

CORROSION PREVENTIVE OILS



BELGIN



BELGiN provides for the usage of various industries a wide product portfolio over 1000 different products under 32 main groups ranging from hydraulic oils, turbine oils, engine oils to specific industrial lubricants.

BELGiN also produces the CORES branded corrosion preventives, which operates under SGS ISO 9001 - TSE ISO 9001 quality system certificate and laboratory certificate in the scope of TS EN ISO/IEC 17025 standard. This plant boasts a production with the state-of-the-art technology as well as fully automatic, computer controlled operations, founded on 7800 m² closed area within 25000 m² open area at the Gebze Organized Industrial Site.

CORES corrosion preventive oils, manufactured under various types with several protection durations and film thickness, are designed as results of common R&D projects with many industrial companies and their performance is proven with longterm field trials.

CORES corrosion preventive oils, produced at worldwide standards, are used successfully in primarily steel-iron manufacturing industry, also in automotive and sparepart production industries for intermediate storage and finished materials protection and also in other various industrial sectors.

CORES corrosion preventive oils contribute to economy and production industries by protecting million dollars worth material against corrosion every year.





→ GENERAL TECHNICAL INFORMATION

Corrosion: Corrosion is the transformation of a metal to its original state in nature.

Iron > **Iron Oxide**

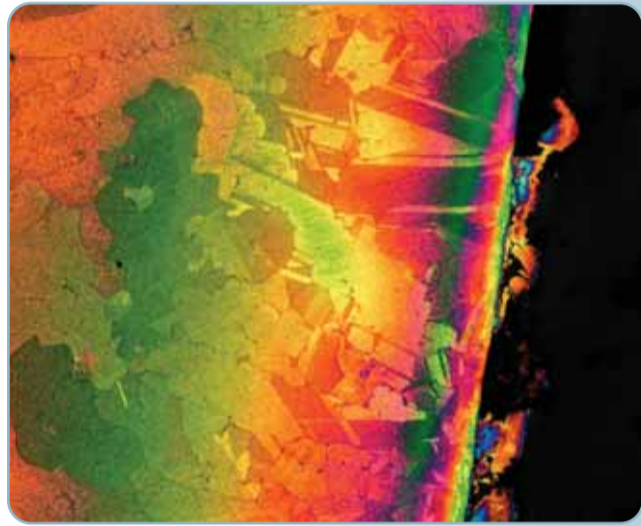
Copper..... > **Copper Sulphide**

Aluminum > **Aluminum Oxide**

Corrosion, which occurs on the metal surface, does not only affect the appearance, but also prevents the implementation of subsequent operations and shortens the material life. In case of corrosion, the metal pieces are required to be re-processed or subjected to mechanical cleaning.

Consequently, corrosion incurs:

- Loss of labor
- Loss of material
- Loss of productivity



→ TYPES OF CORROSION

● **Staining**

Staining is a type of corrosion, which is observed especially in non-ferrous materials like copper, silver and their alloys. Color changing to green-black and turning to opaque are the indicators of this type of corrosion. Usually, no alteration occurs in the structure of the metal in case of staining.

● **Rust**

Rust is the corrosion of ferrous materials. Iron is the material that most easily corrodes.

● **Bimetallic Corrosion**

Bimetallic corrosion is a corrosion type which occurs as a result of the direct contact of two metals with different electron reduction potentials.

● **Bacteria-based Corrosion**

Bacteria-based corrosion, especially observed in the aqueous systems, is caused by the reproduction of anaerobic bacteria which accelerates the electron transfer on the metal and thus triggers corrosion.

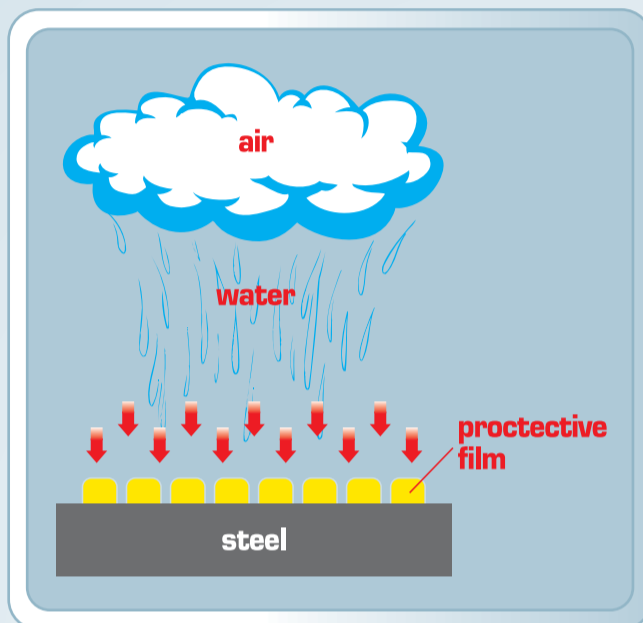
● **Stress Corrosion**

Stress corrosion occurs as a result of the contact fatigue of fine surfaces which have high corrosion tendency with oxygen succeeding to stress corrosion cracking.



CORROSION PREVENTIVE OILS

→ CORROSION PREVENTION MECHANISMS



The aim of the corrosion prevention methods is to protect the metal surfaces from atmospheric effects and prevent the oxidation of metal.

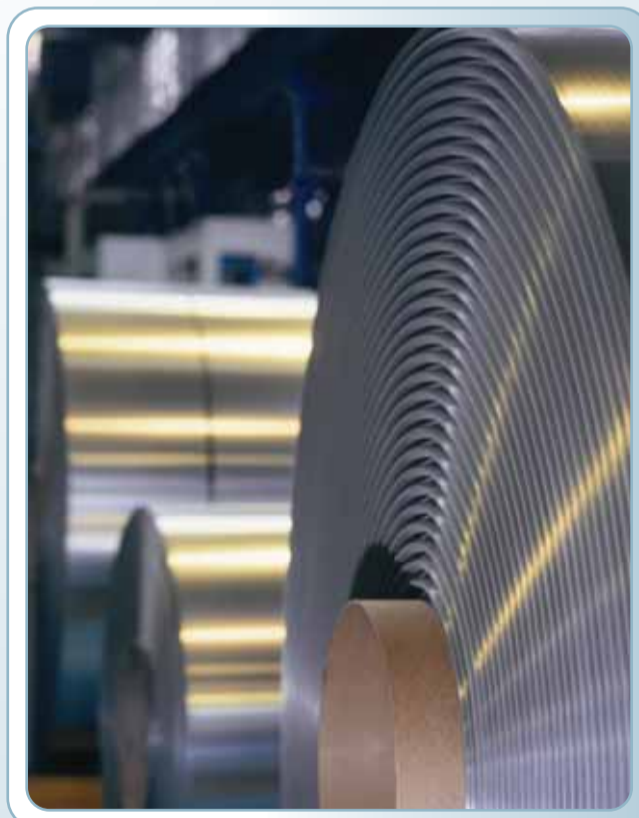
→ CORROSION PREVENTION METHODS

Temporary Protection from Corrosion:

Special corrosion preventive oils are used against metal corrosion and then removed with organic solvents or aqueous alkaline cleaning agents from surface.

Permanent Protection from Corrosion:

Methods such as painting, galvanic coating or plastic coating are applied for permanent protection from corrosion and cleaning can be accomplished only by mechanical means. Permanent coating is much more resistant than temporary coating.



CORROSION PREVENTIVE OILS

→ CLASSIFICATION OF CORROSION PREVENTIVE OILS

Use of corrosion preventive oils is one of the most utilized methods amongst the temporary protection methods. The corrosion preventive oils can be classified under 3 main groups according to the carrier types, film types and application.

ACCORDING TO CARRIER TYPE

- **Water-miscible Corrosion Preventive Oils**
Water-miscible corrosion preventive oils are used via mixing with water at high concentrations (20-40%).
- **Mineral Oil Based Corrosion Preventive Oils**
Mineral oil based corrosion preventive oils are used as neat oils and form an oily film layer on the surface.
- **Solvent Based Corrosion Preventive Oils**
Solvent based corrosion preventive oils are used as neat oils. After a certain period, the solvent evaporates and the pieces are dried with air.
- **Mineral and Solvent Mix Based Corrosion Preventive Oils**
Mineral and solvent mix based corrosion preventive oils are used as neat oils. After a certain period, the solvent evaporates and it forms slightly oily surface.

ACCORDING TO FILM TYPE

- Corrosion preventive oils forming oily film layer
- Corrosion preventive oils forming greasy film layer
- Corrosion preventive oils forming waxy film layer
- Corrosion preventive oils forming transparent film layer
- Corrosion preventive oils forming slightly oily film layer

ACCORDING TO APPLICATION

- **Dewatering Corrosion Preventive Oils**
Dewatering corrosion preventive oils are used for the intermediate storage or final transportation of wet pieces. They penetrate on the metal surface and push the water or emulsion away from the surface forming a very thin protective film layer. They provide an economical solution due to low consumption.
- **Thixotropic Corrosion preventive Oils**
Thixotropic corrosion preventive oils, especially used in the steel industry, facilitates the lubricating operation due to their increasing fluidity properties during application with force. The viscosity returns to its original state after the application and the adhesion of the oil on the pieces increases.
- **Long-term Corrosion Preventive Oils**
Long-term corrosion preventive oils, especially used for the transportation of machinery and vehicles, provide a protection period of at least 2-3 years. The film thickness of this type of oils is more than 1,0 mm.

CORROSION PREVENTIVE OILS

→ PERFORMANCE TESTS FOR CORROSION PREVENTIVE OILS

DETERMINATION OF KINEMATIC VISCOSITY (ASTM D-445)

This test method is used for the determination of the resistance of the oils against flowing, thus their fluidity. The kinematic viscosity of corrosion preventive oils is measured in mm^2/s at 40 °C as for the other industrial applications. The thinner oils are defined by lower values.



DETERMINATION OF OPEN CUP FLASH POINT (ASTM D-92)

This test method is used for the determination of the flash and fire points of lubricants after contacting with flame in an open cup apparatus. These values are essential for work safety. Especially solvent-based products can have low flash point values.

DEWATERING TEST

This test method is used for the determination of the penetration properties of corrosion preventive oil to the metal surface and also the ability of them to push the water or emulsion away from the surface. The results are evaluated according to dewatering time and appearance.



HUMIDITY CABINET CORROSION RESISTANCE TEST (DIN 50017)

This method is an accelerated test for the determination of the protection periods of the corrosion preventive oils applied onto metal plates in a humidity cabinet which contains 95 % relative humidity at 40°C. The results are expressed in hours, days or cycles.



CORROSION PREVENTIVE OILS

→ PERFORMANCE TESTS FOR CORROSION PREVENTIVE OILS

SALT SPRAY (FOG) TEST (ASTM B-117)

This test method is used for the determination of the performance of the corrosion preventive oils during overseas transportation of the materials and implemented by spraying a 5% salt water on the oil-coated pieces. The results are expressed in hours.



DRYING TIME

Drying time, only measured for the solvent-based corrosion preventive oils, is the period for the formation of the dry film layer after the solvent evaporizes. This method is not implemented for the corrosion preventive oils which do not contain solvents. The result is expressed in minutes.

FILM THICKNESS

This test method is used for the determination of the thickness of the film layer after the application of corrosion preventive oils. The result is expressed in microns.



CONDUCTIVITY

This test method is used for the determination of the resistance of the corrosion preventive oils, especially for electrostatic applications, thus for the measurement of conductivity. The result is expressed in ohm.



CORROSION PREVENTIVE OIL CONSUMPTION

This test method is used for the determination of the consumption of the corrosion preventive oils for the application. The consumption of the corrosion preventive oils is affected by several parameters such as the method of application and the piece geometry. The value specified by this method should be assumed as the theoretical consumption value. The measurement unit is g/m^2 .

CORROSION PREVENTIVE OILS

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CORES B, CORES BI

CORES B and BI are effective in the protection of metal surfaces even under salt spray atmosphere, also have intermediate lubrication strength properties for sheet metal forming operations. They form an oily film layer and at the same time these corrosion preventive oils provide good lubrication.

CORES DW-2

CORES DW-2 is a special, solvent-based corrosion preventive oil with dewatering properties. CORES DW-2 forms a very thin waxy film layer which does not stick on the hands and can be easily removed by aqueous alkaline cleaning agents. CORES DW-2 is used especially in the steel tube production industry.

CORES DW-50, CORES DW-100, CORES DW-150

CORES DW-50, 100 and 150 oils are dewatering, solvent-based corrosion preventive oils which form a thin waxy film layer. CORES DW-50, 100 and 150 oils are used for the protection of the unpainted surfaces of machinery, small and large machine parts, gears, any kind of automotive subsidiary industry products such as camshafts and cylinder caps as well as for the overseas transportation of any kind of metal pieces.



CORES DPC

CORES DPC is a thixotropic corrosion preventive oil used for the protection of cold rolled steels and coils and also aids the deep drawing processes without applying any other lubricant.

CORES DPC, quickly dispersing on the cast iron, sheet steel or suchlike material surface, forms a non-drying thin oily film layer.

CORES DF-5

CORES DF-5 is a dewatering corrosion preventive oil used for the protection of the packed pipes and small pieces, the intermediate storage of the pieces which are wet-processed during galvanize operations and the protection of pieces during installation and production.

CORES DF-5 penetrates between the water on the surface and the metal piece and forms a very thin oily film layer. CORES DF-5 provides an economical solution due to low consumption.

CORES FO, CORES FO-1

CORES FO and FO-1 oils are dewatering corrosion preventive oils used for the protection of the wrapped small pieces and the pieces which are wet-processed during galvanize operations.

CORES FO and FO-1 oils penetrate between the water on the surface of the metal and the piece and form a protective film layer.



CORROSION PREVENTIVE OILS

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CORES KC

CORES KC is a thixotropic corrosion preventive oil with reduced dropping tendency, especially used for the transportation and the storage of pipes, profiles, steel and iron strips, bands and bars as well as bearings and auxiliary parts. CORES KC forms an oily protective film layer with a high lubricating property which can be easily removed by aqueous alkaline cleaning agents.



CORES NT

CORES NT is a solvent and mineral based corrosion preventive oil which contains corrosion inhibitors and provides short-term protection. CORES NT has deep penetrating, dirt and rust dissolving properties. CORES NT is used for gun cleaning and short-term protection. CORES NT forms a thin waxy protective film layer on the surface and provides protection from rusting and corrosion. CORES NT fulfills MIL-C-372 C specification.

CORES 800C

CORES 800 C is a dewatering corrosion preventive oil produced by using special base oils and additives and used for gun lubrication and rust protection. CORES 800 C has lubricating and working properties at very low ambient temperatures. CORES 800 C fulfills Mil VVL-800C specification.

CORES 50/S

CORES 50/S is a corrosion preventive oil which forms an oily film layer and provides resistance against the water vapor in the air. CORES 50/S is used for the temporary storage and transportation of the rolled sheets as well as the protection and final transportation of auxiliary parts utilized in the automotive industry.

CORES RPO

CORES RPO is a corrosion preventive oil used for the protection of rolled sheets, steel sheets and materials during transportation or long-term storage.

CORES RPO provides ease of application due to high flash point and low pour point values. It can be applied with electrostatic lubricators. CORES RPO can be used for light drawing operations.

CORES RP-6

CORES RP-6 is a corrosion preventive oil used for the protection of cold rolled steels and coils. It forms an oily film layer.

CORES RP-6 can easily replace water on the metal surface and protect the pieces for 6 months in indoor storage places.

CORES 88T

CORES 88/T is a very effective corrosion preventive oil enriched by special additives with reduced dropping tendency.

CORES 88/T is used for the protection of finished and semi-finished products of all kinds, machinery and other mechanical assemblies and embodied steel sheet, steel sheet products. CORES 88/T can provide protection even in overseas transportation of materials in case of suitable packing.



CORROSION PREVENTIVE OILS

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CORES 88R

CORES 88/R is a corrosion preventive oil which is enriched by special additives and forms an oily film layer.

CORES 88/R is used for the protection of finished and semi-finished products of all kinds, machinery and other mechanical assemblies and embodied steel sheet, steel sheet products. CORES 88/R provides a shorter period of protection with respect to CORES 88/T.

CORES 36

CORES 36 is used for the long-term protection of finished products, automotive auxiliary parts or the overseas transportation of machinery and vehicles. CORES 36 can also be utilized as a long-term undercavity protection agent for the vehicles and buses.

CORES 36 forms a thick, waxy film layer and has a protection period of 24-36 months in case of appropriate application and packaging.

CORES 61, CORES 61/E

CORES 61, 61/E are thixotropic, dropping tendency reduced corrosion preventive oils which can be easily removed by aqueous alkaline cleaning agents.

CORES 61, 61/E are used for the protection of semi-products and products that have to wait for a certain period during or after the production process.

CORES 61, 61/E can also be used for the protection and transportation of profiles, steel pipes, steel and iron rods and bearings as well as auxiliary parts.

CORES MKR, CORES MKR-5, CORES MKR-EP

CORES MKR SERIES are mineral oil based, water-miscible metalworking fluids used for corrosion prevention.

CORES MKR SERIES form long-life, stable and milky emulsions when mixed with water.

CORES MKR SERIES are lubricants with low foaming tendency, providing very good protection against corrosion.



CORES MKR SERIES can be used at 20% concentration or as neat oils for corrosion prevention. They provide in-door protection between 6-12 months against corrosion, unless it has no contact with water. Due to the emulgators they contain, it can be removed from the surface easily with water or aqueous alkaline cleaning agents.

CORES MKR SERIES minimize microorganisms growth due to the special additives they contain, thus smell caused by the bacteria growth and avoid the emulsion separation.

CORES MKR-5 provides better corrosion protection than the other products of the series. CORES MKR-EP can be used successfully in processes that are exposed to high loads due to EP additives contained.

CORROSION PREVENTIVE OILS

Product Name	Application	Film Layer	Indoor Protection Period***	Automotive Industry	Steel Industry	Gun Industry	Multi Purpose	Linearly Welded Tube Industry
CORES B	Multipurpose Corrosion Preventive Oil	Oily Film Layer	3-6 months				X	
CORES BI	Multipurpose Corrosion Preventive Oil	Oily Film Layer	3-6 months				X	
CORES DW-2	De-watering Corrosion Preventive Oil	Waxy Film Layer	6-12 months	X				X
CORES DW-50	De-watering Corrosion Preventive Oil	Waxy Film Layer	6-12 months	X			X	
CORES DW-100	De-watering Corrosion Preventive Oil	Waxy Film Layer	8-14 months	X			X	
CORES DW-150	De-watering Corrosion Preventive Oil	Waxy Film Layer	12-18 months	X	X		X	
CORES DPC	Corrosion Preventive Oil with Lubricity for Deepdrawing	Oily Film Layer	6-12 months	X	X		X	
CORES DF-5	De-watering Corrosion Preventive Oil	Oily Film Layer	3-6 months					X
CORES FO	De-watering Corrosion Preventive Oil	Thin, Oily Film Layer	1-3 months					X
CORES FO-1	De-watering Corrosion Preventive Oil	Thin, Oily Film Layer	3-6 months					X
CORES KC	Multipurpose Corrosion Preventive Oil	Greasy Film Layer	6-12 months		X		X	
CORES NT	Corrosion Preventive Oil for Gun Cleaning	Thin, Oily Film Layer	0-1 months			X		
CORES 800-C	Corrosion Preventive Oil for Gun Protection	Oily Film Layer	1-3 months			X		
CORES 50/S	Multipurpose Corrosion Preventive Oil	Oily Film Layer	6-12 months	X			X	
CORES RPO	Corrosion Preventive Oil for Cold Rolled Steel	Oily Film Layer	6-12 months	X	X			
CORES RP-6	Corrosion Preventive Oil for Cold Rolled Steel	Oily Film Layer	6-12 months	X	X			
CORES 88-T	Multipurpose Corrosion Preventive Oil	Oily Film Layer	8-14 months	X			X	
CORES 88-R	Multipurpose Corrosion Preventive Oil	Greasy Film Layer	8-14 months	X			X	
CORES 36	Long-term Corrosion Preventive Oil	Waxy Film Layer	24-36 months	X			X	
CORES 61	Multipurpose Corrosion Preventive Oil	Oily Film Layer	6-12 months	X			X	
CORES 61-E	Multipurpose Corrosion Preventive Oil	Oily Film Layer	6-12 months	X			X	
CORES MKR*	Water-miscible Corrosion Preventive Oil	Oily Film Layer	6-12 months	X			X	
CORES MKR-5**	Water-miscible Corrosion Preventive Oil	Oily Film Layer	8-14 months	X			X	
CORES MKR-EP*	Water-miscible Corrosion Preventive Oil with EP Additives	Oily Film Layer	6-12 months	X			X	

Should be used by mixing with water at min. 20% concentration and information about the method of application should be requested.

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*** Indoor protection period is determined by laboratory analysis. No guarantee is provided as the application, packaging, transportation and storage conditions may change.

X Represents the primary application fields and the products may be used in other industries if possible. Please consult Belgian Technical Support Team for the suitable product selection.

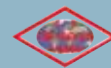
PRODUCT RANGE

- GRINDING FLUIDS
- WATERSOLUBLE METALWORKING FLUIDS
- HYDRAULIC OILS
- GREASES
- NEAT CUTTING OILS
- HONING OILS
- QUENCHING OILS AND FLUIDS
- HEAT TRANSFER OILS
- CIRCULATION AND LUBRICATION OILS
- CORROSION PREVENTIVE OILS
- NEAT FORMING AND DEEPDRAWING LUBRICANTS
- SOLUBLE FORMING AND DEEPDRAWING LUBRICANTS
- SLIDEWAY LUBRICANTS
- INDUSTRIAL GEAR LUBRICANTS
- OPENGEAR LUBRICANTS
- HOTFORMING AND FORGING LUBRICANTS
- VARIOUS LUBRICANTS
- CLEANERS
- MOTOR OILS
- TRANSMISSION OILS
- PROSES OILS
- TEXTILE LUBRICANTS
- BIOCIDES
- ELECTRO EROSION FLUIDS
- INJECTOR ADJUSTMENT FLUIDS
- SHOCKABSORBER OILS
- MOULD RELEASE LUBRICANTS
- COMPRESSOR LUBRICANTS
- MARINE OILS
- COMPLEMENTARY AUTOMOTIVE PRODUCTS
- CHAIN OILS



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