

MOLYPAUL

**Flow Control – Solid lubricants for the Iron,
Steel and Refractory Industry**



LUBRICANTS.
TECHNOLOGY.
PEOPLE.



LUBRITECH
Special Application Lubricants

LUBRICANTS. TECHNOLOGY. PEOPLE.

FUCHS LUBRITECH – Special Application Lubricants

We focus consistently on high-quality lubricants and related specialties. We develop innovative and holistic solutions for a wide variety of applications. We value the high level of commitment of our employees and their trusting interaction with one another.

LUBRITECH *Special Application Lubricants*

Facts and Figures

Company: FUCHS LUBRITECH GmbH, part of the FUCHS Group, based in Kaiserslautern, Germany

LUBRITECH: the Special Application Division of the FUCHS Group

Product range: LUBRITECH GROUP offers a full range of more than 1,000 special products, including food grade lubricants, adhesive lubricants, lubricating fluids and greases, pastes, solid film lubricants, concrete release agents, aerosols and metal-forming lubricants

Certifications: ISO 9001: 2008, ISO 21469, Halal, Kosher

FUCHS has developed, produced and sold lubricants and related specialties for more than 80 years – for virtually all applications and sectors. With over 100,000 customers and 50 companies worldwide, the FUCHS Group is the world's leading independent lubricant supplier.

Within the FUCHS Group, FUCHS LUBRITECH is the expert for Special Application Lubricants. A team of more than 500 specialists around the world work to meet your needs. However demanding the application, we offer a specialised solution. Service is a crucial and fundamental component of our offering. Our experts offer on-site technical consultation to assure performance, efficiency and process reliability.

FUCHS LUBRITECH special application lubricants stand for highest performance and sustainability, safety and reliability, and efficiency and cost savings. They represent a promise: **technology that pays back.**

SPECIALITY LUBRICANTS FOR THE IRON, STEEL AND REFRACTORY INDUSTRY

The high temperatures and pressures as well as the extreme environmental conditions in steelmaking necessitate the use of special lubricants, which are used on high-temperature and pressure-stressed joints and bearings, fastening and motion threads, roller bearings (as minimum quantity lubrication), sliding mechanisms, on the surfaces of ceramic sliding plates, as release assistance for the secondary ceramic components in slide gate systems, gas purge systems and in many other places in the production process.

We offer an extensive product range that comprehensively meets the demands placed and helps steelworks and refractory manufacturers to substantially improve the durability and performance of their products and plants, to decrease downtimes and maintenance work and thus to increase the profitability of their plants. You can rely on our expert knowledge in the fields of development, consulting and support.



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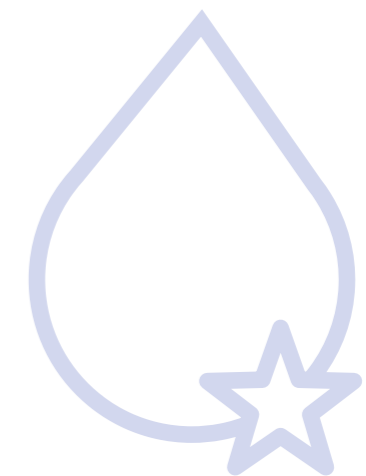
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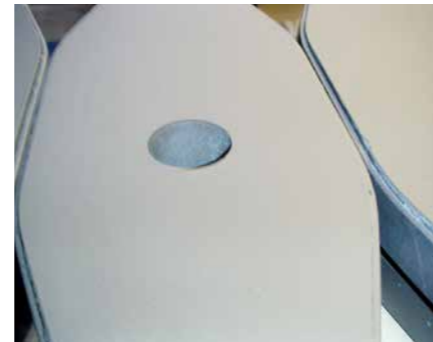
Product and application range of the MOLYPAUL® 900 and 700 series

The MOLYPAUL® 900 and 700 product series contain lubricant variants based on synthetic and natural graphites, which are used as coating and parting lubricants in the

production plants of refractory manufacturers and in the "flow control" area of the iron and steel industry.

Main fields of application

- Surface coating of ceramic sliding plates
- Cold surface coating of sealing surfaces of secondary ceramics
- Separation of ceramic wearing parts after use
- Hot-spraying on ceramic surfaces in steelworks
- Coating of casting moulds for the production of prefabricated ceramic components
- Mould release (casting templates), e.g. fireproof ceramic dry-setting mixes
- Coating of continuous casting moulds for start-up assistance and wear protection (continuous casting plants for billets and blooms, slabs and thin slabs)



Spray-coated sliding-plate surface



Surface spray coating of slab mould



Manual surface coating of ceramic sliding plates

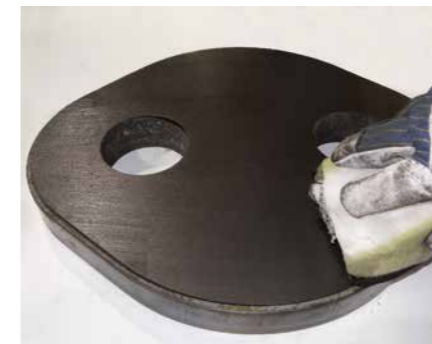
Surface coating of ceramic sliding plates

Coating with high-performance lubricants improves the durability of the ceramic sliding plates, increases their safety in use in the steelworks and thus contributes to a reduction in maintenance costs and possible downtime

costs. Thanks to their high resistance to oxidation and a low coefficient of friction, the products from the MOLYPAUL® 900 series make a substantial contribution to this.



Cold coating of sealing surface of ceramic sliding ladle nozzle



(Manual) ceramic rotary plate coating



Surface coating (spraying) of linear sliding plate

Surface coating of ceramic linear sliding plate

MOLYPAUL® 900/50, MOLYPAUL® 900, MOLYPAUL® 919, MOLYPAUL® 942 FAV

- Water-based, paste-like products
- Dense, oxidation-resistant wearing layer is created
- Application with a sponge, brush, spatula or fibre roller

Ceramic plate coating

MOLYPAUL® 912

- Paste-like product
- Low-friction, oil-based emulsion for use on rotary sliding valve ceramic plates
- System-related tolerance differences and surface unevenness are compensated
- Lubricant is applied directly after installation into the slide valve mechanism
- Application with a sponge, brush or fibre cloth

Surface coating of linear sliding plate

MOLYPAUL® 950, MOLYPAUL® 930

- Water-based, sprayable products
- High-performance, abrasion-resistant lubricating film is created
- Surface is low-friction and resistant to oxidation
- Application with a manual spray gun or an automatic or semi-automatic spraying device

Surface coating of secondary ceramic components

The paste-like MOLY-PAUL® products fulfil this task, dry out at room temperature after application and close the open pores in the ceramic surface.

The wettability is lowered and prevents the penetration of the grout into the pore structure of the component. The wearing parts and any remaining grout residues are easy to remove.



Cold coating of the sealing surface

MOLYPAUL® 900

- Product is applied to the sealing surface of the ceramic sliding ladle nozzle
- The high release effect enables the easy and quick exchange of the head plate, which is bonded by a grouted joint
- Adhering grout residues can be removed easily and gently; the sleeve durability is positively affected

Cold coating of sealing surface of ceramic sliding ladle nozzle



Cold coating of the well block mounting cone

MOLYPAUL® 900

- Wettability of the ceramic surface is reduced
- After use the components (sliding nozzles, porous plug) can be removed quickly and cleanly
- Adhering mortar release can be removed easily; the nozzle brick durability is positively affected

Cold coating of the wellblock mounting cone

Hot-spraying on ceramic surfaces

After spraying, the product developed especially for this application, MOLYPAUL® 994, creates a dense, closed, dry lubrication film with a graphite structure tailored to the application. This decisively reduces the wettability of the ceramic component with respect to the grout/putty used. The efficient exchange of wearing parts is thus ensured.

Particular importance is attached to fine atomisation when spraying. The liquid content of the lubricant serves as a carrier material, which ensures the optimum distribution of the parting substances on the hot ceramic surfaces by spraying. The "Easy Spray Gun" manual spray gun is ideal for the application. No smoke or odours are generated during the application.



Hot-spraying, sealing surface ladle nozzle / sliding bottom plate



Hot-spraying, sealing surface sliding plate / exchangeable nozzle



Hot-spraying, sealing surface exchangeable nozzle / ladle-shroud

MOLYPAUL® 994

- Water-based solid lubricant, especially for spray application to hot surfaces
- Release function of the ceramic components, which are connected via mortar joints
- Application with a low-maintenance, pneumatically operated manual spray gun (Easy Spray Gun)
- Closed, low-friction lubricating film with high release effect is created

Spraying areas:

- Plate surfaces
- Ladle nozzle / exchangeable nozzle sealing surface
- Ladle nozzle brick holding cone /sliding sleeve and porous plug
- Tundish bottom nozzle / submerged entry nozzle

Coating of continuous casting moulds

The MOLYPAUL® products are easy to apply without drips. A self-contained lubricating film with excellent sliding properties is formed. The lubricant application

enables the time-delayed use of the standard oil lubrication during the initial casting phase. The danger of deflagrations is minimised.

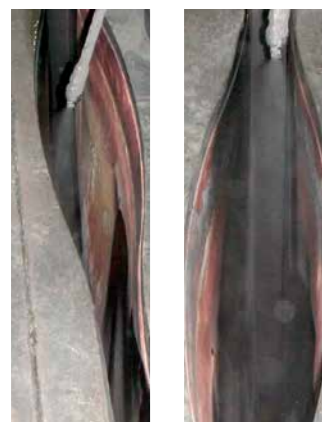


Continuous casting mould for billets: coating with fibre roller

Continuous casting plant for billets and blooms

MOLYPAUL® 783

- Paste-like, non-dripping lubricant on a graphite basis
- Easy to apply
- A compact lubricating film with a low coefficient of friction is created under the influence of temperature
- Shell formations on the mould walls are effectively prevented
- Replaces the standard oil lubrication during initial casting; the danger of deflagrations is minimised
- Applied using fibre cushions or a fleece roller



Coating with a spray device

Continuous casting plants for slabs and thin slabs

MOLYPAUL® 750

- Sprayable, ready to use and aqueous suspension
- Forms a resistant dry lubricating film on ambient-temperature with a high release effect
- Low coefficient of friction and high abrasion resistance ensure a smooth start-up of the dummy bar and protect the metal moulds against scoring and wear during insertion
- Service life of the mould is prolonged
- Applied using spraying apparatus, a fibre roller or a fibre pad

Release of fireproof ceramic products, casting templates and moulds

The MOLYPAUL® products can be applied without drips and enable clean demoulding. The moulded article remains free of unwanted discolourations and the mould is ready for

the next use without the necessity for extensive cleaning. Multiple use of the casting mould is possible, since a new coating often doesn't have to be applied before each use.



Casting mould for the production of cast ceramic components

Release of fireproof ceramic casting products

MOLYPAUL® 959

- Cream-coloured liquid emulsion
- Non-hardening, non-dripping release layer forms
- No discolourations are formed on the ceramic moulded articles
- Usable on all mould materials
- Application with artist's brush, fibre roller or spray gun











Spray-coating of a mould

Release of casting templates

CEPLATTYN TL

- Sprayable, silver-coloured suspension of an oil emulsion with metallic solid lubricants with a high release effect
- Coating, for example of tundish templates, which are used in connection with ceramic dry setting mixes
- Applied using spraying apparatus with a high spraying performance

Overview of products and applications

Product name	Description	Features	Application by means of	Container availability
MOLYPAUL® 900/50	Paste-like, water-based lubricant on a graphite basis for the surface coating of ceramic sliding plates	<ul style="list-style-type: none"> Ready-to-use Oxidation-resistant 	<ul style="list-style-type: none"> Fibre roller Sponge Fibre cloth Brush 	
MOLYPAUL® 900	Paste-like, water-based lubricant on a graphite basis for the surface coating of ceramic sliding plates, release of ceramic components; application to cold surfaces	<ul style="list-style-type: none"> Ready-to-use Low-friction Oxidation-resistant 	<ul style="list-style-type: none"> Fibre roller Sponge Fibre cloth Brush 	
MOLYPAUL® 912	High-viscosity, oil-based lubricant on graphite basis, for the surface coating of ceramic rotary sliding plates	<ul style="list-style-type: none"> Ready-to-use Low-friction Oxidation-resistant Compensation of unevenness 	<ul style="list-style-type: none"> Fibre roller Sponge Fibre cloth Brush 	
MOLYPAUL® 919	Paste-like, water-based lubricant on a graphite basis for the surface coating of ceramic sliding plates	<ul style="list-style-type: none"> Ready-to-use Low-friction Oxidation-resistant Abrasion-resistant 	<ul style="list-style-type: none"> Fibre roller Sponge Fibre cloth Brush 	
MOLYPAUL® 930	Aqueous dispersion, based on a special combination of solid lubricants and a tuned additive package for the surface coating of ceramic sliding plates and as a mould release agent in foundries	<ul style="list-style-type: none"> Sprayable Low-friction High surface adhesion Oxidation-resistant Abrasion-resistant 	<ul style="list-style-type: none"> Fibre roller Sponge Spraying device 	
MOLYPAUL® 942 FAV	High-viscosity, water-based compensating lubricant paste on a graphite basis for the surface priming of ceramic sliding plates and as a basic lubricant in connection with a multiple coating	<ul style="list-style-type: none"> Low shrinkage effect Closes open surface pores High adhesion 	<ul style="list-style-type: none"> Spatula 	
MOLYPAUL® 950	Aqueous dispersion on a graphite basis for the surface coating of ceramic sliding plates	<ul style="list-style-type: none"> Sprayable Low-friction Oxidation-resistant Abrasion-resistant 	<ul style="list-style-type: none"> Fibre roller Sponge Spraying device 	
MOLYPAUL® 994	Aqueous dispersion on a graphite basis for the separation of ceramic products; hot-spray application	<ul style="list-style-type: none"> Sprayable high releasing effect Low-friction Closed graphite veil 	<ul style="list-style-type: none"> Manual spray gun 	
MOLYPAUL® 783	Soft, paste-like lubricant on a graphite basis, suitable for the coating of all mould types and materials	<ul style="list-style-type: none"> Ready-to-use High releasing effect Low consumption Abrasion-resistant Inhibits infiltration Low-friction 	<ul style="list-style-type: none"> Fibre roller 	
MOLYPAUL® 750	Aqueous dispersion on a graphite basis for the coating of continuous casting moulds (slab, thin slab)	<ul style="list-style-type: none"> Sprayable High releasing effect Abrasion-resistant Adhesion to metallic surfaces Low-friction 	<ul style="list-style-type: none"> Fibre roller Spraying device Fibre pad 	
MOLYPAUL® 959	Graphite-free, non-hardening, cream-coloured liquid emulsion for the separation of casting moulds for the manufacture of prefabricated ceramic components	<ul style="list-style-type: none"> High releasing effect Non-dripping No colouring Biodegradable Suitable for all types of mould 	<ul style="list-style-type: none"> Sponge Brush Manual spray gun 	
CEPLATTYN TL	Graphitic silvery suspension of an oil emulsion with metallic solid lubricants for the separation e.g. of tundish templates (dry setting mixes)	<ul style="list-style-type: none"> Sprayable High releasing effect 	<ul style="list-style-type: none"> Spraying device 	
EASY SPRAY GUN	Compressed air operated, hand held gun made of hard plastic with metallic extension tube for spraying aqueous MOLYPAUL® products	<ul style="list-style-type: none"> Sturdy construction Spraying amount adjustable 	<ul style="list-style-type: none"> Compressed air 	

Innovative lubricants need Experienced application engineers

Every lubricant change should be preceded by expert consultation on the application in question. Only then the best lubricant system can be selected. Experienced LUBRITECH engineers will be glad to advise on products for the application in question and also on our full range of lubricants.



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The information contained in this product information is based on the experience and expertise of FUCHS LUBRITECH GmbH in the development and manufacturing of lubricants, and represents the current cutting edge. The performance of our products can be influenced by a series of factors, especially the specific use, the method of application, the operational environment, component pretreatment, possible external contamination, etc. For this reason, universally valid statements about the function of our products are not possible. Our products must not be used in aircraft/spacecraft or their components, unless such products are removed before the components are assembled into the aircraft/spacecraft. The information given in this product information represents general, non-binding guidelines. No warranty expressed or implied is given concerning the properties of the product or its suitability for any given application. We therefore recommend that you consult a FUCHS LUBRITECH GmbH application engineer to discuss application conditions and the performance criteria of the products before the product is used. It is the responsibility of the user to test the functional suitability of the product and to use it with the corresponding care. Our products undergo continuous improvement. We therefore retain the right to change our product range, the products and their manufacturing processes as well as all details of our product information sheets at any time and without warning, unless otherwise provided in customer-specific agreements. With the publication of this product information, all previous editions cease to be valid. Any form of reproduction requires express prior written permission from FUCHS LUBRITECH GmbH.