

Air Pollution Control Division (APCD) - Construction Permit Application

PLEASE READ INSTRUCTIONS ON REVERSE SIDE.

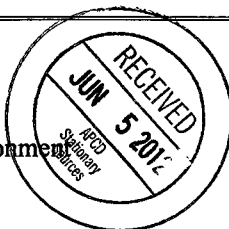
1. Permit to be issued to:	American Honda Motor Co., Inc.		
2. Mailing Address:	American Honda Motor Co., Inc.		
	1919 Torrance Boulevard		
	Torrance, California 90501		
3. General Nature of Business:	Data Center		
SIC code (if known)	5013		
4. Air Pollution Source Description:	Standby Generator emission		
(List permit numbers if existing source, attach additional pages if needed)			Is this a Portable Unit? <u>No</u>
5. Source Location Address (Include Location Map)	If portable, include the initial location and home base location		
	2501 Clover Basin Drive		
	Longmont, Colorado 80503		
6. Reason for Application: (Check all that apply)			
☒ New or Previously Unreported Source	<i>Administrative Permit Amendments</i>		
☐ Modification of Existing Source	☐	Transfer of Ownership (Complete Section 9 & 10 below)	
☐ Request for Synthetic Minor Permit	☐	Company Name Change (Complete Section 9 below)	
☐ Other: _____	☐	Other: _____	
7. Projected Startup Date:	<u>September 2007</u>		
Signature of Legally Authorized Person of Company listed in Section 1		Date Signed	
Garth Sellers Manager		Phone: 310-783-2056	
Type or Print Name and Official Title of Person Signing Above		Fax: 310-783-2088	
8. Check appropriate box if you want:			
☐ Copy of preliminary analysis conducted by Division			
☐ To review a draft of the permit prior to issuance			

These sections are to be completed only if a company name change or transfer of ownership has occurred.

9. Permit previously issued to:	_____		
10. Transfer of Ownership Information			
Effective Date of Permit Transfer:	_____		
As responsible party for the emission source(s) listed above, I certify that the business associated with this source has been sold, and agree to transfer the permit to said party.			
Signature of Legally Authorized Person of Company listed in Section 9		Date Signed	
_____		Phone: _____	
Type or Print Name and Official Title of Person Signing Above		Fax: _____	

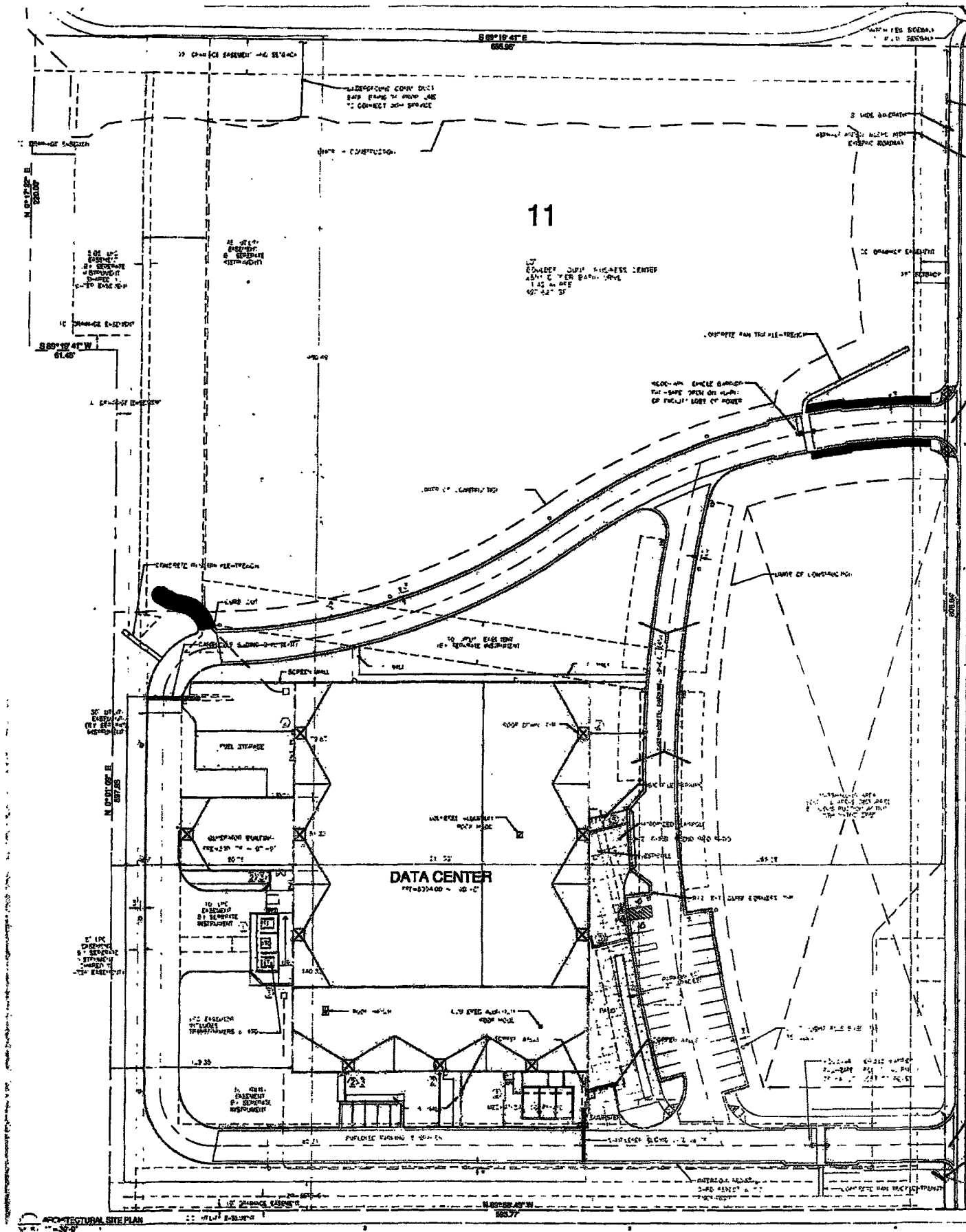
Mail completed application, APENs, and filing fee to:

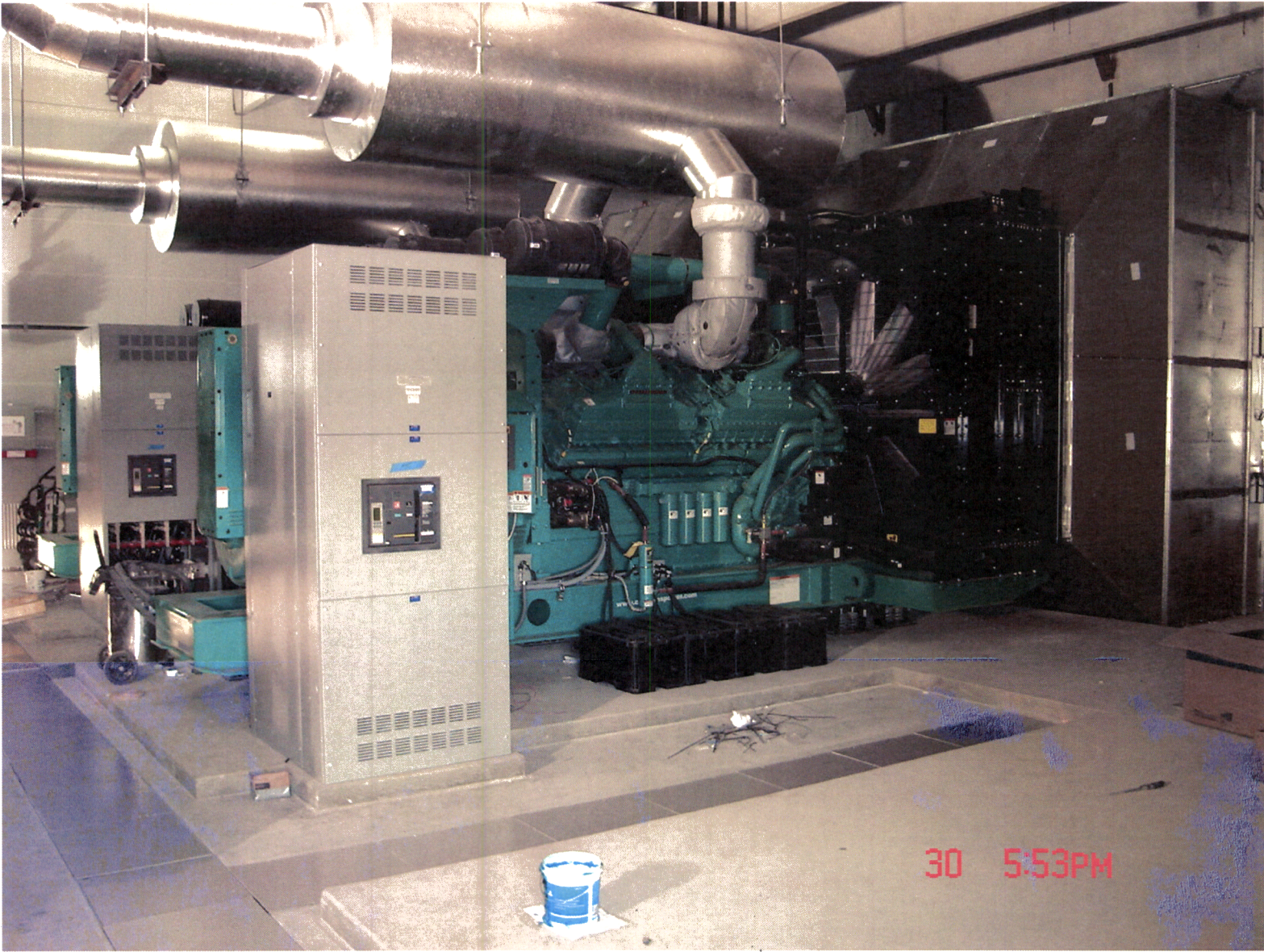
Colorado Department of Public Health and Environment
Air Pollution Control Division
4300 Cherry Creek Drive South, APCD-SS-B1
Denver, Colorado 80246-1530



<http://www.cdphe.state.co.us/ap/stationary.html>
Phone: (303) 692-3150

Revised August 2004







**Power
Generation**

Exhaust Emission Data Sheet 2000DQKAB* 60 Hz Diesel Generator Set

Engine Information:

Model:	Cummins Inc QSK60-G6 NR2	Bore:	6.25 in. (158 mm)
Type:	4 Cycle, 60°V, 16 Cylinder Diesel	Stroke:	7.48 in. (189 mm)
Aspiration:	Turbocharged and Low Temperature Air Aftercooled	Displacement:	3673 cu. in. (60.1 liters)
Compression Ratio:	14.5:1		
Emission Control Device:	Turbocharged and Low Temperature Aftercooled		

	1/4	1/2	3/4	Full	Full
PERFORMANCE DATA	Standby	Standby	Standby	Standby	Prime
BHP @ 1800 RPM (60 Hz)	730	1460	2189	2919	2639
Fuel Consumption (gal/Hr)	46.5	82	107.3	141.3	124.1
Exhaust Gas Flow (CFM)	6510	10220	12000	14920	13780
Exhaust Gas Temperature (°F)	772	838	873	893	884
EXHAUST EMISSION DATA					
HC (Total Unburned Hydrocarbons)	0.22	0.13	0.10	0.11	0.09
NOx (Oxides of Nitrogen as NO2)	2.70	3.10	4.70	5.30	6.00
CO (carbon Monoxide)	0.57	0.36	0.13	0.18	0.16
PM (Particular Matter)	0.16	0.14	0.04	0.04	0.02
SO2 (Sulfur Dioxide)	0.14	0.13	0.11	0.11	0.11
Smoke (Bosch)	0.50	0.60	0.20	0.20	0.10

All values are Grams per HP-Hour, Smoke is Bosch#

TEST CONDITIONS

Data is representative of steady-state engine speed (± 25 RPM) at designated genset loads. Pressures, temperatures, and emission rates were stabilized.

Fuel Specification:	ASTM D975 No. 2-D diesel fuel with 0.03-0.05% sulfur content (by weight), and 40-48 cetane number.
Fuel Temperature:	99 $\pm$ 9 °F (at fuel pump inlet)
Intake Air Temperature:	77 $\pm$ 9 °F
Barometric Pressure:	29.6 $\pm$ 1 in. Hg
Humidity:	NOx measurement corrected to 75 grains H2O/lb dry air
Reference Standard:	ISO 8178

The NOx, HC, CO and PM emission data tabulated here are representative of test data taken from a single engine under the test conditions shown above. Data for the other components are estimated. These data are subjected to instrumentation and engine-to-engine variability. Field emission test data are not guaranteed to these levels. Actual field test results may vary due to test site conditions, installation, fuel specification, test procedures and instrumentation. Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.



**Power
Generation**

**EPA Tier 2 Exhaust Emission
Compliance Statement
2000DQKAB
60 Hz Diesel Generator Set**

Compliance Information:

The engine used in this generator set complies with the Tier 2 emissions limits of U.S EPA New Source Performance Standards for Stationary Emergency engines under the provisions of 40 CFR 60 Subpart IIII when tested per ISO 8178 D2.

Engine Manufacturer:	Cummins Inc
EPA Certificate Number:	CEX-STATCI-11-06
Effective Date:	06/08/2010
Date Issued:	06/08/2010
EPA Diesel Engine Family:	BCEXL060.AAD
CARB Executive Order:	

Engine Information:

Model:	Cummins Inc QSK60-G6 NR2	Bore:	6.25 in. (159 mm)
Engine Nameplate HP:	2922		
Type:	4 Cycle, 60°V, 16 Cylinder Diesel	Stroke:	7.48 in. (190 mm)
Aspiration:	Turbocharged and Low Temperature Aftercooled	Displacement:	3673 cu. in. (60.2 liters)
Compression Ratio:	14.5:1		
Emission Control Device:	Turbocharged and Low Temperature Aftercooled		

U.S. Environmental Protection Agency NSPS Stationary Emergency Tier 2 Limits

(All values are Grams per HP-Hour)

<u>COMPONENT</u>	
NOx + HC (Oxides of Nitrogen as NO2 + Non Methane Hydrocarbons)	4.77
CO (Carbon Monoxide)	2.61
PM (Particulate Matter)	0.15

Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.

Model: DQKAB
Frequency: 60
Fuel type: Diesel
KW rating: 2000 standby
1825 prime

Emissions level: EPA NSPS Stationary Emergency Tier 2

> **Generator set data sheet**

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Exhaust emission data sheet:	EDS-1065
Exhaust emission compliance sheet:	EPA-1099
Sound performance data sheet:	
Cooling performance data sheet:	MCP-158
Prototype test summary data sheet:	PTS-267
Standard set-mounted radiator cooling outline:	0500-4392
Optional set-mounted radiator cooling outline:	0500-4780
Optional heat exchanger cooling outline:	
Optional remote radiator cooling outline:	0500-4393

Fuel consumption	Standby				Prime				Continuous
	kW (kVA)				kW (kVA)				kW (kVA)
Ratings	2000 (2500)				1825 (2281)				
Load	1/4	1/2	3/4	Full	1/4	1/2	3/4	Full	Full
US gph	46.5	82	107.3	141.3	43.4	75.1	100.6	124.1	
L/hr	176	311	407	535	164	285	381	470	

Engine	Standby rating	Prime rating	Continuous rating
Engine manufacturer	Cummins Inc.		
Engine model	QSK60-G6 NR2		
Configuration	Cast iron, V 16 cylinder		
Aspiration	Turbocharged and low temperature aftercooled		
Gross engine power output, kWm (bhp)	2179 (2922)	1975 (2647)	
BMEP at set rated load, kPa (psi)	2420 (350)	2185 (316)	
Bore, mm (in)	159 (6.25)		
Stroke, mm (in)	190 (7.48)		
Rated speed, rpm	1800		
Piston speed, m/s (ft/min)	11.4 (2244)		
Compression ratio	14.5:1		
Lube oil capacity, L (qt)	334 (304)		
Overspeed limit, rpm	2100 ±50		
Regenerative power, kW	168		

Fuel flow		
Maximum fuel flow, L/hr (US gph)	946 (250)	
Maximum fuel inlet restriction, kPa (in Hg)	30 (9.0)	
Maximum fuel inlet temperature, °C (°F)	71 (160)	

Air	Standby rating	Prime rating	Continuous rating
Combustion air, m ³ /min (scfm)	178 (6295)	159 (5615)	
Maximum air cleaner restriction, kPa (in H ₂ O)	6.2 (25)		
Alternator cooling air, m ³ /min (cfm)	204 (7300)		

Exhaust

Exhaust flow at set rated load, m ³ /min (cfm)	436 (15385)	385 (13580)	
Exhaust temperature, °C (°F)	488 (900)	466 (870)	
Maximum back pressure, kPa (in H ₂ O)	6.8 (27)		

Standard set-mounted radiator cooling

Ambient design, °C (°F)	40 (104)		
Fan load, kW _a (HP)	57 (77)		
Coolant capacity (with radiator), L (US gal)	492 (130)		
Cooling system air flow, m ³ /min (scfm)	1922 (67870)		
Total heat rejection, MJ/min (Btu/min)	99.5 (94395)	91.0 (86382)	
Maximum cooling air flow static restriction, kPa (in H ₂ O)	0.12 (0.5)		
Maximum fuel return line restriction kPa (in Hg)	30 (9.0)		

Optional set-mounted radiator cooling

Ambient design, °C (°F)	50 (122)		
Fan load, kW _a (HP)	57 (77)		
Coolant capacity (with radiator), L (US gal)	617 (163)		
Cooling system air flow, m ³ /min (scfm)	2795 (98700)		
Total heat rejection, MJ/min (Btu/min)	99.5 (94395)	91 (86382)	
Maximum cooling air flow static restriction, kPa (in H ₂ O)	0.12 (0.5)		
Maximum fuel return line restriction, kPa (in Hg)	30 (9.0)		

Optional heat exchanger cooling

Set coolant capacity, L (US gal)			
Heat rejected, jacket water circuit, MJ/min (Btu/min)			
Heat rejected, aftercooler circuit, MJ/min (Btu/min)			
Heat rejected, fuel circuit, MJ/min (Btu/min)			
Total heat radiated to room, MJ/min (Btu/min)			
Maximum raw water pressure, jacket water circuit, kPa (psi)			
Maximum raw water pressure, aftercooler circuit, kPa (psi)			
Maximum raw water pressure, fuel circuit, kPa (psi)			
Maximum raw water flow, jacket water circuit, L/min (US gal/min)			
Maximum raw water flow, aftercooler circuit, L/min (US gal/min)			
Maximum raw water flow, fuel circuit, L/min (US gal/min)			
Minimum raw water flow at 27 °C (80 °F) inlet temp, jacket water circuit, L/min (US gal/min)			
Minimum raw water flow at 27 °C (80 °F) inlet temp, aftercooler circuit, L/min (US gal/min)			
Minimum raw water flow at 27 °C (80 °F) inlet temp, fuel circuit, L/min (US gal/min)			
Raw water delta P at min flow, jacket water circuit, kPa (psi)			
Raw water delta P at min flow, aftercooler circuit, kPa (psi)			
Raw water delta P at min flow, fuel circuit, kPa (psi)			
Maximum jacket water outlet temp, °C (°F)			
Maximum aftercooler inlet temp, °C (°F)			
Maximum aftercooler inlet temp at 25 °C (77 °F) ambient, °C (°F)			
Maximum fuel return line restriction, kPa (in Hg)			

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Optional remote radiator cooling ¹	Standby rating	Prime rating	Continuous rating
Set coolant capacity, L (USg gal)			
Max flow rate at max friction head, jacket water circuit, L/min (US gal/min)	1902 (502)		
Max flow rate at max friction head, aftercooler circuit, L/min (US gal/min)	606 (160)		
Heat rejected, jacket water circuit, MJ/min (Btu/min)	46.9 (44526)	44.1 (41824)	
Heat rejected, aftercooler circuit, MJ/min (Btu/min)	33.9 (32156)	30.4 (28887)	
Heat rejected, fuel circuit, MJ/min (Btu/min)			
Total heat radiated to room, MJ/min (Btu/min)	18.7 (17713)	16.5 (15671)	
Maximum friction head, jacket water circuit, kPa (psi)	69 (10)		
Maximum friction head, aftercooler circuit, kPa (psi)	48 (7)		
Maximum static head, jacket water circuit, m (ft)	18 (60)		
Maximum static head, aftercooler circuit, m (ft)	18 (60)		
Maximum jacket water outlet temp, °C (°F)	104 (220)	100 (212)	
Maximum aftercooler inlet temp at 25 °C (77 °F) ambient, °C (°F)	49 (120)		
Maximum aftercooler inlet temp, °C (°F)	66 (150)		
Maximum fuel flow, L/hr (US gph)			
Maximum fuel return line restriction, kPa (in Hg)	30 (9.0)		

Weights²

Unit dry weight kgs (lbs)	14628 (32249)
Unit wet weight kgs (lbs)	15155 (33410)

Notes:

¹ For non-standard remote installations contact your local Cummins Power Generation representative.

² Weights represent a set with standard features. See outline drawing for weights of other configurations.

Derating factors

Standby	Engine power available up to 447 m (1466 ft) at ambient temperatures up to 40 °C (104 °F). From 447 m (1466 ft) up to 2001 m (6562 ft) engine derates at 5.1% per 305 m (1000 ft) for 40 °C (104 °F). Above these elevations, derate an additional 5.8% per 305 m (1000 ft). For temperatures from 40 °C (104 °F) to 50 °C (122 °F) derate 14.6%. For temperatures above 50 °C (122 °F) derate 29% per 10 °C (50 °F).
Prime	Engine power available up to 447 m (1466 ft) at ambient temperatures up to 40 °C (104 °F). From 447 m (1466 ft) up to 2001 m (6562 ft) engine derates at 5.1% per 305 m (1000 ft) for 40 °C (104 °F). Above these elevations, derate an additional 5.8% per 305 m (1000 ft). For temperatures from 40 °C (104 °F) to 50 °C (122 °F) derate 14.6%. For temperatures above 50 °C (122 °F) derate 29% per 10 °C (50 °F).
Continuous	

Ratings definitions

Emergency standby power (ESP):	Limited-time running power (LTP):	Prime power (PRP):	Base load (continuous) power (COP):
Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.	Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) is in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.

Alternator data²

Voltage	Connection ¹	Temp rise degrees C	Duty ²	Single phase factor ³	Max surge kVA ⁴	Winding No.	Alternator data sheet	Feature Code
380	Wye, 3-phase	150/125/105	S/P/C		7327	13	ADS-515	B595
380	Wye, 3-phase	125/105/80	S/P/C		7327	13	ADS-515	B598
380	Wye, 3-phase	105/80	S/P		7327	13	ADS-515	B599
380	Wye, 3-phase	80	S		7963	13	ADS-516	B660
440	Wye, 3-phase	125/105/80	S/P/C		7361	312	ADS-334	B663
440	Wye, 3-phase	105	S		7284	12	ADS-515	B665
480	Wye, 3-phase	125/105/80	S/P/C		7361	312	ADS-334	B462
480	Wye, 3-phase	105/80	S/P		7695	312	ADS-335	B463
480	Wye, 3-phase	125/105	P/C		6716	312	ADS-332	B464
480	Wye, 3-phase	80	S		8412	12	ADS-516	B601
480	Wye, 3-phase	80	P		8412	12	ADS-516	B694
480	Wye, 3-phase	105	S		7695	12	ADS-517	B796
600	Wye, 3-phase	125/105/80	S/P/C		7361	07	ADS-334	B465
600	Wye, 3-phase	105/80	S/P		7695	07	ADS-335	B301
600	Wye, 3-phase	125/105	P/C		6716	07	ADS-333	B466
600	Wye, 3-phase	80	S		7265	07	ADS-516	B604
4160	Wye, 3-phase	125/105/80	S/P/C		6307	51	ADS-518	B467
4160	Wye, 3-phase	105/80	S/P		6307	51	ADS-518	B313
4160	Wye, 3-phase	80	S		6307	51	ADS-518	B605
4160	Wye, 3-phase	105	S		6307	51	ADS-520	B795
12470-13800	Wye, 3-phase	125/105/80	S/P/C		6062	91	ADS-521	B448
12470	Wye, 3-phase	105/80	S/P		6038	87	ADS-521	B567
13200-13800	Wye, 3-phase	105/80	S/P		6062	91	ADS-521	B612
12470	Wye, 3-phase	80	S		6685	87	ADS-522	B607
13200-13800	Wye, 3-phase	80	S		8012	91	ADS-523	B628
13800	Wye, 3-phase	80	S		6833	91	ADS-521	B610
13800	Wye, 3-phase	105	S		6062	91	ADS-523	B797

Notes:

¹ Limited single phase capability is available from some three phase rated configurations. To obtain single phase rating, multiply the three phase kW rating by the Single Phase Factor³. All single phase ratings are at unity power factor.

² Standby (S), Prime (P) and Continuous ratings (C).

³ Factor for the *Single Phase Output from Three Phase Alternator* formula listed below.

⁴ Maximum rated starting kVA that results in a minimum of 90% of rated sustained voltage during starting.

Formulas for calculating full load currents:

Three phase output

$$\frac{\text{kW} \times 1000}{\text{Voltage} \times 1.73 \times 0.8}$$

Single phase output

$$\frac{\text{kW} \times \text{SinglePhaseFactor} \times 1000}{\text{Voltage}}$$

Cummins Power Generation

1400 73rd Avenue N.E.
Minneapolis, MN 55432 USA
Phone: 763 574 5000
Fax: 763 574 5298

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

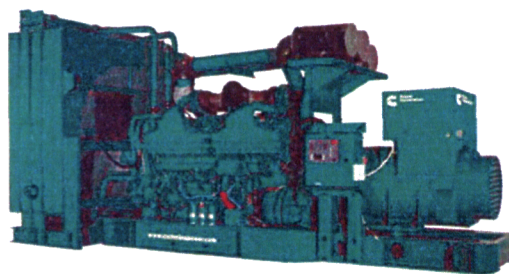
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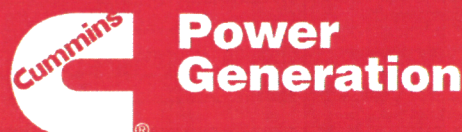


Diesel generator set QSK60 series engine



> **Specification sheet**
1600 kW - 2000 kW 60 Hz

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Description

Cummins Power Generation commercial generator sets are fully integrated power generation systems providing optimum performance, reliability and versatility for stationary standby and prime power applications. Codes or standards compliance may not be available with all model configurations – consult factory for availability.



This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.



The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design. Cummins Power Generation products bearing the PTS symbol meet the prototype test requirements of NFPA 110 for Level 1 systems.



All low voltage models are CSA certified to product class 4215-01.



The generator set is available listed to UL 2200, Stationary Engine Generator Assemblies for all 60 Hz low voltage models. The PowerCommand control is Listed to UL 508 - Category NITW7 for U.S. and Canadian usage. Circuit breaker assemblies are UL 489 Listed for 100% continuous operation and also UL 869A Listed Service Equipment.

U.S. EPA

Engine certified to Stationary Emergency U.S. EPA New Source Performance Standards, 40 CFR 60 subpart IIII Tier 2 exhaust emission levels. U.S. applications must be applied per this EPA regulation.

International Building Code

The generator set package is available certified for seismic application in accordance with the following International Building Code: IBC2000, IBC2003, IBC2006 and IBC2009.

Features

Cummins® heavy-duty engine - Rugged 4-cycle, industrial diesel delivers reliable power, low emissions and fast response to load changes.

Alternator - Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings, low waveform distortion with non-linear loads and fault clearing short-circuit capability.

Permanent magnet generator (PMG) - Offers enhanced motor starting and fault clearing short-circuit capability.

Control system - The PowerCommand® electronic control is standard equipment and provides total genset system integration including automatic remote starting/stopping, precise frequency and voltage regulation, alarm and status message display, AmpSentry™ protection, output metering, auto-shutdown at fault detection and NFPA 110 Level 1 compliance.

Cooling system - Standard integral set-mounted radiator system, designed and tested for rated ambient temperatures, simplifies facility design requirements for rejected heat.

NFPA - The genset accepts full rated load in a single step in accordance with NFPA 110 for Level 1 systems.

Warranty and service - Backed by a comprehensive warranty and worldwide distributor network.

Model	Standby rating		Prime rating		Continuous rating		Data sheets	
	60 Hz kW (kVA)	50 Hz kW (kVA)	60 Hz kW (kVA)	50 Hz kW (kVA)	60 Hz kW (kVA)	50 Hz kW (kVA)	60 Hz	50 Hz
DQKAA	1750 (2188)		1600 (2000)				D-3335	
DQKAB	2000 (2500)		1825 (2281)				D-3336	

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S-1514g (6/11)

Generator set specifications

Governor regulation class	ISO8528 Part 1 Class G3
Voltage regulation, no load to full load	± 0.5%
Random voltage variation	± 0.5%
Frequency regulation	Isochronous
Random frequency variation	± 0.25%
Radio frequency emissions compliance	IEC 801.2 through IEC 801.5; MIL STD 461C, Part 9

Engine specifications

Bore	158.8 mm (6.25 in)
Stroke	190.0 mm (7.48 in)
Displacement	60.2 litres (3673 in ³)
Configuration	Cast iron, V 16 cylinder
Battery capacity	2200 amps minimum at ambient temperature of -18 °C to 0 °C (0 °F to 32 °F)
Battery charging alternator	40 amps
Starting voltage	24 volt, negative ground
Fuel system	Cummins' Modular Common Rail System
Fuel filter	Dual element, 10 micron filtration, spin-on fuel filters with 15 micron water separator
Air cleaner type	Dry replaceable element
Lube oil filter type(s)	Four spin-on, combination full flow filter and bypass filters
Standard cooling system	High ambient radiator

Alternator specifications

Design	Brushless, 4 pole, drip proof revolving field
Stator	2/3 pitch
Rotor	Single bearing, flexible discs
Insulation system	Class H on low and medium voltage, Class F on high voltage
Standard temperature rise	150 °C standby at 40 °C ambient
Exciter type	PMG (permanent magnet generator)
Phase rotation	A (U), B (V), C (W)
Alternator cooling	Direct drive centrifugal blower fan
AC waveform total harmonic distortion	< 5% no load to full linear load, < 3% for any single harmonic
Telephone influence factor (TIF)	< 50 per NEMA MG1-22.43
Telephone harmonic factor (THF)	< 3

Available voltages

60 Hz line-neutral/line-line				50 Hz line-neutral/line-line			
• 219/380	• 277/480	• 2400/4160	• 7620/13200	• 220/380	• 240/415	• 1905/3300	• 3810/6600
• 254/440	• 347/600	• 7200/12470	• 7970/13800	• 230/400	• 254/440	• 3640/6300	• 6350/11000

* Note: Consult factory for other voltages.

Generator set options and accessories

Engine ☐ 208/240/480 V coolant heater for ambient above 4.5 °C (40 °F) ☐ 208/240/480 V coolant heater for ambient below 4.5 °C (40 °F)	Alternator ☐ 80 °C rise ☐ 105 °C rise ☐ 125 °C rise ☐ 120/240 V 300 W anti-condensation heater ☐ Temperature sensor - RTDs, 2/phase ☐ Temperature sensor - alternator bearing RTD ☐ Differential current transformers	Exhaust system ☐ Industrial grade exhaust silencer ☐ Residential grade exhaust silencer ☐ Critical grade exhaust silencer	☐ Battery rack with hold-down - floor standing ☐ Circuit breaker - set mounted ☐ Disconnect switch - set mounted ☐ PowerCommand Network ☐ Remote annunciator panel ☐ Spring isolators ☐ 2 year warranty ☐ 5 year warranty ☐ 10 year major components warranty
Control panel ☐ 120/240 V 100 W control anti-condensation heater ☐ Paralleling configuration ☐ Remote fault signal package ☐ Run relay package		Cooling system ☐ Remote radiator	
		Generator set ☐ AC entrance box ☐ Battery	

* Note: Some options may not be available on all models - consult factory for availability.

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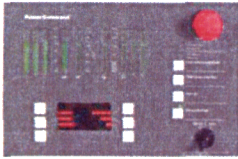
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**Power
Generation**

Control system PCC 3201



PowerCommand control is an integrated generator set control system providing governing, voltage regulation, engine protection and operator interface functions. Major features include:

- Integral AmpSentry™ Protective Relay providing a full range of alternator protection functions that are matched to the alternator provided.
- Battery monitoring and testing features and smart starting control system.
- Three phase sensing, full wave rectified voltage regulation system, with a PWM output for stable operation with all load types.
- Control suitable for operation in ambient temperatures from -40 °C to +70 °C (-40 °F to +158 °F) and altitudes to 5000 meters (13,000 feet).
- Prototype tested; UL, CSA, and CE compliant.
- InPower™ PC-based service tool available for detailed diagnostics.
- Optional Echelon® LONWORKS® network interface.

Operator/display panel

- Off/manual/auto mode switch
- Manual run/stop switch
- Panel lamp test switch
- Emergency stop switch
- Exercise switch
- Alpha-numeric display with pushbutton access for viewing engine and alternator data and providing setup, controls and adjustments
- LED lamps indicating not in auto, common warning, common shutdown, remote start
- Configurable for local language

Engine protection

- Overspeed shut down
- Low oil pressure warning and shut down
- High coolant temperature warning and shut down
- High oil temperature warning
- Low coolant level warning or shut down
- Low coolant temperature warning
- High and low battery voltage warning
- Weak battery warning
- Dead battery shut down
- Fail to start (overcrank) shut down
- Fail to crank shut down
- Redundant start disconnect
- Cranking lockout
- Sensor failure indication

Engine data

- DC voltage
- Lube oil pressure
- Coolant temperature
- Lube oil temperature
- Engine speed
- Engine ECM data

AmpSentry AC protection

- Over current and short-circuit shut down
- Over current warning
- Single and three phase fault regulation
- Over and under voltage shut down
- Over and under frequency shut down
- Overload warning with alarm contact
- Reverse power and reverse Var shut down

Alternator data

- Line-to-line and line-to-neutral AC volts
- Three phase AC current
- Frequency
- Total and individual phase power factor, kW and kVA
- Bus voltage and frequency (with paralleling options)

Other data

- Genset model data
- Start attempts, starts, running hours
- kW hours (total and since reset)
- Fault history
- Load profile (accessible with InPower)

Governing

- Digital electronic isochronous governor
- Temperature dynamic governing
- Smart idle speed mode

Voltage regulation

- Digital PWM electronic voltage regulation
- Three phase line-to-neutral sensing
- Single and three phase fault regulation
- Configurable torque matching

Control functions

- Data logging on faults
- Fault simulation (requires InPower)
- Time delay start and cooldown
- Cycle cranking
- Configurable customer outputs (4)
- Configurable network inputs (8) and outputs (16) (with optional network)
- Remote emergency stop

Paralleling (Option)

- Active digital phase lock loop synchronizer
- Isochronous kW and kVar load sharing controls
- kW import/export and kVar/PF control for utility (mains) paralleling

Options

- ☐ Thermostatically controlled space heater
- ☐ Key-type mode switch
- ☐ Ground fault module
- ☐ Auxiliary relays (3)
- ☐ Echelon LONWORKS interface
- ☐ Modion Gateway to convert to Modbus (loose)
- ☐ PowerCommand iWatch web server for remote monitoring and alarm notification (loose)
- ☐ Digital input and output module(s) (loose)
- ☐ Remote annunciator (loose)
- ☐ Paralleling
- ☐ Power transfer control

For further detail see document S-1444.

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Ratings definitions

Emergency standby power (ESP):

Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Limited-time running power (LTP):

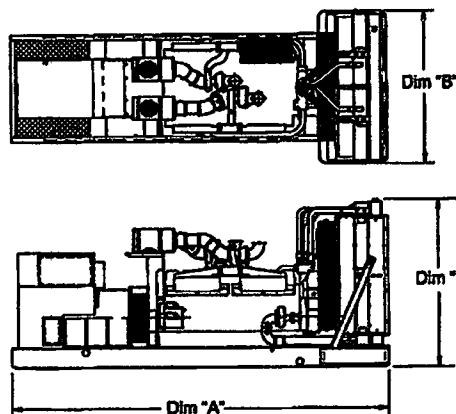
Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.

Prime power (PRP):

Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Base load (continuous) power (COP):

Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.



This outline drawing is for reference only. See respective model data sheet for specific model outline drawing number.

Do not use for installation design

Model	Dim "A" mm (in.)	Dim "B" mm (in.)	Dim "C" mm (in.)	Set Weight* dry kg (lbs)	Set Weight* wet kg (lbs)
DQKAA	6175 (243)	2534 (100)	3043 (120)	15231 (33569)	15398 (33932)
DQKAB	6175 (243)	2534 (100)	3043 (120)	17382 (38309)	17908 (39470)

* Note: Weights represent a set with standard features. See outline drawings for weights of other configurations.

Cummins Power Generation

1400 73rd Avenue N.E.
Minneapolis, MN 55432 USA
Telephone: 763 574 5000
Fax: 763 574 5298

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

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MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name	DIESEL FUELS
Revision date	08-11-2011
Version #	02
MSDS Number	102
Product use	Refinery feedstock.
Synonym(s)	Diesel Fuels All Grades, Diesel Fuel No.2, Fuel Oil No.2, High Sulfur Diesel Fuel, Low Sulfur Diesel Fuel, Ultra Low Sulfur Diesel Fuel, CARB (California Air Resource Board) Diesel Fuel, Off-Road Diesel Fuel, Dyed Diesel Fuel, X Grade Diesel Fuel, X-1 Diesel Fuel See section 16 for complete information.
Manufacturer/Supplier	Valero Marketing & Supply Company and Affiliates P.O. Box 696000 San Antonio, TX 78269-6000 General Assistance 210-346-4593
Emergency	24 Hour Emergency 866-565-5220 1-800-424-9300 (CHEMTREC USA)

2. Hazards Identification

Physical state	Liquid.
Appearance	Liquid (may be dyed red).
Emergency overview	DANGER! Combustible liquid and vapor. May be ignited by heat, sparks or flames. Heat may cause the containers to explode. Harmful if inhaled or swallowed. May be harmful if absorbed through skin. Aspiration may cause lung damage. Irritating to eyes, respiratory system and skin. In high concentrations, vapors and spray mists are narcotic and may cause headache, fatigue, dizziness and nausea. Suspect cancer hazard - may cause cancer. Prolonged exposure may cause chronic effects. Diesel exhaust has been reported to be an occupational hazard due to NIOSH-reported potential carcinogenic properties. Hydrogen sulfide, a highly toxic gas, may be present or released. Signs and symptoms of overexposure to hydrogen sulfide include respiratory and eye irritation, dizziness, nausea, coughing, a sensation of dryness and pain in the nose, and loss of consciousness. Odor does not provide a reliable indicator of the presence of hazardous levels in the atmosphere. Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.
OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects	
Routes of exposure	Inhalation, Ingestion, Skin contact, Eye contact.
Eyes	Contact may irritate or burn eyes. Eye contact may result in corneal injury.
Skin	May be harmful if absorbed through skin. Irritating to skin. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.
Inhalation	Harmful if inhaled. Irritating to respiratory system. In high concentrations, vapors and spray mists are narcotic and may cause headache, fatigue, dizziness and nausea. May cause breathing disorders and lung damage. May cause cancer by inhalation. Prolonged inhalation may be harmful.
Ingestion	Harmful if swallowed. Ingestion may result in vomiting; aspiration (breathing) of vomitus into lungs must be avoided as even small quantities may result in aspiration pneumonia. Irritating to mouth, throat, and stomach.
Target organs	Blood, Eyes, Liver, Respiratory system, Skin, Kidneys, Central nervous system.
Chronic effects	Suspect cancer hazard - may cause cancer. Liver injury may occur. Kidney injury may occur. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion and blurred vision) and/or damage. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.
Signs and symptoms	Irritation of nose and throat, Irritation of eyes and mucous membranes. Skin irritation. Unconsciousness. Corneal damage. Narcosis. Decrease in motor functions. Behavioral changes. Edema. Liver enlargement. Jaundice. Conjunctivitis. Proteinuria. Defatting of the skin. Rash.

DIESEL FUELS

3541

Version #: 02

Revision date: 08-11-2011

Print date: 08-11-2011

GPH MSDS NA

1 / 11

Prepared by 3E Company

Potential environmental effects Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Fuels, diesel	68334-30-5	85 - 100
Biodiesel - Fatty acid methyl esters	87762-38-3	0 - 10
n-Nonane	111-84-2	1 - 3
Octane (All isomers)	111-85-9	1 - 2
Hexane (Other isomers)	98-14-0	0 - 1
Naphthalene	91-20-3	0 - 1
n-Heptane	142-82-5	0 - 1
n-Hexane	110-54-3	0 - 1

4. First Aid Measures

First aid procedures

Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention.

Skin contact

Remove contaminated clothing and shoes. Wash off immediately with soap and plenty of water. Get medical attention if irritation develops or persists. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes. If high pressure injection under the skin occurs, always seek medical attention.

Inhalation

Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Ingestion

Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. Do not give mouth-to-mouth resuscitation. If vomiting occurs, keep head low so that stomach content does not get into the lungs. Get medical attention immediately.

Notes to physician

In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General advice

If exposed or concerned, get medical attention/advice. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before re-use.

5. Fire Fighting Measures

Flammable properties

Combustible by OSHA criteria. Containers may explode when heated.

Extinguishing media

Suitable extinguishing media

Water spray. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media

Do not use a solid water stream as it may scatter and spread fire.

Protection of firefighters

Protective equipment and precautions for firefighters

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Fire fighting equipment/instructions

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. In the event of fire, cool tanks with water spray. Cool containers exposed to flames with water until well after the fire is out. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Water runoff can cause environmental damage. Use compatible foam to minimize vapor generation as needed.

Specific methods

In the event of fire and/or explosion do not breathe fumes.

Hazardous combustion products

Carbon monoxide, Carbon Dioxide, Sulfur oxides, Nitrogen oxides (NOx), Hydrocarbons, Hydrogen sulfide.

6. Accidental Release Measures

Personal precautions

Keep unnecessary personnel away. Local authorities should be advised if significant spills cannot be contained. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. See Section 8 of the MSDS for Personal Protective Equipment.

Environmental precautions

If facility or operation has an "oil or hazardous substance contingency plan", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Flammable. Review Fire Fighting Measures, Section 5, before proceeding with clean up. Keep all sources of ignition (flames, smoking, flares, etc.) and hot surfaces away from release. Contain spill in smallest possible area. Recover as much product as possible (e.g. by vacuuming). Stop leak if it can be done without risk. Use water spray to disperse vapors. Use compatible foam to minimize vapor generation as needed. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 1-800-424-8802. For highway or railways spills, contact Chemtrec at 1-800-424-9300.

Methods for containment

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Local authorities should be advised if significant spillages cannot be contained. Stop leak if you can do so without risk. This material is a water pollutant and should be prevented from contaminating soil or from entering sewage and drainage systems and bodies of water. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas.

Methods for cleaning up

Use non-sparking tools and explosion-proof equipment.

Small Spills: Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. This material and its container must be disposed of as hazardous waste.

Large Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent product from entering drains. Do not allow material to contaminate ground water system. Should not be released into the environment.

Other information

Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling

Wear personal protective equipment. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Avoid prolonged exposure. Use only with adequate ventilation. Wash thoroughly after handling. The product is combustible, and heating may generate vapors which may form explosive vapor/air mixtures. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. When using, do not eat, drink or smoke. Avoid release to the environment.

Storage

Flammable liquid storage. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. The pressure in sealed containers can increase under the influence of heat. Keep container tightly closed in a cool, well-ventilated place. Keep away from food, drink and animal feedings. Keep out of the reach of children.

8. Exposure Controls / Personal Protection

Occupational exposure limits

U.S. ACGIH Threshold Limit Values

Components

Fuels, diesel (68334-30-5)

Type

TWA

Value

100 mg/m3

Form

Inhalable fraction and vapor.

Hexane (Other isomers) (58-14-0)

STEL

1000 ppm

Naphthalene (91-20-3)

TWA

500 ppm

STEL

10 ppm

TWA

15 ppm

n-Heptane (142-82-5)

TWA

400 ppm

STEL

500 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
n-Hexane (110-54-3)	TWA	50 ppm	
n-Nonane (111-84-2)	TWA	200 ppm	
Octane (All isomers) (111-65-9)	TWA	300 ppm	

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Naphthalene (91-20-3)	PEL	10 ppm 50 mg/m3
n-Heptane (142-82-5)	PEL	2000 mg/m3 500 ppm
n-Hexane (110-54-3)	PEL	1800 mg/m3 500 ppm
Octane (All isomers) (111-65-9)	PEL	2350 mg/m3 500 ppm

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value
Fuels, diesel (68334-30-5)	TWA	100 mg/m3
Hexane (Other isomers) (98-14-0)	STEL	1000 ppm
Naphthalene (91-20-3)	TWA	1760 mg/m3
	STEL	3500 mg/m3
	TWA	500 ppm
	TWA	10 ppm
	STEL	15 ppm
	TWA	52 mg/m3
n-Heptane (142-82-5)	STEL	79 mg/m3
	TWA	1640 mg/m3
n-Hexane (110-54-3)	STEL	2050 mg/m3
	TWA	400 ppm
	STEL	500 ppm
n-Nonane (111-84-2)	TWA	176 mg/m3 50 ppm
Octane (All isomers) (111-65-9)	TWA	1050 mg/m3
		200 ppm
		1400 mg/m3 300 ppm

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Fuels, diesel (68334-30-5)	TWA	100 mg/m3	Vapor and aerosol.
Hexane (Other isomers) (98-14-0)	TWA	200 ppm	
Naphthalene (91-20-3)	TWA	10 ppm	
	STEL	15 ppm	
n-Heptane (142-82-5)	TWA	400 ppm	
	STEL	500 ppm	
n-Hexane (110-54-3)	TWA	20 ppm	
n-Nonane (111-84-2)	TWA	200 ppm	
Octane (All isomers) (111-65-9)	TWA	300 ppm	

Canada. Ontario OELs. (Ministry of Labor - Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Fuels, diesel (68334-30-5)	TWA	100 mg/m3	Vapor and aerosol.
Hexane (Other isomers) (98-14-0)	STEL	1000 ppm	
	TWA	1760 mg/m3	

Canada. Ontario OELS. (Ministry of Labor - Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Naphthalene (91-20-3)	STEL	3520 mg/m3	
	TWA	500 ppm	
	TWA	10 ppm	
	STEL	15 ppm	
	TWA	52 mg/m3	
n-Heptane (142-82-5)	STEL	78 mg/m3	
	TWA	1835 mg/m3	
	STEL	2045 mg/m3	
	TWA	400 ppm	
	STEL	500 ppm	
n-Hexane (110-54-3)	TWA	176 mg/m3	
		50 ppm	
n-Nonane (111-84-2)	TWA	1050 mg/m3	
		200 ppm	
Octane (All isomers) (111-65-9)	TWA	1400 mg/m3	
	STEL	1750 mg/m3	
	TWA	300 ppm	
	STEL	375 ppm	

Canada. Quebec OELS. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value
Hexane (Other isomers) (98-14-0)	STEL	1000 ppm
	TWA	1760 mg/m3
Naphthalene (91-20-3)	STEL	3500 mg/m3
	TWA	500 ppm
	TWA	10 ppm
	STEL	15 ppm
	TWA	52 mg/m3
n-Heptane (142-82-5)	STEL	79 mg/m3
	TWA	1840 mg/m3
	STEL	2050 mg/m3
	TWA	400 ppm
n-Hexane (110-54-3)	STEL	500 ppm
	TWA	176 mg/m3
n-Nonane (111-84-2)		50 ppm
	TWA	1050 mg/m3
Octane (All isomers) (111-65-9)		200 ppm
	TWA	1400 mg/m3
	STEL	1750 mg/m3
	TWA	300 ppm
	STEL	375 ppm

Mexico. Occupational Exposure Limit Values

Components	Type	Value
Hexane (Other isomers) (98-14-0)	STEL	1000 ppm
	TWA	1760 mg/m3
Naphthalene (91-20-3)	STEL	3500 mg/m3
	TWA	500 ppm
	TWA	10 ppm
	STEL	15 ppm
	TWA	50 mg/m3
n-Heptane (142-82-5)	STEL	75 mg/m3
	TWA	1800 mg/m3
	STEL	2000 mg/m3
	TWA	400 ppm
n-Hexane (110-54-3)	STEL	500 ppm
	TWA	176 mg/m3
n-Nonane (111-84-2)		50 ppm
	TWA	1050 mg/m3
	STEL	1300 mg/m3

Mexico. Occupational Exposure Limit Values

Components	Type	Value
Octane (All isomers) (111-65-9)	TWA	200 ppm
	STEL	250 ppm
	TWA	1450 mg/m3
	STEL	1800 mg/m3
	TWA	300 ppm
	STEL	375 ppm

Engineering controls Provide adequate general and local exhaust ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment.

Personal protective equipment

Eye / face protection Wear safety glasses. If splash potential exists, wear full face shield or chemical goggles.

Skin protection Wear chemical-resistant, impervious gloves. Full body suit and boots are recommended when handling large volumes or in emergency situations. Flame retardant protective clothing is recommended.

Respiratory protection Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If workplace exposure limits for product or components are exceeded, NIOSH approved equipment should be worn. Proper respirator selection should be determined by adequately trained personnel, based on the contaminants, the degree of potential exposure and published respiratory protection factors. This equipment should be available for nonroutine and emergency use.

General hygiene considerations Consult supervisor for special handling instructions. Avoid contact with eyes. Avoid contact with skin. Keep away from food and drink. Wash hands before breaks and immediately after handling the product. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practice.

9. Physical & Chemical Properties

Appearance	Liquid (may be dyed red).
Color	Clear. Straw.
Odor	Kerosene (strong).
Odor threshold	Not available.
Physical state	Liquid.
Form	Liquid.
pH	Not available.
Melting point	Not available.
Freezing point	-60.1 °F (-51.15 °C) Estimated .
Boiling point	325 - 700 °F (162.78 - 371.11 °C)
Flash point	> 100 °F (> 37.8 °C) Closed Cup
Evaporation rate	0.02
Flammability limits in air, upper, % by volume	8 %
Flammability limits in air, lower, % by volume	0.4 %
Vapor pressure	< 1 mm Hg (20°C)
Vapor density	3 (Air = 1)
Specific gravity	0.82 - 0.87 (60°F)
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	495 °F (257.2 °C)
Decomposition temperature	Not available.
Viscosity	2 - 4.5 mm²/s

10. Chemical Stability & Reactivity Information

Chemical stability	Stable under normal temperature conditions and recommended use.
Conditions to avoid	Heat, flames and sparks. Ignition sources. Contact with incompatible materials. Do not pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat, flame, sparks, static electricity, or other sources of ignition; they may explode and cause injury or death.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Carbon oxides. Sulfur oxides. Nitrogen oxides (NOx). Hydrocarbons. Hydrogen sulfide.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

Components	Test Results
Octane (All isomers) (111-65-9)	Acute Inhalation LC50 Rat: 118 mg/l 4 Hours
n-Nonane (111-84-2)	Acute Inhalation LC50 Rat: 3200 mg/l 4 Hours
n-Heptane (142-82-5)	Acute Inhalation LC50 Rat: 103 mg/l 4 Hours
Naphthalene (91-20-3)	Acute Dermal LD50 Rabbit: > 2 g/kg Acute Oral LD50 Rat: 480 mg/kg

Acute effects	Harmful if inhaled, absorbed through skin, or swallowed. Harmful: may cause lung damage if swallowed. Irritating to eyes, respiratory system and skin. In high concentrations, vapors and spray mists are narcotic and may cause headache, fatigue, dizziness and nausea. Hydrogen sulfide, a highly toxic gas, may be present. Signs and symptoms of overexposure to hydrogen sulfide include respiratory and eye irritation, dizziness, nausea, coughing, a sensation of dryness and pain in the nose, and loss of consciousness. Odor does not provide a reliable indicator of the presence of hazardous levels in the atmosphere.
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Local effects

US ACGIH Threshold Limit Values: Skin designation

Fuels, diesel (CAS 68334-30-5)	Can be absorbed through the skin.
Naphthalene (CAS 91-20-3)	Can be absorbed through the skin.
n-Hexane (CAS 110-54-3)	Can be absorbed through the skin.

Sensitization	This substance may have a potential for sensitization which may provoke an allergic reaction among sensitive individuals.
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Chronic effects	Contains organic solvents which in case of overexposure may depress the central nervous system causing dizziness and intoxication. Repeated exposure to naphthalene may cause cataracts, allergic skin rashes, destruction of red blood cells, and anemia, jaundice, kidney and liver damage. Danger of serious damage to health by prolonged exposure. Prolonged or repeated overexposure may cause central nervous system, kidney, liver, and lung damage.
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Subchronic effects	Liver and kidney damage may occur after prolonged and repeated exposure.
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Carcinogenicity	Diesel exhaust has been reported to be an occupational hazard due to NIOSH-reported potential carcinogenic properties.
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ACGIH Carcinogens

Fuels, diesel (CAS 68334-30-5)	A3 Confirmed animal carcinogen with unknown relevance to humans.
Naphthalene (CAS 91-20-3)	A4 Not classifiable as a human carcinogen.

IARC Monographs: Overall Evaluation of Carcinogenicity

Naphthalene (CAS 91-20-3)	2B Possibly carcinogenic to humans.
---------------------------	-------------------------------------

US NTP Report on Carcinogens: Anticipated carcinogen:

Naphthalene (CAS 91-20-3)	Anticipated carcinogen.
---------------------------	-------------------------

Epidemiology	Studies have shown a risk of spontaneous abortions in women exposed to high concentrations of organic solvents during pregnancy. Pre-existing skin conditions including dermatitis might be aggravated by exposure to this product.
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Mutagenicity	No component of this product present at levels greater than or equal to 0.1% is identified as a mutagen by OSHA.
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Neurological effects

Chronic exposure to high concentrations of various hydrocarbon blends may lead to polyneuropathy (peripheral nerve damage), characterized by progressive weakness and numbness in the extremities, loss of deep tendon reflexes and reduction of motor nerve conduction velocity. Numerous cases of polyneuritis have been reported following prolonged exposures to a petroleum fraction containing various isomers of heptane as major ingredients. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue) and/or damage.

Reproductive effects

Naphthalene interferes with embryo development in experimental animals at dose levels that cause maternal toxicity. In humans, excessive exposure to this agent may cause hemolytic anemia in the mother and fetus.

Teratogenicity

The components of this product are not reported to cause teratogenic effects in humans. Based on best current information, there is no known teratogenicity associated with this product.

Further information

Symptoms may be delayed.

12. Ecological Information

Ecotoxicological data

Components

Test Results

n-Hexane (110-54-3)

LC50 Fathead minnow (*Pimephales promelas*): 2.101 - 2.981 mg/l 96 hours

n-Heptane (142-82-5)

LC50 Mozambique tilapia (*Tilapia mossambica*): 375 mg/l 96 hours

Naphthalene (91-20-3)

EC50 Water flea (*Daphnia magna*): 1.09 - 3.4 mg/l 48 hours
LC50 Rainbow trout, donaldson trout (*Oncorhynchus mykiss*): 0.91 - 2.82 mg/l 96 hours

Ecotoxicity

Contains a substance which causes risk of hazardous effects to the environment.

Environmental effects

The product contains a substance which is toxic to aquatic organisms and which may cause long-term adverse effects in the aquatic environment.

Aquatic toxicity

Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

Persistence and degradability

Not available.

Bioaccumulation / Accumulation

No data available.

Partition coefficient (n-octanol/water)

Not available.

Mobility in environmental media

No data available.

13. Disposal Considerations

Waste codes

D001: Waste Flammable material with a flash point <140 °F

Disposal Instructions

Dispose in accordance with all applicable regulations. Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container.

14. Transport Information

DOT

Basic shipping requirements:

UN number

NA1202

Proper shipping name

Diesel fuel

Hazard class

Combustible Liquid

Packing group

III

Labels required

Combustible liquid

Additional information:

Special provisions

144, B1, IB3, T2, TP1

Packaging exceptions

150

Packaging non bulk

203

Packaging bulk

242

IATA

Basic shipping requirements:

UN number 1202
Proper shipping name Diesel fuel
Hazard class 3
Packing group III

Additional information:

ERG code 3L

IMDG

Basic shipping requirements:

UN number 1202
Proper shipping name Diesel fuel
Hazard class 3
Packing group III
EmS No. F-E, S-E

TDG

Basic shipping requirements:

Proper shipping name Diesel fuel
Hazard class 3
UN number UN1202
Packing group III

15. Regulatory Information

US federal regulations

TSCA Section 12(b) Export Notification(40 CFR 707, Subpt. D)

NAPHTHALENE (CAS 91-20-3)	0.1 % One-Time Export Notification only.
N-HEPTANE (CAS 142-82-5)	1.0 % One-Time Export Notification only.
NONANE (CAS 111-84-2)	1.0 % One-Time Export Notification only.

US CAA Section 112 Hazardous Air Pollutants (HAPs) List

HEXANE (N-HEXANE) (CAS 110-54-3)
NAPHTHALENE (CAS 91-20-3)

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

Naphthalene (CAS 91-20-3)	0.1 %
n-Hexane (CAS 110-54-3)	1.0 %

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

Naphthalene (CAS 91-20-3)	Listed.
n-Hexane (CAS 110-54-3)	Listed.

CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)

n-Nonane: 100
Octane (All isomers): 100
Hexane (Other isomers): 100
Naphthalene: 100
n-Heptane: 100
n-Hexane: 5000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - No
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Section 302 extremely hazardous substance (40 CFR 355, Appendix A)	No
Section 311/312 (40 CFR 370)	No

Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)	Not controlled
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WHMIS status	Controlled
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DIESEL FUELS

3541

Version #: 02

Revision date: 08-11-2011

Print date: 08-11-2011

CP11MSDSNA

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Prepared by 3E Company

WHMIS classification

B3 - Flammable/Combustible
 D2B - Other Toxic Effects-TOXIC

WHMIS labeling



Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations

US - California Hazardous Substances (Director's): Listed substance

Hexane (Other isomers) (CAS 96-14-0)	Listed.
Naphthalene (CAS 91-20-3)	Listed.
n-Heptane (CAS 142-82-5)	Listed.
n-Hexane (CAS 110-54-3)	Listed.
n-Nonane (CAS 111-84-2)	Listed.
Octane (All isomers) (CAS 111-65-9)	Listed.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Benzene (CAS 71-43-2)	Listed.
Toluene (CAS 108-88-3)	Listed.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Benzene (CAS 71-43-2)	Listed: February 27, 1987 Carcinogenic.
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US - California Proposition 65 - CRT: Listed date/Developmental toxin

Benzene (CAS 71-43-2)	Listed: December 26, 1997 Developmental toxin.
Toluene (CAS 108-88-3)	Listed: January 1, 1991 Developmental toxin.

US - California Proposition 65 - CRT: Listed date/Female reproductive toxin

Toluene (CAS 108-88-3)	Listed: August 7, 2009 Female reproductive toxin.
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US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

Benzene (CAS 71-43-2)	Listed: December 26, 1997 Male reproductive toxin.
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US - Massachusetts RTK - Substance: Listed substance

Hexane (Other isomers) (CAS 96-14-0)	Listed.
Naphthalene (CAS 91-20-3)	Listed.
n-Heptane (CAS 142-82-5)	Listed.
n-Hexane (CAS 110-54-3)	Listed.
n-Nonane (CAS 111-84-2)	Listed.
Octane (All isomers) (CAS 111-65-9)	Listed.

US - New Jersey Community RTK (EHS Survey): Reportable threshold

Naphthalene (CAS 91-20-3)	500 LBS
n-Hexane (CAS 110-54-3)	500 LBS

US - New Jersey RTK - Substances: Listed substance

Naphthalene (CAS 91-20-3)	Listed.
n-Heptane (CAS 142-82-5)	Listed.
n-Hexane (CAS 110-54-3)	Listed.
n-Nonane (CAS 111-84-2)	Listed.

Octane (All isomers) (CAS 111-65-9)	Listed.
US - Pennsylvania RTK - Hazardous Substances: Listed substance	
Fuels, diesel (CAS 68334-30-5)	Listed.
Hexane (Other isomers) (CAS 96-14-0)	Listed.
Naphthalene (CAS 91-20-3)	Listed.
n-Heptane (CAS 142-82-5)	Listed.
n-Hexane (CAS 110-54-3)	Listed.
n-Nonane (CAS 111-84-2)	Listed.
Octane (All isomers) (CAS 111-65-9)	Listed.

16. Other Information

Further information

HMIS® is a registered trade and service mark of the NPCA.

Other information

Note: This Material Safety Data Sheet applies to the listed products and synonym descriptions for Hazard Communication purposes only. Technical Specifications vary greatly depending on the products and are not reflected in this document. Consult specification sheets for technical information.

HMIS® ratings

Health: 2*
Flammability: 2
Physical hazard: 0

NFPA ratings

Health: 1
Flammability: 2
Instability: 0

Disclaimer

This Material Safety Data Sheet (MSDS) was prepared in accordance with 29 CFR 1910.1200 by Valero Marketing & Supply Co., ("VALERO"). VALERO does not assume any liability arising out of product use by others. The information, recommendations, and suggestions presented in this MSDS are based upon test results and data believed to be reliable. The end user of the product has the responsibility for evaluating the adequacy of the data under the conditions of use, determining the safety, toxicity and suitability of the product under these conditions, and obtaining additional or clarifying information where uncertainty exists. No guarantee expressed or implied is made as to the effects of such use, the results to be obtained, or the safety and toxicity of the product in any specific application. Furthermore, the information herein is not represented as absolutely complete, since it is not practicable to provide all the scientific and study information in the format of this document, plus additional information may be necessary under exceptional conditions of use, or because of applicable laws or government regulations.

Issue date

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