LUBCON® Special Lubricants for Train, Rail and Wheel

High-Tech Lubricants for Improved Safety and Reliability

biodegradable
LUBCON Special Lubricants for Train, Rail and Wheel

- **Clutches Buffers**
  - Grizzlygrease No. 3
  - Grizzlygrease Bio 1-1000

- **Wheelset bearings**
  - Turmogrease Li 802 EP
  - Turmoplex 3 EP

- **Switches**
  - Terrasol SWA series
  - Terrasol 100 WT
  - Sintono Terra W DB

- **Connections**
  - Traction motors
    - Turmogrease L 802 EP plus

- **Ball screws Seals Guiding systems**
  - Turmotemp N 182
  - Turmogrease SKL series
  - Turmogrease PP 300

- **Top of Rail**
  - Sintono Terra HLK

- **Panthographs**
  - Terrasol 40 CW
  - Turmogrease HDC 2

- **Rail edge Wheel flange**
  - Sintono Terra SK-RE series
  - Sintono Terra HLK

- **Wheelset bearings**
  - Turmogrease Li 802 EP
  - Turmoplex 3 EP

- **Switches**
  - Terrasol SWA series
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- **Top of Rail**
  - Sintono Terra HLK

- **Panthographs**
  - Terrasol 40 CW
  - Turmogrease HDC 2

- **Rail edge Wheel flange**
  - Sintono Terra SK-RE series
  - Sintono Terra HLK
All lubricants listed below fulfill the following criteria:

- biodegradable by OECD 301
- approved/tested by most producers of wheel flange lubricating systems
- available in different packaging sizes

**Rail Flange Lubricants**

<table>
<thead>
<tr>
<th>Application</th>
<th>Product</th>
<th>Operating Temperature Range</th>
<th>Consistency Class</th>
<th>Water Resistance (DIN 51807 T1)</th>
<th>Solid Additives</th>
<th>Base Oil/Thickener</th>
<th>Unit</th>
<th>Features &amp; Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wear reduction</td>
<td>Sintono Terra SK 1</td>
<td>-40 °C up to +120 °C</td>
<td>1</td>
<td>0-90</td>
<td>--</td>
<td>Synthetic oil/lithium-calcium soap</td>
<td>Tram</td>
<td>This grease has been developed for the application on grooved rails within cities (clean lubrication). It is adhesive, resistant to water, suitable for axle load up to 11 to and can be used in all grease application systems.</td>
</tr>
<tr>
<td></td>
<td>Sintono Terra SK 2</td>
<td>-40 °C up to +120 °C</td>
<td>2</td>
<td>0-90</td>
<td>--</td>
<td>Synthetic oil/lithium-calcium soap</td>
<td>Light rail, metro</td>
<td>This lubricant has been developed for the application on vignol rails outside cities. The distribution is approx. 1.000 m. It is adhesive, resistant to water, suitable for axle load up to 20 to and can be used in all grease application systems.</td>
</tr>
<tr>
<td></td>
<td>Sintono Terra SK-RE 1</td>
<td>-40 °C up to +120 °C</td>
<td>1</td>
<td>1-90</td>
<td>&gt;200</td>
<td>Synthetic oil/silicate thickener</td>
<td>Main line, HST*</td>
<td>Innovative grease with very good adhesive properties for the lubrication of long distances up to 7.000 m. It can be applied at high rail temperatures up to 120 °C. The universal grease performs very good and is suitable for axle load up to 30 to. Moreover, it can be used in all grease application systems.</td>
</tr>
<tr>
<td></td>
<td>Grizzlygrease Bio 1-1000</td>
<td>-40 °C up to +140 °C</td>
<td>1</td>
<td>0-90</td>
<td>&gt;190</td>
<td>Ester oil/ce-sulfonate complex soap</td>
<td>Main line, HST*, metro, high load</td>
<td>Grease for the lubrication of guide rails and rails in industrial plants, e.g. steel plants, with very high axle load and side pressure. This grease has an outstanding wear reduction performance.</td>
</tr>
<tr>
<td>Noise reduction, wear reduction on top of rail</td>
<td>Sintono Terra HLK (000/1)</td>
<td>-40 °C up to +120 °C</td>
<td>00/01</td>
<td>0-90 0.33</td>
<td>&gt;200</td>
<td>different soft metals</td>
<td>all</td>
<td>Special grease mainly designed for noise reduction without influencing brake efficiency. Specially designed pumps, distributors and nozzles are needed for grease application. The grease is sprayed or pressed on top of rail and must be handled and applied very carefully. This way it can reduce curve squeeling by almost 100 %.</td>
</tr>
</tbody>
</table>

* DB-material no. 991 955

**Special Lubricants and Lubrication Technology:**

**Successful Duo against Wear!**

- increased safety and reliability
- cost savings
- higher efficiency

**Two in One: Special Rail Lubricant Reduces Wear and Noise on Check Rails**

Grizzlygrease Bio 1-1000 serves perfectly to reduce wear on check rails. The ageing resistant special grease shows good adhesion, high pressure absorption capability and has a wide operating temperature range. This special grease minimises wear and significantly reduces noise accumulations on check rails, the latter being a special benefit for rail lines in residential areas.

**Lubricant and Lubrication Technology: Successful Duo against Wear**

In railway systems manual lubrication is often limited due to the rail network complexity. Lubrication experts, therefore, recommend the use of automatic lubrication systems. Check rails, for example, can be lubricated using the intelligent single point lubricator MicroMax® 120 filled with Grizzlygrease Bio 1-1000. Appropriate lubrication technology reduces maintenance (labour) costs and prevents over and/or under lubrication due to precise grease application and automatic lubrication cycle adjustment.
Wheel Flange Lubricants

<table>
<thead>
<tr>
<th>Application</th>
<th>Product</th>
<th>Operating Temperature Range</th>
<th>Consistency class at 40°C</th>
<th>Water resistance (DIN 51807-T1)</th>
<th>Friction Coefficient</th>
<th>Drop Point (DIN 2176 °C)</th>
<th>Solid Additives</th>
<th>Base Oil/Thickener</th>
<th>Unit</th>
<th>Features &amp; Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wear reduction</td>
<td>Sintono Terra SK</td>
<td>-40 °C up to +120 °C</td>
<td>00</td>
<td>0-90</td>
<td>200</td>
<td>--</td>
<td>130</td>
<td>Synthetic oil/lithium-calcium soap</td>
<td>Tram</td>
<td>This grease is adhesive, resistant to water and suitable for axle load up to 11 t. It has been developed for the application at low speed (&lt; 50 km/h).</td>
</tr>
<tr>
<td></td>
<td>Sintono Terra SK-RE</td>
<td>-40 °C up to +120 °C</td>
<td>00</td>
<td>1-90</td>
<td>&gt;250</td>
<td>--</td>
<td>-</td>
<td>Synthetic oil/silicate thickener</td>
<td>Light rail, Metro</td>
<td>Innovative grease with high temperature stability and remarkable adhesive properties. It is suitable for light rails with a maximum speed of 160 km/h and locomotives with wheel block brakes that have an axle load up to 25 t/axle.</td>
</tr>
<tr>
<td></td>
<td>Sintono Terra SK-RE LT</td>
<td>-50 °C up to +120 °C</td>
<td>00</td>
<td>1-90</td>
<td>&gt;250</td>
<td>--</td>
<td>-</td>
<td>Synthetic oil/silicate thickener</td>
<td>Light rail, Main Line</td>
<td>Innovative grease developed for the application at very low temperatures. The grease is sprayable in the whole temperature range and is suitable for high speeds up to 220 km/h. It can also be used for rack railways.</td>
</tr>
<tr>
<td></td>
<td>Sintono Terra SK-RE DB</td>
<td>-40 °C up to +120 °C</td>
<td>00</td>
<td>1-90</td>
<td>&gt;250</td>
<td>--</td>
<td>-</td>
<td>Synthetic oil/silicate thickener</td>
<td>Main Line, HST</td>
<td>Special grease with very good adhesive properties for the lubrication of long distances. The grease sticks well to the wheel even at speeds of up to 250 km/h. By applying the grease to the rail the following bogies are lubricated as well. The lubricant is very temperature-stable and adhesive even at rail temperatures of more than 80 °C. The compatibility with elastomers commonly used in folding bellows or industrial paint for bogies has been successfully tested. The product can be used for all types of trains/light rails, trams and locomotives.</td>
</tr>
<tr>
<td>Noise reduction, wear reduction on top of rail</td>
<td>Sintono Terra HLK</td>
<td>-40 °C up to +120 °C</td>
<td>00</td>
<td>0-90</td>
<td>0.33</td>
<td>&gt;200</td>
<td>-</td>
<td>Synthetic oil/silicate thickener</td>
<td>all</td>
<td>Special grease mainly designed for noise reduction without influencing brake efficiency. Specially designed pumps, distributors and nozzles are needed for grease application. The grease is sprayed or pressed on top of rail and must be handled and applied very carefully. This way it can reduce curve squeeling by almost 100 %.</td>
</tr>
</tbody>
</table>

Top of Rail Conditioning instead of Curve Squeeling

Local residents, passengers and conductors - all of them know the unpleasant sound released by rail-bound traffic, especially in curves. This high pitched sound is also known as curve squeeling. To reduce this sound LUBCON developed Sintono® Terra HLK in collaboration with maintenance operators and plant technicians. The friction modifier helps to control the vibrations between wheel flange and rail edge and can therefore effectively reduce noise.

Sintono® Terra HLK can be applied on top of rail as well as on rail edges. It fulfills the criteria for braking and traction capability and is biodegradably. It forms a lubricating film that is resistant to water and oxidation and sticks well to all surfaces. Moreover, the lubricant has a very good load carrying capacity.

Evidently effective against squeaking and screeching: measurement prior to lubrication (left) and after application of Sintono® Terra HLK (right).

Sintono Terra SK-RE LT - Safe Lubrication at Freezing Temperatures

As temperature falls the flow pressure of grease usually increases. More pressure is needed to pump grease through a nozzle. Thus, we need a special grease for optimum pumpability in a lubrication system.

SINTONO TERRA SK-RE LT is suitable for temperatures from -50 °C up to +120 °C. Due to its very good pumpability within the whole operating temperature range it can be used in wheel flange lubrication systems all year long, even under extreme conditions as they exist in Russian winter, for example. The very good resistance to water and very high load carrying capacity are persuasive.

Consistency class | Water resistance | Friction Coefficient | Drop Point | Solid Additives | Base Oil/Thickener | Unit | Features & Benefits |
<table>
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<tr>
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<td>00</td>
<td>0-90</td>
<td>200</td>
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<td>130</td>
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<td>&gt;250</td>
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<td></td>
<td>--</td>
<td>&gt;250</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>--</td>
<td>Light rail, Metro</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>--</td>
<td>Light rail, Main Line</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>--</td>
<td>Main Line, HST</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>--</td>
<td>all</td>
</tr>
</tbody>
</table>

* HST = high-speed trains
# Other Railway Products

<table>
<thead>
<tr>
<th>Application</th>
<th>Product</th>
<th>Operating Temperature Range</th>
<th>Consistency class at 40° C</th>
<th>Water/Resistance (DIN 51807 T1)</th>
<th>Flashpoint (DIN EN 289 292° C)</th>
<th>Base Oil/Thickener</th>
<th>Unit</th>
<th>Features &amp; Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switches</td>
<td>Terrasol SWA series</td>
<td>-20 °C up to +140 °C</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>Metro, tram</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Terrasol 100 WT</td>
<td>-25 °C up to +120 °C</td>
<td>--</td>
<td>--</td>
<td>&gt;240</td>
<td>Esteroil</td>
<td>Main line, light rail</td>
<td>Due to special additives the lubricant is resistant to oxidation, reduces wear while it has very good lubricating properties and adhesive capacities.</td>
</tr>
<tr>
<td></td>
<td>Sintono Terra W DB</td>
<td>-40 °C up to +120 °C</td>
<td>0-90</td>
<td>&gt;200</td>
<td>--</td>
<td>Ester/silicate</td>
<td>Main line, light rail</td>
<td>Semifluid grease with very good flowability at low temperatures and high lubricating film consistency at high temperatures. It is very adhesive with a high UV-resistance.</td>
</tr>
<tr>
<td>Contact wire</td>
<td>Terrasol 40 CW</td>
<td>-30 °C up to +120 °C</td>
<td>--</td>
<td>--</td>
<td>&gt;250</td>
<td>PTFE</td>
<td>Tram/train</td>
<td>This oil protects reliably against wear and prevents initial ice formations. It supports the use of automatic spray systems or can be applied manually at the contact wire.</td>
</tr>
<tr>
<td>Panthograph (bearings)</td>
<td>Turmogrease HDC 2</td>
<td>-30 °C up to +150 °C</td>
<td>1-80</td>
<td>&gt;250</td>
<td>--</td>
<td>Mineral oil/ ca-complex</td>
<td>Tram/train</td>
<td>Special grease with resistance to water and other media. This grease is neither washed out nor softening even under constant exposure to water. It is designed for low rotational speed and provides good corrosion protection.</td>
</tr>
<tr>
<td>Door closing systems</td>
<td>Turmogrease SKL 18 VTF</td>
<td>-50 °C up to +130 °C</td>
<td>0-90</td>
<td>&gt;190</td>
<td>--</td>
<td>SHC/ lithium soap</td>
<td>all</td>
<td>Synthetic long-life grease for the lubrication of ball screws in door closing mechanisms. It provides a low frictional resistance, high wear protection and enables the safe functioning of door systems in all kind of trains.</td>
</tr>
<tr>
<td></td>
<td>Turmogrease PP 300</td>
<td>-40 °C up to +150 °C</td>
<td>1-2</td>
<td>0-90</td>
<td>--</td>
<td>Polyglycol/ inert inorganic thickener</td>
<td>all</td>
<td>Resistant to aqueous acids, basic solvents, elastomers and to natural or synthetic rubber. It is suitable for the lubrication and care of door seals. This grease can be removed easily from surfaces, leaving no sticky residues.</td>
</tr>
<tr>
<td></td>
<td>Turmotemp N 182</td>
<td>-50 °C up to +120 °C</td>
<td>0-90</td>
<td>&gt;250</td>
<td>--</td>
<td>PFPE/polyurea</td>
<td>Main line, HST</td>
<td>Special lubricant for the lubrication of door seals. The grease is extremely resistant to pressure and vacuum, it is compatible with EPDM and silicone seals and offers a very good UV-protection for long-life functionality in door mechanisms.</td>
</tr>
<tr>
<td>Connecting bolts, clutches, joint, fittings</td>
<td>Grizzlygrease No. 3</td>
<td>-20 °C up to +150 °C</td>
<td>0-90</td>
<td>&gt;280</td>
<td>--</td>
<td>Mineral oil/ li-ca-complex</td>
<td>all</td>
<td>Special grease with high pressure stability. It offers extremely high load carrying capacity due to its special high-load additives (EP) and reduces significantly friction at the contact points. It is very resistant to corrosion and ageing.</td>
</tr>
<tr>
<td></td>
<td>Grizzlygrease Bio 1-1000</td>
<td>-40 °C up to +140 °C</td>
<td>1-90</td>
<td>&gt;190</td>
<td>--</td>
<td>Synthetic oil/ ca-complex</td>
<td>all</td>
<td>The grease very effectively reduces wear, especially in combination with the lubricator MicroMax 120. It can be applied at all kind of trains and locomotives.</td>
</tr>
<tr>
<td>Wheelset bearing</td>
<td>Turmogrease Li 802 EP</td>
<td>-40 °C up to +140°C</td>
<td>1-90</td>
<td>&gt;190</td>
<td>--</td>
<td>SHC, mineral oil/li-soap</td>
<td>all</td>
<td>Long-life grease for the lubrication of wheelset bearings to cover all speed and load ranges with only one product. It reduces frictional loads, protects against corrosion and provides continuous lubricity. This bearing grease offers high load carrying capacity and good ageing protection.</td>
</tr>
<tr>
<td></td>
<td>Turmoplex 3 EP</td>
<td>-30 °C up to +140°C</td>
<td>1-90</td>
<td>&gt;190</td>
<td>--</td>
<td>Mineral oil/lithium soap</td>
<td>Tram</td>
<td>Oxidation and temperature resistant grease for long-term lubrication of wheel bearings. It is very resistant to water, suitable for low and high speeds, provides good lubricity as well as corrosion protection even in humid environment. This lubricant is easy to apply and particularly suitable for the use in automatic lubricators.</td>
</tr>
<tr>
<td>Engine bearing</td>
<td>Turmogrease L 802 EP plus</td>
<td>-35 °C up to +140°C</td>
<td>2-3</td>
<td>0-90</td>
<td>&gt;250</td>
<td>SHC, min. oil/ li-special soap</td>
<td>all</td>
<td>This grease is extremely corrosion and ageing resistant, it shows good thermal resistance and extends lubrication intervals due to its lubricant-film stability.</td>
</tr>
</tbody>
</table>

*HST = high-speed trains

**Features & Benefits**

- **Special lubricants for the treatment of switch blades and switch controls. Solid lubricants do not leave any residues but provide optimum surface coating. The oils can be applied without prior cleaning, they damp mechanical pressures on the switches and offer outstanding protection against wear.**
- **Due to special additives the lubricant is resistant to oxidation, reduces wear while it has very good lubricating properties and adhesive capacities.**
- **Semi-fluid grease with very good flowability at low temperatures and high lubricating film consistency at high temperatures. It is very adhesive with a high UV-resistance.**
- **This oil protects reliably against wear and prevents initial ice formations. It supports the use of automatic spray systems or can be applied manually at the contact wire.**
- **Special grease with resistance to water and other media. This grease is neither washed out nor softening even under constant exposure to water. It is designed for low rotational speed and provides good corrosion protection.**
- **Synthetic long-life grease for the lubrication of ball screws in door closing mechanisms. It provides a low frictional resistance, high wear protection and enables the safe functioning of door systems in all kind of trains.**
- **Resistant to aqueous acids, basic solvents, elastomers and to natural or synthetic rubber. It is suitable for the lubrication and care of door seals. This grease can be removed easily from surfaces, leaving no sticky residues.**
- **Special lubricant for the lubrication of door seals. The grease is extremely resistant to pressure and vacuum, it is compatible with EPDM and silicone seals and offers a very good UV-protection for long-life functionality in door mechanisms.**
- **Special grease with high pressure stability. It offers extremely high load carrying capacity due to its special high-load additives (EP) and reduces significantly friction at the contact points. It is very resistant to corrosion and ageing.**
- **The grease very effectively reduces wear, especially in combination with the lubricator MicroMax 120. It can be applied at all kind of trains and locomotives.**
- **Long-life grease for the lubrication of wheelset bearings to cover all speed and load ranges with only one product. It reduces frictional loads, protects against corrosion and provides continuous lubricity. This bearing grease offers high load carrying capacity and good ageing protection.**
- **Oxidation and temperature resistant grease for long-term lubrication of wheel bearings. It is very resistant to water, suitable for low and high speeds, provides good lubricity as well as corrosion protection even in humid environment. This lubricant is easy to apply and particularly suitable for the use in automatic lubricators.**

**Contact us!**

Your LUBCON application engineer will help you to choose the right lubricant and provide on-side support! www.lubcon.com
LUBCON® SL 100 Switch Lubricator

Accurate Lubrication of Switches - Easy and Quick

The switch lubricator LUBCON SL 100 is designed for fast, accurate and smooth application of high-viscosity lubricating oils on switch blades.

The innovative nozzle design allows the concentrated oil application in wide and narrow areas. A short interruption of the material flow in the nozzle provides an optimum spray effect and a clean and smooth distribution of the lubricant, without clogging the nozzles. As a result, solid-containing lubricants and oils are processed up to 150 mm³/s. An integrated display informs the user about the status of the battery.

With a working pressure of 130 bar, it is not only possible to achieve a high cleaning effect, but also a high surface wetting ability in a short time. The handy and compact design offers a quick and easy operation as well as a clean refilling of the lubricant within seconds.

Technical Data

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Applicable lubricants</td>
<td>Processes oil and low-viscosity grease to NLGI 0</td>
</tr>
<tr>
<td>Adjustable pressure range</td>
<td>69 – 276 bar/6.9 – 27.6 Mpa (1000 to 4000 psi)</td>
</tr>
<tr>
<td>Battery</td>
<td>28 V DC, Lithium-Ion Capacity: 2.4 Ah, 67 Wh</td>
</tr>
<tr>
<td>Weight (empty)</td>
<td>3.9 kg (8.6 lb)</td>
</tr>
</tbody>
</table>

Advantages:

- Easy operation within seconds
- Optimum dosage of the lubricant
- Accurate lubrication even in areas which are difficult to access
- Clean and exact handling
- Individually adjustable
- Ergonomically designed
- Portable, lightweight and flexible

Accurate Lubrication of Switches - Easy and Quick

The 75 cm long nozzle extension allows an ergonomic adjustment of the device to any body size. Thus, the lubricator LUBCON SL 100 is an ideal tool for the maintenance of rail route networks.

The nozzle extension allows a selective application of the lubricant without problems and within short time. Sand, dirt and also tinder are blown away by the powerful cleaning ability of the nozzle, and it leaves a clean and stable lubricating film.

NOTE: Increase flexibility of SL 100!
Spray head can be adjusted variably by 180°.

Double Protection against Friction and Wear

Due to diverting energies switches are affected by high loads and vibrations leading to significant wear.

LUBCON switch oils of the series Terrasol SWA are solids-containing lubricants for the treatment of switch blades, tailored to meet their critical requirements.

Even after longer usage, the specially chosen solid lubricants do not leave any residues but provide optimum surface wetting. In case of a long lubricating interval, emergency running properties provide sufficient lubrication. The lubricating oils of the series Terrasol SWA can be applied without prior cleaning, they damp mechanical pressures of the switches and therefore offer outstanding protection against wear.

The switch lubricator LUBCON SL 100 and the resistant switch oils of the series Terrasol SWA allow a reliable and quick maintenance of the switches, which improves their steady function and their safety.
Quick Overview of
Lubricant Range for Train, Rail and Wheel

Rail and Wheel:
- Sintono Terra SK-RE Series
- Sintono Terra HLK

Top of Rail/Running Surfaces on Wheels
- Sintono Terra HLK Series

Switches
- Sintono Terra W DB
- Terrasol SWA
- Terrasol 100 WT

Wheelset Bearings
- Turmogrease Li 802 EP
- Turmoplex 3 EP

Engine Bearings
- Turmogrease L 802 EP plus

Door Closing Systems
- Turmogrease SKL Series
- Turmogrease N 182
- Turmogrease PP 300

Pins/Clutches/Hinges
- Grizzlygrease Bio 1-000
- Grizzlygrease No. 3

Discover LUBCON Railway Lubricants in a short movie:

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