



# MAKER TURBO ARIES

## Description

In order to comply with the stringent demands of the different turbine manufacturers, a type of lubricant that, attaining excellent values, complies with various rapid oxidation tests such as IP-280, ASTM-D-2272 and IP-328, as well as exceeding 4000 h in the conventional ASTM-D-943 test. Furthermore, these oils have passed radiation exposure tests, obtaining certification for use in nuclear power plants. They are specially recommended for nuclear and thermal power plant steam turbines requiring oils inhibited against oxidation, rust and with an extended service life. They can also be applied in all uses of Aries lubricants, obtaining greater durability.

## Properties

- Extraordinary resistance to ageing and sludge formation.
- High resistance to rust.
- Great water separation capacity.
- Excellent anti-foam properties.
- Very good air elimination.
- Used by most turbines installed in Spain.

## Quality levels, approvals and recommendations

- DOOSAN SKODA: Tp0010P\* (32)
  - ALSTOM: HTGD 90117 V0001T (32, 46, 68)
  - DIN: 51506, L-VBL (32, 46, 68)
  - DIN: 51517/2 - CL (32, 46, 68)
  - HOWDEN & KKK (46)
  - ISO: 6743/3 - DAA (32, 46, 68)
  - SOLAR: ES 9-224 AA Class II (32, 46)
  - SIEMENS: TLV 9013 04\* (32, 46)
  - CSN: 65 6620 (32)
  - DIN: 51515, L-TD (32, 46, 68)
  - GEK: 46506E, 32568j, 28143b (32, 46, 68)
  - ISO: 3498-CKB (32, 46, 68)
  - ISO: 6743/5 TGB/TSA (32, 46, 68)
- \*Formal approval



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## Technical specifications

|                                    | UNIT     | METHOD     | VALUE  |        |        |
|------------------------------------|----------|------------|--------|--------|--------|
| ISO Viscosity Grade                |          |            | 32     | 46     | 68     |
| Kinematic viscosity at 40 °C       | cSt      | ASTM D445  | 32     | 46     | 68     |
| Kinematic viscosity at 100 °C      | cSt      | ASTM D445  | 5,4    | 6.8    | 8.5    |
| Viscosity index                    | -        | ASTM D2270 | 100    | 98     | 98     |
| Density at 15 °C                   | g/cm3    | ASTM D4052 | 0.873  | 0.877  | 0.883  |
| Pour point                         | °C       | ASTM D97   | -15    | -12    | -12    |
| Flash point, open cup              | °C       | ASTM D92   | 215    | 220    | 230    |
| Water separability at 54 °C        | min      | ASTM D1401 | <15    | <15    | <30    |
| Rust, method A                     | -        | ASTM D665  | Pass   | Pass   | Pass   |
| Air release at 50 °C               | min      | ASTM D3427 | 2.5    | 2.5    | 4      |
| RPVOT                              | min      | ASTM D2272 | 750    | 600    | 600    |
| FZG (A/8,3/90): Failure load stage | -        | ISO 14635  | 9      | 10     | 10     |
| TAN                                | mg KOH/g | ASTM D664  | 0.14   | 0.14   | 0.14   |
| Oxidation (TAN = 2)                | h        | ASTM D943  | >4,000 | >3,000 | >3,000 |

The above mentioned characteristics are typical values and should not be considered product specifications.