Shell Malleus Grease RN

Superior Performance Open Gear Running In Grease Containing Solid Lubricants

THICKENER	NLGI	TEMP RANGE	BASE OIL VISCOSITY		EP	WATER RESISTANCE	SOLID LUBRICANT
			40°C	100°C			
Aluminium Complex	00	- 30°C to + 200°C	520 mm2/s	32 mm2/s	✓✓✓	☆☆☆	Graphite

Shell Malleus RN is a high performance sprayable Running In Aluminium Complex Grease, based on a part synthetic base oil blend and contains micronised graphite as solid lubricant.

The product chemistry is designed to cause a well-controlled smoothening process to reduce surfaces roughness on new and damaged open gearing.

Applications

Open Gears on:

- grinding mills
- rotary kilns & dryers

of mining, cement and steel industries, power stations.

Shell Malleus RN is a ready-to-use product, which can be applied through conventional automatic lubrication spraying systems or manual pressurized-air hand spraying equipment.

It is important to consult the appropriate consumption charts to determine the specified quantities of lubricant to apply. Incorrect consumption quantities could result in tooth damage.

Performance Features

Shell Malleus RN not only reduce surface roughness of first time operating open gears but also improves used tooth flanks surface with a "cleaning" and corrective effect allowing longer life operation.

The product can also be used in case of light tooth damage smoothing surface roughness on the load carrying tooth flanks and increasing the contact area.

♦ ***Superior Running In performance***

Shell Malleus RN advanced formulation ensures a well-controlled smoothening process through chemical reaction in the zones being under higher load. This controlled wear process allows the gearing to obtain the maximum load distribution between the girth and pinion gearing.

♦ ***Periodic smooth lapping of tooth profile***

It is considered to be a good maintenance practice to apply a 180 kg drum of Malleus RN once per year, or every 6000 hrs of operation, to remove fatigue micro-cracks well before they increase in size, causing long term future irreversible damage.

♦ ***Environmental advices***

Lead and solvent haven't been added intentionally to Shell Malleus RN.

Approvals and Recommendations

Shell Malleus RN has been approved by following OEMs :

Ferry-Capitain
FLSmidth

Operating Temperature Range

Automatic spraying system from -15°C to 100°C.

Lubrication film from - 30°C up to 200°C.

Health & Safety

Shell Malleus RN should only be used correctly in the recommended application and under conditions of good industrial and personal hygiene as recommended in the Shell Product Safety Data Sheet.
For further guidance on Product Health & Safety refer to the appropriate Shell Product Safety Data Sheet.

Typical Physical Characteristics

NLGI Consistency	**00**
Colour	**Black**
Soap Type	**Aluminium Complex**
Texture (visual)	**Tacky**
Base Oil (type)	**Part Synthetic**
Density at 15.5℃ Kg/m3 (Gardener Method)	**1000**
Kinematic Viscosity @ 40℃ mm2/s 100℃ mm2/s (ISO 3104)	**520** **32**

Cone Penetration Worked @ 25℃ 0.1mm (ASTM-D217)	**400 - 430**
Dropping Point ℃ (IP 396)	**240**
Copper Strip Corrosion 3 h @ 100℃	**1B**
Four Ball weld load N	**8000**
Low Temperature Pumpability ℃ Lincoln Ventmeter @ 400 psi	**-30**
Rust Test (ASTM D-1743)	**Pass**

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

Application types and Examples to caculate consumption quantities

Consumption quantity guide lines		
Application Type		**Recommended consumption quantities [cc / (cm* x op.hour)]**
1	Small rotary drums (e.g. dryer units) < 750 kw	**4**
2	Small single-pinion kiln drives < 750 kw	**5**
3	Average single-pinion drives of mills and kilns > 751 to < 2500 kw	**6**
4	Large single-pinion mill drives and double-pinion kiln drives > 2501 kw	**7**
5	Double-pinion mill drives	**8**
The above recommended consumption quantities only apply to Shell Malleus RN! kw = Kilowatt power rating of the electrical motor, driving the gear train		

Illustration to calculate required consumption quantities per hour		
	Double-pinion mill drive (type 4)	**Small rotary drum (type 2)**
Required specific consumption quantity **[cc / (cm x op.hour)]**	**7**	**5**
Flank width **[cm]**	85	40
Consumption quantity / **op**.hour **[cc]** cc to kilograms / by 1000	**7** x 85 = **595 cc**	**5** x 40 = **200 cc**
Consumption quantity / 24 op.hours **[kg]**	0.59 cc x 24 op = **14.28 Kgs per day**	0.20 cc x 24 op = **4.80 Kgs per day**
In the case of double-pinion drives with pinion lubrication the consumption quantity should be doubled and distributed evenly to both spray bars. **cc = cubic centimeters** **cm = centimeters of the tooth flank width** **op = operating hours per day** **kg = Kilograms**		

Caution must be taken when converting to the operation lubricant, lubrication system timers must not be reduced for 72 hours to ensure the running in product is flushed from the gearing, pump and grease lines. Consultation with your Shell representative is essential as the above consumptions are listed as a guideline !

Advice

Advice on applications not shown on this leaflet may be obtained from your Shell Representative.