

ASTEROIDS

1. DESCRIPTION

ASTEROIDS are organic materials with controlled particle size used for cleaning blades of gas side of exhaust-gas turbochargers in modern Diesel engines. The specific structure of **ASTEROIDS** is such that when injected by means of compressed air upstream in the gas side of the turbine it causes a slight abrasive action, which maintains the turbine always clean. Once injected in the turbine the **ASTEROIDS** burn and disappear into the atmosphere through the stack without causing any detrimental chemical reaction. The cleaning procedure recommended by most manufacturers until now is cleaning with water. Although that method is efficient it presents a number of drawbacks such as reduction of the RPM of the engine during the entire cleaning process, which causes a loss of speed. Furthermore there is always the risk of forming corrosive acids in presence of sulfurous residuals in the discharge duct.

- With **ASTEROIDS** it is not necessary to reduce the speed of the engine.
- There is no risk of corrosion due to acid formation.

2. APPLICATIONS

When used regularly, **ASTEROIDS** increase significantly the time between maintenance services. Obviously, maintaining the turbine in a perfectly clean condition gives trouble-free operation and improves its efficiency.

3. DIRECTIONS FOR USE

DRY CLEANING SYSTEM OF TURBOCHARGERS

Instead of water, dry solid bodies in the form of granules like **ASTEROIDS** are used for cleaning. A certain quantity of them, depending of the turbocharger size, is blown by compressed air into the exhaust gas lines before the gas inlet casing.

On account of their hardness and composition (natural solid granules, size 1.3-1.7 mm) **ASTEROIDS** have an excellent mechanical cleaning effect (**soft blast**). As a rule, a turbine should be cleaned every **24 to 48 hours** of operation.

PRINCIPLE

ASTEROIDS are blown by compressed air into the exhaust pipes before the turbocharger. This method of cleaning should be employed every 24 to 48 hours of full-load operation. The interval between cleaning operations depends on the degree of contamination and on the increase in exhaust gas temperature after the turbine. Cleaning must be repeated if the gas temperature after the turbine on full load rises to 20°C (20 K) above the mean temperature. For a turbocharger with several gas inlets, the inlets should be cleaned one after the other. On engines with several turbochargers, these should be cleaned one after the other. The gas inlet temperature before the turbine must not exceed 580-590°C (853-863 K) in order to prevent severe burning of the **ASTEROIDS** before the turbine.

ORGANIC MATERIALS WITH CONTROLLED PARTICLE SIZE USED FOR CLEANING BLADES OF GAS SIDE OF EXHAUST-GAS TURBOCHARGERS IN MODERN DIESEL ENGINES

Product Highlights

- With **ASTEROIDS** it is not necessary to reduce the speed of the engine.
- There is no risk of corrosion due to acid formation.
- Increases the time between maintenance services.
- No chemicals used in production process.
- Raw materials treated mechanically.

Product Characteristics

Appearance:	Granulated peanut shells
Corrosive action:	N/A
Specific gravity:	1.5
Flash Point:	None
pH:	None

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clean chemicals clean ships clean seas



ASTEROIDS

Since it is not possible to remove thick coatings with relatively small quantities of **ASTEROIDS**, this method must be used more frequently. Injection of the **ASTEROIDS** into the turbine is best performed at high turbocharger speed, to ensure efficient mechanical cleaning.

INSTALLATIONS OF ASTEROIDS CLEANING SYSTEM

- Before each gas inlet, an adequately dimensioned pipe flange has to be selected and installed in the exhaust gas line (welded or cast eye).
- Manufacture of containers (same number as gas inlets) as shown in the following drawing (welded assemblies).
- Mount the fittings such as valves and the like.
- The container has to be mounted with the strap provided for this purpose at an easily accessible location, the cock or gate valve being at least 300 mm above the corresponding pipe flange in the exhaust gas line. Maximum distance between cock or gate valve and pipe flange / exhaust gas line: 1 m.
- Mount a connecting pipe (outside diameter: 16 mm, inside diameter: 12 mm, maximum length: 1 m), preferably of stainless steel and possibly with a bend radius R of at least 150 mm.

4. INITIAL DOSAGE

Follow the instructions of the manufacturer of blower turbines.

As an indication, an average dosage for an 8.000 to 10.000 HP engine would be 0.6-0.8 dm³ of **ASTEROIDS** injected daily in the blower turbine.

5. OTHER INFORMATION

CLEANING PROCEDURES

For engine with several turbochargers, clean one after the other as follows:

1. Close the safety valve. Tighten the valve cap. Open the cock / gate valve.
2. Open the compressed-air stop valve. Possible deposits and/or condensate in the connecting pipe are now blown out. Close the compressed-air stop valve after about 3 minutes.
3. Close the cock / gate valve.
4. Open the safety valve. The exhaust gas pressure in the container is thus relieved. Close the safety valve.
5. Remove the valve cap. Fill the container with the quantity of **ASTEROIDS** product specified in the table of next page.
6. Check on whether the safety valve is closed. If at all required, reduce the engine output so that the gas temperature before the turbine is < 590°C (863 K).
7. Open the cock / gate valve.
8. Open the compressed-air stop valve. The previously filled-in **ASTEROIDS** are now blown in. Close the compressed-air stop valve after 1 to 1.5 minutes.
9. Close the cock / gate valve.
10. Open the safety valve. The exhaust gas pressure in the container is thus relieved. Close the safety valve.
11. This procedure (item 1 to 10) has to be repeated for any further turbocharger.
12. Cleaning should then be repeated on periodical intervals of every 24 to 50 hours of operation.

ATTENTION: It may occur that, during dry cleaning of the turbine, a small part of blown-in **ASTEROIDS** escapes through the chimney in singed condition.

GENERAL REGULATION

- The gas inlet temperature before the turbine must not exceed 580-590°C (853-863 K).
- The boost pressure should be over 0.5 bars.
- The drain openings in the gas outlet casing must remain closed during dry cleaning.
- The mean particle size of the cleaning granulate must be between 1.3 and 1.7 mm.

6. NOTES

ASTEROIDS

ASTEROIDS are produced from hard shells of fruit stones that have been stabilized by drying and degreasing. Ligneous residues and foreign matter such as mineral or metallic particles are eliminated.

ASTEROIDS are the result of many years of practical experience in blending the raw material to achieve a highly homogeneous and efficient product.

No chemicals are used in our production process. The raw materials are only treated mechanically. Hence the use of **ASTEROIDS** is perfectly safe and harmless.

ASTEROIDS are now produced with improved particle size tolerance of Ø 1.3 to Ø 1.7 mm.