



# Shell Engrenage 3470

ISO VG 220 Gear Oil

Gear oil for use in railroad bogey reduction gearbox units incorporating iron elements and exposed to elevated temperatures.

## DESIGNED TO MEET CHALLENGES

### Performance, Features & Benefits

- **Excellent thermal stability**

Shell Engrenage 3470 has reinforced properties of extreme pressure, and excellent thermal stability for the mechanical drives operating in high temperatures (which in certain cases can reach 140°C). Its very good oxidation resistance makes it possible to consider fill-for-life more likely than with a traditional oil.

- **Reinforced anti-wear performance**

- **Exceptional oxidation resistance and thermal stability**

- **Superior extreme pressure qualities**

- **Excellent dispersency leading to superior levels of casing cleanliness**

- **Low volatility**

### Main Applications

- Gear oil for use in railroad bogey reduction gearbox units incorporating iron elements and exposed to elevated temperatures.

### Specifications, Approvals & Recommendations

- Approved in Category EPHT 1 in accordance with Standard NF F 19-809 (95)

- Approved EP lubricant for applications of high thermal stability for the mechanical drives of TGV fast trains

For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Help Desk, or the OEM Approvals website.

### Typical Physical Characteristics

Properties			Method	Shell Engrenage 3470
Density	@15°C	kg/m <sup>3</sup>	NF T 60 101	885
Colour			NF T 60 104	2
Viscosity	@40°C	cSt	NF T 60 100	233
Viscosity	@100°C	cSt	NF T 60 100	20.7
Viscosity Index			NF T 60 136	106
Pour Point		°C	NF T 60 105	-18
Flash Point (PMCC)		°C	NF T 60 118	296
TAN		mg KOH/g	NF T 60 112	0.3
Copper Corrosion (3 hrs)	@150°C		NF M 07015	1a
Foaming Tendency : Sequence 1	@24°C	ml (foam)	NF T 60 129	0/0
Foaming Tendency : Sequence 2	@93°C	ml (foam)	NF T 60 129	0/0
Foaming Tendency : Sequence 3	@24°C	ml (foam)	NF T 60 129	0/0
FZG Test Stage			DIN 51 354	>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 Engrenage 3470 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 your Shell representative.

- **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.