

Optional Tier 4 Final + Diesel Particulate Filter Equipment

In the mid-2000s, California Air Resources Board (CARB) introduced the Tier 4 standards for off-road compression-ignition (CI) engines, which required significant reductions in oxides of nitrogen (NOx) and PM emissions. Engine manufacturers met the Tier 4 standards by using technologies such as DPFs and selective catalytic reduction (SCR) systems. DPFs are emission control devices that physically capture and remove toxic diesel PM before it is released into the air and are the cleanest technology currently available for controlling PM emissions from CI engines. Accordingly, off-road equipment using a Tier 4 Final engine with a DPF is currently the cleanest CI equipment on the market to help reduce the health risks from PM exposure.

- PM Exposure Health Risks:** Diesel PM is a toxic air contaminant¹ and a major contributor to respiratory illnesses, such as asthma, bronchitis, and reduced lung function. Long-term exposure to diesel exhaust is linked to lung cancer, heart disease, and premature death. Communities near construction zones and equipment operators are especially vulnerable to PM exposure-related health risks.

Tier 4 Final engines with a DPF have lower emissions than Tier 4 engines without a DPF, as shown in the table below.

Table 1. Emission Reductions from Engines with DPFs

19-56 kW	No DPF		With DPF		72.7% PM Emissions Reduction
	NOx + NMHC (g/kW-hr)	PM (g/kW-hr)	NOx + NMHC (g/kW-hr)	PM (g/kW-hr)	
Average	3.92	0.022	3.66	0.006	
% of Engine Families	44%		56%		
56-560 kW	With SCR-only		With DPF and SCR		58.8% PM Emissions Reduction
	NOx (g/kW-hr)	PM (g/kW-hr)	NOx (g/kW-hr)	PM (g/kW-hr)	
Average	0.26	0.017	0.22	0.007	
% of Engine Families	48%		52%		

¹ "Summary: Diesel Particulate Matter Health Impacts," California Air Resources Board, accessed October 29, 2025, [Summary: Diesel Particulate Matter Health Impacts | California Air Resources Board](#)

Awarding bodies that wish to require ALL diesel equipment to have Tier 4 Final engines with a DPF could advise contractors operating equipment to complete the following steps:

Example for Identifying a DPF on a Single Piece of Equipment

STEP 1: Gather known information about the equipment model and engine model.



- Example: Caterpillar 315 Excavator, model year 2022, 80 kilowatt (kW) power rating

STEP 2: Check the Emission Control Information Label on the engine.

- Emission Control Label: An easy way of identifying whether a piece of equipment has a DPF is by looking at the emission control information label on the engine. The DPF is usually listed on the label as a periodic trap oxidizer (PTOX) or as a continuous trap oxidizer (CTOX). The example labels below have PTOX and CTOX circled in red.



Other labels might have dual certification status identified with the engine being certified to both United States Environmental Protection Agency (U.S. EPA) /CARB regulations and the European Union (EU) regulations. A dual certified engine, at least for 2021 and later 19-560 kW engines, can be assumed to have a DPF because EU Stage V emission standards for 19-560 kW engines require the use of a DPF and were fully implemented by 2021. The example below shows the label of a dual certified engine. For EU Stage V certification, look for a "V" that indicates "Stage V" or a "2016/1628" that indicates the "EU Stage V Regulation Number" on the label. The example labels below have the "V" and "2016/1628" outlined in red.

 J3689933	
EMISSION CONTROL INFORMATION	
 Manufactured by Perkins Engines Co. Ltd. S&R Mgr. Carl-Benz-Str. 1, 68167 Mannheim, Germany	
Engine Family: RPKXL03.6FX1 Displacement (L): 3.62 C3.6	
THIS ENGINE COMPLIES WITH U.S. EPA NONROAD AND STATIONARY AND CALIFORNIA OFF-ROAD REGULATIONS FOR 2024 DIESEL ENGINES ULTRA LOW SULFUR FUEL ONLY	
FEL (g/kWh)	NMHC: N/A
NOx: N/A	PM: N/A
Emissions Control System: DDI, TAA, ECM, DOC, EGR SCR, AMOX, PTOX	
Engine Type: 56 < = kW < 130	
Factory Set <input checked="" type="checkbox"/> 4790 /2400 85.9 kW <input type="checkbox"/> 4798 /2400 82.0 kW <input type="checkbox"/> 4794 /2400 74.4 kW <input type="checkbox"/> 4774 /2400 70.0 kW <input type="checkbox"/> / kW	Reset if Applicable <input checked="" type="checkbox"/> Use Service tool to verify current engine settings.
EU Engine Family: NRE5V03.6HTA e24 EV5/D V - 0229 E24 120 R - 010016	
MLIT Approved: Step: STEP 4 FINAL	
INFORMATION APPLICABLE TO CHINA ONLY 此发动机只准在中国出口，符合中华人民共和国国家标准GB20891-2014 豁免规定 This engine is solely for export from China and is therefore exempt under GB20891-2014 from P.R. China emission standards.	
生产日期 Date of Manuf: NOV 2024	
Arg't No: 5412952	Serial No: J3689933 X3466

THIS ENGINE COMPLIES WITH U.S. EPA NONROAD AND STATIONARY AND CALIFORNIA OFF-ROAD REGULATIONS FOR 2022 DIESEL ENGINES ULTRA LOW SULFUR FUEL ONLY

EU ENGINE FAMILY **NRE7V32.1HXA**

EU Type Approval e24 **2016/1628** 2018/989EV7/D*0126

STEP 3: Confirm CTOX/PTOX Emissions Control or Dual-Certification Engines.

- If the label specifies a CTOX/PTOX, the engine uses a DPF and you can conclude the engine is a Tier 4 final with a DPF ;
- Or, if the label states that the engine (2021 and later, 19-560 kW) complies with EU regulations and U.S. EPA/California regulations, you can conclude the engine uses a DPF and you are done with your DPF identification.
- Engines less than 19 kW or greater than 560 kW are not required to use a DPF to meet EU Stage V or U.S. EPA/California Tier 4 Final emissions standards so DPFs are not on this equipment.

STEP 4: Additional Steps

- If DPF identification is still undetermined after following Steps 1-3, **contacting a local equipment dealership may be required.**


- Another option is to use an Artificial Intelligence (AI) search engine such as Perplexity AI, Google Gemini, or ChatGPT. If contractors are looking for specific equipment, equipment model/engine model information can be input in AI search engines to retrieve emission control specifications.

In the example below, Perplexity AI was asked, "Is a Caterpillar 315 excavator, model year 2022, 80 kW, EU Stage V certified?" The response confirmed the dual certification status for this piece of equipment which means the equipment has a DPF.


https://www.perplexity.ai/search/is-a-caterpillar-315-excavator-NK9PpHo9Qf6unhAnsdcydg

Is a Caterpillar 315 excavator, model year 2022, 80 kW, EU Stage V certified?


Answer Images Sources · 10 Steps




Western States Cat
315 GC - Western States Cat







https://www.cat.com/e...
Cat 315 Next Gen Excavator



pacificrimequipment
[PDF] HYDRAULIC EXCAVATOR - Pacific Rim...



teknoxgroup
[PDF] Product Brochure for 315 Hydraulic Excavator,...

The Caterpillar 315 excavator model year 2022 with an engine power around 80-110 kW, powered by the Cat C3.6 engine, is certified to meet the EU Stage V emission standards. Specifically, it meets U.S. EPA Tier 4 Final, EU Stage V, and Japan 2014 emission standards. This confirms that the 2022 Cat 315 excavator is EU Stage V certified.

The engine power for this model is listed around 98 to 110 hp (73–82 kW), aligning with the 80 kW reference, and the emissions compliance is explicitly stated in multiple sources including official Caterpillar brochures and dealer sites. [westernstatescat](#) +7

In another example below, Perplexity AI was asked, "Is the JCB 131X Tier 4 Final certified with a DPF?" The response indicated that the JCB 131X has a Tier 4 Final engine but is certified without the need for a DPF.

https://www.perplexity.ai/search/is-the-jcb-131x-tier-4-final-c-43FLKPoiSGyc6IOFccUS8w

Is the JCB 131X Tier 4 Final certified with a DPF?







Answer Images Sources · 10 Steps

jcb.com
TIER 4 FINAL AND
INCREASED AUTOMATIO...

liftandaccess.com
JCB Tier 4 Final Engine
Strategy Simplifies...

Heavy Equipment Guide
JCB EcoMax Tier 4 Final
Diesel Engines - Heavy...

Utility Contractor Mag...
JCB's Tier 4 Engine
Strategy Allows For Easier...



The JCB 131X Tier 4 Final engine is certified without the need for a Diesel Particulate Filter (DPF). It uses a DOC (Diesel Oxidation Catalyst) along with other in-cylinder combustion technologies to meet Tier 4 Final emissions standards without requiring a DPF or DEF (Diesel Exhaust Fluid). This results in lower running and maintenance costs for the 131X, which has a 74 hp Tier 4 Final EcoMAX engine with no replaceable DPF requirement. liftandaccess +3

Note: An AI search engine can be a useful tool to quickly find emission control specifications for a single piece of equipment or for multiple equipment if an equipment list is added to the query. As a caveat, AI search engines are not always accurate or reliable. AI search engines should be used with caution and not solely relied upon without verifying sources of information used.

New Equipment Needs to Be Purchased or Rented

If new Tier 4 Final + DPF equipment needs to be purchased or rented to augment the fleet, it is recommended to call the equipment dealership or rental fleet directly to request assistance in obtaining the required equipment.