PRODUCT DATA SHEET

DEF Crystal Clean®
Diesel DEF Medic+®

Part #: 4784

11.8 FL OZ (350 mL)

ISO 9001 CERTIFIED COMPANY

Rislone® Diesel DEF & SCR Emissions System Cleaner

Rislone® DEF Crystal Clean® Diesel DEF & SCR Emissions System Cleaner is a proprietary blend of DEF (Diesel Exhaust Fluid) / AdBlue® compatible cleaning agents and surfactant detergents specifically designed to be safe to use and work on SCR (Selective Catalyst Reduction) systems.

DEF Crystal Clean gives a cleaning effect on the entire SCR system by working to dissolve the white crystal deposits that form in the tank, pump, heater, sender, lines, injector, decomposition tube / reactor, and mixer. These deposits can interfere with the normal operation of the SCR emissions system and engine, increasing fuel consumption and reducing engine power. This reduced power can lead to operating in limp mode where the vehicle will drive slowly or become undrivable. This process restores function and with regular use maintains efficiency of the SCR.



- Excellent for diesel vehicles driven regularly at slow speeds, low loads, short durations or make frequent stops as these are more prone to having the problem of crystallization deposit build up in the SCR system.
- Regular use every 5,000 miles not only keeps the system clean but works to prevent the white crystallization issues from returning.
- Will not void manufacturer's new vehicle warranty. Specifically designed and safe to use on vehicles which have DOC catalytic converters, DPF particulate filters, SCR selective catalytic reduction devices, ASC ammonia slip catalyst or DEF / AdBlue® systems.
- Works with all AdBlue®, Aria 32 (Automotive Nitrogen Oxide Liquid Reducing Agent), AUS 32 (Aqueous Urea Solution), BlueHDi, BlueTEC®, Cummins®, DEF UREA, Duramax®, EcoDiesel®, PowerStroke®, TDI® Clean Diesel, and many more.

PRODUCT USES:

Before Changing DEF Fluid
When Warning Light is On
Avoid Expensive Repairs
Restore Lost Performance

CLEANS:

Tank, Pump, Heater, Sender, Lines, Injector, Decomposition Tube / Reactor, and Mixer

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BENEFITS:

- Avoid Costly DEF System Repairs
- Improves Emission Component Life
- Restores SCR Selective Catalyst Reduction Performance
- Cleans Crystal Deposits, Guaranteed
- Works with all Urea DEF / AdBlue® Fluids
- Restores Optimal DEF Injector Spray Pattern

DO NOT ADD TO DIESEL FUEL TANK

INSTRUCTIONS / DOSAGE:

DEF Crystal Clean is specifically designed to only be installed in the Diesel Exhaust Fluid / AdBlue® tank, which usually has a blue cap. Do not add to the diesel fuel tank.

Light Truck or Mid-Size to Large SUV
5 to 9 gallon tank capacity, install full bottle into DEF tank.

Car or Small SUV
3 to 5 gallon tank capacity, use approximately 1/2 bottle.

Medium and Heavy-Duty Diesel Trucks
10 to 20 gallon tank capacity, use 2 bottles.

Pour DEF Crystal Clean into mostly full DEF tank or add and fill tank with diesel exhaust fluid. If light is still on after 250 miles or a few days of driving, second application may be required or mechanical attention is needed.

NOTE:

Works with all approved diesel exhaust fluids. Some vehicles use a special filling adapter to install DEF / AdBlue® into the tank. For those vehicles, use special funnel or pour into mostly empty DEF / AdBlue® bottle and install in system.

MONEY BACK GUARANTEE:

Rislone guarantees, with the proper use of this product, that your vehicle CEL light will turn off if the vehicle has a code listed below, or it will clean the blocked SCR system. Visit www.rislone.com/refunds for details of product refund and requirements.

*OBD-II PID CODES P20EE, P20EF, P204F, P207F, P20E8, and P218F.

SYSTEM:

Selective Catalytic Reduction (SCR) is a means of using a chemical reduction to convert harmful Nitrogen oxide (NO_X) emissions into Nitrogen (N_2) and Water (H_2O), and a small amount of Carbon dioxide (CO_2), which are all naturally occurring components in the air we breathe. This is achieved through the use of liquid urea and deionized water (32.5% urea and 67.5% water), also known as Diesel Exhaust Fluid (DEF) or AdBlue®, which is injected into the hot exhaust stream of the diesel engine, and is then pushed out the tailpipe. This occurs after the combustion process, so it does not affect engine performance. The DEF can be stored in a separate tank and is metered into the exhaust flow in response to specific engine operating conditions.

The SCR system allows diesel engines to meet stricter emissions regulations, while also maintaining performance and efficiency.

Overall, a SCR system is an effective way to reduce NO_X emissions from diesel engines, and it is a widely used technology in various industries such as automotive, marine, and power generation. However, it does require periodic refilling of DEF, which is an additional maintenance step for vehicles or systems equipped with SCR.

PROBLEM:

What are these white deposits and where do they come from? Most of this comes from the evaporation of water from the DEF leaving behind a solid urea residue.

There are several reasons why you might find such deposits in the DEF system:

Leakage: If the DEF system has any air leaks, the DEF can escape and the water will evaporate, leaving behind crystallized urea.

Overfilling: Overfilling the DEF tank can also lead to spills, which can then crystallize.

Improper Handling: If DEF is not handled or stored properly, contamination can occur, which can also lead to crystallization. DEF should always be stored in a cool, dry, well-ventilated place away from direct sunlight.

Poor Quality DEF: If the DEF used is not of good quality (meaning, it doesn't maintain the required ratio of deionized water to urea), it can lead to deposits.

Contamination: Systems that have had diesel fuel or other harmful chemicals accidentally added to them.

CODES:

PENDING CODES / SOFT CODES – Can be intermittent or historical and do not affect current vehicle performance. Most of these types of DTC codes can be reset by disconnecting the vehicle battery or removed with an OBD scan tool.

STORED CODES / HARD CODES – Situation is happening currently so if you try to erase code it will immediately return. These are usually Permanent Diagnostic Trouble Codes (PDTC). Vehicle needs to be repaired, or fault solved before code can be permanently erased.

P20EE: SCR NO_X Catalyst Efficiency Below Threshold Bank. This code implies that the NO_X levels coming out of the SCR system are too high. This could be due to a defective DEF quality sensor, a faulty NO_X sensor, or an ineffective SCR catalyst.

P20EF: Reductant Injection Valve Stuck Closed Bank 1 Unit 1. This suggests that the reductant (Diesel Exhaust Fluid) injector valve is not opening properly. It could be due to a mechanical failure in the valve itself, a problem in the electrical circuit controlling the valve (like a wiring issue or faulty solenoid), or an issue with the control module that operates the valve.

P20E8: Reductant Pressure Too Low. This code indicates an issue with the pressure of the DEF / AdBlue® fluid in the system. Causes include low DEF level, contaminated DEF, clogged DEF injector, pump issue, or a leak.

P204F: Reductant System Performance Bank 1. This indicates that there's a problem with the SCR system's ability to reduce NO_X. It could be due to a DEF issue, a faulty NO_X sensor, a failing DEF injector, or a defective SCR catalyst.

P207F: Reductant Quality Performance. This code means the DEF in the vehicle is of poor quality or the wrong type. It can be triggered by an issue with the DEF, a faulty DEF quality sensor, or a problem with the NO_X sensor.

P218F: Reductant No Flow Detected. This code specifically points to a problem with the reductant pump control circuit performance. It can be caused by a clogged DEF injector, but also defective pump or wiring issue.

The parts of an SCR system are as follows:

DEF tank: This is where the Diesel Exhaust Fluid, a solution of urea and deionized water, is stored.

DEF filler port: The DEF tank filler port is smaller and designed to only take a DEF fill nozzle. Depending on the vehicle this can be located under the hood in the engine compartment, in the trunk area, in the fuel fill door right next to the diesel fuel port, or for larger trucks, side mounted next to the driver's door. For off road engines and equipment, the location of the DEF fill port could be anywhere.

DEF cap: In most cases, the cap will be blue and labeled DEF ONLY or something similar.

Tank level sending unit: The sender monitors and reports the level of DEF fluid in the tank, there are two types of these systems, float mechanism and ultrasonic. The floating system as the name says has a float connected to the sensor that goes up and down with the fluid level. Ultrasonic systems emit a sound wave through the DEF fluid and depending on how long it takes to return tells the fluid level.

Tank heater: DEF can freeze at temperatures below 12°F (-11°C), which can cause problems in cold climates. To prevent this, the DEF tank is equipped with a heater. This heater thaws the DEF if it freezes and keeps it liquid in cold temperatures.

DEF pump: The DEF pump is responsible for transferring the DEF from the storage tank to the DEF injector.

DEF filter: The DEF filter is usually only used on some heavy-duty trucks and equipment. The filter may be located in the DEF tank, in the DEF supply line, or integrated into the DEF pump or injector.

DEF supply lines: DEF lines are the pipes or hoses that transport the DEF from the tank to the injector.

DEF injector: This is responsible for injecting the correct amount of DEF into the exhaust stream, based on engine operating conditions.

DEF dosing unit or dosing module: This controls the injection of the DEF into he exhaust system.

DEF decomposition tube / mixing chamber: This mixing chamber is where the DEF comes into contact with the hot exhaust gases. The purpose is to make sure the DEF is mixed evenly in the exhaust stream. The head and this mixing causes the DEF to evaporate and turn into ammonia and carbon dioxide.

SCR catalyst: The SCR catalyst itself is usually a ceramic material coated with a metal such as vanadium, tungsten, or titanium, and sometimes precious metals like platinum. These metals act as the catalyst to facilitate the necessary chemical reactions with the Ammonia and Nitrogen oxide to form nitrogen and water.

Ammonia Slip Catalyst (ASC): Not all SCR systems use ASC, but for those that do this is the final piece in the exhaust treatment system. It is designed to catch any ammonia that might have slipped through the SCR catalyst without reacting.

NO_X Sensors: These sensors, positioned before and after the SCR catalyst, monitor the level of NO_X in the exhaust. This data is used by the Engine Control Unit (ECU) to control the DEF dosing rate.