



# Shell Malleus GL 3500

## Superior Performance Open Gear

Shell Malleus GL 3500 is a full EP Grease developed for the lubrication and protection of open gears subjected to extremes of ambient temperature and operating conditions.

Shell Malleus GL 3500 combines high performance with an environmentally safe chemistry that minimizes the cost of disposal and provide optimum performance, providing a tenacious lubricant film that resists 'fling off'.

### DESIGNED TO MEET CHALLENGES

#### Performance, Features & Benefits

Shell Malleus GL 3500 lubricant represents the latest scientific breakthrough Technology. Unique feature provides a durable protective coating to metal surfaces without the use of bitumen, solvents or heavy metals.

Shell Malleus GL 3500 generates a tough, durable film on metal surfaces, which minimizes metal-to-metal contact and wear. Lubricant consumption is reduced by as much as 40% compared to traditional open gear lubricants of the fluid type. Shell Malleus GL 3500 contains graphite and MoS<sub>2</sub>. Special additive technology greatly enhances the effectiveness of graphite and MoS<sub>2</sub>. This unique combination enhances the separation of extremely loaded gear teeth and creates a durable protective film on the contact surfaces of machine components.

#### • Reduced Maintenance/Housekeeping

Shell Malleus GL 3500 retains its natural protective properties and remains pliable over its long working life.

Resists drying out in gear teeth or shrouds even in extremely dusty conditions.

#### • Excellent anti-wear performance

Molybdenum disulphide and other solid lubricants combine to reduce tooth contact zone temperatures, reduce gear surface pitting and alleviate 'stick-slip' conditions.

#### • Superb load carrying capacity

Shell Malleus GL 3500 with its unique blend of high viscosity base oils and polymer forms a protective cushion between gear teeth and resists 'fling off', 'squeeze out' and oil separation.

#### • Water resistant

Effectively resists water 'wash-off' by immersion or spray.

#### • Reduced Lubricant Consumption

Shell Malleus GL 3500 forms a tenacious lubricant film, which allows a reduced application rate in comparison to conventional gear lubricants.

#### • Environmental compliance

Lead and solvent haven't been added intentionally to Shell Malleus GL 3500, combined with the ability to decrease usage reduces environmental concerns.

#### • Corrosion protection

Protects metal surfaces from corrosion in hostile environments such as salt-water conditions. Repels dirt and dust.

#### Main Applications

Shell Malleus GL 3500 is recommended for the lubrication of all types of grinding mills and kilns.

#### Specifications, Approvals & Recommendations

#### • F L Smidth

#### • Ferry Capitain

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

## Typical Physical Characteristics

Properties			Method	Shell Malleus Grease GL 3500
NLGI Consistency				00
Colour				Black
Soap Type				Aluminium Complex
Texture (Visual)				Tacky
Base Oil (type)				Mineral
Kinematic Viscosity	@40°C	mm <sup>2</sup> /s	ISO 3104	4100
Kinematic Viscosity	@100°C	mm <sup>2</sup> /s	ISO 3104	157
Cone Penetration Worked	@25°C	0.1mm	ASTM D217	400 - 430
Dropping Point		°C	IP 396	190
Rust Test			ASTM D1743	Pass
Copper Strip Corrosion (3 hrs)	@100°C			1b
Four Ball Weld Load		Kg		800
Four Ball Wear Scar		mm	ASTM D2266	Max 0.7
Four Ball Load Wear Index (LWI)		Kg	ASTM D2596	120
FZG A/2.76/50 Load Stage Pass			DIN 51354	12

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 Malleus Grease GL 3500 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

### • Operating Temperature Range

-7°C to +150°C.

### • Dispensing

Shell Malleus GL may be applied manually or by conventional centralised automatic lubrication systems.

Consult with your local Shell Specialty Mining Lubricants Technician or your Shell Lubricants engineer for advise on application and consumption rates to maximise performance.

### • Advice

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