

## SAPPHIRE® Hi-Torque (with SUPS)

High performance, semi-synthetic gearbox fluids

Viscosity grades: ISO VG 150, 220, 320, 460, 680

### Product Overview

The ROCOL® SAPPHIRE Hi-Torque range of semi-synthetic gearbox lubricants are supplied in viscosity grades: ISO VG 150, 220, 320, 460 & 680.

The majority of wear in a gearbox occurs on start up and the high performance SAPPHIRE Hi-Torque gear oils are reinforced with a unique Start Up Protection System (SUPS) that ensures the oil remains on the gear teeth even after prolonged shutdown. This ensures that the gears are immediately protected when the gearbox starts up without having to wait for the service lubricant to be picked up and splashed around inside the box.

The SAPPHIRE Hi-Torque range of tenacious, EP gear oils are exceptionally thermally stable and contain additives to boost performance and improve adhesion.

### Features and Benefits

- SAPPHIRE Hi-Torque gear oils offers a wide temperature resistance of -20°C to +120°C.
- The range has outstanding EP performance with a 560 kg weld load.
- SAPPHIRE Hi-Torque gear oils have excellent thermal stability and contain a Unique SUPS Start Up Protection System for maximum protection.
- SAPPHIRE Hi-Torque oils are semi-synthetic which ensures compatibility with most types of mineral and synthetic oils.
- SAPPHIRE Hi-Torque gear oils provides a tenacious, low foaming film with excellent water wash-off resistance and corrosion protection.
- They have a blue dye for visibility and excellent stability resulting in extended relubrication intervals and a reduction in lubricant usage.

### Directions for Storage and Use

- For optimum performance drain & flush prior to filling with ROCOL SAPPHIRE Hi-Torque gear oils.
- Additive packages are not required with SAPPHIRE Hi-Torque oils due to their inherent EP Performance.
- The storage temperature should be controlled between +1°C and +40°C.
- Shelf life is 3 years from date of manufacture.

### Typical Applications

SAPPHIRE Hi-Torque gear oils can be used in gearboxes such as worm, spur, helical, bevel etc. and meet the requirements of:

- United States Steel 224
- American Gear Manufacturers Association (AGMA) 250.04.
- Deutsche Industrie Norm (DIN) 51517 part 3
- David Brown S1.53.101.

### Pack Sizes

Product	Part Codes	
SAPPHIRE Hi-Torque	20L	200L
150	21055	21059
220	21015	21019
320	21025	21029
460	21035	21039
680	21045	21049

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Property	Test Method	Result		
Appearance	Visual	Blue liquid		
Base Type	N/A	Semi-synthetic		
Additives	N/A	SUPS		
Base Fluid Viscosity (IP 71) & Viscosity Index		40°C	100°C	VI
SAPPHIRE Hi-Torque 150	N/A	136cSt	14.9	111
SAPPHIRE Hi-Torque 220	N/A	215cSt	21.9cSt	123
SAPPHIRE Hi-Torque 320	N/A	328cSt	27.2cSt	110
SAPPHIRE Hi-Torque 460	N/A	470cSt	35cSt	112
SAPPHIRE Hi-Torque 680	N/A	726cSt	49.5cSt	119
Temperature Range	N/A	-20°C to +120°C		
4-Ball Weld Load	IP 239 – ASTM D2596	560kg		

*Values quoted above are typical and do not constitute a specification.*

### Safety Data Sheets

Safety data sheets are available for download from our website [www.rocol.com](http://www.rocol.com) or may be obtained from your usual ROCOL contact.

The information in this publication is based on our experience and reports from customers. There are many factors outside our control or knowledge which affect the use and performance of our products, for which reason it is given without responsibility.

Issue: 2 Date: 08-13

T +44 (0) 113 232 2600  
F +44 (0) 113 232 2740  
E [customer-service@rocol.com](mailto:customer-service@rocol.com)  
[www.rocol.com](http://www.rocol.com)

ROCOL House, Swillington, Leeds LS26 8BS

Registered Company No. 559693 VAT No. 742 0531 67

Registered Office: Admiral House, St Leonard's Road, Windsor, Berkshire SL4 3BL

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