



# Shell Gadinia AL 40

*Advanced Lubricant for medium speed trunk-piston engines running on distillate fuel.*

Shell GADINIA AL is a premium quality marine diesel engine oil designed for use in medium speed trunk piston engines, which operate on distillate fuels. Shell GADINIA AL is specially designed to control oil consumption in modern engines, where liner -lacquering is a potential problem. Being multifunctional Shell GADINIA AL can also be used for other shipboard applications such as reduction gears.

## DESIGNED TO MEET CHALLENGES

### Performance, Features & Benefits

#### ▪ Improved Reliability

Excellent piston and crankcase cleanliness, which helps to maintain engine efficiency.

Load carrying properties required for use in reduction gears.

#### ▪ Lower Maintenance Costs

Excellent liner lacquer control that maintains lubricating oil consumption at its normal level.

A high level of protection against bore polishing - another cause of high oil consumption.

#### ▪ Re-assurance

Protection for engines where cylinder liner lacquering is likely to occur.

### Main Applications

Highly rated medium speed diesel engines operating under high load or overload conditions.

General ship application, including gears, where specialist lubricants are not required.

### Specifications, Approvals & Recommendations

- Rolls-Royce, Bergen
- Deutz AG
- MAN B&W Diesel AG
- Simplex (Compact Sterntube Seals)
- API CF

For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk.

### Typical Physical Characteristics

| Properties             |        |                    | Method     | Shell Gadinia AL 40 |
|------------------------|--------|--------------------|------------|---------------------|
| Kinematic Viscosity    | @40°C  | mm <sup>2</sup> /s | ASTM D445  | 140                 |
| Kinematic Viscosity    | @100°C | mm <sup>2</sup> /s | ASTM D445  | 14.3                |
| Density                | @15°C  | kg/l               | ASTM D4052 | 0.900               |
| Flash Point (PMCC)     |        | °C                 | ASTM D93   | >200                |
| Pour Point             |        | °C                 | ASTM D97   | -18                 |
| Load Carrying Capacity | FZG    | Fail Stage         | IP 334     | 12                  |
| Sulphated Ash          |        | % wt               | ASTM D874  | 1.65                |
| BN                     |        | mg KOH/g           | ASTM D2896 | 15                  |

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.

### Health, Safety & Environment

#### ▪ Health and Safety

Shell Gadinia AL 40 is unlikely to present any significant health or safety hazard when properly used in the recommended application and good standards of personal hygiene are maintained.

Avoid contact with skin. Use impervious gloves with used oil. After skin contact, wash immediately with soap and water.

Guidance on Health and Safety is available on the appropriate Material Safety Data Sheet, which can be obtained from <http://www.epc.shell.com/>

▪ **Protect the Environment**

Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

**Additional Information**

▪ **Advice**

Advice on applications not covered here may be obtained from your Shell representative.

▪ **Liner Lacquering**

The medium-speed diesel engine is becoming more demanding to lubricate. Higher engine efficiencies are being achieved through engine designs, which incorporate higher cylinder - pressures, higher combustion temperatures, and the use of very high-pressure fuel injection. In some modern distillate fuelled engines, these conditions may lead to the formation of a layer of brown or black lacquer on the cylinder liner surfaces. This can fill in the honing pattern, resulting in a loss of oil control and runaway oil consumption. The condition is particularly common in severe operation (e.g. overload or high torque conditions). There is also evidence that it is more common where low sulphur (<0.5% wt) distillate fuels are in use.