

DESCRIPTION

ERTEK ASTEROIDS is produced from hard shells of fruit stones that have been stabilized by drying and degreasing. Ligneous residues and foreign matters like mineral or metallic particles are eliminated. ASTEROIDS is 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 production process. Raw materials are only treated mechanically. Hence the use of ASTEROIDS is perfectly safe and harmless. ASTEROIDS is produced with particle size tolerance of Ø 1,3 to Ø 1,7 mm.

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|---------------|---------------------------|
| Product Name | : <u>ASTEROIDS</u> |
| Document No | : SP-KS-62 |
| Chemical Name | : Organic Powder |
| Usage Area | : Turbochargers |

A. ORGANIC PROPERTIES

Appearance

Physical Status (20°C) : Granule

Color : Brown

Odor : Odorless

B. PHYSICAL PROPERTIES

Corrosive action : None

Nature of special risks and safety advice : None

Size : 1.3 – 1.7 mm

APPLICATION, FEATURES & BENEFITS

- ✓ Don't cause reduction of the rpm during cleaning process
- ✓ Doesn't form corrosive acids
- ✓ When used regularly, Asteroids increases the time between maintenance services.
- ✓ Maintaining the turbine in perfect clean condition results trouble free operation.
- ✓ 100% organic

DIRECTIONS FOR USE/ APPLICATION RATES AND DOSAGE RATES

Asteroids should be blown by compressed air in to the exhaust pipes before the turbo charger. This cleaning method should be applied in every 24 -48 hours of full load operation. The time between cleaning operations depends on the contamination rate in turbo charges 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 above the average temperature).

For turbochargers has more than 1 inlet, the cleaning should be done one by one. 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. Injection of the ASTEROIDS into the turbine is best performed at high turbocharger speed, to ensure efficient mechanical cleaning.

| VIR VIC | Quantity of solids in kg per turbocharge and cleaning | 1 GAS INLET | | | 2 GAS INLET | | | 3 GAS INLET | | | 4 GAS INLET | | |
|-----------------|--|-------------|--------|----------------|-------------|--------|----------------|-------------|--------|----------------|-------------|--------|----------------|
| | | CONTAINER | | SOLID IN KG | CONTAINER | | SOLID IN KG | CONTAINER | | SOLID IN KG | CONTAINER | | SOLID IN KG |
| | | SIZE | NUMBER | | SIZE | NUMBER | | SIZE | NUMBER | | SIZE | NUMBER | |
| 160/161 184" | 0,1...0,2 | I | 1 | 1X0,5 | I | 2 | each 0,15 | I | 3 | each 0,1 | I | 4 | each 0,1 |
| 200/201 214" | 0,2...0,4 | I | 1 | 1X0,4 | I | 2 | each 0,2 | I | 3 | each 0,15 | I | 4 | each 0,15 |
| 250/251 254" | 0,4...0,6 | I | 1 | 1X0,6 | I | 2 | each 0,3 | I | 3 | each 0,2 | I | 4 | each 0,2 |
| 320/321 304" | 0,6...1,0 | II | 1 | 1X1,0 | I | 2 | each 0,5 | I | 3 | each 0,35 | I | 4 | each 0,35 |
| 400/401 354" | 1,0...1,6 | II | 1 | 1X1,6 | II | 2 | each 0,8 | I | 3 | each 0,55 | I | 4 | each 0,55 |
| 500/501 454" | 1,6...2,0 | II | 1 | 1X2,0 | II | 2 | each 1,0 | I | 3 | each 0,7 | I | 4 | each 0,7 |
| 630/631 564" | 2,0...2,4 | II | 1 | 1X2,4 | II | 2 | each 1,2 | II | 3 | each 0,8 | I | 4 | each 0,8 |
| 714" 750/751 | 2,4...2,8 | III | 1 | 1X2,8 | II | 2 | each 1,4 | II | 3 | each 0,9 | I | 4 | each 0,9 |

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|------|--|--|--|--|--|--|--|--|--|--|--|--|--|
| 900" | | | | | | | | | | | | | |
|------|--|--|--|--|--|--|--|--|--|--|--|--|--|

For these types of turbochargers not all the gas inlets specified in this table are available.

NOTE: If the solid bodies are blown in before the protection grid, the quantity of solids can be increased by 10 to 20%.

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 previous 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 $< 590^{\circ}\text{C}$ (863K).
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 at periodical intervals of every 24 to 50 hours of operation.

GENERAL REGULATION

- The gas inlet temperature before the turbine must not exceed $580 - 590^{\circ}\text{C}$ (853 - 863 K)
- The boost pressure should be over 0,5 bar
- 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

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.

SUGGESTED QUANTITY OF ASTEROIDS IN KG PER TURBO CHARGER OR PER GAS INLET AND THE NUMBER AND SIZE OF CONTAINERS REQUIRED IN EACH CASE**STORAGE INFORMATION**

Store at moderate temperatures. Packing: 25kg. Sacks. Storage Period: 3 years.