

**INTRODUCTION**

Caterpillar Inc. (Cat®) is introducing a new diesel engine oil specification, Cat Engine Crankcase Fluid-2 (ECF-2), that is applicable to Cat 3500 Series and smaller commercial and machine diesel engines, and that is also applicable to all 2006 and older Cat on-highway diesel engines.

The Cat ECF-2 specification defines additional requirements for diesel engine lubricants that satisfy the API (American Petroleum Institute) CI-4 or CI-4 PLUS oil category. This specification was developed to ensure the availability of high performance engine oils that provide improved performance over API CI-4 (API CI-4 PLUS) and prior API category oils, and over Cat ECF-1-a specification oils in providing satisfactory life and performance of Cat diesel engines that are covered by this specification.

Passing the newly developed Cat C13 multi cylinder oil test engine 500-hour test protocol is the key requirement in the new Cat ECF-2 specification. The Cat C13 multi cylinder oil test engine provides significant improvements in defining the oil needs of Cat diesel engines in order to provide advanced piston deposit control and reliable service over the life of the engine. Engine oils meeting the Cat ECF-2 specification are designed to provide advanced piston deposits control, protection from engine wear, and excellent soot dispersion.

**APPLICATION**

Oils meeting the Cat ECF-2 specification are applicable to all 2006 model year and older Cat on-highway diesel engines and Cat 3500 Series and smaller commercial and machine diesel engines. Oils meeting the Cat ECF-2 specification are not applicable to Cat engines equipped with Diesel Particulate Filters (DPF). It is strongly recommended that Cat engines that are equipped with a DPF use oil that meets the Cat ECF-3 specification.

**OBJECTIVE:**

The requirements described herein communicate the minimum performance requirements for a lubricant that is intended for use in Cat diesel engines wherever Cat ECF-2 specification fluids are recommended.

**DESCRIPTION:**

The Cat ECF-2 specification has been created to provide the minimum diesel engine oil requirements in order to provide improved performance over API CI-4 (API CI-4 PLUS) and prior API category oils, and over Cat ECF-1-a specification oils in providing satisfactory life and performance of Cat diesel engines that are covered by this specification.

The following guidelines must be followed to meet the Cat ECF-2 specification:

1. The test program must be conducted according to the protocols in API 1509 (Engine Oil Licensing and Certification System) and the ACC (American Chemistry Council) Code of Practice. API Base Oil Interchange (BOI) read-across guidelines must be followed. API Viscosity Grade Read-Across (VGRA) is allowed.
2. Passing of a complete API CI-4 or CI-4 PLUS program is required for all fully formulated engine oils claiming ECF-2 compliance.
3. Passing a Cat C13, 500 hour test, as defined in the API CJ-4 oil category, is required for fully formulated engine oils claiming Cat ECF-2 specification compliance.
4. The sulfated ash content of the fully formulated oil must be less than or equal to 1.50 wt% as measured by ASTM D0874. Oil formulations having ash levels greater than 1.50 wt% are not acceptable. ACC minor modifications in the formulation are permitted only if they do not result in an increase in the sulfated ash level of the marketed oil relative to the tested oil.
5. API oil categories older than API CI-4 may not claim to meet the Cat ECF-2 specification.

**NOTICE**

1. This document contains all of the performance requirements that a finished lubricant must meet before the lubricant can legitimately be marketed as meeting the Cat ECF-2 specification. Caterpillar Inc. will not monitor or verify the accuracy of claims or advertising suggesting compliance with Cat ECF-2 specification made by other manufacturers or suppliers of fluids. Each supplier is responsible for the performance of their own product and the associated liabilities.
2. Refer to your engine-specific operation manual for detailed application guidance.

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Caterpillar reserves the right to change this document without notice.  
The implementation date of this specification is March 1, 2007.

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