

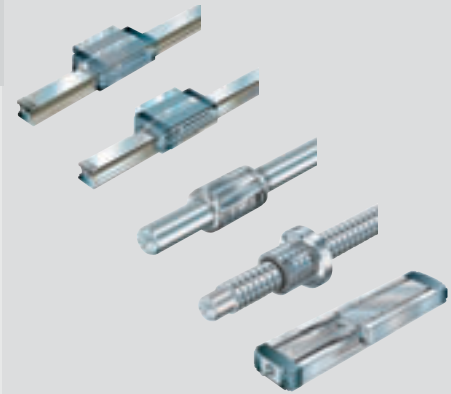
Product Data Sheet

Safety Data Sheet

Dynalub 510

RE 82 052/2003-06 1/4

High-performance Lubricant for Linear Motion Systems



● Product Description

Dynalub 510 is a NLGI Category 2 lithium-based high-performance grease specially developed for linear motion systems. It is notable for offering excellent water resistance and protection against corrosion, and is suitable for use at temperatures of between -20°C and 80°C .

● Applications

Under conventional environmental conditions this ground-fiber, homogeneous grease is ideally suitable for the lubrication of linear elements:

- for loads of up to $0.5 C_{\text{dyn}}$
- also for short-stroke applications ≥ 1 [mm]

● Technical Data

Chemical composition	Mineral oil, special lithium soap, agents	
Designation	KP2K-20	DIN 51 825
Appearance	Light-brown/beige, ground-fiber	
Service temperature range	-20°C to $+80^{\circ}\text{C}$	
NLGI Category	2	
Worked penetration	265-295 1/10 mm	DIN ISO 2137
Water resistance	0-60, 1 -90	DIN 51 807 Part 1
Melting point in $^{\circ}\text{C}$	> 165	DIN ISO 2176
Basic oil viscosity	100 mm^2/s 40°C 10 mm^2/s 100°C	DIN 51 562
Flow pressure at -20°C	< 1400 hPa	DIN 51 805
EMCOR test	0/0	DIN 51 802
Copper corrosion	2 (24 h/ 120°C)	DIN 51 811
Four ball tester welding load	> 2000 N	DIN 51 350 Part 4
Four ball tester impression diameter	0.93 (400 N, 1 h)	DIN 51 350 Part 5

These data are based on our current level of knowledge and were issued upon information and belief. Subject to change. Product Data Sheet status: 01.06.2003.

Safety Data Sheet in accordance with EC Directive 93/112 EEC and TRGS 220 (German Technical Regulations on Hazardous Substances) for: Dynalub 510 non-hazardous substance. Date of issue: 01.06.03 Last amended: Amendment status: 0

● Safety Data

1. Material designation, formulation designation and firm name

Product information:

Trade name: Dynalub 510

Manufacturer/supplier information:

Company: Bosch Rexroth AG
Ernst-Sachs-Straße 100
D-97419 Schweinfurt

Contact: Telephone: +49(0)97 21-9 37-0
Fax: +49(0)97 21-9 37-2 75

Emergency contact (EU): 24-hour emergency number in Berlin for hazardous substance-related accidents
Telephone: +49(0)30-1 92 40

2. Composition / Information on components

Formulation: x Substances: 1

Chemical characterization: Mineral oil, lithium-soap, potassium-soap, agents.

Hazardous constituents:

CAS No.	Designation	Weight %	Danger warnings	Hazard symbol
68849-42-3	Zinc alkyl dithiophosphate	1,5	36-41-51/53	Xi.N
8093962-4	Amine-phosphate	< 1	36/28-51/53	Xi.N
68411-48-1	Modified amine	< 1	51/53	N
60584-90-3	Modified toluotriazole	< 0,1	36-43-51/53	Xi.N

Additional information: Does not contain any components in concentrations which would make its categorization as a hazardous substance as defined in the German GefStoffV Ordinance on Hazardous Substances a requirement. Compliance with TRGS 500 is imperative. Normal precautions and hygiene measures for the handling of chemical products must be taken.

3. Potential hazards

Description of dangers and hazards Deleted
Special danger and hazard warnings for man and environment Deleted

4. First-aid measures

General: All soiled or soaked items of clothing are to be removed and only re-used again after cleaning.

In case of inhalation: If the inhalation of mist, fumes or vapour should lead to irritations of the nose or throat or cause coughing, take the affected person to a source of fresh air. Consult a doctor if the symptoms persist.

In case of skin contact: In case of skin contact, wash off thoroughly using water and soap. In case of irritation to or reddening of the skin, consult a doctor.

In case of eye contact: Immediately wash out with large quantities of fresh water for 10-15 minutes. Hold eyelid(s) open with thumb and index finger while doing so, and consult a doctor.

In case of swallowing: Do not seek to induce vomiting. If a vomiting person is lying on his back, turn him onto his side. Bring a doctor to affected person.

5. Fire-fighting measures

Suitable fire extinguishing agents: Carbon dioxide, hydrated lime, foam, water spray for the cooling of containers at risk.

Fire extinguishing agents which are unsuitable for safety reasons: Full jet water.

Particular dangers from the substance, products of its combustion or gases produced: In case of combustion, hazardous fumes: carbon monoxide, nitrogen oxide (NOx); under certain combustion conditions traces of other toxic substances cannot be excluded.

Special protection equipment: Do not inhale explosion or combustion gases. Use independent respiratory protection equipment (insulating device). Wear suitable protective clothing.

Other instructions: Water contaminated as a result of fire-fighting must be collected separately and not fed into the sewage system.

6. Measures to be taken in case of unintended release

Person-related precautions: There is a particular danger of slipping if the product is leaked or spilt. Keep ignition sources at a distance.

Environmental protection measures: Do not permit the product to enter the sub-floor, soil or sewage system.

Cleaning/clearing up procedures: Clear up the product mechanically. Clear up any residual product with suitable liquid-binding materials. Dispose of the cleared up product in accordance with regulations: it may not be disposed of to domestic waste.

7. Handling and storage

Instructions on safe handling: If used correctly, no special measures are necessary.

Take the usual precautions to be followed in handling chemical products.

Instructions on protection against combustion and explosion: Keep away from sources of ignition and hot surfaces.

Storage and container requirements: Keep in sealed original container, in dry and non-freezing storage conditions.

Storage with other products: Do not store with oxidants. Do not store with feedstuffs or food.

Further information on storage conditions:

Recommended storage temperature 20 – 25° C.

8. Exposure limitation and personal protection equipment

Components with work station-related limit values requiring monitoring

CAS No.	Substance designation	Type	Value
Unit Deleted			

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Personal protection equipment

Respiratory protection: In case of vapour/mist generation or the presence of decomposition products. Particle filters and breathing filters: Type A or circulating air-independent breathing apparatus.

Hand protection: Gloves (oil resistant).

Eye protection: Safety goggles, if impact possible.

General protection measures: Avoid contact with eyes and skin. Do not inhale any vapour, mist or decomposition products.

Hygiene measures: Do not eat, drink, smoke or take snuff. Do not carry cleaning cloths soaked in the product in pockets.

9. Physical and chemical properties

Form:	Solid
Colour:	Brown
Odour:	Slight
pH as delivered:	n.d.
pH value (10g/l water):	Neutral
Change of state (solid/liquid):	Melting point approx. 170° C
Change of state (liquid/gas):	Decomposition begins at approx. 170° C
Flashpoint:	n.d.
Ignition temperature:	n.d.
Lower explosion limit:	n.d.
Upper explosion limit:	n.d.
Vapour pressure in hPa/°C:	n.d.
Density in g/cm ³ at ° C:	approx. 0.92 at 25° C
Water-solubility in mg/L:	Non-soluble
Soluble in:	-
Distribution coefficient (log p _{OW}):	n.d.
Viscosity at 40° C:	n.a.
Solvent separation test	n.d.

10. Stability and reactivity

Conditions to be avoided: Continuous temperatures over 120° C, ignition sources.

Substances to be avoided: Contact/reactions with strong oxidants.

Dangerous decomposition products: Incomplete combustion/thermal decomposition will lead to the generation of fumes, carbon dioxide and dangerous gases such as carbon monoxide, etc.

11. Toxicological information

Acute toxicity (category-based LD 50/LC 50 values):

LD 50 oral mg/kg: n.d.a.

LD 50 dermal: n.d.a.

LD 50 inhalative: n.d.a.

Irritation/caustic effect on eyes and skin: Not known.

Sensibilization of skin and respiratory tract: Not known.

Effects after repeated or long-term exposure: n.d.a.

Carcinogenic or mutagenic effects or harmful effects on the reproductive system: n.d.a.

Further information: Like all mineral oil products, skin contact may lead to irritation.

12. Ecological information

Information on elimination (persistence and degradability): Physio-chemical: n.d.a.

Biological: n.d.a.

Mobility and (bio-)accumulation potential: This product has not been tested.

Aquatic toxicity:

Fish: n.d.a., effective concentration n.d.

Daphnia: n.d.a., effective concentration n.d.

Algae: n.d.a., effective concentration n.d.

Bacteria: n.d.a., effective concentration n.d.

Reaction in sewage treatment works: The product has not been tested.

Respiratory retardation of local utility activated sludge: EC 50: _____ mg/ml as defined by ISO 8192 B.

Further ecological information: CSB value n.d., BSB value n.d.

General instructions: Do not permit the product to enter the environment in an uncontrolled manner.

13. Disposal instructions

Recommendations for the product: Recycle or dispose of the product in compliance with valid official regulations and specifications. The waste code and waste designation indicate possibilities only, and final assignment must be made by the producer of the waste in accordance with the German BestbÜAbfV Ordinance on the Designation of Waste Requiring Monitoring, or the BestbÜAbfV and the EWC.

Waste code/designation: 120112 used waxes and grease.

Accountability: Yes

Untreated packaging: Non-contaminated packaging can be sent for recycling. Untreated packaging is to be disposed in the same manner as the product itself, in accordance with valid regulations.

14. Transportation instructions

14.1 Overland transportation (ADR/RID)

GGVS/ADR/RID class:

Substance No. (UN No.):

Goods designation:

Remarks: Not hazardous goods as defined by GGVS/ADR/RID.

n.d.a.: No data available

n.a.: Not applicable

n.d.: Not determined

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14.2 Inland waterways transportation (ADN/ADNR)
ADN/ADNR class:
Category:
Goods designation:

Remarks:

14.3 Sea-borne transportation (IMDG/GGVSee)
IMDG/GGVSee class:
Packaging group:
EmS No.:
Marine pollutant:
MFAg:
Correct technical name:

Remarks:

14.4 Air transportation (ICAO/IATA)
ICAO/IATA class:
UN/ID No.:
Packaging group:
Correct technical name:

Remarks:

15. Regulations

Identifying markings in accordance with EC directives / GefStoffV: No duty to mark.

Distinguishing mark:

Hazard designation:

Danger warnings:

Safety recommendations:

Notes on employment restriction:

German VbF combustible liquids regulations category: deleted.

German Water Endangerment Category (WGK):
WGK 2, water endangering substance (company assessment).

German TA Luft (Technical Directive on Air) category:
Other regulations, limitations and prohibitions: TRGS 500

16. Other information

Training instructions:

Recommended use and limitations:

Further information:

This safety information complies with the requirements of RL 1999/45/EC and RL 2001/58/EC valid from 30.07.2002.

Sources of key data:

- Safety data sheets from suppliers of substances
- "Harmful occupational substances" data sheets
- German GefStoffV regulations dated 26.10.1993
- Internal company laboratory
- GGVS/ADR (latest versions)
- GMBL dated 29.04.1996

Data sheet of the issuing area:

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Data sheet issued: 01.06.2003

Last amended:

Amendment status: 0

Amended items: Replaces issue dated

This information, which has been compiled on the basis of the latest state in our knowledge, describes our product in relation to any possible safety requirements and identifying markings as required by valid legislation; it does not, however, in any way constitute a labeling of properties.