Omega 690

Super EP Gear Oil

DESCRIPTION:

OMEGA 690 is a revolutionary CTA (Compensatory Thermostat Action) gear oil that surpasses the API GL-5 AND GL-6 requirements. In general, even the best ordinary gear oils can barely attain the GL-4 (or at the very best GL-5) requirements, and very rarely can oils meet API GL-6 requirement.

SUPREME TENACITY:

OMEGA 690's has a marked ability to follow a gear train and stay in position. This well-known OMEGA 690 trait has been subject to many - mainly unsuccessful - attempts to copy or assimilate this action. But there is always a difference between a "copy" and the genuine quality of OMEGA 690. OMEGA 690 retains a fine film on the metal surface regardless of how thoroughly it is wiped away. This ensures that OMEGA 690 is performing its major "stay put" function. Ordinary gear oils migrate away from the metal surface. They leave the friction surface exposed to direct and unprotected contact. This lends itself to oxidation that causes corrosion.

COMPENSATORY THERMOSTAT ACTION (CTA):

OMEGA 690 contains billions of extremely sensitive, micro thermostat - action Megalite* polymers that compensate for the natural tendencies of an oil to thin out or thicken when subjected to high and low temperature fluctuations, respectively. These polymers become expanded when the oil temperature is high.
• and the oil is therefore thinner. They also contract when the temperature is low, and the oil is therefore thicker. This compensatory expansion and contraction action is essential to the quality of the lubricant and protection of the equipment on which it is used.

This unique CTA feature ensures OMEGA 690 provides uniform flow at all operating temperatures for more consistent, high lubricity performance and ensures consistent fluid drag over the extended useful operating life of the lubricant.

*Megalite* polymers can be likened to a spring-loaded metal roll. Each tiny polymer is so sensitive that even very slight temperature fluctuations create either a slight expansion or contraction (depending on whether the environment was hot or cold). As soon as a temperature drop is experienced, the polymer's "spring" immediately shuts, allowing the fluidity of the lubricant to retain its original characteristics and bypass clearances with the same dynamic "bearing" friction as that during ambient temperature conditions. The lubricant avoids becoming heavy and viscous. Similarly when a temperature increase takes place, before the lubricant has a chance to thin out and begin "floating" through clearances, the polymers expand, taking with their expansion an equal "filling" of the lubricant and thereby retaining the essential viscosity stability needed for the well-being of the equipment.

Without "CTA" (Compensatory Thermostat Action), as provided by OMEGA 690, the oil characteristic easily becomes thick and heavy during temperature drops. This results in the difficult coursing of the equipment, draining of energy due to increased fluid drag, increase in oil consumption and the formation of heavy deposits that become hard -- clogging the systems and filters. In hot climatic conditions, equipment wears rapidly and any number of internal "hot spots" formed soon transform into gums and varnishes, forming heavy carbon build-up. OMEGA 690 resists these costly and regular defects through the scientific development of CTA.
**EXTREME PRESSURE:**

OMEGA 690 is heavily-fortified with carefully-calibrated, extreme pressure-resistant supplements. Its additional supplements for corrosion resistance, oxidation resistance, water wash qualities and many others far outnumber those of most ordinary gear oils. The special extreme pressure supplements are designed to withstand such adverse performance conditions as:

<table>
<thead>
<tr>
<th>Load</th>
<th>Inductance</th>
<th>Limited Radiation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compression</td>
<td>Displacement</td>
<td>High Pressure Displacement</td>
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<tr>
<td>Impact</td>
<td>Contact Migration</td>
<td>Explosive Migration</td>
</tr>
<tr>
<td>Shock</td>
<td>Surface Depolarization</td>
<td>Implosive Fragmentation</td>
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<tr>
<td>Impression</td>
<td>Capacitance</td>
<td>Reverberation</td>
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<tr>
<td>Thermal Conductivity</td>
<td>Contact Chaff</td>
<td></td>
</tr>
</tbody>
</table>

**FRICTION MODIFICATION:**

OMEGA 690 contains a selection of friction modifiers. These supplements have been only recently developed and OMEGA 690 is considered to be one of the very few gear oils to boast their usage.

**LIMITED SLIP DIFFERENTIAL PERFORMANCE:**

OMEGA 690 performs perfectly well in limited slip differentials. In contrast, ordinary gear oils form a heavy energy-consuming drag and the oil migrates away from the friction area.

**HYPOID GEAR APPLICATION:**

OMEGA 690 can be used in hypoid gears where the pinion gear is less than 25% of the crown wheel or where the pinion-and-crown-wheel has more than 2 inches (50mm) of offset. Ordinary gear oils, even those which can meet the API GL-4/5 requirements are unable to achieve this performance.
WATERPROOF:

OMEGA 690 is completely water and waterwash resistant. It resists condensation and humidity, rain and other forms of water and moisture contact without thinning or contamination.

VIBRATION RESISTANT:

OMEGA 690 dramatically reduces the noise level in a gear system. This prevents scuffing, scoring, galling, pitting and scraping. These major causes of noise (and wear) are largely eliminated and OMEGA 690 promotes the near-silent running of gears of gearboxes.

VERSATILE RANGE:

- OMEGA 690 is available in seven different grades:
  - OMEGA 690 SAE 90
  - OMEGA 690 SAE 140
  - OMEGA 690 SAE 80W90
  - OMEGA 690 SAE 85W140
  - OMEGA 690 SAE 75W90
  - OMEGA 690 SAE 75W140
  - OMEGA 690 ISO VG 460
- Military Specifications
  OMEGA 690 meets or exceeds the following U.S. Military specifications:
  - MIL-L-2105D
  - SAE J2360 (Formerly MIL-PRF-2105E)
- Automotive Specifications
  - API GL 5 / GL 6, MT-1
  - PG-2 Limited Slip
  - MACK GO-H, MACK GO-J
  - EATON PS-037
  - GM HN-1561, HN-2040
  - MB 235.8
  - Arvin Meritor 0-76N
  - SCANIA STO – 1.00
- Industrial Specifications
  - US STEEL 224
  - CINCINNATI MILACRON
  - AGMA 9005-D94

(Non-exhaustive list of manufacturers)
APPLICATION:

Initial fill, top-up or refill of:

(a) Automotive Transmissions
(b) Hypoid differentials (especially limited slip type)
(c) Industrial gearboxes

TYPICAL DATA:

<table>
<thead>
<tr>
<th>TEST</th>
<th>ASTM</th>
<th>SAE 90</th>
<th>SAE 140</th>
<th>SAE 80W90</th>
<th>SAE 85W140</th>
<th>SAE 75W90</th>
<th>SAE 75W140</th>
<th>ISO VG 460</th>
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<tbody>
<tr>
<td>ISO Viscosity Grade</td>
<td>D-2422</td>
<td>150</td>
<td>320</td>
<td>150</td>
<td>320</td>
<td>100</td>
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<td>Appearance</td>
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<td>103</td>
<td>197</td>
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<tr>
<td>@100°C</td>
<td>D-445</td>
<td>16.4</td>
<td>26</td>
<td>16.4</td>
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<td>102</td>
<td>145</td>
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<td>D-92</td>
<td>219 (426)</td>
<td>222 (432)</td>
<td>219 (426)</td>
<td>222 (432)</td>
<td>165 (329)</td>
<td>155 (311)</td>
<td>222 (432)</td>
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<td>183 (361)</td>
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<td>245 (473)</td>
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<td>All Sequences, After Settling</td>
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<td>3 hrs. @ 100°C</td>
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<td>Four Ball, Wear Scar Dia, mm</td>
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<td>&gt; 450</td>
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<tr>
<td>Phosphorus, % Mass</td>
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<td>0.075</td>
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</tbody>
</table>

# The characteristics given above are typical of current production only and slight batch to batch variations should be expected.
TOTAL RANGE MULTIGRADE: SAE 75W140

OMEGA 690 SAE 75W140 is formulated with a special blend of fully synthetic base fluids to provide outstanding low-temperature fluidity as well as superior high-temperature oil film strength.

- **LOW TEMPERATURE APPLICATION:** OMEGA 690 SAE 75W140 is eminently suitable for use at ambient temperatures as low as –40°C. It gives the gear a smooth and quiet start during cold running and yet maintains a high oil viscosity to protect the gear metal surfaces from all forms of wear and scoring after warming up.

- **FUEL ECONOMY:** Because of the lower fluid drag generated during the starting period, OMEGA 690 SAE 75W/140 produces fuel savings of up to 5% when compared to monograde or conventional multigrade gear oils.

- **OUTSTANDING SHEAR STABILITY:** Because of the severe shearing encountered in gear service, ordinary multigrade and extra-range multigrade gear oils can suffer from huge viscosity loss during service. The special blend of fully synthetic base fluids in OMEGA 690 SAE 75W140 is designed to overcome this shortcoming. When tested according to the Volkswagen KRL test method, the viscosity drop is less than 5%

- **SUPER PERFORMANCE:** Like other grades of OMEGA 690, SAE 75W140 meets and exceeds the API GL-6 performance level. It protects gears from wear and scoring in a manner far superior to that of ordinary gear oils meeting the API GL-5 standard.

### OMEGA 690 ISO VG 460 PERFORMANCE CHARACTERISTICS

With its high base on viscosity, OMEGA 690 ISO VG 460 is recommended for high load application, including many demanding gear applications in the canning/bottling plants, conveyors, paper, construction, and mining industries.

**OMEGA 690 ISO VG 460 meets or exceeds the following industrial specifications:**

<table>
<thead>
<tr>
<th>US Military:</th>
<th>Automotive:</th>
<th>Industrial:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIL-L-2105D</td>
<td>API GL 5 / GL 6, MT-1</td>
<td>US Steel 224</td>
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<tr>
<td>SAE J2360</td>
<td>Mack GO-J, Mack GO-H</td>
<td>Cincinnati Milacron</td>
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<tr>
<td>(Formerly MIL-PRF-2105E)</td>
<td>PG-2 Limited Slip</td>
<td>AGMA 9005-D94</td>
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<td></td>
<td>EATON PS-037</td>
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<td></td>
<td>GM HN-1561, HN-2040</td>
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<td></td>
<td>MB 235.8</td>
<td></td>
</tr>
</tbody>
</table>
SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product name: Omega 690

Container size: 5 l, 20 l, 205 l

1.2. Relevant identified uses of the substance or mixture and uses advised against

Application: Gear oil.

1.3. Details of the supplier of the safety data sheet

Supplier: EU importer: Sovereign Lubricants (UK) Ltd, Crowtrees Lane, Rastrick, West Yorkshire, HD6 3LZ

T: 01484 718674 - F: 01484 400164

enquiries@sovereign-omega.co.uk

www.sovereign-omega.co.uk

Manufacturer: Omega Manufacturing Division

1801, Guardian House

32 Oi Kwan Road

Wanchai, Hong Kong

Tel:(852) 2577 5187

Fax:(852) 2577 3190

magna@magnagroup.com

www.magnagroup.com

Responsible for safety data sheet authoring: SDS_info@dhiigroup.com

1.4. Emergency telephone number
SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

The product is classified:

67/548/EEC: R52/53

Human health: Prolonged or repeated contact with skin may cause redness, itching, irritation, eczema, skin cracking and oil acne. Degreasing to skin. The harmful effects may increase in used oil. The product contains a small amount of sensitising substance which may provoke an allergic reaction among sensitive individuals.

Environment: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Oil spills are generally hazardous to the environment.

2.2. Label elements

R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S60 This material and its container must be disposed of as hazardous waste.

S61 Avoid release to the environment. Refer to special instructions/safety data sheets.

Contains: Long-chain alkyl amine. May produce an allergic reaction.

2.3. Other hazards

PBT/vPvB: Not relevant.
SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

The product contains: mineral oil and additives.

67/548/EEC:

<table>
<thead>
<tr>
<th>%</th>
<th>CAS-No.:</th>
<th>EC No.:</th>
<th>REACH Reg. No.</th>
<th>Chemical name</th>
<th>Hazard classification</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>0,1-1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Long-chain alkyl amine</td>
<td>C;R34 T;R23/24 Xn;R22</td>
<td>R48/20 R43 N;R50-53</td>
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<tr>
<td>0,1-1</td>
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<td>Alkyl phosphonate</td>
<td>Xi;R38-41 N;R51-53</td>
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<tr>
<td>0,1-1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Long-chain alkenyl amine</td>
<td>C;R35 Xn;R22 N;R50</td>
<td></td>
</tr>
</tbody>
</table>

GHS/CLP:

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<tr>
<th>%</th>
<th>CAS-No.:</th>
<th>EC No.:</th>
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<th>Chemical name</th>
<th>Hazard classification</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>0,1-1</td>
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<td>Long-chain alkyl amine</td>
<td>Skin Corr. 1B;H314</td>
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<td></td>
<td></td>
<td></td>
<td>Acute Tox 3;H331</td>
<td></td>
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<td></td>
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<td>Acute Tox 3;H311</td>
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<td>Acute Tox. 4;H302</td>
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<td>STOT RE 2;H373</td>
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<td>Skin Sens. 1;H317</td>
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<td>Aquatic Acute 1;H400</td>
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<td>Aquatic Chronic 1;H410</td>
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<td>Eye Dam. 1;H318</td>
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<td>Aquatic Chronic 2;H411</td>
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<td>Long-chain alkenyl amine</td>
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<td></td>
<td></td>
<td></td>
<td>Aquatic Acute 1;H400</td>
<td></td>
</tr>
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</table>

References: The full text for all R-phrases and hazard statements are displayed in section 16.
SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation: Move into fresh air and keep at rest. In case of persistent throat irritation or coughing or after inhalation of oil mist: Seek medical attention and bring along these instructions.

Skin contact: Remove contaminated clothing immediately and wash skin with soap and water. In case of rashes, wounds or other skin disorders: Seek medical attention and bring along these instructions.

Eye contact: Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyelids widely. If irritation persists: Seek medical attention and bring along these instructions.

Ingestion: Immediately rinse mouth and drink plenty of water. Keep person under observation. If person becomes uncomfortable seek hospital and bring these instructions.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects: See section 11 for more detailed information on health effects and symptoms.

4.3. Indication of any immediate medical attention and special treatment needed

Medical attention/treatments: Not known.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Extinguishing media: Small fires: Extinguish with carbon dioxide or dry powder. Larger fires: Extinguish with foam, carbon dioxide or dry powder. Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Specific hazards: During fire, gases hazardous to health may be formed.

5.3. Advice for firefighters

Protective equipment for fire-fighters: Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace.
SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Avoid inhalation of oil mist and contact with skin and eyes. Follow precautions for safe handling described in this safety data sheet.

6.2. Environmental precautions

Environmental precautions: Do not discharge into drains, water courses or onto the ground.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up: Absorb spillage with oil-absorbing material. Clean contaminated area with oil-removing material.

6.4. Reference to other sections

References: For personal protection, see section 8. For waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Safe handling advice: Observe good chemical hygiene practices. Avoid prolonged and repeated contact with oil, particularly used oil. Always remove oil with soap and water or skin cleaning agent, never use organic solvents. Do not use oil-contaminated clothing or shoes, and do not put rags moistened with oil into pockets.

Technical measures: Use work methods which minimise oil mist production.

Technical precautions: When working with heated oil, mechanical ventilation may be required.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures for safe storage: No special precautions.

Storage conditions: Store in tightly closed original container.

7.3. Specific end use(s)

Specific use(s): Not relevant.
**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

**9.1. Information on basic physical and chemical properties**

**Appearance:** red liquid

**Odour:** almost odourless

**pH:** not relevant

**Boiling point:** not available

**Flash point:** >150°C

**Explosion limits:** not available

**Relative density:** ~0,9

**Solubility:** insoluble in water (<0,1 g/l)

**9.2. Other information**

**Other data:** Not relevant.
SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity
Reactivity: None known.

10.2. Chemical stability
Stability: Stable under normal temperature conditions.

10.3. Possibility of hazardous reactions
Hazardous Reactions: None known.

10.4. Conditions to avoid
Conditions/materials to avoid: None specific.

10.5. Incompatible materials
Incompatible materials: Strong oxidising substances.

10.6. Hazardous decomposition products
Hazardous decomposition products: None in particular.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects
The harmful effects may increase in used oil.

Inhalation: Inhalation of oil mist or vapours formed during heating of the product will irritate the respiratory system and provoke coughing.

Skin contact: Degreasing. Prolonged or frequent contact may cause redness, itching, irritation, eczema, skin cracking and oil acne. The product contains a small amount of sensitising substance which may provoke an allergic reaction among sensitive individuals after repeated contact.

Eye contact: Splashes may irritate.

Ingestion: May irritate and cause malaise.

Specific effects: Prolonged or repeated contact with used oil may cause serious skin diseases, such as dermatitis and skin cancer.
SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Oil spills are generally hazardous to the environment.

The product contains substance which are very toxic to aquatic organisms and which may cause long term adverse effects in the aquatic environment.

Expected LC/EC50 value: 0.1 < LC50 ≤ 1 mg/l (Long-chain alkyl amine)
Expected LC/EC50 value 0.01 < LC50 ≤ 0.1 mg/l (Long-chain alkenyl amine)

12.2. Persistence and degradability

Degradability: The product is expected to be slowly biodegradable.

12.3. Bioaccumulative potential

Bioaccumulative potential: No data available on bioaccumulation.

12.4. Mobility in soil

Mobility: No data available.

12.5. Results of PBT and vPvB assessment

PBT/vPvB: Not relevant.

12.6. Other adverse effects

Other adverse effects: None known.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Dispose of waste and residues in accordance with local authority requirements. Waste is classified as hazardous waste.

Waste from residues: EWC-code: 13 02 05
SECTION 14: TRANSPORT INFORMATION

The product is not covered by international regulation on the transport of dangerous goods (IMDG, IATA, ADR/RID).

14.1. UN number

UN-No:

14.2. UN proper shipping name

Proper Shipping Name:

14.3. Transport hazard class(es)

Class:

14.4. Packing group

PG:

14.5. Environmental hazards

Marine pollutant:

Environmentally Hazardous substance:

14.6. Special precautions for user

Special precautions: None known.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Transport in bulk: Not relevant.

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture


15.2. Chemical Safety Assessment

CSA status: Not relevant.
SECTION 16: OTHER INFORMATION

The user must be instructed in the proper work procedure and be familiar with the contents of these instructions.

Handling of used oils:
Protect health - avoid prolonged and repeated skin contact. Wash with soap and water. Protect the environment - do not pollute drains, water courses or the soil. Contact your local authority for any used oil disposal instructions.

The following sections contain revisions or new statements: 1-16.

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Wordings of
R-phrases/H-statements:
R22 Harmful if swallowed.
R23/24 Toxic by inhalation and in contact with skin.
R34 Causes burns.
R35 Causes severe burns.
R38 Irritating to skin.
R41 Risk of serious damage to eyes.
R43 May cause sensitisation by skin contact.
R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.
R50 Very toxic to aquatic organisms.
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
H302 Harmful if swallowed.
H311 Toxic in contact with skin.
CAUSES SEVERE SKIN BURNS AND EYE DAMAGE

CAUSES SKIN IRRITATION

MAY CAUSE AN ALLERGIC SKIN REACTION

CAUSES SERIOUS EYE DAMAGE

TOXIC IF INHALED

MAY CAUSE DAMAGE TO ORGANS THROUGH PROLONGED OR REPEATED EXPOSURE

VERY TOXIC TO AQUATIC LIFE

VERY TOXIC TO AQUATIC LIFE WITH LONG LASTING EFFECTS

TOXIC TO AQUATIC LIFE WITH LONG LASTING EFFECTS

The information on this data sheet represents our current data and is reliable provided that the product is used under the prescribed conditions and in accordance with the application specified on the packaging and/or in the technical guidance literature. Any other use of the product which involves using the product in combination with any other product or any other process is the responsibility of the user.

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