DEF [DIESEL EXHAUST FLUID] and HINO TRUCKS - WHERE TO BUY DEF

DIESEL EXHAUST FLUID: NON-TOXIC. NON-HAZARDOUS. NON-EXPLOSIVE. NON-FLAMMABLE.

WHAT IS DEF?

ON THIS SITE:
Diesel Exhaust Fluid (DEF) is a solution made up of purified water and 32.5 percent automotive-grade urea that is used as a carrying agent for the ammonia needed to reduce nitrogen oxide (NOx) emissions from vehicles into nitrogen, water and carbon dioxide (CO2).

Diesel Exhaust Fluid is monitored for quality and certified by the American Petroleum Institute (API), ensuring that Diesel Exhaust Fluid is a stable, non-toxic, odorless and completely safe solution. The urea used for Diesel Exhaust Fluid is considered automotive-grade. Urea in additional forms is widely distributed for many other industrial and agricultural needs, including emissions control at public utilities and power plants.

**USING DEF IN YOUR HINO TRUCK**

Filling your truck with DEF is not much different than refueling with diesel however the usage ratio is significantly less. The DEF tank on a Hino Truck will accommodate 4.7 gallons of DEF allowing the vehicle to travel as many as 2500 miles per tank. In fact, Hino trucks will monitor the DEF fluid level within the instrument cluster just like fuel.

Hino customers can purchase DEF from many different locations including dealers, truck stops, fuel station convenience stores, fuel distributors, and auto parts stores.

Hino owners have many options in terms of filling their DEF tank. DEF can be purchased in a one gallon jug to top off your tank, or two 2.5 gallon jugs to completely fill the tank. For those customers who have their own fuel island they can purchase DEF in 55 gallon drums or 330 gallon totes and for those that visit the truck stop for fuel, DEF may also be available right at the pump. Depending on the vehicle application the DEF tanks will be located under the cab on the exterior of the frame rail and will be conducive to quick and easy fill ups.

**WHERE TO GET DEF**

**HINO TRUCK DEALERS**

DEF is mandatorily stocked at all Hino Trucks Dealers in 2.5 gallon jugs (shelf stock), dealers will also have the ability to stock and sell:

- 55 gallon drums
- 330 gallon totes

**OTHER TRUCK DEALERS**

In addition to Hino Dealers, DEF will be available from the most truck OEM dealers.

**ADDITIONAL DEF OUTLETs:**

[www.finddef.com](http://www.finddef.com)

[www.afdc.com](http://www.afdc.com)

**DEF FILLING PUMPS FOR IBC’s and DRUMS**

You can purchase DEF filling pumps for IBC’s and Drums through Hino Trucks dealers. Other DEF dispensing equipment will be available through pump equipment.
FREQUENTLY ASKED QUESTIONS ABOUT DEF

What is DEF?

Diesel Exhaust Fluid (DEF) is one of the key elements involved in the reduction of diesel engine emissions for vehicles equipped with Selective Catalytic Reduction (SCR) systems. It is a nontoxic solution of 67.5% De-ionized water and 32.5% automotive grade urea. DEF helps to convert NOx into nitrogen gas and water vapor. It is stable and colorless and meets accepted international standards for purity and composition under ISO 22241-1.

What is urea?

Urea is a compound of nitrogen that turns to ammonia when heated. It is used in a variety of industries, most commonly as a fertilizer for agriculture. Urea is naturally occurring, but it is primarily produced from natural gas.

Why not use a 100% urea solution?

DEF provides the highest degree of practical NOx reduction in real life automotive conditions. Using DEF at a 32.5% solution in water is cost-effective. Also, it allows the engine to perform at the highest levels of efficiency and at the widest range of climate temperatures - anything above 12 degrees Fahrenheit.

How is DEF quality defined and guaranteed?

DEF is defined by AUS-32 specifications and the specifications meet or exceed the DIN 70070 August 2005 quality standard, the DIN V 70071 June 2005 analytical standard and the ISO 22141-1 2006 standard. The American Petroleum Institute has developed a quality certification program that ensures North American supplies of DEF will meet these standards at the pump and across the nationwide supply chain, including standards of product manufacturing, handling, quality assurance, safety and environmental protection. It is suggested that all Hino Trucks use DEF that meet these standards and are labeled with the API certification. VISIT THE API SITE

What is the chemical process of producing urea and what is the energy balance of this process?

The production of urea involves the raw materials of ammonia and carbon dioxide. Two principle reactions take place in the formation of urea. The first is an exothermic (heat releasing) reaction in which ammonia + carbon dioxide creates ammonium carbonate. The second reaction is an endothermic (absorbing energy within heat) reaction in which ammonium carbamate is converted into water + urea.
How does DEF work within an SCR system?
The goal of an SCR system is to reduce levels of NOx (oxides of nitrogen emitted from engines) that are harmful to our health and the environment. SCR is an aftertreatment technology that treats exhaust gas downstream of the engine and the Diesel Particulate Filter (DPF). A small quantity of DEF is injected into the exhaust stream after the DPF, and before the SCR catalyst, the NOx component of the exhaust gas chemically reacts in this environment, changing into harmless nitrogen and water.

What other industries use urea?
Urea solutions have a wide range of industrial and agricultural uses. More than 90% of world urea production is destined for use in agriculture as a fertilizer. Other industry uses include:

• Nutrient source in plants.

• Nutrient for effluent wastewater treatment.

• Nutrient for fermentation processes.

• Reducing agent in SCR and SNCR processes (energy production plants)

• Food processing/production

• Household cleaning agents

• Chemical intermediate for the manufacture of derivatives of ammonia, pharmaceuticals, and catalysts.

Should drivers in very cold temperatures be concerned?
While freezing may be one of the biggest concerns with DEF, we have seen no issues with it based on our winter development and growth test trucks, nor has this been an issue among European fleets. DEF thaws out quickly without changing its efficacy, and the EPA sees no concern allowing it to warm up or thaw using the heat of the engine when you start the truck. Currently there are no approved products or additives that would prevent the DEF from freezing.

What is the DEF shelf life and storage?
When stored between 10 and 90 degrees Fahrenheit, DEF shelf life is 24 months. Bulk dispensers (1,000 gallon) have climate control systems to ensure product life. However, most Intermediate Bulk Container's (IBC) or totes and small packages in 1-2.5 gallon containers will not have climate controls and should be stored in a controlled environment for the best shelf life.

Is DEF toxic compared to other automotive fluids?
No. By comparison, other automotive fluids such as diesel fuel, brake fluid, coolant, engine, transmission, and axle lube are more toxic. The Environmental Protection Agency classifies DEF as “non-hazardous.” Urea is a naturally occurring substance and is biodegradable.

DEF is corrosive to aluminum. What will storage tanks be made of?
As DEF is corrosive to certain sensitive metals, DEF vehicle tanks, storage tanks, dispensing equipment, etc. will be made of an appropriate, heavy-duty and tamper-free form of durable plastic. Transfer equipment and trailers will utilize stainless steel which is not affected by Urea.

**Does the trucking industry compete with other industries in purchasing urea?**

If all trucks on the road today would be converted to SCR, they would only account for only 10% of the urea consumption worldwide. More than 90% of today's urea is used in agricultural applications. Also, when DEF is used for automotive and commercial vehicle use it differs from other urea solutions in purity, liquidity and concentration; therefore, it is not in direct competition with urea solutions as used in other industries. Hino Trucks is also working with our DEF suppliers to ensure a volume of DEF is dedicated to the Truck Market.

**Where and in what volumes can I buy DEF?**

Today you can purchase DEF from Hino Trucks dealers, other OEM dealerships and various truck stop locations (www.finddef.com).

When purchased through Hino Trucks dealers DEF is currently available in 4 different package sizes:

- 1 gallon Emergency Jugs
- 2.5 gallon container
- 55 gallon Drums
- 275 gallon Internal Bulk Container (IBC)

**Where can I buy DEF filling equipment and how much does that cost?**

DEF dispensing equipment is available through pump equipment manufacturers such as Dresser Wayne, Gilbarco, Benecor, Colonial Chemical and Balcrank. Dispensers for selling DEF at the retail level need three certifications: UL certified, weights/measures approved, and point of sale compliant. DEF pumping equipment for dealerships or fleet operations, will cost between $750 and $2000 depending on type and level of sophistication.

**Do DEF producers or distributors lease or sell the dispensing containers and systems?**

Yes, some DEF producers and chemical distributors have teamed up with dispensing system manufacturers to provide packaged programs and will offer recommendations based on annual volume of DEF required.