

# hirner

## technical products

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Product information and technical data  
MOLYTROP® Dry lubricants

## We are offering 3 different kinds of wear protection blocks

1. **Friction Control Blocks Type 10035** (CD 0.3-0.7) for use to protect against wear but also the existing friction has to be kept up (drive rolls/wheels).
2. **Lubrication Blocks Type 10036** (CF 0.015) – for use as wear protection where dry, continuous and maintenance free lubrication is required.
3. **Dry Lubrication Blocks Type HG045** (CF ca 0.015) where it is to be dry lubricated and freedom of maintenance, not wear protection is most important.

## The wear protection blocks have the following characteristics:

The blocks are mounted in holding devices, and spring-loaded it is permanently pressed against the surface to be wear protected and lubricated (similar to the graphite contacts in electric motors), and a layer (0.001-0.005 mm) is applied to the surface. Due to the availability of different sizes of both blocks and holders, the system can be adapted to most of widths and shapes of the different applications. Customized shapes and sizes are available to fit every thinkable application.

**Material:** Molybdene(IV)disulphide, graphite (microcrystalline), bentonite, binders and alloying additives for generating an optimized CF (0.05 lubrication blocks, 0.3 to 0.5 friction blocks).

**Properties:** The applied parts are rolled into surface of metal or plastic by pressure and so make up a highly loadable dry wear protection layer of Molybdene, which is

- dry and dust repellent
- non dripping and not migrating away
- working free of maintenance for long time
- continuously and steadily lubricating
- weather resistant, blocks HG045 are water resistant
- resistant to high temperatures (300°C), blocks HG045 up to 1200°C
- environmentally harmless (WGK 0)

The use of these wear protection blocks is recommended for applications with increased friction wear and sticky and fatty lubricants cannot be used.

Our wear protection blocks have worked to the highest satisfaction at all appliances where maintenance-free operation is desired and wear has to be avoided!

### Advantages and Properties

- Elimination of slippage (type 10035) and up to 5-fold increased working life span owed to wear-reduction for rails and wheels (all types).
- No negative effects to the systems performance. Possibility of increased performance is possible.
- Continuously coating the metallic surfaces and not migrating away.
- Does not absorb dust particles and other pollutants, which is of importance in environments with high loads of dust.
- Maintenance-free, only the consumed blocks have to be replaced with the new ones from time to time.
- No pollution of soil or water, non-flammable, environmentally friendly.

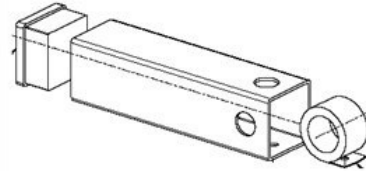
### The service life of the blocks is depending on some influences:

- Original texture of the metallic surfaces (smooth surfaces need much less coating than rough and uneven surfaces from the start).
- Distance travelled by the wheels (how many meters a day have to be recoated).
- Interaction of the machine parts (direction, vibrations, load)
- Quantity and kind of the materials in touch with the protective coating (while the coating is protecting the metallic surfaces, high amounts of hard dust particles are increasing the wear of the coating, which has to be completed by a faster use of the block).
- Operating hours, number of start and brake cycles, etc.
- One can assume a faster wear of the blocks within the first half year of use.
- Usually the blocks will have to be replaced every 1 to 3 years of use.

## Brackets and clamping devices for lubrication and adhesive blocks

### Bracket H0029\_0100

35x35x2.0mm  
L=145mm

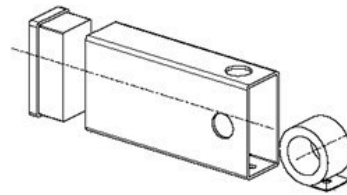


### Bracket H0020\_0060

25x50x1.5mm  
L=95mm

### Bracket H0020\_0120

25x50x1.5mm  
L=145mm

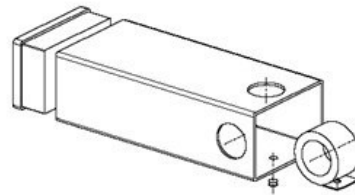


### Bracket H0030\_0070

40x60x1.5mm  
L=100mm

### Bracket H0030\_100

40x60x1.5mm  
L=145mm

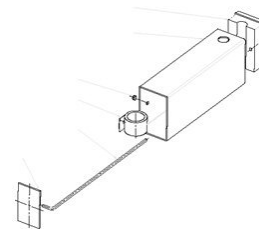


### Bracket H0030\_0100\_Vb

40x60x1.5mm  
L=145mm

### Bracket H0030\_0100\_Es

40x60x1.5mm  
L=155mm

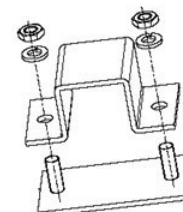


Clamping device **K0029** for bracket **H0029**

Clamping device **K0020** for bracket **H0020**

Clamping device **K0030** for bracket **H0030**

TRKT for multiple arrangements H0030





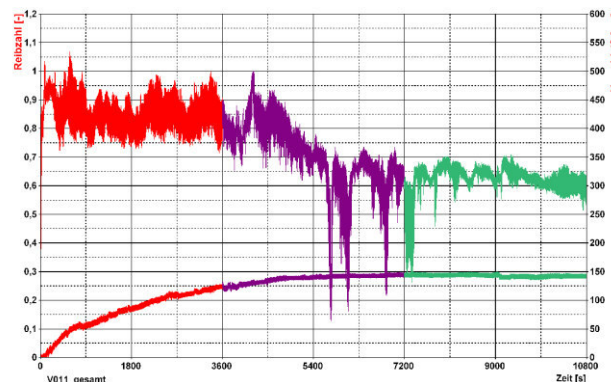
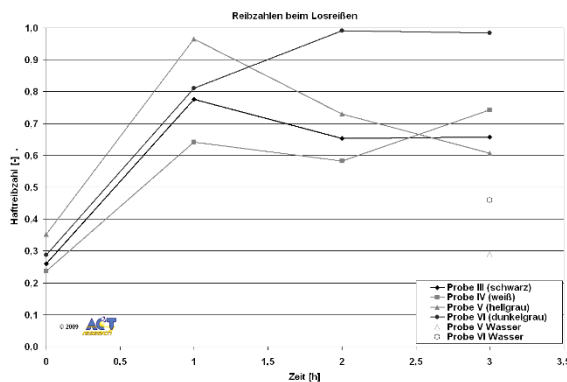
## MOLYTROP® Adhesive Blocks 10035 (positive coefficient of friction)

MOLYTROP® adhesive blocks 10035 have been developed on behalf of operators of industrial plants for friction wheel plants of all kinds.

The result of a proven cooperation with FFG Austria (innovation) and the center of tribology Ac<sup>2</sup>T resp. PROFACTOR was an aligned formula for wear protection and simultaneous maintenance of friction on rolls, wheels, rings, etc. which are used in industrial plants. The task was to prevent friction wear and slip effects and to increase the operating life of those slowly rotating, often driven by friction wheel drive, components of industrial plants. Rolling friction of steel/steel or steel/synthetic often results in negative coefficients of friction, which decrease further through rising rotation speed.

MOLYTROP® adhesive blocks no. 10035 are in their formula adapted for different rotation speeds of industrial plants to constantly and automatically maintain the required coefficients of friction and to simultaneously achieve increased wear protection through surface conditioning. The thin adhesion lubrication, which is adjusted through constant jacking force, protects the concerned components of wear and warrants permanently stable coefficients of friction of appr. 0.3 – 0.5. Particularly in humid and wet surroundings MOLYTROP® adhesive blocks no. 10035 prove their performance. Through solid mountings the application and compensation control of MOLYTROP® adhesive blocks nr. 10035 stays easy and longterm maintenance-free. (at least 12 months)

### Measuring adhesive coefficients of friction MOLYTROP® Adhesive Blocks 10035



### Characteristics:

Environmentally compatible, not water-hazardous

Sp. weight at 20 °C

Appearance

Surface hardness (ASTM D2240)

Applicatin/temperature-resistance

Coefficient of friction (AC<sup>2</sup>T Stift/Scheibe Tribometer) dry

Coefficient of friction (AC<sup>2</sup>T Stift/Scheibe Tribometer) wet

WGK 1

1.67g/cm<sup>3</sup>

dark-grey, opaque solid

81

- 30 °C bis + 280 °C

0.3 – 0.7

0.2 – 0.35

## MOLYTROP® Lubrication Blocks 10036

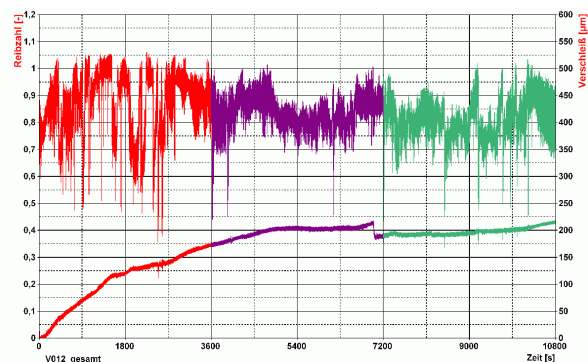
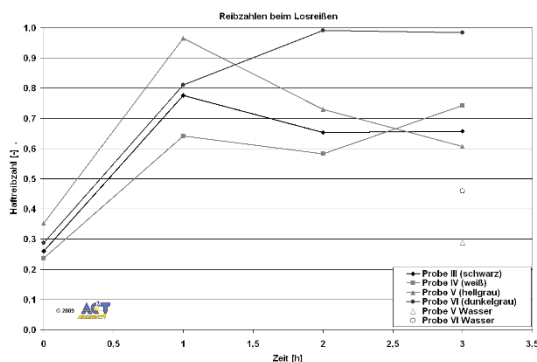
MOLYTROP® lubrication blocks 10036 were developed as a solution for industrial plants, where sliding or rolling parts are heavily affected by wear, however a clean lubrication is needed.

The successful cooperation with FFG Austria (innovation), the Tribology Centre Ac<sup>2</sup>T and PROFACTOR revealed a coordinate formula for wear protection and at the same time a dry, clean film lubrication of rolls, wheels, rings, rails, guides etc. These high-quality units have to be continuously lubricated to prevent surface damages.

MOLYTROP® lubrication blocks 10036 are in their formula geared to most rotation speeds and loads of industrial plants to maintain the required glide under simultaneously protecting against wear with Molybdenum. The thin and dry lubricant coating which is set by a constant contact force, protects affected parts from wear and ensures a permanently constant and low coefficient of friction of about 0.015 to 0.03.

Particularly in aggressive, dusty and hot environments MOLYTROP® lubrication blocks prove their performance. By solid mountings, the installation and usage control of MOLYTROP® lubrication blocks 10036 stays easy and long-term maintenance-free (minimum 12 months).

### Tests of static friction of MOLYTROP® lubrication blocks 10036



### Characteristics:

Environmentally friendly, non-hazardous to water  
 Sp. weight at 20 °C  
 Appearance  
 Surface hardness (ASTM D2240)  
 Application/temperature resistance  
 Due to the special composition suitable for outdoor use

WGK 1  
 1.67g/cm<sup>3</sup>  
 dark grey, opaque solid  
 75  
 - 30 °C bis + 280 °C

## Lubrication Blocks HG045

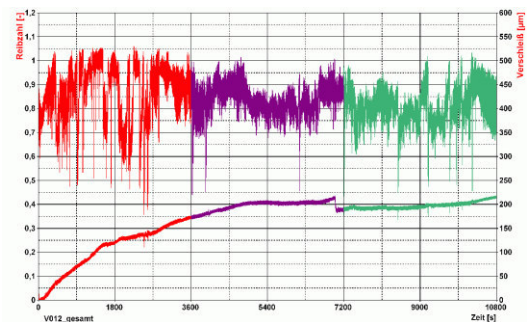
The lubrication blocks HG045 were developed as a dry lubricant for industrial plants, where a clean coating is necessary and wear protection is not in the foreground. If the usage of oils and fats cause problems, lubrication blocks HG045 can be the solution.

An agreed formula for dry and clean film lubrication on rolls, wheels, rings, rails, guides, etc. These high-quality units must be continuously supplied with lubricant to prevent surface damages. Lubrication blocks HG045 are in their formula geared to most rotation speeds and loads of industrial plants to maintain the required glide.

The thin and dry lubricant coating which is set by a constant contact force, protects the affected parts from wear and ensures a permanently constant and low coefficient of friction of about 0.015 to 0.03. Especially in dusty, wet and hot environment the lubrication blocks HG045 prove their performance. By solid mountings, the installation and usage control of lubrication blocks HG045 stays easy and long-term maintenance-free (minimum 12 months). Lubrication blocks HG045 are available in many different sizes (up to 1000 mm length).

### Physical characteristics:

Density (g/cm <sup>3</sup> )	1.65
Hardness (shore)	25-30
Temperature resistance	-30 °C bis +500 °C
Electr. resistance (μ OHMm)	8.00
Bending strength (N/mm)	212.00
Compressive strength (N/mm)	235.00
Thermal expansion (K-1 x 10-6)	2.00
Thermal conductivity (W/mk)	160.00
Particle size max. (mm)	2.5



### Technical data:

Graphite plates quality HG045	
Ground electrographite	
Ash content:	ca. 1.000 ppm
Water resistance:	corrosion-free
generation of lamination strength at most:	no
binding extruded, without binder	

The data above are averages, which may vary slightly. The properties of the HG045 graphite derive from his hexagonal crystalline structure. Due to the hexagonal crystalline structure of the HG045 graphite also derive from its properties.

## **Graphit Suspension** (Dry lubricant bound in water)

Graphit suspension is a liquid lubricant, which dries completely within approx. 20 minutes and therefore does not pick up dust particles when in use. This product is ideal for all metal surfaces that cannot be lubricated due to dust pollution in the immediate vicinity and are subjects to heavy wear. It is also used for the first treatment when using lubrication blocks or heavily attacked surfaces where lubrication blocks are then applied.

### **Application:**

1. Clean the surface as well as possible.
2. The container with graphit suspension has to be stirred well. In a stationary system, apply the graphit suspension with a brush as thin as possible (less is more) and let it dry completely. (approx. 15-20 minutes). Only those parts which are coated are a benefit. Too thick coating will be lost.
3. Start system for 2-3 minutes, turn off and coat once more.
4. After the complete drying of the second layer, the system is ready for operation.
5. Repeat as required until visibly enough lubricant is applied.
6. Keep the container of the graphit suspension well sealed and in room temperature.

Container/content: 1 l, 5 l



## **MOLYTROP® Dry lubricant “liquid”**

MOLYTROP® is an aqueous preparation of molybdenum (IV) disulfide with organic and inorganic additives, which ensure the stability and flow behaviour. The additives are used to transport the MoS<sub>2</sub> dry lubricant to the desired lubrication points. MOLYTROP® is electrically conductive due to its water content. MOLYTROP® is not ferromagnetic.

### **Application:**

**MOLYTROP®** is used for the application of dry lubricants even where the assembly of a block lubrication is not possible. **MOLYTROP®** often replaces loss lubrication when using oils and greases by dry coating with MoS<sub>2</sub>. **MOLYTROP®** is introduced into a commercially available lubricant dispenser using a filling device and can be applied continuously, automatically or manually as a lubricating film to the surfaces to be lubricated, similar to a grease. Special additives ensure that **MOLYTROP®** is only liquid at the moment of application, but then behaves like a dry lubricant again. Can therefore also be applied with a brush

### **Functionality:**

With a pressure of 3 bar or more, the pasty lubricant becomes liquid and is pressed into the lubricant line. Once at the lubrication point, the movement of the lubricant (MoS<sub>2</sub>) of the dry lubricant mixture is rolled into the surface. Surface roughness is compensated and the lubricating film (0.010-0.015 mm) creates a stable sliding friction (coefficient of friction 0.015). Consumption only results from the replacement of the lubricant lost due to the load. This type of lubrication results in minimal consumption, the lubrication point and workplace remain clean, protected from wear and tear, oil and grease free.

### **Physical and chemical characteristics:**

Form	paste
Color	grey
Odor	weakly cereous
pH	6
Melting point	450 °C (Sublimation MoS <sub>2</sub> )
Boiling point	not applicable
Flashpoint	> 100 °C
Vapor pressure	not applicable
Density	not applicable
Bulk density	not applicable
Water solubility	solid not water soluble
NGLI	approx.. 2 in form of delivery, 00 in processing, thixotrop
Use of the rolled-in smear layer	-10 °C to +450 °C
Use in the initial state	-10 °C to +80 °C

## **MOLYTROP® WHITE** Dry lubricant “liquid”

Thanks to the flow behavior adjusted by special additives, **MOLYTROP®** white is only fluid in the moment of application but then acts as a dry lubricant.

**MOLYTROP®** white lubrication through hexagonal boron nitride. Coating on rails, guidings, rollers, rings, wheels, gear racks, plain and rolling bearings...

**Suitable for:** manual lubrication, central lubrication systems, automatic cartridges. Often replaces loss lubrication through oil and grease – based on the system of minimal lubrication.

### **Characteristics:**

**MOLYTROP® white** is a mixture of hexagonal boron nitride and organic and inorganic additives, which control the stability and flow behaviour.

### **Technical data:**

- Electro conductive
- Not ferro-magnetic
- Applied solid boron nitride is insoluble
- No special requirements for transport or storage, WK 0-1
- Contains boron nitride and food-safe propylene glycol

### **Resistance:**

In initial state:	flash point >100 °C
Applied coating:	up to 1200 °C
Application temperature:	-18 °C to +230 °C

For industrial applications only.

No special safety instructions needed. Please use appropriate safety equipment as for soft chemicals. Do not empty into drains. Keep away from children. Harmless preparation, compliant with Ordinance on Hazardous Substances and the two EU directives: 67/548//EWG, 99/45/EC