E-08	< 3.95E-08
Isophorone	78-59-1	1.30E-07	< 1.98E-11	< 6.51E-08	1.30E-07
Methylene Chloride	75-09-2	< 7.96E-08	< 3.55E-08	< 5.75E-08	< 7.96E-08
m-Xylene + p-Xylene	108-38-3/106-42-3	2.86E-07	6.09E-09	1.46E-07	2.86E-07
Naphthalene	91-20-3	1.21E-07	2.21E-09	6.15E-08	1.21E-07
n-Hexane	110-54-3	5.59E-07	3.83E-08	2.99E-07	5.59E-07
Nitrobenzene	98-95-3	< 2.38E-09	< 3.55E-11	< 1.21E-09	< 2.38E-09
n-Nitrosodimethylamine	62-75-9	< 7.41E-09	< 5.57E-11	< 3.74E-09	< 7.41E-09
n-Nitrosomorpholine	59-89-2	< 6.51E-09	< 5.94E-11	< 3.28E-09	< 6.51E-09
o-Anisidine	90-04-0	< 5.78E-09	< 4.74E-11	< 2.91E-09	< 5.78E-09
o-Toluidine	95-53-4	< 3.22E-09	< 2.84E-11	< 1.63E-09	< 3.22E-09
o-Xylene	95-47-6	2.84E-07	2.45E-09	1.43E-07	2.84E-07
Pentachloronitrobenzene	82-68-8	< 2.03E-08	< 1.22E-10	< 1.02E-08	< 2.03E-08
Pentachlorophenol	87-86-5	< 3.51E-09	< 4.63E-11	< 1.78E-09	< 3.51E-09
Phenol	108-95-2	1.49E-07	< 2.72E-11	< 7.44E-08	1.49E-07
Propylene Oxide	00075-56-9	< 1.56E-07	< 4.24E-08	< 9.94E-08	< 1.56E-07
Styrene	100-42-5	4.86E-07	7.73E-10	2.43E-07	4.86E-07
Tetrachloroethene	00127-18-4	< 7.82E-08	< 2.12E-08	< 4.97E-08	< 7.82E-08
Toluene	108-88-3	3.92E-06	5.73E-08	1.99E-06	3.92E-06
Trifluralin	1582-09-8	< 1.01E-08	< 8.80E-11	< 5.11E-09	< 1.01E-08
Vinyl Acetate	00108-05-4	< 7.82E-08	< 2.12E-08	< 4.97E-08	< 7.82E-08
Vinyl Chloride	00075-01-4	< 7.82E-08	< 2.12E-08	< 4.97E-08	< 7.82E-08

a Warm up mill for the calender is not included, see table 6.X-4 for its emission factor.

b To determine emission factors for compounds not listed in this table, multiply table 6.X-3 VOC data by 0.27, speciated organics by 0.40, and HAPs by 0.18.

Ref: "Interpolation Factors" by EW Karger 6/2/95

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TABLE 3.5

TABLE 6.X-7. UNCONTROLLED EMISSION FACTORS FOR A TIRE CURING PRESS [a]

Pollutant Category	CAS Numbers	Type A lb/lb rubber	Type B lb/lb rubber	Type C lb/lb rubber	Type D lb/lb rubber	Type E lb/lb rubber	Type F [b] lb/lb rubber	Type G lb/lb rubber	Type H lb/lb rubber	Type I lb/lb rubber	Mean lb/lb rubber	Max. lb/lb rubber
TOTAL VOCs		3.37E-04	2.51E-04	1.68E-04	2.88E-04	1.64E-04	1.73E-01	2.07E-04	2.61E-04	1.87E-04	2.26E-04	3.37E-04
TOTAL SPECIATED ORGANICS		< 1.48E-04	< 1.57E-04	< 1.12E-01	< 1.66E-04	< 1.71E-04	< 2.76E-04	< 2.11E-01	< 3.15E-04	< 1.81E-04	< 1.94E-04	< 3.15E-04
TOTAL HAPs		< 8.78E-05	< 7.23E-05	< 4.40E-05	< 1.01E-04	< 1.04E-04	< 1.31E-04	< 8.18E-05	< 1.58E-04	< 8.31E-05	< 9.59E-05	< 1.58E-04
Individual HAPs:												
1,1-Dichloroethane	75-34-3	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	7.64E-08	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
1,1-Dichloroethene	75-35-4	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	5.62E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
1,1,1-Trichloroethane [b]	71-55-6	7.92E-08	< 2.54E-07	1.85E-07	< 2.10E-07	4.25E-07	4.04E-05	1.33E-07	1.66E-07	1.31E-07	< 1.98E-07	4.25E-07
1,1,2-Trichloroethane	79-00-5	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
1,1,2,2-Tetrachloroethane	79-34-5	< 2.11E-07	< 2.54E-07	2.50E-07	2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
1,2-Dibromo-3-Chloropropane	96-12-8	< 4.23E-07	< 5.08E-07	5.00E-07	4.19E-07	< 4.25E-07	< 3.59E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 4.26E-07	< 5.08E-07
1,2-Dibromoethane	106-93-4	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
1,2-Dichloroethane	107-06-2	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
1,2-Dichloropropane	78-87-5	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
1,2,4-Trichlorobenzene	00120-82-1	< 9.29E-09	7.76E-09	< 4.77E-09	< 9.60E-09	< 9.16E-09	< 7.92E-09	< 9.38E-09	< 9.09E-09	< 1.29E-08	< 8.99E-09	< 1.29E-08
1,3-Butadiene	106-99-0	< 4.23E-07	< 5.08E-07	5.00E-07	< 4.19E-07	< 4.25E-07	< 3.59E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 4.26E-07	< 5.08E-07
1,4-Dichlorobenzene	00106-46-7	4.98E-09	6.15E-09	2.50E-07	< 9.12E-09	< 4.15E-09	6.51E-07	5.62E-08	6.49E-10	8.62E-09	< 4.25E-08	2.50E-07
1,4-Dioxane	123-91-1	< 8.45E-07	< 1.02E-06	1.00E-06	< 8.39E-07	< 8.49E-07	< 7.19E-07	< 7.20E-07	< 7.58E-07	< 7.94E-07	< 8.53E-07	< 1.02E-06
2-Butanone	78-93-3	3.96E-07	4.34E-07	4.86E-07	8.91E-07	1.03E-06	1.48E-06	6.07E-07	1.66E-06	7.69E-07	7.84E-07	1.66E-06
2-Methylphenol	00095-48-7	1.00E-08	1.39E-08	5.98E-09	< 1.18E-08	< 1.15E-08	< 1.02E-08	7.52E-09	1.95E-08	< 1.59E-08	< 1.21E-08	1.95E-08
3/4-Methylphenol	00108-39-4/00106-44-5	< 1.13E-08	3.97E-08	< 5.69E-09	< 1.14E-08	< 1.10E-08	< 5.89E-09	3.16E-09	1.49E-08	< 1.52E-08	< 1.40E-08	3.97E-08
4-Methyl-2-Pentanone	108-10-1	1.40E-05	1.96E-05	1.04E-05	1.26E-05	9.82E-06	9.21E-06	1.28E-05	1.63E-05	8.93E-06	1.31E-05	1.96E-05
Acetonitrile	75-05-8	< 4.23E-07	< 5.08E-07	5.00E-07	< 4.19E-07	< 4.25E-07	< 3.59E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 4.26E-07	< 5.08E-07
Acetophenone	00098-86-2	7.50E-08	1.50E-07	8.96E-08	1.33E-07	7.05E-08	1.08E-07	1.21E-07	1.31E-07	1.22E-07	1.11E-07	1.50E-07
Acrolein	107-02-8	< 4.23E-07	< 4.39E-07	4.86E-07	< 4.19E-07	< 4.25E-07	< 3.59E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 4.16E-07	4.86E-07
Acrylonitrile	107-13-1	< 4.23E-07	< 5.08E-07	5.00E-07	< 4.19E-07	< 4.25E-07	< 3.59E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 4.26E-07	< 5.08E-07
Allyl Chloride	107-05-1	< 4.23E-07	< 5.08E-07	5.00E-07	< 4.19E-07	< 4.25E-07	< 3.59E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 4.26E-07	< 5.08E-07
Aniline	00062-53-3	1.76E-06	2.56E-06	5.74E-07	5.73E-06	7.40E-07	4.36E-06	6.99E-07	3.36E-07	7.57E-06	< 2.50E-06	7.57E-06
Benzene	71-43-2	1.98E-07	< 2.33E-07	2.71E-07	2.07E-07	4.25E-07	3.37E-07	5.40E-07	4.74E-07	4.96E-07	< 3.55E-07	5.40E-07
Benzyl Chloride	100-44-7	< 5.75E-09	< 2.01E-08	5.00E-07	< 5.69E-09	< 5.54E-09	4.42E-08	< 5.56E-09	< 5.41E-09	< 7.85E-09	< 6.95E-08	5.00E-07
Biphenyl	00092-52-4	9.53E-08	6.98E-08	4.93E-08	4.05E-08	4.43E-08	< 2.39E-08	6.98E-08	4.81E-08	< 7.09E-09	< 5.30E-08	9.53E-08
bis(2-Ethylhexyl)phthalate	00117-81-7	1.14E-07	1.60E-06	1.36E-07	2.41E-08	< 9.48E-08	< 6.05E-08	< 7.04E-08	2.10E-08	3.98E-08	< 2.63E-07	1.60E-06
Bromoform	75-25-2	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
Bromomethane	74-83-9	1.14E-07	< 2.54E-07	2.50E-07	7.08E-08	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 1.84E-07	< 2.54E-07
Carbon Disulfide	75-15-0	2.56E-05	9.01E-06	3.49E-06	7.34E-07	7.70E-06	4.72E-07	6.07E-06	6.87E-06	2.08E-06	7.70E-06	2.56E-05
Carbon Tetrachloride	56-23-5	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
Carbonyl Sulfide	463-58-1	1.09E-08	< 4.59E-07	< 4.94E-07	< 2.57E-07	< 2.60E-07	< 4.49E-07	< 2.20E-07	< 4.74E-07	< 2.43E-07	< 4.37E-07	1.09E-06
Chlorobenzene	108-90-7	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
Chloroethane	75-00-3	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
Chloroform	67-66-3	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	6.52E-08	< 1.89E-07	< 1.98E-07	< 1.99E-07	< 2.54E-07
Chloromethane	74-87-3	9.77E-08	< 2.54E-07	8.34E-08	8.91E-08	< 2.12E-07	4.72E-08	1.03E-07	9.24E-08	6.70E-08	< 1.25E-07	< 2.54E-07

TABLE 6.X-7. UNCONTROLLED EMISSION FACTORS FOR A TIRE CURING PRESS [a]

Pollutant Category	CAS Numbers	Type A lb/lb-rubber	Type B lb/lb-rubber	Type C lb/lb-rubber	Type D lb/lb-rubber	Type E lb/lb-rubber	Type F lb/lb-rubber	Type G lb/lb-rubber	Type H lb/lb-rubber	Type I lb/lb-rubber	Mean lb/lb-rubber	Max. lb/lb-rubber
Cumene	98-82-8	1.21E-07	3.37E-07	5.00E-07	3.41E-07	4.51E-07	4.04E-07	2.92E-07	6.87E-07	2.08E-07	3.67E-07	6.87E-07
Dibenzofuran	00132-64-9	1.16E-08	1.26E-08	9.54E-09	6.64E-09	3.94E-09	< 6.30E-09	6.32E-09	7.25E-09	7.31E-09	< 8.15E-09	1.26E-08
Dimethylphthalate	00131-11-3	5.64E-09	2.66E-08	2.22E-08	9.12E-09	5.28E-08	4.06E-09	2.20E-07	1.51E-08	1.39E-08	4.57E-08	2.20E-07
Di-n-butylphthalate	00084-74-2	2.07E-07	6.42E-07	6.26E-07	1.87E-07	3.14E-07	9.49E-07	1.74E-07	3.76E-07	8.73E-08	3.27E-07	6.42E-07
Epichlorohydrin	106-89-8	< 4.23E-07	< 5.08E-07	5.00E-07	< 4.19E-07	< 4.25E-07	< 3.59E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 4.26E-07	< 5.08E-07
Ethylbenzene	100-41-4	5.28E-06	2.93E-06	1.03E-06	1.21E-05	1.27E-05	9.88E-06	6.75E-06	2.13E-05	7.19E-06	8.66E-06	2.13E-05
Hexachlorobutadiene	87-68-3	< 4.23E-07	< 5.08E-07	5.00E-07	4.19E-07	< 4.25E-07	< 3.59E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 4.26E-07	< 5.08E-07
Isophorone	00078-59-1	< 5.09E-09	< 4.36E-09	2.29E-08	9.12E-09	6.17E-08	4.37E-09	< 4.72E-08	< 7.47E-08	< 7.31E-09	< 2.91E-08	< 7.47E-08
m & p-Xylenes	108-38-3/106-42-3	1.72E-05	1.06E-05	5.84E-06	2.88E-05	2.92E-05	2.25E-05	2.00E-05	5.21E-05	2.18E-05	2.32E-05	5.21E-05
Methylene Chloride	75-09-2	9.77E-07	9.35E-07	2.02E-06	7.60E-06	4.78E-06	5.39E-06	1.01E-06	2.84E-06	3.72E-06	2.99E-06	7.60E-06
Naphthalene	91-20-3	6.93E-08	7.82E-08	1.50E-07	2.84E-07	2.31E-07	< 3.13E-07	1.26E-07	2.47E-07	1.44E-07	< 1.66E-07	2.84E-07
n-Hexane	110-54-3	4.75E-07	1.10E-06	2.72E-07	8.65E-07	3.18E-06	2.92E-06	6.75E-06	8.05E-06	3.47E-06	< 3.02E-06	8.05E-06
o-Toluidine	00095-53-4	1.82E-07	2.88E-07	1.55E-08	< 8.41E-09	1.09E-08	7.21E-09	1.30E-07	2.28E-08	< 9.82E-09	< 8.35E-08	2.88E-07
o-Xylene	95-47-6	4.23E-06	2.15E-06	1.21E-06	8.13E-08	9.55E-06	7.41E-06	5.40E-06	1.14E-05	5.95E-06	< 6.00E-06	1.14E-05
Phenol	00108-95-2	7.79E-08	5.07E-07	2.21E-07	< 8.53E-09	2.16E-07	1.30E-07	5.89E-07	5.86E-07	4.32E-07	< 3.30E-07	5.89E-07
Propylene Oxide	75-56-9	< 4.23E-07	< 5.08E-07	2.23E-06	< 4.19E-07	< 4.25E-07	< 3.59E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 6.43E-07	2.23E-06
Styrene	100-42-5	3.96E-07	3.11E-07	3.74E-07	2.88E-07	9.55E-07	3.82E-06	7.87E-07	3.08E-07	8.19E-07	5.30E-07	9.55E-07
t-Butyl Methyl Ether	1634-04-4	< 4.23E-07	< 5.08E-07	5.00E-07	< 4.19E-07	< 4.25E-07	2.92E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 4.26E-07	< 5.08E-07
Tetrachloroethene	127-18-4	7.66E-08	< 2.54E-07	2.50E-07	< 2.10E-07	7.06E-08	2.04E-07	8.99E-08	1.18E-07	< 1.98E-07	< 1.60E-07	< 2.54E-07
Toluene	108-88-3	8.60E-06	7.31E-06	2.92E-06	1.26E-05	1.30E-05	1.17E-05	1.08E-05	2.61E-05	1.07E-05	1.12E-05	2.61E-05
Trichloroethene	79-01-6	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	1.12E-07	< 2.02E-07	< 2.54E-07
Vinyl Acetate	108-05-4	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
Vinyl Chloride	75-01-4	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07

a Type A,D,F are original equipment, type E,G,H are high performance, and type B,C,I are replacement tires

b 1,1,1-Trichloroethane for Tire F is not included in the Total HAPs or in the statistical summary due to its suspected presence from mold release agent.

Vol. 1 TABLE 3-5

Ref: Vol. 1
TABLE 4-9b, 4-9c, 4-9d

TABLE 6.X-8. UNCONTROLLED EMISSION FACTORS FOR AN AUTOCLAVE (STEAM PRESSURE VESSEL)[c,d]

Vol.4 TABLE 3-6

Pollutant Category	CAS #	Cmpd. #4 lb/lb-rubber	Cmpd. #5 lb/lb-rubber	Cmpd. #6 lb/lb-rubber	Cmpd. #8 lb/lb-rubber	Cmpd. #9 [a] lb/lb-rubber	Cmpd. #9 lb/lb-rubber	Cmpd. #11 lb/lb-rubber
TOTAL VOCs		1.61E-04	1.78E-04	1.33E-04	5.42E-05	1.63E-04	3.61E-04	9.32E-05
TOTAL SPECIATED ORGANICS		< 5.62E-04	< 5.54E-04	< 8.27E-04	< 6.68E-04	< 1.22E-03	< 8.17E-04	< 3.55E-04
TOTAL HAPs		< 2.89E-04	< 1.98E-04	< 1.74E-04	< 5.25E-04	< 2.13E-04	< 1.35E-04	< 1.46E-04
Individual HAPs:								
1,1-Dichloroethane	75-34-3	< 1.49E-07	< 2.01E-07	< 1.09E-07	< 5.54E-07	< 1.06E-07	< 1.02E-07	< 1.95E-07
1,1-Dichloroethene	75-35-4	< 1.51E-07	< 2.04E-07	< 1.11E-07	< 5.59E-07	< 1.10E-07	< 1.04E-07	< 1.97E-07
1,1,1-Trichloroethane	71-55-6	< 1.49E-07	< 2.01E-07	< 1.09E-07	< 5.53E-07	< 1.06E-07	< 1.01E-07	< 1.95E-07
1,1,2-Trichloroethane	79-00-5	< 1.51E-07	< 2.04E-07	< 1.12E-07	< 5.57E-07	< 1.09E-07	< 1.04E-07	< 1.98E-07
1,1,2,2-Tetrachloroethane	79-34-5	< 1.51E-07	< 2.03E-07	< 1.12E-07	< 5.56E-07	< 1.09E-07	< 1.04E-07	< 1.97E-07
1,2-Dibromo-3-Chloropropane	00096-12-8	< 2.95E-07	< 3.98E-07	< 2.14E-07	< 1.10E-06	< 2.05E-07	< 1.99E-07	< 3.86E-07
1,2-Dibromoethane	00106-93-4	< 1.47E-07	< 1.99E-07	< 1.07E-07	< 5.50E-07	< 1.03E-07	< 9.96E-08	< 1.93E-07
1,2-Dichloroethane	107-06-2	< 1.50E-07	< 2.02E-07	< 1.10E-07	< 5.55E-07	< 1.07E-07	< 1.03E-07	< 1.95E-07
1,2-Dichloropropane	78-87-5	< 1.50E-07	< 2.02E-07	< 1.11E-07	< 5.55E-07	< 1.08E-07	< 1.03E-07	< 1.96E-07
1,2-Epoxybutane	106-88-7	< 1.17E-08	< 1.06E-08	< 1.11E-08	< 1.78E-08	< 1.80E-08	< 1.15E-08	< 1.30E-08
1,2,4-Trichlorobenzene	120-82-1	< 1.55E-08	< 1.52E-08	< 1.21E-08	< 3.81E-08	< 8.92E-08	< 7.79E-08	< 1.52E-08
1,3-Butadiene	106-99-0	1.73E-06	< 2.13E-06	7.52E-07	< 3.59E-08	< 5.17E-08	< 8.77E-07	< 1.55E-07
1,4-Dichlorobenzene	00106-46-7	< 1.47E-07	< 1.99E-07	< 1.07E-07	< 5.50E-07	< 9.99E-08	1.01E-07	< 1.93E-07
1,4-Dioxane	00123-91-1	< 5.89E-07	< 7.96E-07	< 4.28E-07	< 2.20E-06	< 4.10E-07	< 3.98E-07	< 7.72E-07
1,4-Phenylenediamine	106-50-3	< 2.27E-08	< 2.61E-08	< 2.20E-08	< 5.59E-08	< 1.43E-07	< 1.08E-07	< 1.80E-08
2-Butanone	78-93-3	1.77E-06	2.12E-06	4.55E-07	3.43E-06	2.45E-06	1.42E-06	1.38E-06
2-Chloroacetophenone	532-27-4	< 7.00E-09	2.46E-07	< 6.60E-09	< 1.98E-08	< 4.69E-08	3.45E-08	8.39E-07
2-Methylphenol	95-48-7	< 2.15E-08	< 1.09E-08	< 2.04E-08	< 2.94E-08	< 1.05E-07	< 9.18E-08	1.94E-08
2,4-Dinitrophenol	51-28-5	< 6.35E-08	< 6.25E-08	< 4.72E-08	< 1.21E-07	< 3.20E-07	< 2.86E-07	< 1.01E-07
2,4-Dinitrotoluene	121-14-2	< 2.03E-08	< 1.58E-08	< 1.38E-08	< 3.36E-08	< 9.18E-08	< 8.25E-08	< 2.15E-08
2,4,5-Trichlorophenol	95-95-4	< 2.28E-08	< 2.12E-08	< 1.56E-08	< 4.44E-08	< 1.16E-07	< 1.04E-07	< 2.42E-08
2,4,6-Trichlorophenol	88-06-2	< 2.42E-08	< 2.27E-08	< 1.64E-08	< 4.93E-08	< 1.29E-07	< 1.16E-07	< 2.49E-08
3,3'-Dichlorobenzidine	91-94-1	< 3.02E-08	< 1.37E-08	< 2.89E-08	< 2.74E-08	< 8.17E-08	< 6.99E-08	< 3.65E-08
3,3'-Dimethoxybenzidine	119-90-4	< 1.80E-08	< 2.40E-08	< 1.51E-08	< 4.90E-08	< 1.53E-07	< 1.15E-07	< 1.54E-08
3,3'-Dimethylbenzidine	119-93-7	< 5.94E-09	< 8.42E-09	< 4.98E-09	< 1.75E-08	< 5.07E-08	< 3.84E-08	< 5.21E-09
3/4-Methylphenol	108-39-4/106-44-5	1.48E-08	< 2.12E-08	< 1.88E-08	< 2.35E-08	< 9.80E-08	< 8.53E-08	3.28E-08
4-Aminobiphenyl	92-67-1	< 5.27E-09	< 6.59E-09	< 4.25E-09	< 1.42E-08	< 3.79E-08	< 2.78E-08	< 4.23E-09
4-Methyl-2-pentanone	108-10-1	1.61E-04	< 6.61E-07	7.27E-05	< 5.55E-07	1.24E-05	< 8.40E-07	< 1.96E-07
4-Nitrobiphenyl	92-93-3	< 8.85E-09	< 1.16E-08	< 7.29E-09	< 2.53E-08	< 6.59E-08	< 4.80E-08	< 7.77E-09
4-Nitrophenol	100-02-7	< 4.38E-08	< 3.11E-08	< 3.04E-08	< 6.88E-08	< 1.93E-07	< 1.74E-07	< 4.80E-08
4,4'-Methylenedianiline	101-77-9	< 1.15E-08	< 1.72E-08	< 9.68E-09	< 3.46E-08	< 9.62E-08	< 7.24E-08	< 9.73E-09
4,6-Dinitro-2-methylphenol	534-52-1	< 4.08E-08	< 3.66E-08	< 2.99E-08	< 7.35E-08	< 1.83E-07	< 1.61E-07	< 5.69E-08
Acetaldehyde [b]	00075-07-0		1.33E-06		2.74E-07			1.02E-07
Acetonitrile	75-05-8	< 2.95E-07	1.50E-06	< 2.14E-07	< 1.10E-06	< 2.05E-07	< 1.99E-07	< 3.86E-07
Acetophenone [b]	00098-86-2	4.88E-06		9.12E-06		1.33E-04	8.80E-05	
Acrolein	00107-02-8	< 2.95E-07	< 2.82E-07	< 2.14E-07	< 1.10E-06	< 3.59E-07	< 1.99E-07	< 3.86E-07
Acrylonitrile	107-13-1	< 3.10E-07	< 4.59E-07	< 2.30E-07	< 1.17E-06	< 2.32E-07	< 2.16E-07	< 3.99E-07
AIM chloride	107-05-1	< 3.01E-07	< 4.04E-07	< 2.21E-07	< 1.11E-06	< 2.17E-07	< 2.06E-07	< 3.92E-07
Aniline	62-53-3	1.04E-05	8.98E-06	2.58E-05	8.45E-07	2.67E-06	1.57E-07	2.21E-06
a,a,a-Trichlorotoluene	98-07-7	< 1.04E-08	< 1.27E-08	< 9.86E-09	< 3.09E-08	< 7.70E-08	< 5.85E-08	< 8.81E-09
Benzene	71-43-2	1.16E-05	5.39E-06	9.09E-06	2.23E-05	4.39E-06	1.46E-06	1.66E-06
Benzidine	92-87-5	< 5.75E-09	< 3.72E-07	< 4.93E-09	5.06E-08	< 5.07E-08	< 3.69E-08	< 6.33E-09
Benzyl Chloride	00100-44-7	< 2.95E-07	< 3.98E-07	< 2.14E-07	< 1.10E-06	< 2.05E-07	< 1.99E-07	< 3.86E-07
Biphenyl	92-52-4	6.99E-08	2.70E-07	3.84E-07	4.22E-08	1.25E-07	< 4.13E-08	5.48E-09
bis(2-Chloroethyl)ether	111-44-4	< 2.32E-08	< 2.43E-08	< 2.22E-08	< 5.31E-08	< 1.11E-07	< 9.69E-08	< 2.12E-08
bis(2-Ethylhexyl)phthalate	117-81-7	4.42E-07	3.30E-07	2.37E-06	3.68E-07	1.74E-07	1.90E-07	7.48E-07
Bromoform	75-25-2	< 1.51E-07	< 2.03E-07	< 1.12E-07	< 5.57E-07	< 1.10E-07	< 1.04E-07	< 1.98E-07
Bromomethane	74-83-9	< 1.53E-07	< 2.08E-07	< 1.13E-07	< 5.65E-07	< 1.12E-07	< 1.05E-07	< 1.99E-07
Carbon disulfide	75-15-0	4.77E-07	2.17E-06	6.07E-07	3.84E-04	5.81E-06	1.39E-06	8.93E-05
Carbon tetrachloride	56-23-5	< 1.49E-07	< 2.01E-07	< 1.09E-07	< 5.53E-07	< 1.05E-07	< 1.01E-07	< 1.82E-07
Carbonyl Sulfide	463-58-1	4.58E-07	4.66E-07	5.48E-07	1.97E-05	8.15E-07	5.18E-07	2.02E-06
Chlorobenzene	108-90-7	1.58E-07	< 2.00E-07	< 1.08E-07	< 5.52E-07	< 1.04E-07	< 1.01E-07	< 1.94E-07
Chloroethane	75-00-3	< 1.53E-07	< 2.06E-07	< 1.13E-07	< 5.63E-07	< 1.12E-07	< 1.06E-07	< 1.98E-07
Chloroform	67-66-3	< 1.49E-07	< 2.01E-07	< 1.09E-07	< 5.54E-07	< 1.06E-07	< 1.02E-07	< 1.95E-07
Chloromethane	74-87-3	< 1.52E-07	< 2.05E-07	< 1.59E-07	< 5.60E-07	< 3.14E-07	< 1.86E-07	< 1.99E-07
Chloroprene	126-99-8	< 2.16E-09	< 2.13E-09	< 2.34E-09	< 4.55E-09	< 3.81E-09	< 2.38E-09	3.28E-07
Cumene	98-82-8	6.75E-08	3.30E-08	6.42E-08	4.97E-08	1.30E-08	8.04E-07	7.00E-09
Dibenzofuran	132-64-9	1.75E-08	4.15E-08	< 1.22E-08	< 7.19E-09	< 2.92E-08	< 2.80E-08	< 8.15E-09

TABLE 6.X-8. UNCONTROLLED EMISSION FACTORS FOR AN AUTOCLAVE (STEAM PRESSURE VESSEL) [c,d]

Pollutant Category	CAS #	Cmpd. #15 lb/lb-rubber	Cmpd. #18 lb/lb-rubber	Cmpd. #21 lb/lb-rubber	Cmpd. #22 lb/lb-rubber	Mean lb/lb-rubber	Max. lb/lb-rubber
Dimethylaminoazobenzene	60-11-7	< 1.37E-08	< 7.12E-09	< 1.75E-08	< 1.02E-08	< 1.89E-08	< 6.01E-08
Dimethylphthalate	131-11-3	8.73E-09	< 4.69E-09	2.28E-08	< 6.62E-09	< 1.31E-08	< 3.47E-08
Di-n-butylphthalate	84-74-2	4.51E-07	2.91E-09	2.12E-07	3.42E-07	< 1.11E-07	4.51E-07
Epichlorohydrin	00106-89-8	< 5.59E-07	< 1.13E-06	< 8.38E-07	< 1.22E-07	< 7.19E-07	< 3.57E-06
Ethyl acrylate	140-88-5	< 3.18E-09	< 1.68E-09	< 3.02E-09	< 2.73E-09	< 3.00E-09	< 4.86E-09
Ethylbenzene	100-41-4	8.91E-06	1.39E-07	3.24E-06	1.30E-06	< 3.03E-06	8.91E-06
Ethylene dibromide	106-93-4	< 3.50E-09	< 2.19E-09	< 4.27E-09	< 2.71E-09	< 3.56E-09	< 5.43E-09
Hexachlorobenzene	118-74-1	< 1.61E-08	< 1.26E-08	< 3.33E-08	< 3.63E-08	< 3.67E-08	< 1.04E-07
Hexachlorobutadiene	00087-68-3	< 5.59E-07	< 1.13E-06	< 8.38E-07	< 1.22E-07	< 5.18E-07	< 1.13E-06
Hexachlorocyclopentadiene	77-47-4	< 2.00E-08	< 1.85E-08	< 4.12E-08	< 2.74E-08	< 5.22E-08	< 1.60E-07
Hexachloroethane	67-72-1	4.94E-07	< 2.04E-08	6.02E-08	< 2.81E-08	< 1.01E-07	4.94E-07
Hydroquinone	123-31-9	< 1.74E-08	< 1.48E-08	< 2.31E-08	< 2.18E-08	< 3.58E-08	< 1.17E-07
Iodomethane	74-88-4	< 1.47E-09	< 8.64E-10	< 2.03E-09	< 1.15E-09	< 1.66E-09	< 3.20E-09
Isooctane	540-84-1	1.07E-06	< 4.06E-09	3.84E-06	1.57E-07	< 1.39E-06	7.39E-06
Isophorone	78-59-1	< 5.94E-09	2.35E-08	< 1.37E-08	3.45E-07	< 8.77E-08	3.45E-07
Methyl methacrylate	80-62-6	< 8.34E-09	< 4.81E-09	< 8.25E-09	< 7.35E-09	< 8.15E-09	< 1.31E-08
Methylene bis-chloroaniline	101-14-4	< 3.70E-08	< 1.80E-08	< 4.62E-08	< 2.69E-08	< 5.18E-08	< 1.72E-07
Methylene chloride	75-09-2	1.18E-05	4.68E-07	4.88E-05	1.21E-05	1.53E-05	7.34E-05
m+o-Xylene	108-38-3/106-42-3	3.24E-05	1.43E-06	1.24E-05	4.74E-06	1.91E-05	6.19E-05
Naphthalene	91-20-3	2.99E-07	9.23E-08	9.41E-08	3.36E-07	2.77E-07	9.83E-07
n-Hexane	110-54-3	< 1.83E-06	< 2.77E-08	1.96E-06	4.03E-07	< 1.65E-06	3.94E-06
Nitrobenzene	98-95-3	< 1.19E-08	< 1.26E-08	< 2.34E-08	< 1.83E-08	< 2.99E-08	< 8.76E-08
n-Nitrosodimethylamine	62-75-9	< 3.60E-08	< 4.21E-08	< 4.73E-08	< 5.33E-08	< 7.83E-08	< 2.23E-07
n-Nitrosomorpholine	59-89-2	< 1.70E-08	< 2.04E-08	< 2.50E-08	< 2.77E-08	< 4.77E-08	< 1.47E-07
N,N-Dimethylaniline	121-69-7	< 9.14E-09	< 9.06E-09	< 1.16E-08	< 1.26E-08	< 2.09E-08	< 6.85E-08
p-Anisidine	90-04-0	< 1.72E-08	< 1.68E-08	< 2.23E-08	< 2.42E-08	< 4.03E-08	< 1.33E-07
o-Toluidine	95-53-4	< 1.01E-08	6.19E-08	< 1.46E-08	1.66E-07	< 1.45E-08	1.53E-05
o-Xylene	95-47-6	7.34E-06	4.14E-08	9.16E-05	2.93E-06	< 1.41E-05	9.16E-05
Pentachloronitrobenzene	82-68-8	< 3.65E-08	< 3.13E-08	< 4.50E-08	< 9.76E-08	< 8.14E-08	< 2.65E-07
Pentachlorophenol	87-86-5	< 3.59E-08	< 1.82E-08	< 7.31E-08	< 5.98E-08	< 1.29E-07	4.36E-07
Phenol	108-95-2	< 8.13E-08	< 1.50E-08	7.30E-08	< 1.63E-08	< 2.50E-07	1.42E-06
Propylene Oxide	00075-56-9	< 5.59E-07	< 1.13E-06	< 8.38E-07	< 1.22E-07	< 4.79E-07	< 1.13E-06
Styrene	100-42-5	8.62E-07	3.08E-07	1.68E-06	9.78E-07	< 8.51E-07	3.28E-06
tert-Butyl methyl ether	1634-04-4	5.63E-07	1.14E-06	2.30E-04	1.43E-07	< 2.14E-05	2.30E-04
Tetrachloroethene	127-18-4	1.68E-06	< 5.72E-07	4.15E-07	< 6.35E-08	< 3.78E-07	1.68E-06
Toluene	108-88-3	2.81E-05	3.88E-06	2.53E-05	2.84E-06	1.37E-05	2.81E-05
Trichloroethene	79-01-6	< 2.82E-07	< 5.66E-07	< 4.22E-07	< 6.28E-08	< 2.50E-07	< 5.66E-07
Trifluralin	1582-09-8	< 3.12E-08	< 2.26E-08	< 3.21E-08	< 3.44E-08	< 6.08E-08	< 2.07E-07
Vinyl acetate	108-05-4	< 2.82E-07	< 5.65E-07	< 4.21E-07	< 6.20E-08	< 2.49E-07	< 5.65E-07
Vinyl Bromide	593-60-2	< 4.50E-09	< 2.95E-09	< 4.90E-09	< 3.64E-09	< 5.24E-09	< 1.17E-08
Vinyl Chloride	75-01-4	< 2.85E-07	< 5.67E-07	< 4.24E-07	< 8.53E-08	< 2.53E-07	< 5.67E-07

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a Extruded EPDM (Peroxide-cure).

b Tentatively identified compound (TIC)- no data is given if not detected.

c Includes pollutants in steam blow-off (when depressurizing the vessel) and in the condensate produced during curing. For noncontact steam applications, the total values shall be used. For direct contact, steam curing, 17% of the emission factor is discharged in the condensate produced during curing and is not therefore released as an air emission.

d To determine emission factors for compounds not listed in this table, multiply table 6.X-3 VOC data by 1.42, speciated organics by 9.09, and HAPs by 7.21.

Ref: "Interpolation Factors" by E W Karger 6/2/95

Ref: "Emissions from Autoclaves" by EW Karger 2/28/95

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TABLE 6.X-9. UNCONTROLLED EMISSION FACTORS FOR A PLATEN PRESS [a]

Pollutant Category	CAS #	b,d Cmpd. #1 lb/lb-rubber	Cmpd. #2 lb/lb-rubber	Cmpd. #3 lb/lb-rubber	Cmpd. #5 lb/lb-rubber	c,d Cmpd. #7 lb/lb-rubber	Cmpd. #9 lb/lb-rubber	Cmpd. #10 lb/lb-rubber	Cmpd. #11 lb/lb-rubber	Cmpd. #12 lb/lb-rubber	Cmpd. #13 lb/lb-rubber
TOTAL VOCs		3.10E-04	1.51E-04	3.77E-04	5.58E-04	9.34E-05	1.68E-03	3.15E-04	2.35E-04	2.53E-04	5.21E-04
TOTAL SPECIATED ORGANICS		< 1.59E-03	< 1.39E-03	< 2.85E-03	< 1.39E-03	< 9.54E-04	< 5.70E-03	< 2.87E-03	< 2.50E-03	< 2.61E-03	< 2.80E-03
TOTAL HAPs		< 1.32E-03	< 1.15E-03	< 2.45E-03	< 2.75E-04	< 7.44E-04	< 5.13E-03	< 2.55E-03	< 2.17E-03	< 2.30E-03	< 2.57E-03
Individual HAPs:											
1,1,1-Trichloroethane	00071-55-6	3.54E-06	2.52E-06	3.15E-06	3.80E-06	4.19E-06	4.20E-06	2.52E-06	< 2.81E-06	3.03E-06	3.58E-04
1,2,4-Trichlorobenzene	120-82-1	< 3.51E-07	< 1.37E-07	< 1.67E-07	< 1.98E-07	< 3.64E-07	< 2.02E-07	< 1.25E-07	< 1.37E-07	< 1.59E-07	< 1.63E-07
1,3-Butadiene	106-99-0	< 7.25E-07	< 1.20E-05	< 7.08E-07	5.84E-06	9.42E-06	7.53E-06	7.43E-06	< 9.28E-07	< 6.81E-07	< 6.68E-07
1,4-Dichlorobenzene	106-46-7	1.03E-07	7.53E-08	5.52E-08	< 1.65E-07	5.42E-08	< 1.75E-07	5.53E-08	< 1.17E-07	5.78E-08	< 1.11E-07
2-Butanone	00078-93-3	1.64E-06	2.77E-06	2.89E-06	2.04E-06	< 2.58E-06	3.02E-06	< 5.03E-06	< 1.79E-06	1.18E-06	< 1.19E-05
2-Chloro-1,3-Butadiene	00126-99-8								3.08E-06		
2-Methylphenol	95-48-7	< 3.28E-07	< 1.17E-07	2.98E-08	< 2.15E-07	< 3.33E-07	< 2.29E-07	< 1.09E-07	< 1.53E-07	< 1.31E-07	< 1.44E-07
2,4-Methylphenol	108-39-4/106-44-5	< 3.10E-07	< 1.28E-07	9.69E-08	< 2.04E-07	< 3.14E-07	< 2.18E-07	5.10E-08	< 1.45E-07	< 1.22E-07	< 1.34E-07
4-Methyl-2-pentanone	00108-10-1	< 2.58E-06	< 6.29E-06	< 1.16E-04	< 1.57E-06	< 1.29E-05	< 3.06E-06	< 2.52E-06	< 9.90E-07	< 2.42E-06	< 5.94E-06
Acetaldehyde	00075-07-0				6.69E-06		7.64E-06		1.65E-06		
Acetonitrile	75-05-8	< 5.15E-06	< 1.25E-05	< 5.03E-06	5.47E-06	< 2.58E-05	< 6.12E-06	< 5.03E-06	< 1.98E-06	< 4.84E-06	< 1.19E-05
Acetophenone	98-86-2	5.09E-07	1.23E-06	4.25E-07	0.00E+00	3.74E-07	4.40E-04	4.36E-07	0.00E+00	2.17E-06	5.05E-07
Acrylonitrile	00107-13-1	< 5.15E-06	< 1.25E-05	< 5.03E-06	< 2.68E-06	< 2.58E-05	< 6.12E-06	< 5.03E-06	< 1.98E-06	< 4.84E-06	< 1.19E-05
Aniline	62-53-3	< 1.56E-07	4.16E-07	7.08E-07	2.01E-06	< 1.59E-07	< 1.49E-07	< 5.24E-06	2.81E-07	< 6.38E-08	< 6.96E-08
Benzene	71-43-2	1.08E-06	1.25E-06	1.18E-06	< 1.14E-06	< 2.09E-06	< 1.24E-06	< 1.02E-06	< 8.04E-07	< 9.83E-07	< 9.65E-07
Benzidine	92-87-5	< 1.91E-07	< 3.50E-08	< 1.28E-07	4.54E-06	< 1.78E-07	< 7.62E-08	< 8.01E-08	< 2.92E-07	< 9.49E-08	< 1.07E-07
Biphenyl	92-52-4	< 1.28E-07	< 3.62E-08	1.40E-07	3.06E-07	< 1.00E-07	< 9.41E-08	< 5.24E-08	< 5.91E-08	< 6.82E-08	< 6.96E-08
bis(2-Ethylhexyl)phthalate	117-81-7	4.20E-06	2.48E-06	2.14E-06	3.83E-06	1.15E-05	2.60E-06	2.83E-06	1.69E-06	3.53E-06	1.78E-05
Carbon Disulfide	00075-15-0	2.16E-06	5.25E-04	3.15E-06	3.46E-06	< 1.29E-05	4.20E-06	1.32E-03	3.47E-04	5.75E-04	9.50E-04
Carbonyl Sulfide	463-58-1	< 3.16E-06	3.55E-06	< 3.08E-06	< 4.50E-06	< 6.44E-06	< 3.75E-06	< 3.11E-06	< 3.25E-06	4.39E-06	3.33E-05
Chloroethane	00075-00-3	< 2.58E-06	< 6.29E-06	< 2.52E-06	< 1.34E-06	< 1.29E-05	< 3.06E-06	< 2.52E-06	< 9.90E-07	< 2.42E-06	< 5.94E-06
Chloromethane	00074-87-3	1.06E-06	< 6.29E-06	7.97E-07	< 1.34E-06	< 1.29E-05	< 3.06E-06	< 2.52E-06	< 9.90E-07	8.77E-07	< 5.94E-06
Cumene	98-82-8	3.64E-08	5.90E-08	5.96E-08	9.03E-08	7.43E-08	2.76E-06	3.20E-08	3.55E-08	4.00E-08	4.55E-08
Dibenzofuran	132-64-9	6.38E-08	3.04E-08	1.54E-07	< 6.45E-08	< 1.33E-07	< 6.87E-08	2.77E-08	< 4.61E-08	5.64E-08	3.27E-08
Dimethylphthalate	131-11-3	< 1.61E-07	7.73E-08	< 8.80E-08	1.80E-07	< 1.64E-07	6.72E-08	< 5.97E-08	< 6.18E-08	< 7.71E-08	< 7.82E-08
Di-n-butylphthalate	84-74-2	5.47E-08	2.11E-06	3.01E-07	1.39E-07	7.80E-07	7.16E-06	8.30E-08	0.00E+00	2.58E-07	0.00E+00
Ethylbenzene	100-41-4	< 1.42E-06	< 1.23E-06	< 1.39E-06	1.34E-06	< 2.85E-06	< 1.69E-06	< 1.39E-06	< 1.09E-06	< 1.34E-06	< 1.31E-06
Hexachlorobutadiene	87-68-3	< 6.16E-07	< 2.23E-07	< 2.92E-07	< 3.37E-07	< 6.39E-07	3.93E-07	< 2.17E-07	< 2.33E-07	< 2.77E-07	< 2.86E-07
Methylene Chloride	00075-09-2	1.26E-03	4.09E-04	2.27E-03	1.76E-04	5.15E-04	4.59E-03	1.16E-03	1.72E-03	1.60E-03	1.13E-03
m-Xylene + o-Xylene	108-38-3/106-42-3	1.01E-06	1.91E-06	3.03E-06	9.24E-06	3.20E-06	< 1.69E-06	< 1.39E-06	< 1.08E-06	< 1.34E-06	< 1.31E-06
Naphthalene	91-20-3	3.29E-07	4.59E-07	5.78E-07	1.57E-06	2.37E-06	4.04E-06	2.81E-07	1.67E-06	3.71E-07	3.31E-07
n-Hexane	110-54-3	7.49E-06	1.23E-05	5.96E-06	1.66E-05	9.22E-06	1.64E-05	4.12E-06	3.12E-05	2.69E-06	< 1.06E-06
p-Toluidine	95-53-4	< 1.82E-07	1.59E-06	< 8.05E-08	< 1.39E-07	< 1.84E-07	< 1.51E-07	< 6.25E-08	< 9.86E-08	2.21E-08	< 8.24E-08
p-Xylene	95-47-6	< 1.42E-06	< 1.23E-06	< 1.39E-06	2.01E-06	1.78E-06	< 1.69E-06	< 1.39E-06	< 1.09E-06	< 1.34E-06	< 1.31E-06
Phenol	108-95-2	6.12E-07	5.27E-07	5.19E-07	9.67E-07	4.22E-07	1.28E-06	4.18E-07	4.62E-07	5.37E-07	7.79E-07
Propylene Oxide	00075-56-9	< 5.15E-06	1.24E-04	< 5.03E-06	< 2.68E-06	< 2.58E-05	< 6.12E-06	< 5.03E-06	3.63E-05	< 4.84E-06	< 1.19E-05
Tetrachloroethylene	00127-18-4	< 2.58E-06	< 6.29E-06	5.35E-07	< 1.34E-06	< 1.29E-05	< 3.06E-06	< 2.52E-06	< 9.90E-07	< 2.42E-06	< 5.94E-06
Toluene	108-88-3	4.23E-06	6.20E-06	6.03E-06	1.18E-05	3.00E-06	2.72E-06	2.76E-06	2.30E-06	2.98E-06	< 1.14E-06

TABLE 6.X-9 UNCONTROLLED EMISSION FACTORS FOR A PLATEN PRESS [a]

a To determine emission factors for compounds not listed in this table, multiply table 6.X-3 VOC data by 5.80, speciated organics by 27.14, and HAPs by 43.40.

b Formaldehyde 1.88×10^{-6} lb/lb rubber

c Formaldehyde 1.23×10^{-6} lb/lb rubber

d Compound judged to be one of the most prodigious emitters of formaldehyde. Sampling was conducted using EPA method TO-11. Analysis was conducted using EPA method TO-11/HPLC. Due to the high reactivity and propensity of formaldehyde to become quickly bound up with other available chemicals, formaldehyde emissions from other compounds and processes are judged to be insignificant.

A blank space indicates that the compound was a Tentatively identified Compound (TIC) and was not detected in that sample. A "0" indicates a blank correction that resulted in a "0" or a negative value.

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OPINION OF RMA SUBCOMMITTEE RUBBER COMPOUNDERS

Vol. 2 Appdx. K

"INTERPOLATION FACTORS" by EW Karger 6/2/95

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TABLE 6.X-10. UNCONTROLLED EMISSION FACTORS FOR A HOT AIR OVEN [c]

Chemical Compound	CAS Numbers	Cmpd. #5 (a) lbs/lb rubber	Cmpd. #8 (a) lbs/lb rubber	Cmpd. #22 (a) lbs/lb rubber	MEAN lbs/lb rubber	MAX lbs/lb rubber
TOTAL VOCs		5.56E-04	1.68E-03	1.12E-04	7.83E-04	1.68E-03
TOTAL SPECIATED ORGANICS		< 8.77E-04	< 2.06E-03	< 3.36E-03	< 2.10E-03	< 3.36E-03
TOTAL HAPs		< 1.38E-04	< 1.09E-03	< 2.03E-03	< 1.08E-03	< 2.03E-03
Individual HAPs:						
1,1-Dichloroethane	00075-34-3	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
1,1-Dichloroethene	00075-35-4	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
1,1,1-Trichloroethane	00071-55-6	1.12E-06	< 4.26E-06	< 5.84E-06	< 3.74E-06	< 5.84E-06
1,1,2-Trichloroethane	00079-00-5	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
1,1,2,2-Tetrachloroethane	00079-34-5	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
1,2-Dibromo-3-Chloropropane	00096-12-8	< 2.59E-06	< 8.52E-06	< 1.17E-05	< 7.59E-06	< 1.17E-05
1,2-Dibromoethane	00106-93-4	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
1,2-Dichloroethane	00107-06-2	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
1,2-Dichloropropane	00078-87-5	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
1,2,4-Trichlorobenzene	120-82-1	< 3.94E-08	< 7.22E-08	< 1.83E-07	< 1.18E-07	< 1.83E-07
1,3-Butadiene	00106-99-0	< 3.58E-07	1.24E-06	< 3.23E-07	< 6.39E-07	1.24E-06
1,4-Dichlorobenzene	00106-46-7	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
1,4-Dioxane	00123-91-1	< 5.18E-06	< 1.70E-05	< 2.33E-05	< 1.52E-05	< 2.33E-05
1,4-Phenylenediamine	106-50-3	< 3.94E-08	< 7.22E-08	< 1.83E-07	< 1.18E-07	< 1.83E-07
2-Butanone	00078-93-3	1.52E-06	< 8.52E-06	< 1.17E-05	< 7.27E-06	< 1.17E-05
2-Methylphenol	95-48-7	< 1.25E-07	< 3.50E-08	< 2.12E-07	< 1.41E-07	< 2.12E-07
2,2,4-Trimethylpentane	00565-75-3	< 3.73E-07	5.54E-07	5.79E-06	< 2.24E-06	5.79E-06
2,4-Dinitrophenol	105-12-85	< 5.15E-07	< 5.19E-07	< 1.29E-06	< 8.07E-07	< 1.29E-06
2,4-Dinitrotoluene	121-14-2	< 1.44E-07	< 1.22E-07	< 3.02E-07	< 1.89E-07	< 3.02E-07
2,4,5-Trichlorophenol	95-95-4	< 1.30E-07	< 1.08E-07	< 2.70E-07	< 1.69E-07	< 2.70E-07
2,4,6-Trichlorophenol	88-06-2	< 1.27E-07	< 1.06E-07	< 2.61E-07	< 1.65E-07	< 2.61E-07
3,3'-Dichlorobenzidine	91-94-1	< 5.33E-08	< 5.95E-08	< 1.19E-07	< 8.73E-08	< 1.19E-07
3,3'-Dimethoxybenzidine	119-90-4	< 1.31E-07	< 9.46E-08	< 1.89E-07	< 1.38E-07	< 1.89E-07
3,3'-Dimethylbenzidine	119-93-7	< 4.81E-08	< 3.51E-08	< 6.97E-08	< 5.09E-08	< 6.97E-08
3,4-Methylphenol	108-39-4/106-44-5	3.19E-07	< 8.19E-08	2.03E-07	< 2.01E-07	3.19E-07
4-Aminobiphenyl	92-67-1	< 4.97E-08	< 4.15E-08	< 9.29E-08	< 6.13E-08	< 9.29E-08
4-Methyl-2-pentanone	00108-10-1	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
4-Nitrobiphenyl	92-93-3	< 3.30E-08	< 7.55E-08	< 1.71E-07	< 1.13E-07	< 1.71E-07
4-Nitrophenol	100-02-7	< 2.98E-07	< 2.51E-07	< 6.21E-07	< 3.90E-07	< 6.21E-07
4,4'-Methylenedianiline	101-77-9	< 1.17E-07	< 8.40E-08	< 1.68E-07	< 1.23E-07	< 1.68E-07
4,6-Dinitro-2-methylphenol	534-52-1	< 2.59E-07	< 2.21E-07	< 4.99E-07	< 3.30E-07	< 4.99E-07
Acetonitrile	75-05-8	5.31E-07	< 8.52E-06	< 1.17E-05	< 6.94E-06	< 1.17E-05
Acetophenone	00098-86-2	3.06E-07	2.13E-04	1.46E-05	7.60E-05	2.13E-04
Acrolein	00107-02-8	7.92E-07	< 8.52E-06	9.34E-06	< 6.22E-06	9.34E-06
Acrylonitrile	00107-13-1	< 2.59E-06	< 8.52E-06	< 1.17E-05	< 7.59E-06	< 1.17E-05
Allyl Chloride	00107-05-1	< 2.59E-06	< 8.52E-06	< 1.17E-05	< 7.59E-06	< 1.17E-05
Aniline	62-53-3	< 7.53E-08	1.48E-07	8.85E-07	< 3.69E-07	8.85E-07
a,a,a-Trichlorotoluene	98-07-7	< 9.30E-08	< 6.80E-08	< 1.71E-07	< 1.11E-07	< 1.71E-07
Benzene	00071-43-2	1.46E-06	4.88E-05	4.04E-06	1.81E-05	4.88E-05
Benzidine	92-87-5	< 4.97E-08	< 3.51E-08	< 6.97E-08	< 5.15E-08	< 6.97E-08
Benzyl Chloride	00100-44-7	< 2.59E-06	< 8.52E-06	< 1.17E-05	< 7.59E-06	< 1.17E-05
Biphenyl	92-52-4	3.77E-07	3.92E-07	< 3.96E-06	< 1.58E-06	< 3.96E-06
bis(2-Chloroethyl)ether	111-44-4	< 1.14E-07	< 7.87E-08	< 1.94E-07	< 1.29E-07	< 1.94E-07
bis(2-Ethylhexyl)phthalate	117-81-7	< 2.72E-08	2.74E-07	1.05E-06	< 4.52E-07	1.05E-06
Bromoform	00075-25-2	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
Bromomethane	00074-83-9	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
Carbon Disulfide	00075-15-0	1.60E-06	4.69E-04	1.20E-03	5.56E-04	1.20E-03
Carbon Tetrachloride	00056-23-5	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
Carbonyl Sulfide	463-58-1	< 3.23E-06	< 2.13E-05	< 2.86E-05	< 1.77E-05	< 2.86E-05
Chlorobenzene	00108-90-7	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
Chloroethane	00075-00-3	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
Chloroform	00067-66-3	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
Chloromethane	00074-87-3	4.21E-07	< 4.26E-06	< 5.84E-06	< 3.51E-06	< 5.84E-06
Cumene	98-82-8	< 5.13E-08	8.08E-08	3.86E-07	< 1.73E-07	3.86E-07
Dibenzofuran	132-64-9	1.95E-06	2.10E-06	3.29E-06	< 2.45E-06	3.29E-06
Dimethylaminoazobenzene	60-11-7	< 7.37E-08	< 5.32E-08	< 1.04E-07	< 7.71E-08	< 1.04E-07
Dimethylphthalate	131-11-3	4.65E-08	3.19E-08	< 8.71E-08	< 5.52E-08	< 8.71E-08
Di-n-butylphthalate	84-74-2	7.61E-06	0.00E+00	1.00E-06	2.87E-06	7.61E-06
Epichlorohydrin	00106-89-8	< 2.59E-06	< 8.52E-06	< 1.17E-05	< 7.59E-06	< 1.17E-05
Ethylbenzene	00100-41-4	< 3.51E-07	< 2.31E-07	< 3.17E-07	< 3.00E-07	< 3.51E-07

TABLE 6.X-10. UNCONTROLLED EMISSION FACTORS FOR A HOT AIR OVEN [c]

Chemical Compound	CAS Numbers	Cmpd. #5 (a) lbs/lb rubber	Cmpd. #8 (a) lbs/lb rubber	Cmpd. #22 (a) lbs/lb rubber	MEAN lbs/lb rubber	MAX lbs/lb rubber
Hexachloro-1,3-butadiene	00087-68-3	< 2.59E-06	< 8.52E-06	< 1.17E-05	< 7.59E-06	< 1.17E-05
Hexachlorobenzene	118-74-1	< 1.03E-07	< 8.40E-08	< 1.89E-07	< 1.25E-07	< 1.89E-07
Hexachlorobutadiene	87-68-3	< 1.59E-07	< 1.16E-07	< 2.93E-07	< 1.89E-07	< 2.93E-07
Hexachlorocyclopentadiene	77-47-4	< 1.55E-07	< 1.32E-07	< 3.25E-07	< 2.04E-07	< 3.25E-07
Hexachloroethane	67-72-1	< 2.05E-07	< 1.40E-07	< 3.51E-07	< 2.32E-07	< 3.51E-07
Hydroquinone	123-31-9	< 3.82E-08	< 6.49E-08	< 1.63E-07	< 1.05E-07	< 1.63E-07
Isooctane	00540-84-1	1.79E-06	< 2.49E-07	< 3.41E-07	< 7.95E-07	1.79E-06
Isophorone	78-59-1	< 4.97E-08	< 3.61E-08	< 9.00E-08	< 5.86E-08	< 9.00E-08
Methylene bis-chloroaniline	101-14-4	< 1.57E-07	< 1.14E-07	< 2.26E-07	< 1.66E-07	< 2.26E-07
Methylene Chloride	00075-09-2	2.59E-05	5.86E-05	3.21E-04	1.35E-04	3.21E-04
m-Xylene	00108-38-3	< 3.51E-07	1.32E-06	< 3.17E-07	< 6.66E-07	1.33E-06
Naphthalene	91-20-3	1.34E-06	1.07E-06	2.32E-06	1.58E-06	2.32E-06
n-Hexane	00110-54-3	3.30E-06	3.13E-06	6.86E-06	4.63E-06	6.86E-06
Nitrobenzene	98-95-3	< 3.98E-08	< 6.59E-08	< 1.65E-07	< 1.07E-07	< 1.65E-07
n-Nitrosodimethylamine	62-75-9	< 2.05E-07	< 1.40E-07	< 3.48E-07	< 2.31E-07	< 3.48E-07
n-Nitrosomorpholine	59-89-2	< 2.45E-07	< 1.58E-07	< 4.18E-07	< 2.77E-07	< 4.18E-07
N,N-Dimethylaniline	121-69-7	< 5.89E-08	< 5.00E-08	< 1.25E-06	< 4.60E-07	< 1.25E-06
p-Anisidine	90-04-0	< 1.31E-07	< 3.57E-08	< 2.44E-07	< 1.57E-07	< 2.44E-07
p-Toluidine	95-53-4	< 3.17E-08	< 5.63E-08	< 1.03E-07	< 9.25E-08	< 1.39E-07
p-Xylene	00095-47-6	5.44E-07	4.92E-05	< 3.17E-07	< 1.67E-05	4.92E-05
Pentachloronitrobenzene	82-68-8	< 2.48E-07	< 2.86E-07	< 6.47E-07	< 4.27E-07	< 6.47E-07
Pentachlorophenol	87-86-5	< 1.82E-07	< 1.33E-07	< 2.99E-07	< 1.98E-07	< 2.99E-07
Phenol	108-95-2	1.20E-06	3.41E-07	2.16E-06	1.23E-06	2.16E-06
Propylene Oxide	00075-56-9	< 2.59E-06	< 8.52E-06	< 1.17E-05	< 7.59E-06	< 1.17E-05
o-Xylene	00106-42-3	1.93E-06	2.95E-06	2.53E-05	1.01E-05	2.53E-05
Styrene	00100-42-5	8.61E-07	4.25E-07	4.51E-07	5.79E-07	8.61E-07
Substituted Benzene	71-43-2	b	2.13E-06		2.13E-06	2.13E-06
Substituted Naphthalene	91-20-3	1.89E-05			1.89E-05	1.89E-05
Substituted Quinoline	91-22-5			1.23E-04	1.23E-04	1.23E-04
t-Butyl Methyl Ether	01634-04-4	< 2.59E-06	< 8.52E-06	< 1.17E-05	< 7.59E-06	< 1.17E-05
Tetrachloroethene	00127-18-4	< 1.03E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
Toluene	00108-88-3	2.75E-06	4.37E-06	5.25E-06	4.12E-06	5.25E-06
Trichloroethene	00079-01-6	< 1.03E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
Trifluralin	1582-09-8	< 1.72E-07	< 1.45E-07	< 3.57E-07	< 2.24E-07	< 3.57E-07
Vinyl Acetate	00108-05-4	< 1.03E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
Vinyl Chloride	00075-01-4	< 1.03E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06

a Compound 5 was green unextruded rubber. Compounds 8 and 22 were preextruded general products.

b A blank space means that the compound was a Tentatively Identified Compound (TIC) and was not detected in that sample.

c To determine emission factors for compounds not listed in this table, multiply table 6.X-3 VOC data by 7.39, speciated organics by 21.43 and HAPs by 22.64.

INTERPOLATION FACTORS by EW Karger 6/2/95

Vol. 4 TABLE 3-8

TABLE 6.X-11. UNCONTROLLED EMISSION FACTORS FOR GRINDING

Pollutant Category	CAS #	Sidewall Grinding (a) lb/lb-rubber	Carcass Grinding (a) lb/lb-rubber	Belt Grinding (a) lb/lb-rubber	Retread Buffing (b) lb/lb-rubber
TOTAL VOCs		1.57E-02	5.18E-04	1.79E-03	2.40E-04
TOTAL SPECIATED ORGANICS		< 1.02E-02	< 1.64E-02	< 2.63E-03	< 1.13E-05
TOTAL METAL HAPs		7.01E-05	6.52E-06	2.69E-05	5.18E-08
TOTAL ORGANIC HAPs		< 1.26E-03	< 1.39E-02	< 2.04E-03	< 7.09E-07
TOTAL PARTICULATE MATTER (PM) c,d		1.23	0.55	1.19	9.48E-03
TOTAL HAPs		< 1.33E-03	< 1.39E-02	< 2.07E-03	< 7.60E-07
Individual HAPs:					
1,3-Butadiene	106-99-0	< 2.44E-05	2.65E-05	2.41E-05	< 8.00E-10
1,4-Dichlorobenzene	00106-46-7	< 4.64E-06	< 5.70E-07	< 6.27E-07	2.63E-09
2-Butanone	00078-93-3	< 4.63E-05	< 7.04E-07	< 1.16E-05	2.52E-10
4-Methyl-2-pentanone	00108-10-1	< 2.85E-05	1.92E-05	< 5.50E-06	1.41E-08
Acetaldehyde	75-07-0			1.02E-05	
Acetophenone	98-86-2	3.37E-06	< 8.52E-07	5.90E-06	1.89E-08
Acrolein	00107-02-8	< 5.71E-05	< 1.89E-06	< 1.18E-05	7.34E-09
Aniline	62-53-3	4.05E-04	1.97E-05	< 7.17E-07	6.66E-08
Benzene	71-43-2	1.33E-05	< 4.25E-06	< 8.80E-07	1.56E-07
Biphenyl	92-52-4	< 2.56E-06	< 4.90E-07	< 3.81E-07	6.63E-09
bis(2-Ethylhexyl)phthalate	117-81-7	1.84E-05	7.94E-06	5.30E-05	1.99E-08
Carbon Disulfide	00075-15-0	< 2.73E-05	1.40E-06	3.03E-04	1.13E-08
Dibenzofuran	132-64-9	< 2.00E-06	1.59E-07	< 2.84E-07	< 3.64E-09
Di-n-butylphthalate	84-74-2	1.69E-06	< 2.28E-06	3.31E-06	3.87E-08
Ethylbenzene	100-41-4	5.70E-05	< 3.94E-07	< 8.97E-07	< 1.78E-10
Isooctane	540-84-1	1.15E-04	< 1.10E-05	< 9.65E-07	< 1.92E-10
Isophorone	78-59-1	< 2.59E-06	< 5.47E-07	< 4.26E-07	6.46E-09
Methylene Chloride	75-09-2	< 3.36E-05	4.19E-03 e	4.98E-05	2.79E-09
m-Xylene + o-Xylene	108-38-3/106-42-3	< 3.21E-05	< 2.30E-06	8.51E-06	< 9.61E-10
Naphthalene	91-20-5	3.81E-06	5.81E-07	4.02E-06	2.11E-08
n-Hexane	110-54-3	1.24E-04	< 1.60E-05	4.18E-05	< 1.93E-10
o-Toluidine	95-53-4	< 3.93E-06	2.55E-06	< 6.63E-07	< 7.56E-09
o-Xylene	95-47-6	< 1.90E-05	< 3.94E-07	5.40E-06	< 7.62E-10
Phenol	108-95-2	1.57E-05	< 1.79E-06	8.88E-06	3.04E-07
Tetrachloroethene	127-18-4	< 2.85E-05	< 5.70E-07	1.39E-04	< 2.23E-10
Toluene	108-88-3	1.86E-04	9.59E-03 e	1.35E-03	< 6.43E-09
Cadmium		1.36E-06	8.62E-07	2.80E-07	
Chromium		2.54E-05	1.59E-06	5.17E-06	2.53E-08
Lead		2.92E-05	2.04E-06	3.18E-06	
Nickel		1.41E-05	2.03E-06	1.83E-05	1.78E-08
Cobalt					8.74E-09

Vol. 1 TABLE 4-13l pg 4-122

Vol. 4 TABLE 3-9

a Sidewall, Carcass, and Belt Grinding-pounds emitted per pound of rubber removed or ground off (lb/lb rubber removed).
b Retread Buffing-pounds emitted per pound of rubber processed (lb/lb rubber processed).
c Particulate matter control:
sidewall by cyclone 91.9%
carcass by cyclone 97.8%
belt by cyclone and ESP 99.97%
retread by cyclone and baghouse 97.9%
For uncontrolled PM emissions Sidewall, Carcass or Belt Grinding us a factor of 1.0 lb emitted per pound of rubber removed.
e Value exceeds that of total VOC. This discrepancy is being investigated.

Vol 4 TABLE 3-9

EMISSIONS FROM AUTOCLAVES

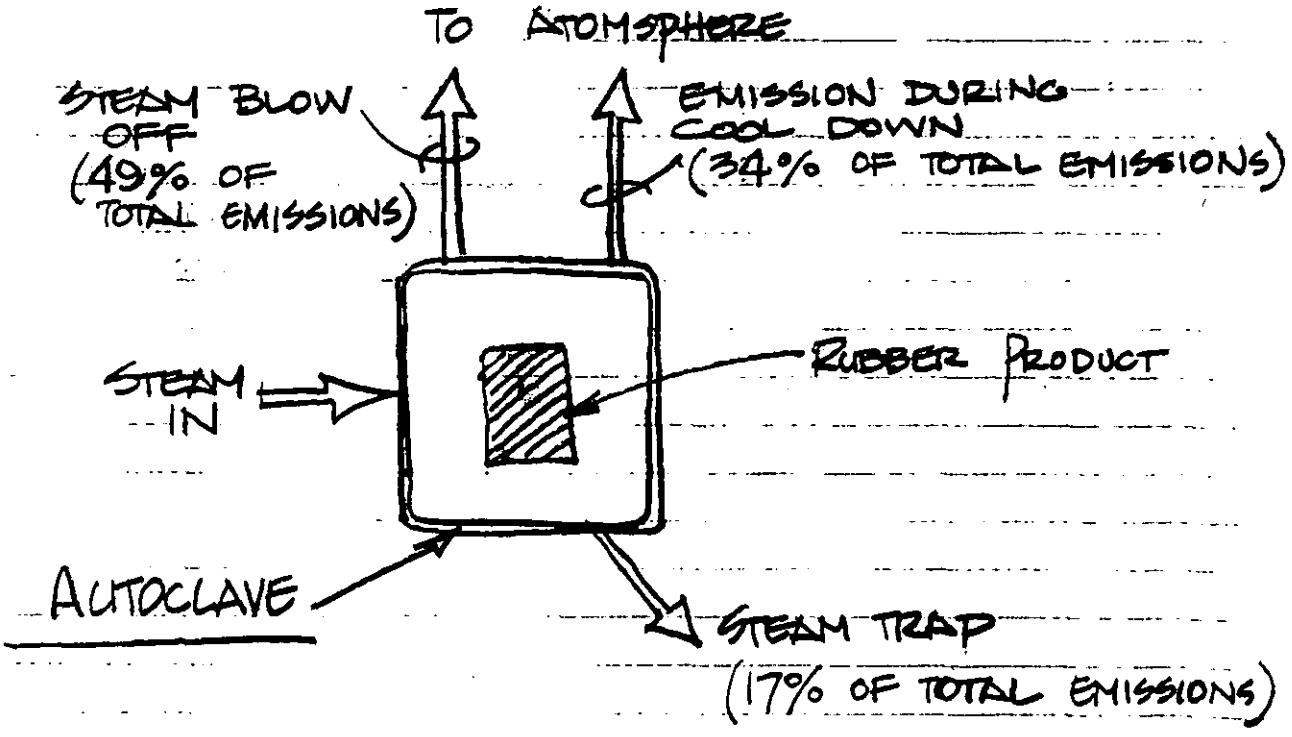
Eu Karger
2/28/95

SUMMARY

steam can be in direct contact with the uncured rubber product or may be isolated from the product and never contact it. Direct contact curing produces 17% less emissions to the atomsphere.

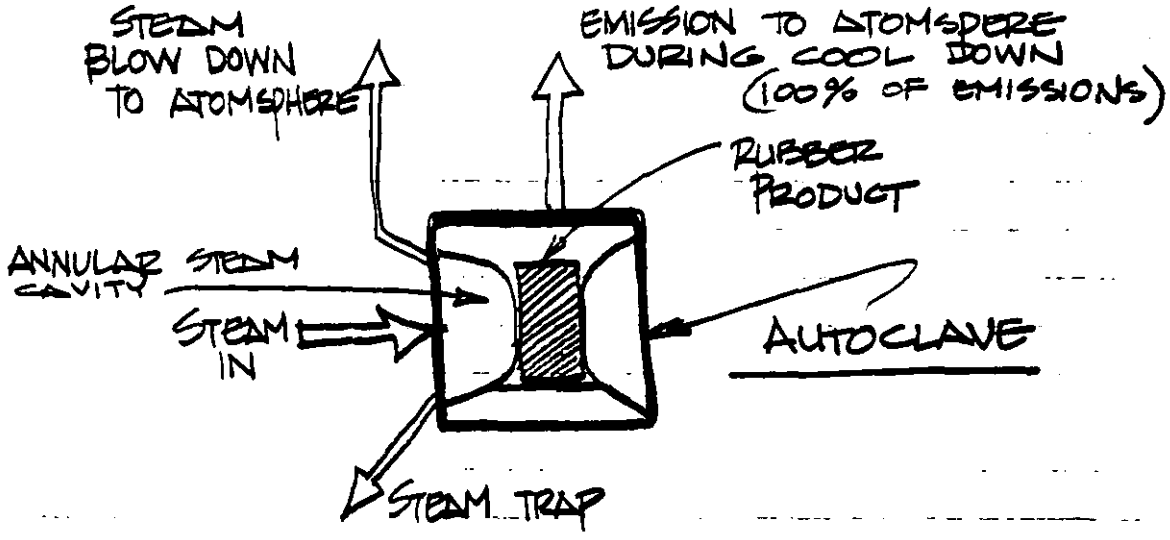
1. WITH STEAM CONTACT a steam trap operating during the curing cycle, condenses and discharges emissions with the hot condensate.

   Steam blow down (depressurizing the vessel) and fumes during product cool down contain VOC/HAP emissions.



Sukanya
2/28/95

2. <u>WITHOUT STEAM CONTACT</u> all the emissions eminating from the uncured product are assumed to be available for release when the cured product is removed from the vessel and goes thru the ambient air cool down cycle. The steam trap condensate and blow down steam are isolated from the uncured product and thus DO NOT contain any rubber product pollutants.



AUTOCLAVE EMISSIONS

2/28/95

DATA

Summary (from pg 4)

SPECIATED VOLATILE + SEMI VOLATILES EMISSIONS. LB/LB RUBBER

BLOW DOWN	4.45×10^{-4}	→	49%
STEAM TRAP	1.51	→	17%
COOL DOWN	3.08	→	34%
	9.04×10^{-4}	→	100%

AUTOCLAVE EMISSIONS

E. Karger
2/28/95

EMISSION	BLOW DOWN STEAM			STEAM TRAP		COOL DOWN	
VOL 2 TABLE	D.1-7	D.1-3	D.1-6	D.1-4	D.1-8	D.1-2	D.1-5
ITEM	VOL. LIQ.	SEMI. VOL.	VOL. GAS	SEMI. VOL	VOL. LIQ.	SEMI. VOL.	VOL.
VALUE	1×10^{-4} LB/LB RUBBER →						
COMP. 4	1.27	0.257	0.871	1.30	0.103	0.233	1.83
5	0.453	0.008	1.910	0.828	0.281	0.095	2.15
6	0.574	1.030	0.659	4.27	0.028	0.776	1.20
8	0.039	0.015	3.320	0.135	0.019	0.032	3.30
9*	0.161	3.120	0.616	3.26	0.090	1.83	3.25
9	0.093	0.086	0.374	3.26	0.021	1.63	2.84
11	0.125	0.027	1.060	0.040	0.205	0.973	1.15
15	0.118	0.226	2.020	0.032	0.071	0.615	2.15
18	0.402	1.440	16.800	0.304	0.014	0.275	1.69
21	4.40	0.667	5.33	0.021	2.20	0.597	6.48
22	0.510	0.093	0.937	0.089	0.049	0.053	0.681
TOTAL	8.145	6.969	33.897	13.539	3.081	7.109	26.721
AVERAGE	0.740	0.634	3.08	1.23	0.280	0.646	2.43
	4.45×10^{-4} TOTAL BLOWN DOWN			1.51×10^{-4} TOTAL STM. TRAP		3.08×10^{-4} TOTAL COOL DOWN	

INTERPOLATION FACTOR FOR TOTAL VOC

PROCESS	NUMBER OF COMPOUNDS TESTED	VOL. 4 DATA TABLE	MEAN FACTOR VALUE 1×10^{-6}	INTERPOLATION FACTOR
MIX	23	3-1A	106.0	NA
MILL	4	3-2	76.9	0.73
EXTRUDER	4	3-3	13.9	0.13
CALENDER	2	3-4	28.9	0.27
AUTOCLAVE	11	3-6	150.0	1.42
PLATEN PRESS	17	3-7	615.0	5.80
HOT AIR OVEN	3	3-8	783.0	7.39

$$\text{INTERPOLATION FACTOR} = \frac{\text{PROCESS FACTOR (MEAN VALUE)}}{\text{MIX PROCESS (MEAN VALUE)}}$$

The emission factor for any compound not tested in a mill, extruder, calender, autoclave, platen press or hot air oven, can be calculated by multiplying its value at the mix process by the interpolation factor shown on this sheet.

Ed Karger
6/2/85

INTERPOLATION FACTOR FOR TOTAL SPECIATED ORGANICS

PROCESS	NUMBER OF COMPOUNDS TESTED	VOL. 4 DATA TABLE	MEAN FACTOR VALUE 1×10^6	INTERPOLATION FACTOR
MIX	23	3-1A	98.0	NA
MILL	4	3-2	32.6	0.33
EXTRUDER	4	3-3	28.5	0.29
CALENDER	2	3-4	38.9	0.40
AUTOCLAVE	11	3-6	891.0	9.09
PLATEN PRESS	17	3-7	2660.0	27.14
HOT AIR OVEN	3	3-8	2100.0	21.43

$$\text{INTERPOLATION FACTOR} = \frac{\text{PROCESS FACTOR (MEAN VALUE)}}{\text{MIX PROCESS (MEAN VALUE)}}$$

The emission factor for any compound not tested in a mill, extruder, calender, autoclave, platen press or hot air oven, can be calculated by multiplying its value at the mix process by the interpolation factor shown on this sheet.

Eric Larger
6/2/95

INTERPOLATION FACTOR FOR TOTAL ORGANIC HAPS [a]

PROCESS	NUMBER OF COMPOUNDS TESTED	VOL. 4 DATA TABLE	MEAN FACTOR VALUE 1×10^{-6}	INTERPOLATION FACTOR
MIX	23	3-1A	47.6	NA
MILL	4	3-2	—	—
EXTRUDER	4	3-3	19.6	0.41
CALENDER	2	3-4	—	—
AUTOCLAVE	11	3-6	—	—
PLATEN PRESS	17	3-7	—	—
HOT AIR OVEN	3	3-8	—	—

$$\text{INTERPOLATION FACTOR} = \frac{\text{PROCESS FACTOR (MEAN VALUE)}}{\text{MIX PROCESS (MEAN VALUE)}}$$

The emission factor for any compound not tested in a mill, extruder, calender, autoclave, platen press or hot air oven, can be calculated by multiplying its value at the mix process by the interpolation factor shown on this sheet.

[a] Since metals were associated with PM, organic HAPs are the same as total HAPs for processes where metals were not detected.

E. Kanger
6/2/95

INTERPOLATION FACTOR FOR TOTAL METAL HAPS

PROCESS	NUMBER OF COMPOUNDS TESTED	VOL. 4 DATA TABLE	MEAN FACTOR VALUE 1×10^{-8}	INTERPOLATION FACTOR
MIX	23	3-1A	5.74	NA
MILL	4	3-2	—	—
EXTRUDER	4	3-3	38.0	6.62
CALENDER	2	3-4	—	—
AUTOCLAVE	11	3-6	—	—
PLATEN PRESS	17	3-7	—	—
HOT AIR OVEN	3	3-8	—	—

$$\text{INTERPOLATION FACTOR} = \frac{\text{PROCESS FACTOR (MEAN VALUE)}}{\text{MIX PROCESS (MEAN VALUE)}}$$

The emission factor for any compound not tested in a mill, extruder, calender, autoclave, platen press or hot air oven, can be calculated by multiplying its value at the mix process by the interpolation factor shown on this sheet.

Eu Karger
6/2/95

INTERPOLATION FACTOR FOR TOTAL HAPS

PROCESS	NUMBER OF COMPOUNDS TESTED	VOL. 4 DATA TABLE	MEAN FACTOR VALUE 1×10^{-6}	INTERPOLATION FACTOR
MIX	23	3-1A	47.7	NA
MILL	4	3-2	12.4	0.26
EXTRUDER	4	3-3	20.0	0.42
CALENDER	2	3-4	8.43	0.18
AUTOCLAVE	11	3-6	344.0	7.21
PLATEN PRESS	17	3-7	2070.0	43.40
HOT AIR OVEN	3	3-8	1080.0	22.64

$$\text{INTERPOLATION FACTOR} = \frac{\text{PROCESS FACTOR (MEAN VALUE)}}{\text{MIX PROCESS (MEAN VALUE)}}$$

The emission factor for any compound not tested in a mill, extruder, calender, autoclave, platen press or hot air oven, can be calculated by multiplying its value at the mix process by the interpolation factor shown on this sheet.

Ed Karger
6/2/95

INTERPOLATION FACTOR FOR PM

PROCESS	NUMBER OF COMPOUNDS TESTED	VOL. 4 DATA TABLE	MEAN FACTOR VALUE 1×10^{-6}	INTERPOLATION FACTOR
MIX	23	3-1A	339.0	NA
MILL	4	3-2	—	—
EXTRUDER	4	3-3	14.4	0.04
CALENDER	2	3-4	—	—
AUTOCLAVE	11	3-6	—	—
PLATEN PRESS	17	3-7	—	—
HOT AIR OVEN	3	3-8	—	—

$$\text{INTERPOLATION FACTOR} = \frac{\text{PROCESS FACTOR (MEAN VALUE)}}{\text{MIX PROCESS (MEAN VALUE)}}$$

The emission factor for any compound not tested in a mill, extruder, calender, autoclave, platen press or hot air oven, can be calculated by multiplying its value at the mix process by the interpolation factor shown on this sheet.

Eric Langer
6/2/95

Sukargu
5/30/95

EMISSIONS FROM NON PRODUCTIVE / PRODUCTIVE MIXING

SUMMARY

Non productive rubber mixing produces 90% of the volatiles emitted during multi pass mixing cycle consisting of non productive and productive mixing.

DISCUSSION

As part of 2 pass mixing, reported in Vol. 1 Table 4-3, total hydrocarbon emissions were monitored and plotted against time. The resultant data, figures 1 thru 7, reveal that approximately 90% of the emissions were released during the non productive phase.

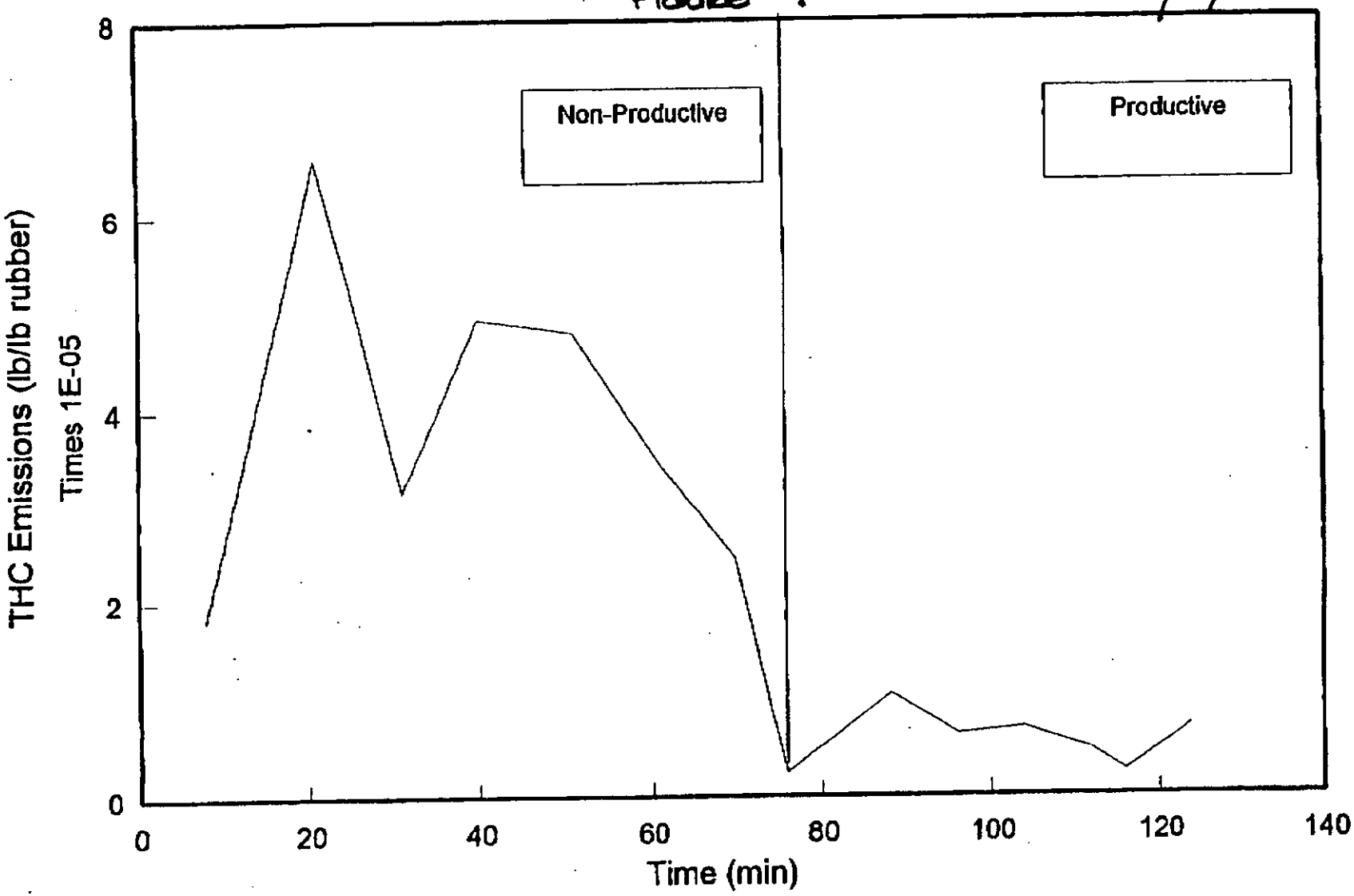
Therefore mixing facilities producing non productive (master-batches) for shipment off site, will produce 90% of the emissions while the final mixing facility will produce only 10% of the emissions.

RMA - Small Banbury

EPDM peroxide

FIGURE 1

5/30/95

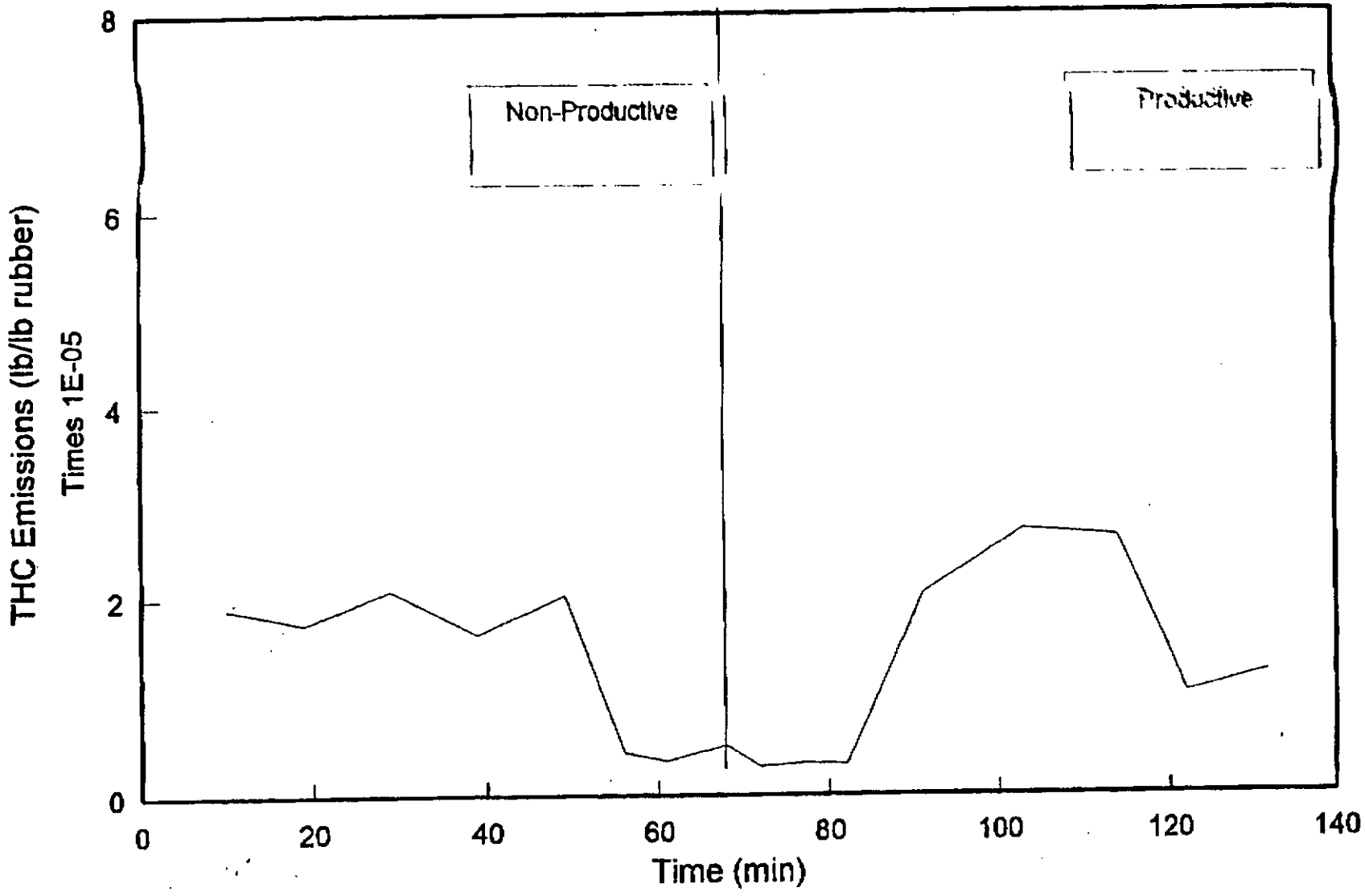


RMA - Small Banbury

SDW with base Scale #4

FIGURE 2

5/30/95



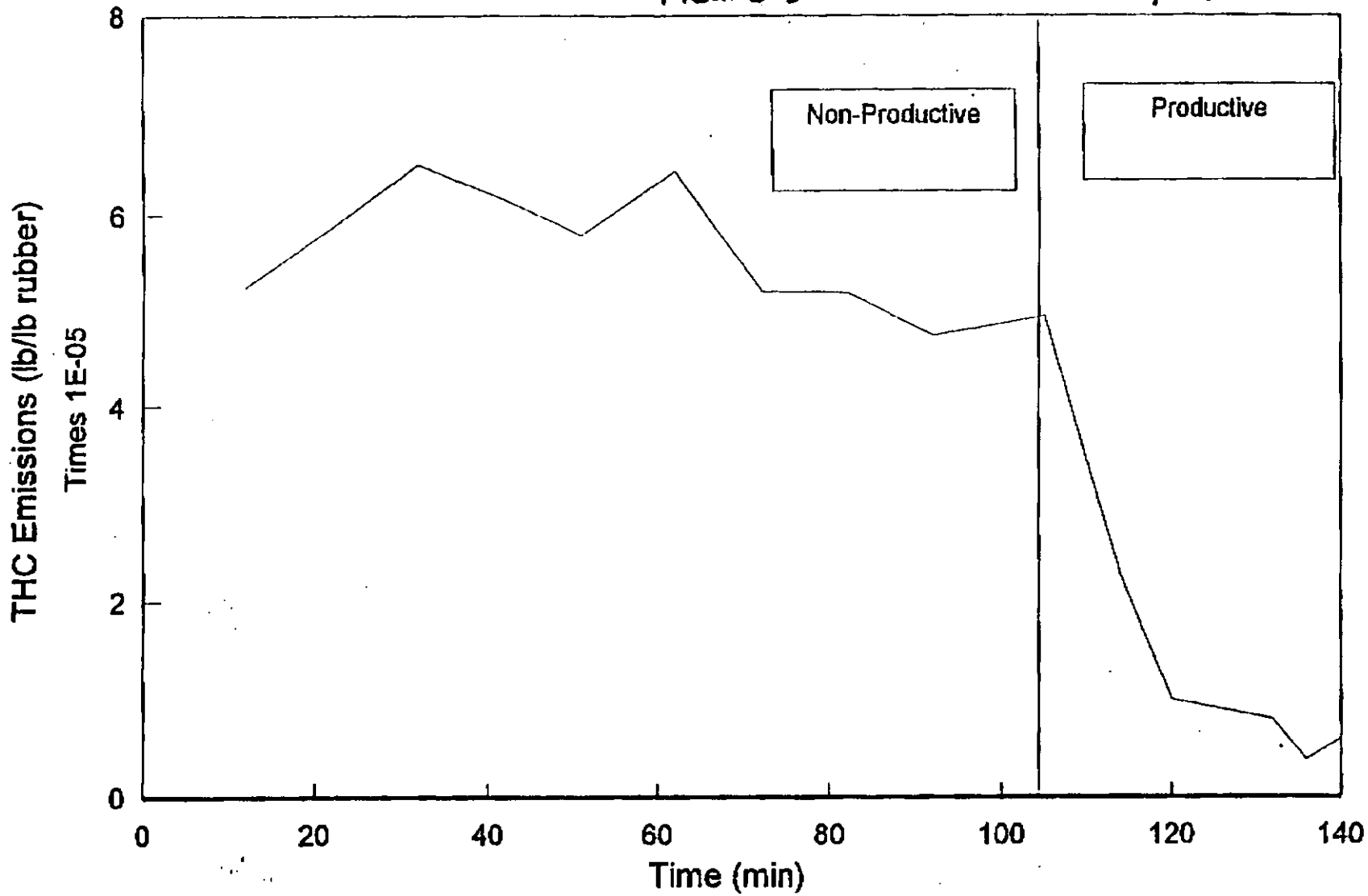
3 of 8

RMA - Small Banbury

SBR 1502

FIGURE 3

5/30/95

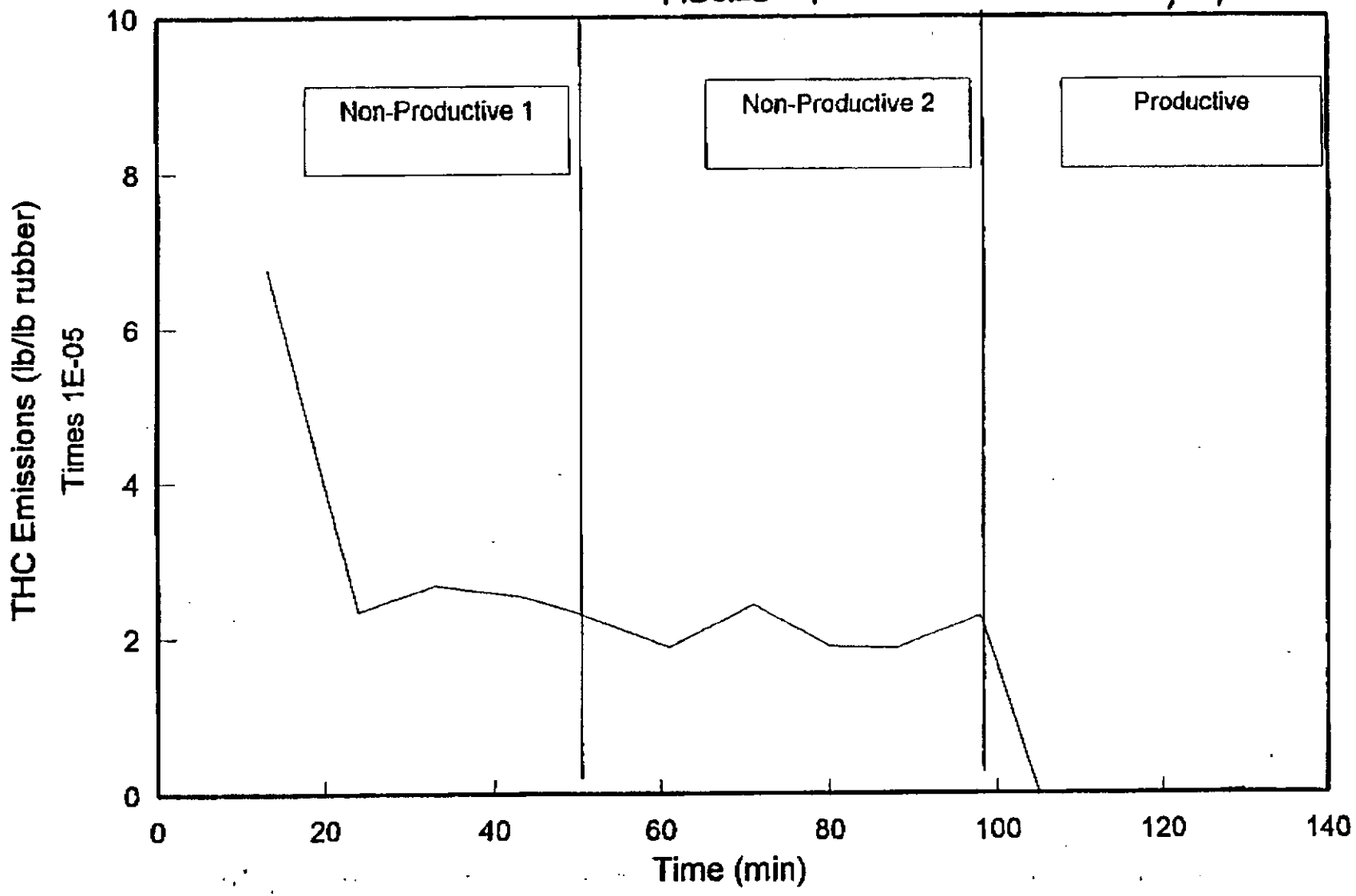


RMA - Large Banbury

Tread #6

FIGURE 4

5/30/95

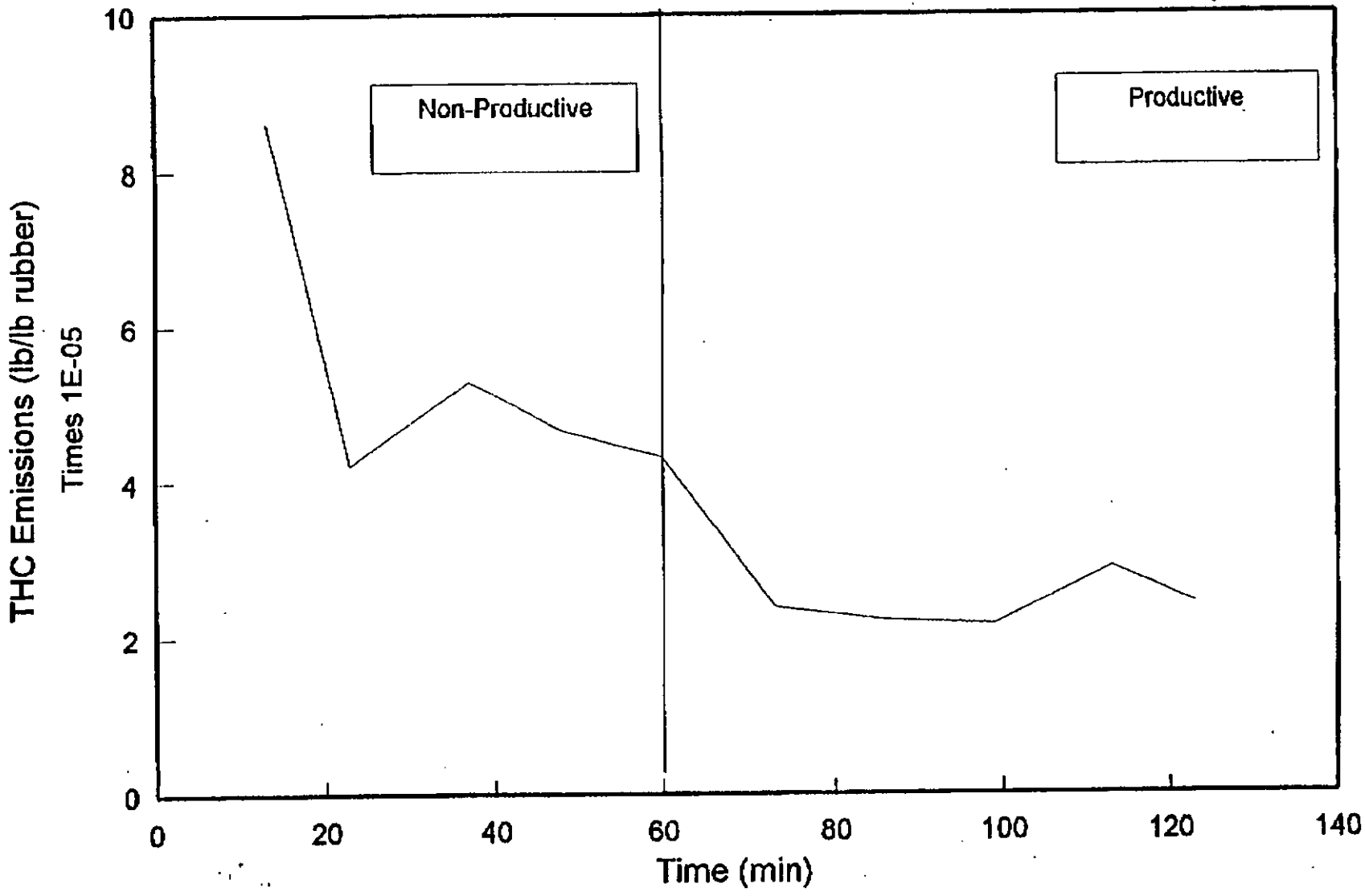


RMA - Large Banbury

EPDM #9

FIGURE 5

5/30/95

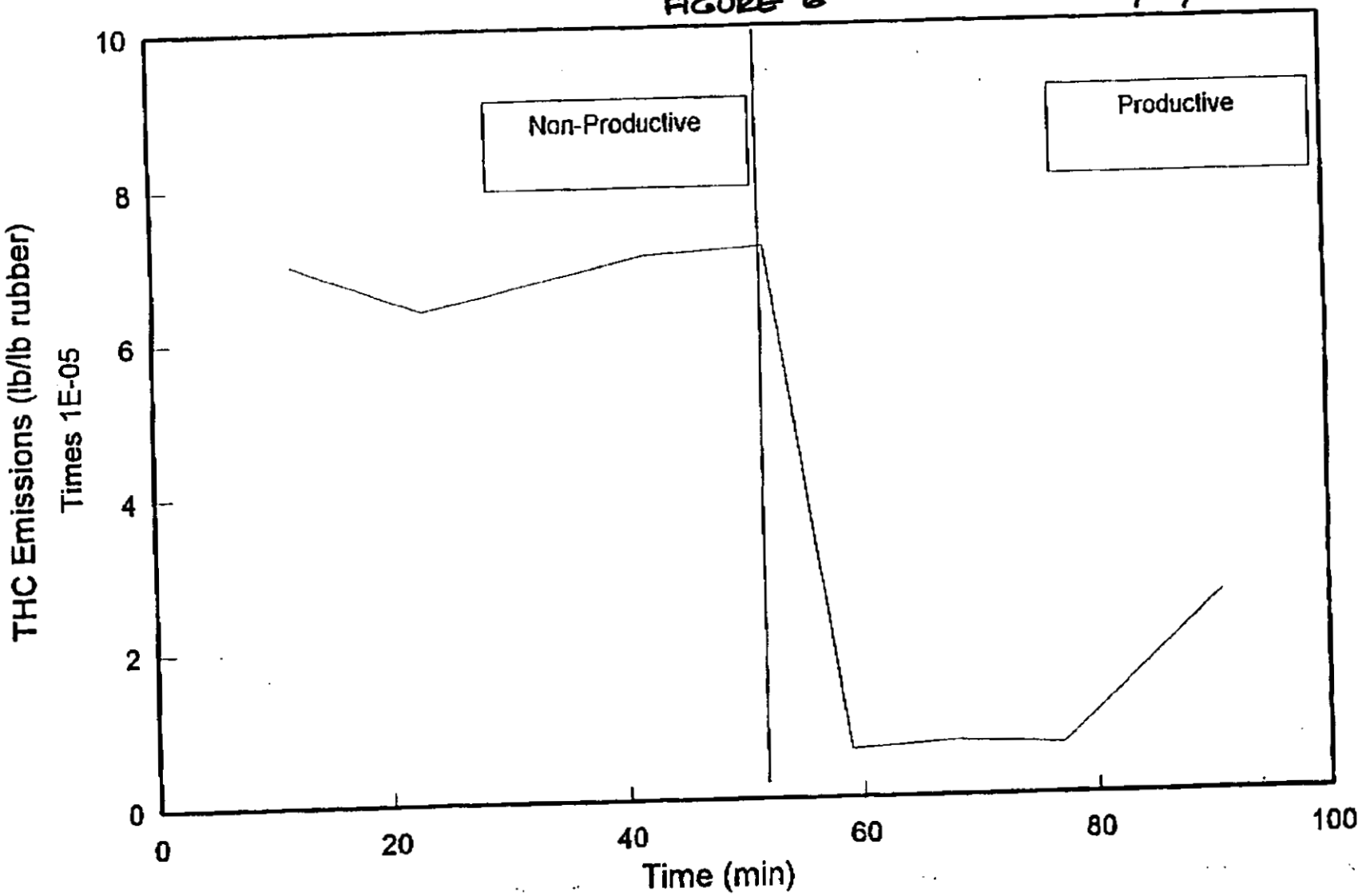


RMA - Large Banbury

SDW #4

FIGURE 6

5/30/95



RMA - Large Banbury

SBR

FIGURE 7

5/30/95

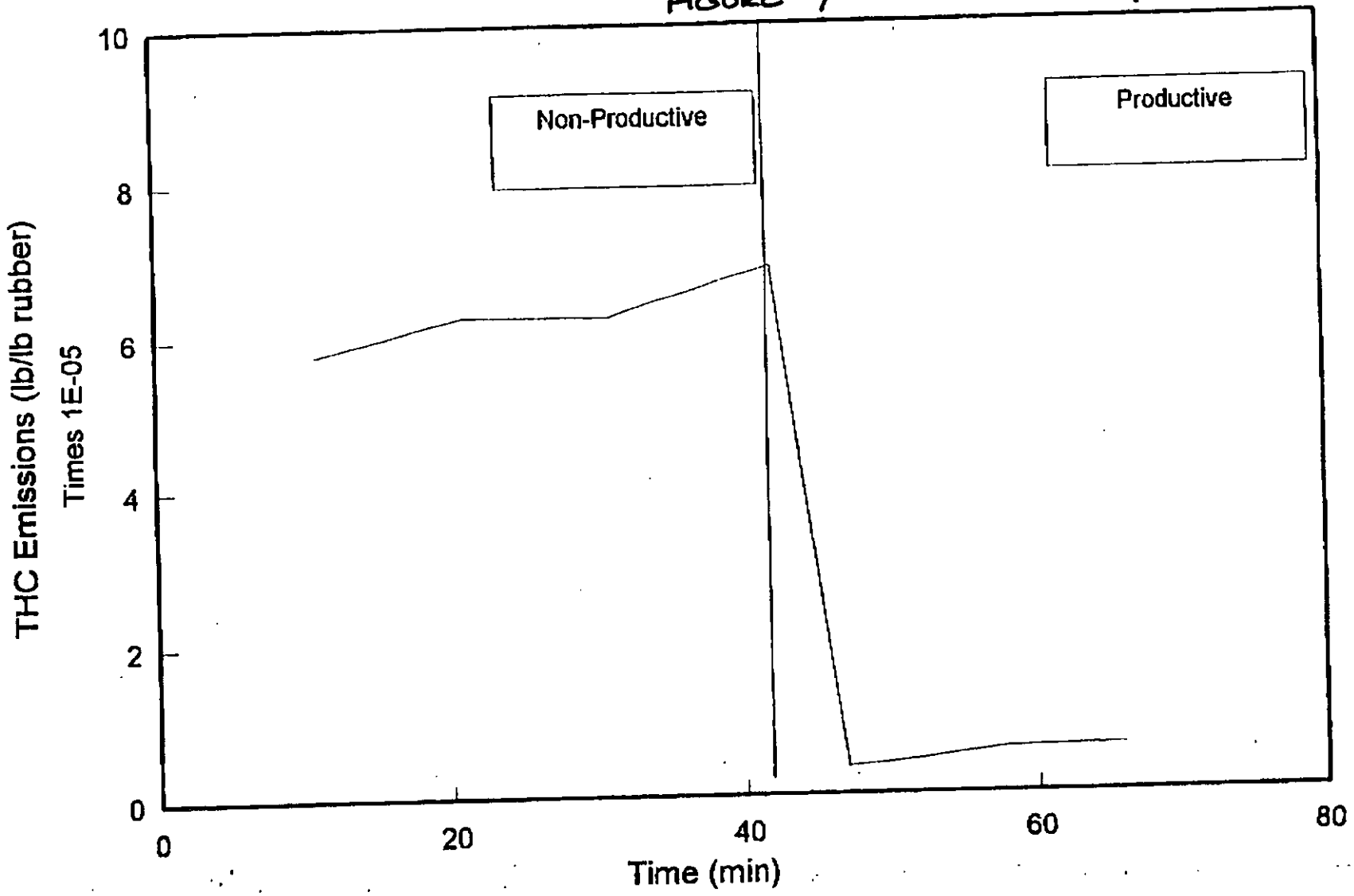


TABLE 6.X-3. UNCONTROLLED EMISSION FACTORS FOR AN INTERNAL MIXER AND ITS DROP MILL OR ROLLER DIE EXTRUDER [d]

Pollutant Category	CAS #	Cmpd. #1 lbs/lb rubber	Cmpd. #2 lbs/lb rubber	Cmpd. #3 lbs/lb rubber	Cmpd. #4 lbs/lb rubber	Cmpd. #5 lbs/lb rubber	Cmpd. #6 lbs/lb rubber	Cmpd. #7 lbs/lb rubber	Cmpd. #8 lbs/lb rubber	Cmpd. #9 lbs/lb rubber	Cmpd. #10 lbs/lb rubber	Cmpd. #11 lbs/lb rubber	Cmpd. #12 lbs/lb rubber	Cmpd. #13 lbs/lb rubber
TOTAL VOCs		6.11E-05	3.86E-05	1.37E-04	3.86E-05	2.15E-04	3.96E-05	1.20E-04	1.55E-05	2.84E-05	2.90E-04	3.22E-05	1.59E-05	2.28E-04
TOTAL SPECIATED ORGANICS [a]		< 8.08E-05	< 6.61E-05	< 1.09E-04	< 6.09E-05	< 7.36E-05	< 1.25E-04	< 1.16E-04	< 6.04E-05	< 6.53E-05	< 3.13E-04	< 4.21E-05	< 6.70E-05	< 1.63E-04
TOTAL PARTICULATE MATTER (PM)		1.75E-04	4.02E-04	8.99E-04	3.00E-04	9.25E-04	4.00E-04	5.66E-04	2.22E-04	4.92E-05	3.58E-04	7.82E-05	1.83E-04	2.46E-04
TOTAL ORGANIC HAPS		< 4.03E-05	< 1.85E-05	< 7.12E-05	< 2.97E-05	< 5.05E-05	< 8.76E-05	< 6.57E-05	< 5.99E-05	< 2.02E-05	< 1.40E-04	< 1.60E-05	< 5.90E-05	< 1.91E-05
TOTAL METAL HAPs		< 9.67E-08	< 3.76E-08	< 1.74E-07	< 7.07E-08	< 7.73E-08	< 4.90E-08	< 1.86E-07	< 3.91E-08	< 3.32E-08	< 5.18E-08	< 2.51E-08	< 2.87E-08	< 4.85E-08
TOTAL HAPS		< 4.04E-05	< 1.86E-05	< 7.14E-05	< 2.98E-05	< 5.05E-05	< 8.76E-05	< 6.59E-05	< 5.99E-05	< 2.03E-05	< 1.40E-04	< 1.60E-05	< 5.90E-05	< 1.92E-05
Individual HAPs														
1,1-Dichloroethane	00075-34-3	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
1,1-Dichloroethene	00075-35-4	< 4.64E-07	< 1.31E-07	< 2.57E-07	5.47E-07	< 2.04E-07	< 4.60E-07	< 4.75E-07	1.00E-07	1.90E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
1,1,1-Trichloroethane	00071-55-6	< 4.64E-07	8.03E-08	3.19E-07	4.23E-08	1.84E-07	< 4.60E-07	< 4.75E-07	2.67E-08	7.30E-08	1.34E-07	< 9.87E-08	2.94E-08	5.32E-08
1,1,2-Trichloroethane	00079-00-5	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
1,1,2,2-Tetrachloroethane	00079-34-5	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
1,2-Dibromo-3-Chloropropane	00096-12-8	< 9.27E-07	< 2.62E-07	< 5.15E-07	< 1.99E-07	< 4.08E-07	< 9.19E-07	< 9.49E-07	< 2.14E-07	< 2.54E-07	< 9.76E-07	< 1.97E-07	< 1.68E-07	< 3.55E-07
1,2-Dibromoethane	00106-93-4	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
1,2-Dichloroethane	00107-06-2	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
1,2-Dichloropropane	00078-87-5	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
1,2,4-Trichlorobenzene	120-82-1	< 7.42E-09	< 4.60E-09	< 1.24E-08	< 3.65E-09	< 6.86E-09	< 9.57E-09	< 1.17E-08	< 5.61E-09	< 5.44E-09	< 5.70E-09	< 4.65E-09	< 3.74E-09	< 4.96E-09
1,3-Butadiene	00106-99-0	9.78E-08	< 1.84E-08	< 3.62E-08	2.17E-07	< 1.15E-08	< 6.46E-08	4.67E-07	1.13E-07	1.70E-07	< 6.86E-08	3.82E-07	8.57E-08	1.12E-07
1,4-Dichlorobenzene	00106-46-7	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
1,4-Dioxane	00123-91-1	< 1.85E-06	< 5.25E-07	< 1.03E-06	< 3.98E-07	< 8.10E-07	< 1.84E-06	< 1.90E-06	< 4.27E-07	< 5.08E-07	< 1.95E-06	< 3.95E-07	< 3.36E-07	< 7.10E-07
1,4-Phenylenediamine	106-50-3	< 1.59E-08	< 9.34E-09	< 3.67E-08	< 1.26E-08	< 1.46E-08	< 1.72E-08	< 2.47E-08	< 1.36E-08	< 1.33E-08	< 1.02E-08	< 8.31E-09	< 9.11E-09	< 8.89E-09
2-Butanone	00078-93-3	5.91E-06	1.59E-06	9.01E-07	2.74E-06	1.53E-06	4.40E-07	1.40E-06	5.08E-07	4.92E-07	1.18E-06	8.64E-08	8.20E-07	3.22E-07
2-Butene [b]	00126-99-8							1.19E-06						
2-Methylphenol	95-48-7	< 8.31E-09	< 5.50E-09	8.64E-08	8.34E-10	1.30E-08	6.00E-09	< 1.29E-08	< 7.35E-09	< 6.50E-09	< 6.55E-09	< 5.26E-09	< 4.53E-09	< 5.77E-09
2,4-Dinitrophenol	51-28-5	< 2.97E-08	< 2.88E-08	< 7.51E-08	< 2.82E-08	< 2.87E-08	< 4.83E-08	< 4.48E-08	< 2.94E-08	< 3.10E-08	< 2.95E-08	< 2.42E-08	< 2.15E-08	< 2.61E-08
2,4-Dinitrotoluene	121-14-2	< 9.45E-09	< 6.91E-09	< 1.92E-08	< 5.52E-09	< 9.14E-09	< 1.23E-08	< 1.43E-08	< 6.03E-09	< 6.32E-09	< 7.49E-09	< 6.15E-09	< 4.40E-09	< 6.63E-09
2,4,5-Trichlorophenol	95-95-4	< 1.00E-08	< 7.04E-09	< 1.92E-08	< 5.68E-09	< 9.67E-09	< 1.38E-08	< 1.50E-08	< 7.47E-09	< 7.68E-09	< 8.43E-09	< 6.95E-09	< 5.46E-09	< 7.44E-09
2,4,6-Trichlorophenol	88-06-2	< 1.01E-08	< 7.42E-09	< 1.90E-08	< 5.63E-09	< 9.73E-09	< 1.40E-08	< 1.52E-08	< 7.82E-09	< 8.26E-09	< 8.53E-09	< 7.04E-09	< 5.72E-09	< 7.55E-09
3,3'-Dichlorobenzidine	91-94-1	< 2.07E-08	< 3.58E-09	< 7.11E-08	< 1.01E-08	< 2.21E-08	< 5.05E-09	< 3.89E-08	< 3.23E-09	< 3.88E-09	< 2.93E-09	< 2.96E-09	< 2.02E-09	< 3.56E-09
3,3'-Dimethoxybenzidine	119-90-4	< 2.20E-08	< 6.01E-09	< 9.02E-08	< 1.57E-08	< 2.35E-08	< 7.13E-09	< 4.14E-08	< 4.72E-09	< 5.63E-09	< 4.17E-09	< 4.18E-09	< 2.95E-09	< 5.07E-09
3,3'-Dimethylbenzidine	119-93-7	< 8.62E-09	< 2.05E-09	< 2.70E-08	< 5.58E-09	< 9.26E-09	< 2.87E-09	< 1.63E-08	< 1.85E-09	< 2.19E-09	< 1.69E-09	< 1.69E-09	< 1.14E-09	< 2.05E-09
3/4 Methylphenol	108-39-4/106-44-5	1.01E-08	< 5.12E-09	2.37E-07	< 4.07E-09	1.11E-07	< 1.12E-08	< 1.24E-08	< 6.87E-09	< 6.13E-09	1.54E-09	< 5.07E-09	< 4.27E-09	< 5.55E-09
4-Aminobiphenyl	92-67-1	< 4.12E-09	< 2.37E-09	< 7.29E-09	< 2.92E-09	< 3.81E-09	< 3.83E-09	< 6.32E-09	< 2.21E-09	< 2.38E-09	< 2.23E-09	< 1.83E-09	< 1.50E-09	< 1.94E-09
4-Methyl-2-Pentanone	00108-10-1	< 4.64E-07	1.97E-07	1.26E-05	1.49E-05	< 2.04E-07	3.06E-05	< 4.75E-07	1.27E-07	1.24E-07	4.15E-07	6.79E-08	< 8.41E-08	9.87E-08
4-Nitrobiphenyl	92-93-3	< 8.94E-09	< 4.73E-09	< 1.64E-08	< 6.62E-09	< 8.21E-09	< 7.22E-09	< 1.37E-08	< 4.42E-09	< 4.75E-09	< 4.22E-09	< 3.43E-09	< 2.95E-09	< 3.61E-09
4-Nitrophenol	100-02-7	< 2.50E-08	< 2.19E-08	< 5.85E-08	< 1.43E-08	< 2.41E-08	< 3.25E-08	< 3.77E-08	< 1.88E-08	< 1.97E-08	< 1.98E-08	< 1.63E-08	< 1.37E-08	< 1.75E-08
4,4'-Methylenedianiline	101-77-9	< 1.83E-08	< 4.48E-09	< 4.79E-08	< 1.12E-08	< 1.75E-08	< 6.00E-09	< 3.07E-08	< 3.82E-09	< 4.57E-09	< 3.52E-09	< 3.52E-09	< 2.42E-09	< 4.26E-09
4,6-Dinitro-2-methylphenol	534-52-1	< 2.25E-08	< 1.33E-08	< 4.73E-08	< 2.14E-08	< 2.07E-08	< 2.63E-08	< 3.45E-08	< 1.54E-08	< 1.64E-08	< 1.53E-08	< 1.23E-08	< 1.03E-08	< 1.32E-08
Acetaldehyde [b]	00075-07-0	6.95E-07												
Acetonitrile	75-05-8	< 9.27E-07	< 2.62E-07	< 5.15E-07	< 1.99E-07	< 4.08E-07	< 9.19E-07	< 9.49E-07	< 2.14E-07	< 2.54E-07	< 9.76E-07	< 1.97E-07	< 1.68E-07	< 3.55E-07
Acetophenone	98-86-2	4.24E-08	2.13E-08	5.13E-08	3.75E-09	1.85E-08	7.67E-08	1.23E-07	1.29E-08	1.47E-06	8.46E-08	2.29E-07	3.45E-07	5.21E-08
Acrolein	00107-02-8	< 9.27E-07	< 2.62E-07	< 5.15E-07	< 1.99E-07	< 4.08E-07	< 9.19E-07	< 9.49E-07	< 2.14E-07	< 2.54E-07	< 9.76E-07	< 1.97E-07	< 1.68E-07	7.10E-07
Acrylonitrile	00107-13-1	< 9.27E-07	< 2.62E-07	< 5.15E-07	< 1.99E-07	< 4.08E-07	< 9.19E-07	< 9.49E-07	8.81E-08	< 2.54E-07	< 9.76E-07	< 1.97E-07	< 1.68E-07	9.54E-07
Allyl Chloride	00107-05-1	< 9.27E-07	< 2.62E-07	< 5.15E-07	< 1.99E-07	< 4.08E-07	< 9.19E-07	< 9.49E-07	< 2.14E-07	< 2.54E-07	< 9.76E-07	< 1.97E-07	< 1.68E-07	< 3.55E-07
Aniline	62-53-3	< 5.71E-09	4.80E-07	< 1.30E-08	4.30E-07	< 5.33E-09	9.97E-08	< 8.91E-09	7.70E-09	5.13E-09	4.71E-09	2.39E-08	< 2.55E-09	< 3.56E-09
a,a,a-Trichlorotoluene	98-07-7	< 5.07E-09	< 3.77E-09	< 9.58E-09	< 3.13E-09	< 4.69E-09	< 7.83E-09	< 7.95E-09	< 4.54E-09	< 4.38E-09	< 4.61E-09	< 3.75E-09	< 3.04E-09	< 4.04E-09
Benzene	00071-43-2	5.46E-08	4.62E-08	1.13E-07	1.14E-07	2.98E-07	6.22E-08	9.13E-08	1.45E-08	4.90E-08	6.61E-08	1.34E-08	3.64E-08	6.61E-07
Benzidine	92-87-5	< 1.12E-08	< 2.94E-09	< 2.75E-08	< 7.77E-09	< 1.20E-08	< 4.35E-09	< 2.11E-08	< 2.75E-09	< 3.25E-09	< 2.53E-09	< 2.53E-09	< 1.72E-09	< 3.07E-09
Benzyl Chloride	00100-44-7	< 9.27E-07	< 2.62E-07	< 5.15E-07	< 1.99E-07	< 4.08E-07	< 9.19E-07	< 9.49E-07	< 2.14E-07	< 2.54E-07	< 9.76E-07	< 1.97E-07	< 1.68E-07	< 3.55E-07
Biphenyl	92-52-4	< 2.66E-09	< 2.30E-09	5.63E-08	5.42E-09	< 2.58E-09	1.17E-08	< 4.02E-09	< 2.45E-09	< 2.56E-09	< 2.78E-09	< 2.30E-09	< 1.80E-09	< 2.48E-09
bis(2-Chloroethyl)ether	111-44-4	< 9.26E-09	< 5.24E-09	< 1.87E-08	< 5.00E-09	< 8.73E-09	< 1.18E-08	< 1.45E-08	< 7.05E-09	< 8.25E-09	< 6.65E-09	< 5.35E-09	< 4.36E-09	< 5.88E-09
bis(2-Ethylhexyl)phthalate	117-81-7	3.91E-08	3.01E-08	1.19E-07	0.00E+00	2.29E-08	1.79E-07	3.34E-08	0.00E+00	7.07E-09	< 1.29E-09	2.89E-07	8.93E-09	7.40E-07
Bromoform	00075-25-2	2.78E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
Bromomethane	00074-83-9	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07

TABLE 6.X-3. UNCONTROLLED EMISSION FACTORS FOR AN INTERNAL MIXER AND ITS DROP MILL OR ROLLER DIE EXTRUDER[d]

Pollutant Category	CAS #	Cmpd. #14 lbs/lb rubber	Cmpd. #15 lbs/lb rubber	Cmpd. #16 lbs/lb rubber	Cmpd. #17 lbs/lb rubber	Cmpd. #18 lbs/lb rubber	Cmpd. #19 lbs/lb rubber	Cmpd. #20 lbs/lb rubber	Cmpd. #21 lbs/lb rubber	Cmpd. #22 lbs/lb rubber	Cmpd. #23 lbs/lb rubber	Mean lbs/lb rubber	Max. lbs/lb rubber
Carbon Disulfide	00075 15 0	4 26E 06	1 54E 07	4 50E 08	< 1 89E 07	3 54E-05	< 6 34E 08	2 80E 07	4 36E-08	9 56E 08	5 07E 07	< 1 01E-05	1 03E 04
Carbon Tetrachloride	00056 23 5	< 1 03E 07	4 68E 05	< 8 38E 08	< 1 89E 07	< 1 83E 07	< 6 34E 08	< 1 09E 07	< 9 83E 08	< 1 09E-07	2 36E-07	< 2 22E 08	4 68E 05
Carbonyl sulfide	00463 58-1	1 13E 05	2 73E 06	< 1 05E 07	< 4 36E 07	< 2 29E 06	1 69E 07	1 58E 06	3 52E 07	< 1 34E 07	2 88E-06	< 2 43E 08	2 24E 05
Chlorobenzene	00108 90 7	< 1 03E 07	< 5 85E 08	< 8 38E 08	< 1 89E 07	< 1 83E 07	< 6 34E 08	< 1 09E 07	< 9 83E 08	< 1 09E 07	< 4 61E 07	< 2 01E 07	< 4 88E 07
Chloroethane	00075 00 3	< 1 03E 07	< 5 85E 08	1 70E 06	2 01E 07	< 1 83E 07	< 6 34E 08	4 24E 07	< 9 83E 08	< 1 09E 07	< 4 61E 07	< 2 86E 07	1 70E 06
Chloroform	00067 66 3	2 45E 08	6 51E 07	1 23E 08	< 1 89E 07	< 1 83E 07	< 6 34E 08	< 1 09E 07	1 72E 08	< 1 09E 07	< 4 61E 07	< 2 17E 07	6 51E 07
Chloromethane	00074 87-3	3 61E 08	1 02E 07	1 44E 08	8 86E 07	< 1 83E-07	1 48E 07	3 35E 07	3 93E 07	3 82E 08	< 4 61E-07	< 2 06E 07	8 86E 07
Cumene	00098 82 8	< 1 43E 08	< 8 12E 09	< 1 16E 08	< 1 31E 07	1 21E 07	1 06E-06	< 1 52E 08	2 80E 08	5 61E 08	< 1 60E 08	< 2 64E 07	3 17E 06
Dibenzofuran	132 64 9	2 41E 09	7 41E 10	< 1 19E 09	< 3 81E 09	< 2 06E 09	< 1 83E 09	9 63E 10	3 06E 10	< 1 84E 09	5 31E-10	< 3 27E 09	3 42E 08
Dimethylaminoazobenzene	60 11-7	< 2 71E 09	1 04E 08	< 2 42E 09	< 2 52E 08	< 3 29E 09	< 3 58E 09	< 1 37E 08	< 2 88E 09	< 2 95E 09	< 2 83E 09	< 8 62E 09	< 2 87E 08
Dimethylphthalate	131 11 3	3 00E 09	2 18E 09	3 12E 09	< 4 75E 09	< 2 58E 09	< 2 22E 09	< 2 64E 09	< 1 70E 09	< 1 96E 09	< 1 86E 09	< 3 19E 09	1 57E 08
Di n-butylphthalate C	84-74 2	8 95E 09	0 00E+00	3 68E 09	0 00E+00	8 27E 08	2 91E 08	2 17E 08	2 86E 07	3 57E 08	8 78E 08	< 4 72E 08	3 34E 07
Epichlorohydrin	00106 89 8	< 2 06E 07	< 1 17E 07	< 1 68E 07	< 3 78E 07	< 3 66E-07	< 1 27E 07	< 2 19E 07	< 1 97E 07	< 2 18E 07	< 9 23E 07	< 4 03E 07	< 8 76E 07
Ethyl Acrylate b					4 73E 06							4 73E 06	4 73E 06
Ethylbenzene	00100 41-4	6 12E 08	4 84E 08	< 1 16E 08	< 1 30E 07	2 78E-07	3 24E 08	7 92E 08	< 1 36E 08	1 28E 07	< 1 59E 08	< 2 86E 07	4 32E 06
Hexachlorobenzene	118-74 1	< 4 81E 09	< 3 63E 09	< 4 61E 09	< 1 56E 08	< 7 61E 09	< 6 71E 09	< 7 40E 09	< 4 02E 09	< 5 68E 09	< 5 35E 09	< 7 47E 09	< 1 62E 08
Hexachlorobutadiene	00087 68 3	< 2 06E 07	< 1 17E 07	< 1 68E 07	< 3 78E 07	< 3 66E 07	< 1 27E 07	< 2 19E 07	< 1 97E 07	< 2 18E 07	< 9 23E 07	< 4 03E 07	< 9 76E 07
Hexachlorocyclopentadiene	77 47 4	< 8 48E 09	< 4 05E 09	< 8 81E 09	< 1 84E 08	< 1 50E 08	< 1 11E 08	< 9 93E 09	< 8 52E 09	< 8 51E 09	< 8 00E 09	< 1 18E 08	2 39E 08
Hexachloroethane	67-72 1	< 8 59E 09	1 23E 06	< 6 43E 09	< 1 87E 08	< 1 11E 08	< 7 46E 09	< 1 05E 08	< 8 13E 09	< 7 42E 09	6 06E 09	< 8 39E 08	1 23E 06
Hydroquinone	123 31 9	< 2 83E 08	< 6 39E 09	< 6 43E 09	< 1 48E 08	< 1 03E 08	< 6 76E 09	< 9 12E 09	< 8 03E 09	< 7 80E 09	< 7 74E-09	< 1 19E 06	2 62E 05
Isophorone	78-59 1	< 8 24E 09	< 1 64E 09	< 2 04E 09	< 7 07E 09	< 3 29E 09	< 2 70E 09	< 3 50E 09	3 94E 09	3 37E 07	< 2 26E 09	< 4 95E 08	8 63E 07
Methylene bis-chloroaniline	101-14 4	< 5 89E 09	< 1 55E 08	< 4 87E 09	< 5 41E 08	< 6 58E 09	< 6 98E 09	< 4 70E 08	< 5 68E 09	< 8 44E 09	< 6 15E 09	< 1 98E 08	< 9 88E 08
Methylene Chloride	00075 09 2	1 68E 06	7 02E 07	5 09E 07	1 65E 05	8 68E 07	3 74E 07	1 03E 06	2 82E 07	1 01E 06	1 10E 06	3 58E 06	3 86E 05
m,p Xylenes	00108 38-3/00106 42 3	3 35E 07	3 07E 07	1 07E 07	4 76E 07	8 83E 07	1 01E 07	3 36E 07	1 42E 07	4 22E 07	1 18E 07	1 05E 06	1 44E 05
Naphthalene	91-20 3	< 5 18E 09	2 78E 08	1 13E 08	4 01E 08	3 30E 08	1 23E 08	1 71E 08	1 25E 08	5 52E 08	3 18E 08	< 4 74E 08	3 08E 07
n Hexane	00110 54 3	6 78E 07	7 88E 07	1 81E 06	1 13E 04	4 03E 07	2 37E 07	4 86E 07	2 53E 07	7 75E 07	6 22E 07	< 8 89E 08	1 13E 04
Nitrobenzene	98 95-3	< 1 48E 08	< 2 92E 09	< 3 75E 09	< 1 29E 08	< 8 07E 09	< 4 80E 09	< 6 03E 09	< 4 28E 09	< 4 09E 09	< 4 07E 09	< 7 39E 09	2 02E 08
n Nitrosodimethylamine C	62 75 9	< 7 89E 09	0 00E+00	< 6 43E 09	0 00E+00	< 1 11E 08	< 6 33E 09	< 1 94E 08	< 9 04E 09	< 8 82E 09	< 8 94E 09	< 8 90E 09	< 4 50E 08
n Nitrosomorpholine	59 89 2	< 7 59E 09	< 5 42E 09	< 5 87E 09	< 1 46E 08	< 1 01E 08	< 7 28E 09	< 9 07E 09	< 7 91E 09	< 8 55E 09	< 8 72E 09	< 9 78E 09	< 2 10E 08
N,N Dimethylaniline	121 69 7	< 1 04E 08	< 2 07E 09	< 2 60E 09	< 6 27E 09	< 4 18E 09	< 3 40E 09	< 3 80E 09	< 3 00E 09	< 2 89E 09	< 2 83E 09	< 4 40E 09	< 1 04E 08
o-Anisidine	90 04 0	< 1 86E 08	< 4 34E 09	< 4 76E 09	< 1 27E 08	< 7 61E 09	< 6 19E 09	< 7 35E 09	< 5 50E 09	< 5 13E 09	< 5 09E 09	< 8 28E 09	< 1 86E 08
o-Toluidine	95-53 4	< 3 65E 09	< 2 34E 09	< 2 82E 09	< 8 09E 09	< 4 90E 09	< 3 58E 09	< 4 92E 09	< 3 89E 09	< 3 11E 09	< 3 18E 09	< 1 74E 08	2 23E 07
o-Xylene	00095-47 6	1 71E 07	8 07E 08	5 49E 08	5 09E-07	3 64E 07	4 81E 08	1 25E 07	1 59E 07	3 82E 07	< 1 59E 08	< 5 77E 07	7 73E 06
Pentachloronitrobenzene	82 68 8	< 1 51E 08	< 1 18E 08	< 1 35E 08	< 3 63E 08	< 2 23E 08	< 1 96E 08	< 2 01E 08	< 1 18E 08	< 1 80E 08	< 1 68E 08	< 2 17E 08	< 4 50E 08
Pentachlorophenol	87-86 5	< 6 77E 09	< 1 02E 08	< 7 43E 09	< 4 36E 08	< 1 22E 08	1 25E 08	< 1 63E 08	< 6 51E 09	< 7 91E 09	< 7 43E 09	< 1 43E 08	< 4 36E 08
Phenol	108 95-2	5 31E 08	2 61E 08	4 56E 08	1 27E 06	5 63E 08	< 3 79E 09	1 84E 08	9 35E 09	6 87E 07	1 25E 08	< 1 57E 07	1 27E 06
Propylene Oxide	00075-56 9	6 97E 06	< 1 17E 07	< 1 68E 07	< 3 78E 07	< 3 66E 07	< 1 27E 07	< 2 19E 07	< 1 97E 07	< 2 18E 07	< 9 23E 07	< 6 97E 07	6 97E 06
Styrene	00100-42 5	6 50E 08	< 7 92E 09	< 1 13E 08	< 1 28E 07	5 45E 08	< 8 58E 09	< 1 48E 08	6 32E 08	1 48E 06	< 1 56E 08	< 2 95E 07	4 25E 06
t-Butyl Methyl Ether	01634 04 4	< 2 06E 07	< 1 17E 07	< 1 68E 07	< 3 78E 07	< 3 66E-07	< 1 27E 07	< 2 19E 07	7 98E 08	< 2 18E 07	< 9 23E 07	< 7 15E 07	7 98E 06
Tetrachloroethene	00127-18 4	1 42E 07	6 95E 07	< 8 38E 08	< 1 89E 07	7 86E 08	2 81E 08	7 59E 08	< 9 83E 08	1 91E 06	< 4 61E 07	< 4 27E 07	4 10E 06
Toluene	00108 88 3	1 55E 08	3 16E 07	1 75E 07	1 04E 06	6 88E 07	4 34E-07	4 75E 07	1 38E 07	2 47E 06	2 31E 05	2 14E 06	2 31E-05
Trichloroethene	00079 01 6	< 1 03E 07	< 5 85E 08	< 8 38E 08	< 1 89E 07	< 1 83E 07	< 6 31E 08	< 1 09E 07	< 9 83E 08	< 1 09E 07	< 4 61E 07	< 2 03E 07	< 4 88E 07
Trifluralin	1582 09 8	< 1 08E 08	< 8 98E 09	< 8 10E 09	< 1 73E 08	< 1 38E 08	< 1 07E 08	< 1 31E 08	< 8 21E 09	< 1 08E 08	< 1 02E 08	< 1 29E 08	< 3 16E 08
Vinyl Acetate	00108 05-4	< 1 03E 07	< 5 85E 08	< 8 38E 08	< 1 89E 07	< 1 83E 07	< 6 34E 08	< 1 09E 07	< 9 83E 08	< 1 09E-07	< 4 61E 07	< 2 94E 07	2 35E 06
Vinyl Chloride	00075 01-4	< 1 03E-07	1 32E 08	< 8 38E 08	< 1 89E 07	< 1 83E 07	< 6 34E-08	< 1 09E 07	< 9 83E 08	< 1 09E 07	< 4 61E 07	< 1 99E 07	< 4 88E-07
Chromium		4 05E 09	1 96E 09	8 29E 10	4 20E 08	< 1 62E-08	< 1 06E 08	9 37E 09	1 08E 09	3 81E 09	2 11E 08	< 1 83E 08	1 23E 07
Nickel		< 2 70E 08	2 16E 08	< 1 66E 08	3 21E 08	3 89E 08	2 65E-08	< 2 34E 08	< 2 15E 08	< 2 54E 08	2 91E 08	< 3 30E 08	8 53E 08
Cadmium		3 38E 09	1 66E 09	6 09E 10	2 65E 09	1 47E 09	6 06E-10	1 35E 09	8 27E 10	2 79E 09	1 04E 09	< 2 49E 09	8 35E 09
Lead		5 39E 09	2 27E 10	ND	ND	ND	1 86E 09	ND	ND	4 97E 09	2 73E-10	< 3 55E 09	2 03E 08

TABLE 6.X-3. UNCONTROLLED EMISSION FACTORS FOR AN INTERNAL MIXER AND ITS DROP MILL

Pollutant Category	CAS #	Cmpd. #14 lbs/lb rubber	Cmpd. #15 lbs/lb rubber	Cmpd. #16 lbs/lb rubber	Cmpd. #17 lbs/lb rubber	Cmpd. #18 lbs/lb rubber	Cmpd. #19 lbs/lb rubber	Cmpd. #20 lbs/lb rubber	Cmpd. #21 lbs/lb rubber	Cmpd. #22 lbs/lb rubber	Cmpd. #23 lbs/lb rubber	Mean lbs/lb rubber	Max lbs/lb rubber
TOTAL VOCs		2.30E-04	9.69E-06	8.18E-05	4.43E-04	6.48E-05	2.70E-05	8.22E-06	1.56E-04	1.23E-04	4.02E-05	1.06E-04	4.43E-04
TOTAL SPECIATED ORGANICS		< 1.47E-04	< 6.32E-05	< 3.48E-05	< 3.20E-04	< 1.35E-04	< 2.40E-05	< 1.97E-05	< 1.40E-05	< 9.27E-05	< 8.19E-05	< 9.80E-05	< 3.20E-04
TOTAL PARTICULATE MATTER (PM) [a]		1.30E-04	1.42E-04	3.17E-04	8.96E-05	1.92E-04	6.89E-05	7.84E-04	7.50E-05	4.49E-04	3.39E-04	3.21E-04	8.25E-04
TOTAL ORGANIC HAPS		< 4.58E-05	< 5.79E-05	< 8.40E-06	< 1.50E-04	< 5.64E-05	< 6.40E-06	< 1.15E-05	< 1.49E-05	< 3.36E-05	< 5.12E-05	< 4.76E-05	< 1.50E-04
TOTAL METAL HAPs		< 3.98E-08	< 2.54E-08	< 1.80E-08	< 7.68E-08	< 5.66E-08	< 3.96E-08	< 3.41E-08	< 2.32E-08	< 3.70E-08	< 5.15E-08	< 5.74E-08	< 1.86E-07
TOTAL HAPS		< 4.59E-05	< 5.79E-05	< 8.42E-06	< 1.50E-04	< 5.65E-05	< 6.44E-06	< 1.15E-05	< 1.50E-05	< 3.38E-05	< 8.13E-05	< 4.77E-05	< 1.50E-04
Individual HAPs:													
1,1-Dichloroethane	00075-34-3	< 1.03E-07	< 5.85E-08	< 8.38E-08	< 1.89E-07	< 1.83E-07	< 6.34E-08	< 1.09E-07	< 9.83E-08	< 1.09E-07	< 4.61E-07	< 2.01E-07	< 4.88E-07
1,1-Dichloroethene	00075-35-4	2.19E-07	1.39E-08	< 8.38E-08	< 1.89E-07	8.80E-08	< 6.34E-08	< 1.09E-07	< 9.83E-08	< 1.09E-07	< 4.61E-07	< 2.22E-07	5.47E-07
1,1,1-Trichloroethane	00071-55-6	3.61E-08	1.81E-08	1.75E-08	6.03E-08	< 1.83E-07	1.14E-07	7.31E-07	1.04E-08	6.55E-08	< 4.61E-07	< 1.80E-07	7.31E-07
1,1,2-Trichloroethane	00079-00-5	< 1.03E-07	< 5.85E-08	< 8.38E-08	< 1.89E-07	< 1.83E-07	< 6.34E-08	< 1.09E-07	< 9.83E-08	< 1.09E-07	< 4.61E-07	< 2.01E-07	< 4.88E-07
1,1,2,2-Tetrachloroethane	00079-34-5	< 1.03E-07	< 5.85E-08	< 8.38E-08	< 1.89E-07	< 1.83E-07	< 6.34E-08	< 1.09E-07	< 9.83E-08	< 1.09E-07	< 4.61E-07	< 2.01E-07	< 4.88E-07
1,2-Dibromo-3-Chloropropane	00096-12-8	< 2.06E-07	< 1.17E-07	< 1.68E-07	< 3.78E-07	< 3.66E-07	< 1.27E-07	< 2.19E-07	< 1.97E-07	< 2.18E-07	< 9.23E-07	< 4.03E-07	< 9.76E-07
1,2-Dibromoethane	00106-93-4	< 1.03E-07	< 5.85E-08	< 8.38E-08	< 1.89E-07	< 1.83E-07	< 6.34E-08	< 1.09E-07	< 9.83E-08	< 1.09E-07	< 4.61E-07	< 2.01E-07	< 4.88E-07
1,2-Dichloroethane	00107-06-2	< 1.03E-07	< 5.85E-08	< 8.38E-08	< 1.89E-07	< 1.83E-07	< 6.34E-08	< 1.09E-07	< 9.83E-08	< 1.09E-07	< 4.61E-07	< 2.01E-07	< 4.88E-07
1,2-Dichloropropane	00078-87-5	< 1.03E-07	< 5.85E-08	< 8.38E-08	< 1.89E-07	< 1.83E-07	< 6.34E-08	< 1.09E-07	< 9.83E-08	< 1.09E-07	< 4.61E-07	< 2.01E-07	< 4.88E-07
1,2,4-Trichlorobenzene	120-82-1	< 1.41E-08	< 2.57E-09	< 3.64E-09	< 1.20E-08	< 5.87E-09	< 4.75E-09	< 5.32E-09	< 4.19E-09	< 3.88E-09	< 3.85E-09	< 6.37E-09	< 1.41E-08
1,3-Butadiene	00106-99-0	2.39E-07	6.17E-08	< 1.18E-08	< 1.31E-07	1.80E-07	5.79E-08	< 1.54E-08	< 1.10E-08	1.31E-07	1.43E-07	< 1.23E-07	4.67E-07
1,4-Dichlorobenzene	00106-46-7	< 1.03E-07	< 5.85E-08	< 8.38E-08	< 1.89E-07	< 1.83E-07	< 6.34E-08	< 1.09E-07	< 9.83E-08	< 1.09E-07	< 4.61E-07	< 2.01E-07	< 4.88E-07
1,4-Dioxane	00123-91-1	< 4.13E-07	< 2.34E-07	< 3.35E-07	< 7.56E-07	< 7.31E-07	< 2.51E-07	< 4.37E-07	< 3.93E-07	< 4.37E-07	< 1.85E-06	< 8.05E-07	< 1.95E-06
1,4-Phenylenediamine	106-50-3	< 2.88E-08	< 8.85E-09	< 8.81E-09	< 2.19E-08	< 1.42E-08	< 8.50E-09	< 1.58E-08	< 7.56E-09	< 7.97E-09	< 7.92E-09	< 1.41E-08	< 3.67E-08
2-Butanone	00078-93-3	3.10E-07	6.78E-08	3.95E-08	1.01E-06	1.26E-06	6.30E-08	1.30E-07	4.71E-07	4.37E-06	< 9.23E-07	1.16E-06	5.91E-06
2-Butene [b]	00126-99-8											1.19E-06	1.19E-06
2-Methylphenol	95-48-7	< 5.47E-09	< 3.20E-09	< 4.31E-09	< 1.30E-08	< 7.42E-09	< 5.06E-09	1.01E-09	< 5.50E-09	< 4.63E-09	< 4.82E-09	< 9.71E-09	8.64E-08
2,4-Dinitrophenol	51-28-5	< 2.50E-08	< 2.07E-08	< 1.86E-08	< 1.01E-07	< 3.17E-08	1.62E-08	< 3.12E-08	< 1.95E-08	< 2.51E-08	< 2.37E-08	< 3.30E-08	< 1.01E-07
2,4-Dinitrotoluene	121-14-2	< 8.00E-09	< 4.05E-09	< 3.79E-09	< 1.68E-08	< 6.45E-09	< 6.45E-09	< 8.01E-09	< 4.94E-09	< 6.00E-09	< 5.86E-09	< 7.81E-09	< 1.92E-08
2,4,5-Trichlorophenol	95-95-4	< 8.12E-09	< 4.17E-09	< 4.72E-09	< 1.72E-08	< 8.07E-09	< 7.28E-09	< 8.01E-09	< 5.59E-09	< 6.11E-09	< 5.75E-09	< 8.57E-09	< 1.92E-08
2,4,6-Trichlorophenol	88-06-2	< 8.42E-09	< 4.11E-09	< 4.94E-09	< 1.76E-08	< 8.45E-09	< 7.37E-09	< 7.91E-09	< 5.64E-09	< 6.44E-09	< 6.10E-09	< 8.74E-09	< 1.90E-08
3,3'-Dichlorobenzidine	91-94-1	< 2.88E-09	< 7.72E-09	< 2.30E-09	< 2.55E-08	< 3.23E-09	< 3.58E-09	< 3.30E-08	< 2.93E-09	< 3.17E-09	< 3.05E-09	< 1.21E-08	< 7.11E-08
3,3'-Dimethoxybenzidine	119-90-4	< 4.89E-09	< 1.21E-08	< 3.46E-09	< 3.84E-08	< 4.71E-09	< 5.06E-08	< 4.29E-08	< 4.11E-09	< 5.29E-09	< 5.09E-09	< 1.56E-08	< 9.02E-08
3,3'-Dimethylbenzidine	119-93-7	< 1.85E-09	< 4.29E-09	< 1.34E-09	< 1.51E-08	< 1.81E-09	< 2.09E-09	< 1.29E-08	< 1.66E-09	< 1.80E-09	< 1.72E-09	< 5.50E-09	< 2.70E-08
3/4-Methylphenol	108-39-4/106-44-5	< 5.12E-09	< 3.00E-09	< 4.05E-09	< 1.23E-08	< 8.97E-09	< 4.84E-09	< 6.69E-09	< 5.24E-09	< 4.42E-09	< 4.51E-09	< 2.08E-08	2.37E-07
4-Aminobiphenyl	92-67-1	< 1.71E-09	< 2.07E-09	< 1.45E-09	< 5.86E-09	< 2.39E-09	< 2.27E-09	< 3.24E-09	< 1.35E-09	< 2.02E-09	< 1.90E-09	< 2.91E-09	< 7.29E-09
4-Methyl-2-Pentanone	00108-10-1	8.26E-07	4.90E-08	8.64E-08	1.85E-07	4.57E-06	< 6.34E-08	1.91E-07	2.76E-08	1.37E-05	< 4.61E-07	< 3.50E-08	3.06E-05
4-Nitrobiphenyl	92-93-3	< 3.47E-09	< 4.68E-09	< 2.90E-09	< 1.27E-08	< 4.78E-09	< 4.23E-09	< 7.30E-09	< 2.53E-09	< 4.04E-09	< 3.80E-09	< 8.07E-09	< 1.64E-08
4-Nitrophenol	100-02-7	< 1.90E-08	< 1.05E-08	< 1.18E-08	< 3.91E-08	< 2.01E-08	9.90E-09	< 2.44E-08	< 1.31E-08	< 1.90E-08	< 1.80E-08	< 2.18E-08	< 5.85E-08
4,4'-Methylenedianiline	101-77-9	< 3.59E-09	< 8.58E-09	< 2.82E-09	< 2.85E-08	< 3.81E-09	< 4.27E-09	< 2.28E-08	< 3.45E-09	< 3.93E-09	< 3.76E-09	< 1.05E-08	< 4.79E-08
4,6-Dinitro-2-methylphenol	534-52-1	< 9.77E-09	< 1.51E-08	< 1.01E-08	< 7.21E-08	< 1.66E-08	< 1.53E-08	< 2.10E-08	< 9.17E-09	< 1.15E-08	< 1.07E-08	< 2.00E-08	< 7.21E-08
Acetaldehyde [b]	00075-07-0		5.12E-07									< 6.04E-07	6.95E-07
Acetonitrile	75-05-8	< 2.06E-07	< 1.17E-07	< 1.68E-07	< 3.78E-07	< 3.66E-07	4.63E-07	< 2.19E-07	< 1.97E-07	< 2.18E-07	< 9.23E-07	< 4.17E-07	< 9.76E-07
Acetophenone	98-86-2	1.70E-08	1.10E-08	1.11E-08	1.45E-08	5.72E-08	2.48E-08	1.61E-07	1.76E-08	2.92E-08	9.02E-09	1.25E-07	1.47E-08
Acrolein	00107-02-8	8.26E-07	< 1.17E-07	< 1.68E-07	< 3.78E-07	< 3.66E-07	< 1.27E-07	< 2.19E-07	2.27E-07	3.00E-07	< 9.23E-07	< 4.50E-07	< 9.76E-07
Acrylonitrile	00107-13-1	1.17E-05	< 1.17E-07	< 1.68E-07	< 3.78E-07	8.00E-07	< 1.27E-07	< 2.19E-07	< 1.97E-07	< 2.18E-07	< 9.23E-07	< 9.43E-07	1.17E-05
Allyl Chloride	00107-05-1	< 2.06E-07	< 1.17E-07	< 1.68E-07	< 3.78E-07	< 3.66E-07	< 1.27E-07	< 2.19E-07	< 1.97E-07	< 2.18E-07	< 9.23E-07	< 4.03E-07	< 9.76E-07
Aniline	62-53-3	< 3.06E-09	< 2.92E-09	< 2.45E-09	5.13E-07	1.66E-07	< 3.10E-09	7.20E-09	< 3.36E-09	4.68E-07	2.23E-07	< 1.08E-07	5.13E-07
a,a,a-Trichlorotoluene	98-07-7	< 1.17E-08	< 2.18E-09	< 2.94E-09	< 6.97E-09	< 4.71E-09	< 3.84E-09	< 4.10E-09	< 3.41E-09	< 3.22E-09	< 3.18E-09	< 4.90E-09	< 1.17E-08
Benzene	00071-43-2	5.24E-07	1.74E-08	2.61E-08	< 1.28E-07	3.77E-08	1.42E-07	5.92E-08	< 1.33E-08	8.87E-08	< 1.56E-08	< 1.18E-07	8.61E-07
Benzidine	92-87-5	< 2.35E-09	1.80E-08	< 2.01E-09	< 1.95E-08	< 2.71E-09	< 3.10E-09	< 1.31E-08	< 2.53E-09	< 2.57E-09	< 2.48E-09	< 7.43E-08	< 2.75E-08
Benzyl Chloride	00100-44-7	< 2.06E-07	< 1.17E-07	< 1.68E-07	< 3.78E-07	< 3.66E-07	< 1.27E-07	< 2.19E-07	< 1.97E-07	< 2.18E-07	< 9.23E-07	< 4.03E-07	< 9.76E-07
Biphenyl	92-52-4	1.24E-09	< 1.48E-09	< 1.56E-09	< 3.75E-09	< 2.65E-09	< 2.40E-09	< 2.64E-09	< 1.63E-09	9.77E-09	< 1.90E-09	< 5.59E-09	5.63E-08
bis(2-Chloroethyl)ether	111-44-4	< 5.24E-08	< 3.74E-09	< 4.12E-09	< 1.50E-08	< 7.10E-09	< 5.14E-09	< 8.11E-09	< 5.55E-09	< 4.53E-09	< 4.84E-09	< 7.48E-09	< 1.87E-08
bis(2-Ethylhexyl)phthalate	117-81-7	0.00E+00	4.60E-08	3.54E-08	2.40E-09	2.20E-08	1.31E-08	4.53E-08	1.31E-07	8.41E-09	8.74E-07	1.06E-07	7.40E-07
Bromoform	00075-25-2	< 1.03E-07	< 5.85E-08	< 8.38E-08	< 1.89E-07	< 1.83E-07	< 6.34E-08	< 1.09E-07	< 9.83E-08	< 1.09E-07	< 4.61E-07	< 1.93E-07	< 4.88E-07
Bromomethane	00074-83-9	< 1.03E-07	< 5.85E-08	< 8.38E-08	< 1.89E-07	< 1.83E-07	5.62E-08	< 1.09E-07	< 9.83E-08	< 1.09E-07	< 4.61E-07	< 2.01E-07	< 4.88E-07

TABLE 6.X-3. UNCONTROLLED EMISSION FACTORS FOR AN INTERNAL MIXER AND ITS DROP MILL

Pollutant Category	CAS #	Cmpd #1 lbs/lb rubber	Cmpd #2 lbs/lb rubber	Cmpd #3 lbs/lb rubber	Cmpd #4 lbs/lb rubber	Cmpd #5 lbs/lb rubber	Cmpd. #6 lbs/lb rubber	Cmpd #7 lbs/lb rubber	Cmpd #8 lbs/lb rubber	Cmpd #9 lbs/lb rubber	Cmpd #10 lbs/lb rubber	Cmpd #11 lbs/lb rubber	Cmpd. #12 lbs/lb rubber	Cmpd #13 lbs/lb rubber
Carbon Disulfide	00075-15-0	< 4.64E-07	< 1.31E-07	< 2.57E-07	1.99E-07	1.84E-07	3.83E-06	< 4.75E-07	2.81E-05	6.66E-07	1.03E-04	8.64E-06	4.52E-05	8.32E-07
Carbon Tetrachloride	00056-23-5	< 4.64E-07	< 1.31E-07	1.19E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
Carbonyl sulfide	00463-58-1	< 2.32E-07	< 1.61E-07	< 3.15E-07	< 1.22E-07	5.34E-07	1.59E-06	< 2.33E-07	2.24E-05	1.15E-06	< 2.44E-07	< 1.23E-07	8.14E-06	5.85E-07
Chlorobenzene	00108-90-7	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
Chloroethane	00075-00-3	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
Chloroform	00067-66-3	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
Chloromethane	00074-87-3	< 4.64E-07	3.12E-08	< 2.57E-07	2.98E-08	< 2.04E-07	3.25E-07	< 4.75E-07	3.74E-08	3.17E-08	9.27E-08	< 9.87E-08	2.31E-08	6.43E-08
Cumene	00098-82-8	< 2.58E-08	< 1.82E-08	< 3.58E-08	< 1.38E-08	< 1.13E-08	< 6.38E-08	8.31E-08	9.65E-08	3.17E-06	8.81E-07	< 1.37E-08	9.05E-08	9.86E-08
Dibenzofuran	132-64-9	< 2.22E-09	2.11E-09	3.42E-08	1.41E-09	< 2.11E-09	3.31E-09	< 3.35E-09	< 1.91E-09	< 2.00E-09	< 2.13E-09	< 1.78E-09	< 1.36E-09	< 1.89E-09
Dimethylaminoazobenzene	60-11-7	< 1.45E-08	< 3.33E-09	< 2.87E-08	< 9.54E-09	< 1.54E-08	< 4.96E-09	< 2.72E-08	< 3.34E-09	< 3.94E-09	< 2.93E-09	< 2.91E-09	< 2.07E-09	< 3.56E-09
Dimethylphthalate	131-11-3	< 2.85E-09	< 2.30E-09	1.57E-08	1.56E-09	< 2.75E-09	< 4.18E-09	< 4.31E-09	< 2.39E-09	< 2.56E-09	< 2.58E-09	< 2.11E-09	< 1.76E-09	< 2.26E-09
Di-n-butylphthalate C	84-74-2	8.00E-08	1.61E-08	5.49E-08	0.00E+00	0.00E+00	1.50E-08	0.00E+00	7.47E-09	1.31E-09	1.47E-08	0.00E+00	5.94E-09	3.34E-07
Epichlorohydrin	00106-89-8	< 9.27E-07	< 2.62E-07	< 5.15E-07	< 1.99E-07	< 4.08E-07	< 9.19E-07	< 9.49E-07	< 2.14E-07	< 2.54E-07	< 9.76E-07	< 1.97E-07	< 1.68E-07	< 3.55E-07
Ethyl Acrylate b														
Ethylbenzene	00100-41-4	< 2.56E-08	1.45E-07	2.13E-07	1.17E-07	1.18E-07	2.43E-07	4.32E-06	1.11E-07	7.36E-08	< 6.74E-08	6.81E-08	5.74E-08	2.08E-07
Hexachlorobenzene	118-74-1	< 1.05E-08	< 6.59E-09	9.29E-09	< 5.11E-09	< 9.73E-09	< 1.16E-08	< 1.62E-08	< 7.05E-09	< 7.51E-09	< 6.75E-09	< 5.44E-09	< 4.71E-09	< 5.82E-09
Hexachlorobutadiene	00087-68-3	< 9.27E-07	< 2.62E-07	< 5.15E-07	< 1.99E-07	< 4.08E-07	< 9.19E-07	< 9.49E-07	< 2.14E-07	< 2.54E-07	< 9.76E-07	< 1.97E-07	< 1.68E-07	< 3.55E-07
Hexachlorocyclopentadiene	77-47-4	< 9.38E-09	< 9.79E-09	< 2.39E-08	< 5.52E-09	< 9.08E-09	< 2.11E-08	< 1.42E-08	< 1.40E-08	< 1.47E-08	< 1.29E-08	< 1.06E-08	< 1.02E-08	< 1.14E-08
Hexachloroethane	87-72-1	< 1.29E-08	< 8.63E-09	< 2.43E-08	< 6.05E-09	< 1.21E-08	< 1.73E-08	< 2.00E-08	< 1.10E-08	< 9.76E-09	< 9.72E-09	< 7.79E-09	< 6.78E-09	< 8.52E-09
Hydroquinone	123-31-9	< 1.07E-08	< 9.15E-09	< 2.13E-08	8.10E-07	2.62E-05	< 1.37E-08	< 1.68E-08	< 9.91E-09	< 9.63E-09	< 8.13E-09	< 6.62E-09	< 6.65E-09	< 7.12E-09
Isophorone	78-59-1	< 4.18E-09	< 6.63E-07	< 8.15E-09	5.93E-08	< 3.91E-09	< 5.48E-09	< 6.61E-09	< 3.17E-09	< 3.06E-09	< 3.27E-09	< 2.63E-09	< 2.11E-09	< 2.86E-09
Methylene bis chloroaniline	101-14-4	< 3.10E-08	< 7.29E-09	< 9.88E-08	< 2.02E-08	< 3.31E-08	< 9.74E-09	< 5.81E-08	< 6.63E-09	< 7.94E-09	< 5.75E-09	< 5.73E-09	< 4.14E-09	< 6.95E-09
Methylene Chloride	00075-09-2	1.10E-06	9.51E-07	3.86E-05	1.86E-06	4.18E-07	2.49E-06	1.14E-06	4.81E-07	6.98E-07	9.04E-06	5.00E-07	6.51E-07	2.22E-07
m,p-Xylenes	00108-38-3/00106-42-3	2.62E-07	5.79E-07	7.11E-07	5.15E-07	4.11E-07	6.24E-07	1.44E-05	4.35E-07	4.82E-07	1.08E-06	1.51E-07	3.65E-07	7.96E-07
Naphthalene	91-20-3	2.50E-08	3.33E-08	3.08E-07	1.73E-08	2.52E-07	5.11E-08	4.32E-08	2.72E-08	2.79E-08	8.18E-09	8.87E-09	3.02E-08	1.14E-08
n-Hexane	00110-54-3	8.24E-06	1.08E-06	1.58E-06	1.56E-06	5.91E-06	1.49E-06	1.08E-05	1.38E-06	3.21E-06	1.66E-06	2.84E-07	4.68E-07	2.05E-06
Nitrobenzene	98-95-3	< 7.80E-09	< 4.80E-09	< 1.40E-08	< 4.12E-09	< 7.21E-09	< 9.74E-09	< 1.23E-08	< 5.79E-09	< 5.63E-09	< 5.80E-09	2.02E-08	< 3.87E-09	< 5.07E-09
n-Nitrosodimethylamine C	62-75-9	0.00E+00	< 7.93E-09	< 4.50E-08	0.00E+00	0.00E+00	< 1.92E-08	0.00E+00	< 1.09E-08	< 9.76E-09	< 1.08E-08	< 8.68E-09	< 6.78E-09	< 9.49E-09
n-Nitrosomorpholine	59-89-2	< 1.15E-08	< 7.81E-09	< 2.10E-08	< 7.30E-09	< 1.08E-08	< 1.69E-08	< 1.80E-08	< 1.00E-08	< 8.88E-09	< 9.47E-09	< 7.60E-09	< 6.21E-09	< 8.30E-09
N,N-Dimethylaniline	121-69-7	< 4.57E-09	< 3.39E-09	< 8.87E-09	< 2.92E-09	< 4.22E-09	< 6.96E-09	< 7.09E-09	< 4.06E-09	< 3.94E-09	< 4.12E-09	< 3.33E-09	< 2.68E-09	< 3.61E-09
o-Anisidine	90-04-0	< 9.19E-09	< 6.01E-09	< 1.72E-08	< 8.15E-09	< 8.50E-09	< 1.25E-08	< 1.44E-08	< 7.35E-09	< 7.13E-09	< 7.44E-09	< 6.05E-09	< 4.89E-09	< 6.47E-09
o-Toluidine	95-53-4	< 4.82E-09	< 3.65E-09	< 1.14E-08	< 3.13E-09	< 4.51E-09	2.23E-07	< 7.47E-09	< 4.84E-09	< 4.25E-09	< 4.61E-09	< 3.71E-09	8.24E-08	< 4.10E-09
o-Xylene	00095-47-6	9.60E-08	3.89E-07	3.20E-07	3.77E-07	1.52E-07	9.51E-07	7.73E-06	1.55E-07	1.66E-07	3.91E-07	1.33E-07	1.68E-07	3.55E-07
Pentachloronitrobenzene	82-68-8	< 2.56E-08	< 2.09E-08	< 4.50E-08	< 1.67E-08	< 2.35E-08	< 3.36E-08	< 3.92E-08	< 2.06E-08	< 2.20E-08	< 1.96E-08	< 1.58E-08	< 1.38E-08	< 1.89E-08
Pentachlorophenol	87-86-5	< 1.86E-08	< 9.21E-09	< 3.66E-08	< 1.43E-08	< 1.71E-08	< 1.87E-08	< 2.85E-08	< 1.13E-08	< 1.21E-08	< 1.09E-08	< 8.82E-09	< 7.57E-09	4.53E-09
Phenol	108-95-2	7.21E-08	4.90E-08	2.77E-07	1.47E-08	7.61E-07	4.43E-08	2.39E-08	3.19E-08	5.95E-08	1.21E-08	9.20E-09	2.72E-08	4.20E-08
Propylene Oxide	00075-56-9	< 8.27E-07	< 2.62E-07	< 5.15E-07	< 1.99E-07	< 4.08E-07	< 9.19E-07	< 9.49E-07	< 2.14E-07	< 2.54E-07	< 9.76E-07	< 1.97E-07	< 1.68E-07	< 3.55E-07
Styrene	00100-42-5	< 2.51E-08	< 1.78E-08	< 3.49E-08	4.44E-08	< 1.10E-08	4.25E-06	< 2.57E-08	4.12E-08	1.83E-07	2.18E-07	5.01E-08	< 1.14E-08	5.40E-08
t-Butyl Methyl Ether	01634-04-4	< 9.27E-07	< 2.62E-07	< 5.15E-07	< 1.99E-07	< 4.08E-07	3.25E-07	< 9.49E-07	< 2.14E-07	< 2.54E-07	< 9.76E-07	< 1.97E-07	< 1.68E-07	< 3.55E-07
Tetrachloroethene	00127-18-4	< 4.64E-07	4.10E-06	9.65E-08	8.59E-08	< 2.04E-07	1.01E-07	< 4.75E-07	7.75E-08	1.13E-07	1.22E-07	2.41E-08	7.88E-08	1.33E-07
Toluene	00108-88-3	1.65E-06	2.06E-06	2.11E-06	5.99E-07	1.73E-06	5.45E-07	1.05E-06	1.32E-06	2.26E-06	1.84E-06	3.92E-07	5.72E-07	2.79E-06
Trichloroethene	00079-01-6	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	2.22E-07
Trifluralin	1582-09-8	< 1.23E-08	< 1.24E-08	< 3.16E-08	< 9.49E-09	< 1.19E-08	< 2.03E-08	< 1.85E-08	< 1.28E-08	< 1.35E-08	< 1.24E-08	< 1.02E-08	< 9.38E-09	< 1.10E-08
Vinyl Acetate	00108-05-4	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	2.35E-06	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
Vinyl Chloride	00075-01-4	< 4.64E-07	< 1.31E-07	< 2.57E-07	< 9.95E-08	< 2.04E-07	< 4.60E-07	< 4.75E-07	< 1.07E-07	< 1.27E-07	< 4.88E-07	< 9.87E-08	< 8.41E-08	< 1.77E-07
Chromium		3.18E-08	8.99E-09	5.91E-08	2.38E-08	2.72E-08	4.26E-09	1.23E-07	4.41E-09	1.53E-09	1.56E-08	ND	6.44E-09	6.58E-09
Nickel		4.82E-08	< 2.79E-08	9.53E-08	4.09E-08	2.47E-08	< 4.26E-08	< 4.91E-08	3.38E-08	< 3.05E-08	2.40E-08	< 2.33E-08	2.15E-08	3.42E-08
Cadmium		9.35E-09	2.40E-08	7.01E-09	2.55E-08	5.05E-09	2.18E-09	3.89E-09	9.09E-10	1.12E-09	4.08E-09	1.27E-09	7.29E-10	5.94E-10
Lead		6.35E-09	3.24E-10	1.25E-08	3.42E-09	2.03E-08	ND	1.03E-08	ND	ND	8.16E-09	5.51E-10	ND	7.10E-09

a Particulate matter collection efficiency of 99.3% was observed on a baghouse control device used on this process.
b Compounds detected only as tentatively identified compounds (TICs) in emissions from indicated rubber compounds. No applicable data for non-detects.
c Blank correction caused a negative value. A "0" is reported for these cases, but is not included in the statistics summary.
d Emission factor is a combination of emissions from productive and nonproductive passes. Emissions from nonproductive mixing are approximately 90% of the total.

TABLE 6.X-4. UNCONTROLLED EMISSION FACTORS FOR A MILL [a]

Pollutant Category	CAS Number	Cmpd. 2 lb/lb-rubber	Cmpd. 3 lb/lb-rubber	Cmpd. 4 lb/lb-rubber	Cmpd. 12 lb/lb-rubber	Mean lb/lb-rubber	Max. lb/lb-rubber
TOTAL VOCs		1.10E-04	1.12E-04	8.40E-05	1.71E-06	7.69E-05	1.12E-04
TOTAL SPECIATED ORGANICS		< 3.47E-05	< 4.39E-05	< 5.08E-05	< 9.61E-07	< 3.26E-05	< 5.08E-05
TOTAL HAPs		< 9.04E-06	< 2.31E-05	< 1.75E-05	< 1.49E-07	< 1.24E-05	< 2.31E-05
Individual HAPs:							
1,1,1-Trichloroethane	00071-55-6	3.32E-08	< 7.04E-08	< 6.63E-08	< 3.46E-09	< 4.33E-08	< 7.04E-08
1,2-Dibromo-3-chloropropane	96-12-8	< 9.32E-09	< 2.89E-08	< 8.82E-09	< 7.68E-11	< 1.18E-08	< 2.89E-08
1,2,4-Trichlorobenzene	120-82-1	< 5.25E-09	< 1.39E-08	< 4.33E-09	< 4.19E-11	< 5.89E-09	< 1.39E-08
1,3-Butadiene	106-99-0	< 2.08E-08	< 9.90E-09	< 9.33E-09	< 9.74E-11	< 1.00E-08	< 2.08E-08
1,4-Dichlorobenzene	106-46-7	< 4.07E-09	< 1.26E-08	< 3.84E-09	< 3.40E-11	< 5.13E-09	< 1.26E-08
2-Butanone	00078-93-3	8.12E-07	7.61E-08	4.06E-07	< 6.93E-09	< 3.25E-07	8.12E-07
2-Methylphenol	95-48-7	1.99E-08	< 1.87E-08	< 5.73E-09	2.31E-11	< 1.11E-08	1.99E-08
2,4-Dinitrophenol	105-67-9	< 3.06E-08	< 5.81E-08	< 2.01E-08	< 2.64E-10	< 2.73E-08	< 5.81E-08
2,4-Dinitrotoluene	121-14-2	< 7.74E-09	< 1.47E-08	< 5.08E-09	< 6.55E-11	< 6.89E-09	< 1.47E-08
2,4,5-Trichlorophenol	95-95-4	< 8.76E-09	< 1.66E-08	< 5.73E-09	< 6.26E-11	< 7.79E-09	< 1.66E-08
2,4,6-Trichlorophenol	88-06-2	< 8.87E-09	< 1.68E-08	< 5.93E-09	< 6.58E-11	< 7.88E-09	< 1.68E-08
3,3'-Dimethoxybenzidine	119-90-4	< 3.79E-09	< 1.08E-08	< 3.29E-09	< 7.37E-11	< 4.48E-09	< 1.08E-08
3,3'-Dimethylbenzidine	119-93-7	< 1.58E-09	< 4.49E-09	< 1.35E-09	< 2.43E-11	< 1.86E-09	< 4.49E-09
3/4-Methylphenol	108-39-4/106-44-5	5.58E-08	< 1.80E-08	1.13E-08	< 3.40E-11	< 2.13E-08	< 5.58E-08
4-Aminobiphenyl	92-67-1	< 2.49E-09	< 4.34E-09	< 1.54E-09	< 7.77E-11	< 2.11E-09	< 4.34E-09
4-Methyl-2-Pentanone	00108-10-1	1.57E-07	1.14E-06	9.12E-06	< 3.46E-09	< 2.61E-06	9.12E-06
4-Nitrobiphenyl	92-93-3	< 4.69E-09	< 8.08E-09	< 2.84E-09	< 4.32E-11	< 3.91E-09	< 8.08E-09
4-Nitrophenol	100-02-7	< 2.05E-08	< 3.89E-08	< 1.35E-08	< 2.00E-10	< 1.83E-08	< 3.89E-08
4,4'-Methylenedianiline	101-77-9	< 3.22E-09	< 9.13E-09	< 2.74E-09	< 5.31E-11	< 3.79E-09	< 9.13E-09
Acetonitrile	01722-09-4	< 2.95E-07	< 1.41E-07	< 1.33E-07	< 6.93E-09	< 1.44E-07	< 2.95E-07
Acetophenone	98-86-2	< 5.08E-09	2.80E-07	2.84E-08	3.06E-10	< 7.83E-08	2.80E-07
Acrolein	107-02-8	< 2.95E-07	< 1.41E-07	< 1.33E-07	< 6.93E-09	< 1.44E-07	< 2.95E-07
Acrylonitrile	00107-13-1	1.29E-07	< 1.41E-07	< 1.33E-07	< 6.93E-09	< 1.02E-07	< 1.41E-07
Allyl Chloride	00107-05-1	< 2.95E-07	< 1.41E-07	< 1.33E-07	< 6.93E-09	< 1.44E-07	< 2.95E-07
Aniline	62-53-3	7.50E-08	5.32E-06	3.48E-06	< 2.37E-10	< 2.22E-06	5.32E-06
Benzene	71-43-2	5.99E-08	1.76E-08	5.39E-08	3.47E-10	3.29E-08	5.99E-08
Benzidine	92-87-5	< 2.32E-09	< 6.58E-09	< 1.99E-09	< 3.19E-11	< 2.73E-09	< 6.58E-09
Benzyl Chloride	100-44-7	< 3.22E-09	< 9.88E-09	< 3.04E-09	< 6.93E-09	< 5.77E-09	< 9.88E-09
Biphenyl	92-52-4	3.55E-08	3.65E-08	4.16E-08	9.50E-11	2.84E-08	4.16E-08
bis(2-Ethylhexyl)phthalate	117-81-7	3.25E-08	8.63E-07	1.09E-07	1.41E-09	2.51E-07	8.63E-07
Bromoform	00075-25-2	< 1.48E-07	< 7.04E-08	< 6.63E-08	< 3.46E-09	< 7.19E-08	< 1.48E-07
Carbon Disulfide	00075-15-0	5.90E-07	9.67E-08	2.49E-07	1.76E-07	2.78E-07	5.90E-07
Carbon Tetrachloride	00056-23-5	< 1.48E-07	< 7.04E-08	< 6.63E-08	< 3.46E-09	< 7.19E-08	< 1.48E-07
Carbonyl Sulfide	463-58-1	8.38E-07	< 4.31E-07	< 2.40E-07	< 8.49E-10	< 3.77E-07	8.38E-07
Chlorobenzene	00108-90-7	< 1.48E-07	< 7.04E-08	< 6.63E-08	< 3.46E-09	< 7.19E-08	< 1.48E-07
Chloroform	00067-66-3	< 1.48E-07	< 7.04E-08	< 6.63E-08	< 3.46E-09	< 7.19E-08	< 1.48E-07
Cumene	98-82-8	< 2.37E-09	1.47E-08	1.44E-09	2.48E-11	< 4.63E-09	1.47E-08
Dibenzofuran	132-64-9	1.73E-08	< 4.19E-09	1.06E-08	< 3.53E-11	< 8.02E-09	1.73E-08
Dimethylphthalate	131-11-3	< 2.66E-09	7.21E-08	< 1.74E-09	< 2.08E-11	< 1.91E-08	7.21E-08
Di-n-butylphthalate	84-74-2	2.49E-09	1.37E-07	1.70E-07	2.22E-10	7.74E-08	1.70E-07
Epichlorohydrin	00106-89-8	< 2.95E-07	< 1.41E-07	< 1.33E-07	< 6.93E-09	< 1.44E-07	< 2.95E-07
Ethylbenzene	100-41-4	1.12E-07	< 9.71E-09	7.78E-08	2.61E-10	< 5.00E-08	1.12E-07
Hexachlorobenzene	118-74-1	< 7.46E-09	< 1.29E-08	< 4.58E-09	< 5.71E-11	< 6.24E-09	< 1.29E-08
Hexachlorobutadiene	87-68-3	< 8.36E-09	< 2.20E-08	< 6.88E-09	< 7.14E-11	< 9.33E-09	< 2.20E-08
Hexachlorocyclopentadiene	77-47-4	< 1.34E-08	< 2.54E-08	< 8.82E-09	< 8.55E-11	< 1.19E-08	< 2.54E-08
Hexachloroethane	67-72-1	< 8.93E-09	< 2.77E-08	< 8.42E-09	< 8.03E-11	< 1.13E-08	< 2.77E-08
Hydroquinone	123-31-9	< 7.51E-09	< 1.98E-08	< 6.18E-09	< 8.20E-11	< 8.38E-09	< 1.98E-08
Isophorone	78-59-1	6.50E-09	1.12E-05	3.07E-07	< 2.43E-11	< 2.88E-06	1.12E-05
Methylene Chloride	00075-09-2	1.01E-06	4.13E-07	6.80E-07	< 6.03E-08	< 5.42E-07	1.01E-06
m-Xylene + p-Xylene	108-38-3/106-42-3	6.11E-07	3.50E-08	2.56E-07	1.14E-09	2.26E-07	6.11E-07
Naphthalene	91-20-3	1.30E-07	3.73E-07	1.68E-07	2.87E-10	1.67E-07	3.73E-07

TABLE 6.X-4. UNCONTROLLED EMISSION FACTORS FOR A MILL [a]

Pollutant Category	CAS Number	Cmpd. 2 lb/lb-rubber	Cmpd. 3 lb/lb-rubber	Cmpd. 4 lb/lb-rubber	Cmpd. 12 lb/lb-rubber	Mean lb/lb-rubber	Max. lb/lb-rubber
n-Hexane	110-54-3	7.16E-07	1.21E-07	2.48E-07	2.94E-08	2.79E-07	7.16E-07
Nitrobenzene	98-95-3	< 5.37E-09	< 1.41E-08	< 4.38E-09	< 4.35E-11	< 5.97E-09	< 1.41E-08
n-Nitrosodimethylamine	62-75-9	< 9.94E-09	< 3.08E-08	< 9.42E-09	< 7.20E-11	< 1.26E-08	< 3.08E-08
n-Nitrosomorpholine	59-89-2	< 8.70E-09	< 2.69E-08	< 8.22E-09	< 7.18E-11	< 1.10E-08	< 2.69E-08
o-Anisidine	90-04-0	< 6.89E-09	< 1.81E-08	< 5.68E-09	< 5.59E-11	< 7.68E-09	< 1.81E-08
o-Toluidine	95-53-4	< 4.29E-09	< 1.32E-08	< 4.04E-09	< 3.41E-11	< 5.38E-09	< 1.32E-08
p-Xylene	95-47-6	3.46E-07	< 9.71E-09	1.37E-07	< 1.89E-10	< 1.23E-07	3.46E-07
Pentachloronitrobenzene	82-68-8	< 2.17E-08	< 3.74E-08	< 1.33E-08	< 1.88E-10	< 1.81E-08	< 3.74E-08
Pentachlorophenol	87-86-5	< 1.21E-08	< 2.08E-08	< 7.37E-09	< 7.82E-11	< 1.01E-08	< 2.08E-08
Phenol	108-95-2	4.65E-08	< 1.41E-08	< 4.28E-09	6.99E-10	< 1.64E-08	4.65E-08
Propylene Oxide	C0075-56-9	< 2.95E-07	< 1.41E-07	< 1.33E-07	< 6.93E-09	< 1.44E-07	< 2.95E-07
Styrene	100-42-5	1.55E-07	< 9.53E-09	< 8.98E-09	< 9.38E-11	< 4.34E-08	1.55E-07
Tetrachloroethene	C0127-18-4	8.39E-08	< 7.04E-08	< 6.63E-08	< 3.46E-09	< 5.60E-08	8.39E-08
Toluene	108-88-3	3.28E-07	3.71E-07	1.95E-07	3.86E-08	2.33E-07	3.71E-07
Trifluralin	1582-09-8	< 1.28E-08	< 2.44E-08	< 8.47E-09	< 1.18E-10	< 1.15E-08	< 2.44E-08
Vinyl Acetate	C0108-05-4	< 1.46E-07	< 7.04E-08	< 6.63E-08	< 3.46E-09	< 7.19E-08	< 1.48E-07
Vinyl Chloride	C0075-01-4	< 1.46E-07	< 7.04E-08	< 6.63E-08	< 3.46E-09	< 7.19E-08	< 1.48E-07

a To determine emission factors for compounds not listed in this table, multiply table 6.X-3 VOC data by 0.73, speciated organics by 0.33, and HAPs by 0.26.

TABLE 6.X-5. UNCONTROLLED EMISSION FACTORS FOR AN EXTRUDER AND ITS COOLING CONVEYOR [a]

Pollutant Category	CAS #	Cmpd.#4 lb/lb-rubber	Cmpd. #6 lb/lb-rubber	Cmpd #9 lb/lb-rubber	Cmpd. #22 lb/lb-rubber	Mean lb/lb-rubber	Max. lb/lb-rubber
TOTAL VOC		8.35E-06	1.76E-05	1.73E-05	1.24E-05	1.39E-05	1.76E-05
TOTAL SPECIATED ORGANICS		< 1.50E-05	< 5.87E-05	< 2.77E-05	< 1.25E-05	< 2.85E-05	< 5.87E-05
TOTAL METAL HAPs		4.63E-07	1.05E-07	1.95E-07	7.57E-07	3.80E-07	7.57E-07
TOTAL ORGANIC HAPs		< 1.32E-05	< 3.70E-05	< 1.89E-05	< 9.14E-06	< 1.96E-05	< 3.70E-05
TOTAL PARTICULATE MATTER (PM)		2.38E-05	1.28E-06	5.75E-06	2.66E-05	1.44E-05	2.66E-05
TOTAL HAPs		< 1.37E-05	< 3.71E-05	< 1.91E-05	< 9.90E-06	< 2.00E-05	< 3.71E-05
Individual HAPs:							
1,1,1-Trichloroethane	71-55-6	< 8.47E-08	< 3.31E-08	< 1.08E-07	< 6.56E-08	< 8.77E-08	< 1.08E-07
1,2-Dibromo-3-Chloropropane	96-12-8	< 2.38E-07	< 2.00E-07	< 1.66E-07	< 1.32E-07	< 1.84E-07	< 2.38E-07
1,2,4-Trichlorobenzene	120-82-1	< 2.51E-08	< 6.79E-09	< 1.66E-08	< 8.57E-09	< 1.43E-08	< 2.51E-08
1,3-Butadiene	00106-99-0	< 8.92E-08	5.06E-07	< 6.01E-08	< 7.83E-08	< 1.83E-07	5.06E-07
1,4-Dichlorobenzene	106-46-7	< 1.20E-08	< 5.96E-09	< 1.36E-08	1.97E-09	< 8.36E-09	< 1.36E-08
2-Butanone	78-93-3	1.34E-07	1.17E-07	1.18E-07	9.29E-08	1.15E-07	1.34E-07
2-Chloroacetophenone	532-27-4	< 1.24E-08	< 3.54E-09	< 5.55E-09	3.70E-09	< 6.29E-09	< 1.24E-08
2-Chloronaphthalene	1335-88-2	< 1.29E-08	< 3.28E-09	< 6.43E-09	1.07E-09	< 5.93E-09	< 1.29E-08
2,4-Dinitrophenol	5-12-85	< 1.48E-07	< 3.30E-08	< 9.51E-08	< 6.64E-08	< 8.57E-08	< 1.48E-07
2,4-Dinitrotoluene	121-14-2	< 3.65E-08	< 8.85E-09	< 2.42E-08	< 1.26E-08	< 2.05E-08	< 3.65E-08
2,4,5-Trichlorophenol	95-95-4	< 4.37E-08	< 9.62E-09	< 2.82E-08	< 1.59E-08	< 2.44E-08	< 4.37E-08
2,4,6-Trichlorophenol	88-06-2	< 4.15E-08	< 9.79E-09	< 2.72E-08	< 1.57E-08	< 2.36E-08	< 4.15E-08
3,3'-Dimethoxybenzidine	119-90-4	< 5.49E-08	< 3.00E-08	< 4.69E-08	< 4.19E-08	< 4.34E-08	< 5.49E-08
3,3'-Dimethylbenzidine	119-93-7	< 2.34E-08	< 8.25E-09	< 1.74E-08	< 1.45E-08	< 1.59E-08	< 2.34E-08
3/4-Methylphenol	108-39-4/106-44-5	< 2.24E-08	< 8.85E-09	< 1.87E-08	2.87E-09	< 1.32E-08	< 2.24E-08
4-Aminobiphenyl	92-67-1	< 1.76E-08	< 4.22E-09	< 1.18E-08	< 6.53E-09	< 1.01E-08	< 1.76E-08
4-Methyl-2-Pentanone	108-10-1	5.54E-06	2.66E-06	2.85E-07	1.61E-06	2.52E-06	5.54E-06
4-Nitrobiphenyl	92-93-3	< 3.61E-08	< 9.26E-09	< 2.61E-08	< 1.35E-08	< 2.12E-08	< 3.61E-08
4-Nitrophenol	100-02-7	< 1.11E-07	< 2.80E-08	< 7.22E-08	< 6.39E-08	< 6.87E-08	< 1.11E-07
4,4'-Methylenedianiline	107-77-9	< 4.81E-08	< 1.63E-08	< 3.55E-08	< 3.08E-08	< 3.27E-08	< 4.81E-08
Acetonitrile	75-05-8	< 2.38E-07	< 3.19E-07	< 1.66E-07	< 1.32E-07	< 2.14E-07	< 3.19E-07
Acetophenone	98-86-2	2.03E-08	3.04E-06	8.18E-06	1.61E-08	2.81E-06	8.18E-06
Acrolein	107-02-8	< 3.33E-07	< 3.10E-07	< 1.75E-07	< 1.66E-07	< 2.46E-07	< 3.33E-07
Acrylonitrile	107-13-1	< 2.38E-07	< 2.00E-07	< 1.66E-07	< 1.32E-07	< 1.84E-07	< 2.38E-07
Allyl Chloride	107-05-1	< 2.29E-07	< 2.00E-07	< 4.20E-07	< 1.32E-07	< 2.48E-07	< 4.20E-07
Aniline	62-53-3	4.66E-07	1.87E-07	< 8.72E-09	2.21E-07	< 2.21E-07	4.66E-07
Benzene	00071-43-2	< 4.46E-08	2.69E-07	7.51E-08	1.22E-07	< 1.28E-07	2.69E-07
Benzidine	92-87-5	< 2.73E-08	< 9.87E-09	< 2.08E-08	< 1.71E-08	< 1.88E-08	< 2.73E-08
Benzyl Chloride	100-44-7	< 2.38E-07	< 1.83E-07	< 1.66E-07	< 1.32E-07	< 1.80E-07	< 2.38E-07
Biphenyl	92-52-4	4.61E-09	1.42E-08	3.27E-09	4.42E-09	< 6.62E-09	1.42E-08
bis(2-Ethylhexyl)phthalate	117-81-7	9.28E-08	1.00E-07	6.70E-08	1.48E-07	1.02E-07	1.48E-07
Bromoform	75-25-2	< 1.19E-07	< 1.00E-07	< 9.02E-08	< 6.60E-08	< 9.38E-08	< 1.19E-07
Carbon Disulfide	75-15-0	1.09E-07	< 2.66E-07	9.60E-08	1.16E-07	< 1.47E-07	< 2.66E-07
Carbon Tetrachloride	56-23-5	< 1.19E-07	< 1.00E-07	< 9.02E-08	< 6.60E-08	< 9.38E-08	< 1.19E-07
Carbonyl Sulfide	463-58-1	< 1.33E-07	< 2.46E-07	< 1.11E-07	< 8.77E-08	< 1.44E-07	< 2.46E-07
Chlorobenzene	108-90-7	< 1.19E-07	< 1.00E-07	< 9.02E-08	< 6.60E-08	< 9.38E-08	< 1.19E-07
Chloroform	67-66-3	< 1.19E-07	< 1.00E-07	< 8.77E-08	< 6.89E-08	< 9.39E-08	< 1.19E-07
Chloromethane	74-87-3	< 7.06E-08	6.64E-08	< 6.11E-08	1.83E-07	< 9.52E-08	1.83E-07
Cumene	98-82-8	6.35E-09	1.11E-07	1.48E-06	3.59E-08	4.09E-07	1.48E-06
Dibenzofuran	38178-38-0	< 5.50E-09	2.81E-09	< 5.22E-09	2.58E-09	< 4.03E-09	< 5.50E-09
Dimethylphthalate	131-11-13	< 1.16E-08	3.83E-09	< 6.58E-09	< 4.15E-09	< 6.55E-09	< 1.16E-08
Di-n-butylphthalate	84-74-2	8.19E-08	1.96E-07	3.65E-07	< 7.49E-08	< 1.79E-07	3.65E-07
Epichlorohydrin	106-89-8	< 2.38E-07	< 1.83E-07	< 1.66E-07	< 1.32E-07	< 1.80E-07	< 2.38E-07
Ethylbenzene	00100-41-4	< 3.30E-08	8.10E-08	3.03E-08	< 3.57E-07	< 1.25E-07	< 3.57E-07
Hexachlorobenzene	118-74-1	< 3.43E-08	< 9.35E-09	< 2.37E-08	< 1.23E-08	< 1.99E-08	< 3.43E-08
Hexachlorobutadiene	87-68-3	< 4.22E-08	< 1.04E-08	7.17E-08	< 1.46E-08	< 3.47E-08	7.17E-08
Hexachlorocyclopentadiene	77-47-4	< 4.71E-08	< 1.08E-08	< 3.08E-08	< 1.50E-08	< 2.59E-08	< 4.71E-08
Hexachloroethane	67-72-1	< 4.14E-08	< 1.22E-08	< 2.87E-08	< 1.56E-08	< 2.45E-08	< 4.14E-08
Hydroquinone	123-31-9	< 4.06E-08	< 9.51E-09	< 2.58E-08	< 1.69E-08	< 2.32E-08	< 4.06E-08

TABLE 6.X-5. UNCONTROLLED EMISSION FACTORS FOR AN EXTRUDER AND ITS COOLING CONVEYOR [a]

Pollutant Category	CAS #	Cmpd.#4 lb/lb-rubber	Cmpd. #6 lb/lb-rubber	Cmpd #9 lb/lb-rubber	Cmpd. #22 lb/lb-rubber	Mean lb/lb-rubber	Max. lb/lb-rubber
Isophorone	78-59-1	2.85E-08	< 3.78E-09	< 7.99E-09	6.35E-08	< 2.59E-08	6.35E-08
Methylene Chloride	79-09-2	1.60E-06	1.32E-05	2.44E-06	< 8.18E-08	< 4.32E-06	1.32E-05
m-Xylene + p-Xylene	00108-38-3/00106-42-3	< 7.65E-08	3.32E-07	1.53E-07	6.00E-08	< 1.55E-07	3.32E-07
Naphthalene	91-20-3	6.66E-08	1.77E-07	7.81E-07	6.04E-08	2.71E-07	7.81E-07
n-Hexane	110-54-3	1.02E-07	3.94E-07	8.38E-07	2.45E-06	9.46E-07	2.45E-06
Nitrobenzene	98-95-3	< 2.20E-08	< 6.81E-09	< 1.52E-08	< 8.14E-09	< 1.30E-08	< 2.20E-08
n-Nitrosodimethylamine	62-75-9	< 8.72E-08	< 1.79E-08	< 5.65E-08	< 2.06E-08	< 4.56E-08	< 8.72E-08
n-Nitrosomorpholine	59-89-2	< 3.77E-08	< 9.86E-09	< 2.54E-08	< 1.43E-08	< 2.18E-08	< 3.77E-08
o-Anisidine	90-04-0	< 3.34E-08	< 1.04E-08	< 2.30E-08	< 1.17E-08	< 1.96E-08	< 3.34E-08
o-Toluidine	95-53-4	< 1.84E-08	< 1.18E-07	< 1.26E-08	< 6.63E-09	< 3.89E-08	< 1.18E-07
o-Xylene	00095-47-6	4.14E-08	2.58E-07	7.55E-08	4.77E-07	2.13E-07	4.77E-07
Pentachloronitrobenzene	82-68-8	< 1.05E-07	< 2.72E-08	< 7.17E-08	< 4.10E-08	< 6.13E-08	< 1.05E-07
Pentachlorophenol	87-86-5	< 3.37E-08	< 1.89E-08	< 5.47E-08	< 3.85E-08	< 4.89E-08	< 8.37E-08
Phenol	108-95-2	1.20E-07	1.42E-07	1.73E-07	1.17E-08	1.12E-07	1.73E-07
Propylene Oxide	75-56-9	< 2.38E-07	< 1.85E-06	< 2.36E-07	< 5.04E-07	< 7.08E-07	< 1.85E-06
Styrene	00100-42-5	< 1.07E-08	7.25E-07	< 2.38E-08	< 3.93E-08	< 2.00E-07	7.25E-07
Tetrachloroethene	127-18-4	< 1.07E-07	< 9.47E-08	< 7.39E-08	< 2.02E-07	< 1.20E-07	< 2.02E-07
Toluene	00108-88-3	< 1.15E-07	9.26E-06	< 9.02E-08	< 7.09E-08	< 2.38E-06	9.26E-06
Trifluralin	1582-09-8	< 6.39E-08	< 1.45E-08	< 4.18E-08	< 1.95E-08	< 3.49E-08	< 6.39E-08
Vinyl Acetate	108-05-4	< 1.19E-07	< 1.00E-07	< 1.05E-07	< 6.60E-08	< 9.74E-08	< 1.19E-07
Vinyl Chloride	75-01-4	< 1.19E-07	< 1.00E-07	< 8.07E-08	< 6.34E-08	< 9.08E-08	< 1.19E-07
Chromium		2.45E-07	2.25E-08	7.81E-08	2.54E-07	1.50E-07	2.54E-07
Cobalt		1.90E-08	9.92E-09	1.51E-08	1.04E-08	1.36E-08	1.90E-08
Nickel		1.99E-07	7.24E-08	1.02E-07	4.93E-07	2.16E-07	4.93E-07

a To determine emission factors for compounds not listed in this table, multiply table 6.X-3 VOC data by 0.13, speciated organics by 0.29, metal HAPs by 6.62, organic HAPs by 0.41, PM by 0.04 and HAPs by 0.42,.

TABLE 6.X-6. UNCONTROLLED EMISSION FACTORS FOR A CALENDER [a,b]

Pollutant Category	CAS Number	Cmpd. 2 lb/lb rubber	Cmpd. 12 lb/lb rubber	Mean lb/lb rubber	Max. lb/lb rubber
TOTAL VOCs		5.31E-05	4.67E-06	2.89E-05	5.31E-05
TOTAL SPECIATED ORGANICS		< 7.34E-05	< 4.49E-06	< 3.89E-05	< 7.34E-05
TOTAL HAPs		**< 1.34E-05**	**< 3.49E-06**	**< 8.43E-06**	**< 1.34E-05**
Individual HAPs:					
1,1,1-Trichloroethane	71-55-6	< 5.27E-08	< 2.12E-08	< 3.70E-08	< 5.27E-08
1,2-Dibromo-3-Chloropropane	00096-12-8	< 1.56E-07	< 4.24E-08	< 9.94E-08	< 1.56E-07
1,2-Dichloroethane	107-06-2	1.22E-07	< 2.12E-08	< 7.18E-08	1.22E-07
1,2,4-Trichlorobenzene	120-82-1	< 2.62E-09	< 3.47E-11	< 1.33E-09	< 2.62E-09
1,3-Butadiene	106-99-0	< 1.10E-08	< 1.19E-10	< 5.56E-09	< 1.10E-08
1,4-Dichlorobenzene	106-46-7	< 5.54E-08	< 2.12E-08	< 3.83E-08	< 5.54E-08
2-Butanone	78-93-3	< 2.61E-07	< 4.24E-08	< 1.52E-07	< 2.61E-07
2-Methylphenol	95-48-7	< 1.91E-09	1.86E-10	< 1.05E-09	< 1.91E-09
2,4-Dinitrophenol	51-28-5	< 1.01E-08	< 1.87E-10	< 5.16E-09	< 1.01E-08
2,4-Dinitrotoluene	121-14-2	< 3.19E-09	< 4.96E-11	< 1.62E-09	< 3.19E-09
2,4,5-Trichlorophenol	95-95-4	< 3.41E-09	< 4.19E-11	< 1.73E-09	< 3.41E-09
2,4,6-Trichlorophenol	88-06-2	< 3.60E-09	< 4.32E-11	< 1.82E-09	< 3.60E-09
3,3'-Dimethoxybenzidine	119-90-4	< 6.00E-09	< 3.54E-11	< 3.02E-09	< 6.00E-09
3,3'-Dimethylbenzidine	119-93-7	< 2.18E-09	< 1.15E-11	< 1.09E-09	< 2.18E-09
3/4-Methylphenol	108-39-4/106-44-5	< 1.76E-09	1.26E-10	< 9.41E-10	< 1.76E-09
4-Aminobiphenyl	92-67-1	< 1.94E-09	1.27E-09	< 1.61E-09	< 1.94E-09
4-Methyl-2-pentanone	108-10-1	< 6.42E-07	< 2.12E-08	< 3.31E-07	< 6.42E-07
4-Nitrobiphenyl	92-93-3	< 3.19E-09	< 2.86E-11	< 1.61E-09	< 3.19E-09
4-Nitrophenol	100-02-7	< 5.10E-09	< 1.40E-10	< 2.62E-09	< 5.10E-09
4,4'-Methylenedianiline	101-77-9	< 3.77E-09	< 2.44E-11	< 1.90E-09	< 3.77E-09
Acetonitrile	01722-09-4	< 1.56E-07	< 4.24E-08	< 9.94E-08	< 1.56E-07
Acetophenone	98-86-2	4.94E-07	1.17E-09	2.48E-07	4.94E-07
Acrolein	107-02-8	< 1.29E-07	< 4.24E-08	< 8.56E-08	< 1.29E-07
Acrylonitrile	00107-13-1	< 1.56E-07	< 4.24E-08	< 9.94E-08	< 1.56E-07
Allyl Chloride	00107-05-1	< 1.56E-07	< 4.24E-08	< 9.94E-08	< 1.56E-07
Aniline	62-53-3	< 9.44E-08	9.64E-09	< 5.20E-08	< 9.44E-08
Benzene	71-43-2	4.54E-08	1.33E-09	2.34E-08	4.54E-08
Benzidine	92-87-5	< 1.96E-09	< 1.27E-11	< 9.85E-10	< 1.96E-09
Benzyl Chloride	00100-44-7	< 1.56E-07	< 4.24E-08	< 9.94E-08	< 1.56E-07
Biphenyl	92-52-4	1.78E-08	8.88E-10	9.33E-09	1.78E-08
bis(2-Ethylhexyl)phthalate	117-81-7	7.34E-07	9.35E-10	3.68E-07	7.34E-07
Bromoform	00075-25-2	< 7.82E-08	< 2.12E-08	< 4.97E-08	< 7.82E-08
Carbon Disulfide	75-15-0	2.41E-06	2.61E-06	2.51E-06	2.61E-06
Carbon Tetrachloride	00056-23-5	< 7.82E-08	< 2.12E-08	< 4.97E-08	< 7.82E-08
Carbonyl Sulfide	463-58-1	< 9.58E-08	4.19E-08	< 6.88E-08	< 9.58E-08
Chlorobenzene	00108-90-7	< 7.82E-08	< 2.12E-08	< 4.97E-08	< 7.82E-08
Chloroform	00067-66-3	< 7.82E-08	< 2.12E-08	< 4.97E-08	< 7.82E-08
Chloromethane	74-87-3	2.18E-08	< 2.12E-08	< 2.15E-08	2.18E-08

TABLE 6.X-6. UNCONTROLLED EMISSION FACTORS FOR A CALENDER [a,b]

Pollutant Category	CAS Number	Cmpd. 2 lb/lb rubber	Cmpd. 12 lb/lb rubber	Mean lb/lb rubber	Max. lb/lb rubber
Cumene	98-82-8	6.31E-08	7.05E-10	3.19E-08	6.31E-08
Dibenzofuran	132-64-9	< 9.38E-10	< 1.97E-10	< 5.67E-10	< 9.38E-10
Di-n-butylphthalate	84-74-2	0.00E+00	2.62E-10	2.62E-10	2.62E-10
Epichlorohydrin	00106-89-8	< 1.56E-07	< 4.24E-08	< 9.94E-08	< 1.56E-07
Ethylbenzene	100-41-4	1.57E-07	2.06E-09	7.94E-08	1.57E-07
Hexachlorobenzene	118-74-1	< 2.78E-09	< 3.45E-11	< 1.41E-09	< 2.78E-09
Hexachlorobutadiene	00087-68-3	< 1.56E-07	< 4.24E-08	< 9.94E-08	< 1.56E-07
Hexachlorocyclopentadiene	77-47-4	< 5.80E-09	< 5.55E-11	< 2.93E-09	< 5.80E-09
Hexachloroethane	67-72-1	< 3.48E-09	< 6.47E-11	< 1.77E-09	< 3.48E-09
Hydroquinone	123-31-9	< 3.95E-08	< 6.47E-11	< 1.98E-08	< 3.95E-08
Isophorone	78-59-1	1.30E-07	< 1.98E-11	< 6.51E-08	1.30E-07
Methylene Chloride	75-09-2	< 7.96E-08	< 3.55E-08	< 5.75E-08	< 7.96E-08
m-Xylene + p-Xylene	108-38-3/106-42-3	2.86E-07	6.09E-09	1.46E-07	2.86E-07
Naphthalene	91-20-3	1.21E-07	2.21E-09	6.15E-08	1.21E-07
n-Hexane	110-54-3	5.59E-07	3.83E-08	2.99E-07	5.59E-07
Nitrobenzene	98-95-3	< 2.38E-09	< 3.55E-11	< 1.21E-09	< 2.38E-09
n-Nitrosodimethylamine	62-75-9	< 7.41E-09	< 5.57E-11	< 3.74E-09	< 7.41E-09
n-Nitrosomorpholine	59-89-2	< 6.51E-09	< 5.94E-11	< 3.28E-09	< 6.51E-09
o-Anisidine	90-04-0	< 5.78E-09	< 4.74E-11	< 2.91E-09	< 5.78E-09
o-Toluidine	95-53-4	< 3.22E-09	< 2.84E-11	< 1.63E-09	< 3.22E-09
o-Xylene	95-47-6	2.84E-07	2.45E-09	1.43E-07	2.84E-07
Pentachloronitrobenzene	82-68-8	< 2.03E-08	< 1.22E-10	< 1.02E-08	< 2.03E-08
Pentachlorophenol	87-86-5	< 3.51E-09	< 4.63E-11	< 1.78E-09	< 3.51E-09
Phenol	108-95-2	1.49E-07	< 2.72E-11	< 7.44E-08	1.49E-07
Propylene Oxide	00075-56-9	< 1.56E-07	< 4.24E-08	< 9.94E-08	< 1.56E-07
Styrene	100-42-5	4.86E-07	7.73E-10	2.43E-07	4.86E-07
Tetrachloroethene	00127-18-4	< 7.82E-08	< 2.12E-08	< 4.97E-08	< 7.82E-08
Toluene	108-88-3	3.92E-06	5.73E-08	1.99E-06	3.92E-06
Trifluralin	1582-09-8	< 1.01E-08	< 8.80E-11	< 5.11E-09	< 1.01E-08
Vinyl Acetate	00108-05-4	< 7.82E-08	< 2.12E-08	< 4.97E-08	< 7.82E-08
Vinyl Chloride	00075-01-4	< 7.82E-08	< 2.12E-08	< 4.97E-08	< 7.82E-08

a Warm up mill for the calender is not included, see table 6.X-4 for its emission factor.

b To determine emission factors for compounds not listed in this table, multiply table 6.X-3 VOC data by 0.27, speciated organics by 0.40, and HAPs by 0.18.

TABLE 6.X-7. UNCONTROLLED EMISSION FACTORS FOR A TIRE CURING PRESS [a]

Pollutant Category	CAS Numbers	Type A lb/lb-rubber	Type B lb/lb-rubber	Type C lb/lb-rubber	Type D lb/lb-rubber	Type E lb/lb-rubber	Type F [b] lb/lb-rubber	Type G lb/lb-rubber	Type H lb/lb-rubber	Type I lb/lb-rubber	Mean lb/lb-rubber	Max. lb/lb-rubber
TOTAL VOCs		3.37E-04	2.51E-04	1.68E-04	2.88E-04	1.64E-04	1.73E-04	2.07E-04	2.61E-04	1.87E-04	2.26E-04	3.37E-04
TOTAL SPECIATED ORGANICS		< 1.46E-04	< 1.57E-04	< 1.12E-04	< 1.66E-04	< 1.71E-04	< 2.76E-04	< 2.11E-04	< 3.15E-04	< 1.91E-04	< 1.94E-04	< 3.15E-04
TOTAL HAPs		< 8.78E-05	< 7.23E-05	< 4.40E-05	< 1.01E-04	< 1.04E-04	< 1.31E-04	< 8.18E-05	< 1.58E-04	< 8.31E-05	< 9.59E-05	< 1.58E-04
Individual HAPs:												
1,1-Dichloroethane	75-34-3	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	7.64E-08	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
1,1-Dichloroethene	75-35-4	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	5.62E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
1,1,1-Trichloroethane [b]	71-55-6	7.92E-08	< 2.54E-07	1.85E-07	< 2.10E-07	4.25E-07	4.04E-05	1.33E-07	1.66E-07	1.31E-07	< 1.98E-07	4.25E-07
1,1,2-Trichloroethane	79-00-5	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
1,1,2,2-Tetrachloroethane	79-34-5	< 2.11E-07	< 2.54E-07	2.50E-07	2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
1,2-Dibromo-3-Chloropropane	96-12-8	< 4.23E-07	< 5.08E-07	5.00E-07	4.19E-07	< 4.25E-07	< 3.59E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 4.26E-07	< 5.08E-07
1,2-Dibromoethane	106-93-4	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
1,2-Dichloroethane	107-06-2	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
1,2-Dichloropropane	78-87-5	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
1,2,4-Trichlorobenzene	00120-82-1	< 9.29E-09	7.76E-09	< 4.77E-09	< 9.60E-09	< 9.16E-09	< 7.92E-09	< 9.38E-09	< 9.09E-09	< 1.29E-08	< 8.99E-09	< 1.29E-08
1,3-Butadiene	106-99-0	< 4.23E-07	< 5.08E-07	5.00E-07	< 4.19E-07	< 4.25E-07	< 3.59E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 4.26E-07	< 5.08E-07
1,4-Dichlorobenzene	00106-46-7	4.98E-09	6.15E-09	2.50E-07	< 9.12E-09	< 4.15E-09	6.51E-07	5.62E-08	6.49E-10	8.62E-09	< 4.25E-08	2.50E-07
1,4-Dioxane	123-91-1	< 8.45E-07	< 1.02E-06	1.00E-06	< 8.39E-07	< 8.49E-07	< 7.19E-07	< 7.20E-07	< 7.58E-07	< 7.94E-07	< 8.53E-07	< 1.02E-06
2-Butanone	78-93-3	3.96E-07	4.34E-07	4.86E-07	8.91E-07	1.03E-06	1.48E-06	6.07E-07	1.66E-06	7.69E-07	7.84E-07	1.66E-06
2-Methylphenol	00095-48-7	1.08E-08	1.39E-08	5.98E-09	< 1.18E-08	< 1.15E-08	< 1.02E-08	7.52E-09	1.95E-08	< 1.59E-08	< 1.21E-08	1.95E-08
3/4-Methylphenol	00108-39-4/00106-44-5	< 1.13E-08	3.97E-08	< 5.69E-09	< 1.14E-08	< 1.10E-08	< 5.89E-09	3.16E-09	1.49E-08	< 1.52E-08	< 1.40E-08	3.97E-08
4-Methyl-2-Pentanone	108-10-1	1.40E-05	1.96E-05	1.04E-05	1.26E-05	9.62E-06	9.21E-06	1.28E-05	1.63E-05	8.93E-06	1.31E-05	1.96E-05
Acetonitrile	75-05-8	< 4.23E-07	< 5.08E-07	5.00E-07	< 4.19E-07	< 4.25E-07	< 3.59E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 4.26E-07	< 5.08E-07
Acetophenone	00098-86-2	7.50E-08	1.50E-07	8.96E-08	1.33E-07	7.05E-08	1.08E-07	1.21E-07	1.31E-07	1.22E-07	1.11E-07	1.50E-07
Acrolein	107-02-8	< 4.23E-07	< 4.39E-07	4.86E-07	< 4.19E-07	< 4.25E-07	< 3.59E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 4.16E-07	4.86E-07
Acrylonitrile	107-13-1	< 4.23E-07	< 5.08E-07	5.00E-07	< 4.19E-07	< 4.25E-07	< 3.59E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 4.26E-07	< 5.08E-07
Allyl Chloride	107-05-1	< 4.23E-07	< 5.08E-07	5.00E-07	< 4.19E-07	< 4.25E-07	< 3.59E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 4.26E-07	< 5.08E-07
Aniline	00062-53-3	1.76E-06	2.56E-06	5.74E-07	5.73E-06	7.40E-07	4.36E-06	6.99E-07	3.36E-07	7.57E-06	< 2.50E-06	7.57E-06
Benzene	71-43-2	1.98E-07	< 2.33E-07	2.71E-07	2.07E-07	4.25E-07	3.37E-07	5.40E-07	4.74E-07	4.96E-07	< 3.55E-07	5.40E-07
Benzyl Chloride	100-44-7	< 5.75E-09	< 2.01E-08	5.00E-07	< 5.69E-09	< 5.54E-09	4.42E-08	< 5.56E-09	< 5.41E-09	< 7.85E-09	< 6.95E-08	5.00E-07
Biphenyl	00092-52-4	9.53E-08	6.98E-08	4.93E-08	4.05E-08	4.43E-08	< 2.39E-08	6.98E-08	4.81E-08	< 7.09E-09	< 5.30E-08	9.53E-08
bis(2-Ethylhexyl)phthalate	00117-81-7	1.14E-07	1.60E-06	1.36E-07	2.41E-08	< 9.48E-08	< 6.05E-08	< 7.04E-08	2.10E-08	3.98E-08	< 2.63E-07	1.60E-06
Bromoform	75-25-2	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
Bromomethane	74-83-9	1.14E-07	< 2.54E-07	2.50E-07	7.08E-08	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 1.84E-07	< 2.54E-07
Carbon Disulfide	75-15-0	2.56E-05	9.01E-06	3.49E-06	7.34E-07	7.70E-06	4.72E-07	6.07E-06	6.87E-06	2.08E-06	7.70E-06	2.56E-05
Carbon Tetrachloride	56-23-5	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
Carbonyl Sulfide	463-58-1	1.09E-06	< 4.59E-07	< 4.94E-07	< 2.57E-07	< 2.60E-07	< 4.49E-07	< 2.20E-07	< 4.74E-07	< 2.43E-07	< 4.37E-07	1.09E-06
Chlorobenzene	108-90-7	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
Chloroethane	75-00-3	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
Chloroform	67-66-3	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	6.52E-08	< 1.89E-07	< 1.98E-07	< 1.99E-07	< 2.54E-07
Chloromethane	74-87-3	9.77E-08	< 2.54E-07	8.34E-08	8.91E-08	< 2.12E-07	4.72E-08	1.03E-07	9.24E-08	6.70E-08	< 1.25E-07	< 2.54E-07

TABLE 6.X-7. UNCONTROLLED EMISSION FACTORS FOR A TIRE CURING PRESS [a]

Pollutant Category	CAS Numbers	Type A lb/lb-rubber	Type B lb/lb-rubber	Type C lb/lb-rubber	Type D lb/lb-rubber	Type E lb/lb-rubber	Type F lb/lb-rubber	Type G lb/lb-rubber	Type H lb/lb-rubber	Type I lb/lb-rubber	Mean lb/lb-rubber	Max. lb/lb-rubber
Cumene	98-82-8	1.21E-07	3.37E-07	5.00E-07	3.41E-07	4.51E-07	4.04E-07	2.92E-07	6.87E-07	2.08E-07	3.67E-07	6.87E-07
Dibenzofuran	00132-64-9	1.16E-08	1.26E-08	9.54E-09	6.64E-09	3.94E-09	< 6.30E-09	6.32E-09	7.25E-09	7.31E-09	< 8.15E-09	1.26E-08
Dimethylphthalate	00131-11-3	5.64E-09	2.66E-08	2.22E-08	9.12E-09	5.28E-08	4.06E-09	2.20E-07	1.51E-08	1.39E-08	4.57E-08	2.20E-07
Di-n-butylphthalate	00084-74-2	2.07E-07	6.42E-07	6.26E-07	1.87E-07	3.14E-07	9.49E-07	1.74E-07	3.76E-07	8.73E-08	3.27E-07	6.42E-07
Epichlorohydrin	106-89-8	< 4.23E-07	< 5.08E-07	5.00E-07	< 4.19E-07	< 4.25E-07	< 3.59E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 4.26E-07	< 5.08E-07
Ethylbenzene	100-41-4	5.28E-06	2.93E-06	1.03E-06	1.21E-05	1.27E-05	9.88E-06	6.75E-06	2.13E-05	7.19E-06	8.66E-06	2.13E-05
Hexachlorobutadiene	87-68-3	< 4.23E-07	< 5.08E-07	5.00E-07	4.19E-07	< 4.25E-07	< 3.59E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 4.26E-07	< 5.08E-07
Isophorone	00078-59-1	< 5.09E-09	< 4.36E-09	2.29E-08	9.12E-09	6.17E-08	4.37E-09	< 4.72E-08	< 7.47E-08	< 7.31E-09	< 2.91E-08	< 7.47E-08
m & p-Xylenes	108-38-3/106-42-3	1.72E-05	1.06E-05	5.64E-06	2.80E-05	2.92E-05	2.25E-05	2.00E-05	5.21E-05	2.18E-05	2.32E-05	5.21E-05
Methylene Chloride	75-09-2	9.77E-07	9.35E-07	2.02E-06	7.60E-06	4.78E-06	5.39E-06	1.01E-06	2.84E-06	3.72E-06	2.99E-06	7.60E-06
Naphthalene	91-20-3	6.93E-08	7.82E-08	1.50E-07	2.84E-07	2.31E-07	< 3.13E-07	1.26E-07	2.47E-07	1.44E-07	< 1.66E-07	2.84E-07
n-Hexane	110-54-3	4.75E-07	1.10E-06	2.72E-07	8.65E-07	3.18E-06	2.92E-06	6.75E-06	8.05E-06	3.47E-06	< 3.02E-06	8.05E-06
o-Toluidine	00095-53-4	1.82E-07	2.88E-07	1.55E-08	< 8.41E-09	1.09E-08	7.21E-09	1.30E-07	2.28E-08	< 9.82E-09	< 8.35E-08	2.88E-07
o-Xylene	95-47-6	4.23E-06	2.15E-06	1.21E-06	8.13E-06	9.55E-06	7.41E-06	5.40E-06	1.14E-05	5.95E-06	< 6.00E-06	1.14E-05
Phenol	00108-95-2	7.79E-08	5.07E-07	2.21E-07	< 8.53E-09	2.16E-07	1.30E-07	5.89E-07	5.86E-07	4.32E-07	< 3.30E-07	5.89E-07
Propylene Oxide	75-56-9	< 4.23E-07	< 5.08E-07	2.23E-06	< 4.19E-07	< 4.25E-07	< 3.59E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 6.43E-07	2.23E-06
Styrene	100-42-5	3.96E-07	3.11E-07	3.74E-07	2.88E-07	9.55E-07	3.82E-06	7.87E-07	3.08E-07	8.19E-07	5.30E-07	9.55E-07
t-Butyl Methyl Ether	1634-04-4	< 4.23E-07	< 5.08E-07	5.00E-07	< 4.19E-07	< 4.25E-07	2.92E-07	< 3.60E-07	< 3.79E-07	< 3.97E-07	< 4.26E-07	< 5.08E-07
Tetrachloroethene	127-18-4	7.66E-08	< 2.54E-07	2.50E-07	< 2.10E-07	7.96E-08	2.04E-07	8.99E-08	1.18E-07	< 1.98E-07	< 1.60E-07	< 2.54E-07
Toluene	108-88-3	8.60E-06	7.34E-06	2.92E-06	1.26E-05	1.30E-05	1.17E-05	1.08E-05	2.61E-05	1.07E-05	1.12E-05	2.61E-05
Trichloroethene	79-01-6	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	1.12E-07	< 2.02E-07	< 2.54E-07
Vinyl Acetate	108-05-4	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07
Vinyl Chloride	75-01-4	< 2.11E-07	< 2.54E-07	2.50E-07	< 2.10E-07	< 2.12E-07	< 1.80E-07	< 1.80E-07	< 1.89E-07	< 1.98E-07	< 2.13E-07	< 2.54E-07

a Type A,D,F are original equipment, type E,G,H are high performance, and type B,C,I are replacement tires
b 1,1,1-Trichloroethane for Tire F is not included in the Total HAPs or in the statistical summary due to its suspected presence from mold release agent.

TABLE 6.X-8. UNCONTROLLED EMISSION FACTORS FOR AN AUTOCLAVE (STEAM PRESSURE VESSEL)[c,d]

Pollutant Category	CAS #	Cmpd. #4 lb/lb-rubber	Cmpd. #5 lb/lb-rubber	Cmpd. #6 lb/lb-rubber	Cmpd. #8 lb/lb-rubber	Cmpd. #9 [a] lb/lb-rubber	Cmpd. #9 lb/lb-rubber	Cmpd. #11 lb/lb-rubber
TOTAL VOCs		1.61E-04	1.78E-04	1.33E-04	5.42E-05	1.63E-04	3.61E-04	9.32E-05
TOTAL SPECIATED ORGANICS		< 5.62E-04	< 5.54E-04	< 8.27E-04	< 6.68E-04	< 1.22E-03	< 8.17E-04	< 3.55E-04
TOTAL HAPs		< 2.89E-04	< 1.98E-04	< 1.74E-04	< 5.25E-04	< 2.13E-04	< 1.35E-04	< 1.46E-04
Individual HAPs:								
1,1-Dichloroethane	75-34-3	< 1.49E-07	< 2.01E-07	< 1.09E-07	< 5.54E-07	< 1.06E-07	< 1.02E-07	< 1.95E-07
1,1-Dichloroethene	75-35-4	< 1.51E-07	< 2.04E-07	< 1.11E-07	< 5.59E-07	< 1.10E-07	< 1.04E-07	< 1.97E-07
1,1,1-Trichloroethane	71-55-6	< 1.49E-07	< 2.01E-07	< 1.09E-07	< 5.53E-07	< 1.06E-07	< 1.01E-07	< 1.95E-07
1,1,2-Trichloroethane	79-00-5	< 1.51E-07	< 2.04E-07	< 1.12E-07	< 5.57E-07	< 1.09E-07	< 1.04E-07	< 1.98E-07
1,1,2,2-Tetrachloroethane	79-34-5	< 1.51E-07	< 2.03E-07	< 1.12E-07	< 5.56E-07	< 1.09E-07	< 1.04E-07	< 1.97E-07
1,2-Dibromo-3-Chloropropane	00096-12-8	< 2.95E-07	< 3.98E-07	< 2.14E-07	< 1.10E-06	< 2.05E-07	< 1.99E-07	< 3.86E-07
1,2-Dibromoethane	00106-93-4	< 1.47E-07	< 1.99E-07	< 1.07E-07	< 5.50E-07	< 1.03E-07	< 9.96E-08	< 1.93E-07
1,2-Dichloroethane	107-06-2	< 1.50E-07	< 2.02E-07	< 1.10E-07	< 5.55E-07	< 1.07E-07	< 1.03E-07	< 1.95E-07
1,2-Dichloropropane	78-87-5	< 1.50E-07	< 2.02E-07	< 1.11E-07	< 5.55E-07	< 1.08E-07	< 1.03E-07	< 1.96E-07
1,2-Epoxybutane	106-88-7	< 1.17E-08	< 1.06E-08	< 1.11E-08	< 1.78E-08	< 1.80E-08	< 1.15E-08	< 1.30E-08
1,2,4-Trichlorobenzene	120-82-1	< 1.55E-08	< 1.52E-08	< 1.21E-08	< 3.61E-08	< 8.92E-08	< 7.79E-08	< 1.52E-08
1,3-Butadiene	106-99-0	1.73E-06	< 2.13E-06	7.52E-07	< 3.59E-08	< 5.17E-08	< 8.77E-07	< 1.55E-07
1,4-Dichlorobenzene	00106-46-7	< 1.47E-07	< 1.99E-07	< 1.07E-07	< 5.50E-07	< 9.99E-08	1.01E-07	< 1.93E-07
1,4-Dioxane	00123-91-1	< 5.89E-07	< 7.96E-07	< 4.28E-07	< 2.20E-06	< 4.10E-07	< 3.98E-07	< 7.72E-07
1,4-Phenylenediamine	106-50-3	< 2.27E-08	< 2.61E-08	< 2.20E-08	< 5.59E-08	< 1.43E-07	< 1.08E-07	< 1.80E-08
2-Butanone	78-93-3	1.77E-06	2.12E-06	4.55E-07	3.43E-06	2.45E-06	1.42E-06	1.38E-06
2-Chloroacetophenone	532-27-4	< 7.00E-09	2.46E-07	< 6.60E-09	< 1.98E-08	< 4.69E-08	3.45E-08	8.39E-07
2-Methylphenol	95-48-7	< 2.15E-08	< 1.09E-08	< 2.04E-08	< 2.94E-08	< 1.05E-07	< 9.18E-08	1.94E-08
2,4-Dinitrophenol	51-28-5	< 6.35E-08	< 6.25E-08	< 4.72E-08	< 1.21E-07	< 3.20E-07	< 2.86E-07	< 1.01E-07
2,4-Dinitrotoluene	121-14-2	< 2.03E-08	< 1.58E-08	< 1.38E-08	< 3.36E-08	< 9.18E-08	< 8.25E-08	< 2.15E-08
2,4,5-Trichlorophenol	95-95-4	< 2.28E-08	< 2.12E-08	< 1.56E-08	< 4.44E-08	< 1.16E-07	< 1.04E-07	< 2.42E-08
2,4,6-Trichlorophenol	88-06-2	< 2.42E-08	< 2.27E-08	< 1.64E-08	< 4.93E-08	< 1.29E-07	< 1.16E-07	< 2.49E-08
3,3'-Dichlorobenzidine	91-94-1	< 3.02E-08	< 1.37E-08	< 2.89E-08	< 2.74E-08	< 8.17E-08	< 6.99E-08	< 3.65E-08
3,3'-Dimethoxybenzidine	119-90-4	< 1.80E-08	< 2.40E-08	< 1.51E-08	< 4.90E-08	< 1.53E-07	< 1.15E-07	< 1.54E-08
3,3'-Dimethylbenzidine	119-93-7	< 5.94E-09	< 8.42E-09	< 4.98E-09	< 1.75E-08	< 5.07E-08	< 3.84E-08	< 5.21E-09
3/4-Methylphenol	108-39-4/106-44-5	1.48E-08	< 2.12E-08	< 1.88E-08	< 2.35E-08	< 9.80E-08	< 8.53E-08	3.28E-08
4-Aminobiphenyl	92-67-1	< 5.27E-09	< 6.59E-09	< 4.25E-09	< 1.42E-08	< 3.79E-08	< 2.78E-08	< 4.23E-09
4-Methyl-2-pentanone	108-10-1	1.61E-04	< 6.61E-07	7.27E-05	< 5.55E-07	1.24E-05	< 8.40E-07	< 1.96E-07
4-Nitrobiphenyl	92-93-3	< 8.85E-09	< 1.16E-08	< 7.29E-09	< 2.53E-08	< 6.59E-08	< 4.80E-08	< 7.77E-09
4-Nitrophenol	100-02-7	< 4.38E-08	< 3.11E-08	< 3.04E-08	< 6.88E-08	< 1.93E-07	< 1.74E-07	< 4.80E-08
4,4'-Methylenedianiline	101-77-9	< 1.15E-08	< 1.72E-08	< 9.68E-09	< 3.46E-08	< 9.62E-08	< 7.24E-08	< 9.73E-09
4,6-Dinitro-2-methylphenol	534-52-1	< 4.08E-08	< 3.66E-08	< 2.99E-08	< 7.35E-08	< 1.83E-07	< 1.61E-07	< 5.69E-08
Acetaldehyde [b]	00075-07-0		1.83E-06		2.74E-07			1.02E-07
Acetonitrile	75-05-8	< 2.95E-07	1.60E-06	< 2.14E-07	< 1.10E-06	< 2.05E-07	< 1.99E-07	< 3.86E-07
Acetophenone [b]	00098-86-2	4.88E-06		9.12E-06		1.33E-04	8.80E-05	
Acrolein	00107-02-8	< 2.95E-07	< 2.82E-07	< 2.14E-07	< 1.10E-06	< 3.59E-07	< 1.99E-07	< 3.86E-07
Acrylonitrile	107-13-1	< 3.10E-07	< 4.59E-07	< 2.30E-07	< 1.17E-06	< 2.32E-07	< 2.16E-07	< 3.99E-07
Allyl chloride	107-05-1	< 3.01E-07	< 4.04E-07	< 2.21E-07	< 1.11E-06	< 2.17E-07	< 2.06E-07	< 3.92E-07
Aniline	62-53-3	1.04E-05	8.98E-06	2.58E-05	8.45E-07	2.67E-06	1.57E-07	2.21E-06
a,a,a-Trichlorotoluene	98-07-7	< 1.04E-08	< 1.27E-08	< 9.86E-09	< 3.09E-08	< 7.70E-08	< 5.85E-08	< 8.81E-09
Benzene	71-43-2	1.16E-05	5.39E-06	9.09E-06	2.23E-05	4.39E-06	1.46E-06	1.66E-06
Benzidine	92-87-5	< 5.75E-09	< 3.72E-07	< 4.93E-09	5.06E-08	< 5.07E-08	< 3.69E-08	< 6.33E-09
Benzyl Chloride	00100-44-7	< 2.95E-07	< 3.98E-07	< 2.14E-07	< 1.10E-06	< 2.05E-07	< 1.99E-07	< 3.86E-07
Biphenyl	92-52-4	6.99E-08	2.70E-07	3.84E-07	4.22E-08	1.25E-07	< 4.13E-08	5.48E-09
bis(2-Chloroethyl)ether	111-44-4	< 2.32E-08	< 2.43E-08	< 2.22E-08	< 5.31E-08	< 1.11E-07	< 9.69E-08	< 2.12E-08
bis(2-Ethylhexyl)phthalate	117-81-7	4.42E-07	3.30E-07	2.37E-08	3.68E-07	1.74E-07	1.90E-07	7.48E-07
Bromoform	75-25-2	< 1.51E-07	< 2.03E-07	< 1.12E-07	< 5.57E-07	< 1.10E-07	< 1.04E-07	< 1.98E-07
Bromomethane	74-83-9	< 1.53E-07	< 2.08E-07	< 1.13E-07	< 5.65E-07	< 1.12E-07	< 1.05E-07	< 1.99E-07
Carbon disulfide	75-15-0	4.77E-07	2.17E-06	6.07E-07	3.84E-04	5.81E-06	1.39E-06	8.93E-05
Carbon tetrachloride	56-23-5	< 1.49E-07	< 2.01E-07	< 1.09E-07	< 5.53E-07	< 1.05E-07	< 1.01E-07	< 1.82E-07
Carbonyl Sulfide	463-58-1	4.58E-07	4.66E-07	5.48E-07	1.97E-05	8.15E-07	5.18E-07	2.02E-06
Chlorobenzene	108-90-7	1.58E-07	< 2.00E-07	< 1.08E-07	< 5.52E-07	< 1.04E-07	< 1.01E-07	< 1.94E-07
Chloroethane	75-00-3	< 1.53E-07	< 2.06E-07	< 1.13E-07	< 5.63E-07	< 1.12E-07	< 1.06E-07	< 1.98E-07
Chloroform	67-66-3	< 1.49E-07	< 2.01E-07	< 1.09E-07	< 5.54E-07	< 1.06E-07	< 1.02E-07	< 1.95E-07
Chloromethane	74-87-3	< 1.52E-07	< 2.05E-07	< 1.59E-07	< 5.60E-07	< 3.14E-07	< 1.86E-07	< 1.99E-07
Chloroprene	126-99-8	< 2.16E-09	< 2.13E-09	< 2.34E-09	< 4.55E-09	< 3.81E-09	< 2.38E-09	3.28E-07
Cumene	98-82-8	6.75E-08	3.30E-08	6.42E-08	4.97E-08	1.30E-08	8.04E-07	7.00E-09
Dibenzofuran	132-64-9	1.75E-08	4.15E-08	< 1.22E-08	< 7.19E-09	< 2.92E-08	< 2.80E-09	< 6.15E-09

TABLE 6.X-8. UNCONTROLLED EMISSION FACTORS FOR AN AUTOCLAVE (STEAM PRESSURE VESSEL) [c,d]

Pollutant Category	CAS #	Cmpd. #4 lb/lb-rubber	Cmpd. #5 lb/lb-rubber	Cmpd. #6 lb/lb-rubber	Cmpd. #8 lb/lb-rubber	Cmpd. #9 [a] lb/lb-rubber	Cmpd. #9 lb/lb-rubber	Cmpd. #11 lb/lb-rubber
Dimethylaminoazobenzene	60-11-7	< 7.69E-09	< 1.13E-08	< 6.67E-09	< 2.24E-08	< 6.01E-08	< 4.38E-08	< 7.25E-09
Dimethylphthalate	131-11-3	< 7.06E-09	< 5.89E-09	< 4.64E-09	6.90E-09	< 3.47E-08	< 3.12E-08	1.05E-08
Di-n-butylphthalate	84-74-2	< 4.39E-09	4.34E-09	2.16E-08	< 2.16E-09	6.37E-08	9.89E-08	1.76E-08
Epichlorohydrin	00106-89-8	< 2.95E-07	< 3.98E-07	< 2.14E-07	< 3.57E-06	< 2.05E-07	< 1.99E-07	< 3.86E-07
Ethyl acrylate	140-88-5	< 2.59E-09	< 2.21E-09	< 3.22E-09	< 3.73E-09	< 4.88E-09	< 2.97E-09	< 2.78E-09
Ethylbenzene	100-41-4	4.77E-06	1.75E-06	2.91E-06	3.90E-06	3.31E-06	3.02E-06	< 8.17E-08
Ethylene dibromide	106-93-4	< 2.81E-09	< 3.49E-09	< 3.19E-09	< 5.43E-09	< 4.65E-09	< 2.95E-09	< 3.92E-09
Hexachlorobenzene	118-74-1	< 1.85E-08	< 1.82E-08	< 1.26E-08	< 3.88E-08	< 1.04E-07	< 9.20E-08	< 2.16E-08
Hexachlorobutadiene	00087-68-3	< 2.95E-07	< 3.98E-07	< 2.14E-07	< 1.10E-06	< 3.96E-07	< 5.07E-07	< 1.45E-07
Hexachlorocyclopentadiene	77-47-4	< 2.32E-08	< 2.83E-08	< 1.64E-08	< 6.51E-08	< 1.60E-07	< 1.45E-07	< 2.90E-08
Hexachloroethane	67-72-1	< 2.71E-08	< 3.71E-08	< 2.48E-08	< 6.50E-08	< 1.50E-07	< 1.30E-07	< 7.50E-08
Hydroquinone	123-31-9	< 1.42E-08	< 2.09E-08	< 1.37E-08	< 4.96E-08	< 1.17E-07	< 8.83E-08	< 1.45E-08
Iodomethane	74-88-4	< 1.23E-09	< 1.79E-09	< 1.31E-09	< 3.20E-09	< 2.14E-09	< 1.34E-09	< 1.73E-09
Isooctane	540-84-1	4.78E-07	7.27E-07	2.88E-07	9.76E-07	5.54E-08	2.80E-07	7.39E-06
Isophorone	78-59-1	2.37E-07	2.00E-07	< 7.76E-09	< 2.13E-08	< 5.71E-08	< 4.30E-08	< 8.98E-09
Methyl methacrylate	80-62-6	< 7.16E-09	< 6.27E-09	< 8.64E-09	< 1.01E-08	< 1.31E-08	< 7.98E-09	< 7.59E-09
Methylene bis-chloroaniline	101-14-4	< 1.99E-08	< 2.73E-08	< 1.68E-08	< 5.75E-08	< 1.72E-07	< 1.30E-07	< 1.76E-08
Methylene chloride	75-09-2	3.72E-06	7.34E-05	2.26E-06	3.08E-06	2.15E-06	4.41E-06	5.32E-07
m-/o-Xylene	108-38-3/106-42-3	4.48E-05	6.19E-05	9.71E-06	1.95E-05	1.28E-05	9.79E-06	2.75E-07
Naphthalene	91-20-3	3.02E-07	2.89E-07	9.83E-07	2.41E-07	1.76E-07	1.69E-07	6.18E-08
n-Hexane	110-54-3	1.85E-06	3.05E-06	1.08E-06	3.94E-06	1.22E-06	1.88E-06	9.58E-07
Nitrobenzene	98-95-3	< 1.79E-08	< 1.59E-08	< 1.44E-08	< 3.67E-08	< 8.76E-08	< 7.63E-08	< 1.54E-08
n-Nitrosodimethylamine	62-75-9	< 4.79E-08	< 4.65E-08	< 5.30E-08	< 1.11E-07	< 2.23E-07	< 1.73E-07	< 2.82E-08
n-Nitrosomorpholine	59-89-2	< 2.38E-08	< 3.36E-08	< 2.50E-08	< 7.24E-08	< 1.47E-07	< 1.13E-07	< 1.93E-08
N,N-Dimethylaniline	121-69-7	< 9.98E-09	< 1.22E-08	< 9.52E-09	2.76E-08	< 6.85E-08	< 5.19E-08	< 8.02E-09
o-Anisidine	90-04-0	< 1.83E-08	< 2.29E-08	< 1.71E-08	< 5.45E-08	< 1.33E-07	< 1.01E-07	< 1.57E-08
o-Toluidine	95-53-4	2.14E-07	< 1.63E-08	1.53E-05	< 3.58E-08	< 7.53E-08	< 5.68E-08	< 9.82E-09
o-Xylene	95-47-6	4.97E-06	4.22E-06	3.31E-06	4.81E-06	1.25E-05	2.93E-06	2.01E-05
Pentachloronitrobenzene	82-68-8	< 3.49E-08	< 4.33E-08	< 2.94E-08	< 9.27E-08	< 2.65E-07	< 1.90E-07	< 3.04E-08
Pentachlorophenol	87-86-5	< 3.02E-08	4.36E-07	< 2.28E-08	< 6.27E-08	< 1.58E-07	< 1.39E-07	3.85E-07
Phenol	108-95-2	< 1.75E-08	< 1.19E-07	< 1.65E-08	< 6.45E-08	1.42E-06	8.81E-07	< 4.04E-08
Propylene Oxide	00075-56-9	< 2.95E-07	< 3.98E-07	< 2.14E-07	< 1.10E-06	< 2.05E-07	< 1.99E-07	< 2.14E-07
Styrene	100-42-5	1.31E-06	7.18E-07	3.28E-06	< 3.56E-07	1.27E-06	4.38E-07	2.93E-08
tert-Butyl methyl ether	1634-04-4	3.09E-07	2.84E-07	2.34E-07	1.12E-06	< 2.08E-07	< 3.02E-07	1.13E-06
Tetrachloroethene	127-18-4	< 1.53E-07	< 2.02E-07	< 1.10E-07	< 5.56E-07	< 1.10E-07	< 1.02E-07	< 1.96E-07
Toluene	108-88-3	2.08E-05	1.56E-05	7.09E-06	2.79E-05	5.01E-06	6.91E-06	7.45E-06
Trichloroethene	79-01-6	< 1.49E-07	< 2.05E-07	< 1.09E-07	< 5.55E-07	< 1.06E-07	< 1.02E-07	< 1.96E-07
Trifluralin	1582-09-8	< 2.42E-08	< 3.44E-08	< 2.28E-08	< 7.81E-08	< 2.07E-07	< 1.60E-07	< 2.03E-08
Vinyl acetate	108-05-4	< 1.49E-07	< 2.01E-07	< 1.09E-07	< 5.53E-07	< 1.05E-07	< 1.01E-07	< 1.95E-07
Vinyl Bromide	593-60-2	< 3.95E-09	< 6.79E-09	< 4.13E-09	< 1.17E-08	< 6.65E-09	< 4.26E-09	< 4.17E-09
Vinyl Chloride	75-01-4	< 1.52E-07	< 2.04E-07	< 1.12E-07	< 5.60E-07	< 1.11E-07	< 1.05E-07	< 1.97E-07

TABLE 6.X-8. UNCONTROLLED EMISSION FACTORS FOR AN AUTOCLAVE (STEAM PRESSURE VESSEL)[c,d]

Pollutant Category	CAS #	Cmpd. #15 lb/lb-rubber	Cmpd. #18 lb/lb-rubber	Cmpd. #21 lb/lb-rubber	Cmpd. #22 lb/lb-rubber	Mean lb/lb-rubber	Max. lb/lb-rubber
TOTAL VOCs		7.34E-05	9.27E-05	2.26E-04	1.11E-04	1.50E-04	3.61E-04
TOTAL SPECIATED ORGANICS		< 5.08E-04	< 2.09E-03	< 1.96E-03	< 2.37E-04	< 8.91E-04	< 2.09E-03
TOTAL HAPs		< 3.38E-04	< 1.17E-03	< 4.74E-04	< 1.26E-04	< 3.44E-04	< 1.17E-03
Individual HAPs:							
1,1-Dichloroethane	75-34-3	< 2.82E-07	< 5.66E-07	< 4.21E-07	< 6.28E-08	< 2.50E-07	< 5.66E-07
1,1-Dichloroethene	75-35-4	< 2.83E-07	< 5.67E-07	< 4.23E-07	< 6.45E-08	< 2.52E-07	< 5.67E-07
1,1,1-Trichloroethane	71-55-6	< 2.82E-07	< 5.66E-07	< 4.21E-07	< 6.25E-08	< 2.50E-07	< 5.66E-07
1,1,2-Trichloroethane	79-00-5	< 2.84E-07	< 5.68E-07	< 4.24E-07	< 6.46E-08	< 2.52E-07	< 5.68E-07
1,1,2,2-Tetrachloroethane	79-34-5	< 2.84E-07	< 5.67E-07	< 4.23E-07	< 6.47E-08	< 2.52E-07	< 5.67E-07
1,2-Dibromo-3-Chloropropane	00096-12-8	< 5.59E-07	< 1.13E-06	< 8.38E-07	< 1.22E-07	< 4.95E-07	< 1.13E-06
1,2-Dibromoethane	00106-93-4	< 2.80E-07	< 5.64E-07	< 4.19E-07	< 6.08E-08	< 2.47E-07	< 5.64E-07
1,2-Dichloroethane	107-06-2	< 2.82E-07	< 5.66E-07	< 4.22E-07	< 6.33E-08	< 2.50E-07	< 5.66E-07
1,2-Dichloropropane	78-87-5	< 2.83E-07	< 5.66E-07	< 4.22E-07	< 6.40E-08	< 2.51E-07	< 5.66E-07
1,2-Epoxybutane	106-88-7	< 2.49E-08	< 9.22E-09	< 1.53E-08	< 9.81E-09	< 1.39E-08	< 2.49E-08
1,2,4-Trichlorobenzene	120-82-1	< 1.21E-08	< 1.15E-08	< 2.48E-08	< 1.52E-08	< 2.95E-08	< 8.92E-08
1,3-Butadiene	106-99-0	< 2.01E-08	< 6.25E-08	< 1.74E-08	< 3.34E-07	< 5.61E-07	< 2.13E-06
1,4-Dichlorobenzene	00106-46-7	< 2.50E-07	< 5.64E-07	< 4.19E-07	< 6.08E-08	< 2.45E-07	< 5.64E-07
1,4-Dioxane	00123-91-1	< 1.12E-06	< 2.26E-06	< 1.68E-06	< 2.43E-07	< 9.90E-07	< 2.26E-06
1,4-Phenylenediamine	106-50-3	< 2.29E-08	< 2.21E-08	< 2.94E-08	< 3.04E-08	< 4.55E-08	< 1.43E-07
2-Butanone	78-93-3	< 1.08E-06	1.60E-06	1.93E-05	8.71E-07	< 3.26E-06	1.93E-05
2-Chloroacetophenone	532-27-4	< 7.24E-09	< 6.40E-09	< 8.98E-09	< 8.99E-09	< 1.12E-07	8.39E-07
2-Methylphenol	95-48-7	< 1.49E-08	1.55E-08	< 3.53E-08	< 2.10E-08	< 3.50E-08	< 1.05E-07
2,4-Dinitrophenol	51-28-5	< 7.05E-08	< 4.24E-08	< 1.30E-07	< 6.49E-08	< 1.19E-07	< 3.20E-07
2,4-Dinitrotoluene	121-14-2	< 1.51E-08	< 1.28E-08	< 2.87E-08	< 1.78E-08	< 3.22E-08	< 9.18E-08
2,4,5-Trichlorophenol	95-95-4	< 1.79E-08	< 1.43E-08	< 3.24E-08	< 2.03E-08	< 3.94E-08	< 1.16E-07
2,4,6-Trichlorophenol	88-06-2	< 1.81E-08	< 1.59E-08	< 3.42E-08	< 2.21E-08	< 4.30E-08	< 1.29E-07
3,3'-Dichlorobenzidine	91-94-1	< 2.19E-08	< 9.80E-09	< 5.78E-08	< 1.38E-08	< 3.56E-08	< 8.17E-08
3,3'-Dimethoxybenzidine	119-90-4	< 3.32E-08	< 1.64E-08	< 4.01E-08	< 2.36E-08	< 4.57E-08	< 1.53E-07
3,3'-Dimethylbenzidine	119-93-7	< 1.09E-08	< 5.26E-09	< 1.36E-08	< 7.94E-09	< 1.54E-08	< 5.07E-08
3/4-Methylphenol	108-39-4/106-44-5	< 1.45E-08	< 1.43E-08	< 3.32E-08	< 1.94E-08	< 3.42E-08	< 9.80E-08
4-Aminobiphenyl	92-67-1	< 6.12E-09	< 4.78E-09	< 7.12E-09	< 1.39E-08	< 1.20E-08	< 3.79E-08
4-Methyl-2-pentanone	108-10-1	< 2.83E-07	5.72E-05	< 4.22E-07	6.46E-05	< 3.37E-05	1.61E-04
4-Nitrobiphenyl	92-93-3	< 1.21E-08	< 8.20E-09	< 1.40E-08	< 2.38E-08	< 2.12E-08	< 6.59E-08
4-Nitrophenol	100-02-7	< 3.24E-08	< 2.45E-08	< 6.80E-08	< 3.35E-08	< 6.81E-08	< 1.93E-07
4,4'-Methylenedianiline	101-77-9	< 1.99E-08	< 1.05E-08	< 2.44E-08	< 1.52E-08	< 2.92E-08	< 9.62E-08
4,6-Dinitro-2-methylphenol	534-52-1	< 4.14E-08	< 2.39E-08	< 8.52E-08	< 7.32E-08	< 7.32E-08	< 1.83E-07
Acetaldehyde b	00075-07-0			1.18E-06		8.47E-07	1.83E-06
Acetonitrile	75-05-8	< 5.59E-07	< 1.13E-06	< 8.38E-07	< 1.22E-07	< 6.04E-07	1.60E-06
Acetophenone b	00098-86-2				7.36E-06	4.85E-05	1.33E-04
Acrolein	00107-02-8	< 5.39E-07	< 1.13E-06	< 4.44E-06	< 1.22E-07	< 8.24E-07	< 4.44E-06
Acrylonitrile	107-13-1	< 5.76E-07	< 1.14E-06	< 8.52E-07	< 1.38E-07	< 5.20E-07	< 1.17E-06
Allyl chloride	107-05-1	< 5.66E-07	< 1.13E-06	< 8.44E-07	< 1.28E-07	< 5.02E-07	< 1.13E-06
Aniline	62-53-3	2.69E-08	1.68E-06	1.48E-08	8.27E-06	< 5.55E-06	2.58E-05
a,a,a-Trichlorotoluene	98-07-7	< 9.20E-09	< 9.27E-09	< 1.20E-08	< 1.30E-08	< 2.29E-08	< 7.70E-08
Benzene	71-43-2	5.26E-06	3.54E-07	5.25E-06	1.14E-05	7.12E-06	2.23E-05
Benzidine	92-87-5	< 1.19E-08	< 5.70E-09	< 1.56E-08	< 8.89E-09	< 5.17E-08	< 3.72E-07
Benzyl Chloride	00100-44-7	< 5.59E-07	< 1.13E-06	< 8.38E-07	< 1.22E-07	< 4.95E-07	< 1.13E-06
Biphenyl	92-52-4	1.19E-08	7.23E-09	7.44E-09	3.99E-07	< 1.24E-07	3.99E-07
bis(2-Chloroethyl)ether	111-44-4	< 1.45E-08	< 1.63E-08	< 3.50E-08	< 2.21E-08	< 4.00E-08	< 1.11E-07
bis(2-Ethylhexyl)phthalate	117-81-7	1.00E-06	4.54E-08	2.20E-06	1.75E-07	< 7.32E-07	2.37E-06
Bromoform	75-25-2	< 2.85E-07	< 5.67E-07	< 4.24E-07	< 6.49E-08	< 2.52E-07	< 5.67E-07
Bromomethane	74-83-9	< 2.86E-07	< 5.69E-07	< 4.26E-07	< 6.58E-08	< 2.55E-07	< 5.69E-07
Carbon disulfide	75-15-0	1.47E-04	1.06E-03	1.02E-06	1.86E-06	1.54E-04	1.06E-03
Carbon tetrachloride	56-23-5	5.67E-05	< 5.65E-07	6.00E-07	< 6.24E-08	< 5.39E-06	5.67E-05
Carbonyl Sulfide	463-58-1	8.80E-07	9.17E-06	1.42E-07	4.36E-07	3.19E-06	1.97E-05
Chlorobenzene	108-90-7	< 2.81E-07	5.74E-07	< 4.20E-07	< 6.18E-08	< 2.50E-07	5.74E-07
Chloroethane	75-00-3	< 2.86E-07	< 5.68E-07	< 4.25E-07	< 6.61E-08	< 2.54E-07	< 5.68E-07
Chloroform	67-66-3	1.64E-05	< 5.66E-07	5.98E-07	< 6.28E-08	< 1.73E-06	1.64E-05
Chloromethane	74-87-3	< 2.85E-07	< 5.67E-07	< 4.44E-06	< 1.81E-07	< 6.57E-07	< 4.44E-06
Chloroprene	126-99-8	< 2.02E-09	< 1.46E-09	< 2.04E-09	< 2.05E-09	< 3.21E-08	3.28E-07
Cumene	98-82-8	3.83E-08	7.49E-08	1.26E-07	7.17E-08	< 2.40E-07	1.30E-06
Dibenzofuran	132-64-9	5.64E-09	< 4.12E-09	< 8.20E-09	< 5.82E-09	< 1.50E-08	4.15E-08

TABLE 6.X-8. UNCONTROLLED EMISSION FACTORS FOR AN AUTOCLAVE (STEAM PRESSURE VESSEL)[c,d]

Pollutant Category	CAS #	Cmpd. #15 lb/lb-rubber	Cmpd. #18 lb/lb-rubber	Cmpd. #21 lb/lb-rubber	Cmpd. #22 lb/lb-rubber	Mean lb/lb-rubber	Max. lb/lb-rubber
Dimethylaminoazobenzene	60-11-7	< 1.37E-08	< 7.12E-09	< 1.75E-08	< 1.02E-08	< 1.89E-08	< 6.01E-08
Dimethylphthalate	131-11-3	8.73E-09	< 4.69E-09	2.28E-08	< 6.62E-09	< 1.31E-08	< 3.47E-08
Di-n-butylphthalate	84-74-2	4.51E-07	2.91E-09	2.12E-07	3.42E-07	< 1.11E-07	4.51E-07
Epichlorohydrin	00106-89-8	< 5.59E-07	< 1.13E-06	< 8.38E-07	< 1.22E-07	< 7.19E-07	< 3.57E-06
Ethyl acrylate	140-88-5	< 3.18E-09	< 1.68E-09	< 3.02E-09	< 2.73E-09	< 3.00E-09	< 4.86E-09
Ethylbenzene	100-41-4	8.91E-06	1.39E-07	3.24E-06	1.30E-06	< 3.03E-06	8.91E-06
Ethylene dibromide	106-93-4	< 3.50E-09	< 2.19E-09	< 4.27E-09	< 2.71E-09	< 3.56E-09	< 5.43E-09
Hexachlorobenzene	118-74-1	< 1.61E-08	< 1.26E-08	< 3.33E-08	< 3.63E-08	< 3.67E-08	< 1.04E-07
Hexachlorobutadiene	00087-68-3	< 5.59E-07	< 1.13E-06	< 8.38E-07	< 1.22E-07	< 5.18E-07	< 1.13E-06
Hexachlorocyclopentadiene	77-47-4	< 2.00E-08	< 1.85E-08	< 4.12E-08	< 2.74E-08	< 5.22E-08	< 1.60E-07
Hexachloroethane	67-72-1	4.94E-07	< 2.04E-08	6.02E-08	< 2.81E-08	< 1.01E-07	4.94E-07
Hydroquinone	123-31-9	< 1.74E-08	< 1.48E-08	< 2.31E-08	< 2.18E-08	< 3.58E-08	< 1.17E-07
Iodomethane	74-88-4	< 1.47E-09	< 8.64E-10	< 2.03E-09	< 1.15E-09	< 1.66E-09	< 3.20E-09
Isooctane	540-84-1	1.07E-06	< 4.06E-09	3.84E-06	1.57E-07	< 1.39E-06	7.39E-06
Isophorone	78-59-1	< 6.94E-09	2.35E-08	< 1.37E-08	3.45E-07	< 8.77E-08	3.45E-07
Methyl methacrylate	80-62-6	< 8.34E-09	< 4.81E-09	< 8.25E-09	< 7.35E-09	< 8.15E-09	< 1.31E-08
Methylene bis-chloroaniline	101-14-4	< 3.70E-08	< 1.80E-08	< 4.62E-08	< 2.69E-08	< 5.18E-08	< 1.72E-07
Methylene chloride	75-09-2	1.18E-05	4.68E-07	4.88E-05	1.21E-05	1.53E-05	7.34E-05
m-/p-Xylene	108-38-3/106-42-3	3.24E-05	1.43E-06	1.24E-05	4.74E-06	1.91E-05	6.19E-05
Naphthalene	91-20-3	2.99E-07	9.23E-08	9.41E-08	3.36E-07	2.77E-07	9.83E-07
n-Hexane	110-54-3	< 1.83E-06	< 2.77E-08	1.96E-06	4.03E-07	< 1.65E-06	3.94E-06
Nitrobenzene	98-95-3	< 1.19E-08	< 1.26E-08	< 2.34E-08	< 1.63E-08	< 2.99E-08	< 8.76E-08
n-Nitrosodimethylamine	62-75-9	< 3.60E-08	< 4.21E-08	< 4.73E-08	< 5.33E-08	< 7.83E-08	< 2.23E-07
n-Nitrosomorpholine	59-89-2	< 1.70E-08	< 2.04E-08	< 2.50E-08	< 2.77E-08	< 4.77E-08	< 1.47E-07
N,N-Dimethylaniline	121-69-7	< 9.14E-09	< 9.06E-09	< 1.16E-08	< 1.26E-08	< 2.09E-08	< 6.85E-08
o-Anisidine	90-04-0	< 1.72E-08	< 1.68E-08	< 2.23E-08	< 2.42E-08	< 4.03E-08	< 1.33E-07
o-Toluidine	95-53-4	< 1.01E-08	6.19E-08	< 1.46E-08	1.66E-07	< 1.45E-06	1.53E-05
o-Xylene	95-47-6	7.34E-06	4.14E-08	9.16E-05	2.93E-06	< 1.41E-05	9.16E-05
Pentachloronitrobenzene	82-68-8	< 3.65E-08	< 3.13E-08	< 4.50E-08	< 9.76E-08	< 8.14E-08	< 2.65E-07
Pentachlorophenol	87-86-5	< 3.59E-08	< 1.82E-08	< 7.31E-08	< 5.98E-08	< 1.29E-07	4.36E-07
Phenol	108-95-2	< 8.13E-08	< 1.50E-08	7.30E-08	< 1.63E-08	< 2.50E-07	1.42E-06
Propylene Oxide	00075-56-9	< 5.59E-07	< 1.13E-06	< 8.38E-07	< 1.22E-07	< 4.79E-07	< 1.13E-06
Styrene	100-42-5	6.62E-07	3.08E-07	1.68E-08	9.78E-07	< 8.51E-07	3.28E-06
tert-Butyl methyl ether	1634-04-4	5.63E-07	1.14E-06	2.30E-04	1.43E-07	< 2.14E-05	2.30E-04
Tetrachloroethene	127-18-4	1.58E-06	< 5.72E-07	4.15E-07	< 6.35E-08	< 3.78E-07	1.68E-06
Toluene	108-88-3	2.81E-05	3.88E-06	2.53E-05	2.84E-06	1.37E-05	2.81E-05
Trichloroethene	79-01-6	< 2.82E-07	< 5.66E-07	< 4.22E-07	< 6.28E-08	< 2.50E-07	< 5.66E-07
Trifluralin	1582-09-8	< 3.12E-08	< 2.26E-08	< 3.21E-08	< 3.44E-08	< 6.06E-08	< 2.07E-07
Vinyl acetate	108-05-4	< 2.82E-07	< 5.65E-07	< 4.21E-07	< 6.20E-08	< 2.49E-07	< 5.65E-07
Vinyl Bromide	593-60-2	< 4.50E-09	< 2.95E-09	< 4.90E-09	< 3.64E-09	< 5.24E-09	< 1.17E-08
Vinyl Chloride	75-01-4	< 2.85E-07	< 5.67E-07	< 4.24E-07	< 8.53E-08	< 2.53E-07	< 5.67E-07

a Extruded EPDM (Peroxide-cure).

b Tentatively identified compound (TIC)- no data is given if not detected.

c Includes pollutants in steam blow-off (when depressurizing the vessel) and in the condensate produced during curing. For noncontact steam applications, the total values shall be used. For direct contact, steam curing, 17% of the emission factor is discharged in the condensate produced during curing and is not therefore released as an air emission.

d To determine emission factors for compounds not listed in this table, multiply table 6.X-3 VOC data by 1.42, speciated organics by 9.09, and HAPs by 7.21.

TABLE 6.X-9. UNCONTROLLED EMISSION FACTORS FOR A PLATEN PRESS [a]

Pollutant Category	CAS #	Cmpd. #1 [b,d] lb/lb-rubber	Cmpd. #2 [b,d] lb/lb-rubber	Cmpd. #3 [b,d] lb/lb-rubber	Cmpd. #5 [c,d] lb/lb-rubber	Cmpd. #7 [c,d] lb/lb-rubber	Cmpd. #9 [c,d] lb/lb-rubber	Cmpd. #10 [c,d] lb/lb-rubber	Cmpd. #11 [c,d] lb/lb-rubber	Cmpd. #12 [c,d] lb/lb-rubber	Cmpd. #13 [c,d] lb/lb-rubber
TOTAL VOCs		3.10E-04	1.51E-04	3.77E-04	5.56E-04	9.34E-05	1.68E-03	3.15E-04	2.35E-04	2.53E-04	5.21E-04
TOTAL SPECIATED ORGANICS		< 1.59E-03	< 1.39E-03	< 2.85E-03	< 1.39E-03	< 9.54E-04	< 5.70E-03	< 2.87E-03	< 2.50E-03	< 2.61E-03	< 2.80E-03
TOTAL HAPs		< 1.32E-03	< 1.15E-03	< 2.45E-03	< 2.75E-04	< 7.44E-04	< 5.13E-03	< 2.55E-03	< 2.17E-03	< 2.30E-03	< 2.57E-03
Individual HAPs:											
1,1,1-Trichloroethane	00071-55-6	3.54E-06	2.52E-06	3.15E-06	3.80E-06	4.19E-06	4.20E-06	2.52E-06	< 2.81E-06	3.03E-06	3.56E-04
1,2,4-Trichlorobenzene	120-82-1	< 3.51E-07	< 1.37E-07	< 1.67E-07	< 1.98E-07	< 3.64E-07	< 2.02E-07	< 1.25E-07	< 1.37E-07	< 1.59E-07	< 1.63E-07
1,3-Butadiene	106-99-0	< 7.25E-07	1.20E-05	< 7.08E-07	5.84E-06	9.42E-06	7.53E-06	7.43E-06	< 9.28E-07	< 6.81E-07	< 6.68E-07
1,4-Dichlorobenzene	106-46-7	1.03E-07	7.53E-08	5.52E-08	< 1.65E-07	5.42E-08	< 1.75E-07	5.53E-08	< 1.17E-07	5.78E-08	< 1.11E-07
2-Butanone	00078-93-3	1.84E-06	2.77E-06	2.89E-06	2.04E-06	< 2.58E-05	3.02E-06	< 5.03E-06	< 1.79E-06	1.18E-06	< 1.19E-05
2-Chloro-1,3-Butadiene	00126-99-8								9.08E-06		
2-Methylphenol	95-48-7	< 3.28E-07	< 1.17E-07	2.98E-08	< 2.15E-07	< 3.33E-07	< 2.29E-07	< 1.09E-07	< 1.53E-07	< 1.31E-07	< 1.44E-07
3/4-Methylphenol	108-39-4/106-44-5	< 3.10E-07	< 1.08E-07	3.69E-08	< 2.04E-07	< 3.14E-07	< 2.18E-07	5.10E-08	< 1.45E-07	< 1.22E-07	< 1.34E-07
4-Methyl-2-pentanone	00108-10-1	< 2.58E-06	< 6.29E-06	1.16E-04	< 1.57E-06	< 1.29E-05	< 3.06E-06	< 2.52E-06	< 9.90E-07	< 2.42E-06	< 5.94E-06
Acetaldehyde	00075-07-0				6.69E-06		7.64E-06		1.65E-06		
Acetonitrile	75-05-8	< 5.15E-06	< 1.26E-05	< 5.03E-06	5.47E-06	< 2.58E-05	< 6.12E-06	< 5.03E-06	< 1.98E-06	< 4.84E-06	< 1.19E-05
Acetophenone	98-86-2	5.09E-07	1.39E-06	4.25E-07	0.00E+00	8.74E-07	4.40E-04	4.36E-07	0.00E+00	2.17E-06	5.05E-07
Acrylonitrile	00107-13-1	< 5.15E-06	< 1.26E-05	< 5.03E-06	< 2.58E-06	< 2.58E-05	< 6.12E-06	< 5.03E-06	< 1.98E-06	< 4.84E-06	< 1.19E-05
Aniline	62-53-3	< 1.56E-07	4.16E-07	7.08E-07	2.01E-06	< 1.59E-07	< 1.49E-07	< 5.24E-08	2.61E-07	< 6.38E-08	< 6.96E-08
Benzene	71-43-2	1.08E-06	1.35E-06	1.18E-06	< 1.14E-06	< 2.09E-06	< 1.24E-06	< 1.02E-06	< 8.04E-07	< 9.83E-07	< 9.65E-07
Benzidine	92-87-5	< 1.91E-07	< 3.50E-08	< 1.28E-07	4.54E-06	< 1.78E-07	< 7.62E-08	< 8.01E-08	< 2.92E-07	< 9.49E-08	< 1.07E-07
Biphenyl	92-52-4	< 1.28E-07	< 3.52E-08	1.40E-07	3.06E-07	< 1.30E-07	< 9.41E-08	< 5.24E-08	< 5.91E-08	< 6.82E-08	< 6.96E-08
bis(2-Ethylhexyl)phthalate	117-81-7	4.20E-06	2.48E-06	2.14E-06	3.83E-06	1.15E-05	2.60E-06	2.83E-06	1.89E-06	3.63E-06	1.78E-05
Carbon Disulfide	00075-15-0	2.16E-06	5.35E-04	3.15E-06	3.46E-06	< 1.29E-05	4.20E-06	1.32E-03	3.47E-04	5.75E-04	9.50E-04
Carbonyl Sulfide	463-58-1	< 3.16E-06	3.65E-06	< 3.08E-06	< 4.50E-06	< 6.44E-06	< 3.75E-06	< 3.11E-06	< 3.25E-06	4.39E-05	3.33E-05
Chloroethane	00075-00-3	< 2.58E-06	< 6.29E-06	< 2.52E-06	< 1.34E-06	< 1.29E-05	< 3.06E-06	< 2.52E-06	< 9.90E-07	< 2.42E-06	< 5.94E-06
Chloromethane	00074-87-3	1.06E-06	< 6.29E-06	7.87E-07	< 1.34E-06	< 1.29E-05	< 3.06E-06	< 2.52E-06	< 9.90E-07	8.77E-07	< 5.94E-06
Cumene	98-82-8	3.64E-08	5.90E-08	5.96E-08	9.03E-08	7.43E-08	2.76E-06	3.20E-08	3.55E-08	4.00E-08	4.55E-08
Dibenzofuran	132-64-9	6.38E-08	5.04E-08	1.54E-07	< 6.45E-08	< 1.33E-07	< 6.87E-08	2.77E-08	< 4.61E-08	5.64E-08	3.27E-08
Dimethylphthalate	131-11-3	< 1.61E-07	7.78E-08	< 8.80E-08	1.80E-07	< 1.64E-07	6.72E-08	< 5.97E-08	< 6.18E-08	< 7.71E-08	< 7.82E-08
Di-n-butylphthalate	84-74-2	5.47E-08	2.11E-06	3.01E-07	1.39E-07	7.80E-07	7.16E-06	8.30E-06	0.00E+00	2.58E-07	0.00E+00
Ethylbenzene	100-41-4	< 1.42E-06	< 1.39E-06	< 1.39E-06	1.34E-06	< 2.85E-06	< 1.69E-06	< 1.39E-06	< 1.09E-06	< 1.34E-06	< 1.31E-06
Hexachlorobutadiene	87-68-3	< 6.16E-07	< 2.38E-07	< 2.92E-07	< 3.37E-07	< 6.39E-07	3.93E-07	< 2.17E-07	< 2.33E-07	< 2.77E-07	< 2.86E-07
Methylene Chloride	00075-09-2	1.26E-03	4.09E-04	2.27E-03	1.76E-04	5.15E-04	4.59E-03	1.16E-03	1.72E-03	1.60E-03	1.13E-03
m-Xylene + p-Xylene	108-38-3/106-42-3	1.01E-06	1.91E-06	9.03E-06	9.24E-06	3.20E-06	< 1.69E-06	< 1.39E-06	< 1.08E-06	< 1.34E-06	< 1.31E-06
Naphthalene	91-20-3	3.29E-07	4.59E-07	5.78E-07	1.57E-06	2.37E-06	4.04E-06	2.81E-07	1.67E-06	3.71E-07	3.31E-07
n-Hexane	110-54-3	7.49E-06	1.03E-05	6.96E-06	1.66E-05	9.22E-06	1.64E-05	4.12E-06	3.12E-05	2.69E-06	< 1.06E-06
o-Toluidine	95-53-4	< 1.82E-07	1.59E-06	< 8.05E-08	< 1.39E-07	< 1.84E-07	< 1.51E-07	< 8.26E-08	< 9.86E-08	2.21E-06	< 8.24E-08
o-Xylene	95-47-6	< 1.42E-06	< 1.39E-06	< 1.39E-06	2.01E-06	1.78E-06	< 1.69E-06	< 1.39E-06	< 1.09E-06	< 1.34E-06	< 1.31E-06
Phenol	108-95-2	6.12E-07	5.37E-07	5.19E-07	9.67E-07	4.22E-07	1.28E-06	4.18E-07	4.62E-07	5.37E-07	7.79E-07
Propylene Oxide	00075-56-9	< 5.15E-06	1.04E-04	< 5.03E-06	< 2.58E-06	< 2.58E-05	< 6.12E-06	< 5.03E-06	3.63E-05	< 4.84E-06	< 1.19E-05
Tetrachloroethene	00127-18-4	< 2.58E-06	< 6.29E-06	5.35E-07	< 1.34E-06	< 1.29E-05	< 3.06E-06	< 2.52E-06	< 9.90E-07	< 2.42E-06	< 5.94E-06
Toluene	108-88-3	4.23E-06	5.20E-06	5.03E-06	1.18E-05	3.00E-06	2.72E-06	2.76E-06	2.30E-06	2.98E-06	< 1.14E-06

TABLE 6.X-9. UNCONTROLLED EMISSION FACTORS FOR A PLATEN PRESS [a]

Pollutant Category	CAS #	Cmpd. #14 lb/lb-rubber	Cmpd. #16 lb/lb-rubber	Cmpd. #17 lb/lb-rubber	Cmpd. #19 lb/lb-rubber	Cmpd. #20 lb/lb-rubber	Cmpd. #22 lb/lb-rubber	Cmpd. #23 lb/lb-rubber	Mean lb/lb-rubber	Max. lb/lb-rubber
TOTAL VOCs		1.93E-04	2.91E-04	2.25E-03	2.43E-03	2.26E-04	4.68E-04	1.12E-04	6.15E-04	2.43E-03
TOTAL SPECIATED ORGANICS		< 3.93E-03	< 1.99E-03	< 3.95E-03	< 3.60E-03	< 2.87E-03	< 2.89E-03	< 1.41E-03	< 2.86E-03	< 5.70E-03
TOTAL HAPs		< 3.66E-03	< 1.66E-03	< 2.20E-03	< 6.13E-04	< 2.59E-03	< 2.81E-03	< 1.24E-03	< 2.07E-03	< 6.13E-03
Individual HAPs:										
1,1,1-Trichloroethane	00071-55-6	2.05E-06	2.45E-06	1.51E-05	2.25E-06	3.34E-06	4.51E-06	2.04E-06	< 2.62E-05	3.56E-04
1,2,4-Trichlorobenzene	120-82-1	< 5.08E-08	< 1.50E-07	1.66E-08	< 1.39E-07	< 4.84E-08	< 1.93E-07	< 1.30E-07	< 1.81E-07	< 3.64E-07
1,3-Butadiene	106-99-0	2.17E-05	< 7.08E-07	< 7.08E-07	1.00E-05	2.56E-05	< 6.78E-07	6.77E-06	< 6.60E-06	2.56E-05
1,4-Dichlorobenzene	106-46-7	8.94E-06	9.15E-08	5.27E-08	5.01E-08	9.11E-06	< 1.59E-07	8.08E-08	< 9.32E-08	< 1.75E-07
2-Butanone	00078-93-3	< 5.14E-06	1.20E-06	< 5.03E-06	1.30E-05	1.76E-06	< 9.62E-06	1.30E-06	< 5.80E-06	< 2.58E-05
2-Chloro-1,3-Butadiene	00126-99-8						4.01E-06		6.54E-06	9.08E-06
2-Methylphenol	95-48-7	< 5.24E-08	< 1.28E-07	< 4.97E-08	< 2.06E-07	1.42E-08	< 2.07E-07	< 1.14E-07	< 1.50E-07	< 3.33E-07
3/4-Methylphenol	108-39-4/106-44-5	< 4.93E-08	7.35E-08	< 4.67E-08	< 1.93E-07	6.69E-08	< 1.97E-07	5.68E-08	< 1.40E-07	< 3.14E-07
4-Methyl-2-pentanone	00108-10-1	< 2.57E-06	< 2.52E-06	< 2.52E-06	< 5.76E-06	< 2.43E-06	< 2.21E-05	< 2.47E-06	< 1.15E-05	1.16E-04
Acetaldehyde	00075-07-0						4.01E-06		5.00E-06	7.64E-06
Acrylonitrile	75-05-8	< 5.14E-06	< 5.03E-06	< 5.03E-06	< 1.15E-05	< 4.86E-06	< 9.62E-06	< 4.94E-06	< 7.65E-06	< 2.58E-05
Acetophenone	98-86-2	2.16E-06	5.44E-07	6.49E-07	2.21E-07	8.33E-07	4.01E-06	3.37E-07	< 2.67E-05	4.40E-04
Acrylonitrile	00107-13-1	3.02E-05	< 5.03E-06	< 5.03E-06	< 1.15E-05	< 4.86E-06	< 9.62E-06	< 4.94E-06	< 8.96E-06	3.02E-05
Aniline	62-53-3	< 2.93E-06	6.15E-08	1.02E-03	< 1.05E-07	< 2.71E-08	4.26E-06	2.83E-06	< 6.04E-05	1.02E-03
Benzene	71-43-2	1.15E-06	9.88E-07	1.06E-06	5.62E-06	1.00E-06	< 1.09E-06	< 1.00E-06	< 1.40E-06	5.62E-06
Benzidine	92-87-5	< 4.62E-08	< 8.55E-08	< 5.12E-08	< 1.03E-07	< 3.84E-08	2.79E-07	< 8.97E-08	< 3.80E-07	4.54E-06
Biphenyl	92-52-4	< 2.31E-08	< 6.00E-08	< 2.41E-08	< 7.77E-08	< 2.14E-08	< 7.75E-08	< 5.38E-08	< 8.47E-08	3.06E-07
bis(2-Ethylhexyl)phthalate	117-81-7	2.41E-06	3.37E-06	4.14E-06	4.33E-06	2.57E-06	2.65E-06	6.50E-06	4.61E-06	1.76E-05
Carbon Disulfide	00075-15-0	8.67E-04	5.56E-06	6.29E-06	< 5.76E-06	4.25E-06	1.63E-04	8.64E-06	< 2.83E-04	1.32E-03
Carbonyl Sulfide	463-58-1	8.79E-05	< 3.08E-06	< 3.08E-06	< 2.88E-06	< 2.98E-06	< 4.00E-06	2.64E-06	< 1.40E-05	8.79E-05
Chlorobenzene	00075-00-3	< 2.57E-06	1.48E-06	< 2.52E-06	< 5.76E-06	< 2.43E-06	< 4.81E-06	< 2.47E-06	< 3.68E-06	< 1.29E-05
Chloromethane	00074-87-3	< 2.57E-06	5.81E-07	1.04E-06	< 5.76E-06	9.73E-07	< 4.81E-06	1.05E-06	< 3.09E-06	< 1.29E-05
Cumene	98-82-8	5.08E-08	< 4.05E-08	4.82E-08	< 7.27E-08	4.27E-08	9.44E-08	2.24E-08	< 2.12E-07	2.76E-06
Dibenzofuran	132-64-9	5.70E-08	4.05E-08	3.31E-08	< 6.52E-08	3.99E-08	< 6.21E-08	4.19E-08	< 6.10E-08	1.54E-07
Dimethylphthalate	131-11-3	6.62E-08	5.55E-08	9.18E-08	< 8.14E-08	< 2.28E-08	9.90E-08	< 6.13E-08	< 8.61E-08	1.80E-07
Di-n-butylphthalate	84-74-2	4.78E-07	5.40E-08	9.64E-06	2.12E-07	4.47E-07	1.42E-07	3.58E-08	< 1.50E-06	9.64E-06
Ethylbenzene	100-41-4	< 1.42E-06	< 1.39E-06	< 1.39E-06	< 1.27E-06	< 1.34E-06	< 1.33E-06	< 1.36E-06	< 1.45E-06	< 2.85E-06
Hexachlorobutadiene	87-68-3	< 1.02E-07	< 2.61E-07	< 9.94E-08	< 1.88E-07	< 9.54E-08	< 3.36E-07	< 2.26E-07	< 2.84E-07	< 6.39E-07
Methylene Chloride	00075-09-2	2.60E-03	1.57E-03	1.10E-03	1.96E-04	2.49E-03	2.30E-03	1.14E-03	1.54E-03	4.59E-03
m-Xylene + p-Xylene	108-38-3/106-42-3	< 1.42E-06	< 1.39E-06	< 1.39E-06	< 1.27E-06	< 1.34E-06	< 1.42E-06	< 1.36E-06	< 2.40E-06	9.24E-06
Naphthalene	91-20-3	6.12E-07	2.50E-07	5.23E-07	0.00E+00	3.70E-07	3.00E-06	3.71E-07	1.01E-06	4.04E-06
n-Hexane	110-54-3	6.50E-06	5.25E-06	5.26E-06	3.00E-04	2.63E-05	8.53E-06	4.96E-06	< 2.72E-05	3.00E-04
o-Toluidine	95-53-4	< 3.24E-08	< 7.35E-08	< 3.01E-08	< 1.13E-07	< 2.99E-08	< 1.05E-07	< 6.58E-08	< 3.07E-07	2.21E-06
o-Xylene	95-47-6	< 1.42E-06	< 1.39E-06	< 1.39E-06	< 1.27E-06	< 1.34E-06	< 1.33E-06	< 1.36E-06	< 1.43E-06	2.01E-06
Phenol	108-95-2	2.67E-06	5.19E-07	< 3.61E-08	< 1.44E-07	5.85E-07	5.53E-07	3.96E-07	< 6.72E-07	2.67E-06
Propylene Oxide	00075-56-9	< 5.14E-06	< 5.03E-06	< 5.03E-06	< 1.15E-05	< 4.86E-06	< 2.66E-05	< 4.94E-06	< 1.59E-05	1.04E-04
Tetrachloroethylene	00127-18-4	< 2.57E-06	< 2.52E-06	< 2.52E-06	< 5.76E-06	< 2.43E-06	< 4.81E-06	< 2.47E-06	< 3.83E-06	< 1.29E-05
Toluene	108-88-3	3.87E-06	3.96E-06	3.27E-06	9.94E-06	4.49E-06	4.22E-06	5.57E-06	< 6.71E-06	3.96E-05

TABLE 6.X-9 UNCONTROLLED EMISSION FACTORS FOR A PLATEN PRESS [a]

a To determine emission factors for compounds not listed in this table, multiply table 6.X-3 VOC data by 5.80, speciated organics by 27.14, and HAPs by 43.40.
b Formaldehyde 1.88×10^{-6} lb/lb rubber
c Formaldehyde 1.23×10^{-6} lb/lb rubber
d Compound judged to be one of the most prodigious emitters of formaldehyde. Sampling was conducted using EPA method TO-11. Analysis was conducted using EPA method TO-11/HPLC.
Due to the high reactivity and propensity of formaldehyde to become quickly bound up with other available chemicals, formaldehyde emissions from other compounds and processes are judged to be insignificant.
A blank space indicates that the compound was a Tentatively identified Compound (TIC) and was not detected in that sample.
A "0" indicates a blank correction that resulted in a "0" or a negative value.

TABLE 6.X-10. UNCONTROLLED EMISSION FACTORS FOR A HOT AIR OVEN [c]

Chemical Compound	CAS Numbers	Cmpd. #5 (a) lbs/lb rubber	Cmpd. #8 (a) lbs/lb rubber	Cmpd. #22 (a) lbs/lb rubber	MEAN lbs/lb rubber	MAX lbs/lb rubber
TOTAL VOCs		5.56E-04	1.68E-03	1.12E-04	7.83E-04	1.68E-03
TOTAL SPECIATED ORGANICS		< 8.77E-04	< 2.06E-03	< 3.36E-03	< 2.10E-03	< 3.36E-03
TOTAL HAPs		< 1.38E-04	< 1.09E-03	< 2.03E-03	< 1.08E-03	< 2.03E-03
Individual HAPs:						
1,1-Dichloroethane	00075-34-3	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
1,1-Dichloroethene	00075-35-4	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
1,1,1-Trichloroethane	00071-55-6	1.12E-06	< 4.26E-06	< 5.84E-06	< 3.74E-06	< 5.84E-06
1,1,2-Trichloroethane	00079-00-5	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
1,1,2,2-Tetrachloroethane	00079-34-5	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
1,2-Dibromo-3-Chloropropane	00096-12-8	< 2.59E-06	< 8.52E-06	< 1.17E-05	< 7.59E-06	< 1.17E-05
1,2-Dibromoethane	00106-93-4	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
1,2-Dichloroethane	00107-06-2	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
1,2-Dichloropropane	00078-87-5	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
1,2,4-Trichlorobenzene	120-82-1	< 3.94E-08	< 7.23E-08	< 1.83E-07	< 1.18E-07	< 1.83E-07
1,3-Butadiene	00106-99-0	< 3.58E-07	1.24E-06	< 3.23E-07	< 6.39E-07	1.24E-06
1,4-Dichlorobenzene	00106-46-7	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
1,4-Dioxane	00123-91-1	< 5.18E-06	< 1.70E-05	< 2.33E-05	< 1.52E-05	< 2.33E-05
1,4-Phenylenediamine	106-50-3	< 3.94E-08	< 7.23E-08	< 1.83E-07	< 1.18E-07	< 1.83E-07
2-Butanone	00078-93-3	1.62E-06	< 8.52E-06	< 1.17E-05	< 7.27E-06	< 1.17E-05
2-Methylphenol	95-48-7	< 1.25E-07	< 8.50E-08	< 2.12E-07	< 1.41E-07	< 2.12E-07
2,2,4-Trimethylpentane	00565-75-3	< 3.78E-07	5.54E-07	5.79E-06	< 2.24E-06	5.79E-06
2,4-Dinitrophenol	005-12-85	< 5.15E-07	< 5.19E-07	< 1.29E-06	< 8.07E-07	< 1.29E-06
2,4-Dinitrotoluene	121-14-2	< 1.44E-07	< 1.22E-07	< 3.02E-07	< 1.89E-07	< 3.02E-07
2,4,5-Trichlorophenol	95-95-4	< 1.30E-07	< 1.08E-07	< 2.70E-07	< 1.69E-07	< 2.70E-07
2,4,6-Trichlorophenol	88-06-2	< 1.27E-07	< 1.06E-07	< 2.61E-07	< 1.65E-07	< 2.61E-07
2,3'-Dichlorobenzidine	91-94-1	< 3.33E-08	< 5.95E-08	< 1.19E-07	< 8.73E-08	< 1.19E-07
3,3'-Dimethoxybenzidine	119-90-4	< 1.31E-07	< 9.46E-08	< 1.89E-07	< 1.38E-07	< 1.89E-07
3,3'-Dimethylbenzidine	119-93-7	< 4.81E-08	< 3.51E-08	< 6.97E-08	< 5.09E-08	< 6.97E-08
3/4-Methylphenol	108-39-4/106-44-5	3.19E-07	< 8.19E-08	2.03E-07	< 2.01E-07	3.19E-07
4-Aminobiphenyl	92-67-1	< 4.97E-08	< 4.15E-08	< 9.29E-08	< 6.13E-08	< 9.29E-08
4-Methyl-2-pentanone	00108-10-1	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
4-Nitrobiphenyl	92-93-3	< 3.30E-08	< 7.55E-08	< 1.71E-07	< 1.13E-07	< 1.71E-07
4-Nitrophenol	100-02-7	< 2.98E-07	< 2.51E-07	< 6.21E-07	< 3.90E-07	< 6.21E-07
4,4'-Methylenedianiline	101-77-9	< 1.17E-07	< 8.40E-08	< 1.68E-07	< 1.23E-07	< 1.68E-07
4,6-Dinitro-2-methylphenol	534-52-1	< 2.59E-07	< 2.21E-07	< 4.99E-07	< 3.30E-07	< 4.99E-07
Acetonitrile	75-05-8	5.31E-07	< 8.52E-06	< 1.17E-05	< 6.94E-06	< 1.17E-05
Acetophenone	00098-86-2	3.06E-07	2.13E-04	1.46E-05	7.60E-05	2.13E-04
Acrolein	00107-02-8	7.92E-07	< 8.52E-06	9.34E-06	< 6.22E-06	9.34E-06
Acrylonitrile	00107-13-1	< 2.59E-06	< 8.52E-06	< 1.17E-05	< 7.59E-06	< 1.17E-05
Allyl Chloride	00107-05-1	< 2.59E-06	< 8.52E-06	< 1.17E-05	< 7.59E-06	< 1.17E-05
Aniline	62-53-3	< 7.53E-08	1.48E-07	8.85E-07	< 3.69E-07	8.85E-07
a,a,a-Trichlorotoluene	98-07-7	< 9.30E-08	< 6.80E-08	< 1.71E-07	< 1.11E-07	< 1.71E-07
Benzene	00071-43-2	1.46E-06	4.88E-05	4.04E-06	1.81E-05	4.88E-05
Benzidine	92-87-5	< 4.97E-08	< 3.51E-08	< 6.97E-08	< 5.15E-08	< 6.97E-08
Benzyl Chloride	00100-44-7	< 2.59E-06	< 8.52E-06	< 1.17E-05	< 7.59E-06	< 1.17E-05
Biphenyl	92-52-4	3.77E-07	3.92E-07	< 3.96E-06	< 1.58E-06	< 3.96E-06
bis(2-Chloroethyl)ether	111-44-4	< 1.14E-07	< 7.87E-08	< 1.94E-07	< 1.29E-07	< 1.94E-07
bis(2-Ethylhexyl)phthalate	117-81-7	< 2.72E-08	2.74E-07	1.05E-06	< 4.52E-07	1.05E-06
Bromoform	00075-25-2	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
Bromomethane	00074-83-9	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
Carbon Disulfide	00075-15-0	1.60E-06	4.69E-04	1.20E-03	5.56E-04	1.20E-03
Carbon Tetrachloride	00056-23-5	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
Carbonyl Sulfide	463-58-1	< 3.23E-06	< 2.13E-05	< 2.86E-05	< 1.77E-05	< 2.86E-05
Chlorobenzene	00108-90-7	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
Chloroethane	00075-00-3	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
Chloroform	00067-66-3	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
Chloromethane	00074-87-3	4.21E-07	< 4.26E-06	< 5.84E-06	< 3.51E-06	< 5.84E-06
Cumene	98-82-8	< 5.13E-08	8.08E-08	3.86E-07	< 1.73E-07	3.86E-07
Dibenzofuran	132-64-9	1.95E-06	2.10E-06	3.29E-06	< 2.45E-06	3.29E-06
Dimethylaminoazobenzene	60-11-7	< 7.37E-08	< 5.32E-08	< 1.04E-07	< 7.71E-08	< 1.04E-07
Dimethylphthalate	131-11-3	4.65E-08	3.19E-08	< 8.71E-08	< 5.52E-08	< 8.71E-08
Di-n-butylphthalate	84-74-2	7.61E-06	0.00E+00	1.00E-06	2.87E-06	7.61E-06
Epichlorohydrin	00106-89-8	< 2.59E-06	< 8.52E-06	< 1.17E-05	< 7.59E-06	< 1.17E-05
Ethylbenzene	00100-41-4	< 3.51E-07	< 2.31E-07	< 3.17E-07	< 3.00E-07	< 3.51E-07

TABLE 6.X-10. UNCONTROLLED EMISSION FACTORS FOR A HOT AIR OVEN [c]

Chemical Compound	CAS Numbers	Cmpd. #5 (a) lbs/lb rubber	Cmpd. #8 (a) lbs/lb rubber	Cmpd. #22 (a) lbs/lb rubber	MEAN lbs/lb rubber	MAX lbs/lb rubber
Hexachloro-1,3-butadiene	00087-68-3	< 2.59E-06	< 8.52E-06	< 1.17E-05	< 7.59E-06	< 1.17E-05
Hexachlorobenzene	118-74-1	< 1.03E-07	< 8.40E-08	< 1.89E-07	< 1.25E-07	< 1.89E-07
Hexachlorobutadiene	87-68-3	< 1.59E-07	< 1.16E-07	< 2.93E-07	< 1.89E-07	< 2.93E-07
Hexachlorocyclopentadiene	77-47-4	< 1.55E-07	< 1.32E-07	< 3.25E-07	< 2.04E-07	< 3.25E-07
Hexachloroethane	67-72-1	< 2.05E-07	< 1.40E-07	< 3.51E-07	< 2.32E-07	< 3.51E-07
Hydroquinone	123-31-9	< 8.82E-08	< 6.49E-08	< 1.63E-07	< 1.05E-07	< 1.63E-07
Isooctane	00540-84-1	1.79E-06	< 2.49E-07	< 3.41E-07	< 7.95E-07	1.79E-06
Isophorone	78-59-1	< 4.97E-08	< 3.61E-08	< 9.00E-08	< 5.86E-08	< 9.00E-08
Methylene bis-chloroaniline	101-14-4	< 1.57E-07	< 1.14E-07	< 2.26E-07	< 1.66E-07	< 2.26E-07
Methylene Chloride	00075-09-2	2.59E-05	5.86E-05	3.21E-04	1.35E-04	3.21E-04
m-Xylene	00108-38-3	< 3.51E-07	1.33E-06	< 3.17E-07	< 6.66E-07	1.33E-06
Naphthalene	91-20-3	1.34E-06	1.07E-06	2.32E-06	1.58E-06	2.32E-06
n-Hexane	00110-54-3	3.90E-06	3.13E-06	6.86E-06	4.63E-06	6.86E-06
Nitrobenzene	98-95-3	< 8.98E-08	< 5.59E-08	< 1.65E-07	< 1.07E-07	< 1.65E-07
n-Nitrosodimethylamine	62-75-9	< 2.05E-07	< 1.40E-07	< 3.48E-07	< 2.31E-07	< 3.48E-07
n-Nitrosomorpholine	59-89-2	< 2.45E-07	< 1.68E-07	< 4.18E-07	< 2.77E-07	< 4.18E-07
N,N-Dimethylaniline	121-69-7	< 5.89E-08	< 5.00E-08	< 1.26E-06	< 4.60E-07	< 1.26E-06
o-Anisidine	90-04-0	< 1.31E-07	< 9.57E-08	< 2.44E-07	< 1.57E-07	< 2.44E-07
o-Toluidine	95-53-4	< 8.17E-08	< 5.63E-08	< 1.39E-07	< 9.25E-08	< 1.39E-07
o-Xylene	00095-47-6	5.44E-07	4.92E-05	< 3.17E-07	< 1.67E-05	4.92E-05
Pentachloronitrobenzene	82-68-8	< 3.48E-07	< 2.86E-07	< 6.47E-07	< 4.27E-07	< 6.47E-07
Pentachlorophenol	87-86-5	< 1.62E-07	< 1.33E-07	< 2.99E-07	< 1.98E-07	< 2.99E-07
Phenol	108-95-2	1.20E-06	3.41E-07	2.16E-06	1.23E-06	2.16E-06
Propylene Oxide	00075-56-9	< 2.59E-06	< 8.52E-06	< 1.17E-05	< 7.59E-06	< 1.17E-05
p-Xylene	00106-42-3	1.93E-06	2.95E-06	2.53E-05	1.01E-05	2.53E-05
Styrene	00100-42-5	8.61E-07	4.25E-07	4.51E-07	5.79E-07	8.61E-07
Substituted Benzene	71-43-2	b	2.13E-06		2.13E-06	2.13E-06
Substituted Naphthalene	91-20-3	1.89E-05			1.89E-05	1.89E-05
Substituted Quinoline	91-22-5			1.23E-04	1.23E-04	1.23E-04
t-Butyl Methyl Ether	01634-04-4	< 2.59E-06	< 3.52E-06	< 1.17E-05	< 7.59E-06	< 1.17E-05
Tetrachloroethene	00127-18-4	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
Toluene	00108-88-3	2.75E-06	4.37E-06	5.25E-06	4.12E-06	5.25E-06
Trichloroethene	00079-01-6	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
Trifluralin	1582-09-8	< 1.72E-07	< 1.45E-07	< 3.57E-07	< 2.24E-07	< 3.57E-07
Vinyl Acetate	00108-05-4	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06
Vinyl Chloride	00075-01-4	< 1.29E-06	< 4.26E-06	< 5.84E-06	< 3.80E-06	< 5.84E-06

a Compound 5 was green unextruded rubber. Compounds 8 and 22 were preextruded general products.

b A blank space means that the compound was a Tentatively Identified Compound (TIC) and was not detected in that sample.

c To determine emission factors for compounds not listed in this table, multiply table 6.X-3 VOC data by 7.39, speciated organics by 21.43 and HAPs by 22.64.

TABLE 6.X-11. UNCONTROLLED EMISSION FACTORS FOR GRINDING

Pollutant Category	CAS #	Sidewall Grinding (a) lb/lb-rubber	Carcass Grinding (a) lb/lb-rubber	Belt Grinding (a) lb/lb-rubber	Retread Buffing (b) lb/lb-rubber
TOTAL VOCs		1.57E-02	5.18E-04	1.79E-03	2.40E-04
TOTAL SPECIATED ORGANICS		< 1.02E-02	< 1.64E-02	< 2.83E-03	< 1.13E-05
TOTAL METAL HAPs		7.01E-05	6.52E-06	2.69E-05	5.18E-08
TOTAL ORGANIC HAPs		< 1.26E-03	< 1.39E-02	< 2.04E-03	< 7.09E-07
TOTAL PARTICULATE MATTER (PM) c,d		1.23	0.55	1.19	9.48E-03
TOTAL HAPs		< 1.33E-03	< 1.39E-02	< 2.07E-03	< 7.60E-07
Individual HAPs:					
1,3-Butadiene	106-99-0	< 2.44E-05	2.65E-05	2.41E-05	< 3.00E-10
1,4-Dichlorobenzene	00106-46-7	< 4.64E-06	< 5.70E-07	< 6.27E-07	2.63E-09
2-Butanone	00078-93-3	< 4.63E-05	< 7.04E-07	< 1.16E-05	2.52E-10
4-Methyl-2-pentanone	00108-10-1	< 2.85E-05	1.92E-05	< 6.50E-06	1.41E-08
Acetaldehyde	75-07-0			1.02E-05	
Acetophenone	98-86-2	3.37E-06	< 8.52E-07	5.90E-06	1.89E-08
Acrolein	00107-02-8	< 5.71E-05	< 1.89E-06	< 1.18E-05	7.34E-09
Aniline	62-53-3	4.05E-04	1.97E-05	< 7.17E-07	5.66E-08
Benzene	71-43-2	1.33E-05	< 4.25E-06	< 8.80E-07	1.56E-07
Biphenyl	92-52-4	< 2.56E-06	< 4.90E-07	< 3.81E-07	5.63E-09
bis(2-Ethylhexyl)phthalate	117-81-7	1.84E-05	7.94E-06	5.30E-05	1.99E-08
Carbon Disulfide	00075-15-0	< 2.73E-05	1.40E-06	3.03E-04	1.13E-08
Dibenzofuran	132-64-9	< 2.00E-06	1.59E-07	< 2.84E-07	< 3.64E-09
Di-n-butylphthalate	84-74-2	1.69E-06	< 2.28E-06	3.31E-06	3.87E-08
Ethylbenzene	100-41-4	5.70E-05	< 3.94E-07	< 8.97E-07	< 1.78E-10
Isooctane	540-84-1	1.15E-04	< 1.10E-05	< 9.65E-07	< 1.92E-10
Isophorone	78-59-1	< 2.59E-06	< 5.47E-07	< 4.26E-07	6.46E-09
Methylene Chloride NOT VOC	75-09-2	< 3.36E-05	4.19E-03 e	4.98E-05	2.79E-09
m-Xylene + o-Xylene	108-38-3/106-42-3	< 3.21E-05	< 2.30E-06	8.51E-06	< 9.61E-10
Naphthalene	91-20-5	3.81E-06	5.81E-07	4.02E-06	2.11E-08
n-Hexane	110-54-3	1.24E-04	< 1.60E-05	4.18E-05	< 1.93E-10
o-Toluidine	95-53-4	< 3.93E-06	2.55E-06	< 6.83E-07	< 7.56E-09
o-Xylene	95-47-6	< 1.90E-05	< 3.94E-07	5.40E-06	< 7.62E-10
Phenol	108-95-2	1.57E-05	< 1.79E-06	8.88E-06	3.04E-07
Tetrachloroethene	127-18-4	< 2.85E-05	< 5.70E-07	1.39E-04	< 2.23E-10
Toluene	108-88-3	1.86E-04	9.59E-03 e	1.35E-03	< 6.43E-09
Cadmium		1.36E-06	8.62E-07	2.80E-07	
Chromium		2.54E-05	1.59E-06	5.17E-06	2.53E-08
Lead		2.92E-05	2.04E-06	3.18E-06	
Nickel		1.41E-05	2.03E-06	1.83E-05	1.78E-08
Cobalt					8.74E-09

a Sidewall, Carcass, and Belt Grinding-pounds emitted per pound of rubber removed or ground off (lb/lb rubber removed).
b Retread Buffing-pounds emitted per pound of rubber processed (lb/lb rubber processed).
c Particulate matter control:
sidewall by cyclone 91.9%
carcass by cyclone 97.8%
belt by cyclone and ESP 99.97%
retread by cyclone and baghouse 97.9%
For uncontrolled PM emissions Sidewall, Carcass or Belt Grinding us a factor of 1.0 lb emitted per pound of rubber removed.
e Value exceeds that of total VOC. This discrepancy is being investigated.

RUBBER MANUFACTURERS ASSOCIATION

VIA UPS OVERNIGHT

June 6, 1995

Ron Ryan, Environmental Engineer
Emission Factors and Inventory Group
Emissions Monitoring and Analysis Division (EMAD)
Office of Air Quality Planning and Standards
United States Environmental Protection Agency
79 T. W. Alexander Drive
Building 4201, 4th Floor
Research Triangle Park, North Carolina 27709

Dear Mr. Ryan:

Several RMA member company representatives and I look forward to our June 12, 1995, meeting with you concerning our desire to have the recently developed emission factors for rubber products manufacturing incorporated into the EPA AP 42 publication. Since we are extremely interested in moving the process of incorporation along as quickly as possible, our proposed addition to AP 42 and substantiating analytical and engineering data is arriving under separate cover.

We will judge the June 12 meeting a success if it provides us with a clear understanding of what we need to do to keep the process moving in as prompt a manner as possible.

Questions that come to mind are:

1) If the format and content of our proposal is not acceptable, what revisions are necessary?

2) If the substantiating data is not adequate, what additional data is necessary?

3) What other information is required?

4) What is the reasonable schedule, i.e., when would you anticipate the factors to be incorporated into AP 42?

5) What impediments to a prompt and smooth incorporation of our proposal do you anticipate?

6) What additional assistance can we provide to ensure the process goes smoothly?

1400 K STREET, N.W., WASHINGTON, D.C. 20005 • TELEPHONE (202) 682-4800 • FAX (202) 682-4854

We feel strongly that the Title V permitting activity and understanding of air emissions from rubber manufacturing facilities will be greatly enhanced by having this emission data in the hands of state air pollution control agencies. We therefore anticipate making the proposal we have presented to you available to them after our June 12 meeting.

We are committed to this AP 42 activity and want to be your partner in bringing it to a prompt resolution.

Sincerely,

Dale A. Louda, Jr.,
Manager of Regulatory Affairs

c: RMA Environment Committee

Enclosure: Suggested Agenda

Separately: Proposed Section 6.X Rubber Products (clear copy) 6/95.

Proposed Section 6.X Rubber Products (annotated copy with reverences to the source of the data) 6/95.

Development of Emission Factors for the Rubber Manufacturing Industry: TRC Environmental Corporation; Volume 1, May, 1995; Volume 2, January, 1995; Volume 3, January, 1995; Volume 4, May, 1995.

Emissions from Autoclaves calculations: E. W. Karger, 2/28/95.

Interpolation Factors for Total VOC, Total Speciated Organics, Total Organic HAPs, Total Metal HAPs, Total HAPs, and Total Particulate Matter: E. W. Karger, 6/2/95.

Emissions from non-productive/productive mixing: E. W. Karger, 5/30/95.

Presentation by

The Rubber Manufacturers Association

to

The Environmental Protection Agency

L94-454.txt

RUBBER MANUFACTURERS ASSOCIATION (RMA)

TIRE MANUFACTURERS

- 13 Manufacturers – MC to off-road tires
- 39 Factory locations
- Producing over 250 million tires annually, including:

  Motorcycle

  Passenger

  Light Truck

  Medium Truck

  Off Road Tires

RUBBER MANUFACTURERS ASSOCIATION
GENERAL PRODUCTS GROUP

PRODUCTS

- BELTS
- HOSES
- ROOFING MATERIALS
- PRINTING ROLLS
- SEALS
- MOLDED PRODUCTS

RUBBER MANUFACTURERS ASSOCIATION
GENERAL PRODUCTS GROUP

- 90 COMPANIES
- 284 PLANT SITES
- EMPLOYMENT PER PLANT

# EMPLOYEES	# PLANTS
≤ 100	102 (36%)
101 - 500	160 (56%)
≥ 501	22 (8%)

Program Background and Goals

- **To pursue emission testing and development of emission factors for various processes, by using smaller scale equipment outside the factory setting due to the following:**
  - **The impracticality of multiple and repeated source testing in a factory setting.**
  - **The size and complexity of the process equipment, multiple sources of emissions on the same piece of equipment and impractical enclosures that do not allow realistic operation of equipment.**

Program Background and Goals

- The high degree of variability in production schedule and product mix.

- The cross contamination of samples due to adjacent sources of solvents or other VOC sources.

Program Background and Goals

- **Develop Emission Factors for Six Primary Rubber Manufacturing Processes**

VOL. ~~III~~

- **Provide an Applications Approach to Member Companies for Applying the Factors**

- **Produce a Documented Test Protocol Which Will Be Used for Factor Development**

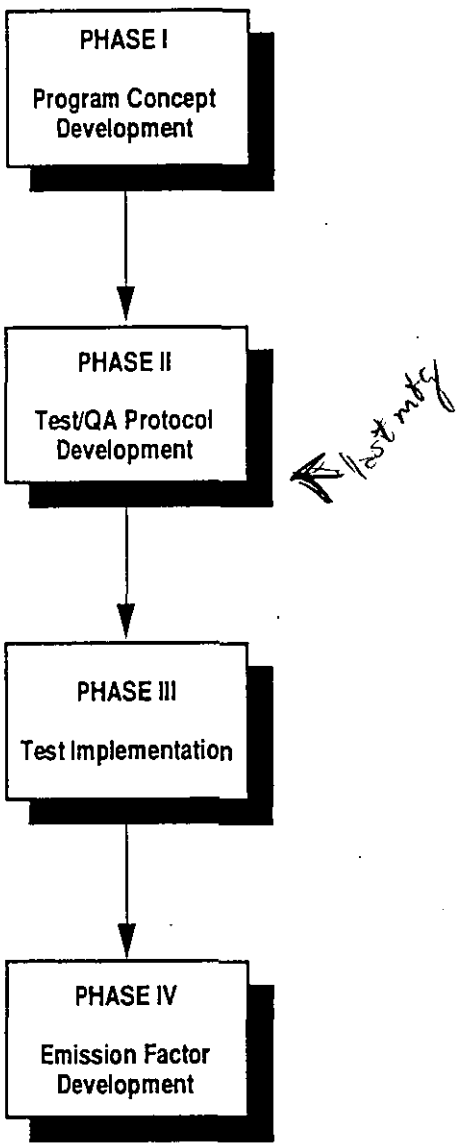
Program Approach

Program Approach
Process Priorities

- **Mixing & Milling Operations**
- **Warming Mills**
- **Calendaring** – laminating
- **Curing**
  - **Tire Curing press** Need
  - **Injection Molding**
  - **Autoclaving**
  - **Hot Air**
- **Rubber Extrusion**
- **Grinding operations**

Program Approach

Rubber Manufacturing Association
Rubber Manufacturing Processes
Emission Factor Development Program
Phased Approach



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Program Approach
Process Priorities

- **Mixing & Milling Operations** -lab scale & semi-production (½ size)
- **Warming Mills**
- **Calendaring**
- **Curing**
  - **Tire Curing press**
  - **Injection Molding**
  - **Autoclaving**
  - **Hot Air**
- **Rubber Extrusion**
- **Grinding operations**

Program Approach
Phase III Test program

MIXING / MILLING:

- **Conducted Tests on Lab Scale & Semi Production Size Equipment**
- **Conducted Measurements Utilizing Conventional test Methodologies and FTIR**
- **Established Correlation Between Two Sizes of Equipment and Measurement Methodologies**
- **Completed Testing on the Remainder of Compound Mixes Using Lab Scale Equipment**

Program Approach
Phase III Test program

Extrusion, Calendering & Grinding:

- **4" Extruder utilized** – $2\frac{1}{2}$" to 10" used in production
- **Grinding - all full size equipment tested**
  - **Tire "truing"**
  - **Tire white sidewall**
  - **Automotive drive / timing belts**
  - **Retreading**
    - **Carcass**
    - **Tread Buffing**
- **Calendaring - full size equipment tested** – factory setting

Program Approach
Phase III Test program

Tire Curing Press: - thought this would be largest source

- **Conducted tests on full size press**
- **Monitored heating and cooldown cycles**
- **Conducted Lab Scale Tests on Tire Cross Sections**
- **Established Relationship of Full Size Curing Press vs. Lab Press**
- **Conducted Additional Tests Using Lab Scale Equipment**

Program Approach
Phase III Test program

Curing Via Autoclave: - used for hoses, belts Not Tires

- **Conducted Testing on Full Scale Unit Only**
- **Engineered Products were Tested**

Program Approach Phase IV Emission Factor Development

- **Developed Process Emission factors for Generic Materials** - for both Tire & engin. products

- **Established Scale up (Down) Relationship Between Equipment Scale Tests vs. Production Size Equipment**

- **Established Statistical data Bounds Including estimates of Uncertainty**

RUBBER MANUFACTURERS ASSOCIATION

Rubber Manufacturers Association
AP-42 Submittal
June, 1995

INITIAL EPA REVIEW FOR COMPLETENESS AND APPLICABILITY
Items To Be Addressed By All Submittals

(1) Submitter's Name: *Rubber Manufacturers Association*
1400 K Street NW, Suite 900
Washington, DC 20005

(2) Contact Name: *Dale A. Louda, Jr.*
Same address as above
202.682.4839 (phone)
202.682.4854 (fax)

(3) AP-42 Section: *Organic Chemical Process Industry*

(4) Description of emission source affected: *VOCs and HAPs from mixing, milling, extruding, calendering, curing, grinding, in manufacturing of tires and general rubber products.*

(5) Estimated number of facilities affected: *1000*

(6) Estimated total emissions affected: *3000 Tons VOCs, 900 Tons HAPs*

(7) Description of proposed change or addition: *Addition of an estimating technique for a source not currently addressed by EPA.*

(8) New or marked up text of the proposed revision to AP-42, guidance document, or database citation, which clearly shows where the existing text is affected: *Submitted to Ron Ryan on June 6, 1995.*

(9) Brief description of the type and source of data or analyses supporting the request: *Analytical results expressed as pounds of emission per pound of rubber compound processes. Analyses were conducted by stack sampling of lab scale and full sized equipment using EPA approved test methods.*

(10) Estimate the range or uncertainty of the estimation technique: *Per standard of EPA test methods.*

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(11) Describe what effect(s) the proposed change might have on your facility: *For most rubber manufacturers, this will be the first time that VOCs and HAPs from the six processes have been defined. Completeness and accuracy of emission inventories will therefore be improved.*

(12) Any significant issues associated with the request: *Since two methods for defining VOCs exist, method 25A and speciated organics, it illustrates the difference in the results.*

(13) All data and analyses necessary to support the request, including test reports, material balance logs, data evaluations, etc.: *Submitted to Ron Ryan, June 6, 1995.*

(14) If test data are submitted:

a) Is the point tested clearly identified? *yes*
b) Were process parameters monitored and recorded? *yes*
c) Were process parameters within normal ranges? *yes*
d) Are upsets and deviations described and explained? *yes*
e) Are the test methods and procedures described? *yes*
f) Are the methods compatible with approved EPA methods? *yes*
g) Is there enough detail for EPA to validate the procedures identified? *yes*
h) Are deviations from the normal procedures identified? *yes*
i) Are original raw data and field data sheets included? *no*
j) Are QA/QC procedures described? *yes*

RUBBER MANUFACTURERS ASSOCIATION
Emission Factors Development Project

Meeting with representatives of the United States Environmental Protection Agency to discuss rubber manufacturing industry proposal to AP 42

Monday, June 12, 1995
1:00 p.m.
US EPA Offices
79 T. W. Alexander Drive
Building 4201, 4th Floor
Research Triangle Park, North Carolina

PROPOSED AGENDA

1) Introductions

2) Project Overview

3) Summary of Results

4) Submittal Completeness and Applicability

5) Open Discussion

EXPECTED RMA ATTENDEES

Continental General Tire Incorporated	John Finn
Dunlop Tire Corporation	Dan Pyanowski
The Gates Rubber Company	Ernie Karger
The Goodyear Tire and Rubber Company	Nancy Ray Jandrokovic
Rubber Manufacturers Asssociation	Dale Louda

RMA

RUBBER MANUFACTURERS ASSOCIATION

June 14, 1995

Ron Ryan, Environmental Engineer
Emission Factors and Inventory Group
Emissions Monitoring and Analysis Division (EMAD)
Office of Air Quality Planning and Standards
United States Environmental Protection Agency
MD-14
Research Triangle Park, North Carolina 27711

Dear Mr. Ryan:

On behalf of the Rubber Manufacturers Association, I want to thank-you for meeting with our group on June 12, 1995 at 1:00 p.m. to discuss the AP-42 submittal by the rubber manufacturing industry. We are proud of our work in developing universally acceptable, industry-wide emission factors for the rubber manufacturing industry. The RMA looks forward to working in concert with US EPA to produce an AP-42 that is workable, acceptable to all parties, and accurate.

I understand that you will send comments to our initial draft to me by July 4, 1995. We will respond to them as quickly as is practicable. I also understand from our meeting that once comments are returned to you, we can expect a draft AP-42 section for the rubber manufacturing industry to appear on the EPA Bulletin Board within about a week. After that, we can expect a 60 day comment period before final changes need to be made. Assuming the alterations are minor in nature, we can expect an AP-42 section for the rubber manufacturing industry to appear on the Bulletin Board by Thanksgiving of this year.

Thanks again and I look forward to working with you in the future.

Sincerely,

Dale A. Louda, Jr.,
Manager of Regulatory Affairs

c: Thomas Cole, RMA President
RMA Environment Committee
Ed Peduto, TRC Vice President

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Don Pyonnwski's

U. S. RUBBER MANUFACTURING

RUBBER EMISSIONS

Summary:
The total emissions of Volatile Organic Compounds (VOC) and Hazardous Air Pollutants (HAP) from mixed or "compounded" rubber manufactured by tire and engineered products manufacturers in the United States is presented below.

Sources of Data:

1. Emission Factors, generally based on pound of pollutants per pound of rubber produced is from: "Development of Emission Factors for the Rubber manufacturing Industry", Volume 4: Emission Factor Application Manual, May 1995, Presented to Rubber Manufacturers Association, by TRC Environmental Corporation.

2. Total U. S. Rubber Consumption - 1994, from the 1995 edition of "Tire Industry FACTS" prepared by the Rubber Manufacturers Association. Provides total synthetic and natural rubber used by the tire, tire products and non-tire products industries.

Data:

1. <u>1994 U. S. Rubber Consumption</u>:

Tire/Tire Products	1,955,000 metric tons
Non-Tire Products	1,164,000 metric tons
Total	3,119,000 metric tons

2. <u>% Consumption</u>:

Tire/Tire Products	62.7%
Non-Tire Products	37.3%

3. <u>Pounds Rubber Consumed</u> (2204.6 lbs./metric ton):

Tire/Tire Products	4,309,993,000 pounds
Non-Tire Products	2,566,154,400 pounds
Total	6,876,147,400 pounds

4. <u>Pounds Rubber Mixed</u> (2 times rubber consumed):*

Tire/Tire Products	8,619,986,000 pounds
Non-Tire Products	5,132,308,800 pounds
Total	13,752,294,800 pounds

U. S. RUBBER MANUFACTURING

RUBBER EMISSIONS

Emission Summary:

Emissions were calculated based on both the "mean" and "maximum" emission factors presented in the TRC Volume 4 Report. Also, weighted average emission factors from real tire plant data are also presented.

	VOC (Tons)	HAP (Tons)
U. S. Tire Manufacturing Only	2,004.4	597.2
All U. S. Rubber manufacturing (mean)	2,928.4	842.3
All U. S. Rubber Manufacturing (max.)	6,514.5	1,947.3

The above figures were calculated on the attached spreadsheets, file names: RMAEMIST.xls, RMAEMISM.xls, RMAEMISX.xls.

Notes:

* The quantity of rubber mixed is based on two (2) times the "raw" rubber weight. Carbon black, oils, pigments and other ingredients are added to the synthetic and natural (raw) rubber to produce mixed or "compounded" rubber. Emission factors have been developed based on the quantity of mixed rubber.

file: RMAEMIS.doc
Prepared by: Dan Pyanowski
Dunlop Tire Corporation

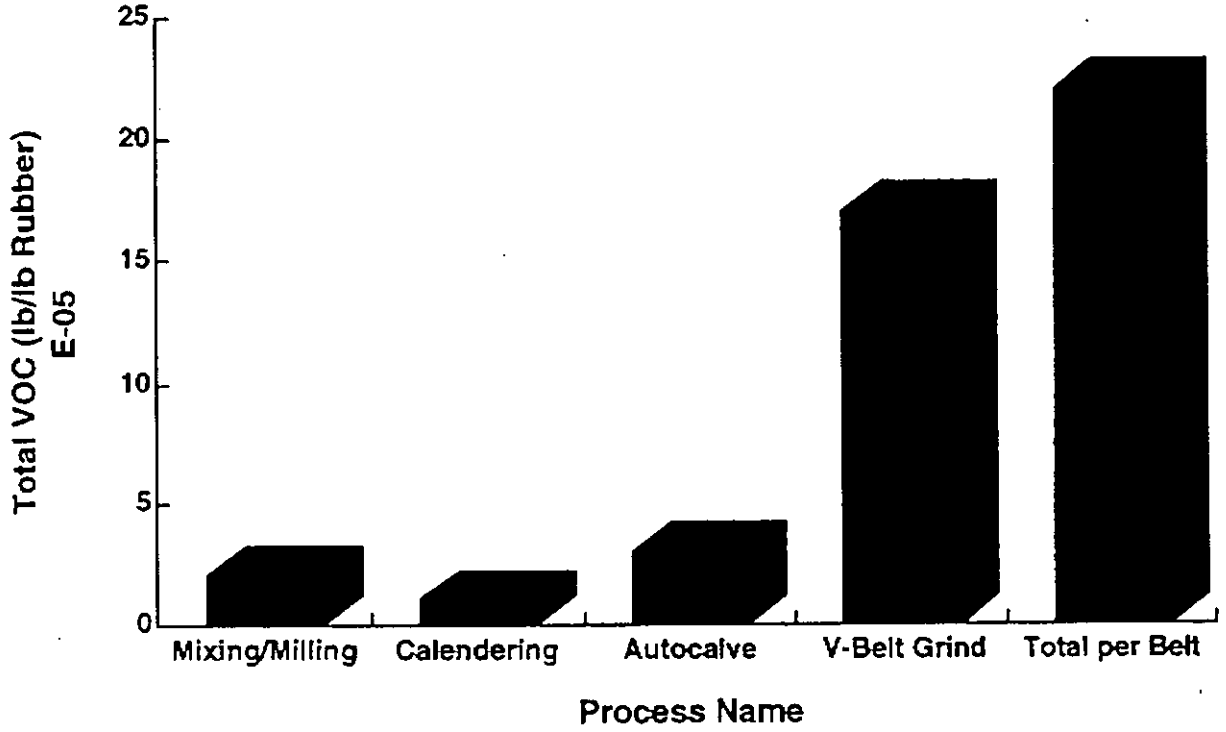
U. S. TIRE MANUFACTURING									
FILE: RMAEMIST.XLS									5/1/95
EMISSION FACTOR SUMMARY									
EMISSION:		VOC		HAP					
		(Tires)		(Tires)					
MIXING		8.00E-05		5.69E-05					
WARM-UP MILL		1.05E-04		1.24E-05					
EXTRUDING		1.30E-05		2.41E-05					
CALENDERING		5.30E-05		1.22E-05					
CURING		2.25E-04		5.04E-05					
GRINDING		1.57E-02		9.64E-04					
TOTALS		1.62E-02		1.12E-03					
UNITS:	Lb. Emission / Lb. Rubber								
	Lb. Emission / Lb. Rubber Removed for Grinding								
TOTAL # RUBBER MIXED:	8,619,986,000								
	Rubber	VOC		HAP					
	(Lbs.)	(Lbs.)		(Lbs.)					
MIXING	8,619,986,000	689598.9		490477.2					
EXTRUDING	5171991600	67235.9		124645.0					
CALENDERING	3447994400	182743.7		42065.5					
WARM -UP MILLING	5602990900	588314.0		69477.1					
CURING	8,619,986,000	1939496.9		434447.3					
GRINDING	34,479,944	541335.1		33238.7					
GRAND TOTALS:									
POUNDS		4,008,724		1,194,351					
TONS		2,004.4		597.2					

U. S. RUBBER MANUFACTURING									
FILE: RMAEMISM.XLS									5/1/95
EMISSION FACTOR SUMMARY									
EMISSION:		VOC		HAP					
		(Mean)		(Mean)					
MIXING		1.06E-04		3.80E-05					
WARM-UP MILL		7.69E-05		9.40E-06					
EXTRUDING		1.39E-05		1.69E-05					
CALENDERING		2.89E-05		7.78E-06					
CURING		2.26E-04		4.27E-05					
GRINDING		6.00E-03		5.61E-03					
TOTALS		6.45E-03		5.72E-03					
UNITS:	Lb. Emission / Lb. Rubber								
	Lb. Emission / Lb. Rubber Removed for Grinding								
TOTAL # RUBBER MIXED:	13,752,290,000								
	Rubber	VOC		HAP					
	(Lbs.)	(Lbs.)		(Lbs.)					
MIXING	13,752,290,000	1457742.7		522587.0					
EXTRUDING	8251374000	114694.1		139448.2					
CALENDERING	5500916000	158976.5		42797.1					
WARM -UP MILLING	8938988500	687408.2		84026.5					
CURING	13,752,290,000	3108017.5		587222.8					
GRINDING	55,009,160	330055.0		308601.4					
GRAND TOTALS:									
POUNDS		5,856,894		1,684,683					
TONS		2,928.4		842.3					

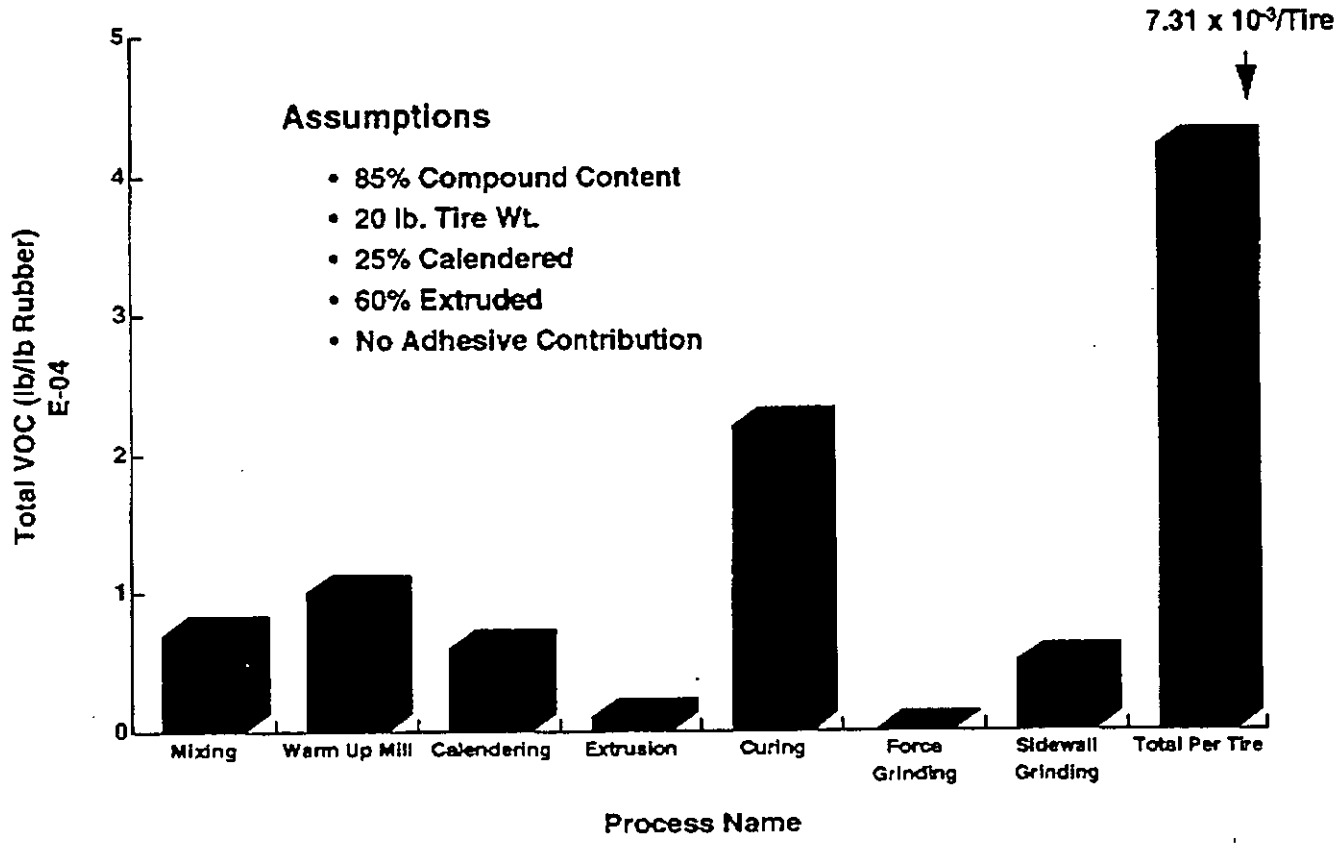
U. S. RUBBER MANUFACTURING									
FILE: RMAEMISX.XLS									5/1/95
EMISSION FACTOR SUMMARY									
EMISSION:		VOC		HAP					
		(Max.)		(Max.)					
MIXING		4.43E-04		4.40E-05					
WARM-UP MILL		1.12E-04		2.31E-05					
EXTRUDING		1.76E-05		8.70E-06					
CALENDERING		5.31E-05		1.34E-05					
CURING		3.37E-04		1.58E-04					
GRINDING		1.57E-02		1.39E-02					
TOTALS		1.67E-02		1.41E-02					
UNITS:	Lb. Emission / Lb. Rubber								
	Lb. Emission / Lb. Rubber Removed for Grinding								
TOTAL # RUBBER MIXED:	13,752,290,000								
	Rubber	VOC		HAP					
	(Lbs.)	(Lbs.)		(Lbs.)					
MIXING	13,752,290,000	6092264.5		605100.8					
EXTRUDING	8251374000	145224.2		71787.0					
CALENDERING	5500916000	292098.6		73712.3					
WARM -UP MILLING	8938988500	1001166.7		206490.6					
CURING	13,752,290,000	4634521.7		2172861.8					
GRINDING	55,009,160	863643.8		764627.3					
GRAND TOTALS:									
POUNDS		13,028,920		3,894,580					
TONS		6,514.5		1,947.3					

John Finn's overheads

Application Approach - Belt Manufacturing



Application Approach - Tire Manufacturing



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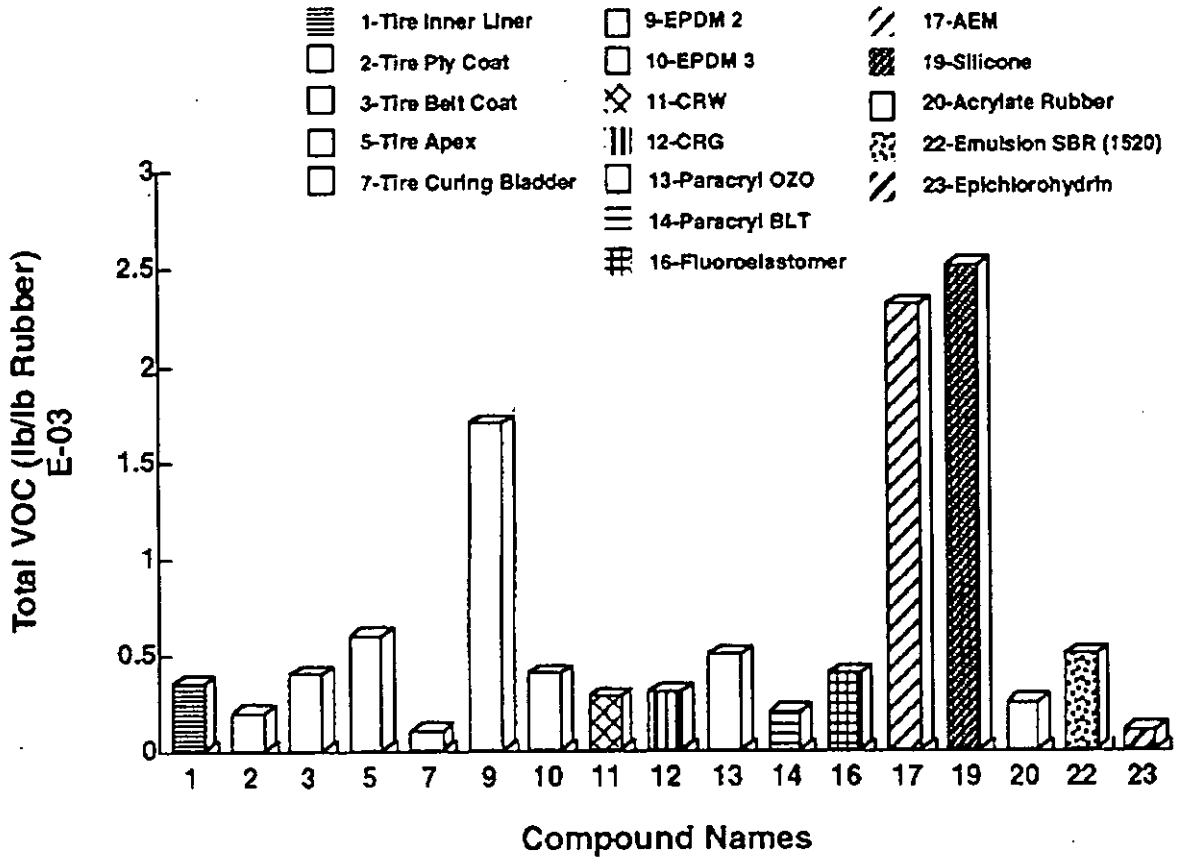
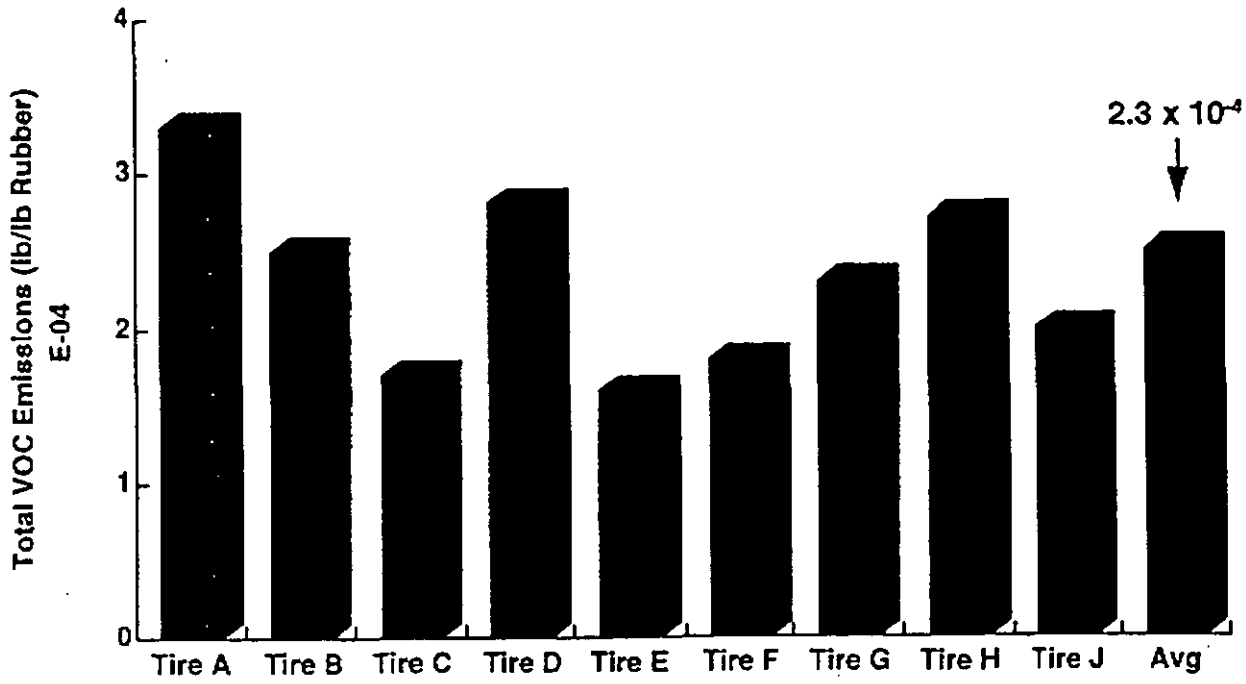
Jun 09 95 11:37 No.001 P.11

Summary of VOC Emissions from the Platen Press

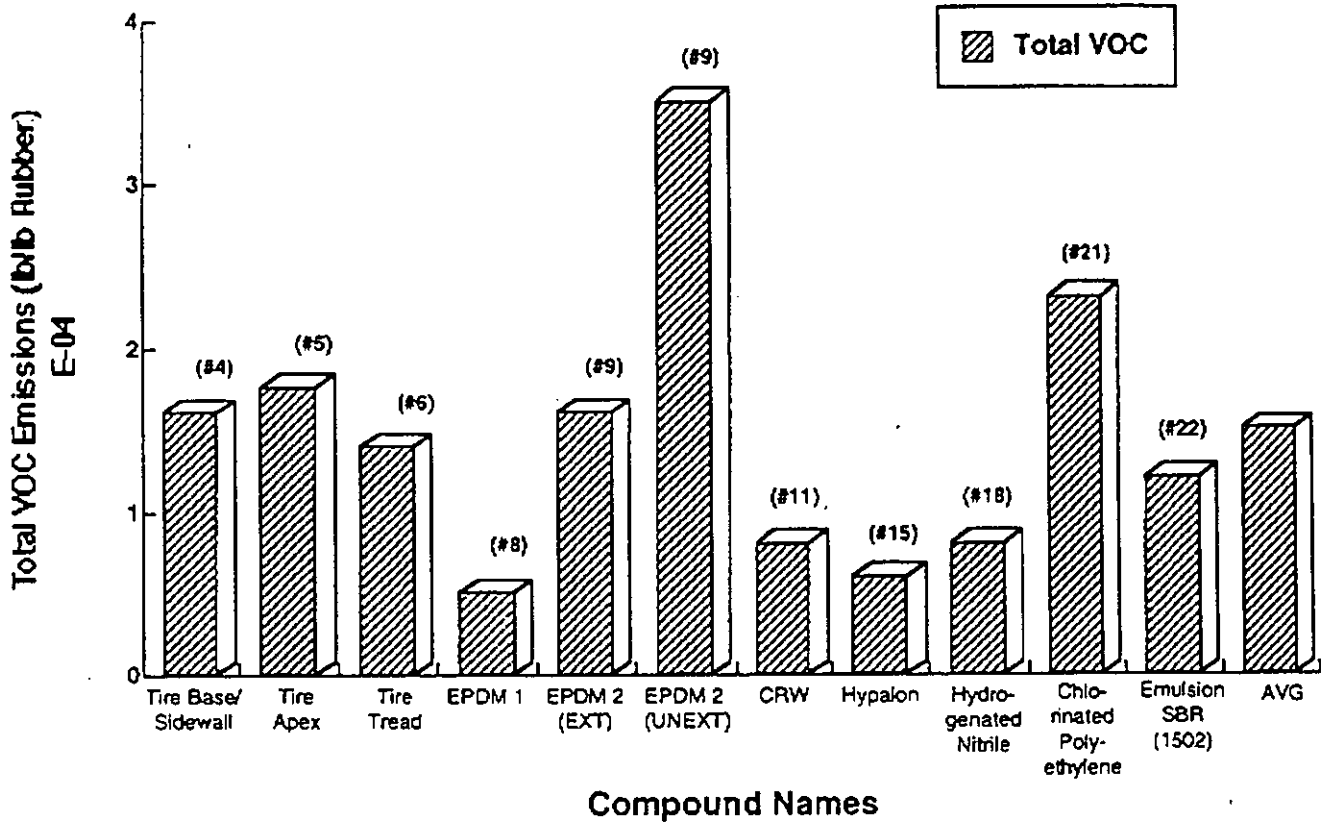


TEL: Jun 09 95 11:32 No.007 P.10

Summary of VOC Emissions for Passenger Tires

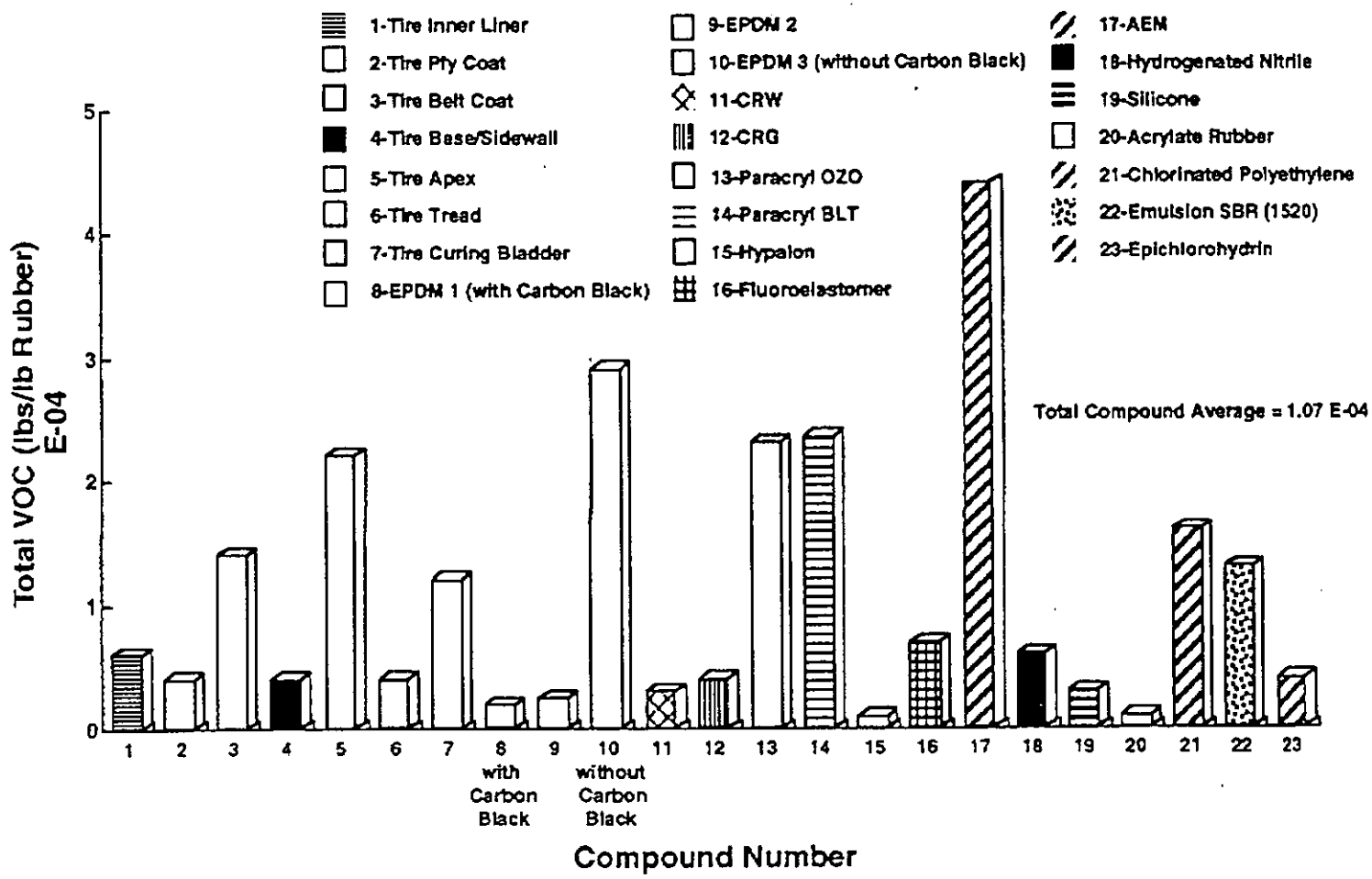


Summary of VOC Emissions from Autoclave Tests

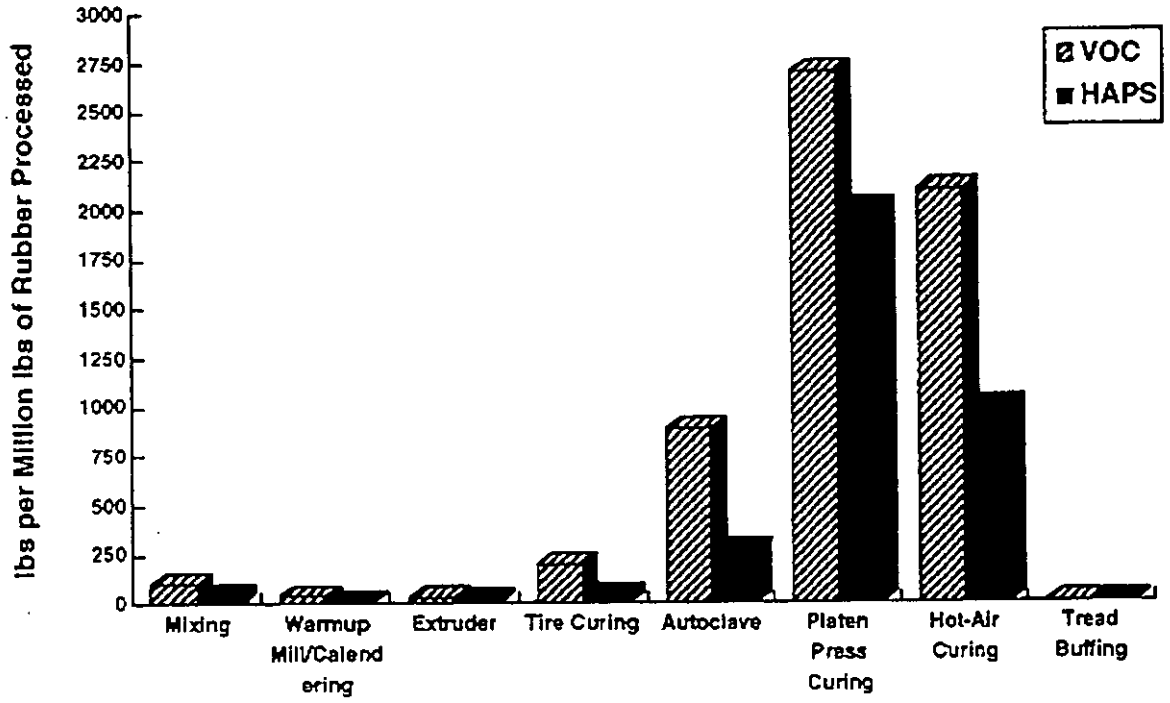


TEL: Jun 09 95 11:02 No.007 P.09

Mixer/Drop Mill Summary



Summary Emissions Distribution by Process



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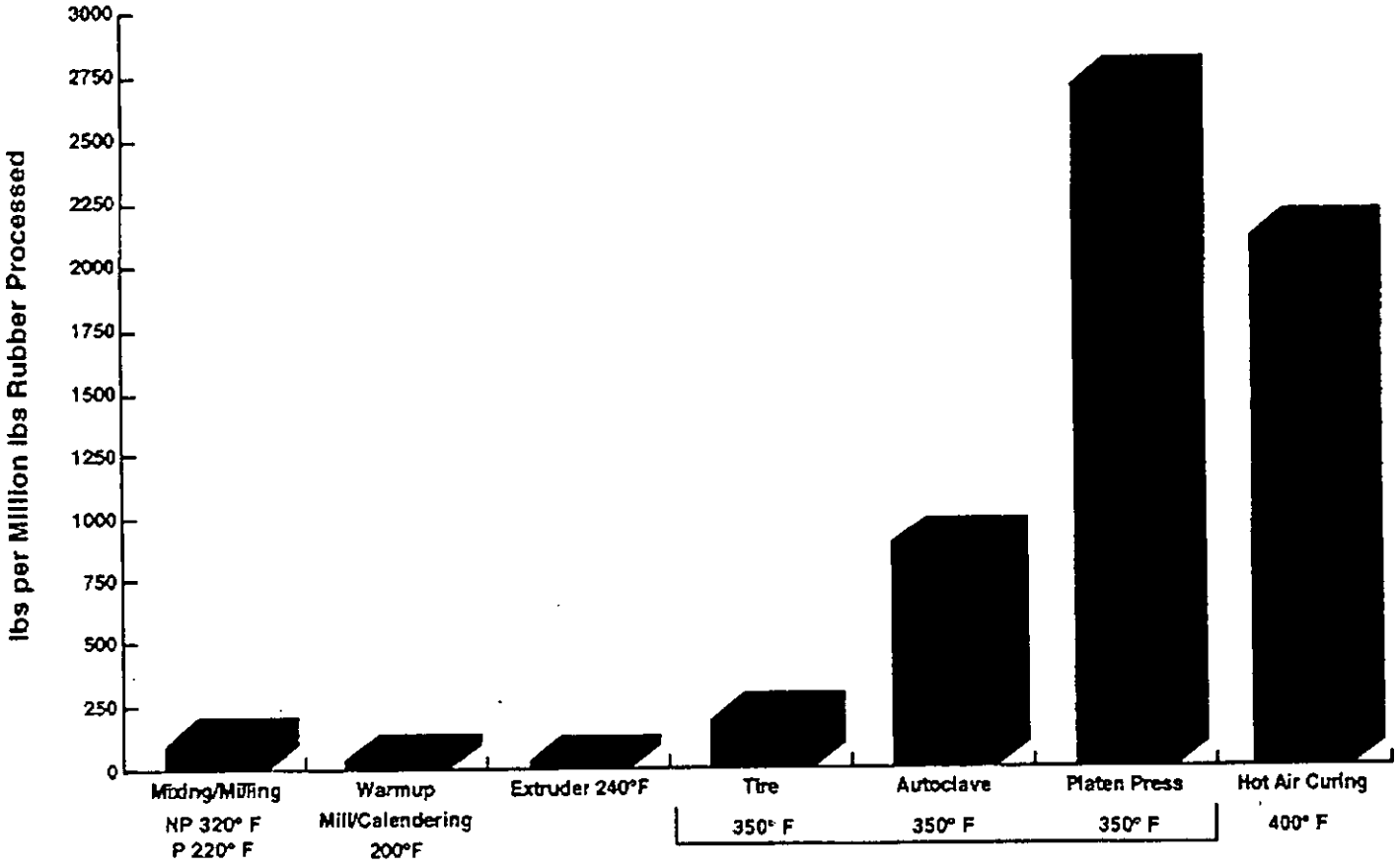
Relative Effect of Temperature on VOC Release



Sampling and Analytical Methods Summary

	Parameters	Sampling Method	Analytical Methods
1	Total Volatile Organic Compounds	M25A	M25A/FID
2	Speciated Volatiles	TO-14	TO-14/GC-MS M 8240
3	Volatile Ozone Precursors	TO-14	TO-14/GC-FID
4	Sulfur Compounds	TO-14	GC/FPD
5	Semivolatiles	M 0010	M 8270
6	Polycyclic Organic Matter	M202	Extr./Gravimetric
7	Particulate Matter	M5	Gravimetric
8	Metals	M0012	M 6010, 7000
9	Amines	Midget Impinger Sampling Train	GC
10	FTIR	Extractive	FTIR

Generic Rubber Formulations/Products

Compound	Category	Description
1	Tire Inner Liner	Brominated IIR/Natural Rubber
2	Tire Ply Coat	Natural Rubber/Synthetic Rubber
3	Tire Belt Coat	Natural Rubber
4	Tire Base/Sidewall	Natural Rubber/Polybutadience Rubber
5	Tire Apex	Natural Rubber
6	Tire Tread	Styrene Butadiene Rubber/ Polybutadiene Rubber
7	Tire Bladder	Butyl Rubber/Neoprene Rubber
8	EPDM 1	EPDM Sulfur Cure
9	EPDM 2	Peroxide Cure
10	EPDM 3	Non-black EPDM Sulfur Cure
11	CRW	Polychloroprene W Type
12	CRG	Polychloroprene G Type
13	Paracryl OZO	Nitrile Rubber/PVC
14	Paracryl BLT	Nitrile Rubber
15	Hypalon	CSM
16	Fluoroelastomer	FKM
17	AEM	Vamac
18	Hydrogenated Nitrile	HNBR
19	Silicone	VMQ
20	Acrylate Rubber	ACM
21	Chlorinated Polyethylene	CPE
22	Emulsion SBR	SBR 1502
23	Epichlorohydrin	ECO
24	Oil-Extended SBR*	SBR 1712
25	Emulsion SBR*	SBR 1500
26	Solution SBR*	Duradene 707

* Compounds 24, 25, and 26, were mixes of polymer only, without fillers or cure systems

State	Company Name	Doing Business As	City	Zip	Zip plus 4	Congressional Dis
AL	3M Specialty Fluoropolymers Department	3M Specialty Fluoropolymers Dept.	Decatur	35609	2206	05
AL	Associated Rubber Company	Associated Rubber Company	Fruithurst	36262	0125	03
AL	Dunlop Tire Corporation	Dunlop Tire Corporation	Huntsville	35807	4901	05
AL	Michelin North America	Michelin Tire Corp. Manufacturing Div.	Dothan	36302	0040	02
AL	Michelin North America	Uniroyal Goodrich Tire Mfg.	Opelika	36803	0030	03
AL	Michelin North America	Uniroyal Goodrich Tire Mfg.	Tuscaloosa	35402		07
AL	Robbins, Inc.	Robbins, Inc.	Tuscumbia	35674	0060	05
AL	Specification Rubber Products, Inc.	Specification Rubber Products, Inc.	Alabaster	35007	0568	06
AL	The Gates Rubber Company	The Gates Rubber Company	Red Bay	35582	0094	04
AL	The Goodyear Tire & Rubber Company	The Goodyear Tire & Rubber Company	Decatur	35601	0788	05
AL	The Goodyear Tire & Rubber Company	The Goodyear Tire & Rubber Company	Gadsden	35903	1922	04
AL	The Standard Products Company	Holm Industries	Hartselle	35640		05
AL	Uniroyal Chemical Company, Inc.	Uniroyal Chemical Company, Inc.	Bay Minbette	36057		02
AR	Acadia Elastomers Corporation	Acadia-Paragould	Paragould	72450		01
AR	Boston Weatherhead, Div. of Dana Corp.	Boston Industrial Products, Div. of Dana	Paragould	72451	1000	01
AR	Bridgestone/Firestone, Inc.	Firestone Tire & Rubber, Tube Division	Russellville	72801	9633	03
AR	Bridgestone/Firestone, Inc.	Firestone Building Products	Prescott	71857	0597	04
AR	Cooper Tire & Rubber Company	Cooper Tire & Rubber Company	Texarkana	77502	9309	04
AR	Dayco Products, Inc.	Dayco Products, Inc.	Springdale	72764		03
AR	Eagle-Picher Rubber Molding Division	Eagle-Picher Rubber Molding Division	Pine Bluff	71602		04
AR	Engineered Products, Division of Cooper	Engineered Products, Div. of Cooper Tir	El Dorado	71730	6611	04
AR	Firestone Building Products	Firestone Building Products	Prescott	71857		04
AR	GenCorp, Inc.	GenCorp, Inc.	Batesville	72501	9418	01
AR	The Gates Rubber Company	The Gates Rubber Company	Siloam Springs	72761	0888	03
AZ	GenCorp, Inc.	Penn Racquet Sports	Phoenix	85043	3913	02
AZ	Rema Tip Top of North America, Inc.	Rema Tip Top of North America, Inc.	Casa Grande	85222	9500	06
AZ	The Goodyear Tire & Rubber Company	Air Treads - Kingman	Kingman	86401	6767	03
CA	Bandag, Inc.	Bandag Licensing Corp.	Long Beach	90805	1836	38
CA	Bandag, Inc.	Bandag, Inc.	Chino	91710	0637	41
CA	Dayco Products, Inc.	Dayco Products, Inc.	Walnut	91789	2918	41
CA	Oliver Rubber Company	Oliver Rubber Company	Oakland	94662	0912	09
CA	Pirelli Armstrong Tire Corporation	Pirelli Armstrong Tire Corporation	Hanford	93232	0129	20
CA	Schlegel N.A.A.O.	Schlegel Hayward	Hayward	94544	7038	13
CA	The Standard Products Company	Oliver Rubber Company	Oakland	94662	1111	09
CA	The Standard Products Company	Holm Industries	San Diego	92173	3635	50
CA	Titan Industries	Titan Industries	South Gate	90280	7590	33
CA	Titan Wheel	Automotive Wheels	Brea	92621	3705	39
CA	Truflex/Pang Rubber Products Company	Truflex/Pang Rubber Products Compan	Los Angeles	90012	1997	33
CA	West American Rubber Company, Inc.	West American Rubber Company, Inc.	Orange	92668	1106	47
CO	Bridgestone/Firestone, Inc.	Firestone Building Products	Denver	80216	6408	01
CO	The Gates Rubber Company	The Gates Rubber Company	Denver	80239	2707	01
CT	Bridgestone/Firestone, Inc.	Firestone Roofing Products	North Branford	06471	1250	03
CT	Eagle-Picher Rubber Molding Division		Stratford	06497	6234	03

State	Company Name	Doing Business As	City	Zip	Zip plus 4	Congressional Dis
CT	Eagle-Picher Rubber Molding Division	Eagle-Picher Rubber Molding Division	Norwich	06360	1536	02
CT	Latex Foam Products, Inc.	Latex Foam Products, Inc.	Ansonia	06401	0525	05
CT	Syntex Rubber Corporation	Syntex Rubber Corporation	Bridgeport	06607	1024	04
CT	Uniroyal Chemical Company, Inc.	Uniroyal Chemical Company, Inc.	Bethany	06524	3406	05
CT	Uniroyal Chemical Company, Inc.	Uniroyal Chemical Company, Inc.	Naugatuck	06770	4556	05
FL	Bridgestone/Firestone, Inc.	Firestone Building Products	Jacksonville	32205	3415	03
FL	Dayco Products, Inc.	Dayco Products, Inc.	Ocala	32670	6250	06
FL	Dayco Products, Inc.	U.S. Rubber	Vero Beach	32966	3066	15
FL	Goshen Rubber Company, Inc.	ETI, Inc.	Largo	34647	1420	10
FL	Thompson Aircraft Tire Corporation	Thompson Aerospace	Miami	33126	1889	21
GA	"5" Rubber Corporation	"5" Rubber Corporation	Griffin	30223	4537	03
GA	Associated Rubber Company	Associated Rubber Company	Tallapoosa	30176		07
GA	Bandag, Inc.	Bandag, Inc.	Griffin	30224	4518	03
GA	Bridgestone/Firestone, Inc.	Bridgestone Sporting Goods Mfg., Inc.	Covington	31703	1708	10
GA	Cooper Tire & Rubber Company	Cooper Tire & Rubber Company	Albany	31705	9100	08
GA	Dawson Manufacturing Company	Dawson Manufacturing Company	Dawson	31742	0429	02
GA	Georgia Duck & Cordage Mill	Georgia Duck & Cordage Mill	Scottdale	30079	0865	04
GA	Oliver Rubber Company	Oliver Rubber Company	Athens	30603	1827	10
GA	Rema Tip Top of North America, Inc.	Rema Tip Top of North America, Inc.	Conyers	30207	1302	04
GA	The Goodyear Tire & Rubber Company	Cartersville	Cartersville	30120	2588	07
GA	The Goodyear Tire & Rubber Company	Air Treads - Atlanta	Forest Park	30050	2042	03
GA	The Standard Products Company	5 Rubber Corporation	Griffin	30223	4537	03
GA	The Standard Products Company	Oliver Rubber Company	Athens	30603	1839	10
IA	Bandag, Inc.	Bandag, Inc.	Muscatine	52761	1174	01
IA	Bandag, Inc.	Bandag, Inc.	Muscatine	52761	9312	01
IA	Bridgestone/Firestone, Inc.	Firestone Tire & Rubber Co.	Des Moines	50305		04
IA	Dayco Products, Inc.	Dayco Products, Inc.	Eldora	50627	1111	05
IA	Hawkeye Rubber Manufacturing Compan	Hawkeye Rubber Manufacturing Compa	Cedar Rapids	52402	4508	01
IA	Schlegel N.A.A.O.	Schlegel Iowa	Keokuk	52632	2259	03
IA	The Goodyear Tire & Rubber Company	The Goodyear Tire & Rubber Company	Mount Pleasant	52641	0638	03
IA	Titan Wheel	Dico Inc.	Des Moines	50306	7528	04
IA	Titan Wheel	Titan Tire Corporation	Des Moines	50306	7528	04
IA	Trellex Morse, Division of Svedala Indust	Trellex Morse,	Keokuk	52632	2002	03
IL	Acadia Elastomers Corporation	Acadia-ETI	Burr Ridge	60521	5944	13
IL	Bridgestone/Firestone, Inc.	Firestone Tire & Rubber Co.	Decatur	62525	4744	19
IL	Bridgestone/Firestone, Inc.	Bridgestone/Firestone Off-The-Road Tir	Bloomington	61702	0640	15
IL	Burrell-Leder Beltech, Inc.	Burrell-Leder Beltech, Inc.	Skokie	60076	0369	09
IL	Central Rubber Company	Central Rubber Company	Belvidere	61008	2332	16
IL	Chicago-Allis Manufacturing Company	Chicago-Allis Manufacturing Company	Chicago	60607	2303	07
IL	Continental General Tire, Inc.	General Tire, Inc.	Mt. Vernon	62864	1029	20
IL	CR Industries	CR Industries	Elgin	60123	2147	14
IL	Eagle-Picher Rubber Molding Division	Eagle-Picher Rubber Molding Division	Paris	61944		15
IL	Hawkeye Rubber Manufacturing Compan	R & B Rubber	Peoria	61603	4019	18

State	Company Name	Doing Business As	City	Zip	Zip plus 4	Congressional Dis
IL	John Crane, Inc.	John Crane, Inc.	Vandalia	62471		20
IL	Kelly-Springfield Tire Company	Kelly-Springfield Tire Company	Freeport	61032	9652	16
IL	MBL (U.S.A.) Corporation	MBL (U.S.A.) Corporation	Ottawa	61350	9535	11
IL	MBL (U.S.A.) Corporation	MBL (U.S.A.) Corporation	Lombard	60148	1211	06
IL	The Gates Rubber Company	The Gates Rubber Company	Rockford	61109	2114	16
IL	The Gates Rubber Company	The Gates Rubber Company	Galesburg	61401		17
IL	The Goodyear Tire & Rubber Company	Freeport	Freeport	61032	9652	16
IL	The Standard Products Company	Jarrow Products	St. Charles	60674		03
IL	Titan Wheel	Titan Wheel International	Quincy	62301	3473	17
IL	Titan Wheel	Automation International, Inc.	Danville	61832	3367	15
IL	Waukesha Rubber Company, Inc.	Waukesha Rubber Company, Inc.	Ladd	61329	0456	17
IL	Western Consolidated Technologies	Western Consolidated Technologies	Schaumberg	60193		05
IL	Western Consolidated Technologies	Western Consolidated Technologies	Fremont	46737	0657	04
IL	Yale-South Haven, Inc.	Yale-South Haven, Inc.	Carmi	62821	2236	19
IL	Yale-South Haven, Inc.	Yale-South Haven, Inc.	Carmi	62821	1249	19
IL	Yokohama Tire Corporation	Yokohama Tire Corporation/Joint Ventur	Mt. Vernon	62864	1029	20
IN	Acadia Elastomers Corporation	Acadia Ligonier	Ligonier	46767	0029	04
IN	Bridgestone/Firestone, Inc.	Firestone Building Products	(Beach Grove) India	46203	6102	10
IN	Bridgestone/Firestone, Inc.	Firestone Industrial Products	Noblesville	46060	3023	06
IN	Clevite Elastomers, a Pullman Company	Clevite Elastomers, a Pullman Company	Angola	46703	1057	04
IN	Engineered Products, Division of Cooper	Engineered Products, Div. of Cooper Tir	Auburn	46706	2089	04
IN	Federal-Mogul Corporation, Sealing Prod	Federal-Mogul Corporation, Sealing Pro	Frankfort	46041	0489	06
IN	Firestone Building Products	Firestone Building Products	Carmel	46032	5607	06
IN	Firestone Industrial Products	Firestone Industrial Products	Noblesville	46060	3023	06
IN	Freudenberg-NOK, General Partnership	Freudenberg-NOK, General Partnership	Shelbyville	46176	0038	02
IN	Freudenberg-NOK, General Partnership	Freudenberg-NOK, General Partnership	Morristown	46161	0245	02
IN	Freudenberg-NOK, General Partnership	Freudenberg-NOK, General Partnership	Scottsburg	47170	4452	09
IN	GenCorp, Inc.	GenCorp, Inc.	Logansport	46947	2500	05
IN	GenCorp, Inc.	GenCorp, Inc.	Evansville	47710	2498	08
IN	GenCorp, Inc.	GenCorp, Inc.	Marion	46952	2425	05
IN	GenCorp, Inc.	GenCorp, Inc.	Peru	46970		05
IN	GenCorp, Inc.	GenCorp, Inc.	Wabash	46992	2615	05
IN	Goshen Rubber Company, Inc.	Bond-Flex Rubber Co., Inc.	Columbia City	46725	2405	04
IN	Goshen Rubber Company, Inc.	GKI Corp.	Goshen	46526	9140	03
IN	Goshen Rubber Company, Inc.	Goshen Rubber, Plant 1	Goshen	46527	0517	03
IN	Goshen Rubber Company, Inc.	Goshen Rubber Plant 2	Goshen	46527	4505	03
IN	Goshen Rubber Company, Inc.	Bond-Flex Rubber Co., Inc.	Laketon	46943		05
IN	Goshen Rubber Company, Inc.	Bower Manufacturing	Goshen	46527	0116	03
IN	Goshen Rubber Company, Inc.	Syracuse Rubber	Syracuse	46567	1529	03
IN	IMCO, Inc.	IMCO, Inc.	Huntington	46750	0444	04
IN	Michelin North America	Uniroyal Goodrich Tire Mfg.	Woodburn	46797	0277	04
IN	Protective Coatings, Inc.	Protective Coatings, Inc.	Ft. Wayne	46803	2704	04
IN	Sperry Rubber & Plastics Company, Inc.	Sperry Rubber & Plastics Company	Brookville	47012	9657	09

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IN	Syracuse Rubber Products, Inc.	Syracuse Rubber Products, Inc.	Syracuse	46567	1529	03
IN	T & M Rubber, Inc.	T & M Rubber, Inc.	Goshen	46527	0516	03
IN	The Standard Products Company	Holm Industries	Scottsburg	47170	2178	09
IN	The Standard Products Company	Nishikawa Standard Company	Topeka	46571	9076	04
IN	The Standard Products Company	Nishikawa Standard Company	Bremen	46506	1040	05
IN	Western Consolidated Technologies	Western Consolidated Technologies	Goshen	46527	1049	03
IN	Western Consolidated Technologies	Western Consolidated Technologies	Ligonier	46767	0210	04
IO	The Gates Rubber Company	The Gates Rubber Company	Boone	50036	0637	05
KS	CR Industries	CR Industries	Seneca	66538	0230	02
KS	Dayco Products, Inc.	Dayco Products, Inc.	Ft. Scott	66701	0629	02
KS	HBD Industries, Inc.	HBD Industries, Inc.	Chanute	66720	0728	02
KS	The Gates Rubber Company	The Gates Rubber Company	Iola	66749	0606	02
KS	The Goodyear Tire & Rubber Company	The Goodyear Tire & Rubber Company	Topeka	66618	1445	02
KY	American Synthetic Rubber Corporation	American Synthetic Rubber Corporation	Louisville	40232		03
KY	Bando Manufacturing of America, Inc.	Bando Manufacturing of America, Inc.	Bowling Green	42102	4860	02
KY	Bridgestone/Firestone, Inc.	Firestone Building Products	Covington	41015	1720	04
KY	Bridgestone/Firestone, Inc.	Firestone Industrial Products	Williamsburg	40769	0509	05
KY	Continental General Tire, Inc.	General Tire, Inc.	Mayfield	42066	0329	01
KY	Firestone Industrial Products	Firestone Industrial Products	Williamsburg	40769		05
KY	Michelin North America	American Synthetic Rubber Co.	Louisville	40232		03
KY	The Gates Rubber Company	The Gates Rubber Company	Elizabethtown	42701	3006	02
KY	The Gates Rubber Company	The Gates Rubber Company	Elizabethtown	42701	3005	02
KY	The Standard Products Company	Standard Products Company	Lexington	40505	4050	06
KY	Yale-South Haven, Inc.	Yale-South Haven, Inc.	Morganfield	42437	0392	01
KY	Zeon Chemicals, Inc.	Zeon Chemicals, Inc.	Louisville	40232	4320	03
LA	Bridgestone/Firestone, Inc.	Firestone Synthetic Rubber & Latex	Lake Charles	70602		07
LA	DSM Copolymer	DSM Copolymer	Addis	70710	0480	04
MA	Boston Weatherhead, Div. of Dana Corp.	Everflex	Ludlow	01056	0370	02
MA	Bridgestone/Firestone, Inc.	Firestone Building Products	Springfield	01104	1634	02
MI	Beloit Manhattan	Beloit Manhattan	Kalamazoo	49001		06
MI	Cadillac Rubber & Plastics, Inc.	Cadillac Rubber & Plastics, Inc.	Cadillac	49601		02
MI	Cadillac Rubber & Plastics, Inc.	Cadillac Rubber & Plastics, Inc.	Manton	49663	9432	02
MI	Cadillac Rubber & Plastics, Inc.	Avon Technical Products	Manton	49663	9432	02
MI	Chardon Rubber Company	Chardon Rubber Co., Industrial Rubber	St. Joseph	49085	2305	06
MI	Controlled Rubber Products, Inc.	Controlled Rubber Products, Inc.	South Haven	49090	1945	06
MI	Federal-Mogul Corporation, Sealing Prod	Federal-Mogul Corporation, Sealing Pro	Milan	48160	9310	16
MI	Goshen Rubber Company, Inc.	GRM Corp.	Pigeon	48755	9704	05
MI	The Standard Products Company	Standard Products Company	Gaylord	49735		01
MI	Titan Wheel	Tractech	Warren	48090	3800	12
MI	Vail Rubber Works, Inc.	Vail Rubber Works, Inc.	St. Joseph	49085	0064	06
MI	Yale-South Haven, Inc.	Yale-South Haven, Inc.	Sandusky	48471	1034	05
MI	Yale-South Haven, Inc.	Dawson Manufacturing Co.	Benton Harbor	49023	0603	06
MN	3M Specialty Fluoropolymers Department	3M Industrial Chemical Products Divisio	St. Paul	55144		04

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MN	Dayco Products, Inc.	Dayco PTI	Redwig	55066	1839	01
MN	Paul E. Hawkinson Company	Paul E. Hawkinson Company	Minneapolis	55413	2695	05
MN	The Standard Products Company	Holm Industries	New Ulm	56073		02
MO	Buckhorn Rubber Products, Inc.	Buckhorn Rubber Products, Inc.	Hannibal	63401		09
MO	Cupples Rubber Company	Cupples Rubber Company	St. Louis	63132	1539	01
MO	Dayco Products, Inc.	Dayco Products, Inc.	Springfield	65807	3258	07
MO	GenCorp, Inc.	GenCorp, Inc.	Berger	63014	9801	09
MO	Michelin North America	Michelin Aircraft Tire Corp.	Kansas City	64153	1820	06
MO	The Gates Rubber Company	The Gates Rubber Company	Charleston	63834	0345	08
MO	The Gates Rubber Company	The Gates Rubber Company	Poplar Bluff	63901	7014	08
MO	The Gates Rubber Company	The Gates Rubber Company	Versailles	65084	0008	04
MO	The Gates Rubber Company	The Gates Rubber Company	Poplar Bluff	63901	7046	08
MO	The Goodyear Tire & Rubber Company	Cosmoflex	Hannibal	63401	0994	09
MS	Beloit Manhattan	Beloit Manhattan	Columbus	39702		03
MS	Cadillac Rubber & Plastics, Inc.	Bell Avon	Picyune	39466	5427	05
MS	Cooper Tire & Rubber Company	Cooper Tire & Rubber Company	Clarksdale	38614	0130	02
MS	Cooper Tire & Rubber Company	Cooper Tire & Rubber Company	Tupelo	38802	0170	01
MS	Fidelity Tire Manufacturing Company	Fidelity Tire Manufacturing Company	Natchez	39120	0927	04
MS	Zeon Chemicals, Inc.	Zeon Chemicals, Inc.	Hattiesburg	39401	2825	05
NC	Bandag, Inc.	Bandag, Inc.	Oxford	27565	3591	02
NC	Bridgestone/Firestone, Inc.	Firestone Tire & Rubber Co.	Wilson	27894		01
NC	Bridgestone/Firestone, Inc.	Firestone Fibers & Textiles Co.	Gastonia	28052	1278	09
NC	Continental General Tire, Inc.	General Tire, Inc.	Charlotte	28241	7001	12
NC	CR Industries	CR Industries	Franklin	28734	9052	11
NC	CR Industries	CR Industries	Gastonia	28053	1767	09
NC	Dayco Products, Inc.	Dayco Products, Inc.	Waynesville	28786	0360	11
NC	Goshen Rubber Company, Inc.	GNC Corp.	Wilson	27893	2209	01
NC	Goshen Rubber Company, Inc.	GSH Corp.	Snow Hill	28580	1306	01
NC	HBD Industries, Inc.	HBD Industries, Inc.	Salisbury	28145	0948	08
NC	Kelly-Springfield Tire Company	Kelly-Springfield Tire Company	Fayetteville	28311	9318	07
NC	Lawrence Industries	Lawrence Industries	Han River	27258		12
NC	Michelin North America	Michelin Aircraft Tire Corp.	Charlotte	28262		09
NC	Michelin North America	Michelin Aircraft Tire Corp.	Norwood	28128	9786	08
NC	Oliver Rubber Company	Oliver Rubber Company	Asheboro	27203	6800	06
NC	Patch Rubber Company	Patch Rubber Company	Roanoke Rapids	27870	8082	02
NC	Scandura, Inc.	Scandura, Inc.	Charlotte	28230	0606	12
NC	Scandura, Inc.	Scandura, Inc.	Charlotte	28217	6509	09
NC	Schlegel N.A.A.O.	Schlegel North Carolina	Reidsville	27320		05
NC	The Gates Rubber Company	The Gates Rubber Company	Jefferson	66749	9704	05
NC	The Goodyear Tire & Rubber Company	Fayetteville	Fayetteville	28311	9318	07
NC	The Goodyear Tire & Rubber Company	Asheboro	Randleman	27317	7586	06
NC	The Standard Products Company	Standard Products Company	Goldsboro	27530	9001	03
NC	The Standard Products Company	Standard Products Company	Rocky Mount	27804	9514	02

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NC	The Standard Products Company	Oliver Rubber Company	Asheboro	27203	6800	06
NC	Uniroyal Chemical Company, Inc.	Uniroyal Chemical Company, Inc.	Gastonia	28053	2337	09
NE	Dayco Products, Inc.	Dayco Products, Inc.	Alliance	69301		03
NE	Dayco Products, Inc.	Dayco Products, Inc.	McCook	69001	1448	03
NE	Goshen Rubber Company, Inc.	GRN Corp.	Gothenburg	69138	0270	03
NE	The Goodyear Tire & Rubber Company	Lincoln	Lincoln	68504	1708	01
NE	The Goodyear Tire & Rubber Company	Norfolk	Norfolk	68702	0579	01
NH	Chardon Rubber Company	Beebe Rubber Co.	Nashua	03060	3917	02
NJ	Ames Rubber Corporation	Ames Rubber Corporation Plant #2	Sussex	07461		05
NJ	Ames Rubber Corporation	Ames Rubber Corporation Plant #4	Vernon	07462		05
NJ	Ames Rubber Corporation	Ames Rubber Corporation	Hamburg	07419	1514	05
NJ	Ames Rubber Corporation	Ames Rubber Corporation Plan #3	Sussex	07461		05
NY	Acadia Elastomers Corporation	Acadia Elastomers Corporation	Marion	14505	0006	27
NY	Cadillac Rubber & Plastics, Inc.	Cadillac Rubber & Plastics, Inc.	Lockport	14094	4142	29
NY	Cadillac Rubber & Plastics, Inc.	Cadillac Rubber & Plastics, Inc.	Albion	14411	1630	29
NY	Dunlop Tire Corporation	Dunlop Tire Corporation	Tonawanda	14150	7752	29
NY	Garlock Mechanical Packing, Division of	Garlock Mechanical Packing	Palmyra	14522	9383	27
NY	Garlock Mechanical Packing, Division of	Garlock Mechanical Packing, Div. of Col	Sodus	14551	1002	27
NY	Globe International, Inc.	Globe International, Inc.	Buffalo	14206	2919	30
NY	Pawling Corporation	Pawling Corporation	Pawling	12564	1121	19
NY	Schlegel N.A.A.O.	Schlegel Rochester	Rochester	14623	3109	28
NY	The Standard Products Company	The Standard Products Company	Schenectedy	12306	2432	21
OH	Abbott Laboratories	Abbott Laboratories	Ashland	44805	2412	16
OH	Advanced Elastomer Systems, LP	Advanced Elastomer Systems, LP	Akron	44334	0584	14
OH	Ashtabula Rubber Company	Ashtabula Rubber Company	Ashtabula	44004	2846	19
OH	Chardon Rubber Company	Chardon Rubber Co.	Alliance	44601		16
OH	Chardon Rubber Company	Chardon Rubber Company	Chardon	44024	1129	13
OH	Clevite Elastomers, a Pullman Company	Clevite Elastomers, a Pullman Company	Napolean	43545		05
OH	Clevite Elastomers, a Pullman Company	Clevite Elastomers, a Pullman Company	Milan	44846	9734	05
OH	Continental General Tire, Inc.	General Tire, Inc.	Bryan	43506	0548	05
OH	Cooper Tire & Rubber Company	Cooper Tire & Rubber Company	Findlay	45840	1237	04
OH	Custom Rubber Corporation	Custom Rubber Corporation	Cleveland	44103	1029	11
OH	Dayco Products, Inc.	Dayco Products, Inc.	Bucyrus	44820	3413	04
OH	Denman Tire Corporation	Denman Tire Corporation	Leavittsburg	44430	9705	17
OH	DTR Industries, Inc.	DTR Industries	Buffton	45817	9573	04
OH	Engineered Products, Division of Cooper	Engineered Products, Div. of Cooper Tir	Bowling Green	43402		05
OH	Engineered Products, Division of Cooper	Engineered Products, Div. of Cooper Tir	Bowling Green	43402	1310	05
OH	Federal-Mogul Corporation, Sealing Prod	Federal-Mogul Corporation, Sealing Pro	Van Wert	45891	1409	05
OH	HBD Industries, Inc.	HBD Industries, Inc.	Bellefontaine	43311	5230	04
OH	Johnson Rubber Company	The Johnson Rubber Company	Middlefield	44062		13
OH	Johnson Rubber Company	The Johnson Rubber Company	N. Baltimore	45872	9521	05
OH	Johnson Rubber Company	The Johnson Rubber Company	Chagrin Falls	44023	5411	13
OH	Neff-Perkins Company	Neff-Perkins Company	Middlefield	44062	0736	13

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OH	Neff-Perkins Company	Neff-Perkins Company	Austinburg	44062	9763	19
OH	Ottawa Rubber Company	Ottawa Rubber Company, Bradner Plant	Bradner	43406	0678	05
OH	Rice-Chadwick Rubber Company	Rice Chadwick Rubber Company	Killbuck	44637	0405	16
OH	Scandura, Inc.	Scandura, Inc.	Port Clinton	43452		05
OH	Schlegel N.A.A.O.	Schlegel West Unity	West Unity	43520	9500	05
OH	T & M Rubber, Inc.	T & M Rubber, Inc.	Middlefield	44062	0818	13
OH	TECH International	TECH International	Johnstown	43031	0486	12
OH	The Goodyear Tire & Rubber Company	Maysville	Marysville	43040	8890	07
OH	The Goodyear Tire & Rubber Company	St. Marys	St. Marys	45885	2827	04
OH	The Goodyear Tire & Rubber Company	Greensburg	Greensburg	44232	0185	14
OH	The Goodyear Tire & Rubber Company	Jackson	Jackson	45640	2141	06
OH	The Goodyear Tire & Rubber Company	Logan	Logan	43138	9031	06
OH	The Goodyear Tire & Rubber Company	Akron Mix Center	Akron	44316	2432	14
OH	The Goodyear Tire & Rubber Company	Akron Tech Center	Akron	44309	3531	14
OH	The Goodyear Tire & Rubber Company	The Goodyear Tire & Rubber Company	Akron	44316	0001	14
OH	The Standard Products Company	Standard Products Company	Cleveland	44102	3510	10
OK	Bridgestone/Firestone, Inc.	Firestone Tire & Rubber Co.	Oklahoma City	73128	9501	05
Ok	CR Industries	CR Industries	Hobart	73651	5625	06
OK	Dana Corporation	Dana Corporation	Oklahoma City	73125		06
OK	Michelin North America	Uniroyal Goodrich Tire Manufacturing	Ardmore	73401	1867	03
OK	Schlegel N.A.A.O.	Schlegel Oklahoma	Frederick	73542		04
OK	The Goodyear Tire & Rubber Company	The Goodyear Tire & Rubber Company	Lawton	73505		04
PA	"5" Rubber Corporation	"5" Rubber Corporation	Kittanning	16201	2301	12
PA	Associated Rubber, Inc.	Associated Rubber, Inc.	Quakertown	18951	0520	08
PA	Carlisle Tire & Rubber Company, Divisio	Carlisle Tire&Rubber Co., Division of Ca	Carlisle	17013	0099	19
PA	Fenner Inc., Fenaplast Division	Fenner America, Inc., Fenaplast Division	Lawrence	15055	0459	20
PA	Fenner Inc., Fenaplast Division	Fenner America, Inc., Fenaplast Division	Mannheim	17545	1747	17
PA	Oliver Rubber Company	Oliver Rubber Company	Export	15632		04
PA	Rubber Rolls, Inc.	Rubber Rolls, Inc.	Meadow Lands	15347	0398	20
PA	The Gates Rubber Company	The Gates Rubber Company	Chambersburg	17201	9206	09
PA	The Standard Products Company	5 Rubber Corporation	Kittanning	16201	2301	12
PA	The Standard Products Company	Oliver Rubber Company	Export	15632		04
PA	Yale-South Haven, Inc.	SHR Enterprises LTD.	Easton	18040	9285	15
QU	Bandag, Inc.	Bandag, Inc.	Shawinigan	G9N	06V9	
RI	Fulflex, Inc.	Fulflex, Inc.	Middletown	02842	0549	01
SC	Beloit Manhattan	Beloit Manhattan	Aiken	29801	9376	02
SC	Bridgestone/Firestone, Inc.	Firestone Building Products	Kingstree	29556		06
SC	Carlisle Tire & Rubber Company, Divisio	Carlisle Tire & Rubber Co., Div. of Carlis	Aiken	29801	9384	02
SC	Dayco Products, Inc.	Dayco Products, Inc.	Walterboro	29488	1128	06
SC	Dayco Products, Inc.	Dayco Products, Inc.	Williston	29853		02
SC	Dayco Products, Inc.	Dayco Products, Inc.	Easley	29640		03
SC	Federal-Mogul Corporation, Sealing Prod	Federal-Mogul Corporation, Sealing Pro	Summerton	29148	0385	06
SC	Firestone Building Products	Firestone Building Products	Kingstree	29556	0640	06

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SC	HBD Industries, Inc.	HBD Industries, Inc.	Elgin	29045	0400	05
SC	HBD Industries, Inc.	HBD Industries, Inc.	Greenville	29605	5294	04
SC	Michelin North America	Michelin Tire Corp. Manufacturing Div.	Greenville	29602	2846	04
SC	Michelin North America	Michelin Tire Corp. Manufacturing Div.	Sandy Springs	29677	0308	03
SC	Michelin North America	Michelin Tire Corp. Manufacturing Div.	Spartanburg	29304	5049	04
SC	Michelin North America	Michelin Tire Corp. Manufacturing Div.	Lexington	29072	0578	02
SC	Michelin North America	Uniroyal Goodrich Tire Mfg.	Winnsboro	29180	1732	05
SC	Michelin North America	Michelin North America, Inc.	Greenville	29602	9001	04
SC	Miles Inc./Polysar Rubber Division	Miles Inc./Polysar Rubber Division	Charleston	29423	8088	01
SC	RM Engineered Products, Inc.	RM Engineered Products, Inc.	North Charleston	29405	4972	01
SC	Schlegel N.A.A.O.	Schlegel South Carolina	Chester	29706	0190	05
SC	TBMC, Inc.	TBMC, Inc.	Greenville	29615	5752	04
SC	The Gates Rubber Company	The Gates Rubber Company	Moncks Corner	29461	2802	01
SC	The Goodyear Tire & Rubber Company	(Formerally Longmile)	Spartanburg	29301	4398	04
SC	The Standard Products Company	Standard Products Company	Spartanburg	29304	4801	04
SC	The Standard Products Company	Standard Products Company	Winnsboro	29180	0200	05
SD	CR Industries	CR Industries	Springfield	57062	0567	AL
TN	Associated Rubber Company	Associated Rubber Company	Huntingdon	38344	0765	08
TN	Boston Weatherhead, Div. of Dana Corp.	Boston Industrial Products, Div. of Dana	Hohenwald	38462	1231	07
TN	Boston Weatherhead, Div. of Dana Corp.	Boston Industrial Products, Div. of Dana	Newbern	38059		08
TN	Bridgestone/Firestone, Inc.	Bridgestone Tire Manufacturing (U.S.A.)	La Vergne	37086	3000	06
TN	Bridgestone/Firestone, Inc.	Bridgestone Tire Manufacturing (U.S.A.)	(Warren County)	37357	0500	04
TN	Bridgestone/Firestone, Inc.	Bridgestone/Firestone, Inc.	Nashville	37214	3672	05
TN	Bridgestone/Firestone, Inc.	Firestone Industrial Products	Dyersburg	38024	1703	08
TN	Chardon Rubber Company	C.E.C. Inc.	Greenville	37743	3505	01
TN	Dana Corporation	Dana Corporation Boston Weatherhead	Hohenwald	38412	1231	07
TN	Dayco Products, Inc.	Dayco Products, Inc.	Lexington	38351		07
TN	Firestone Industrial Products	Firestone Industrial Products	Dyersburg	38024	1703	08
TN	HBD Industries, Inc.	HBD Industries, Inc.	Oneida	37841	0310	04
TN	Pirelli Armstrong Tire Corporation	Pirelli Armstrong Tire Corporation	Madison	37116	0359	05
TN	Rubber Rolls, Inc.	Rubber Technology, Inc.	Piney Flats	37686	4455	01
TN	Schlegel N.A.A.O.	Schlegel Tennessee, Inc.	Maryville	37801	3701	02
TN	Schlegel N.A.A.O.	Schlegel TN. Finishing Plant	Maryville	37801	3701	02
TN	Schlegel N.A.A.O.	Schlegel TN. Tech. Center	Rockford	37853	3043	02
TN	The Goodyear Tire & Rubber Company	The Goodyear Tire & Rubber Company	Union City	38261	0570	08
TN	Titan Wheel	DICO Tire, Inc.	Clinton	37716		03
TX	Acadia Elastomers Corporation	Acadia Elastomers Corporation	Nacogdoches	85073	2340	01
TX	Ameripol Synpol	Ameripol Synpol	Port Neches	77651	0667	09
TX	Bandag, Inc.	Bandag, Inc.	Abilene	79602	2010	17
TX	Bridgestone/Firestone, Inc.	Firestone Building Products	Irving	75062	4953	26
TX	Bridgestone/Firestone, Inc.	Firestone Synthetic Rubber & Latex	Orange	77631	1269	02
TX	Continental General Tire, Inc.	Dynagen, Inc.	Odessa	79760	2032	23
TX	Dayco Products, Inc.	Eaglemotive	Ft. Worth	76113	3600	12

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TX	Exxon Chemical Company, Polymers Gr	BAytown Texas Polymer Center	Baytown	77520	1710	25
TX	Kelly-Springfield Tire Company	Kelly-Spring Tire Company	Tyler	75712	4670	05
TX	Miles Inc./Polysar Rubber Division	Miles Inc./Polysar Rubber Division	Orange	77631	2000	02
TX	Miles Inc./Polysar Rubber Division	Miles Inc./Polysar Rubber Division	Houston	77287	7220	18
TX	Oliver Rubber Company	Oliver Rubber Company	Dallas	75235		30
TX	Oliver Rubber Company	Oliver Rubber Company	Paris	75461	0309	01
TX	The Goodyear Tire & Rubber Company	Tyler	Tyler	75709		05
TX	The Goodyear Tire & Rubber Company	(Formerally Longmile)	Greenville	75401		01
TX	The Standard Products Company	Oliver Rubber Company	Dallas	75235		30
TX	The Standard Products Company	Oliver Rubber Company	Paris	75461	1630	01
TX	Titan Industries	Titan Industries	Spring	77389	4570	08
TX	Zeon Chemicals, Inc.	Zeon Chemicals, Inc.	Pasadena	77507		22
UT	Bridgestone/Firestone, Inc.	Firestone Building Products	Salt Lake City	84120	7203	03
VA	Acadia Elastomers Corporation	Acadia-Clifton Forge/Central Mix	Iron Gate	24448		06
VA	Bridgestone/Firestone, Inc.	Firestone Fibers & Textiles Co.	Hopewell	23960	0450	04
VA	Michelin North America	Uniroyal Goodrich Tire Mfg.	Scottsville	24590	0729	05
VA	The Goodyear Tire & Rubber Company	The Goodyear Tire & Rubber Company	Danville	24541	6607	05
VA	Titan Wheel	TD Wheel Company of Virginia, Inc.	Saltville	24370	3311	09
VA	Yokohama Tire Corporation	Yokohama Tire Corporation	Salem	24153	7058	06
WA	Beloit Manhattan	Beloit Manhattan	Federal Way	98063	3027	09
WA	Michelin North America	Michelin Aircraft Tire Corp.	Seattle	98101	3215	07
WI	Albert Trostel Packings, Ltd.	Albert Trostel Packings, Ltd.	Lake Geneva	53147	2469	01
WI	Albert Trostel Packings, Ltd.	Albert Trostel Packings, Ltd.	White Water	53190	1455	01
WI	Albert Trostel Packings, Ltd.	Albert Trostel Packings, Ltd.	Lake Geneva	53147	1003	01
WI	Albert Trostel Packings, Ltd.	Albert Trostel Packings, Ltd.	Whitewater	53190	1452	01
WI	Beloit Manhattan	Beloit Manhattan	Neenah	54957	0309	06
WI	The Goodyear Tire & Rubber Company	Sun Prairie	Sun Prairie	53590		02
WI	Titan Wheel	DICO Tire, Inc.	Slinger	53086	0376	09
WI	Waukesha Rubber Company, Inc.		Waukesha	53187	4720	04

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Description of Test Facilities[a]

Type of Equipment	Size of Equipment	# of Facilities Involved During Testing	# of Pieces of Equipment Tested	Types of Emissions Investigated	Sample Size	How many sample runs	Type of test equipment	Methods Used	Compounds Checked	Remarks
Autoclave Curing										
Steam-Contact Autoclave Setup	Process equipment	1	1	Total Volatile Organic Compounds, Speciated Volatiles, Volatile Ozone Precursors, Sulfur Compounds, Amines	3 batches at 50 lbs each	No data on # of sample runs.	Total VOCs: THC Analyzer; Sulfur Compounds: GC/FPD; all other emissions show no record of equipment type used for testing.	Total VOCs: M25A/FID Speciated; Volatiles: TO-14/GC-MS M 8240; Volatile Ozone Precursors TO-14/GC-FID Sulfur Compounds: TO-14/GC/FPD; Amines: Midget Impinger Sampling Train/GC	4,5,6,8,9,9, 11,15,18,21, 22	Temp: 340F; 110psig during each curing run. Sampling was conducted throughout the 3 modes of operation. Total capture method where all steam & pollutant releases where sampled. All steam releases were vented through the 1" watertrap or blowdow n pipe into a series of condensing impingers & sorbent tubeskept under negative pressure by a metering pump.
Extrusion										
Extruder	3.5" Barrel	1	1	Total Volatile Organic Compounds, Speciated Volatiles, Volatile Ozone Precursors, Sulfur Compounds, PM & Metals	2 pallets each of wigwagged tread (Cmpd. #6), sidewall (Cmpd. #4), emulsion SBR (Cmpd.#22) & peroxide-cure EPDM (Cmpd. #9).	No data on # of sample runs.	Total VOCs: THC Analyzer; Sulfur Compounds: GC/FPD; all other emissions show no record of equipment type used for testing.	Total VOCs: M25A/FID Speciated; Volatiles: TO-14/GC-MS M 8240; Volatile Ozone Precursors TO-14/GC-FID Sulfur Compounds: TO-14/GC/FPD; PM: M5/Grovimetric; Metals: M0012/M6010, 7000	4,6,9,22	Temp: Tread 255-275F; Sidewall 230-260F; SBR 1502 255-275F; EPDM2 250-280F. Two zones were tested: Location A-The extruder outlet, or head, was enclosed to permit capture of emissions throughout operation. It was equipped with an outlet exhaust duct from which sampling was conducted. Location B-Cool down zone was enclosed to allow sampling of pollutant emissions. Rubber temperatures were measured at the die head & at 2 points of the cool down zone.

RMA AP-42
Description of Test Facilities[a]

Type of Equipment	Size of Equipment	# of Facilities Involved During Testing	# of Pieces of Equipment Tested	Types of Emissions Investigated	Sample Size	How many sample runs	Type of test equipment	Methods Used	Compounds Checked	Remarks
Platen Press										
Platen Press	Lab-scale	1 (site was at TRC facility)	1	Total Volatile Organic Compounds, Speciated Volatiles, Volatile Ozone Precursors, Sulfur Compounds	50g each	9 samples of each of 17 rubber types.	Total VOCs: THC Analyzer; Sulfur Compounds: GC/FPD; all other emissions show no record of equipment type used for testing.	Total VOCs: M25A/FID Speciated; Volatiles: TO-14/GC-MS M 8240; Volatile Ozone Precursors TO-14/GC-FID Sulfur Compounds: TO-14/GC/FPD	1,2,3,5,7,9, 10,11,12,13, 14,16,17,19, 20,22,23	Emission rates were based on lbs of pollutant/hour and lbs of pollutant/lb of rubber. Temp: 340-350F; Pressure of 30 tons during the first 3 minutes and 20 tons for the second 3 minutes. Emissions were contained by an exhaust hood & a flexible Tyvek sheeting & exhausted by a single 5" duct and blower.
Hot Air Oven Curing										
Hot Air Oven Cure	Lab-scale	1	1	Total Volatile Organic Compounds, Speciated Volatiles, Volatile Ozone Precursors, Sulfur Compounds	100g each	3 samples	Total VOCs: THC Analyzer; Sulfur Compounds: GC/FPD; all other emissions show no record of equipment type used for testing.	Total VOCs: M25A/FID Speciated; Volatiles: TO-14/GC-MS M 8240; Volatile Ozone Precursors TO-14/GC-FID Sulfur Compounds: TO-14/GC/FPD;	5,8,22	Temperatures were 400F for 5-8 minutes. The oven was set up with a preheated sweep gas inlet & an exhaust gas outlet. A temporary enclosure was erected around the oven to contain emissions during the curing & cooldown, and when the door was opened. An exhaust duct was used to vent the enclosure & provide sampling locations.

RMA AP-42
Description of Test Facilities[a]

Type of Equipment	Size of Equipment	# of Facilities Involved During Testing	# of Pieces of Equipment Tested	Types of Emissions Investigated	Sample Size	How many sample runs	Type of test equipment	Methods Used	Compounds Checked	Remarks
Tire Curing										
Hot Nitrogen Purge Oven Cure System (Lab- Scale Tire Curing)	Lab-scale	1	1	Total Volatile Organic Compounds, Speciated Volatiles, Volatile Ozone Precursors, Sulfur Compounds	No data for sample size	28 tire cuts were oven cured, represent-ing 9 types of tires from 7 manu-facturers.	Total VOCs: THC Analyzer; Sulfur Compounds: GC/FPD; all other emissions show no record of equipment type used for testing.	Total VOCs: M25A/FID Speciated; Volatiles: TO-14/GC-MS M 8240; Volatile Ozone Precursors TO-14/GC-FID Sulfur Compounds: TO-14/GC/FPD;	N/A	There were not any remarks with the results of that comparison. The lab scale evaluation was done to determine if there is a correlation between lab scale and field data for tire curing. Non-determinate report Original equipment, replacement, and high performance tires were tested. Emissions were monitored by a Fourier transform infrared analyzer(FTIR). 2 zones were sampled-inlet & outlet during curing and cooldown phases. Temp:340-360F.
Hot Nitrogen Purge Oven Cure System (Full- Scale Tire Curing)	Full-scale	1	1	Total Volatile Organic Compounds, Speciated Volatiles, Volatile Ozone Precursors, Sulfur Compounds	No data for sample size	9 tire types were press-cured, repre-senting 2 tire sizes from 7 manufact-urers.	Total VOCs: THC Analyzer; Sulfur Compounds: GC/FPD; all other emissions show no record of equipment type used for testing.	Total VOCs: M25A/FID Speciated; Volatiles: TO-14/GC-MS M 8240; Volatile Ozone Precursors TO-14/GC-FID Sulfur Compounds: TO-14/GC/FPD;	N/A	Original equipment, replacement, and high performance tires were tested. Temp: 330-355F; steam pressures from 200-300psig. Each tire was cured for 10-15 minutes. Two emissions zones tested: the press itself and the tire cool-down zone. An enclosure was set up on the tire press to collect fugitive emissions during the press curing of green tires. The enclosure hadan outlet exhaust duct in which sampling was conducted for target parameters. There was a similar enclosure around the cool-down rack.

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Description of Test Facilities[a]

Type of Equipment	Size of Equipment	# of Facilities Involved During Testing	# of Pieces of Equipment Tested	Types of Emissions Investigated	Sample Size	How many sample runs	Type of test equipment	Methods Used	Compounds Checked	Remarks
Tire Grinding										
Retread Buffing	Observed at a full-scale site.	1	4	Total Volatile Organic Compounds, Speciated Volatiles, Volatile Ozone Precursors, Sulfur Compounds, PM and Metals	Tread section = 37 ft long.	No data on # of runs.	Total VOCs: THC Analyzer; Sulfur Compounds: GC/FPD;PM: Cyclone/ fabric filter; all other emissions show no record of equipment type used for testing.	Total VOCs: M25A/FID Speciated; Volatiles: TO-14/GC-MS M 8240; Volatile Ozone Precursors TO-14/GC-FID Sulfur Compounds: TO-14/GC/FPD; PM: M5/Grovimetric; Metals: M0012/M6010, 7000	N/A	TRC fings that the entire tire grinding operation <u>may</u> emit HAPs. *For Retread, Sidewall, and Carcass Grinding, there was no mention of testing the air for emissions. There is only mention of cyclone testing. Emissions sampling was conducted in the hood's exhaust duct (control device inlet) to determine the process' potential to emit. The four exhaust ducts enter a common header duct. Emissions conveyed to a cyclone/fabric filter.
Whitewall/ Sidewall	Process Equipment	1	1	Total Volatile Organic Compounds, Speciated Volatiles, Volatile Ozone Precursors, Sulfur Compounds, Amines PM and Metals	No data on sample size.	No data on # of runs.	Total VOCs: THC Analyzer; Sulfur Compounds: GC/FPD;PM: Cyclone; all other emissions show no record of equipment type used for testing.	Total VOCs: M25A/FID Speciated; Volatiles: TO-14/GC-MS M 8240; Volatile Ozone Precursors TO-14/GC-FID Sulfur Compounds: TO-14/GC/FPD; PM: M5/Grovimetric; Metals: M0012/M6010, 7000; Amines Midget Impinger Sampling Train/GC	N/A	Emissions are ducted to a cyclone for removal of rubber dust and pieces ground from tires.

RMA AP-42
Description of Test Facilities[a]

Type of Equipment	Size of Equipment	# of Facilities Involved During Testing	# of Pieces of Equipment Tested	Types of Emissions Investigated	Sample Size	How many sample runs	Type of test equipment	Methods Used	Compounds Checked	Remarks
Carcass Grinding	Process equipment	1	1	Total Volatile Organic Compounds, Speciated Volatiles, Volatile Ozone Precursors, Sulfur Compounds, Amines PM and Metals	No data on sample size.	No data on # of runs.	Total VOCs: THC Analyzer; Sulfur Compounds: GC/FPD;PM: Cyclone; all other emissions show no record of equipment type used for testing.	Total VOCs: M25A/FID Speciated; Volatiles: TO-14/GC-MS M 8240; Volatile Ozone Precursors TO-14/GC-FID Sulfur Compounds: TO-14/GC/FPD; PM: M5/Grovimetric; Metals: M0012/M6010, 7000; Amines: Midget Impinger Sampling Train/GC	N/A	No mention of the magnitude of difference in temperature of fine vs. course grinding. Sampling was conducted in the 20" inlet duct to the cyclone, in the 20" baghouse outlet duct prior to the I.D. fan, and in the 22" stack after the I.D. fan. Although carcass grinding involves both fine and course grinding,only the fine grind operation was tested due to the fact that the grinding period is longer(1-2min. for course; 4 min. for fine), and the temperature is higher than the course grind. Sampling was conducted in the 10" cyclone inlet duct & the 16" outlet stack. lbs/hr & lbs/lb removed rubber measured by the quantity of rubber dust & particles collected in cyclone.

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Description of Test Facilities[a]

Type of Equipment	Size of Equipment	# of Facilities Involved During Testing	# of Pieces of Equipment Tested	Types of Emissions Investigated	Sample Size	How many sample runs	Type of test equipment	Methods Used	Compounds Checked	Remarks
Truing (Force)	No test; Observed at a full scale site.	1	1	Total Volatile Organic Compounds, Speciated Volatiles, Volatile Ozone Precursors, Sulfur Compounds, Amines PM and Metals	No data on sample size.	1 screening evaluation	Total VOCs: THC Analyzer; Sulfur Compounds: GC/FPD;PM: Cyclone; all other emissions show no record of equipment type used for testing.	Total VOCs: M25A/FID Speciated; Volatiles: TO-14/GC-MS M 8240; Volatile Ozone Precursors TO-14/GC-FID Sulfur Compounds: TO-14/GC/FPD; PM: M5/Grovimetric; Metals: M0012/M6010, 7000; Amines: Midget Impinger Sampling Train/GC	N/A	"A *screening evaluation* of emissions from a force grinder was conducted at a full scale tire manu-facturing ..." A screening evaluation of emissions from a force grinder was conducted at a full scale tire manufacturing facility using FTIR and total hydrocarbon analyzers.
Calendering										
Calender	Process equipment	2	2	Total Volatile Organic Compounds, Speciated Volatiles, Volatile Ozone Precursors, Sulfur Compounds	No data on sample size.	3	Total VOCs: THC Analyzer; Sulfur Compounds: GC/FPD; all other emissions show no record of equipment type used for testing.	Total VOCs: M25A/FID Speciated; Volatiles: TO-14/GC-MS M 8240; Volatile Ozone Precursors TO-14/GC-FID Sulfur Compounds: TO-14/GC/FPD;	Location A: (Compound 2) Location B: (Compound 12)	Location A: Continuous Production Process, testing a tire ply coat rubber compound; 3 test runs were conducted from an exhaust collector system outlet stack. Location B: Calendering of a neoprene compound. Calender had 54" rolls and ran 1100 linear yards of the neoprene cmpd. during each of 3 test runs. Emissions were measured with a temperature enclosure and exhaust duct configuration.

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RMA AP-42
Description of Test Facilities[a]

not needed here

Type of Equipment	Size of Equipment	# of Facilities Involved During Testing	# of Pieces of Equipment Tested	~~Types of Emissions Investigated~~	Sample Size	How many sample runs	~~Type of test equipment~~	~~Methods Used~~	Compounds Checked	Remarks
Internal Mixers 1. Large Banbury (F-80) 2. Small Banbury (BR-1600) [1] 3. Small Banbury (BR-1600) [2] 4. Lrg Banbury mixer/torit control Device	Process equipment ? #batches? Looks Like 7 in Eq #4 (pg. 2-2) pg. 4-1 → 26 cmpls on SMALL MIXER #B – (1 run) + 4, 9, 22 on Large & SMALL #1 (1 run) + 6 on Large only (1 run) + 3 on Large w/ Torit (3 runs)	3 vol I, pg. 3-1 3	3 4	Total Volatile Organic Compounds, Speciated Volatiles, Volatile Ozone Precursors, Sulfur Compounds, PM and Metals	(1.) Batch sizes of 125-140 lbs per drop. (2. & 3.) Batch sizes were 2-3 lbs per drop.	~~No data for # of sample runs.~~ pg. 4-3	Total VOCs: THC Analyzer; Sulfur Compounds: GC/FPD;PM: Cyclone; all other emissions show no record of equipment type used for testing.	Total VOCs: M25A/FID Speciated; Volatiles: TO-14/GC-MS M 8240; Volatile Ozone Precursors TO-14/GC-FID Sulfur Compounds: TO-14/GC/FPD; PM: M5/Grovimetric; Metals: M0012/M6010, 7000;	All 23 compounds	1. Emission occurred during charging and mixing, and during drop milling. Productive run temperatures were 220F (non-productive runs temp = 335F). Sampled the fume collector and duct system. 2. & 3. Both similar in design & capacity. Sampling took place during charging & mixing. Emissions were sampled from a section of duct installed in a flexible exhaust hose. Temperatures were the same as the large mixers. The rubber is moved to a milling unit were an outlet exhaust duct was sampled.
Warmup Milling	Evaluation #1: Process equipment Evaluation #2: Lab scale	2	2	Total Volatile Organic Compounds, Speciated Volatiles, Volatile Ozone Precursors, Sulfur Compounds	2.5lbs	(Evaluation #1): 3 One test run was conducted per compound. (Evaluation #2): 3	Total VOCs: THC Analyzer; Sulfur Compounds: GC/FPD;PM: Cyclone; all other emissions show no record of equipment type used for testing.	Total VOCs: M25A/FID Speciated; Volatiles: TO-14/GC-MS M 8240; Volatile Ozone Precursors TO-14/GC-FID Sulfur Compounds: TO-14/GC/FPD;	2,3,4	Emissions from a lab scale warmup mill were tested during the milling of compounds 2,3,&4. Multiple drops were made for each test run. Another test was conducted at an engineered rubber products manufacturing facility. Used Batch mode for testing. Neoprene compound was used for the 3 test runs and collected the milled rubber on pigs for running through the calender. The temperature of the mill roll was 90F; the rubber was milled to 0.3" and to 175F.

aTRC Environmental Corporation Development of Emission Factors for the Rubber Manufacturer Association Volume 1, Section 3; May 1995.