

SAPPHIRE® Extreme 2

High load, high temperature MoS₂ bearing grease

Product Overview

ROCOL® SAPPHIRE Extreme 2 is a heavy duty, high temperature bearing grease fortified with molybdenum disulphide. It has been designed for the effective lubrication and protection of ball, roller and plain bearings used in extreme environments.

SAPPHIRE Extreme 2 combines the resilience of a clay thickener with the addition of molybdenum disulphide ensuring that a lubricating film exists under the most extreme loadings where the grease film can be squeezed out.

Features and Benefits

- Excellent high temperature resistance – operating from -10°C to +235°C.
- Non-melting, organically modified clay (Bentone) thickened, grease, fortified with molybdenum disulphide, for excellent high temperature and water resistance.
- Molybdenum disulphide (MoS₂) has an affinity to metal surfaces leaving a tenacious high load carrying film with a low coefficient of friction. This film provides an extremely durable layer, reducing frictional heat and wear and extending component life and lubrication intervals.
- Ideal for highly loaded applications, where shock loads and vibration can occur.
- Highly resistant to oxidation, providing extended lubrication intervals over conventional lubricants.
- Excellent corrosion resistance to protect in humid, damp and even wet conditions.
- Highly tenacious lubricants, with outstanding film strength, ensure the lubricants remain in place even in severe operating conditions.
- SAPPHIRE Extreme 2 maintains its integrity in extreme conditions and continues to protect over extended lubrication intervals, reducing equipment failure, downtime and lubricant usage.

Directions for Storage and Use

- SAPPHIRE Extreme 2 can be applied manually, by grease gun, keg pump or by other methods suitable for dispensing NLGI No. 2 greases with solid additives.
- SAPPHIRE Extreme 2 is compatible with other clay thickened greases. However, for best results the previous lubricant should be removed prior to application.
- Avoid mixing SAPPHIRE Extreme 2 with soap thickened greases.
- The storage temperature should be controlled between +1°C and +40°C.
- Shelf life is 3 years from date of manufacture.

Typical Applications

SAPPHIRE Extreme 2 is particularly suitable for high temperature bearings operating in extreme conditions such as shock loads, vibration and wet environments.

It is designed for all types of ball, roller and plain bearings typically found in industries such as steelworks, quarries, mining, marine, docks, agriculture, construction, brick and tile works and other industries particularly where ovens or similar heavy duty, high temperature applications are found.

SAPPHIRE Extreme 2 excels in applications such as ovens, furnaces, kiln cars, crushers, screens, presses, loaders, scrapers, wagons and similar applications where bearings, pins, bushes, slides etc. are subjected to extreme conditions.

Pack Sizes

Pack Size	Part Code
400g cartridge	12211
5kg	12216
18kg	12214
50kg	12218

SAPPHIRE® Extreme 2

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Property	Test Method	Result
Appearance	Visual	Smooth blue / black grease
NLGI No.	IP 50 – ASTM D217	2
Base Type	N/A	Semi-synthetic
Base Fluid Viscosity at 40°C	IP 71	200cSt
Base Fluid Viscosity at 100°C	IP 71	20cSt
Thickener	N/A	Organically modified clay
Solids	N/A	Molybdenum disulphide
Temperature Range - Upper Limit	N/A	-10°C to + 235°C
Temperature Range - Short Periods	N/A	Up to +250°C
4-Ball Weld Load	IP 239 – ASTM D2596	280kg
4-Ball Mean Hertz Load	IP 239 – ASTM D2596	50kg
Oil Separation 24 hrs at +100°C	IP 121	5% maximum
Water Washout Test	IP 215 – ASTM D1264	0%
Emcor Corrosion Test	IP 220	0:0
Corrosion Test:		
24 hrs at +100°C Copper	IP 112 – ASTM D130	1a
Corrosion Test - Mild Steel	24 hrs at 100°C	No stain
Corrosion Test - Aluminium	24 hrs at 100°C	No stain

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 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.

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ROCOL A division of **ITW** Ltd



BS EN ISO 9001
Certificate No. FM 12448



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Certificate No. EMS 67596



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Certificate No. OHS 78173



INVESTORS
IN PEOPLE



SAFETY DATA SHEET
SAPPHIRE EXTREME

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Compilation date: 26/10/2011

Revision No: 3

Section 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name: SAPPHIRE EXTREME

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

1.3. Details of the supplier of the safety data sheet

Company name: ROCOL

ROCOL House

Swillington

Leeds

West Yorkshire

LS26 8BS

ENGLAND

Tel: +44 (0) 113 232 2700

Fax: +44 (0) 113 232 2740

Email: customer-service@rocol.com

1.4. Emergency telephone number

Emergency tel: +44 (0) 113 232 2600

Section 2: Hazards identification

2.1. Classification of the substance or mixture

Classification under CHIP: This product has no classification under CHIP.

2.2. Label elements

Label elements under CHIP:

Hazard symbols: No significant hazard.

2.3. Other hazards

PBT: This substance is not identified as a PBT substance.

Section 3: Composition/information on ingredients

3.2. Mixtures

[cont...]

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Hazardous ingredients:

SOLVENT REFINED BASE OIL (LESS THAN 3% DMSO EXTRACT)

EINECS	CAS	CHIP Classification	CLP Classification	Percent
265-101-6	64742-01-4	Substance with a Community workplace exposure limit.	-	30-50%

LUBRICATING OILS (LESS THAN 3% DMSO EXTRACT)

278-012-2	74869-22-0	-: Substance with a Community workplace exposure limit.	-	30-50%
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MOLYBDENUM DISULPHIDE

215-263-9	1317-33-5	Substance with a Community workplace exposure limit.	-	1-10%
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Section 4: First aid measures

4.1. Description of first aid measures

Skin contact: Wash immediately with plenty of soap and water.

Eye contact: Bathe the eye with running water for 15 minutes.

Ingestion: Wash out mouth with water.

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

Skin contact: There may be mild irritation at the site of contact.

Eye contact: There may be irritation and redness.

Ingestion: There may be irritation of the throat.

Inhalation: No symptoms.

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

Section 5: Fire-fighting measures

5.1. Extinguishing media

Extinguishing media: Use water spray to cool containers. Suitable extinguishing media for the surrounding fire should be used.

5.2. Special hazards arising from the substance or mixture

Exposure hazards: In combustion emits toxic fumes of carbon dioxide / carbon monoxide.

5.3. Advice for fire-fighters

Advice for fire-fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

Section 6: Accidental release measures

[cont...]

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6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Refer to section 8 of SDS for personal protection details.

6.2. Environmental precautions

Environmental precautions: Do not discharge into drains or rivers.

6.3. Methods and material for containment and cleaning up

Clean-up procedures: Transfer to a closable, labelled salvage container for disposal by an appropriate method.

6.4. Reference to other sections

Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: Avoid direct contact with the substance.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in cool, well ventilated area.

Suitable packaging: Must only be kept in original packaging.

7.3. Specific end use(s)

Section 8: Exposure controls/personal protection

8.1. Control parameters

Hazardous ingredients:

SOLVENT REFINED BASE OIL (LESS THAN 3% DMSO EXTRACT)

Workplace exposure limits:

Respirable dust

State	8 hour TWA	15 min. STEL	8 hour TWA	15 min. STEL
EU	5 mg/m ³	10 mg/m ³	-	-

LUBRICATING OILS (LESS THAN 3% DMSO EXTRACT)

UK	5mg/m ³	10mg/m ³	-	-
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MOLYBDENUM DISULPHIDE

UK	-	-	15mg/m ³	10mg/m ³
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8.2. Exposure controls

Respiratory protection: Respiratory protection not normally required.

Hand protection: Protective gloves.

Eye protection: Safety glasses with side-shields.

Skin protection: Protective clothing.

[cont...]

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Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

State: Paste
Colour: Blue-black
Odour: Odourless
Evaporation rate: Negligible
Oxidising: Non-oxidising (by EC criteria)
Solubility in water: Insoluble
Viscosity: Highly viscous
Melting point/range°C: > 200
Flash point°C: > 200
Autoflammability°C: > 200
Relative density: < 1

9.2. Other information

Other information: Not applicable.

Section 10: Stability and reactivity

10.1. Reactivity

10.2. Chemical stability

Chemical stability: Stable under normal conditions.

10.3. Possibility of hazardous reactions

10.4. Conditions to avoid

Conditions to avoid: Heat.

10.5. Incompatible materials

Materials to avoid: Strong oxidising agents. Strong reducing agents.

10.6. Hazardous decomposition products

Haz. decomp. products: In combustion emits toxic fumes of carbon dioxide / carbon monoxide.

Section 11: Toxicological information

11.1. Information on toxicological effects

Toxicity values: Not applicable.

Symptoms / routes of exposure

Skin contact: There may be mild irritation at the site of contact.
Eye contact: There may be irritation and redness.
Ingestion: There may be irritation of the throat.
Inhalation: No symptoms.

[cont...]

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Section 12: Ecological information

12.1. Toxicity

Ecotoxicity values: Not applicable.

12.2. Persistence and degradability

Persistence and degradability: Only slightly biodegradable.

12.3. Bioaccumulative potential

Bioaccumulative potential: No bioaccumulation potential.

12.4. Mobility in soil

Mobility: Non-volatile. Absorbed only slowly into soil.

12.5. Results of PBT and vPvB assessment

PBT identification: This substance is not identified as a PBT substance.

12.6. Other adverse effects

Section 13: Disposal considerations

13.1. Waste treatment methods

Disposal of packaging: Dispose of in a regulated landfill site or other method for hazardous or toxic wastes.

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

Section 14: Transport information

Transport class: This product does not require a classification for transport.

Section 15: Regulatory information

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

15.2. Chemical Safety Assessment

Chemical safety assessment: A chemical safety assessment has not been carried out for the substance or the mixture by the supplier.

Section 16: Other information

Other information

Other information: This safety data sheet is prepared in accordance with Commission Regulation (EU) No 453/2010.

Compiled in accordance with REACH.

Phrases used in s.2 and 3: None

Legal disclaimer: The above information is believed to be correct but does not purport to be all inclusive

[cont...]

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and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.