

**TITLE: Use of Ultra Low Sulfur Diesel Fuel (ULSD) When Testing Diesel Engines****MSHA Mine Safety and Health Administration, Approval & Certification Center**

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**1.0 PURPOSE**

To establish a policy that informs Part 7 testing laboratories and the A&CC that ultra low sulfur diesel fuel may be used when conducting approval and audit testing of diesel engines seeking to comply with 30 CFR Part 7, Subpart E, Diesel Engines Intended for Use in Underground Coal Mines.

**2.0 SCOPE**

This document encompasses all applications for diesel engines submitted for approval and audit.

**3.0 REFERENCES**

3.1. 30 CFR Part 7, Subpart E.

3.2. ALEG 1023 - Legal Rationale for use of ultra-low sulfur diesel fuel

**4.0 DEFINITIONS**

4.1. Low Sulfur Diesel Fuel (LSD) - Diesel fuel meeting the specifications in 30 CFR Part 7.86(a)(2) Table E-1 with a total sulfur content of 0.03 to 0.05 percent (300 to 500 ppm).

4.2. Ultra Low Sulfur Diesel Fuel (ULSD) - Diesel fuel meeting the specifications in 30 CFR Part 7.86(a)(2) Table E-1 with a total sulfur content of 0.0007 to 0.0015 percent (7 to 15 ppm).

**5.0 POLICY**

5.1. Effective July 25, 2008, all Part 7 testing laboratories and the A&CC may substitute but are not required to use ultra low sulfur diesel (ULSD) fuel for all diesel engine approval and audit testing conducted under 30 CFR Part 7, Subpart E.

5.1.1. The LSD fuel specified in 30 CFR Part 7.86(a)(2) Table E-1 may be substituted with ULSD fuel having 0.0007-0.0015 percent (7-15 ppm) total sulfur.

5.1.2. Except for the change in total sulfur, all diesel test fuel specifications remain the same as 30 CFR Part 7.86(a)(2) Table E-1.

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- 5.2. New technology in diesel engine design has created a necessity to reevaluate the test equipment and specifications in 30 CFR Part 7.86(a)(2). This policy was developed to allow Part 7 Subpart E, Diesel Engines Intended for Use in Underground Mines, testing to be conducted with newer test fuel specifications.
- 5.3. The 30 CFR Part 7.86(a)(2) test fuel specifications listed in Table E-1 represented the available test fuel when the regulation was promulgated, October 25, 1996. Current diesel engine technology has incorporated diesel particulate filters that require the use of ULSD fuel to maintain the filters integrity.
- 5.4. The 30 CFR Part 7.86(a)(2) requires diesel test fuel to meet the specifications of Table E-1 30 CFR Part 7.86(a)(2) which specifies low sulfur diesel fuel 300-500 mg/kg (.03-.05%, 300-500 ppm) total sulfur.
- 5.5. MSHA's M&ESD justification and guidance for this policy was provided in accordance with the 30 CFR Part 7.92, New Technology, and MSHA's Solicitor's opinion, email dated July 24, 2008. The Solicitor's opinion is documented as ALEG 1023 - Legal Rationale for use of ultra-low sulfur diesel fuel.
- 5.6. This policy will allow diesel engine manufacturers to use ULSD test fuel that meets newer specifications required for new diesel engine technology.

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Appendix 1

30 CFR Part 7.86(a)(2) Test Fuel Specifications Table E-1

**TABLE E-1—DIESEL TEST FUEL SPECIFICATIONS**

Item	ASTM	Type 2-D
Cetane number .....	D613	40–48.
Cetane index .....	D976	40–48.
Distillation range:		
IBP °F .....	D86	340–400.
(°C) .....		(171.1–204.4).
10 pct. point, °F .....	D86	400–460.
(°C) .....		(204.4–237.8).
50 pct. point, °F .....	D86	470.540.
(°C) .....		(243.3–282.2).
90 pct. point, °F .....	D86	560–630.
(°C) .....		(293.3–332.2).
EP, °F .....	D86	610–690.
(°C) .....		(321.1–365.6).
Gravity, °API .....	D287	32–37.
Total sulfur, pct. ....	D2622	0.03–0.05.
Hydrocarbon composition:		
Aromatics, pct. ....	D1319	27 minimum.
Paraffins, naphthenes, olefins.	D1319	Remainder.
Flashpoint, minimum, °F .....	93	130.
(°C) .....		(54.4).
Viscosity, centistokes .....	445	2.0–3.2.