Note: This is a reference cited in *AP 42, 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 reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

AP42 Section:	9.12.1
Background Chapter	4
Reference:	27
Title:	Source Emissions Testing Report for Coors Brewing Company: Golden, Colorado Facility, FID/FTIR Ethanol Measurements--Can and Bottle Line Ducts, Air Pollution Testing, Inc., Lakewood, Colorado, April 3-4, 1995.

COORS REFERENCE 27 DATA SUMMARY

D. Emission Data/Mass Flux Rates/Emission Factors

Test ID	Parameter	Units	Values reported			
			Run 1	Run 2	Run 3	Run 4
1	Stack temperature	Deg F	69	69	67	
BOTTLE FILLER EXHAUST	Moisture	%	0	0	0	
	Oxygen	%	20.9	20.9	20.9	
	Volumetric flow, actual	acfm	24513	24693	22479	
	Volumetric flow, standard	dscfm	20099	20272	18543	
	Isokinetic variation	%	NA	NA	NA	
Circle: Production or feed rate Capacity:		1000 bbl/hr	0.43548	0.46139	0.44274	
	Pollutant concentrations:					
	THC as propane	ppmwv	41.5	44.95	56	
	THC as ethanol (CF = 2.12)	ppmwv	88.0	95.3	118.7	
	Ethanol (FTIR)	ppmwv	92.57	108.59	125.79	
	Pollutant mass flux rates:					
	THC as propane	lb/hr	5.7	6.2	7.1	
	THC as ethanol	lb/hr	12.7	13.8	15.8	
	Ethanol (FTIR)	lb/hr	13.3	15.8	16.7	
Ratio: air in/ air out		unitless	1.43	1.43	1.43	
	Emission factors:					Average
	THC as propane	lb/1000 bbl	18.7	19.3	23.0	20.3
	THC as ethanol	lb/1000 bbl	41.6	42.9	50.9	45.1
	Ethanol (FTIR)	lb/1000 bbl	43.7	48.9	53.9	48.8

Test ID	Parameter	Units	Values reported			
			Run 1	Run 2	Run 3	Run 4
2	Stack temperature	Deg F	72	72	77	
CAN FILLER EXHAUST	Moisture	%	0	0	0	
	Oxygen	%	20.9	20.9	20.9	
	Volumetric flow, actual	acfm	36347	35693	34697	
	Volumetric flow, standard	dscfm	29452	28820	27763	
	Isokinetic variation	%	NA	NA	NA	
Circle: Production or feed rate Capacity:		1000 bbl/hr	0.9678	1.002	0.9435	
	Pollutant concentrations:					
	THC as propane	ppmwv	33.7	27.4	33.6	
	THC as ethanol (CF = 2.12)	ppmwv	71.5	58.1	71.2	
	Ethanol (FTIR)	ppmwv	68.43	ND	77.65	
	Pollutant mass flux rates:					
	THC as propane	lb/hr	7.12	5.66	6.68	
	THC as ethanol	lb/hr	15.1	12.0	14.2	
	Ethanol (FTIR)	lb/hr	14.4	ND	15.5	
Ratio: air in/ air out		unitless	2.14	2.14	2.14	
	Emission factors:					Average
	THC as propane	lb/1000 bbl	16	12	15	14
	THC as ethanol	lb/1000 bbl	33	26	32	30
	Ethanol (FTIR)	lb/1000 bbl	32		35	33

Coors

FAX COVER SHEET

CI—3809-C

NUMBER OF PAGES 4 (INCLUDING THIS PAGE)		SUBJECT Coors Filling Emission Factors	
DELIVER TO Tom Lapp		DATE 10/10	TIME
LOCATION MRI			
TELEPHONE NUMBER 919-677-0249 x 5258			
FAX NUMBER 919-677-0065			
FROM Jere Zimmerman	COST CENTER	FAX NUMBER 303-277-3080	
TELEPHONE NUMBER 303-277-3831		(PLEASE CALL THIS NUMBER IF YOU DO NOT RECEIVE ALL OF THE PAGES OR SHOULD YOU HAVE ANY QUESTIONS REGARDING THIS FAX.)	

COMMENTS

Tom- we discovered a piece of information missing necessary to convert the latest filling stack test we sent you into a per bbl emission factor. The 'factor' on the spreadsheet has to do with the #bbls/case. Since we had all the other data we went ahead and did the calculations and put them on a spreadsheet. The first page is our average emission factor with the latest tests included. If you have any questions please give me a call.

Jere

Recycled Paper

BR_FILL.XLS

Can Filler Average Emission Factor

Date of Test	Stack Test Firm	Test Method	Test Area	Emission Factor
6/23/92	CAE	FID	all can lines	40.1
10/14/92	APT	FID	all can lines	29.0
12/3/92	APT	FID	#9 can line	42.0
12/16/92	APT	FID	#5 can line	36.0
12/16/92	APT	FID	#6 can line	37.0
4/4/95	APT	FID	all can lines	30.3
4/4/95	Peak	FTIR	all can lines	33.4
Average Can Filler Emission Factor (lbs/1000 bbls)				**35.4**

Bottle Filler Average Emission Factor

Date of Test	Stack Test Firm	Test Method	Test Area	Emission Factor
6/25/92	CAE	FID	all bottle lines	39.2
10/14/92	APT	FID	all bottle lines	33.0
12/2/92	APT	FID	#3 bottle line	38.0
4/3/95	APT	FID	all bottle lines	45.1
4/3/95	Peak	FTIR	all bottle lines	48.8
Average Bottle Filler Emission Factor (lbs/1000 bbls)				**40.8**

CAE = Clean Air Engineering
APT = Air Pollution Testing
Peak = Peak Analytical

FROM :COORS ENGINEERING 3032776064 1995,10-10 16:05 #912 P.03/04

VERSION 10-03-1995												
			BOTTLE FILLER EXHAUST									
	RUN NO. 1		RUN NO. 2.		RUN NO. 3		AVERAGE		TOTAL FLOW INTO FILLER ROOMS. (DSCFM)		FACTOR (total/avg)	corrected emission factor.
DATE:	4/3/95		4/3/95		4/3/95							
RUN TIME:	17:45-18:45		19:34-20:53		21:33-22:53							
MEASURED DUCT FLOW RATE (DSCFM)	20099		20272		18543		19838		28056		1.4287	
FID EMISSION RATE: (LBS./HR.)	12.7		13.8		15.8		14.1					
FTIR EMISSION RATE: (LBS./HR.)	13.3		15.8		16.7		15.3					
BBLS OF BEER PACKAGED PER HR.	435.48		461.39		442.74		446.54					
FID EMISSION RATE (LBS OF ETOH/1000 BBL)	29.16		29.91		35.69		31.59				1.4287	45.126
FTIR EMISSION RATE (LBS OF ETOH/1000 BBL)	30.54		34.24		37.72		34.17				1.4287	48.815
CALCULATION OF PACKAGING BARRELS;												
		RUN NO. 1				RUN NO.2				RUN NO. 3		
FILLERS:	CASES/HR.	FACTOR	BBLS/HR		CASES/HR.	FACTOR	BBLS/HR		CASES/HR	FACTOR	BBLS/HR	
1-BOTTLE:	2200	0.07258	159.676		1457	0.07258	105.7491		2000	0.07258	145.16	
2-BOTTLE:	2700	0.07258	195.966		3000	0.07258	217.74		3000	0.07258	217.74	
3-BOTTLE:	1100	0.07258	79.838		1900	0.07258	137.902		1100	0.07258	79.838	
QUART:	0	0.07258	0		0	0.07258	0		0	0.07258	0	
TOTAL:			435.48				461.3911				442.738	

FROM :COORS ENGINEERING 3032776064 1995,10-10 16:05 #912 P.04/04

VERSION 10-04-1995												
			CAN FILLER EXHAUST									
	RUN NO. 1		RUN NO. 2.		RUN NO. 3		AVERAGE		TOTAL FLOW		FACTOR	corrected
									INTO FILLER		(total/avg.)	emission
DATE:	4/4/95		4/4/95		4/4/95				ROOMS.			factor.
									(DSCFM)			
RUN TIME:	16:30-17:30		18:02-19:02		19:06-20:03							
MEASURED DUCT												
FLOW RATE (DSCFM):	29452		28820		27763		28678		61242		2.136	
FID EMISSION RATE:	15.1		12		14.2		13.8					
(LBS./HR.)												
FTIR EMISSION RATE:	14.4		NOT RUN		15.5		15					
(LBS./HR.)												
BBLS OF BEER												
PACKAGED PER HR.	967.85		1001.60		943.53		970.99					
FID EMISSION RATE												
(LBS OF ETOH/1000 BBL)	15.60		11.98		15.05		14.21				2.136	30.347
FTIR EMISSION RATE	14.88		NOT RUN		16.43		15.65				2.136	33.427
(LBS OF ETOH/1000 BBL)												
CALCULATION OF PACKAGING BARRELS												
		RUN NO. 1				RUN NO.2				RUN NO. 3		
FILLERS:	CASES/HR.	FACTOR	BBLS/HR		CASES/HR.	FACTOR	BBLS/HR		CASES/HR	FACTOR	BBLS/HR	
1-CAN:	1650	0.09677	159.6705		1800	0.09677	174.186		2100	0.09677	203.217	
4-CAN:	2750	0.07258	199.595		1100	0.07258	79.838		1000	0.07258	72.58	
6-CAN:	3800	0.07258	275.804		3700	0.07258	268.546		3500	0.07258	254.03	
9-CAN:	1950	0.07258	141.531		2400	0.07258	174.192		2100	0.07258	152.418	
10-1-CAN:	1650	0.07258	119.757		2500	0.07258	181.45		2300	0.07258	166.934	
10-2-CAN:	985	0.07258	71.4913		1700	0.07258	123.386		1300	0.07258	94.354	
TOTAL:			967.8488				1001.598				943.533	