

Air Shield™ DEF

API Registered Diesel Exhaust Fluid
Cummins Approved
ISO 22241-1 Certified Quality



Technical Bulletin

Valvoline's Air Shield diesel exhaust fluid (DEF) is produced by combining highly purified urea with ultra pure demineralised water under clean, controlled conditions. The fluid is stored, shipped and dispensed using dedicated and compatible materials. Lot traceability is assured through rigorous quality control measures.

Valvoline's Air Shield diesel exhaust fluid works with all selective catalyst reduction systems (SCR) to significantly reduce nitrogen oxide (NOx) content in diesel engine exhaust streams. SCR is a new exhaust gas after-treatment technology that incorporates aqueous 32.5 % urea based diesel exhaust fluid to meet the latest emissions requirements.

Valvoline's Air Shield diesel exhaust fluid is safe to handle and store. It is non-toxic and non-polluting. DEF is stable and colorless. It is non hazardous and readily bio-degradeable. DEF begins to freeze at 12 degrees F and has a 7% volume expansion on freezing. DEF packaging is designed to accommodate this and DEF is freeze / thaw stable. DEF weighs approximately 9 pounds per gallon.

The shelf life of DEF varies with storage temperature. For temperatures under 75 F, DEF is shelf stable for two years. At temperatures between 10 and 90 F, DEF has a one year shelf life. Valvoline recommends DEF be stored in a cool dry, well ventilated area not in direct sunlight. The optimum storage temperature is up to 77 F (25 C) and temperature should be controlled. All Valvoline's Air Shield DEF packages carry a date code. This allows for product age determination.

If DEF is spilled on your vehicle, rinse with water. If it dries, white crystals may be observed. These can be easily washed away with water. DEF has a faint ammonia smell and is harmless. DEF is corrosive to copper, brass, mild steels and galvanized materials. Always use compatible containers for DEF including HDPE, high density polyethylene and stainless steel. Benecor pumps are suggested by Valvoline.

DEF consumption is approximately 2% of fuel use but varies with duty cycle, operation, geography and other factors. At 6 mpg, a truck can be expected to travel 300 miles on a single gallon of DEF.

Valvoline's Air Shield DEF carries the following:

ISO 22241-1 Quality	Cummins Approved
ISO 22241-2 Tested	API Registered
ISO 22241-3 Handling, Transportation & Storage	AdBlue Approved
DIN70070	AUS32 - DEF

Valvoline's Air Shield DEF Typical Physical Properties		
Urea	mass %	32.5
Biuret	mass %	0.3 max
Water	mass %	67.5 typical
Weight per gallon approximate	lbs	9.0
Density @ 20C	kg/M ³	1089.7 typ

This information only applies to products manufactured in the following location(s): USA, Mexico, Canada, India

ISO 22241-1 Quality Characteristics		
Valvoline's Air Shield Diesel Exhaust Fluid		
Characteristic	Unit	Typical
Refractive Index	-	1.3830
Alkalinity as NH ₃	%(m/m)	0.06
Phosphate	mg/kg	0.06
Insoluble Matter	mg/kg	2.1
Aldehydes	mg/kg	0
Calcium	mg/kg	<0.1
Iron	mg/kg	<0.1
Copper	mg/kg	<0.1
Zinc	mg/kg	<0.1
Chromium	mg/kg	<0.1
Nickel	mg/kg	<0.1
Aluminum	mg/kg	<0.1
Magnesium	mg/kg	<0.1
Sodium	mg/kg	<0.1
Potassium	mg/kg	<0.1

Valvoline recommends that spent DEF never be disposed of by dumping into a septic system, storm sewer or onto the ground. Instead, contact your state or local municipality for instructions on where to and how to properly dispose of this DEF and protect our environment.

Call 1-800-Team-Val for questions, comments and further information on Valvoline's Air Shield diesel exhaust fluid

Effective Date	Expiration Date	Replaces	Author
2/1/2010	2/1/2015	New	DET

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