



# SHELL ROTELLA™ DEF

- Diesel Exhaust Fluid
- ISO 22241 and API Certified
- For SCR Equipped Diesel Emission Systems

Shell Rotella® lubricants are premium fluids to meet the needs of your diesel pickups, heavy duty trucks and off-road equipment. Shell Rotella™ DEF diesel exhaust fluid is formulated to work with Tier 4 Selective Catalytic Reduction (SCR) emission systems designed to reduce the nitrogen oxides (NOx) emissions. Along with diesel particulate filters, these systems help produce cleaner burning diesel engines ever produced. Shell Rotella™ DEF diesel exhaust fluid is a high purity DEF meeting the stringent requirements of ISO 22241 (AUS 32) for use in most 2010 and later on-road diesel trucks, cars and a growing number of off-road and stationary diesel engines as emissions reduction deadlines approach.

## EQUIPMENT NEEDS

With the implementation of new EPA requirements, 2010 brought significant changes in the on-road diesel engine vehicle. While some vehicles attempted to use high levels of exhaust gas recirculation to reduce NOx emissions, many vehicles began using SCR systems. Diesel exhaust fluid is injected into the exhaust stream just ahead of the SCR catalyst and converts NOx to harmless nitrogen and water. This greatly reduces NOx a significant contributor to greenhouse gases in the air with overall reduction in total diesel emissions reduced by 90%. The market for diesel exhaust fluid is expected to be as much as 1 billion gallons in 2020 in North America.

## USAGE RATE

Diesel exhaust fluid usage will depend on the fuel usage, load of the vehicle, and the level of emissions the engine design naturally produces. A usage rate of 1-2% of diesel fuel use is expected. The EPA requirements for diesel exhaust fluid systems in light duty is a minimum of 4,000 miles between fill up of tank. Light duty car manufacturers often target DEF fill up with oil change with diesel pickups about every 5,000 to 7,000 miles.

Commercial vehicles and off-road equipment must not use diesel exhaust fluid faster than the fuel capacity of the equipment. An operator should fill the diesel exhaust fluid tank with every fuel stop. What happens if someone doesn't use diesel exhaust fluid? The system will first give warning lights that diesel exhaust fluid tank is low. Next comes a "limp" mode with reduced speed or performance. The final stage is either engine shutdown or very limited operation.



## WHY SHELL ROTELLA™ DEF FLUID?

Shell Rotella® diesel engine oils are the market leader because they work as hard as you do and provide outstanding performance. Shell Rotella™ DEF diesel exhaust fluid brings those traditions to the diesel exhaust fluid market with the performance to the industry standards required by your equipment. Meeting the chemical requirements of ISO 22241, Diesel Engines – NOx Reduction Agent AUS 32, Shell Rotella™ DEF diesel exhaust fluid conforms to manufacturing standards and certification requirements for API Certified Diesel Exhaust Fluid. This high quality is required by equipment manufacturers for the performance of their emission systems requiring diesel exhaust fluid.

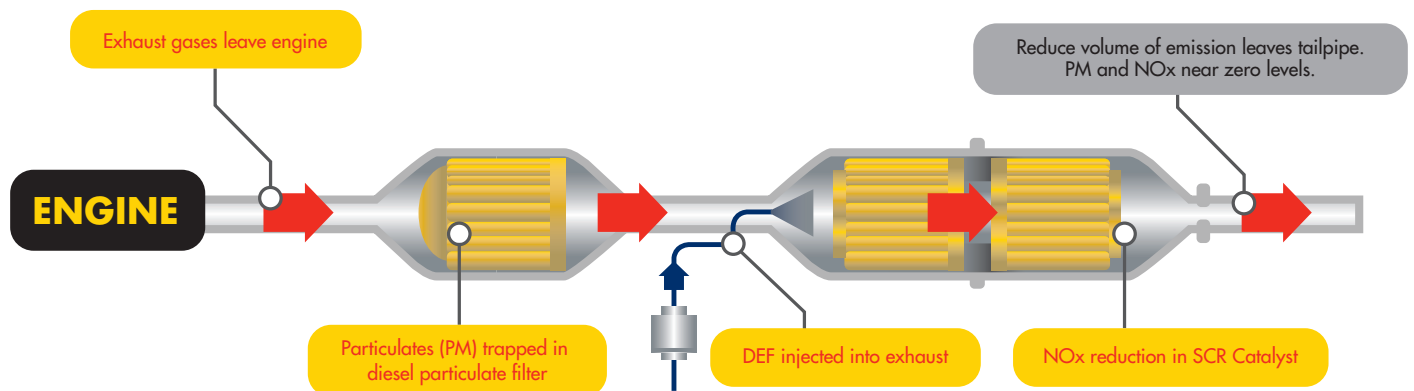
### STORAGE AND HANDLING

All DEF is designed to breakdown at elevated temperatures. Industry standard requirements specify storage between 23° F (-5° C) to 86° F (30° C) for maximum shelf life. The box housing the DEF bottle helps prevent exposure to sunlight and other UV light, also helping to maintain shelf life. DEF is typically made with a shelf life up to 2 years from the time of manufacture. Signs of problems in storage will include crystals forming in containers, pressurization of sealed bottles or loss in volume.

### APPLICATIONS

Shell Rotella™ DEF diesel exhaust fluid is for use in cars, trucks and equipment with SCR equipped emission systems requiring diesel exhaust fluid. This applies primarily to model year 2010 and later vehicles and equipment with diesel engines. Available in a convenient 2.5 gallon “bottle in a box”, Shell Rotella™ DEF diesel exhaust fluid is sized for fill-up or top-up of DEF tanks ranging from 6 to 23 gallons.

### DIESEL EMISSION CONTROL SYSTEM



For more information, please contact your Shell Lubricants representative.



[shell.com/lubricants](http://shell.com/lubricants)

Shell Rotella™ DEF diesel exhaust fluid is part of a family of Rotella® diesel engine oils, Spirax® transmission and gear oils, Gadus® grease and other Shell lubricants to meet your equipment needs.