

**UNION PACIFIC LOCOMOTIVE DIESEL FUEL SPECIFICATION**  
**SPECIFICATION C.S. 26-D DIESEL FUEL OIL (ASTM D-975)**

**General Statement**

This specification covers two fuel grades:

- No. 1-D for diesel engines (Min. 40 Cetane) and
- No. 2-D for diesel locomotives (Min. 40 Cetane).

The fuels shall be free from grit, acid, microbial growth and fibrous or other foreign material likely to clog pipes and strainers or damage injectors. In addition, the fuel should pass EMD Filtration Cleanliness Test-M.I. 1750.

The fuels in this specification shall be stable as listed under service requirements in engine operation and storage.

**Rejection**

Any samples of fuel delivered failing to meet these specifications shall be rejected and the shipment returned to the manufacturers, who shall pay the freight both ways.

**Physical Requirements**

	<b><u>ASTM Test Method</u></b>	<b><u>No. 1-D</u></b>	<b><u>No. 2-D</u></b>
Flash °F, Min	D93	100	125
Water & Sediment, Vol.% Max.	D2709	0.05	0.05
Carbon Residue 10% Bot. Max.	D524	0.15	0.35
Ash, Wt.% Max.	D482	0.01	0.01
Distillation, IBP Min. °F	D86		338
10 Max. °F		425	
90 Max. °F		550	640
EP Max. °F		600	700
Recovery, Min. %		99	99
Vis. SUS at 100°F Min.	D2161	30.5	32.6
Vis. SUS at 100°F Max.		36.2	40.1
Sulfur Wt. PPM Max.	D5453	15	15
Copper Strip Corrosion, Max. 3 hours at 212°F	D130	No. 3	No. 3
Cetane No. Min.	D4737	40	40
API Gravity	D4052	35-45	30-40
Cloud Point °F Max	D5773	See Table 1	
Pour Point °F Max.	D5949	See Table 1	
Lubricity at 140°F Max.	D6079	520	520
Electrical Conductivity Min. pS/m	D2624	25	25
Stability	D6468	Report	Report

**Table 1:** Cloud & Pour Point Requirements:

In accordance with ASTM D975, Tenth Percentile Minimum Ambient Temperatures for the United States, or winter/summer specifications as determined by pipelines on which UP bulk ships products.

Northern Region											
Month	Colorado West	Colorado East	IA	IL North	IL South	KS	MN	MO	NE	WI	WY
Oct	17.6	28.4	28.4	30.2	33.8	28.4	24.8	33.8	26.6	26.6	24.8
Nov	0.0	10.4	8.6	15.8	19.4	12.2	0.0	19.4	8.6	6.8	5.0
Dec	-13.0	6.8	-9.4	-2.2	3.2	5.0	-22.0	6.8	0.0	-11.2	0.0
Jan	-22.0	-2.2	-14.8	-5.8	1.4	-2.2	-29.2	3.2	-7.6	-18.4	-14.8
Feb	-11.2	5.0	-7.6	0.0	5.0	6.8	-23.8	8.6	-2.2	-11.2	-2.2
Mar	3.2	10.4	3.2	12.2	17.6	8.6	-11.2	17.6	8.6	0.0	3.2
Southern Region											
Month	AR	LA	TX North	TX South							
Oct	35.6	41	37.4	48.2							
Nov	24.8	30.2	21.2	35.6							
Dec	19.4	26.6	28.4	15.8							
Jan	19.0	24.8	26.6	8.6							
Feb	19.4	28.4	30.2	15.8							
Mar	26.6	33.8	19.4	35.6							
Western Region											
Month	AZ	CA North	CA South	ID	NM	NV North	NV South	OR West	OR East	UT	
Oct	44.6	37.4	42.8	24.8	39.2	19.4	46.4	32	21.2	28.4	
Nov	32.0	32.0	35.6	8.6	24.8	6.8	32.0	24.8	12.2	12.2	
Dec	28.4	28.4	32.0	0.0	17.6	0.0	26.6	23.0	6.8	6.8	
Jan	24.8	28.4	30.2	-5.8	12.2	-7.6	24.8	19.4	-2.2	0.0	
Feb	26.6	30.2	32.0	0.0	19.4	0.0	28.4	24.8	6.8	6.8	
Mar	30.2	30.2	35.6	8.6	26.6	8.6	33.8	26.6	15.8	17.6	

\*Pour Point Depressant is added by railroad at North Platte to -30°F.

**Service Requirements**

Fuels may contain stabilizing and metal deactivating additives approved by the general research & development engineer, in order to meet requirements.

Use of any additive that contributes to pollution of the air and is in violation of state or Federal regulations in the railroad operating area is prohibited.

All fuels shall be stable and shall be compatible with other conventional grades of diesel engine fuel oil.

### **Pipeline Deliveries**

In addition to fulfilling other requirements, fuel oil delivered by pipeline shall be treated with sufficient corrosion inhibitor to produce an NACE rating of B++.

### **BIODIESEL**

Up to 5% bio content is permitted in diesel if material is sold as B5 diesel. **Non-biodiesel** material must be bio-free. B100 used in blending must comply with ASTM-6751 and the producer must be BQ-9000 certified. B100 monoglyceride content as measured by ASTM D6584 must be less than 0.4% during cold weather months (October 15<sup>th</sup> thru April 15<sup>th</sup>).

### **RED DYE ADDITIVE**

Red dye must be injected into the fuel across the rack pursuant to IRS regulations.

June 30, 2017