STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
CALIFORNIA AIR RESOURCES BOARD

MOBILE SOURCE CERTIFICATION AND COMPLIANCE FEE PAYMENT FORM FOR ON-ROAD APPLICATIONS ONLY

CARB USE ONLY

Invoice Name	MSF250703-1
Invoice Date	Feb 09, 2026

COMPANY INFORMATION

Company Name	Volvo Car USA LLC
Address	270 THREE POINT DRIVE
City	RIDGEVILLE
State	SC
Zip	29472
Country	United States
Contact Name	Bryant Lowry
Contact Telephone Number	8432763791
Contact Email	bryant.lowry@volvocars.com
CARB Customer Number	CCAM000086

APPLICATION INFORMATION

Row Number	Previous Unique Application Identifier	Previously Selected Category Type	Previously Selected Fee Type	Paid Amount	Corrected Unique Application Identifier	Corrected Category Type	Corrected Fee Type	Corrected Amount	Amount Due
1	VVVXT02.0P34	Light-duty vehicle test group and medium-duty vehicle test group	Base	$ 50,309.00	VVVXT02.0P34	Light-duty vehicle test group and medium-duty vehicle test group	Base	$ 50,309.00	$ 0.00
2	VVVXT02.0S34	Light-duty vehicle test group and medium-duty vehicle test group	Base	$ 50,309.00	VVVXT02.0S34	Light-duty vehicle test group and medium-duty vehicle test group	Base	$ 50,309.00	$ 0.00
3	VVVXT02.0S30	Light-duty vehicle test group and medium-duty vehicle test group	Carry-Over	$ 12,577.00	VVVXT02.0S30	Light-duty vehicle test group and medium-duty vehicle test group	Base	$ 50,309.00	$ 37,732.00
4	VVVXT00.0ZVG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	VVVXT00.0ZVG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	$ 0.00
5	VVVXT00.0ZPG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	VVVXT00.0ZPG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	$ 0.00
6	VVVXT00.0ZVH	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	VVVXT00.0ZVH	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	$ 0.00
		Light-duty vehicle test group and				Light-duty vehicle test group and			

7	VVVXT00.0ZPH	medium-duty vehicle test group	Zero-Emission	$ 12,577.00	VVVXT00.0ZPH	medium-duty vehicle test group	Zero-Emission	$ 12,577.00	$ 0.00
8	VVVXV00.0ZVI	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	VVVXV00.0ZVI	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	$ 0.00
9	VVVXV00.0ZVJ	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	VVVXV00.0ZVJ	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	$ 0.00

Total Invoice (MSF250703) Paid	$ 188,657.00	**Total Corrected**	$ 226,389.00
		Total Due	$ 37,732.00

Notes
Changed fee type for UID VVXT02.0S30 from Carry-Over to Base Fee.

I, Bryant Lowry
Bryant Lowry (Feb 9, 2026 08:16:50 EST) , attest that any information provided is true, accurate, and complete.

(Responsible Party Signature Here)

VOLVO

Application for Certification – Part 1
2027 Model Year

Test Group	Applicable Standards	Certification Summary Information
VVVXT02.0P34	Calif: Exhaust: LEV III – SULEV30 Evap: LEV III Fed: Exhaust: Interim Tier 4 Bin 30 Evap: Tier 4	VVVXT02.0P34- VVVXR0142EP6

Durability Group:
VVVXHHGVNLV3

Evap. Family:
VVVXR0142EP6

Durability Group Description:
P-HEV (Plug-In Hybrid), Four Stroke, Miller cycle, Gasoline Fueled, DFI
Ceramic Monolith Pd/Rh Closed Coupled Catalyst

Test Group Description:
2.0 Liter, I-4, LDT

Carlines Covered:
XC60 & XC90

Emission Data Vehicles Tested:

Vehicle ID 202701 Configuration 00
Test number: VVVX10093500 (UDDS-CS), VVVX10093501 (HWF-CS),
VVVX10093472 (US06), VVVX10093502 (SC03),
VVVX10093503 (Cold CO), VVVX10093504 (50F)

Vehicle ID 202712 Configuration 00 (VVVXR0142EP6)
Test number: VVVX10093555 (3-D Evap), VVVX10093558 (R/L)
VVVX10093557 (ORVR), VVVX10093554 (2-D Evap)

EPA Response Requested By:
April 20, 2026

For Questions, Contact:
Bruno DiGennaro, Phone 201-218-7106

		Cover page
		Table of Contents
01		*CORRESPONDENCE & COMMUNICATIONS*
01.01	*Common Application*	*Correspondence & Communications*
02		*DURABILITY GROUP DESCRIPTION*
02.01	*Test Group Application*	*Durability Group Description*
03		*EVAPORATIVE / REFUELING FAMILY DESCRIPTION*
03.01	*Common Application*	*ORVR Safety Information*
03.02.01	*Test Group Application*	*Evaporative Family Description*
03.02.02	*Test Group Application*	*Evaporative Code Characteristics*
03.02.03	*Test Group Application*	*Evaporative Test Vehicle Connections*
03.02.04	*Test Group Application*	*Evaporative System General Features*
04		*DURABILITY PROCEDURE DESCRIPTION*
04.01	*Common Application*	*Evaporative Bench Aging Procedure description*
04.02.01	*Test Group Application*	*Evap Deterioration Factors & Ozone Statement* *Evaporative family VVVXR0142EP6* *Evaporative family VVVXR0142E50* *Evaporative family VVVXR0142E58*
04.02.02		*Statement Ozone resistance*
04.03	*Common Application*	*Exhaust Emissions Durability Test Procedure*
04.03.01		*Volvo Customized Bench Aging Procedure (VCBAP)*
04.03.02		*Volvo Customized Bench Aging Procedure (VCBAP2)*
04.03.03		*Volvo Customized Bench Aging Procedure (VCBAP3)*
04.03.04		*Alternative Durability Procedures Approval*
04.04		*Exhaust Emission Deterioration Factors*
04.04.01	*Test Group Application*	*Test Group Deterioration Factors (incl. CREE)*
04.05	*Test Group Application*	*Battery Aging Procedure Description*
04.06	*Test Group Application*	*Battery Aging Simulation Data*
05.01	*Test Group Application*	*Test Group Description*
05.02	*Test Group Application*	*Engine Codes Summary*
06		*TEST VEHICLE DESCRIPTION*
06.01	*Test Group Application*	*Statement (Refer to Section 12)*

07		*TEST RESULTS*
07.01	*Test Group Application*	*VERIFY Certification Summary Information Report*
07.02	*Test Group Application*	*Evaporative Emission Test Results Log* *Evaporative family VVVXR0142EP6* *Evaporative family VVVXR0142E50* *Evaporative family VVVXR0142E58*
07.03	*Test Group Application*	*Exhaust Emission Test Results Log*
07.03.01		*Emission & Fuel Economy Data Vehicles*
07.03.02		*SFTP Test Results*
07.03.03		*Determining procedure for FE label calculation. (Litmus Test)*
07.03.04		*Cycle specific and combined cycle energy data (BEV)*
08		*EMISSION TESTING WAIVER STATEMENT*
08.01	*Common Application*	*Statement of Compliance*
09		*OBD SYSTEM*
09.01	*Test Group Application*	*Federal OBD compliance statement & referral to separate OBD Application*
09.02	*Test Group Application*	*Approval Letters*
10	*Test Group Application*	*DESCRIPTION OF ALTERNATE FUELED VEHICLES*
10.01		*Description of Alternate-fueled vehicles*
10.02.01		*High Voltage Battery Charging Information (PHEV&BEV)*
10.02.02		*Charger inlet including adapters (PHEV&BEV)*
10.03		*Vehicle Safe Operation (PHEV&BEV)*
10.04		*Method for determining battery SOC (PHEV&BEV)*
10.05		*Instruction for safe operation (PHEV&BEV)*
10.06		*Description of the Charging system (PHEV&BEV)*
10.07		*Description of the Propulsion system (PHEV&BEV)*
10.08		*Description of the Energy Storage system (PHEV&BEV)*
10.09		*Description of the climate control system (PHEV&BEV)*
11		*AECD DESCRIPTIONS*
11.01.01	*Test Group Application*	*List of AECD Hardware*
11.01.02	*Test Group Application*	*List of AECD Software*
11.02.01	*Test Group Application*	*AECD Descriptions Hardware*
11.02.02	*Test Group Application*	*AECD Descriptions Software*
11.03	*Common Application*	*Engineering Evaluation of Cold NMHC @ High Altitude*
11.04	*Common Application*	*LBT (Lean Best Torque)*
11.05	*Common Application*	*“Alternative Maps” Calibration Description*

12		DESCRIPTIONS OF VEHICLES COVERED BY CERTIFICATE AND TEST PARAMETERS
12.01	Test Group Application	Transmission Description
12.02		Test Vehicle Selection & Information
12.02.01	Test Group Application	EDV / DDV Selection
12.02.02	Test Group Application	FE Label Test Selection
12.02.03		VERIFY Test Vehicle Information
12.02.03.01	Test Group Application	Exhaust / FE (see VERIFY info)
12.02.03.02	Test Group Application	Evaporative family VVVXR0142EP6 Evaporative family VVVXR0142E50 Evaporative family VVVXR0142E58
12.02.04	Test Group Application	Test Vehicle Description
12.02.05	Common Application	Test Vehicle Maintenance and break-in period
12.02.06	Test Group Application	Test Vehicles Generating Data
12.03		Label Format
12.03.01	Test Group Application	Vehicle Emission Control Label
12.03.02	Common Application	Fuel Economy & Environment Label Information
12.04		Vehicle Test Parameters & Related Descriptions
12.04.01	Test Group Application	List of vehicle parameters
12.04.02	Common Application	Description of Road Load Determination
12.04.03	Common Application	Active Aerodynamic Device Description
12.04.04	Test Group Application	Active Aerodynamic Device DATA
12.04.05	Common Application	Description of Dyno Mode used for Dyno testing
12.05	Test Group Application	List of Certified Vehicles
12.06	Common Application	Adjustable Parameters on ERC
12.07	Common Application	California Evaporative Supplemental Information
12.07.01		Data for Generation of Temperature and Pressure Profiles
12.07.02		Measured Temperature and Pressure Profiles
12.07.03		Ambient Conditions
12.07.04		Corrected Temperature Profiles
12.08	Common Application	Catalyst Configuration Description
12.09	Test Group Application	Drive Modes Description
12.10	Common Application	Stop-Start Disable Criteria
12.11	Test Group Application	Description of DCF (BEV only)
12.12	Test Group Application	Climate settings for Certification Testing

13		*PROJECTED SALES & EPA COMPLIANCE*
13.01.01	*Common Application*	*Test Group & Durability Group Sales*
13.01.02		*Evaporative Family Sales*
13.02		*Tier4 Phase-In*
13.03		*Tier4 NMOG+NOx FTP & SFTP compliance*
13.04		*Tier4 Cold NMHC compliance*
13.05		*Tier3 Evaporative compliance*
14		*REQUEST FOR CERTIFICATION*
14.01	*Test Group Application*	*Request for Certificate*
15		*OTHER INFORMATION*
15.01	*Test Group Application*	*Fee Filing Form EPA*
15.02		*Fee Filing Form EPA (Receipt)*
15.03		*Compliance Invoice Adjustment Form (CARB)*
16		*CONFIDENTIAL INFORMATION*
16.01	*Test Group & common Application*	*Statement of Confidentiality*
17		*CALIFORNIA ARB INFORMATION*
17.01	*Test Group Application*	*Fill pipes and Openings of Fuel Tank*
17.02		*Fill pipe and Opening Specifications*
17.03	*Common Application*	*Compliance Plan / Phase in / Fleet average*
17.03.01		*LEV III FTP & SFTP NMOG+NOx compliance*
17.03.02		*LEV III Evaporative compliance*
17.03.03		*LEV III FTP & US06 PM compliance*
17.03.04		*LEV III Bench Leak Rate compliance*
17.03.05		*LEV III PZEV Anti-backsliding compliance*
17.04	*Test Group Application*	*California Emission Test Results*
17.04.01		*50F Test Results*
17.05	*Common Application*	*California & EPA warranty*
17.06	*Test Group Application*	*California High Priced Parts List*
17.07	*Test Group Application*	*California Compliance Statements & summary information*
17.08	*Test Group Application*	*CARB Certification Review Sheet*
17.09	*Test Group Application*	*Warranty Booklet Reference*

18	*Common Application*	*CANADIAN INFORMATION*
18.01		*Projected Sales*
18.01.01		*Test Group and Durability Group sales*
18.01.02		*Evap Family sales*
18.02		*Emission Compliance & Sales Information*
18.03		*Canada FE Label Selection*
18.04		*Canada Compliance Plan / Fleet average*
19		*APPLICATION REVISIONS*
19.01	*Common Application*	*Application Revisions*
20	*Test Group Application*	*INFORMATION FROM AUTHORITIES*
20.01		*EPA Certificate of Conformity*
20.02		*CARB executive order*

Section 03.02.01

EVAP FAMILY DESCRIPTION

Test Group TVVXT02.0P34 contains one evaporative family: VVVXR0142EP6

- Family VVVXR0142EP6 contains light-duty trucks. This evaporative family includes 71-liter plastic tanks. This evaporative family is certified to 150K useful life evaporative standards for light-duty trucks. This evaporative family is introduced for the first time in MY 2027.

The deterioration factors for this evaporative family are derived during MY 2027 using Volvo's bench aging test procedure for evaporative systems subject to 150K useful life.
A description of this procedure can be found under Section 04.01 in Volvo's Common Application, Part 1.

Evaporative emission data will be established for 2027MY.

Volvo Cars vehicles in this evaporative family with Non-Integrated Refueling-Only Canister System (NIRCOS) will meet the refueling emission standard when tested according to the EPA partial refueling test.

Engineering analysis:

ORVR testing at Volvo Cars on cars with NIRCOS, is performed with the canister disconnected during the Drain and 10% Fill step. During the following Vehicle Soak step, the canister is connected.
The Fuel Tank Isolation Valve (FTIV) is activated to open in the following step when the car is in the ORVR SHED i.e. the pressurized fuel tank is ventilated through the canister before the refueling step starts.
The resulting "puff loss" loading (for the 71 L fuel tank) has been verified to be up to 8 grams.
The refueling test canister loading (for the 71 L fuel tank) has been verified to be up to 75 grams.
The highest total load (puff loss + refueling) is verified to be 83 grams.
The ORVR GWC (Gasoline Working Capacity) for the canister is verified to be 110 (*) grams which means good margin for the verified total loading. All tests have met the ORVR emission std.

(*) 0.775 x 142g = 110g

Section 03.02.02
Evap code characteristics
Test Group: VVVXT02.0P34

EVAP FAMILY	FUEL TANK MATERIAL	EVAP CODE	FUEL TANK VOLUME [litres]	CANISTER WORKING CAPACITY [Grams]	PURGE CONTROL	VEHICLE MODELS
VVVXR0142EP6	Plastic	69P:71	71	142	Electronic	XC60 T8 AWD XC90 T8 AWD

Note: For GVWR and Vehicle Class, see sections 12.04 and 12.05 in Test Group Applications

Section 03.02.04
Evap system general features
Test Group: VVVXT02.0P34

Evap family	VVVXR0142EP6		
Leak family	VVVXR0142EP6-001		
Evap codes	69P:71		
Vapor storage device	Carbon Canister		
Canister Configuration Housing	Plastic (3 chambers)		
Working Capacity	142g N-Butane		
Load Rate	17.8 g/h		
Storage medium	*Chamber 1*	*Chamber 2*	*Chamber 3*
Material	Activated Carbon	Activated Carbon	Activated Carbon
Configuration	Pellets	Pellets	Honeycomb Monolith
Density	0.29 g/cm3	0.36 g/cm3	n.a.
Bed volume	1700 cm3	830 cm3	n.a.
Max Vapor Volume at 40% fill (liters)	69:71 - 42,6		

Section 03.02.03
Evap Test Vehicle Connections:
Test Group: VVVXT02.0P34

Evap Family	DF Method	Test Group information							Cert Status
		DDV	DDV ID	MY		EDV	EDV ID	MY	vs. 2026 MY
VVVXR0142EP6	Bench Aging	VVVXT02.0P34	2027ED	2027		VVVXT02.0P34	202712	2027	New DDV New EDV

Section 04.02.01
Deterioation Factors

EVAP Family: VVVXR0142EP6
Vehicle ID: 2027ED (Bench Aged)
The Vehicles 2027ED & 2022EC (slave vehicle) were bench-aged according to the procedure described under section 04.01 in this application

3-Day + Hot Soak test								
Test Number	Test Date	Mileage Point	Hot soak HC (g/test)	Diurnal 1 HC (g/test)	Diurnal 2 HC (g/test)	Diurnal 3 HC (g/test)	Diurnal + Hot soak HC (g/test)	Note
VT1_2025-10-16_1	10 16 2025	4000	0.0356	**0.1372**	0.0994	0.0918	0.1728	4K 3-Day Set 1
01497_20251107_0717	11 07 2025	4000	0.0341	**0.1043**	0.0571	0.0438	0.1384	4K 3-Day Set 2
N/A		4000	**0.0349**	**0.1208**			**0.1556**	4K 3-Day average Data
01513_20260227_1225	02 27 2026	150000	0.0521	**0.1287**	0.0773	0.0531	0.1808	150K 3-Day Set 1
VT2_2026-03-30_1	03 30 2026	150000	0.0467	**0.1354**	0.0949	0.0798	0.1821	150K 3-Day Set 2
N/A		150000	**0.0494**	**0.1321**			**0.1815**	150K 3-Day average Data
DF's 3-Day Hot soak + Diurnal: 0,1815 – 0,1556= <u>0,0259</u>								

2-Day + Hot Soak test								
Test Number	Test Date	Mileage Point	Hot soak HC (g/test)	Diurnal 1 HC (g/test)	Diurnal 2 HC (g/test)		Diurnal + Hot soak HC (g/test)	Note
VT2_2025-10-26_1	10 26 2025	4000	0.0103	**0.1730**	0.1269		0.1833	4K 2-Day Set 1
VT2_2025-09-21_1	09 21 2025	4000	0.0162	**0.1897**	0.1402		0.2059	4K 2-Day Set 2
N/A		4000	**0.0133**	**0.1814**			**0.1946**	4K 2-Day average Data
01517_20260313_0706	03 13 2026	150000	0.0124	**0.1229**	0.0617		0.1353	150K 2-Day Set 1
01519_20260320_0718	03 20 2026	150000	0.0264	**0.1412**	0.0973		0.1676	150K 2-Day Set 2
N/A		150000	**0.0194**	**0.1321**			**0.1515**	150K 2-Day average Data
DF's 2-Day Hot soak + Diurnal: 0,1515– 0,1946 = 0								

On-Board Refueling Vapor Recovery test				
Test Number	Test Date	Mileage Point	ORVR HC (g/gallon)	Note
Report 426	09 11 2025	4000	0.003	4K ORVR Set1
Report 420	10 30 2025	4000	0.004	4K ORVR Set2
N/A		4000	**0.0035**	4K ORVR average Data
Report 442	02 13 2026	150000	0.006	150K ORVR Set1
Report 438	03 05 2026	150000	0.006	150K ORVR Set2
N/A		150000	**0.0060**	150K ORVR average Data
DF's On-Board Refueling Vapor Recovery: 0,0060 – 0,0035 = <u>0,002</u>				

Running Loss Test				
Test Number	Test Date	Mileage Point	Running Loss HC (g/mile)	Note
S1_251016_006	10 16 2025	4000	0.001	4K RL Set1
S1_251106_006	11 06 2025	4000	0.001	4K RL Set2
N/A		4000	**0.001**	4K RL average Data
S1_260226_009	02 26 2026	150000	0.000	150K RL Set1
S1_260326_010	03 26 2026	150000	0.000	150K RL Set2
N/A		150000	**0.000**	150K RL average Data
DF's Running Loss: 0,001 – 0,000 = 0				

Section 04.04.01-1 EXHAUST EMISSIONS DETERIORATION FACTORS

Test Group: VVVXT02.0P34
Durability Group: VVVXHHGVNLV3

Original Test Group: VVVXT02.0P34
Original Durability Group: VVVXHHGVNLV3

The Deterioration Factors were derived using the Volvo Customized Bench Aging Procedure Version2 as described in Application for Certification, section 04.03.02

Durability Data Type: NEW **Drive Mode:Hybrid Mode (Worst Case)** **Emission Cycles: All**

Exhaust Emission Test Results Vehicle ID: 2027B												
mileage [miles]	Test no.	THC [g/mile]	NMHC [g/mile]	NMOG [g/mile]	CO [g/mile]	NOx [g/mile]	C02 [g/mile]	N2O [g/mile]	CH4 [g/mile]	PM [g/mile]	Remarks	Calculation
4000	E1_260214_000	0.006	0.0049	0.0054	0.15	0.003	240	0.0005	0.0017	0.0002	4K test 3	
4000	E1_260213_002	0.006	0.0044	0.0048	0.15	0.003	241	0.0002	0.0022	0.0002	4K test 2	
4000	E1_260212_004	0.006	0.0047	0.0052	0.17	0.003	256	0.0005	0.0014	0.0003	4k test 1	
4000		**0.00600**	**0.004667**	**0.005133**	**0.1567**	**0.00300**	**245.67**	**0.000400**	**0.001767**	**0.000233**	**4K average**	**DF Point 1**
150,000	E1_260308_002	0.015	0.0102	0.0112	0.24	0.006	243	0.0008	0.0056	0.0003	150K test 3	
150,000	E1_260305_013	0.01	0.0067	0.0074	0.17	0.006	245	0.0005	0.004	0.0001	150K test 2	
150,000	E1_260304_014	0.013	0.0084	0.0092	0.4	0.006	254	0.0003	0.0055	0.0003	150K test 1	
150,000		**0.01267**	**0.008433**	**0.009267**	**0.2700**	**0.00600**	**247.33**	**0.000533**	**0.005033**	**0.000233**	**150K average**	**DF Point 2**

Values at 50 000 & 120 000 miles are calculated									
mileage [miles]	THC [g/mile]	NMHC [g/mile]	NMOG [g/mile]	CO [g/mile]	NOx [g/mile]	C02 [g/mile]	N2O [g/mile]	CH4 [g/mile]	PM [g/mile]
4000	0.0060	0.00467	0.00513	0.157	0.0030	245.7	0.00040	0.00177	0.00023
50000 (calculated)	0.0081	0.00585	0.00644	0.192	0.0039	246.2	0.00044	0.00280	0.00023
120000 (calculated)	0.0113	0.00766	0.00842	0.247	0.0054	247.0	0.00051	0.00436	0.00023
150,000	0.0127	0.00843	0.00927	0.270	0.0060	247.3	0.00053	0.00503	0.00023

Calculated Additive DFs	THC [g/mile]	NMHC [g/mile]	NMOG [g/mile]	CO [g/mile]	NOx [g/mile]	C02 [g/mile]	N2O [g/mile]	CH4 [g/mile]	PM [g/mile]	NMOG+NOx [g/mile]
4K-50K	0.0021	0.00118	0.00131	0.035	0.00090	n.a.	n.a.	n.a.	n.a.	n.a
4K-120K	0.0053	0.00299	n.a.	0.090	n.a.	n.a. (*)	0.00011	0.00259	n.a.	n.a
4K-150K	n.a	0.00376	0.00414	0.113	0.00300	n.a.	n.a.	n.a.	0.00000	0.00714

Rounded Additive DFs	**THC [g/mile]**	**NMHC [g/mile]**	**NMOG [g/mile]**	**CO [g/mile]**	**NOx [g/mile]**	**C02 [g/mile]**	**N2O [g/mile]**	**CH4 [g/mile]**	**PM [g/mile]**	**NMOG+NOx [g/mile]**
4K-50K	**0.002**	**n.a**	**n.a**	**0.04**	**n.a**	**n.a**	**n.a**	**n.a**	**n.a**	**n.a**
4K-120K	**0.005**	**0.0030**	**n.a**	**0.09**	**n.a**	**n.a. (*)**	**0.0000**	**0.0026**	**n.a**	**n.a**
4K-150K	**n.a**	**n.a**	**0.0041**	**0.11**	**0.003**	**n.a.**	**n.a.**	**n.a.**	**0.0000**	**0.0071**

(*) Separate CREE DF calculated, see section 04.04.01-2

Section 04.04.01-2 **CREE DETERIORATION FACTORS**

Test Group: VVVXT02.0P34
Durability Group: VVVXHHGVNLV3

Original Test Group: VVVXT02.0P34
Original Durability Group: VVVXHHGVNLV3

The Deterioration Factors were derived using the Volvo Customized Bench Aging Procedure Version2 as described in Application for Certification, section 04.03.02

Durability Data Type:NEW Data

Drive Mode: HYBRID MODE (Default, Predominant Mode)

	mileage [miles]	Test no.	THC [g/mile]	CO [g/mile]	C02 [g/mile]	CREE (round) [g/mile]	Remarks	Transition Cycle
4k miles status 4k Battery	UDDS CS 4k	E1_260214_000	0.006	0.15	240	240	4K test 1	
	UDDS CS 4k	E1_260213_002	0.006	0.15	241	241	4K test 2	
	UDDS CS 4k	E1_260212_004	0.006	0.17	256	256	4K test 3	
	UDDS CS AVG 4k				**245.67**	**245.67**		
	HWY CS 4k	E1_260214_001	0.000	0.17	223	223	4K test 1	
	HWY CS 4k	E1_260213_003	0.000	0.17	225	225	4K test 2	
	HWY CS 4k	E1_260212_005	0.000	0.19	221	221	4k test 3	
	HWY CS AVG 4k				**223.00**	**223.00**		
	Composite UDDS CD/ UDDS CS AVG 4k	E1_260216_015	n.a.	n.a.	n.a.	49	4K test 1	Phase 7
	Composite UDDS CD/ UDDS CS AVG 4k	E1_260217_010	n.a.	n.a.	n.a.	47	4K test 2	Phase 7
	Composite UDDS CD/CS AVG 4k					**48.00**		
	Composite HWY CD/ HWY CS AVG 4k	E1_260218_007	n.a.	n.a.	n.a.	123	4K test 1	Phase 5
	Composite HWY CD/ HWY CS AVG 4k	E1_260219_012	n.a.	n.a.	n.a.	125	4K test 2	Phase 5
	Composite HWY CD/CS AVG 4k					**124.00**		
120k miles status 10 Year Battery Catalyst 150k status	UDDS CS 120k	E1_260308_002	0.015	0.24	243	243	150K test 1	
	UDDS CS 120k	E1_260305_013	0.01	0.17	245	245	150K test 2	
	UDDS CS 120k	E1_260304_014	0.013	0.4	254	255	150K test 3	
	UDDS CS AVG 120k				**247.33**	**247.67**		
	HWY CS 120k	E1_260307_003	0.000	0.07	222	222	150K test 1	
	HWY CS 120k	E1_260305_014	0.000	0.08	222	222	150K test 2	
	HWY CS 120k	E1_260304_015	0.000	0.05	222	222	150K test 3	
	HWY CS AVG 120k				**222.00**	**222.00**		
	Composite UDDS CD/ UDDS CS AVG 120k	E1_260309_014	n.a.	n.a.	n.a.	76	150K test 1	Phase 5
	Composite UDDS CD/ UDDS CS AVG 120k	E1_260310_014	n.a.	n.a.	n.a.	74	150K test 3	Phase 5
	Composite UDDS CD/CS AVG 120k					**75.00**		
	Composite HWY CD/ HWY CS AVG 120k	E1_260311_013	n.a.	n.a.	n.a.	147	150K test 1	Phase 3
	Composite HWY CD/ HWY CS AVG 120k	E1_260312_017	n.a.	n.a.	n.a.	161	150K test 3	Phase 4
	Composite HWY CD/CS AVG 120k					**154.00**		

Calculated Multiplicative DFs	**UDDS Composite CD/CS CREE (round) [g/mile]**	**HWY Composite CD/CS CREE (round) [g/mile]**	**COMB Composite CD/CS CREE (round) [g/mile]**
4K-50K	n.a.	n.a.	n.a.
4K-120K	1.5625	1.2419	1.4182
4K-150K	n.a.	n.a.	n.a.

Rounded Multiplicative DFs	**UDDS Composite CD/CS CREE [g/mile]**	**HWY Composite CD/CS CREE [g/mile]**	**COMB Composite CD/CS CREE [g/mile]**
4K-50K	**n.a.**	**n.a.**	**n.a.**
4K-120K	**1.562**	**1.242**	**1.418**
4K-150K	**n.a.**	**n.a.**	**n.a.**

Section 05.01
Test Group Description

Test group: VVVXT02.0P34

Vehicle Class:	LDT
Certification Summary Information:	CSI-VVVXT02.0P34- VVVXR0142EP6 (XC60 & XC90 T8 AWD)
Applicable Emission Standards:	See Certification Summary Information in section 07
Emission standard class:	LEV III SULEV30 / Interim Tier4 Bin30
Engine Type:	4-stroke, Miller cycle
Engine Configuration:	Inline, 4 cylinder
Engine displacement:	1969 cm^3, 120 cu in
Cylinder head design:	OHV, DOHC, 4 valves / cylinder
Method of aspiration:	Turbocharged
Rated power:	247 hp @ 5400-5700 rpm (Combustion engine)
	154 hp @ 4000-15900rpm (Electric engine)
Rated torque:	266 ftlb @ 2000-4500 rpm(Combustion engine)
	228 ftlb @ 0-3280 rpm (Electric engine)
Fuel & Ignition System: (Manufacturer and type):	Phinia / DFI / Electronic microprocessor controlled
Knock sensor:	Yes
Oil Viscosity / Classification:	0W20 – API SP & ILSAC GF-6A

For Hybrid system information please see *Section 10 Description of Alternate fueled vehicles*. (Electric motor capacity, voltage, type and the size of electric motor and the battery capacity, voltage and type of battery technology.)

Section 06.
Test vehicle description

For test vehicle description, please refer to section 12

Certification Summary Information Report

Manufacturer	Volvo Car USA, LLC	**Manufacturer Code**	VVX
Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6
Certificate Number	--	**CARB Executive Order #**	--
Certificate Issue Date	--	**Certificate Revision Date**	--
Certificate Effective Date	--	**Conditional Certificate**	--
CSI Revision #	--	**CSI Submission/Revision Date**	04/13/2026 04:06:49 AM
Model Year	2027		

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Test Group Information

CSI Type	New	**Running Change Reference Number**	--
GHG Exempt Status	Not Exempt		

Drive Sources and Fuel(s)

Drive Source #1: Electric Motor

Fuel	Basic Fuel Metering System	Lean Burn Strategy Indicator
Electricity	--	No

Drive Source #2: Combustion Engine

Fuel	Basic Fuel Metering System	Lean Burn Strategy Indicator
Gasoline	Spark Ignition Direct fuel injection	No

Hybrid Indicator	Yes		
Multiple Fuel Storage	--	**Rechargeable Energy Storage System Indicator**	Yes
Multiple Fuel Combustion	--	**Off-board Charge Capable Indicator**	Yes
Fuel Cell Indicator	No	**EPA Vehicle Class**	LDT2, LDT4
Federal Clean Fuel Vehicle	No	**Federal Clean Fuel Vehicle Standard**	--
Federal Clean Fuel Vehicle ILEV	No	**California Partial Zero Emissions Vehicle Indicator**	Yes
Durability Group Name	VVVXHHGVNLV3	**Durability Group Equivalency Factor**	1.0
Reduced Fee Test Group	No	**Certification Region Code(s)**	FA, CA
Complies with HD GHG 2b/3 regulations?	No		
Introduction into Commerce Date	--	**CAP2000 Conditional Certificate?**	N/A
Independent Commercial Importer?	--	**Alternative Fuel Converter Certificate?**	--
SFTP Federal Composite Compliance Identifier	Tier 3	**SFTP Tier 2 Composite CO Option**	No
SFTP LEV-III Composite Compliance Indicator	Yes		
OBD Compliance Type	CARB	**OBD Demonstration Vehicle Test Group**	VVVXT02.0P34
Test Group OBD Compliance Level	Partial - with deficiencies and penalty	**Number of Test Group OBD Deficiencies**	8
OBD Deficiencies Comments	Pending OBD approval		
Mfr Test Group Comments	2.0 L direct injection gasoline and electric hybrid technology. New DDV, EDV, New Evaporative DDV, EDV. TZEV group meeting CARB LEV III SULEV 30 standards bleed emissions 0.020 grams standard, NIRCO systems exempt per section 1876(G) 1.b. Testgroup is certified with EPA Interim TIER 4 standard		
Mfr Exhaust / Evap Standards Comments	--		

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Evaporative/Refueling Family Information

Evaporative Summary Information Type	New	**Submission/Correction Date**	03/20/2026 03:42:01 AM
Integrated ORVR?	Yes	**Fuel(s)**	Gasoline
Multiple Fuel Storage	--		
Bladder Fuel Tank?	No		
Fuel Tank Material	Plastic	**Fuel Tank Material Description**	Coextruder 6 layer
Fill Pipe Seal Type	Liquid seal		
Air Intake System Vapor Storage Device?	No	**Air Intake System Vapor Storage Device Description**	--
Fuel System Vapor Storage Canister?	Yes	**Other Vapor Storage**	--
Fuel System Vapor Storage Canister(s) Total Working Capacity (grams)	142	**Number of Primary Canisters**	1
Number of Bleed Canisters	0	**Bleed Canister Total Working Capacity (grams)**	0
Mfr Evaporative/Refueling Family Comments	New evaporative durability and EDV test. Tier 3 ORVR and LEV 3 evap. LDT2. XC60 T8 AWD, XC90 T8 AWD hybrids. No testing or std for canister bleed emissions because PHEV vehicle is equipped with NIRCO system. Bleed integrated into canister.		

Leak Family Details

Leak Family Indicator	Yes		
Canister Bleed Test Indicator	No	**Applicability of Evaporative Canister Bleed Test**	--
Evaporative Canister Bleed Test Comments	--		
CARB Fuel Only (Rig) Test Indicator	No	**Applicability of CARB Fuel Only (Rig) Test**	--
CARB Fuel Only (Rig) Test Comments	--		

Leak Family Name	Applicability of Leak Family Requirements	Leak Family Standard (inches)	Leak Family Description
VVVXR0142EP6-001	50 State	0.02	--

Models Covered by this Certificate

Carline Manufacturer	Division	Carline	Certification Region Code(s)	Drive System	Trans - Type	- # of Gears	Trans - Lockup
Volvo Car USA, LLC	1 - Volvo Cars of North America, LLC	298 - XC90 T8 AWD	Federal	All Wheel Drive	Semi-Automatic	8	Yes
Volvo Car USA, LLC	1 - Volvo Cars of North America, LLC	298 - XC90 T8 AWD	California + CAA Section 177 states	All Wheel Drive	Semi-Automatic	8	Yes
Volvo Car USA, LLC	1 - Volvo Cars of North America, LLC	299 - XC60 T8 AWD	Federal	All Wheel Drive	Semi-Automatic	8	Yes
Volvo Car USA, LLC	1 - Volvo Cars of North America, LLC	299 - XC60 T8 AWD	California + CAA Section 177 states	All Wheel Drive	Semi-Automatic	8	Yes

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Engine Description

Hybrid Type	IC Engine/Electric Motor	**Hybrid Description**	--
Engine Type	4-Stroke Spark Ignition	**Mfr Engine Description**	gasoline direct injection/electric hybrid
Engine Block Arrangement	Inline	**Mfr Engine Block Arrangement Description**	--
Camless Valvetrain Indicator	No	**Oil Viscosity/Classification**	0W-20 / C6 (API SP)
Number of Cylinders/Rotors	4	**Mechanically Variable Compression Ratio Indicator**	N

After Treatment Device(s) (ATD)

ATD Number	ATD Type	ATD Precious Metal	Substrate Material	Substrate Construction
1	Three-way catalyst	Palladium + Rhodium	Ceramic	Monolith
2	Three-way catalyst	Palladium + Rhodium	Metal	Monolith

Mfr After Treatment Device (ATD) Comments	There are 2 catalyst units but only 1 TWC part number. 3 oxygen sensors monitor unit.
Direct Ozone Reduction (DOR) Device	Not Equipped
Mfr Emission Control Device Comments	--

Engine Configuration Number 1

Engine Displacement (liters)	2.0	**Engine Rated Horsepower**	312
Number of Inlet Valves Per Cylinder	2	**Number of Exhaust Valves Per Cylinder**	2
Air Aspiration Method	Turbocharged	**Number of Air Aspiration Devices**	1
Air Aspiration Device Configuration	Single	**Charge Air Cooler Type**	Air
Air Aspiration Drive Method(s)	Mechanical		
Cylinder Deactivation	No		
Cylinder Deactivation Description	--		
Variable Valve Timing	Yes		
Variable Valve Timing System Description	Timing on both intake and exhaust sides.		
Variable Valve Lift?	No		
Variable Valve Lift System Description	N/A		
Number of Knock Sensors	2	**Number of Air/Fuel Sensors**	3
Air/Fuel Sensor # 1 Type	Heated oxygen	**Air/Fuel Sensor # 1 Description**	--
Air/Fuel Sensor # 2 Type	Heated oxygen	**Air/Fuel Sensor # 2 Description**	--
Air/Fuel Sensor # 3 Type	Heated oxygen	**Air/Fuel Sensor # 3 Description**	--
Mfr Air/Fuel Sensor Comments	--		
Exhaust Gas Recirculation	No	**Cooled Exhaust Gas Recirculation**	No
EGR Type	--	**Exhaust Gas Recirculation Description if 'Other'**	--
Closed Loop Air Injection System	No		
Air Injection Type	Not Applicable	**Air Injection Type if 'Other'**	--
Mfr Engine Configuration Comments	All variants/models are AWD.		

Certification Summary Information Report

Test Group	VVVXT02.0P34	Evaporative/Refueling Family	VVVXR0142EP6

Official Test Numbers

Test Group Fuel	FTP	US06	SC03	Cold CO	Highway	EPA City Litmus Value	EPA City Litmus Threshold	EPA Highway Litmus Value	EPA Highway Litmus Threshold	CREE Weighting Factor
Gasoline	VVVX10093500	VVVX10093472	VVVX10093502	VVVX10093503	VVVX10093501	--	19.2	--	23.6	1
Electricity	--	--	--	--	--	--	--	--	--	0

SFTP LEV-III Official Test Numbers

Test Group Fuel	FTP	US06	SC03
Gasoline	VVVX10093500	VVVX10093472	VVVX10093502

Official Charge Depleting Test Numbers

Test Group Fuel	UDDS	Highway
Gasoline	--	--
Electricity	VVVX10093423	VVVX10093422

Hybrid Electric Vehicle And Fuel Cell Information

Rechargable Energy Storage System	Battery(s)	**Rechargable Energy Storage System, if Other**	--
Battery Type	Lithium Ion	**Number of Battery Packs**	1
Total Voltage of Battery Packs	369	**Battery Energy Capacity**	51
Battery Specific Energy	141.4	**Battery Charger Type**	On-Board
Number of Capacitors	--	**Capacitor Rating (In Farads)**	--
Mfr Capacitor Comments	--		
Hydraulic System Description	--		
Regenerative Braking Type	Electrical Regen Brake		
Regenerative Braking Source	Rear Wheels	**Driver Controlled Regenerative Braking**	No
Mfr Regenerative Braking Description	--		
Drive Motor(s)/Generator(s)	2		
Motor/Generator Type 1	CDPM	**Rated Motor/Generator Power**	52
Motor/Generator Type 2	PMSM	**Rated Motor/Generator Power**	115
Mfr Fuel Cell Description	--		
Fuel Cell On-Board H2 Storage Capacity (kg)	--	**Usable H2 Fill Capacity (kg)**	--
Mfr Hybrid Electric/ Electric Vehicle Comments	Cranck ISG only support ICE = CDPM (CD Permanent Magnet brushed) Rear electric motor = PMSM (Permanent Magnet Syncronised motor)		

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Emission Data Vehicle Information

Vehicle ID / Configuration	202701 / 0	**Manufacturer Vehicle Configuration Number**	0
Original Test Group Name	VVVXT02.0P34	**Original Evaporative/Refueling Family**	VVVXR0142EP6
Original Test Vehicle Model Year	2027		

Vehicle Model

Represented Test Vehicle Make	Volvo	**Represented Test Vehicle Model**	XC90 T8 AWD

Leak Family Details

Leak Family Identifier	001	**Leak Family Name**	VVVXR0142EP6-001

Drive Sources and Fuel System Details

Drive Source and Fuel#	Drive Source	Fuel
1	Electric Motor	Electricity
2	Combustion Engine	Gasoline

Hybrid Indicator	Yes		
Multiple Fuel Storage	--	**Multiple Fuel Combustion**	--
Fuel Cell Indicator	No	**Rechargeable Energy Storage System Indicator**	Yes
Rechargeable Energy Storage System	Battery(s)	**Rechargeable Energy Storage System, if 'Other'**	--
Off-board charge Capable Indicator	Yes		
Odometer Correction -- Initial	0	**Odometer Correction Factor**	1.0062
Odometer Correction Sign	+ = System Miles is equal to (Test odometer reading * Correction factor) + Initial system miles		
Odometer Correction Units	Kilometers		
Engine Code	HD_1	**Rated Horsepower**	247
Displacement (liters)	1.969		
Air Aspiration Method	Turbocharged	**Air Aspiration Method, if 'Other'**	
Number of Air Aspiration Devices	1	**Air Aspiration Device Configuration**	Single
Charge Air Cooler Type	Air	**Drive Mode While Testing**	All Wheel Drive
Shift Indicator Light Usage	Not eqipped	**Aged Emission Components**	4,000 (mi)
Curb Weight (lbs)	5147	**Equivalent Test Weight (pounds)**	5500
GVWR (lbs)	6500	**N/V Ratio**	26.2
Axle Ratio	3.33		
Transmission Type	Semi-Automatic	**# of Transmission Gears**	8
Transmission Lockup	Yes	**Creeper Gear**	No

Certification Summary Information Report

Test Group	VVVXT02.0P34	Evaporative/Refueling Family	VVVXR0142EP6

Dynamometer Coefficients:

Coefficient Category	Target Coefficients A (lbf)	Target Coefficients B (lbf/mph)	Target Coefficients C (lbf/mph**2)	Set Coefficients A (lbf)	Set Coefficients B (lbf/mph)	Set Coefficients C (lbf/mph**2)	EPA Calculated Total Road Load Horse Power for City/Highway/Evap Coefficients
City/Highway/Evap	44.65	0.3541	0.0261	7.597	0.28062	0.025183	17
Cold CO	49.12	0.3895	0.02871	1.835	0.14016	0.028398	N/A
US06	44.65	0.3541	0.0261	7.597	0.28062	0.025183	N/A

Emission Control Device Comments --

Manufacturer Test Vehicle Comments EDV- XC90 T8 AWD, Tested on worst case dyno setting TRLHP 17.0.

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Test #	**VVVX10093500**	**Test Procedure**	**35 - California fuel 3-day exhaust**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	52 - CARB LEV4 E10 Premium Gasoline
Test Date	01/28/2026	**Fuel**	Gasoline
Fuel Batch ID	002893	**Fuel Calibration Number**	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	**DF Type**	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	6499	**Odometer Units**	K
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)
ACT-DISTANCE (Actual Distance Driven (miles))	14.908	--
METHANE (CH4 - Methane)	0.0013	--
CO (Carbon Monoxide)	0.19	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	-1.11	--
DT-EER (Drive Trace Energy Economy Rating)	-1.41	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	-1.83	--
MFR FE (Manufacturer Fuel Economy)	25.1581	25.1581
NOX (Nitrogen Oxide)	0.004	--
N2O (Nitrous Oxide)	0.0003	--
HC-NM (Non-methane Hydrocarbon)	0.0048	--
NMOG (Non-methane organic gases)	0.0053	--
PM (Particulate Matter)	0.0003	--
HC-TOTAL (Total Hydrocarbon)	0.006	--
WATT-HRS (Watt Hours)	-97.8523	--

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	348.3167	348

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	348	--

Certification Summary Information Report

Test Group VVVXT02.0P34 **Evaporative/Refueling Family** VVVXR0142EP6

Manufacturer Test Comments XC90 T8 AWD - EDV

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NM HC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	120,000 miles	Federal Tier 3 Bin 30	CREE	348	--	--	--	--	1.594	555	--	--
Fed	120,000 miles	Federal Tier 3 Bin 30	METHANE	0.0013	--	--	--	0.0026	--	0.004	0.030	Pass
Fed	120,000 miles	Federal Tier 3 Bin 30	N2O	0.0003	--	--	--	0	--	0	0.010	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	CO	0.19	--	--	--	0.11	--	0.3	1.0	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	CO-COMP	0.38	--	--	--	0	--	0.4	4.2	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0.0053	--	1.099	--	0.0041	--	0.009	999.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX	0.0093	--	--	--	--	--	0.016	0.030	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX-COMP	0.0135	--	--	--	0	--	0.014	0.050	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.004	--	--	--	0.003	--	0.007	999.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	PM	0.0003	--	--	--	0	--	0	0.003	Pass
CA	150,000 miles	California LEV-III SULEV30	CO	0.19	--	--	--	0.11	--	0.3	1.0	Pass
CA	150,000 miles	California LEV-III SULEV30	CO-COMP	0.38	--	--	--	0	--	0.4	4.2	Pass
CA	150,000 miles	California LEV-III SULEV30	CO-COMP	0.38	--	--	--	0	--	0.4	4.2	Pass
CA	150,000 miles	California LEV-III SULEV30	NMOG	0.0053	--	1.099	--	0.0041	--	0.009	999.999	Pass
CA	150,000 miles	California LEV-III SULEV30	NMOG+NOX	0.0093	--	--	--	--	--	0.016	0.030	Pass
CA	150,000 miles	California LEV-III SULEV30	NMOG+NOX-COMP	0.0135	--	--	--	0	--	0.014	0.050	Pass
CA	150,000 miles	California LEV-III SULEV30	NMOG+NOX-COMP	0.0135	--	--	--	0	--	0.014	0.050	Pass
CA	150,000 miles	California LEV-III SULEV30	NOX	0.004	--	--	--	0.003	--	0.007	999.999	Pass
CA	150,000 miles	California LEV-III SULEV30	PM	0.0003	--	--	--	0	--	0	0.001	Pass

NOTE: For Non-charge depleting tests, the Rounded Result for CREE/OPT-CREE Emission names are Verify-calculated values.

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Test #	**VVVX10093503**	**Test Procedure**	**11 - Cold CO**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	29 - Cold CO E10 Premium Gasoline (Tier 3)
Test Date	02/12/2026	**Fuel**	Gasoline
Fuel Batch ID	IFTW11	**Fuel Calibration Number**	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	**DF Type**	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	7163	**Odometer Units**	K
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)
ACT-DISTANCE (Actual Distance Driven (miles))	11.0786	--
METHANE (CH4 - Methane)	0.0065	--
CO (Carbon Monoxide)	0.46	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	1.33	--
DT-EER (Drive Trace Energy Economy Rating)	0.1	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	1.51	--
MFR FE (Manufacturer Fuel Economy)	19.7773	19.7773
NOX (Nitrogen Oxide)	0.009	--
N2O (Nitrous Oxide)	0.0003	--
HC-NM (Non-methane Hydrocarbon)	0.0611	--
NMOG (Non-methane organic gases)	0.0671	--
HC-TOTAL (Total Hydrocarbon)	0.066	--
WATT-HRS (Watt Hours)	0	--

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	441.9231	--

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	441	--

Manufacturer Test Comments XC90 T8 AWD - EDV 20F degrees

Certification Summary Information Report

Test Group VVVXT02.0P34 **Evaporative/Refueling Family** VVVXR0142EP6

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NM HC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	50,000 miles	Federal Tier 3 Bin 30	CO	0.46	--	--	--	0.04	--	0.5	12.5	Pass
Fed	120,000 miles	Federal Tier 3 Bin 30	HC-NM	0.061	--	--	--	0.002	--	0.06	0.30	Pass
CA	50,000 miles	California LEV-III SULEV30	CO	0.46	--	--	--	0.04	--	0.5	12.5	Pass

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Test #	**VVVX10093504**	**Test Procedure**	**51 - CA fuel 50 Deg(F) exhaust test**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	52 - CARB LEV4 E10 Premium Gasoline
Test Date	03/05/2026	**Fuel**	Gasoline
Fuel Batch ID	004975	**Fuel Calibration Number**	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	**DF Type**	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	8069	**Odometer Units**	K
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)
ACT-DISTANCE (Actual Distance Driven (miles))	14.9022	--
METHANE (CH4 - Methane)	0.0018	--
CO (Carbon Monoxide)	0.26	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	0.51	--
DT-EER (Drive Trace Energy Economy Rating)	-1.02	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	0.5	--
MFR FE (Manufacturer Fuel Economy)	23.8161	23.8161
NOX (Nitrogen Oxide)	0.003	--
N2O (Nitrous Oxide)	0.0005	--
HC-NM (Non-methane Hydrocarbon)	0.0058	--
NMOG (Non-methane organic gases)	0.0064	--
HC-TOTAL (Total Hydrocarbon)	0.007	--
WATT-HRS (Watt Hours)	0	--

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	366.4297	--

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	366	--

Manufacturer Test Comments XC90 T8 AWD - EDV 50F degrees

Certification Summary Information Report

Test Group VVVXT02.0P34 **Evaporative/Refueling Family** VVVXR0142EP6

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NMHC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
CA	4,000 miles	California LEV-III SULEV30	CO	0.26	--	--	--	0	--	0.3	1.0	Pass
CA	4,000 miles	California LEV-III SULEV30	NMOG	0.0064	--	1.099	--	0	--	0.006	999.999	Pass
CA	4,000 miles	California LEV-III SULEV30	NMOG+NOX	0.0094	--	--	--	--	--	0.009	0.060	Pass
CA	4,000 miles	California LEV-III SULEV30	NOX	0.003	--	--	--	0	--	0.003	999.999	Pass

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Test #	**VVVX10093501**	**Test Procedure**	**3 - HWFE**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	52 - CARB LEV4 E10 Premium Gasoline
Test Date	01/28/2026	**Fuel**	Gasoline
Fuel Batch ID	002893	**Fuel Calibration Number**	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	**DF Type**	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	6522	**Odometer Units**	K
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)
ACT-DISTANCE (Actual Distance Driven (miles))	10.254	--
METHANE (CH4 - Methane)	0.0001	--
CO (Carbon Monoxide)	0.28	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	1.8	--
DT-EER (Drive Trace Energy Economy Rating)	-0.05	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	2.18	--
MFR FE (Manufacturer Fuel Economy)	34.8513	34.8513
NOX (Nitrogen Oxide)	0.001	--
N2O (Nitrous Oxide)	0	--
HC-NM (Non-methane Hydrocarbon)	0.0002	--
NMOG (Non-methane organic gases)	0.0002	--
PM (Particulate Matter)	0.0002	--
HC-TOTAL (Total Hydrocarbon)	0	--
WATT-HRS (Watt Hours)	17.0333	--

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	251.4399	251

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	251	--

Manufacturer Test Comments XC90 T8 AWD - EDV

Certification Summary Information Report

Test Group VVVXT02.0P34 **Evaporative/Refueling Family** VVVXR0142EP6

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NM HC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	120,000 miles	Federal Tier 3 Bin 30	CREE	251	--	--	--	--	1.164	292	--	--
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0.0002	--	1.03	--	0.0041	--	0.004	999.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX	0.0012	--	--	--	--	--	0.008	0.030	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.001	--	--	--	0.003	--	0.004	999.999	Pass
CA	150,000 miles	California LEV-III SULEV30	NMOG	0.0002	--	1.03	--	0.0041	--	0.004	999.999	Pass
CA	150,000 miles	California LEV-III SULEV30	NMOG+NOX	0.0012	--	--	--	--	--	0.008	0.030	Pass
CA	150,000 miles	California LEV-III SULEV30	NOX	0.001	--	--	--	0.003	--	0.004	999.999	Pass

NOTE: For Non-charge depleting tests, the Rounded Result for CREE/OPT-CREE Emission names are Verify-calculated values.

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Test #	**VVVX10093472**	**Test Procedure**	**90 - US06**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	52 - CARB LEV4 E10 Premium Gasoline
Test Date	01/28/2026	**Fuel**	Gasoline
Fuel Batch ID	002893	**Fuel Calibration Number**	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	**DF Type**	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	6567	**Odometer Units**	K
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)
ACT-DISTANCE (Actual Distance Driven (miles))	8.016	--
METHANE (CH4 - Methane)	0.001	--
CO (Carbon Monoxide)	0.52	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	-5.56	--
DT-EER (Drive Trace Energy Economy Rating)	-1.91	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	-10.95	--
MFR FE (Manufacturer Fuel Economy)	26.0939	26.0939
NOX (Nitrogen Oxide)	0.003	--
N2O (Nitrous Oxide)	0	--
HC-NM (Non-methane Hydrocarbon)	0.0024	--
NMOG (Non-methane organic gases)	0.0025	--
PM (Particulate Matter)	0.0026	--
HC-NM+NOX (SFTP Non-methane Hydrocarbon + Nitrogen Oxides for US06 or SC03)	0.0054	--
HC-TOTAL (Total Hydrocarbon)	0.003	--
WATT-HRS (Watt Hours)	-19.0381	--

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	335.826	--

Certification Summary Information Report

Test Group VVVXT02.0P34 **Evaporative/Refueling Family** VVVXR0142EP6

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	335	--

Manufacturer Test Comments XC90 T8 AWD - EDV

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NMHC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Federal Tier 3 Bin 30	CO	0.52	--	--	--	0.11	--	0.63	999.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0.0025	--	1.03	--	0.0041	--	0.007	999.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.003	--	--	--	0.003	--	0.006	999.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	PM	0.0026	--	--	--	0	--	0.003	0.006	Pass
CA	150,000 miles	California LEV-III SULEV30	CO	0.52	--	--	--	0.11	--	0.63	999.999	Pass
CA	150,000 miles	California LEV-III SULEV30	NMOG	0.0025	--	1.03	--	0.0041	--	0.007	999.999	Pass
CA	150,000 miles	California LEV-III SULEV30	NOX	0.003	--	--	--	0.003	--	0.006	999.999	Pass
CA	150,000 miles	California LEV-III SULEV30	PM	0.0026	--	--	--	0	--	0.003	0.006	Pass

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Test #	**VVVX10093502**	**Test Procedure**	**95 - SC03**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	52 - CARB LEV4 E10 Premium Gasoline
Test Date	01/28/2026	**Fuel**	Gasoline
Fuel Batch ID	002893	**Fuel Calibration Number**	1
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	**DF Type**	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	6603	**Odometer Units**	K
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value (miles per gallon)
ACT-DISTANCE (Actual Distance Driven (miles))	3.581	--
METHANE (CH4 - Methane)	0.0014	--
CO (Carbon Monoxide)	0.15	--
DT-ASCR (Drive Trace Absolute Speed Change Rating)	-0.57	--
DT-EER (Drive Trace Energy Economy Rating)	-1.14	--
DT-IWRR (Drive Trace Inertia Work Ratio Rating)	-1.48	--
MFR FE (Manufacturer Fuel Economy)	23.5414	23.5414
NOX (Nitrogen Oxide)	0.004	--
N2O (Nitrous Oxide)	0.0014	--
HC-NM (Non-methane Hydrocarbon)	0.0004	--
NMOG (Non-methane organic gases)	0.0004	--
PM (Particulate Matter)	0.0002	--
HC-NM+NOX (SFTP Non-methane Hydrocarbon + Nitrogen Oxides for US06 or SC03)	0.0044	--
HC-TOTAL (Total Hydrocarbon)	0.001	--
WATT-HRS (Watt Hours)	-44.4793	--

Test Result Name	Unrounded Test Result	Verify Calculated CREE/OPT-CREE
Carbon-Related Exhaust Emissions	372.2387	--

Certification Summary Information Report

Test Group VVVXT02.0P34 **Evaporative/Refueling Family** VVVXR0142EP6

Test Result Name	Unrounded Test Result	Verify Calculated CO2
Carbon dioxide	372	--

Manufacturer Test Comments XC90 T8 AWD - EDV

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NMHC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Federal Tier 3 Bin 30	CO	0.15	--	--	--	0.11	--	0.26	999.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG	0.0004	--	1.03	--	0.0041	--	0.004	999.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NMOG+NOX	0.0044	--	--	--	--	--	0.012	999.999	Pass
Fed	150,000 miles	Federal Tier 3 Bin 30	NOX	0.004	--	--	--	0.003	--	0.007	999.999	Pass
CA	150,000 miles	California LEV-III SULEV30	CO	0.15	--	--	--	0.11	--	0.26	999.999	Pass
CA	150,000 miles	California LEV-III SULEV30	NMOG	0.0004	--	1.03	--	0.0041	--	0.004	999.999	Pass
CA	150,000 miles	California LEV-III SULEV30	NOX	0.004	--	--	--	0.003	--	0.007	999.999	Pass

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Emission Data Vehicle Information

Vehicle ID / Configuration	202701 / 1	**Manufacturer Vehicle Configuration Number**	1
Original Test Group Name	VVVXT02.0P34	**Original Evaporative/Refueling Family**	VVVXR0142EP6
Original Test Vehicle Model Year	2027		

Vehicle Model

Represented Test Vehicle Make	Volvo	**Represented Test Vehicle Model**	XC90 T8 AWD

Leak Family Details

Leak Family Identifier	001	**Leak Family Name**	VVVXR0142EP6-001

Drive Sources and Fuel System Details

Drive Source and Fuel#	Drive Source	Fuel
1	Electric Motor	Electricity
2	Combustion Engine	Gasoline

Hybrid Indicator	Yes		
Multiple Fuel Storage	--	**Multiple Fuel Combustion**	--
Fuel Cell Indicator	No	**Rechargeable Energy Storage System Indicator**	Yes
Rechargeable Energy Storage System	Battery(s)	**Rechargeable Energy Storage System, if 'Other'**	--
Off-board charge Capable Indicator	Yes		
Odometer Correction -- Initial	0	**Odometer Correction Factor**	1.0062
Odometer Correction Sign	+ = System Miles is equal to (Test odometer reading * Correction factor) + Initial system miles		
Odometer Correction Units	Kilometers		
Engine Code	HD_1	**Rated Horsepower**	247
Displacement (liters)	1.969		
Air Aspiration Method	Turbocharged	**Air Aspiration Method, if 'Other'**	
Number of Air Aspiration Devices	1	**Air Aspiration Device Configuration**	Single
Charge Air Cooler Type	Air	**Drive Mode While Testing**	All Wheel Drive
Shift Indicator Light Usage	Not eqipped	**Aged Emission Components**	4,000 (mi)
Curb Weight (lbs)	5147	**Equivalent Test Weight (pounds)**	5500
GVWR (lbs)	6500	**N/V Ratio**	26.2
Axle Ratio	3.33		
Transmission Type	Semi-Automatic	**# of Transmission Gears**	8
Transmission Lockup	Yes	**Creeper Gear**	No

Certification Summary Information Report

Test Group	VVVXT02.0P34	Evaporative/Refueling Family	VVVXR0142EP6

Dynamometer Coefficients:

Coefficient Category	Target Coefficients A (lbf)	Target Coefficients B (lbf/mph)	Target Coefficients C (lbf/mph**2)	Set Coefficients A (lbf)	Set Coefficients B (lbf/mph)	Set Coefficients C (lbf/mph**2)	EPA Calculated Total Road Load Horse Power for City/Highway/Evap Coefficients
City/Highway/Evap	42.51	0.3541	0.0261	5.641	0.30479	0.024866	16.7
Cold CO	46.76	0.3895	0.02871	1	0.1	0.01	N/A
US06	42.51	0.3541	0.0261	5.641	0.30479	0.024866	N/A

Emission Control Device Comments --

Manufacturer Test Vehicle Comments FEDV- XC90 T8 AWD, Highest selling tire TRLHP 16.7.

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Test #	**VVVX10093422**	**Test Procedure**	**84 - Charge Depleting Highway**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	61 - Tier 2 Cert Gasoline
Test Date	02/25/2026	**Fuel**	N/A
Fuel Batch ID	000811	**Fuel Calibration Number**	1
Vehicle Class	N/A	**DF Type**	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	7673	**Odometer Units**	K
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	No		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

PHEV/EV Charge Depleting Test Information

Recharge Event Voltage	235	**Recharge Event Energy (kiloWatt-hours)**	17.3276
Charge Depleting Range (Calculated miles)	44.168	**Charge Depleting Range (Actual miles)**	44.811
Charge Depleting Range Highway (Calculated miles)	--	**Derived 5-Cycle Coefficient Model Year**	2017
All Electric Range Unadjusted (miles)	44.811	**Equivalent All Electric Range (miles)**	44.168
Number of Charge Depleting Bags/Phases Conducted	8	**Transition Bag/Phase Number**	5

Charge Depleting Bag/Phase #1

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	10.265
Average System Voltage	403.51
Carbon Monoxide	0
Carbon dioxide	0
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	0.74
Drive Trace Energy Economy Rating	-0.41
Drive Trace Inertia Work Ratio Rating	1.09
Integrated Amp-hours	8.584
Manufacturer Fuel Economy	0
Total Hydrocarbon	0

Charge Depleting Bag/Phase #2

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	10.259
Average System Voltage	388.4
Carbon Monoxide	0
Carbon dioxide	0
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	0.51
Drive Trace Energy Economy Rating	-0.23
Drive Trace Inertia Work Ratio Rating	0.87
Integrated Amp-hours	17.139
Manufacturer Fuel Economy	0
Total Hydrocarbon	0

Charge Depleting Bag/Phase #3

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	10.258
Average System Voltage	372.45
Carbon Monoxide	0
Carbon dioxide	0
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	0.87
Drive Trace Energy Economy Rating	-0.46
Drive Trace Inertia Work Ratio Rating	1.25
Integrated Amp-hours	25.968
Manufacturer Fuel Economy	0
Total Hydrocarbon	0

Charge Depleting Bag/Phase #4

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	10.267
Average System Voltage	359.15
Carbon Monoxide	0
Carbon dioxide	0
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	3.36
Drive Trace Energy Economy Rating	0.07
Drive Trace Inertia Work Ratio Rating	4.71
Integrated Amp-hours	35.148
Manufacturer Fuel Economy	0
Total Hydrocarbon	0

Charge Depleting Bag/Phase #5

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	10.26
Average System Voltage	355.53
Carbon Monoxide	0.19
Carbon dioxide	192
Carbon-Related Exhaust Emissions	192
Drive Trace Absolute Speed Change Rating	0.03
Drive Trace Energy Economy Rating	-0.85
Drive Trace Inertia Work Ratio Rating	-0.12
Integrated Amp-hours	37.936
Manufacturer Fuel Economy	46.4
Total Hydrocarbon	0.016

Charge Depleting Bag/Phase #6

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	10.25
Average System Voltage	360.17
Carbon Monoxide	0.25
Carbon dioxide	235
Carbon-Related Exhaust Emissions	235
Drive Trace Absolute Speed Change Rating	-1.6
Drive Trace Energy Economy Rating	-0.84
Drive Trace Inertia Work Ratio Rating	-1.96
Integrated Amp-hours	37.653
Manufacturer Fuel Economy	37.9
Total Hydrocarbon	0.004

Charge Depleting Bag/Phase #7

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	10.249
Average System Voltage	360.48
Carbon Monoxide	0.26
Carbon dioxide	227
Carbon-Related Exhaust Emissions	227
Drive Trace Absolute Speed Change Rating	-0.03
Drive Trace Energy Economy Rating	-0.72
Drive Trace Inertia Work Ratio Rating	-0.13
Integrated Amp-hours	37.478
Manufacturer Fuel Economy	39.3
Total Hydrocarbon	0.003

Charge Depleting Bag/Phase #8

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	10.254
Average System Voltage	360.73
Carbon Monoxide	0.24
Carbon dioxide	226
Carbon-Related Exhaust Emissions	226
Drive Trace Absolute Speed Change Rating	-2.16
Drive Trace Energy Economy Rating	-1.07
Drive Trace Inertia Work Ratio Rating	-2.71
Integrated Amp-hours	37.403
Manufacturer Fuel Economy	39.4
Total Hydrocarbon	0.003

Manufacturer Test Comments XC90 T8 AWD - FEDV CD HFEDS

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Test #	**VVVX10093423**	**Test Procedure**	**81 - Charge Depleting UDDS**
Exhaust Test # for this Evap Test	--	**Test Fuel Type**	61 - Tier 2 Cert Gasoline
Test Date	02/24/2026	**Fuel**	N/A
Fuel Batch ID	000811	**Fuel Calibration Number**	1
Vehicle Class	N/A	**DF Type**	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	--		
Test Start Odometer Reading	7579	**Odometer Units**	K
4WD Test Dyno	Yes	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

PHEV/EV Charge Depleting Test Information

Recharge Event Voltage	235	**Recharge Event Energy (kiloWatt-hours)**	17.2995
Charge Depleting Range (Calculated miles)	48.228	**Charge Depleting Range (Actual miles)**	47.543
Charge Depleting Range Highway (Calculated miles)	--	**Derived 5-Cycle Coefficient Model Year**	2017
All Electric Range Unadjusted (miles)	47.543	**Equivalent All Electric Range (miles)**	48.228
Number of Charge Depleting Bags/Phases Conducted	8	**Transition Bag/Phase Number**	7

Charge Depleting Bag/Phase #1

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	7.455
Average System Voltage	410.65
Carbon Monoxide	0
Carbon dioxide	0
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	-0.34
Drive Trace Energy Economy Rating	-0.84
Drive Trace Inertia Work Ratio Rating	-0.41
Integrated Amp-hours	5.633
Manufacturer Fuel Economy	0
Total Hydrocarbon	0

Charge Depleting Bag/Phase #2

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	7.441
Average System Voltage	400.3
Carbon Monoxide	0
Carbon dioxide	0
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	-0.65
Drive Trace Energy Economy Rating	-2
Drive Trace Inertia Work Ratio Rating	-1.22
Integrated Amp-hours	11.12
Manufacturer Fuel Economy	0
Total Hydrocarbon	0

Charge Depleting Bag/Phase #3

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	7.438
Average System Voltage	390.33
Carbon Monoxide	0
Carbon dioxide	0
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	-0.22
Drive Trace Energy Economy Rating	-0.84
Drive Trace Inertia Work Ratio Rating	-0.32
Integrated Amp-hours	16.762
Manufacturer Fuel Economy	0
Total Hydrocarbon	0

Charge Depleting Bag/Phase #4

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	7.436
Average System Voltage	379.07
Carbon Monoxide	0
Carbon dioxide	0
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	-0.67
Drive Trace Energy Economy Rating	-1.5
Drive Trace Inertia Work Ratio Rating	-0.91
Integrated Amp-hours	22.545
Manufacturer Fuel Economy	0
Total Hydrocarbon	0

Charge Depleting Bag/Phase #5

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	7.469
Average System Voltage	369.87
Carbon Monoxide	0
Carbon dioxide	0
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	-0.36
Drive Trace Energy Economy Rating	-1.25
Drive Trace Inertia Work Ratio Rating	-0.7
Integrated Amp-hours	28.492
Manufacturer Fuel Economy	0
Total Hydrocarbon	0

Charge Depleting Bag/Phase #6

Certification Summary Information Report

Test Group	VVVXT02.0P34	Evaporative/Refueling Family	VVVXR0142EP6

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	7.467
Average System Voltage	362.91
Carbon Monoxide	0
Carbon dioxide	0
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	-0.37
Drive Trace Energy Economy Rating	-1.42
Drive Trace Inertia Work Ratio Rating	-0.89
Integrated Amp-hours	34.532
Manufacturer Fuel Economy	0
Total Hydrocarbon	0

Charge Depleting Bag/Phase #7

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	7.431
Average System Voltage	358.28
Carbon Monoxide	0.12
Carbon dioxide	176
Carbon-Related Exhaust Emissions	176
Drive Trace Absolute Speed Change Rating	0.32
Drive Trace Energy Economy Rating	-0.58
Drive Trace Inertia Work Ratio Rating	0.14
Integrated Amp-hours	37.396
Manufacturer Fuel Economy	50.7
Total Hydrocarbon	0.018

Charge Depleting Bag/Phase #8

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	7.444
Average System Voltage	359.84
Carbon Monoxide	0.16
Carbon dioxide	246
Carbon-Related Exhaust Emissions	246
Drive Trace Absolute Speed Change Rating	0.27
Drive Trace Energy Economy Rating	-0.4
Drive Trace Inertia Work Ratio Rating	0.45
Integrated Amp-hours	37.248
Manufacturer Fuel Economy	36.4
Total Hydrocarbon	0.002

Manufacturer Test Comments XC90 T8 AWD - FEDV CD UDDS

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Emission Data Vehicle Information

Vehicle ID / Configuration	202712 / 0	**Manufacturer Vehicle Configuration Number**	0
Original Test Group Name	VVVXT02.0P34	**Original Evaporative/Refueling Family**	VVVXR0142EP6
Original Test Vehicle Model Year	2027		

Vehicle Model

Represented Test Vehicle Make	Volvo	**Represented Test Vehicle Model**	XC90 T8 AWD

Leak Family Details

Leak Family Identifier	001	**Leak Family Name**	VVVXR0142EP6-001

Drive Sources and Fuel System Details

Drive Source and Fuel#	Drive Source	Fuel
1	Combustion Engine	Gasoline
2	Electric Motor	Electricity

Hybrid Indicator	Yes		
Multiple Fuel Storage	--	**Multiple Fuel Combustion**	--
Fuel Cell Indicator	No	**Rechargeable Energy Storage System Indicator**	Yes
Rechargeable Energy Storage System	Battery(s)	**Rechargeable Energy Storage System, if 'Other'**	--
Off-board charge Capable Indicator	Yes		
Odometer Correction -- Initial	0	**Odometer Correction Factor**	1.002
Odometer Correction Sign	+ = System Miles is equal to (Test odometer reading * Correction factor) + Initial system miles		
Odometer Correction Units	Kilometers		
Engine Code	HD_1	**Rated Horsepower**	247
Displacement (liters)	1.969		
Air Aspiration Method	Turbocharged	**Air Aspiration Method, if 'Other'**	
Number of Air Aspiration Devices	1	**Air Aspiration Device Configuration**	Single
Charge Air Cooler Type	Air	**Drive Mode While Testing**	All Wheel Drive
Shift Indicator Light Usage	Not eqipped	**Aged Emission Components**	4,000 (mi)
Curb Weight (lbs)	5147	**Equivalent Test Weight (pounds)**	5500
GVWR (lbs)	6500	**N/V Ratio**	26.2
Axle Ratio	3.33		
Transmission Type	Semi-Automatic	**# of Transmission Gears**	8
Transmission Lockup	Yes	**Creeper Gear**	No

Certification Summary Information Report

Test Group	VVVXT02.0P34	Evaporative/Refueling Family	VVVXR0142EP6

Dynamometer Coefficients:

Coefficient Category	Target Coefficients A (lbf)	Target Coefficients B (lbf/mph)	Target Coefficients C (lbf/mph**2)	Set Coefficients A (lbf)	Set Coefficients B (lbf/mph)	Set Coefficients C (lbf/mph**2)	EPA Calculated Total Road Load Horse Power for City/Highway/Evap Coefficients
City/Highway/Evap	44.65	0.3541	0.0261	8.27	0.38885	0.023831	17
Cold CO	49.12	0.3895	0.02871	1	0.1	0.01	N/A
US06	44.65	0.3541	0.0261	8.27	0.38885	0.023831	N/A

Emission Control Device Comments --

Manufacturer Test Vehicle Comments EVAP EDV- XC90 T8 AWD, Tested on worst case dyno setting TRLHP 17.0.

Test #	**VVVX10093554**	**Test Procedure**	**27 - California fuel 2-day evap**
Exhaust Test # for this Evap Test	VVVX10093553	**Test Fuel Type**	52 - CARB LEV4 E10 Premium Gasoline
Test Date	02/12/2026	**Fuel**	Gasoline
Fuel Batch ID	004975	**Fuel Calibration Number**	1
Vehicle Class	N/A	**DF Type**	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	Calculated (1.08 x FID Total Hydrocarbons)		
Test Start Odometer Reading	6432	**Odometer Units**	K
4WD Test Dyno	No	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value
HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)	0.1863	--

Manufacturer Test Comments 2-Day CARB Evaporative Test

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	Add DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Federal Tier 3 Evap	HC-TOTAL-EQUIV	0.1863	0	0.186	0.4	Pass
CA	150,000 miles	California LEV-III Zero Evap (Option 2)	HC-TOTAL-EQUIV	0.1863	0	0.186	0.4	Pass

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Test #	**VVVX10093555**	**Test Procedure**	**38 - CA fuel 3-day evap.**
Exhaust Test # for this Evap Test	VVVX10093552	**Test Fuel Type**	52 - CARB LEV4 E10 Premium Gasoline
Test Date	03/07/2026	**Fuel**	Gasoline
Fuel Batch ID	004975	**Fuel Calibration Number**	1
Vehicle Class	N/A	**DF Type**	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	Calculated (1.08 x FID Total Hydrocarbons)		
Test Start Odometer Reading	6519	**Odometer Units**	K
4WD Test Dyno	No	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value
HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)	0.2287	--

Manufacturer Test Comments 3-Day CARB Evaporative Test

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	Add DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Federal Tier 3 Evap	HC-TOTAL-EQUIV	0.2287	0.0259	0.255	0.4	Pass
CA	150,000 miles	California LEV-III Zero Evap (Option 2)	HC-TOTAL-EQUIV	0.2287	0.0259	0.255	0.4	Pass

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Test #	**VVVX10093557**	**Test Procedure**	**24 - Federal fuel refueling test (ORVR)**
Exhaust Test # for this Evap Test	VVVX10093556	**Test Fuel Type**	49 - Tier 3 E10 Premium Gasoline (9 RVP @Low Alt.)
Test Date	01/28/2026	**Fuel**	Gasoline
Fuel Batch ID	005730	**Fuel Calibration Number**	1
Vehicle Class	N/A	**DF Type**	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	Actual Total Hydrocarbon Equivalent Measurement (with speciation)		
Test Start Odometer Reading	6408	**Odometer Units**	K
4WD Test Dyno	No	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value
HC (Hydrocarbon for Running Loss and ORVR)	0.004	--

Manufacturer Test Comments ORVR EPA Test

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	Add DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Federal Tier 3 Evap	HC	0.004	0.002	0.006	0.2	Pass
CA	150,000 miles	California LEV-III Zero Evap (Option 2)	HC	0.004	0.002	0.006	0.2	Pass

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Test #	**VVVX10093558**	**Test Procedure**	**37 - California Fuel Running Loss**
Exhaust Test # for this Evap Test	VVVX10093552	**Test Fuel Type**	52 - CARB LEV4 E10 Premium Gasoline
Test Date	03/07/2026	**Fuel**	Gasoline
Fuel Batch ID	004975	**Fuel Calibration Number**	1
Vehicle Class	N/A	**DF Type**	Mfr. Determined
Verify Test Lab ID	Volvo Car Corporation		
E10 Evaporative Test Measurement Method	Calculated (1.08 x FID Total Hydrocarbons)		
Test Start Odometer Reading	6519	**Odometer Units**	K
4WD Test Dyno	No	**Diesel Adjustment Factor Usage**	--
State of Charge Delta	Yes		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	**Road Speed Fan Usage**	Yes

Test Results

Test Result Name	Unrounded Test Result	Verify Calculated FE Equivalent Value
HC-TOTAL-EQUIV (Total Hydrocarbon equivalent - Evap only)	0	--

Manufacturer Test Comments Running Loss (R/L)

Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	Add DF	Certification Level	Standard	Pass/Fail
Fed	150,000 miles	Federal Tier 3 Evap	HC-TOTAL-EQUIV	0	0	0	0.05	Pass
CA	150,000 miles	California LEV-III Zero Evap (Option 2)	HC-TOTAL-EQUIV	0	0	0	0.05	Pass

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Fuel Properties

Fuel Batch ID	**004975**	**Fuel Calibration Number**	**1**
Test Fuel Type	52 - CARB LEV4 E10 Premium Gasoline	**Fuel Batch Calibration Date**	06/18/2025
Fuel Batch Calibration Effective Date	10/10/2025	**Fuel Batch Calibration Ineffective Date**	--
Carbon Weight Fraction NMHC	--	**Carbon Weight Fraction HC**	--
Exhaust Carbon Weight Fraction	--	**Fuel Methanol Volume Fraction**	--
Fuel Density (grams/cubic ft)	--	**Fuel Specific Gravity**	0.751
Fuel Ethanol Volume Percent (%)	9.7	**Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)**	17828
Fuel Net Heat of Combustion (E10) (MJ/kg)	41.466	**Fuel Carbon Mass Fraction (E10)**	0.828
Fuel Blend Carbon Weight Fraction / Fuel Carbon Mass Fraction (E0)	--	**Weight Fraction CO2**	--

Fuel Batch ID	**000811**	**Fuel Calibration Number**	**1**
Test Fuel Type	61 - Tier 2 Cert Gasoline	**Fuel Batch Calibration Date**	07/10/2025
Fuel Batch Calibration Effective Date	10/10/2025	**Fuel Batch Calibration Ineffective Date**	--
Carbon Weight Fraction NMHC	--	**Carbon Weight Fraction HC**	--
Exhaust Carbon Weight Fraction	--	**Fuel Methanol Volume Fraction**	--
Fuel Density (grams/cubic ft)	--	**Fuel Specific Gravity**	0.741
Fuel Ethanol Volume Percent (%)	--	**Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)**	18405
Fuel Net Heat of Combustion (E10) (MJ/kg)	--	**Fuel Carbon Mass Fraction (E10)**	--
Fuel Blend Carbon Weight Fraction / Fuel Carbon Mass Fraction (E0)	0.868	**Weight Fraction CO2**	--

Fuel Batch ID	**005730**	**Fuel Calibration Number**	**1**
Test Fuel Type	49 - Tier 3 E10 Premium Gasoline (9 RVP @Low Alt.)	**Fuel Batch Calibration Date**	06/19/2025
Fuel Batch Calibration Effective Date	12/20/2025	**Fuel Batch Calibration Ineffective Date**	--
Carbon Weight Fraction NMHC	--	**Carbon Weight Fraction HC**	--
Exhaust Carbon Weight Fraction	--	**Fuel Methanol Volume Fraction**	--
Fuel Density (grams/cubic ft)	--	**Fuel Specific Gravity**	0.754
Fuel Ethanol Volume Percent (%)	9.7	**Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)**	17975
Fuel Net Heat of Combustion (E10) (MJ/kg)	41.81	**Fuel Carbon Mass Fraction (E10)**	0.826
Fuel Blend Carbon Weight Fraction / Fuel Carbon Mass Fraction (E0)	--	**Weight Fraction CO2**	--

Fuel Batch ID	**IFTW11**	**Fuel Calibration Number**	**1**
Test Fuel Type	29 - Cold CO E10 Premium Gasoline (Tier 3)	**Fuel Batch Calibration Date**	10/12/2020
Fuel Batch Calibration Effective Date	01/07/2025	**Fuel Batch Calibration Ineffective Date**	--
Carbon Weight Fraction NMHC	--	**Carbon Weight Fraction HC**	--
Exhaust Carbon Weight Fraction	--	**Fuel Methanol Volume Fraction**	--

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6
Fuel Density (grams/cubic ft)	--	**Fuel Specific Gravity**	0.75
Fuel Ethanol Volume Percent (%)	9.7	**Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)**	17803
Fuel Net Heat of Combustion (E10) (MJ/kg)	41.412	**Fuel Carbon Mass Fraction (E10)**	0.829
Fuel Blend Carbon Weight Fraction / Fuel Carbon Mass Fraction (E0)	--	**Weight Fraction CO2**	--
Fuel Batch ID	**002893**	**Fuel Calibration Number**	**1**
Test Fuel Type	52 - CARB LEV4 E10 Premium Gasoline	**Fuel Batch Calibration Date**	03/11/2025
Fuel Batch Calibration Effective Date	10/10/2025	**Fuel Batch Calibration Ineffective Date**	--
Carbon Weight Fraction NMHC	--	**Carbon Weight Fraction HC**	--
Exhaust Carbon Weight Fraction	--	**Fuel Methanol Volume Fraction**	--
Fuel Density (grams/cubic ft)	--	**Fuel Specific Gravity**	0.753
Fuel Ethanol Volume Percent (%)	9.6	**Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)**	17809
Fuel Net Heat of Combustion (E10) (MJ/kg)	41.423	**Fuel Carbon Mass Fraction (E10)**	0.83
Fuel Blend Carbon Weight Fraction / Fuel Carbon Mass Fraction (E0)	--	**Weight Fraction CO2**	--

Certification Summary Information Report

Test Group	VVVXT02.0P34	Evaporative/Refueling Family	VVVXR0142EP6

Consolidated List of Standards

Exhaust Standards

Cert Region	Federal	**Cert/In-Use Code**	Both
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	**Standard Level**	Federal Tier 3 Bin 30
Fuel	Gasoline	**Test Procedure**	California fuel 3-day exhaust

Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
120,000 miles	CREE	--	--	--	--	--	1.594	--	999.999
120,000 miles	METHANE	--	--	--	--	--	--	0.0026	0.030
120,000 miles	N2O	--	--	--	--	--	--	0	0.010
150,000 miles	CO	--	--	--	--	--	--	0.11	1.0
150,000 miles	CO-COMP	--	--	--	--	--	--	0	4.2
150,000 miles	NMOG	--	--	1.099	--	--	--	0.0041	999.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0.0071	0.030
150,000 miles	NMOG+NOX-COMP	--	--	--	--	--	--	0	0.050
150,000 miles	NOX	--	--	--	--	--	--	0.003	999.999
150,000 miles	PM	--	--	--	--	--	--	0	0.003

Cert Region	Federal	**Cert/In-Use Code**	Both
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	**Standard Level**	Federal Tier 3 Bin 30
Fuel	Gasoline	**Test Procedure**	SC03

Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
150,000 miles	CO	--	--	--	--	--	--	0.11	999.999
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0041	999.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0.0071	999.999
150,000 miles	NOX	--	--	--	--	--	--	0.003	999.999

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Cert Region	California + CAA Section 177 states	**Cert/In-Use Code**	Cert
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	**Standard Level**	California LEV-III SULEV30
Fuel	Gasoline	**Test Procedure**	California fuel 3-day exhaust

Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
150,000 miles	CO	--	--	--	--	--	--	0.11	1.0
150,000 miles	CO-COMP	--	--	--	--	--	--	0	4.2
150,000 miles	NMOG	--	--	1.099	--	--	--	0.0041	999.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0.0071	0.030
150,000 miles	NMOG+NOX-COMP	--	--	--	--	--	--	0	0.050
150,000 miles	NOX	--	--	--	--	--	--	0.003	999.999
150,000 miles	PM	--	--	--	--	--	--	0	0.001

Cert Region	California + CAA Section 177 states	**Cert/In-Use Code**	Cert
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	**Standard Level**	California LEV-III SULEV30
Fuel	Gasoline	**Test Procedure**	CA fuel 50 Deg(F) exhaust test

Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
4,000 miles	CO	--	--	--	--	--	--	0	1.0
4,000 miles	NMOG	--	--	1.099	--	--	--	0	999.999
4,000 miles	NMOG+NOX	--	--	--	--	--	--	0	0.060
4,000 miles	NOX	--	--	--	--	--	--	0	999.999

Cert Region	California + CAA Section 177 states	**Cert/In-Use Code**	In-Use
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	**Standard Level**	California LEV-III SULEV30
Fuel	Gasoline	**Test Procedure**	California fuel 3-day exhaust

Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
150,000 miles	CO	--	--	--	--	--	--	0.11	1.0
150,000 miles	CO-COMP	--	--	--	--	--	--	0	4.2
150,000 miles	NMOG	--	--	1.099	--	--	--	0.0041	999.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0.0071	0.030
150,000 miles	NMOG+NOX-COMP	--	--	--	--	--	--	0	0.050
150,000 miles	NOX	--	--	--	--	--	--	0.003	999.999
150,000 miles	PM	--	--	--	--	--	--	0	0.002

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Cert Region	California + CAA Section 177 states	**Cert/In-Use Code**	Both
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	**Standard Level**	California LEV-III SULEV30
Fuel	Gasoline	**Test Procedure**	US06

Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
150,000 miles	CO	--	--	--	--	--	--	0.11	999.999
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0041	999.999
150,000 miles	NOX	--	--	--	--	--	--	0.003	999.999
150,000 miles	PM	--	--	--	--	--	--	0	0.006

Cert Region	California + CAA Section 177 states	**Cert/In-Use Code**	Both
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	**Standard Level**	California LEV-III SULEV30
Fuel	Gasoline	**Test Procedure**	SC03

Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
150,000 miles	CO	--	--	--	--	--	--	0.11	999.999
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0041	999.999
150,000 miles	NOX	--	--	--	--	--	--	0.003	999.999

Cert Region	California + CAA Section 177 states	**Cert/In-Use Code**	Both
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	**Standard Level**	California LEV-III SULEV30
Fuel	Gasoline	**Test Procedure**	HWFE

Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0041	999.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0.0071	0.030
150,000 miles	NOX	--	--	--	--	--	--	0.003	999.999

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Cert Region	Federal	**Cert/In-Use Code**	Both
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	**Standard Level**	Federal Tier 3 Bin 30
Fuel	Gasoline	**Test Procedure**	US06

Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
150,000 miles	CO	--	--	--	--	--	--	0.11	999.999
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0041	999.999
150,000 miles	NOX	--	--	--	--	--	--	0.003	999.999
150,000 miles	PM	--	--	--	--	--	--	0	0.006

Cert Region	Federal	**Cert/In-Use Code**	Cert
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	**Standard Level**	Federal Tier 3 Bin 30
Fuel	Gasoline	**Test Procedure**	Cold CO

Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
50,000 miles	CO	--	--	--	--	--	--	0.04	12.5
120,000 miles	HC-NM	--	--	--	--	--	--	0.002	0.30

Cert Region	Federal	**Cert/In-Use Code**	Both
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	**Standard Level**	Federal Tier 3 Bin 30
Fuel	Gasoline	**Test Procedure**	HWFE

Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
120,000 miles	CREE	--	--	--	--	--	1.164	--	999.999
150,000 miles	NMOG	--	--	1.03	--	--	--	0.0041	999.999
150,000 miles	NMOG+NOX	--	--	--	--	--	--	0.0071	0.030
150,000 miles	NOX	--	--	--	--	--	--	0.003	999.999

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6
Cert Region	California + CAA Section 177 states	**Cert/In-Use Code**	Cert
Vehicle Class	LDT2 (LVW 3751-5750, GVW 0-6000)	**Standard Level**	California LEV-III SULEV30
Fuel	Gasoline	**Test Procedure**	Cold CO

Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
50,000 miles	CO	--	--	--	--	--	--	0.04	12.5

Evaporative/Refueling Standards

Evaporative/Refueling Family	VVVXR0142EP6	**Cert Region**	California + CAA Section 177 states
Cert/In-Use Code	Both	**Standard Level**	California LEV-III Zero Evap (Option 2)
Test Procedure	California Fuel Running Loss		

Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF
Gasoline	150,000 miles	HC-TOTAL-EQUIV	--	0.05	0

Evaporative/Refueling Family	VVVXR0142EP6	**Cert Region**	Federal
Cert/In-Use Code	Both	**Standard Level**	Federal Tier 3 Evap
Test Procedure	Evap Canister Bleed Test		

Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF
Gasoline	150,000 miles	HC-TOTAL	--	0.020	0

Evaporative/Refueling Family	VVVXR0142EP6	**Cert Region**	California + CAA Section 177 states
Cert/In-Use Code	Both	**Standard Level**	California LEV-III Zero Evap (Option 2)
Test Procedure	California fuel 2-day evap		

Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF
Gasoline	150,000 miles	HC-TOTAL-EQUIV	--	0.400	0

Evaporative/Refueling Family	VVVXR0142EP6	**Cert Region**	Federal
Cert/In-Use Code	Both	**Standard Level**	Federal Tier 3 Evap
Test Procedure	Federal fuel refueling test (ORVR)		

Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF
Gasoline	150,000 miles	HC	--	0.200	0.002

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6

Evaporative/Refueling Family	VVVXR0142EP6	**Cert Region**	Federal
Cert/In-Use Code	Both	**Standard Level**	Federal Tier 3 Evap
Test Procedure	California fuel 2-day evap		

Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF
Gasoline	150,000 miles	HC-TOTAL-EQUIV	--	0.400	0

Evaporative/Refueling Family	VVVXR0142EP6	**Cert Region**	Federal
Cert/In-Use Code	Both	**Standard Level**	Federal Tier 3 Evap
Test Procedure	CA fuel 3-day evap.		

Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF
Gasoline	150,000 miles	HC-TOTAL-EQUIV	--	0.400	0.0259

Evaporative/Refueling Family	VVVXR0142EP6	**Cert Region**	California + CAA Section 177 states
Cert/In-Use Code	Both	**Standard Level**	California LEV-III Zero Evap (Option 2)
Test Procedure	CA fuel 3-day evap.		

Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF
Gasoline	150,000 miles	HC-TOTAL-EQUIV	--	0.400	0.0259

Evaporative/Refueling Family	VVVXR0142EP6	**Cert Region**	California + CAA Section 177 states
Cert/In-Use Code	Both	**Standard Level**	California LEV-III Zero Evap (Option 2)
Test Procedure	Federal fuel refueling test (ORVR)		

Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF
Gasoline	150,000 miles	HC	--	0.200	0.002

Evaporative/Refueling Family	VVVXR0142EP6	**Cert Region**	Federal
Cert/In-Use Code	Both	**Standard Level**	Federal Tier 3 Evap
Test Procedure	California Fuel Running Loss		

Fuel	Useful Life	Emission Name	Rounded Result	Std	Add DF
Gasoline	150,000 miles	HC-TOTAL-EQUIV	--	0.050	0

Certification Summary Information Report

Test Group	VVVXT02.0P34	Evaporative/Refueling Family	VVVXR0142EP6

Glossary

Useful Life

4	4,000 miles	120	120,000 miles
50	50,000 miles	150	150,000 miles
100	100,000 miles		

Emission Name

HC-TOTAL	Total Hydrocarbon	COMB-CREE	Combined Carbon-Related Exhaust Emissions
CO	Carbon Monoxide	COMB-OPT-CREE	Combined Optional Carbon-Related Exhaust Emissions
CO2	Carbon dioxide	HC-TOTAL-EQUIV	Total Hydrocarbon equivalent - Evap only
CREE	Carbon-Related Exhaust Emissions	METHANE-COMB	Combined CH4 for HD 2b/3 vehicles only
OPT-CREE	Optional Carbon-Related Exhaust Emissions	N2O-COMB	Combined Nitrous Oxide for HD 2b/3 vehicles only
NOX	Nitrogen Oxide	LEAK-DIA	Effective Leak Diameter (inches)
PM	Particulate Matter	LEAK-GAS CAP	Gas Cap Leakage (cc/min)
PM-COMP	SFTP Composite Particulate Matter	CO2-COMB	Combined Carbon Dioxide for HD 2b/3 Vehicles Only
HC-NM	Non-methane Hydrocarbon	KW-HRS	Integrated DC KW-HRS
OMHCE	Organic material Hydrocarbon Equivalent	CH4 BAG 1	Bag 1 Methane
OMNMHCE	Organic material non-methane HC equivalent	CH4 BAG 2	Bag 2 Methane
NMOG	Non-methane organic gases	CH4 BAG 3	Bag 3 Methane
HCHO	Formaldehyde	CH4 BAG 4	Bag 4 Methane
H3C2HO	Acetaldehyde	CO BAG 1	Bag 1 Carbon Monoxide
HC-NM+NOX	SFTP Non-methane Hydrocarbon + Nitrogen Oxides for US06 or SC03	CO BAG 2	Bag 2 Carbon Monoxide
HC-NM+NOX-COMP	SFTP Composite Non-methane Hydrocarbon + Nitrogen Oxides	CO BAG 3	Bag 3 Carbon Monoxide
CO-COMP	SFTP Composite Carbon Monoxide	CO BAG 4	Bag 4 Carbon Monoxide
ETHANOL	C2H5OH - Ethanol	NMOG BAG 1	Bag 1 Non-methane organic gases
FE BAG 1	Bag 1 Fuel Economy	NMOG BAG 2	Bag 2 Non-methane organic gases
FE BAG 2	Bag 2 Fuel Economy	NMOG BAG 3	Bag 3 Non-methane organic gases
FE BAG 3	Bag 3 Fuel Economy	NMOG BAG 4	Bag 4 Non-methane organic gases
FE BAG 4	Bag 4 Fuel Economy	ACT-DISTANCE BAG 1	Bag 1 Actual Distance
MFR FE	Manufacturer Fuel Economy	ACT-DISTANCE BAG 2	Bag 2 Actual Distance
HC	Hydrocarbon for Running Loss and ORVR	ACT-DISTANCE BAG 3	Bag 3 Actual Distance
METHANE	CH4 - Methane	ACT-DISTANCE BAG 4	Bag 4 Actual Distance
METHANOL	CH3OH - Methanol	HC-TOTAL BAG 1	Bag 1 Total Hydrocarbon
N2O	Nitrous Oxide	HC-TOTAL BAG 2	Bag 2 Total Hydrocarbon
SPITBACK	Spitback Hydrocarbon in grams	HC-TOTAL BAG 3	Bag 3 Total Hydrocarbon
AMP-HRS	Integrated Amp-hours	HC-TOTAL BAG 4	Bag 4 Total Hydrocarbon
START-SOC	System Start State of Charge Watt-hours	WATT-HRS BAG 1	Bag 1 Watt Hours
END-SOC	System End State of Charge Watt-hours	WATT-HRS BAG 2	Bag 2 Watt Hours

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6
ACT-DISTANCE	Actual Distance Driven (miles)	WATT-HRS BAG 3	Bag 3 Watt Hours
AS-VOLT	Average System Voltage	WATT-HRS BAG 4	Bag 4 Watt Hours
CO2 BAG 1	Bag 1 Carbon Dioxide	WATT-HRS	Watt Hours
CO2 BAG 2	Bag 2 Carbon Dioxide	HC-NM BAG 1	Bag 1 Non-methane Hydrocarbon
CO2 BAG 3	Bag 3 Carbon Dioxide	HC-NM BAG 2	Bag 2 Non-methane Hydrocarbon
CO2 BAG 4	Bag 4 Carbon Dioxide	HC-NM BAG 3	Bag 3 Non-methane Hydrocarbon
NMOG+NOX	Non-methane organic gases plus Nitrogen Oxides	HC-NM BAG 4	Bag 4 Non-methane Hydrocarbon
NMOG+NOX-COMP	SFTP Composite Non-methane Organic Gases + Nitrogen Oxides	N2O BAG 1	Bag 1 Nitrous Oxide
DT-IWRR	Drive Trace Inertia Work Ratio Rating	N2O BAG 2	Bag 2 Nitrous Oxide
DT-ASCR	Drive Trace Absolute Speed Change Rating	N2O BAG 3	Bag 3 Nitrous Oxide
DT-EER	Drive Trace Energy Economy Rating	N2O BAG 4	Bag 4 Nitrous Oxide

Certification Region			
CA	California + CAA Section 177 states	FA	Federal

Exhaust Emission Standard Level			
B1	Federal Tier 2 Bin 1	HDV2B340	Federal Tier 3 HD Class 2b Transitional Bin 340
B2	Federal Tier 2 Bin 2	HDV2B250	Federal Tier 3 HD Class 2b Bin 250
B3	Federal Tier 2 Bin 3	HDV2B200	Federal Tier 3 HD Class 2b Bin 200
B4	Federal Tier 2 Bin 4	HDV2B170	Federal Tier 3 HD Class 2b Bin 170
B5	Federal Tier 2 Bin 5	HDV2B150	Federal Tier 3 HD Class 2b Bin 150
B6	Federal Tier 2 Bin 6	HDV2B0	Federal Tier 3 HD Class 2b Bin 0
B7	Federal Tier 2 Bin 7	HDV3B630	Federal Tier 3 HD Class 3 Transitional Bin 630
B8	Federal Tier 2 Bin 8	HDV3B570	Federal Tier 3 HD Class 3 Transitional Bin 570
B9	Federal Tier 2 Bin 9	HDV3B400	Federal Tier 3 HD Class 3 Bin 400
B10	Federal Tier 2 Bin 10	HDV3B270	Federal Tier 3 HD Class 3 Bin 270
B11	Federal Tier 2 Bin 11	HDV3B230	Federal Tier 3 HD Class 3 Bin 230
HDV1	HDV1 (Federal HD chassis Class 2b GVW 8501-10000)	HDV3B200	Federal Tier 3 HD Class 3 Bin 200
HDV2	HDV2 (Federal HD chassis Class 3 GVW 10001-14000)	HDV3B0	Federal Tier 3 HD Class 3 Bin 0
L2	California LEV-II LEV	L4SULEV100	California LEV-IV SULEV100
L2OP	California LEV-II LEV Optional	L4SULEV125	California LEV-IV SULEV125
U2	California LEV-II ULEV	L4SULEV15	California LEV-IV SULEV15
S2	California LEV-II SULEV	L4SULEV150	California LEV-IV SULEV150
ZEV	California ZEV	L4SULEV170	California LEV-IV SULEV170
OT	Other	L4SULEV175	California LEV-IV SULEV175
T1	Federal Tier 1	L4SULEV20	California LEV-IV SULEV20
PZEV	California PZEV	L4SULEV200	California LEV-IV SULEV200
L2LEV160	California LEV-II LEV160	L4SULEV230	California LEV-IV SULEV230
L2ULEV125	California LEV-II ULEV125	L4SULEV25	California LEV-IV SULEV25
L2SULEV30	California LEV-II SULEV30	L4SULEV30	California LEV-IV SULEV30
L2LEV395	California LEV-II LEV395	L4SULEV75	California LEV-IV SULEV75

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6
L2ULEV340	California LEV-II ULEV340	L4SULEV85	California LEV-IV SULEV85
L2LEV630	California LEV-II LEV630	L4ULEV125	California LEV-IV ULEV125
L2ULEV570	California LEV-II ULEV570	L4ULEV200	California LEV-IV ULEV200
L3LEV160	California LEV-III LEV160	L4ULEV250	California LEV-IV ULEV250
L3ULEV125	California LEV-III ULEV125	L4ULEV270	California LEV-IV ULEV270
L3ULEV70	California LEV-III ULEV70	L4ULEV40	California LEV-IV ULEV40
L3ULEV50	California LEV-III ULEV50	L4ULEV400	California LEV-IV ULEV400
L3SULEV30	California LEV-III SULEV30	L4ULEV50	California LEV-IV ULEV50
L3SULEV20	California LEV-III SULEV20	L4ULEV60	California LEV-IV ULEV60
L3LEV395	California LEV-III LEV395	L4ULEV70	California LEV-IV ULEV70
L3ULEV340	California LEV-III ULEV340	T4B170	Federal Tier 4 MDV Bin 170
L3ULEV250	California LEV-III ULEV250	T4B150	Federal Tier 4 MDV Bin 150
L3ULEV200	California LEV-III ULEV200	T4B125	Federal Tier 4 MDV Bin 125
L3SULEV170	California LEV-III SULEV170	T4B100	Federal Tier 4 MDV Bin 100
L3SULEV150	California LEV-III SULEV150	T4B85	Federal Tier 4 MDV Bin 85
L3LEV630	California LEV-III LEV630	T4B75	Federal Tier 4 MDV Bin 75
L3ULEV570	California LEV-III ULEV570	T4B70	Federal Tier 4 Bin 70
L3ULEV400	California LEV-III ULEV400	T4B65	Federal Tier 4 Bin 65
L3ULEV270	California LEV-III ULEV270	T4B60	Federal Tier 4 Bin 60
L3SULEV230	California LEV-III SULEV230	T4B55	Federal Tier 4 Bin 55
L3SULEV200	California LEV-III SULEV200	T4B50	Federal Tier 4 Bin 50
T3B160	Federal Tier 3 Bin 160	T4B45	Federal Tier 4 Bin 45
T3B125	Federal Tier 3 Bin 125	T4B40	Federal Tier 4 Bin 40
T3B110	Federal Tier 3 Transitional Bin 110	T4B35	Federal Tier 4 Bin 35
T3B85	Federal Tier 3 Transitional Bin 85	T4B30	Federal Tier 4 Bin 30
T3SULEV30	Federal Tier 3 Transitional LEV-II SULEV30 Carryover	T4B25	Federal Tier 4 Bin 25
T3B70	Federal Tier 3 Bin 70	T4B20	Federal Tier 4 Bin 20
T3B50	Federal Tier 3 Bin 50	T4B15	Federal Tier 4 Bin 15
T3B30	Federal Tier 3 Bin 30	T4B10	Federal Tier 4 Bin 10
T3B20	Federal Tier 3 Bin 20	T4B5	Federal Tier 4 Bin 5
T3B0	Federal Tier 3 Bin 0	T4B0	Federal Tier 4 Bin 0
HDV2B395	Federal Tier 3 HD Class 2b Transitional Bin 395		

Transmission Type Code			
AMS	Automated Manual- Selectable (e.g. Automated Manual with paddles)	M	Manual
A	Automatic	OT	Other
AM	Automated Manual	SA	Semi-Automatic
CVT	Continuously Variable	SCV	Selectable Continuously Variable (e.g. CVT with paddles)

Drive System Code			
4	4-Wheel Drive	P	Part-time 4-Wheel Drive

Certification Summary Information Report

Test Group	VVVXT02.0P34	**Evaporative/Refueling Family**	VVVXR0142EP6
F	2-Wheel Drive, Front	A	All Wheel Drive
R	2-Wheel Drive, Rear		

Additional Terms and Acronyms

AFC	Alternative Fuel Converter	ICI	Independent Commercial Importer
CSI	Certificate Summary Information	ORVR	Onboard Refueling Vapor Recovery
DF	Deterioration Factor	SIL	Shift Indicator Light
Evap	Evaporation, Evaporative	Trans	Transmission

Section 07.02
Evaporative emission test results log

Section 07.02
Evaporative Family VVVXR0142EP6

Evaporative Emission Test Log Vehicle ID: 202712											
Date	**Test #**	**Odometer Mileage** [miles]	**System Mileage** [miles]	**Running Loss** [g/mile]	**Hot Soak** [g]	**Diurnal**			**Total HS + Di** [g]	**ORVR** [g/gallon]	**Comment**
						0-24 h [g]	**24-48 h** [g]	**48-72 h** [g]			
02 12 2026	HS: VT2_2026-02-12_1-CARB Di VT2_2026-02-15_1-CARB	3997	4077	n.a	0.0141	0.1722	0.0215	n.a	**0.1863**	n.a	2-day CARB V00*
01 28 2026	ORVR: 435	3982	4062	n.a	n.a	n.a	n.a	n.a	n.a	**0.004**	ORVR V00
03 07 2026	RL: S1_260307_002	4062	4143	**0.000**	n.a	n.a	n.a	n.a	n.a	n.a	Running Losses* (Point source)
03 07 2026	HS: VT2_2026-03-07_1-CARB Di: VT2_2026-03-11_1-CARB	4051	4132	n.a	0.0550	0.1737	0.1266	0.1120	**0.2287**	n.a	3-day CARB V00*

* Compensated for ethanol fuel by multiplying results with 1,08

Vehicle Canister Bleed Emission Test

According to CALIFORNIA EVAPORATIVE EMISSION STANDARDS AND TEST PROCEDURES FOR 2001 AND SUBSEQUENT MODEL MOTOR VEHICLES, Part I Section E.1(e)(i)(B)(4), Vehicles with a non-integrated refueling canister-only system are exempt from the canister bleed emission standard.

Test Group: VVVXT02.0P34																																						
Vehicle ID:	202701	Vehicle Model:	XC90 T8 AWD				Emissions and Fuel Economy														Fuel Economy MPG by Phase				Fuel Economy CO2 by Phase				Dyno Load Coefficients			Drive Trace Evaluation			Test Data Details
Date	Test No. VCC	Test No. Verify	Fuel Batch ID	Odo Reading* (km)	System Mileage* (km)	Odometer Correction Factor	PM [g/mile]	HC [g/mile]	CH4 [g/mile]	NMHC [g/mile]	NMOG [g/mile]	CO [g/mile]	NOx [g/mile]	N2O [g/mile]	NMOG+NOx [g/mile]	CO2 [g/mile]	FE Unrounded VCC [MPG]	FE Unrounded Verify [MPG]	FE Rounded Verify [MPG]	CREE Unrounded 4K [g/mile]	CREE Rounded 4K [g/mile]	FE FTP/UDDS Phase1 SC03/US06 HWY [MPG]	FE FTP/UDDS Phase2 US06 City [MPG]	FE FTP/UDDS Phase3 [MPG]	FE UDDS Phase4 [MPG]	CO2 FTP/UDDS Phase1 SC03/US06 HWY [g/mile]	CO2 FTP/UDDS Phase2 US06 City [g/mile]	CO2 FTP/UDDS Phase3 [g/mile]	CO2 UDDS Phase4 [g/mile]	DL F0	DL F1	DL F2	DT-IWR [%]	DT-ASCR [%]	DT-EER [%]	Test Comments
20260128	E1_260128_001	VVVX10093500	002893	6499	6539	1.0062	0.0003	0.006	0.0013	0.0048	0.0053	0.19	0.004	0.0003	0.0093	348	25.1644	25.1581	25.2	348.3167	348	22.1872	24.9702	28.0649	25.2646	394	351	312	347	7.597	0.28062	0.025183	-1.83	-1.11	-1.41	XC90 T8 AWD EDV V00 4K CS UDDS LEV IV E10 Fuel
20260128	E1_260128_002	VVVX10093501	002893	6522	6562	1.0062	0.0002	0.000	0.0001	0.0002	0.0002	0.28	0.001	0.0000	0.0012	251	34.8678	34.8513	34.9	251.4399	251		34.8678				251			7.597	0.28062	0.025183	2.18	1.80	-0.05	XC90 T8 AWD EDV V00 4K CS HFEDS LEV IV E10 Fuel
20260128	E1_260128_003	VVVX10093472	002893	6567	6608	1.0062	0.0026	0.003	0.0010	0.0024	0.0025	0.52	0.003	0.0000	0.0055	335	26.1181	26.0939	26.1	335.8260	336	29.6217	18.4417			295	474			7.597	0.28062	0.025183	-10.95	-5.56	-1.91	XC90 T8 AWD EDV V00 4K CS US06 LEV IV E10 Fuel
20260128	E1_260128_005	VVVX10093502	002893	6603	6644	1.0062	0.0002	0.001	0.0014	0.0004	0.0004	0.15	0.004	0.0014	0.0044	372	23.5409	23.5414	23.5	372.2387	372		23.5409				372			7.597	0.28062	0.025183	-1.48	-0.57	-1.14	XC90 T8 AWD EDV V00 4K CS SC03 LEV IV E10 Fuel
20260212	K2_260212_000	VVVX10093503	IFTW11	7163	7207	1.0062		0.066	0.0065	0.0611	0.0671	0.46	0.009	0.0003	0.0761	441	19.7779	19.7773	19.8	441.9231	442	14.2476	21.3709	23.3234		611	409	374		1.835	0.14016	0.028398	1.51	1.33	0.10	XC90 T8 AWD EDV V00 4K CS FTP 20F TIER3 E10 fuel
20260305	E1_260305_012	VVVX10093504	004975	8069	8119	1.0062		0.007	0.0018	0.0058	0.0064	0.26	0.003	0.0005	0.0094	366	23.8251	23.8161	23.8	366.4297	366	20.2800	23.8687	26.0969	24.8298	429	365	334	351	7.597	0.28062	0.025183	0.50	0.51	-1.02	XC90 T8 AWD EDV V00 4K CS FTP 50F LEV IV E10 Fuel
20260225	E1_260225_004	VVVX10093422	000811	7673	7721	1.0062																							5.641	0.30479	0.024866				XC90 T8 AWD FEDV V01 4K CD HFEDS TIER2 fuel
20260224	E1_260224_017	VVVX10093423	000811	7579	7626	1.0062																							5.641	0.30479	0.024866				XC90 T8 AWD FEDV V01 4K CD UDDS TIER2 fuel
20260223	E1_260223_010	VVVX10093435	000811	7534	7581	1.0062	N/A	0.003	0.0008	0.0020	0.0021	0.26	0.001	0.0000	0.0031	224	39.7903	39.7822	39.8	224.4180	224		39.7903				224			5.641	0.30479	0.024866	-0.59	-0.31	-0.96	XC90 T8 AWD FEDV V01 4K CS HFEDS TIER 2 fuel
20260223	E1_260223_009	VVVX10093433	000811	7511	7558	1.0062	N/A	0.007	0.0019	0.0057	0.0059	0.19	0.003	0.0004	0.0089	261	34.1944	34.1643	34.2	261.3207	261	23.7134	44.6540	30.6231	45.1048	376	200	291	198	5.641	0.30479	0.024866	1.03	0.65	-0.61	XC90 T8 AWD FEDV V01 4K CS UDDS TIER 2 fuel

Test Group: VVVXT02.0P34							Emissions and Fuel Economy														Fuel Economy MPG by Phase				Fuel Economy CO2 by Phase				Dyno Load Coefficients			Drive Trace Evaluation			Test Data Details
Vehicle ID: 202702		Vehicle Model: XC60 T8 AWD FEDV																															
Date	Test No. VCC	Test No. Verify	Fuel Batch ID	Odo Reading* (km)	System Mileage* (km)	Odometer Correction Factor	PM [g/mile]	HC [g/mile]	CH4 [g/mile]	NMHC [g/mile]	NMOG [g/mile]	CO [g/mile]	NOx [g/mile]	N2O [g/mile]	NMOG+NOx [g/mile]	CO2 [g/mile]	FE Unrounded VCC [MPG]	FE Unrounded Verify [MPG]	FE Rounded Verify [MPG]	CREE Unrounded 4K [g/mile]	CREE Rounded 4K [g/mile]	FE FTP/UDDS Phase1 SC03/US06 HWY [MPG]	FE FTP/UDDS Phase2 US06 City [MPG]	FE FTP/UDDS Phase3 [MPG]	FE UDDS Phase4 [MPG]	CO2 FTP/UDDS Phase1 SC03/US06 HWY [g/mile]	CO2 FTP/UDDS Phase2 US06 City [g/mile]	CO2 FTP/UDDS Phase3 [g/mile]	CO2 UDDS Phase4 [g/mile]	DL F0	DL F1	DL F2	DT-IWR [%]	DT-ASCR [%]	DT-EER [%]	Test Comments
20260311	E1_260311_000	VVVX10093498	000811	7218	7171	0.9935																								-2.692	0.39911	0.021196				XC90 T8 AWD EDV V00 4K CS UDDS LEV IV E10 Fuel
20260309	E1_260309_015	VVVX10093497	000811	7122	7076	0.9935																								-2.692	0.39911	0.021196				XC60 T8 AWD FEDV V00 4K CD UDDS TIER2 fuel
20260223	E1_260223_012	VVVX10093496	000811	6579	6536	0.9935	N/A	0.000	0.0002	0.0000	0.0000	0.21	0.000	0.0000	0.0000	209	42.6666	42.6496	42.6	209.3299	209		42.6666				209			-2.692	0.39911	0.021196	0.56	0.40	-0.83	XC60 T8 AWD FEDV V00 4K CS HFEDS TIER 2 fuel
20260223	E1_260223_011	VVVX10093486	000811	6554	6511	0.9935	N/A	0.005	0.0011	0.0044	0.0046	0.16	0.002	0.0005	0.0066	248	35.9254	35.9606	36.0	248.2673	248	25.3618	46.3644	31.7008	47.7391	351	193	281	187	-2.692	0.39911	0.021196	1.12	0.53	-0.63	XC60 T8 AWD FEDV V00 4K CS UDDS TIER 2 fuel

Section 07.03.02
SFTP Test Results

Vehicle ID / Version:	202701 V00
Durability Group:	VVVXHHGVNLV3
Test Group:	VVVXT02.0P34
Emission Standards:	Exhaust: TIER3 BIN30 (EPA), LEV III BIN30 (CARB) SFTP: NMOG+NOx and CO Composite Exhaust Emission Standards Selected Particulate Certification Level FTP: 0.006 g/mile
Fuel	LEVIV E10
A/C Equipped:	Yes
Full Useful Life:	150 k

Test Results [G/mile]				
	NMOG	NOx	CO	PM
UDDS	0.0053	0.004	0.19	0.0003
US06	0.0025	0.003	0.52	0.0026
SC03	0.0004	0.004	0.15	0.0002

DF´s			
	NMOG+NOx	CO	PM
Full Useful Life	0.0071	0.11	0.0000

Test Results incl DF's			
	Composite NMOG+NOx	Composite CO	US06 PM
Full Useful Life	**0.0135**	**0.38**	**0.0026**

Standards 150k			
	Composite NMOG+NOx	Composite CO	US06 PM
Cert	0.050	4.2	0.006
In-Use	0.050	4.2	0.006

S 07.03.03

Determining of procedure for FE label calculation (Litmus Test) according to CISD-15-15
Test Group VVVXT02.0P34

Model Year	Manufacturer	Division or Make	Model Name	Original EDV Test Group	EDV ID	EDV Vehicle	Carry Over EDV	Specific 5-cycle results CITY	Specific 5-cycle results HWY	Derived 5-cycle results CITY	Derived 5-cycle results HWY	Derived 5-cycle results CITY * 0.96	Derived 5-cycle results HWY * 0.95	Pass Criteria CITY	Pass Criteria HWY	Manufacturer request to use Litmus test data for FE label until EPA Confirmatory Testing is performed
2027	Volvo Car Corp.	Volvo	XC90 T8 AWD, XC60 T8 AWD	VVVXT02.0P34	202701V0	XC90 T8 AWD	No	20.8	25.8	19.9	24.8	19.1	23.6	PASS	PASS	Yes

Section 10.01
DESCRIPTION OF ALTERNATE-FUELED VEHICLES

For 2027MY, Volvo does offer alternate fueled vehicles in the Test Group **VVVXT02.0P34** (Plug-In Hybrid) using:

Front drive unit
Internal combustion gasoline engine
Crank mounted integrated starter generator (C-ISG) with 3-phase synchronous electric motor
- 165 Nm peak torque
- 52 kW peak power

8-speed automatic transmission

Rear drive unit
3-phase synchronous electric motor
309 Nm peak torque
115 kW peak power
Single-speed transmission without disconnect clutch

High voltage battery
Lithium Ion battery pack
Anode: Graphite
Cathode: NMC 811 (Nickel Manganese Cobalt)
18.8 kWh Nominal energy capacity
14.7 kWh pack useable energy capacity
110 kW discharge power
50 kW charge power
369 Volt Nominal Voltage (Ref. S10.08)
Battery Manufacturer: VREMT
Cell & module Manufacturer: CATL
Number of cells (34 cells per module): 102 (Ref. S10.08)
Number of modules: 3 (Ref. S10.08)
Battery Duty Cycle Usage: 95.0% to 15% (Depletion New Battery) (Ref. S04.06)
Battery Duty Cycle Usage: 76.2% to 15% (Depletion 10 year Old Battery) (Ref. S04.06)
133 kg Weight (Ref. S10.08)
0.141 kWh/kg Specific Pack Energy

Regenerative braking system
During coasting and braking the electric motor in the rear drive unit is used to decelerate the vehicle and recuperate kinetic energy. The amount of electric power during regeneration will vary during normal operation depending on battery state of charge and temperature.

High Voltage Battery Charging
Maximum Charging power output: 3.6kW
Nominal charging voltage: 220VAC/ Range 85V – 275V
Nominal charging current: 16 Ampere per phase

Power meter

The power meter tells you how and when the battery power is being used or regenerated.

Updated 09/18/2025

The power meter is always visible in the instrument panel. The different sections of the power meter indicate different power uses or limitations.

1. *The vehicle isn't able to draw its normal amount of power from the battery, and the available power is reduced.*
2. *The vehicle is using power to move. The size of this section grows and shrinks with the amount of power being used. When this section passes the drop symbol at the side of the power meter, the engine starts. This is because the vehicle can't deliver the required electrical power anymore.*
3. *The vehicle's battery is regenerating power rather than using it. This can appear when using the accelerator or the brake pedal. The size of this section grows and shrinks with the amount of power being regenerated.*
4. *The friction brakes are in use. You might see this section appear when the disc brakes are engaged or if the battery is full and can't store any more power. The more the friction brakes are applied, the larger the section becomes.*

Test Group: VVVXT02.0P34

Charging a hybrid car

Charge the car via a charging station at home or via a public charging station[1].

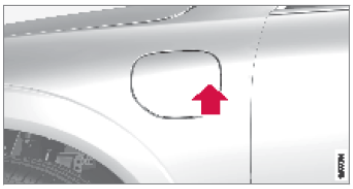
Starting charging

1. Disconnect the charging cable from the charging station storage socket or take out the charging cable. Note that the car must be switched off prior to charging.
2. Plug the charging cable into the charging station. If the charging station has a permanent charging cable, skip to step 3.

IMPORTANT

Avoid plugging in the charging cable when there is a risk of a thunderstorm or lightning strikes.

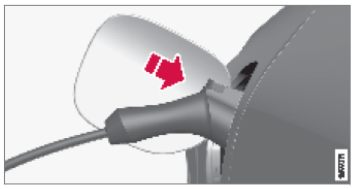
3.



!XC90 Hybrid (other models are similar)
Press in the rear section of the cover to open the charging hatch[2].

Press in the rear section of the cover to open the charging hatch and undo the cover for the charging input socket[3].

4.



Remove the charging handle's protective cover and press the charging handle the whole way into the socket for the car.

IMPORTANT

To avoid damage to the paint, e.g. in the event of high winds, position the charging handle's protective cover so that it does not touch the car.

1 Refers to charging with a mode-3 charging cable, or a charging station with a permanent charging cable.
2 The figure is schematic - parts may vary depending on model.
3 The figure is schematic - parts may vary depending on model.

5. The charging cable's charging handle is fastened/locked in, and charging starts within 5 seconds.
   > When charging has started, the LED lamp in the charging input socket flashes with a green glow.

   The driver display shows the remaining estimated charging time or whether charging is not working as intended.

Condensation from the air conditioning may drip under the car during charging. This is normal and takes place due to cooling of the hybrid battery.

WARNING

- Children should be supervised when in the vicinity of the charging cable when it is plugged in.
- US_Canada
  High voltage in the charging cable. Contact with high voltage can cause death or serious personal injury.
- US_Canada
  High voltage is present in your electric meter housing and power distribution service panel. Contact with high voltage can cause death or serious personal injury.
- Do not use the charging cable if it is damaged in any way. A damaged or inoperative charging cable must only be repaired by a workshop - an authorised Volvo workshop is recommended.
- Always position the charging cable so that it will not be driven over, stepped on, tripped over or damaged in some other way, or cause personal injury.
- Do not connect one or more adapters of any type between charging cable and car.

Also, refer to the manufacturer's instructions for using the charging cable and its components.

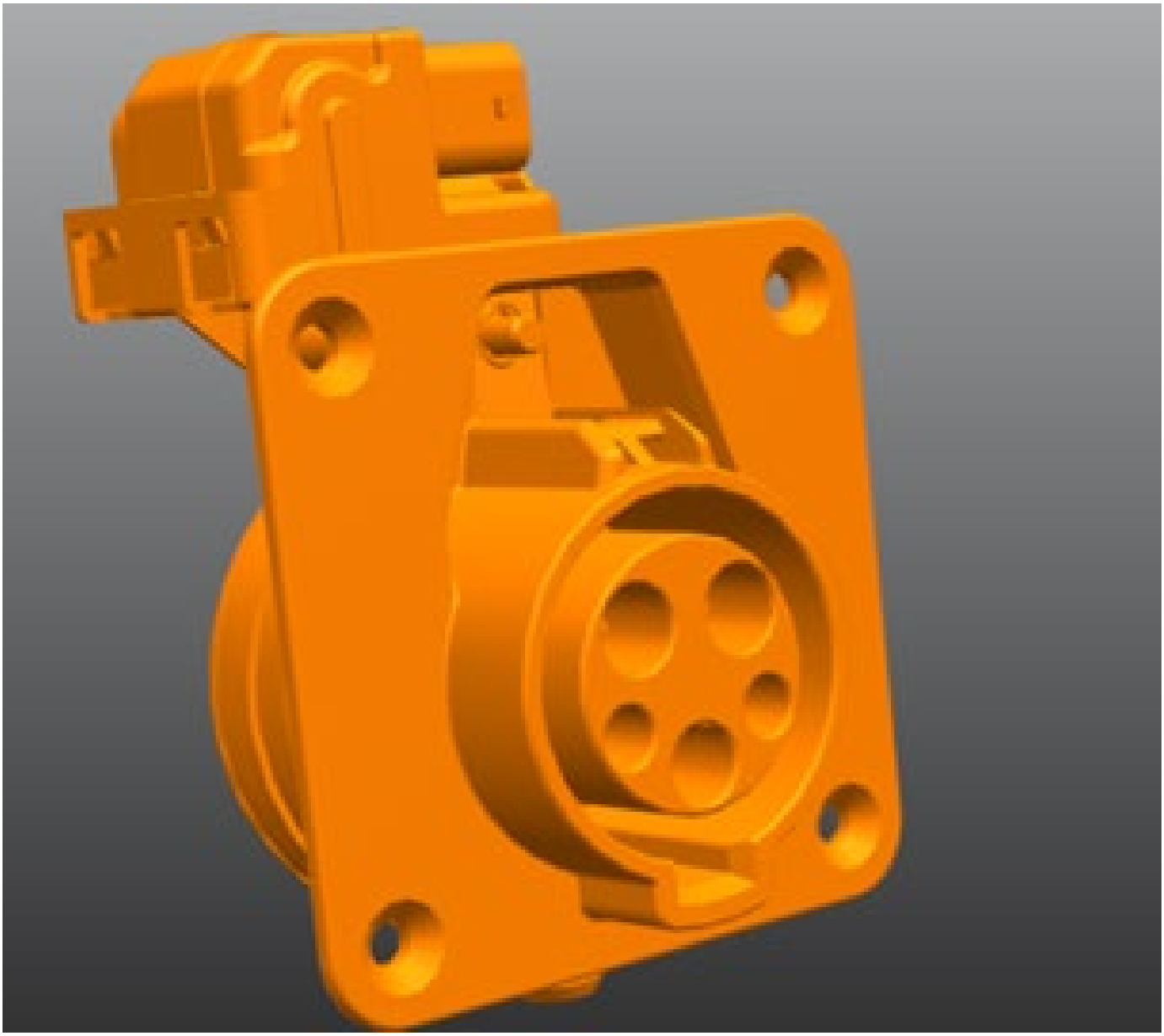
IMPORTANT

Do not wash the car when the charging cable is connected or when the charging hatch is open.

VOLVO

Image of the charger inlet

Charging port (EVI) according to SAE J1772 (Oct 2017)

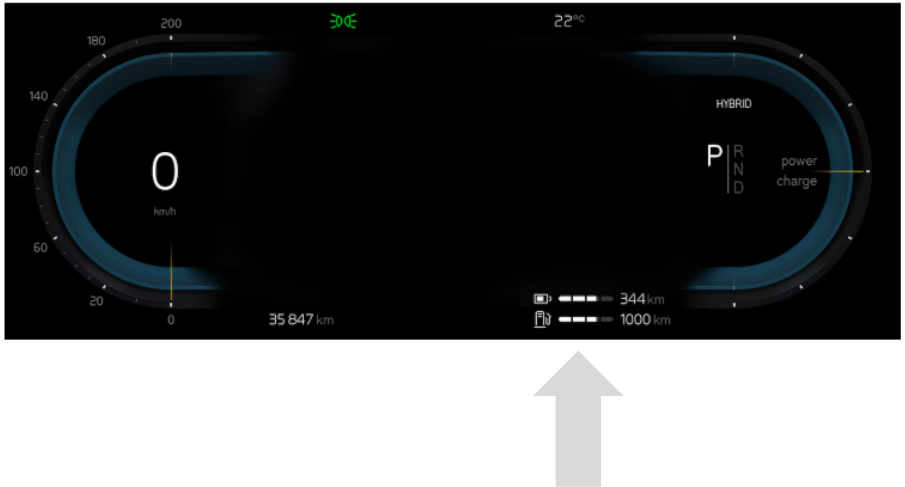


S10.04 - Method for determining battery state of charge

Battery gauge

The battery gauge shows how much current is left in the battery. The remaining current is shown both as a percentage of the total current and as an approximate range. The range is affected by factors such as driving style, driving settings, speed, outdoor temperature and weather.

The battery gauge at the bottom of the instrument panel shows the charge level of the battery and the estimated driving distance until the battery is discharged.



S 10.05 Instructions provided to vehicle owner for proper and safe operation

Test Group: VVVXT02.0P34 (Vehicles: XC90/XC60 T8 AWD)

WARNING

Charging components and high voltage

- The car's charging components carry hazardous currents and voltages. They must be handled with care. Do not perform actions that are not clearly described in the user manual.
- Do not modify or make your own repairs to any charging components. Contact an authorised Volvo workshop for any required repairs or servicing.
- Installation and repairs of at-home charging equipment [1] (Including any work on the electric metre housing or power distribution service panel.) must be performed by a licensed electrician.
- Damage to the car's high-voltage components, including the traction battery, can cause overheating, fire and serious personal injury. If there is a risk of damage, such as after battery leakage, flooding, fire or a collision, do not use the car. Contact an authorised Volvo workshop as soon as possible. If possible, leave the car outdoors and away from people, buildings, property and other objects that could catch or spread fire.

If you have a pacemaker or similar device

Charging may affect the operation of your pacemaker. Anyone with implanted pacemakers or biventricular pacing pulse generators without defibrillation capability should not attempt to charge the car on their own. Ask someone else to charge your car. You should also stay away from the chargers and charging cables while charging the car.

NOTE

12 V battery charging

The car keeps the 12 V battery charged as long as the high-voltage battery has sufficient charge.

Condensation during charging

During charging, condensation from the cooling system can collect under the car. This is perfectly normal and caused by the traction battery cooling down.

Charging at a charging station or from a charging point at home

AC charging points are available at a variety of charging locations, both public and private. An AC charging point can be installed at home and is the recommended source for regular charging.

Charging with a household socket

You can charge your car from a regular household socket. This type of charging is only suitable for occasional charging and is not recommended for regular use. If you are planning to charge your car from a household socket, there are additional steps you need to take to ensure it is done safely.

WARNING

Do not use visibly worn or damaged electrical sockets as they could cause overheating, electric shock or personal injury.

IMPORTANT

- The car must only be charged from approved, earthed household sockets.
- Do not exceed the maximum permitted charging current when charging via a regular household socket. Limits imposed by local and national charging recommendations may apply.
- Ensure that the household socket fuse can handle the charging cable's specified current before you start charging. If you are uncertain, the socket must be checked by a qualified and licensed electrician.
- Never connect the charging cable when there is a risk of thunderstorm or lightning strike.

Charging cables

There are different charging cables to use when you charge your car. Mode 3 cables are the standard cable to use when charging electric cars. There are different versions of the mode 2 cable available. Mode 2 cables can be used as an emergency solution, but it is not recommended to use them as a daily charging method.

Automatic charging while driving

Your car can automatically charge its batteries [2] (both the traction battery and the 12 V battery.) slightly while driving. This is done through regenerative braking during lighter braking using the foot brake and by engine braking in gear B. Charging your car this way is not an alternative to using a charging station or a charging point, but it is a way of re-using some of the car's kinetic energy during braking manoeuvres.

Section 12.01 Transmission Description

For description of Vehicle Drive Modes / Transmission modes: See section 12.09

Gearbox	Transmission type	Transmission Gear Ratios								Engine Code	Vehicle Model	Transmission Multimode (yes/no)
		1	2	3	4	5	6	7	8			
TG-81	SA	5.25	3.03	1.95	1.46	1.22	1.00	0.81	0.67	HD_1 HD_2	XC90 T8 AWD XC60 T8 AWD	Yes

Section 12.02.01

VVVXT02.0P34 EDV & DDV Selection & Carry-Over Justification

Exhaust DDV Justification:

Vehicles in 2027MY:

Vehicle	XC90 T8 AWD	XC60 T8 AWD
Engine disp	2.0 liter	2.0 liter
Transm.	AWD	AWD
Total Catalyst Loading	8.0 g	8.0 g
Precious Metal Composition	PdRh / PdRh	PdRh / PdRh
ETW	5500	5000
TRLHP - worst case	16.7	15.2
Drive Modes available	Hybrid (default) Power XC Pure AWD Manual	Hybrid (default) Power XC Pure AWD Manual

Exhaust DDV covering all 2027MY vehicles:

	EXHAUST DDV Info
Original Test Group	VVVXT02.0P34
Vehicle	XC90 T8 AWD
Engine disp	2.0 liter
Transm.	AWD
Total Catalyst Loading	8.0 g
Precious Metal Composition	PdRh / PdRh
ETW	5500
TRLHP -worst case	17.0
Drive Mode used for test	Hybrid (*)

(*) Hybrid mode represents worst case for ageing parameters for Exhaust Emission DDV.

Exhaust DDV Carry-Over Justification:

- New Exhaust DDV for 2027MY.

Exhaust DDV Selection:

- New exhaust DDV for 2027MY:
- Using development test data and engineering judgment,
  test from XC90 T8 AWD has been determined to represent same or worst case for this Test Group.

:

Exhaust EDV Justification:

Vehicles in 2027MY:

Vehicle	XC90 T8 AWD	XC60 T8 AWD
Engine disp	2.0 liter	2.0 liter
Transm.	AWD	AWD
Total Catalyst Loading	8.0 g	8.0 g
Precious Metal Composition	PdRh / PdRh	PdRh / PdRh
ETW	5500	5000
TRLHP - worst case	16.7	15.2
Drive Modes available	Hybrid (default) Power XC Pure AWD Manual	Hybrid (default) Power XC Pure AWD Manual

Exhaust EDV covering all 2027MY vehicles:

	EXHAUST EDV Info
Original Test Group	VVVXT02.0P34
Vehicle	XC90 T8 AWD
Engine disp	2.0 liter
Transm.	AWD
Total Catalyst Loading	8.0 g
Precious Metal Composition	PdRh / PdRh
ETW	5500
TRLHP -worst case	17.0
Drive Mode used for test	Power (**)

(**) Power mode represents worst case for Exhaust Emission EDV.

Exhaust EDV Carry-Over Justification:

- New Exhaust EDV for 2027MY.

Exhaust EDV Selection:

- New exhaust EDV for 2027MY:
- Using development test data and engineering judgment,
  test from XC90 T8 AWD has been determined to represent same or worst case for this Test Group.

2027MY EVAP Family Description

EVAP family name	VVVXR0142EP6	VVVXR0142EP6
Vehicle	XC90 T8 AWD	XC60 T8 AWD
Certification Vehicle class	LDT4	LDT2
Canister Capacity g	142g	142g
Canister configuration	3 chamber	3 chamber
Fuel tank volume litres	71	71
Drive Mode available	Hybrid (default) Power XC Pure AWD Manual	Hybrid (default) Power XC Pure AWD Manual

	EVAP DDV Info
EVAP family name	VVVXR0142EP6
Vehicle	XC90 T8 AWD
Certification Vehicle class	LDT4
Canister Capacity g	142g
Canister configuration	3 chamber
Fuel tank volume litres	71
Drive Mode used for test	Hybrid (***)

(***) Hybrid mode represents worst case for ageing parameters for EVAP Emission DDV.

EVAP DDV Carry-Over Justification:

- New EVAP DDV for 2027MY:

EVAP DDV Selection:

- New EVAP DDV for 2027MY:
- Using development test data and engineering judgment, test from XC90 B5 AWD has been determined to represent same or worst case Evaporative emissions for this EVAP Family.

:

	EVAP EDV Info
EVAP family name	VVVXR0142EP6
Vehicle	XC90 T8 AWD
Certification Vehicle class	LDT4
Canister Capacity g	142g
Canister configuration	3 chamber
Fuel tank volume litres	71
Drive Mode used for test	Hybrid (****)

(****) Hybrid mode represents worst case for EVAP Emission EDV.

EVAP EDV Carry-Over Justification:

- New EVAP EDV for 2027MY:

EVAP EDV Selection:

- New EVAP EDV for 2027MY:
- Using development test data and engineering judgment, test from XC90 T8 AWD has been determined to represent worst case Evaporative emissions for this EVAP Family.

Verify Processing Report

Total Datasets Submitted: 1
Accepted Datasets: 1
Rejected Datasets: 0

The original datasets are listed below. In addition, any information generated by the Verify system is also included. For any rejected datasets, the reason(s) the dataset was rejected is provided below in the Transaction Report for that particular dataset.

Test Vehicle Information Submission

Test Vehicle Information Details

Information Process Code : N
EPA Manufacturer Code : VVX
Vehicle Identification Text : 202701
Vehicle Configuration Number : 0

Vehicle Configuration Details

Vehicle Description Details

Manufacturer Vehicle Configuration Number : 0
Test Group Name : VVVXT02.0P34
Evaporative Refueling Family Name : VVVXR0142EP6
Leak Family Identifier : 001
Leak Family Name : VVVXR0142EP6-001
Model Year : 2027
Actual Test Vehicle Make Text : Volvo
Actual Test Vehicle Model Text : XC90 T8 AWD

Drive Source Details

Drive Source Identifier : C
Fuel Identifier : G

Drive Source Details

Drive Source Identifier : E
Fuel Identifier : EL

Fuel Cell Indicator : N
Rechargeable Energy Storage System Indicator : Y
Rechargeable Energy Storage Device Identifier : B
Off Board Charge Capability Indicator : Y
Test Drive Code : A
Shift Indicator Light Usage Identifier : 1
Aged Component Usage Identifier : 4

Odometer Correction Details

Correction Initial Value : 0.0
Correction Factor Value : 1.0062
Correction Sign Identifier : +
Correction Units Code : K

Engine Code Text : HD_1

Engine Rated Horsepower Value : 247
Engine Displacement Value : 1.969

Air Aspiration Details

Air Aspiration Method Identifier : TC
Air Aspiration Device Count : 1
Air Aspiration Configuration Identifier : N

Charge Air Cooler Identifier : A

Vehicle Specifications Details

Curb Weight Value : 5147
Equivalent Test Weight Value : 5500
Gross Vehicle Weight Rating Value : 6500
NV Ratio Value : 26.2
Axle Ratio Value : 3.33

Transmission Specifications Details

Light Duty Transmission Type Identifier : SA
Transmission Lockup Indicator : Y
Transmission Creeper Gear Indicator : N
Transmission Gear Count : 8

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : C-H-E
Target CoefficientA Value : 44.65
Target CoefficientB Value : 0.3541
Target CoefficientC Value : 0.02610
Set CoefficientA Value : 7.597
Set CoefficientB Value : 0.28062
Set CoefficientC Value : 0.025183

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : US06
Target CoefficientA Value : 44.65
Target CoefficientB Value : 0.3541
Target CoefficientC Value : 0.02610
Set CoefficientA Value : 7.597
Set CoefficientB Value : 0.28062
Set CoefficientC Value : 0.025183

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : Cold-CO
Target CoefficientA Value : 49.12
Target CoefficientB Value : 0.3895
Target CoefficientC Value : 0.02871
Set CoefficientA Value : 1.835
Set CoefficientB Value : 0.14016
Set CoefficientC Value : 0.028398

Manufacturer Comment Text : EDV- XC90 T8 AWD, Tested on worst case dyno setting TRLHP 17.0.

EPA Generated Test Vehicle Details

Original Receipt Date : 20260303
Hybrid Vehicle Indicator : Y
Adjusted Loaded Vehicle Weight Value : 5823
Loaded Vehicle Weight Value : 5447
Total Road Load Horsepower Value : 17.0

Transaction Status Details

Transaction Status Identifier : ACCEPTED

Verify Processing Report

Total Datasets Submitted: 1
Accepted Datasets: 1
Rejected Datasets: 0

The original datasets are listed below. In addition, any information generated by the Verify system is also included. For any rejected datasets, the reason(s) the dataset was rejected is provided below in the Transaction Report for that particular dataset.

Test Vehicle Information Submission

Test Vehicle Information Details

Information Process Code : N
EPA Manufacturer Code : VVX
Vehicle Identification Text : 202701
Vehicle Configuration Number : 1

Vehicle Configuration Details

Vehicle Description Details

Manufacturer Vehicle Configuration Number : 1
Test Group Name : VVVXT02.0P34
Evaporative Refueling Family Name : VVVXR0142EP6
Leak Family Identifier : 001
Leak Family Name : VVVXR0142EP6-001
Model Year : 2027
Actual Test Vehicle Make Text : Volvo
Actual Test Vehicle Model Text : XC90 T8 AWD

Drive Source Details

Drive Source Identifier : C
Fuel Identifier : G

Drive Source Details

Drive Source Identifier : E
Fuel Identifier : EL

Fuel Cell Indicator : N
Rechargeable Energy Storage System Indicator : Y
Rechargeable Energy Storage Device Identifier : B
Off Board Charge Capability Indicator : Y
Test Drive Code : A
Shift Indicator Light Usage Identifier : 1
Aged Component Usage Identifier : 4

Odometer Correction Details

Correction Initial Value : 0.0
Correction Factor Value : 1.0062
Correction Sign Identifier : +
Correction Units Code : K

Engine Code Text : HD_1

Engine Rated Horsepower Value : 247
Engine Displacement Value : 1.969

Air Aspiration Details

Air Aspiration Method Identifier : TC
Air Aspiration Device Count : 1
Air Aspiration Configuration Identifier : N

Charge Air Cooler Identifier : A

Vehicle Specifications Details

Curb Weight Value : 5147
Equivalent Test Weight Value : 5500
Gross Vehicle Weight Rating Value : 6500
NV Ratio Value : 26.2
Axle Ratio Value : 3.33

Transmission Specifications Details

Light Duty Transmission Type Identifier : SA
Transmission Lockup Indicator : Y
Transmission Creeper Gear Indicator : N
Transmission Gear Count : 8

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : US06
Target CoefficientA Value : 42.51
Target CoefficientB Value : 0.3541
Target CoefficientC Value : 0.02610
Set CoefficientA Value : 5.641
Set CoefficientB Value : 0.30479
Set CoefficientC Value : 0.024866

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : C-H-E
Target CoefficientA Value : 42.51
Target CoefficientB Value : 0.3541
Target CoefficientC Value : 0.02610
Set CoefficientA Value : 5.641
Set CoefficientB Value : 0.30479
Set CoefficientC Value : 0.024866

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : Cold-CO
Target CoefficientA Value : 46.76
Target CoefficientB Value : 0.3895
Target CoefficientC Value : 0.02871
Set CoefficientA Value : 1.0
Set CoefficientB Value : 0.1
Set CoefficientC Value : 0.01

Manufacturer Comment Text : FEDV- XC90 T8 AWD, Highest selling tire TRLHP 16.7.

EPA Generated Test Vehicle Details

Original Receipt Date : 20260303
Hybrid Vehicle Indicator : Y
Adjusted Loaded Vehicle Weight Value : 5823
Loaded Vehicle Weight Value : 5447
Total Road Load Horsepower Value : 16.7

Transaction Status Details

Transaction Status Identifier : ACCEPTED

Verify Processing Report

Total Datasets Submitted: 1
Accepted Datasets: 1
Rejected Datasets: 0

The original datasets are listed below. In addition, any information generated by the Verify system is also included. For any rejected datasets, the reason(s) the dataset was rejected is provided below in the Transaction Report for that particular dataset.

Test Vehicle Information Submission

Test Vehicle Information Details

Information Process Code : N
EPA Manufacturer Code : VVX
Vehicle Identification Text : 202702
Vehicle Configuration Number : 0

Vehicle Configuration Details

Vehicle Description Details

Manufacturer Vehicle Configuration Number : 0
Test Group Name : VVVXT02.0P34
Evaporative Refueling Family Name : VVVXR0142EP6
Leak Family Identifier : 001
Leak Family Name : VVVXR0142EP6-001
Model Year : 2027
Actual Test Vehicle Make Text : Volvo
Actual Test Vehicle Model Text : XC60 T8 AWD

Drive Source Details

Drive Source Identifier : C
Fuel Identifier : G

Drive Source Details

Drive Source Identifier : E
Fuel Identifier : EL

Fuel Cell Indicator : N
Rechargeable Energy Storage System Indicator : Y
Rechargeable Energy Storage Device Identifier : B
Off Board Charge Capability Indicator : Y
Test Drive Code : A
Shift Indicator Light Usage Identifier : 1
Aged Component Usage Identifier : 4

Odometer Correction Details

Correction Initial Value : 0.0
Correction Factor Value : 0.9935
Correction Sign Identifier : +
Correction Units Code : K

Engine Code Text : HD_2

Engine Rated Horsepower Value : 247
Engine Displacement Value : 1.969

Air Aspiration Details

Air Aspiration Method Identifier : TC
Air Aspiration Device Count : 1
Air Aspiration Configuration Identifier : N

Charge Air Cooler Identifier : A

Vehicle Specifications Details

Curb Weight Value : 4723
Equivalent Test Weight Value : 5000
Gross Vehicle Weight Rating Value : 5860
NV Ratio Value : 26.7
Axle Ratio Value : 3.33

Transmission Specifications Details

Light Duty Transmission Type Identifier : SA
Transmission Lockup Indicator : Y
Transmission Creeper Gear Indicator : N
Transmission Gear Count : 8

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : Cold-CO
Target CoefficientA Value : 42.45
Target CoefficientB Value : 0.3893
Target CoefficientC Value : 0.02533
Set CoefficientA Value : 1.0
Set CoefficientB Value : 0.1
Set CoefficientC Value : 0.01

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : C-H-E
Target CoefficientA Value : 38.59
Target CoefficientB Value : 0.3539
Target CoefficientC Value : 0.02303
Set CoefficientA Value : -2.7
Set CoefficientB Value : 0.399
Set CoefficientC Value : 0.0212

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : US06
Target CoefficientA Value : 38.59
Target CoefficientB Value : 0.3539
Target CoefficientC Value : 0.02303
Set CoefficientA Value : -2.7
Set CoefficientB Value : 0.399
Set CoefficientC Value : 0.0212

Manufacturer Comment Text : XC60 T8 AWD FEDV, -Highest selling tire TRLHP 15.2

EPA Generated Test Vehicle Details

Original Receipt Date : 20260303
Hybrid Vehicle Indicator : Y
Adjusted Loaded Vehicle Weight Value : 5291
Loaded Vehicle Weight Value : 5023
Total Road Load Horsepower Value : 15.2

Transaction Status Details

Transaction Status Identifier : ACCEPTED

Verify Processing Report

Total Datasets Submitted: 1
Accepted Datasets: 1
Rejected Datasets: 0

The original datasets are listed below. In addition, any information generated by the Verify system is also included. For any rejected datasets, the reason(s) the dataset was rejected is provided below in the Transaction Report for that particular dataset.

Test Vehicle Information Submission

Test Vehicle Information Details

Information Process Code : N
EPA Manufacturer Code : VVX
Vehicle Identification Text : 202712
Vehicle Configuration Number : 0

Vehicle Configuration Details

Vehicle Description Details

Manufacturer Vehicle Configuration Number : 0
Test Group Name : VVVXT02.0P34
Evaporative Refueling Family Name : VVVXR0142EP6
Leak Family Identifier : 001
Leak Family Name : VVVXR0142EP6-001
Model Year : 2027
Actual Test Vehicle Make Text : Volvo
Actual Test Vehicle Model Text : XC90 T8 AWD

Drive Source Details

Drive Source Identifier : C
Fuel Identifier : G

Drive Source Details

Drive Source Identifier : E
Fuel Identifier : EL

Fuel Cell Indicator : N
Rechargeable Energy Storage System Indicator : Y
Rechargeable Energy Storage Device Identifier : B
Off Board Charge Capability Indicator : Y
Test Drive Code : A
Shift Indicator Light Usage Identifier : 1
Aged Component Usage Identifier : 4

Odometer Correction Details

Correction Initial Value : 0.0
Correction Factor Value : 1.0020
Correction Sign Identifier : +
Correction Units Code : K

Engine Code Text : HD_1

Engine Rated Horsepower Value : 247
Engine Displacement Value : 1.969

Air Aspiration Details

Air Aspiration Method Identifier : TC
Air Aspiration Device Count : 1
Air Aspiration Configuration Identifier : N

Charge Air Cooler Identifier : A

Vehicle Specifications Details

Curb Weight Value : 5147
Equivalent Test Weight Value : 5500
Gross Vehicle Weight Rating Value : 6500
NV Ratio Value : 26.2
Axle Ratio Value : 3.33

Transmission Specifications Details

Light Duty Transmission Type Identifier : SA
Transmission Lockup Indicator : Y
Transmission Creeper Gear Indicator : N
Transmission Gear Count : 8

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : US06
Target CoefficientA Value : 44.65
Target CoefficientB Value : 0.3541
Target CoefficientC Value : 0.02610
Set CoefficientA Value : 8.270
Set CoefficientB Value : 0.38885
Set CoefficientC Value : 0.023831

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : Cold-CO
Target CoefficientA Value : 49.12
Target CoefficientB Value : 0.3895
Target CoefficientC Value : 0.02871
Set CoefficientA Value : 1.0
Set CoefficientB Value : 0.1
Set CoefficientC Value : 0.01

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : C-H-E
Target CoefficientA Value : 44.65
Target CoefficientB Value : 0.3541
Target CoefficientC Value : 0.02610
Set CoefficientA Value : 8.270
Set CoefficientB Value : 0.38885
Set CoefficientC Value : 0.023831

Manufacturer Comment Text : EVAP EDV- XC90 T8 AWD, Tested on worst case dyno setting TRLHP 17.0.

EPA Generated Test Vehicle Details

Original Receipt Date : 20260319
Hybrid Vehicle Indicator : Y
Adjusted Loaded Vehicle Weight Value : 5823
Loaded Vehicle Weight Value : 5447
Total Road Load Horsepower Value : 17.0

Transaction Status Details

Transaction Status Identifier : ACCEPTED

Section 12.02.04
TEST VEHICLE DESCRIPTION .

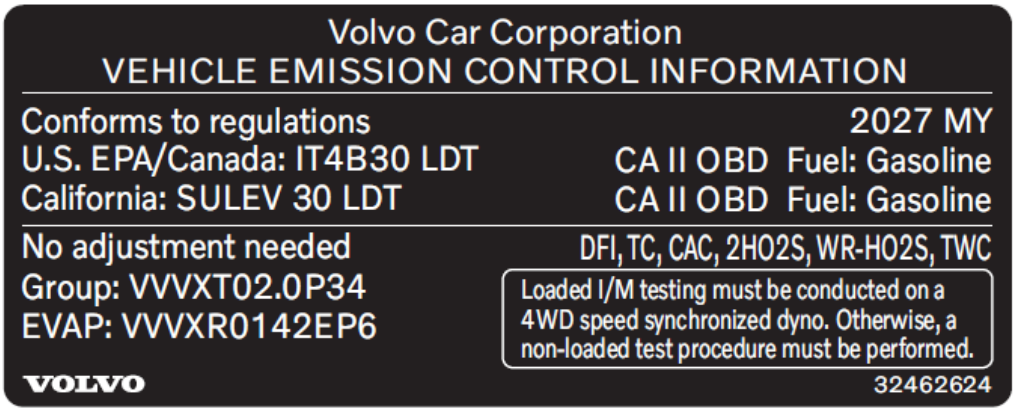
Please refer to VERIFY Vehicle Information in Section 12.02.03 &
VERIFY Certification Summary Information Report in Section 07.01

Test vehicles generating data for Test Group VVVXT02.0P34 2027MY								
	Certification purposes							
Vehicle ID	Data	Emission	Aging Method	Original Test Group / Evap Family	Original MY	Engine	Transmission	
2027ED	DDV	EVAP	150K Bench Aging	Evap Family: VVVXR0142EP6	2027	B4204TH	AWD	aut
202712	EDV	EVAP	4K SRC	Evap Family: VVVXR0142EP6	2027	B4204TH	AWD	aut
2027B	DDV	EXHAUST	150K Bench Aging	Test Group: VVVXT02.0P34	2027	B4204TH	AWD	aut
202701	EDV	EXHAUST	4K SRC	Test Group: VVVXT02.0P34	2027	B4204TH	AWD	aut
202701	FEDV	FE	4K SRC	Test Group: VVVXT02.0P34	2027	B4204TH	AWD	aut
202702	FEDV	FE	4K SRC	Test Group: VVVXT02.0P34	2027	B4204TH	AWD	aut

Section 12.03
LABEL FORMAT
Section 12.03.01
VEHICLE EMISSION CONTROL INFORMATION LABEL

LABEL INFO: Label size: 103 x 41 mm
Label location: Engine compartment, on the hood

Test Group: VVVXT02.0P34
Engine Code: HD_2, HD_1
Vehicles: XC60, XC90 T8 AWD



S12.05 List of Certified vehicles

Test Group: VVVXT02.0P34

Evap Families: VVVXR0142EP6

Emission Fuel: CARB LEV IV E10 Gasoline

Fuel Economy Fuel: Tier2 Gasoline

Carline	Model Type	Vehicle Model	Vehicle Class	Sales Area	Engine Name	Engine Displ [liter]	Engine Code	Fuel tank volume [liter]	Evap Code	Emission Control System	Transm Type	Transm Class	ETW
XC90	XC90 T8 AWD	Wagon	Standard SUV 4WD	50 S	B4204TH	2.0	HD_1	71	69P:71	DFI, TC, CAC, 2HO2S, WR-HO2S, TWC	SA	S8 AWD	5500
XC60	XC60 T8 AWD	Wagon	Small SUV 4WD	50 S	B4204TH	2.0	HD_2	71	69P:71	DFI, TC, CAC, 2HO2S, WR-HO2S, TWC	SA	S8 AWD	5000

January 09, 2026

Mr. Byron Bunker, Director
Compliance Division
OTAQ
U.S. Environmental Protection Agency
2000 Traverwood Drive
Ann Arbor, Michigan 48105

Ms. Robin U. Lang, Division Chief
Emissions Certification and Compliance Division
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Dear Mr. Bunker and Ms. Lang:

Volvo Car USA, LLC (Volvo) herewith submits an Application for Certification for 2027MY gasoline-electric powered light-duty trucks (LDT's) contained in Volvo's 50-State test group VVVXT02.0P34 and evaporative family VVVXR0142EP6. This test group has a target sales start date of June, 2026. This test group complies with all applicable California and Federal regulations.
The emission standards applicable to this test group are as follows:

Federal Certification Exhaust Emission Standards
(Interim) Tier 4 Bin 30 Standards 150K

Federal In-Use Exhaust Emission Standards
(Interim) Tier 4 Bin 30 Standards 150K

California Certification Exhaust Emission Standards
LEV III SULEV 30 Standards 150K

California In-Use Exhaust Emission Standards
LEV III SULEV 30 Standards 150K

Federal Certification Evaporative Standards
Tier 4 Standards 150K LDT2

Federal In-Use Evaporative Standards
Tier 4 Standards 150K LDT2

California Certification Evaporative Standards
LEV III Standards 150K LDT2

California In-Use Evaporative Standards
LEV III Standards 150K LDT2

In addition, this LDT test group will be certified to the applicable running loss, spitback, SFTP, ORVR, high altitude, particulates and Cold CO / NMHC standards. Actual numerical emission standards can be found in the specific test group application.

As provided in 40 CFR 86.1848-10 (d), Volvo has elected to submit an Application for each test group. Therefore, certification is requested for the VVVXR0142EP6 evaporative family contained in this VVVXT02.0P34 test group. This Part I Application has been prepared in accordance with the standardized format recommended by EPA via its Mail Out # CD-14-19, subject: "Certification Application Reporting Guidance" dated November 24, 2014.
All other sections of the Application (e.g., The Common Section) not contained herein are hereby included in this Application by reference.

Therefore, in accordance with the provisions of 40 CFR 86.1844-01, Volvo requests that a U.S. EPA Certificate of Conformity and CARB executive order to be issued for the LDT's listed in this Application for Certification.

Please do not hesitate to contact me if you have any questions regarding this submission.

Sincerely,

VOLVO CARS USA, LLC
Certification, Regulatory & Compliance

Bruno DiGennaro
Senior Manager, Certification & Conformity

US EPA Fee Form

Help and EPA Instructions

* Required Field

General Information

Date: 01/15/2026

Process Code *

Submit New Fee Filing Form

Manufacturer Code *

VVX

Manufacturer Name *

Volvo Car USA, LLC

Contact Name *

Bryant Lowry

Contact Email Address *

BRYANT.LOWRY@VOLVOCARS.COM

Contact Phone *

18432763791

Calendar Year complete application submitted to EPA *

2026

PLEASE NOTE: These fees apply to complete certification applications received by EPA from January 1, 2026, through December 31, 2026. The applicable fee is determined by the

calendar year in which the complete certification application is received, not the model year.

Engine Family / Evaporative Family / Test Group *

VVVXT02.0P34

Certificate Request Type (Industry Sector Code)

Certificate Request Type *

- (●) On-Highway LDV, LTD, MDVPV, HDV Chassis Cert (Federal) (A, B, D, J, T, V)
- ( ) On-Highway HDE Dyno Cert (Federal) (E, H)
- ( ) On-Highway LD ICI, MDPV ICI, HDV ICI (A, B, D, J, T, V)
- ( ) On-Highway Motorcycle (C)
- ( ) On-Highway HDV Evap (F)
- ( ) On-Highway LDV, LTD, MDVPV, HDV Chassis Cert (California-Only) (A, B, D, J, T, V)
- ( ) On-Highway HDE Dyno Cert (California-Only) (E, H)
- ( ) Nonroad CI (L)
- ( ) Nonroad SI (B, S)
- ( ) Locomotive (G, K)
- ( ) All Nonroad Recreational, excluding Marine engines (X, Y)
- ( ) All Marine (Including IMO) (M, N, W)
- ( ) Component Certification for Evaporative Emissions (P)

IMO Name (Required for dual US/IMO Marine Only)

ICI VIN Number (Required for ICIs Only)

Do you qualify for a Reduced Fee? *

No

Payment Information

Amount Owed

$32,317.00

Payment Type *

Offline Wire

Comments

Certification fees for:

XC90 T8 AWD
XC60 T8 AWD

EPA Form Number 3520-29
OMB Control No. 2060-0545
Approval expires 7/31/2027

The public reporting and recordkeeping burden for this collection of information is estimated to average 12 minutes per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed forms to this address.

The content of this document may contain Sensitive But Unclassified (SBU) data and/or Controlled Unclassified Information (CUI).

Outlook

Confirmation of Certification Fees Payment

From fees@epa.gov <fees@epa.gov>
Date Tue 2026-01-27 08:48
To Lowry, Bryant <bryant.lowry@volvocars.com>

To the representative for Volvo Car USA, LLC:

Your certification Fee Filing Form(s) submitted for the following family or test group(s) and the associated financial documentation for your payment of $323170.00 were received on 01/27/2026.

- VVVXT00.0ZPG

- VVVXT00.0ZPH

- VVVXT00.0ZVH

- VVVXT02.0P34

- VVVXT02.0S30

- VVVXT02.0S34

- VVVXV00.0ZVC

- VVVXV00.0ZVD

- VVVXV00.0ZVI

- VVVXV00.0ZVJ

This message indicates only that EPA has received record of your payment and form(s) for the above certification fee. It does not constitute the granting of a Certificate of Conformity by EPA or convey any information about the status of your certification application for the subject family or test group(s).

Please do not respond to this email. If you have any questions regarding certification of the family or test group(s), please contact your EPA Certification Representative; for questions on fees, contact Fees@epa.gov.

STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
CALIFORNIA AIR RESOURCES BOARD

MOBILE SOURCE CERTIFICATION AND COMPLIANCE FEE PAYMENT FORM FOR ON-ROAD APPLICATIONS ONLY

CARB USE ONLY

Invoice Name	MSF250703-1
Invoice Date	Feb 09, 2026

COMPANY INFORMATION

Company Name	Volvo Car USA LLC
Address	270 THREE POINT DRIVE
City	RIDGEVILLE
State	SC
Zip	29472
Country	United States
Contact Name	Bryant Lowry
Contact Telephone Number	8432763791
Contact Email	bryant.lowry@volvocars.com
CARB Customer Number	CCAM000086

APPLICATION INFORMATION

Row Number	Previous Unique Application Identifier	Previously Selected Category Type	Previously Selected Fee Type	Paid Amount	Corrected Unique Application Identifier	Corrected Category Type	Corrected Fee Type	Corrected Amount	Amount Due
1	VVVXT02.0P34	Light-duty vehicle test group and medium-duty vehicle test group	Base	$ 50,309.00	VVVXT02.0P34	Light-duty vehicle test group and medium-duty vehicle test group	Base	$ 50,309.00	$ 0.00
2	VVVXT02.0S34	Light-duty vehicle test group and medium-duty vehicle test group	Base	$ 50,309.00	VVVXT02.0S34	Light-duty vehicle test group and medium-duty vehicle test group	Base	$ 50,309.00	$ 0.00
3	VVVXT02.0S30	Light-duty vehicle test group and medium-duty vehicle test group	Carry-Over	$ 12,577.00	VVVXT02.0S30	Light-duty vehicle test group and medium-duty vehicle test group	Base	$ 50,309.00	$ 37,732.00
4	VVVXT00.0ZVG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	VVVXT00.0ZVG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	$ 0.00
5	VVVXT00.0ZPG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	VVVXT00.0ZPG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	$ 0.00
6	VVVXT00.0ZVH	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	VVVXT00.0ZVH	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	$ 0.00
		Light-duty vehicle test group and				Light-duty vehicle test group and			

7	VVVXT00.0ZPH	medium-duty vehicle test group	Zero-Emission	$ 12,577.00	VVVXT00.0ZPH	medium-duty vehicle test group	Zero-Emission	$ 12,577.00	$ 0.00
8	VVVXV00.0ZVI	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	VVVXV00.0ZVI	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	$ 0.00
9	VVVXV00.0ZVJ	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	VVVXV00.0ZVJ	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	$ 12,577.00	$ 0.00

Total Invoice (MSF250703) Paid	$ 188,657.00	**Total Corrected**	$ 226,389.00
		Total Due	$ 37,732.00

Notes
Changed fee type for UID VVXT02.0S30 from Carry-Over to Base Fee.

I, Bryant Lowry
Bryant Lowry (Feb 9, 2026 08:16:50 EST) , attest that any information provided is true, accurate, and complete.

(Responsible Party Signature Here)

Section 16.01 STATEMENT OF CONFIDENTIALITY

According to Class determination 3-78, the following sections in the below listed Applications are determined by Volvo to be kept as confidential.

Test Group Applications:

Sections:	
02	Durability Group Description
04.02.02	Ozone resistance
04.05	Battery Aging Procedure Description
04.06	Battery Aging Simulation Data
05.02	Engine Code Summary
09	OBD System
10.03	Vehicle Safe Operation
10.06	Identification and description of the charging system
10.07	Identification and description of the propulsion system
10.08	Identification and description of energy storage system
10.09	Identification and description of climate control system
11	AECD Descriptions
12.02.02	FE Label Testing Selection
12.04	Vehicle Test Parameters
12.09	Drive Modes Description
12.11	Description of DCF (Disc Cleaning Function)
12.12	Climate settings for Certification Testing
17.06	California High Priced Parts List (Not Confidential for Final Application)
17.09	Warranty Booklet Reference (Not Confidential for Final Application)

Common Application:

Part 1 Sections:

04.01	Evap Bench Aging procedure description & Approval
04.03	Exhaust Emissions Durability Test Procedures
11	AECD Descriptions
12.04	Vehicle Test Parameters
12.04.01	List of Test Vehicle Parameters (Not Confidential for Final Application)
12.07	California EVAP Supplemental Information
12.10	Stop-Start Disable Criteria
12.13	AC System Description
13	US Projected Sales / Phase in / Fleet average
17.03	Compliance Plan / Phase in / Fleet average
18.01	Canada Projected Sales
18.02	Canada Compliance & Sales Information
18.03	Canada FE Label Testing Selection
18.04	Canada Compliance Plan / Phase in / Fleet average

Part 2 Sections:

02	Calibration Information
04	Actual Sales
07	Actual Sales (Canada)

Section 17.01

FILL PIPES AND OPENINGS OF FUEL TANKS

Fill pipe access zones

Volvo Car Corporation certifies that the fill pipe access zones for the models covered by this application are in full compliance with the requirements specified by the California Air Resources Boards "Specification for Fill Pipes and Openings of 2015 and subsequent Motor Vehicle Fuel Tanks" adopted March 22, 2012 (13 California Code of Regulations, Section 2235) and are not obstructed in any manner by bumpers, body parts, body trims or accessories that are either factory or dealer installed.

Fill Pipes

Volvo Car Corporation also certifies that the fill pipes installed on all production models covered by this application are in compliance with all of the requirements of the California Air Resources Boards "Specification for Fill Pipes and Openings of 2015 and subsequent Motor Vehicle Fuel Tanks" adopted March 22, 2012 & amended May 31, 2019.

S17.02 CARB Fill Pipe and opening specifications

On-Road Light-Duty Certification Section - FILL PIPE COMPLIANCE REVIEW

Manufacturer **Volvo** **Model Year** **2027**

The nomenclature and symbols used below are the same as those defined in "Specifications for Fill Pipes and Openings of 2015 and Subsequent Motor Vehicle Fuel Tanks", amended May 31, 2019 (CARB Fill Pipe Spec.) (Refer to ISO-13331-1995(E) as adopted June 1, 1995)

	General Specification	ARB Specification	ISO-13331 Reference Section/Figure***			Manufacturer Specification*
						VOLVO PHEV
1	Angle α in degrees	$-10° < \alpha < 20°$	2.8 & 3.4/Fig 2a & 3a			-1,25°
2	Spill Prevention in degrees (angle between centerline of test spout in its resting position and the horizontal plane).	30° (MIN)	3.5			33,75°
3	Test nozzle penetration of restrictor	2.25 cm or 22.5 mm(MIN)	3.4			24,1 mm
4	Angle β in degrees	none	2.9/Fig 2b & 3b			2°
	Fill Pipe Specification					
1	Fill Pipe face surface in TIR	0.025 cm or 0.25 mm(MAX)	3.1/Fig 1			0,25 mm
2a	Fill Pipe face outside diameter: unless meets criteria in 2b. Below	5.75 cm or 57.5 mm(MAX)	3.1/Fig 1			
		5.20 cm or 52.0 mm (MIN)	3.1/Fig 1			
2b	Fill Pipe face outside diameter: criteria: new fill pipe head design starting MY 2024	5.79 cm or 57.9 mm(MAX)	3.1/Fig 1			56.2mm
		5.20 cm or 52.0 mm (MIN)	CARB Fill Pipe Spec.			
3	Internal locking lip in degrees of the inside circumference	100° (MIN)	3.2/Fig 2 and 3			360°
	(a) degrees extending each side of reference plane	35° (MIN) LS**	3.2/Fig 2 and 3			40°
		each side RS**	3.2/Fig 2 and 3			40°
4	Height of lip measured from fill pipe inside wall; or	0.25 cm or 2.5 mm(MIN)	3.2			2,5 mm
	height of lip measured from fill pipe outside wall for outside diameters between 5.20 and 5.75 cm.	0.85 cm or 8.5 mm(MIN)	3.2			8,9 mm
5a	Depth of lip (D) in centimeters: unless meets criteria in 5b. Below	$0.4 \leq D \leq 1.3$	3.2			
5b	Depth of lip (D) in centimeters: criteria: new fill pipe head design starting MY 2024	$0.4 \leq D \leq 1.1$	CARB Fill Pipe Spec.			0.57cm
	Offset					
	Offset A	none	3.3.1/Fig 5 shown as "**f**"			0.93
	Offset B	none	3.3.1/Fig 5 shown as "**g**"			0.8
6a	Fill Pipe Face Clearance (Axial): unless meets criteria in 7b. Below	0.25 cm or 2.5 mm (MIN)	Fig 5 shown as "**2.5**"			
6b	Fill Pipe Face Clearance (Axial): criteria: new fill pipe head design starting MY 2024	40 degrees out to 12 mm depth	CARB Fill Pipe Spec.			29mm
7a	Fill Pipe Face Clearance (Radial): unless meets criteria in 7b. Below	40 mm (MIN)	Fig 5 shown as "**R40**"			
7b	Fill Pipe Face Clearance (Radial): criteria: new fill pipe head design starting MY 2024	≥ 43 mm	CARB Fill Pipe Spec.			Yes
8	Fill Pipe Face Inside Diameter	49.8 mm(MAX)	Fig 1			35 mm
9	Capped or Capless					CL
10	Open Vent or Holes					No
11	Seal (Mechanical or Liquid)					L
12	Disruption in the Fill Pipe Face					No
13	ORVR Design (**I / NI / NIRCO / NO**)****					NIRCO
14	Type (Threaded or Bayonet)		Fig 1			Capless
15	Usage of Design (Models or Evaporative Family(s))					XC90 T8 AWD
						XC60 T8 AWD
16	Total vehicle model year sales		(PROJECTED CALIF. SALES)			**1886**

* dimension should include adverse tolerance condition, **LS = Left side of reference plane, **RS = Right side of reference plane

*** For Figures 1 through 5, please click on the respective tabs in this sheet (Figures are from ISO 13331 with annotations added)

**** ORVR Design: Integrated (**I**)/Non-Integrated (**NI**)/Non-Integrated Refueling Canister Only (**NIRCO**)/Non-ORVR (**NO**)

Section 17.04.01
50F Compliance data

Test Group: VVVXT02.0P34 (New Test Data 2027MY)

50F tests tested for all Test Groups

Engine Information				Standards				Test Results									
Original Test Group	Engine designation	Vehicle ID / Version	Odom		HCHO	CO	NMOG+NOx	Test Date	Test no	HC	NMHC	NMOG	NMOG+NOx	HCHO	CO	NOx	CO2
VVVXT02.0P34	B4204TH	202701 V00	8069	LEV III SULEV30	0.008	1.0	0.060	03 05 2026	VVVX10093504	0.007	0.0058	0.0064	0.0094	n.a*	0.26	0.003	366

* See statement in section 08.01 Common application

VOLVO

S 17.07 California Compliance Statements & summary information.

Test Group: VVVXT02.0P34

Certification Standard and Summary Matrix:

Engine Code Type:	50S
Exhaust Standard:	LEV III - SULEV30
Exhaust Useful Life:	150K
EVAP Useful Life:	150K
Fuel Type:	Gasoline
Exhaust Emission Test Fuel:	California LEV IV E10 Gasoline
EVAP Test Procedure:	California
EVAP Emission Standard:	LEV III

FTP Emission Standards Statement:

Volvo's Light-Duty Trucks in 2027 MY Test Group VVVXT02.0P34 are certified and comply with the applicable LEV III SULEV30 FTP standards and test procedure.

SFTP Emission Standards Statement:

It is Volvo Car Corporation's intent to certify the Light-Duty Trucks in 2027 MY Test Group VVVXT02.0P34 to the applicable LEVIII SFTP NMOG+NOx and CO composite standards set forth in California Exhaust Emission Standards Section E.1.2.2.1.2.

Evaporative Emission Standards Statement:

Evaporative Families VVVXR0142EP6:

Volvo's Light-Duty Trucks in 2027 MY Test Group VVVXT02.0P34 are certified and comply with the evaporative emission standards LEV III set forth in California Evaporative Emission Standards Section E.1(e)(i)(B) including Canister Bleed Emission Standards (option 2). Volvo choose to use fleet average option.

For 2012 and subsequent model-year off-vehicle charge capable hybrid electric vehicles that are equipped with non-integrated refueling canister-only systems, Part III Section D.8.2.5 California Evaporative Emission Standards and Test Procedures for 2001 and subsequent model motor vehicles, requires a manufacturer to demonstrate in either a separate test or an engineering evaluation, that vapor would not be vented to the atmosphere if the fuel fill pipe cap was removed at the end of the test.
Volvos design of the fuel system in an off-vehicle charge capable hybrid electric vehicle includes a non-vented fuel tank regulated by a Fuel Tank Isolation Valve (FTIV). When pressing the "open tank lid" button on the dashboard, the FTIV opens and allows any remaining pressure in the fuel tank to be ventilated through the canister. Only when the tank pressure is close to zero, the fuel lid is unlocked and refueling can start.

VOLVO

Emission Control Device Statement

In accordance with **CFR Section 86.1823 Durability Demonstration Procedures For Exhaust Emissions,** Volvo states that at the time of certification, based on good engineering judgment and available information, the emission control devices on our vehicles are durable and are designed and will be manufactured to operate properly and in compliance with all applicable requirements for the full useful life or allowable maintenance interval of the vehicles.

All vehicles tested for certification shall be, in all material respects, substantially the same as production vehicles.

Environmental Performance Label Information:

Volvo applies new EPA label in lieu of the CA EP label.

VECI label durability statement (40 CFR 86.1807(a)(2)):

The label shall be affixed by the vehicle manufacturer who has been issued the Certificate of Conformity for such vehicle, in such manner that it cannot be removed without destroying or defacing the label. The label shall not be affixed to any equipment which is easily detached from such vehicle.

Evaporative Emissions – 2 Day

In accordance with California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles, amended September 2, 2015, and the incorporated CFR 40 Subsection 86.1824-01 (c), Volvo Cars states that, based on our good engineering judgment and demonstration test results, all 2027 model year Volvo test groups being certified, comply with California's 2-Day evaporative emission standard.

Classification of ZEVs.

Test Group: VVVXT02.0P34

Vehicles in this Test Group do not contain any ZEV vehicles.

VOLVO

California Supplementary Questions:

1. Do the test and production vehicles have a defeat device?

- No, Volvo Cars never has and never will fit any device to its vehicles that manipulates emission performance during emission tests.
- Please see reference in section 08.01 “Statement of Compliance”.
  “Volvo Car Corporation certifies that all 2027MY Test Groups are free of defeat devices and strategies”

2. Have all AECDs been declared and described in the application?

- Yes, please see Sections 11 “AECD Description”

3. Do the test and production vehicles have alternate maps?

- Yes, there are alternative maps. Please see Section 11.05 “California Alternative Maps Calibration Description”.

4. Is the transmission part of any AECD, for example, by receiving outputs from the ECU or providing inputs to the ECU, in any emission control strategy, for example, engine and/or catalyst warm-up

- For the transmission, and as stated and described under sections 11, 12.01 and 12.09 of our application for certification, Transmission Description and Drive mode Description describes the default mode of operation. No other AECD operations are stated and/or used.

5. Does the transmission behave and perform the same as, or differently than, while on road versus on a dynamometer? Please explain any differences

- Please note that the transmission behaves the same on-road and on the dynamometer.

Certification review sheet

Model Year	Test Group	Vehicle Class(es)	Fuel Category	Fuel Type
2027	VVVXT02.0P34	LDT2, LDT4	Plug-in Hybrid Electric Vehicle	Gasoline

Useful Life		Vehicle Emission Category		Interim / Intermmediate In-Use STD	
Exh/ORVR	EVAP	FTP	SFTP	FTP	SFTP
150000	150000	LEV III Sulev30	LEVIII Composite	*	*

Exhaust Emission Control system	OBD status		Engine displacement
DFI, TC, CAC, 2HO2S, WR-HO2S, TWC	Full	TBD	2.0
	Partial	TBD	
	Partial With fines	TBD	

EVAP/ORVR Family	EVAP STD Category	EVAP STD Class	Special Features
VVVXR0142EP6	LEV III Option2 With FEL	LDT2	*

NMOG+NOx Fleet AVE.Credit For Extended	NMOG Credit for Non-PZEV Zero Evap	EVAP STD Class	Special Features
N	N	N	N

NMOG RAF	CH4 RAF	FTP NMOG/NMHC Ratio	HCHO/NMHC Ratio	NMOG+NOx Fleet STD PC	NMOG+NOx Fleet STD LDT
*	*	1.10	*	*	*

FTP		NMOG+NOx (g/mi)		CO (g/mi)		NOx (g/mi)		HCHO (mg/mi)		PM (g/mi)	
	Fuel	CERT	STD	CERT	STD	CERT	STD	CERT	STD	CERT	STD
FTP@UL	LEV4 E10 Prem	0.0164	0.030	0.30	1.0	*	*	*	4	0.0003	0.001
50F@UL	LEV4 E10 Prem	0.0094	0.060	0.26	1.0	*	*	*	8		

HWFET + 20F		NMOG+NOx (g/mi)		CO (g/mi)	
	Fuel	CERT	STD	CERT	STD
HWY@UL	LEV4 E10 Prem	0.0083	0.030		
20F@UL	Cold CO E10 PREM (TIER3)			0.50	12.5

SFTP			US06			SC03		Composite		
	Fuel		NMOG+NOx (g/mi)	CO (g/mi)	PM (mg/mi)	NMOG+NOx (g/mi)	CO (g/mi)	NMOG+NOx (g/mi)	CO (g/mi)	PM (mg/mi)
4K	*	Cert	*	*		*	*			
		STD	*	*		*	*			
UL	LEV4 E10 Prem	CERT	*	*	2.6	*	*	0.0135	0.38	*
		STD	*	*	6	*	*	0.050	4.2	*
		BIN						0.050		

		3DHS (g/test) / UL			2DHS (g/test) / UL			RL (g/test) / UL	
EVAP Family	Fuel	CERT	STD	FEL	CERT	STD	FEL	CERT	STD
VVVXR0142EP6	LEV4 E10 Prem	0.2546	0.400	0.400	0.1863	0.400	0.400	0	0.05

		ORVR (g/gallon) / UL		Bleed Canister Test	
EVAP Family	Fuel	CERT	STD	CERT	STD
VVVXR0142EP6	TIER3 E10 Prem	0.006	0.20	*	*

EVAP Family	Leak Family	CERT	STD
VVVXR0142EP6	VVVXR0142EP6-001	*	0.02

Make	Model	Veh Class	Engine	Trans Type	Evaporative Family	EXH ECS	OBD
Volvo	XC60 T8 AWD	LDT2	2.0	SA8	VVVXR0142EP6	1	Full
Volvo	XC90 T8 AWD	LDT4	2.0	SA8	VVVXR0142EP6	1	Full