

THE CASTROL PRODUCT SELECTION TABLE

SOLVENT BASED

| Product Name | Description | HSE Performance | Base Fluid | Flash Point [°C/°F] | Film Type | Film Forming Content [%] | Film Thickness [µm] | Corrosion Protection | | Drying Time @ 20°C [min] | Viscosity @ 40°C [mm ² /sec] | Barium |
|---------------------------------|---|-----------------|---------------|------------------------|-------------|--------------------------------|------------------------|----------------------|--------------------|--------------------------------|---|--------|
| | | | | | | | | Indoor [month] | Outdoor [month] | | | |
| SafeCoat DW 10 ⁽¹⁾ | Dewatering fluid | ★★ | de-aromatized | >61/142 | no film | 0 | 0 | n/a | n/a | 30 | n/a | |
| SafeCoat DW 21X ⁽¹⁾ | Short-term dewatering protective, oily film | ★★ | isoparaffin | >58/136 | oily | 30 | 3.5 - 5 | 3 | 1 | 90 | n/a | |
| SafeCoat DW 30 ⁽¹⁾ | Medium-term dewatering protective, greasy film | ★★ | de-aromatized | >60.5/141 | greasy | 8 | 0.6 - 1 | 9 | 3 | 45 | n/a | |
| Rustilo DW 4130 ⁽¹⁾ | Long-term dewatering protective, oily-greasy film | ★★ | isoparaffin | >58/136 | oily-greasy | 22 | 1.3 | 18 | 3 - 6 | 75 | n/a | • |
| Rustilo 4135 HF ⁽¹⁾ | Medium-term dewatering protective, greasy film, low VOC | ★★★ | de-aromatized | >112/234 | greasy | 10 | 2 - 2.5 | 12 | 3 | 90 | n/a | |
| Rustilo DWX 10 ⁽²⁾ | Dewatering fluid | * | white spirit | >38/100 | no film | 0 | 0 | n/a | n/a | 15 | n/a | |
| Rustilo DWX 21 ⁽²⁾ | Short-term dewatering protective, oily film | * | white spirit | >38/100 | oily | 30 | 3 - 4 | 3 | 1 | 60 | n/a | • |
| SafeCoat DW 18X ⁽²⁾ | Medium-term dewatering protective, oily greasy film | ★★ | isoparaffin | >58/136 | oily-greasy | 11 | 1.2 - 1.5 | 12 | 4 - 6 | 40 | n/a | |
| Rustilo DWX 22 ⁽²⁾ | Medium-term dewatering protective, soft greasy film | * | white spirit | >38/100 | soft-greasy | 30 | 3.5 - 4.0 | 12 | 6 | 120 | n/a | • |
| Rustilo DWX 30 ⁽²⁾ | Medium-term dewatering protective, greasy film | * | white spirit | >38/100 | greasy | 8 | 0.6 - 1 | 8 - 12 | 3 - 6 | 30 | n/a | • |
| Rustilo DWX 32 ⁽²⁾ | Long-term dewatering protective, greasy film | * | white spirit | >38/100 | greasy | 30 | 4 | 18 | 9 | 90 | n/a | • |
| SafeCoat DW 37 ⁽²⁾ | Long-term dewatering protective, greasy film | ★★ | de-aromatized | >61.5/143 | greasy | 31 | 4 - 6 | 18 | 9 | 90 | n/a | |
| Rustilo DWX 33 ⁽²⁾ | Extra long-term dewatering protective, greasy film | * | white spirit | >38/100 | firm-greasy | 40 | 7 | 18 | 12 | 120 | n/a | • |
| SafeCoat DW 33 ⁽²⁾ | Extra long-term dewatering protective, greasy film | ★★ | de-aromatized | >61.5/143 | firm-greasy | 40 | 7 | 24 | 12 | 120 | n/a | |
| Rustilo DW 924HF ⁽³⁾ | Medium-term dewatering protective, greasy film | ★★ | Solvent | >85/185 | greasy | 10 | 0.6 - 1 | 12 | 3 | 120 | n/a | • |
| Rustilo DW 924 ⁽³⁾ | Medium-term dewatering protective, greasy film | ★★ | white spirit | >38/100 | greasy | 8 | 0.6 - 1 | 8 - 12 | 3 - 6 | 30 | n/a | • |

NEAT OILS

| | | | | | | | | | | | | |
|---------------------------------|---|------|-----------------|----------|-----------|-----|------------------------|--------------------------|-----|-----|-----|--|
| SafeCoat 66 ⁽¹⁾ | Neat oil containing vapor-phase corrosion inhibitor | ★★★ | neat oil + VCI | >130/266 | thin-oily | 100 | 2 - 3 | 5 yrs (sealed pack) | n/r | n/a | 13 | |
| Rustilo S 40 ⁽¹⁾ | Thixotropic mill oil | ★★★ | thixotropic oil | >200/342 | oily | 100 | 2 - 8 | >20 cycles DIN 50017 KFW | n/a | n/a | 40 | |
| Rustilo Tarp CFX ⁽¹⁾ | Thixotropic long-term protective | ★★★ | thixotropic oil | >104/219 | greasy | 100 | depends on application | 36 - 60 | 24 | n/a | n/a | |
| Rustilo 4163 ⁽¹⁾ | Corrosion preventive oil, low viscosity | ★★★ | neat oil | >110/230 | oily | 100 | 2 | 12 | n/r | n/a | 7 | |
| Rustilo 630 ⁽¹⁾ | Corrosion preventive oil, low viscosity | ★★★ | neat oil | >170/338 | oily | 100 | 4 | 3 | n/r | n/a | 21 | |
| SafeCoat 637 ⁽¹⁾ | Corrosion preventive oil, medium viscosity | ★★★ | neat oil | >190/374 | oily | 100 | 3 - 5 | 6 | n/r | n/a | 37 | |
| Rustilo 647 ⁽²⁾ | Corrosion preventive oil, low viscosity | ★★★ | neat oil | >140/284 | oily | 100 | 4 | 12 | 3 | n/a | 18 | |
| SafeCoat 652 ⁽²⁾ | Corrosion preventive oil, high viscosity | ★★★ | neat oil | >190/374 | oily | 100 | 3 - 5 | 6 - 9 | n/r | n/a | 52 | |
| SafeCoat DW 90 ⁽³⁾ | No odor, water-displacing, low VOC | ★★★★ | neat oil | >168/334 | oily | 100 | 0.6 - 1 | 18 | n/r | n/a | 14 | |
| Rustilo 4164 CFX ⁽³⁾ | No odor, water-displacing, fingerprint suppressant | ★★★ | thixotropic | >104/219 | oily | 100 | 0.6 - 1 | 3 - 6 | 12 | n/a | n/a | |

AQUEOUS

| | | | | | | | | | | | | |
|--------------------------------|---|------|----------------|----------|---------------|--------------------------|--------------------------|--------------------------------|--------------------------|----------|-----|--|
| Rustilo 4175 ⁽¹⁾ | Fully synthetic concentrate | ★★★★ | synthetic | n/a | dry | depends on concentration | depends on concentration | 9 | n/r | 15 | n/a | |
| Aquasafe 21 ⁽²⁾ | Soluble oil corrosion preventive | ★★★★ | soluble | >150/302 | thin-oily | depends on concentration | depends on concentration | 8 - 12 (@20%) concentration | n/r | 60 - 240 | 70 | |
| Aquasafe 30 ⁽²⁾ | Waxy micro-emulsion, 'ready to use' | ★★★★ | micro-emulsion | n/a | greasy | 10 | 0.9 | 9 | n/r | 30 | n/a | |
| Safety-Film 614 ⁽³⁾ | Water-based, wax emulsion (also for use as dry film lube) | ★★★ | emulsion | n/a | dry film | 20 | <13 | depends on concentration | depends on concentration | 20 | n/a | |
| Safety-Film 616 ⁽³⁾ | Water-based, wax emulsion (also for use as dry film lube) | ★★★ | emulsion | n/a | dry film | 12 | <8 | depends on concentration | depends on concentration | 20 | n/a | |
| Safety-Film 639 ⁽³⁾ | Water-based, wax emulsion | ★★★ | emulsion | n/a | clear, satiny | 24 | 5 | depends on concentration | depends on concentration | 15 | n/a | |

★ Indicates increasing performance
★★
★★★
★★★★

n/a = not applicable n/r = not recommended VOC = Volatile Organic Compounds VCI = Vapor Corrosion Inhibitor

The corrosion protection data in the above table is based on standard corrosion tests under laboratory conditions and should be used as a guide only.

Corrosion protection time may vary dependent on application and the environment. Please note that not all products may be available in your country. Consult your local Castrol representative for advice.

⁽¹⁾ – Available globally and in US/Canada/Mexico. ⁽²⁾ – Available on request in US/Canada/Mexico ⁽³⁾ – Available only in US/Canada/Mexico

AQUEOUS CORROSION PREVENTIVES

Synthetic Corrosion Preventives

These are fully synthetic, water-based corrosion preventives, that leave translucent, imperceptible films, offering short term protection with minimal surface contamination.

Advantages:

- Meets growing environmental regulations - e.g., European Volatile Organic Compounds (VOC) legislation.
- Facilitates ISO 14000 compliance (continuous improvement).
- Reduces fire risk which may allow reduced insurance premiums.
- Improves your working environment.
- Enhances health and safety for your workforce.

Application:

Our in-process corrosion preventives provide temporary protection on wet or dry parts after cutting and grinding or forming operations, while stored or stacked indoors until assembly. They can also be used as a rinse and corrosion preventive in multi-stage washers or as an additive in alkaline cleaners for additional protection.

Soluble Oil Corrosion Preventives

These medium viscosity mineral oils, containing film-forming additives and coupling agents, are supplied as a concentrate for dilution with water before use. These products leave a thin, oily film on components after the evaporation of the water phase.

Advantages:

- As per Synthetic Corrosion Preventives.
- Medium-term protection with easy-to-remove surface films.

Application:

Our short- to medium-term soluble corrosion preventives are used as an emulsion. They are mainly designed for inter-operational protection of all components made of steel, cast iron, other metals and their alloys.

Depending on the product, application can be by spray, immersion or flooding, preferably at 50-60°C to aid drying and limit bacterial growth.

Wax Micro-Emulsion Corrosion Preventives

These high-performance, environmentally friendly water-based corrosion preventives are formulated with select blends of corrosion inhibitors. After evaporation of the water, these leave a protective greasy or waxy film, which is usually only provided by solvent-based products.

Advantages:

- As per Synthetic Corrosion Preventives.
- Robust medium- to long-term protection.

Application:

Wax micro-emulsions are designed to be ready to use at ambient temperatures. Depending on type and thickness, the residual film provides effective medium- to long-term protection against corrosion for various components during intermediate storage or transportation. These products are intended for dip, low pressure spray and flood applications.

Our range of water-based corrosion preventives are under the Castrol Aquasafe®, Castrol Safety-Film® and Castrol Rustilo® names.

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SURFACE TREATMENT

CORROSION PREVENTIVES

YOUR ADVANTAGE IN AN INDUSTRIAL WORLD





THE EXPERTS IN CORROSION PREVENTION

CASTROL OFFERS YOU A COMPREHENSIVE RANGE OF WORLD-CLASS CORROSION PREVENTIVES AND PRODUCT SUPPORT SERVICES THAT WILL HELP YOU TO:

- > Achieve more reliable protection of finished parts.
- > Improve Health, Safety and Environmental (HSE) performance.
- > Boost productivity through reduced scrap rates and waste.

We can offer you these powerful benefits by harnessing the up-to-the-minute global process and applications expertise of our network of engineering and research professionals. It's then all delivered directly to you by our knowledgeable local sales and support teams. Our ultimate goal is to help you achieve top performance in your manufacturing environment.

We know that corrosion of metals affects virtually everyone every day. Wherever base metals or related articles are produced, there is a risk of corrosion, and wherever corrosion occurs, it costs money and eats into profits.

For many years, we have focused on preventing corrosion and researching the causes. This has generated a wide range of anti-corrosion materials and, just as important, a tremendous bank of knowledge and experience in their application in various industries.

In particular we can help you to improve your HSE performance using low aromatic, solvent-free or water-based products. See the product selection table for details.

Simply, you can trust Castrol to provide the right product for the job, across all your operations.

A CHOICE TO SUIT ALL NEEDS

Temporary corrosion preventives may be required to meet a variety of needs. The degree of protection achieved will depend on the type of film as well as its thickness. Before you can make the right choice of protection, you need to consider various conditions, such as:

- The nature of the article to be protected, its size and the materials used.
- The condition of the surface.
- Preferred method of application.
- The desired drying speed if a volatile solvent-based product is used.
- Compatibility with subsequent processes, i.e., removability.
- The duration of required protection.
- Corrosive conditions against which articles are to be protected.
- Compatibility with other process materials such as engine oils and paints.
- Whether secondary protection, such as wrapping, will also be employed.
- If transport is involved, the destination and route to be taken.

Our portfolio of corrosion preventives covers a comprehensive range of user friendly and environmentally friendly products. These are grouped based on their different film characteristics and variable protection times. This versatility enables you to choose the best product to suit your needs.

- > Solvent-based dewatering corrosion preventives
- > Neat corrosion preventive oils
- > Aqueous corrosion preventives

THE COMPLETE RANGE OF CORROSION PREVENTIVES



SOLVENT BASED DEWATERING CORROSION PREVENTIVES

Dewatering Fluids

Dewatering fluids are mainly based on hydrocarbon solvents containing a selected combination of additives that enable complete water displacement and penetration of treated metal surfaces. After removing the metal from the solution, the solvent evaporates leaving a clean, dry surface.

Advantages:

- Easy to apply and therefore suitable for most processes.
- Effectively removes water from metal surfaces for improved parts quality.
- Economical and efficient alternative to heat or compressed air drying.
- Avoids water spots when dewatering sensitive surfaces, such as polished or plated components.
- Does not hinder adhesion of paint or other subsequent protective coatings.

Application:

Dewatering fluids effectively remove water from components following electroplating processes, after machining using soluble metalworking fluids, or once parts have been washed. Dewatering fluids specifically can be used for the treatment of surfaces that cannot be subjected to heat to accelerate drying.

Although dewatering fluids can be applied by brushing or spraying, the dewatering action is most effective if items are immersed in a dip tank. Displaced water can be drained from the bottom of the tank.

Our range of solvent-based dewatering corrosion preventives are under the Castrol Rustilo[®], Castrol Rustilo[®] DW, Castrol Rustilo[®] DWX and Castrol SafeCoat[®] DW names.

Dewatering Corrosion Preventives

Similar to the composition of dewatering fluids, these liquids are mainly based on hydrocarbon solvents containing a select combination of additives that enable complete water displacement and penetration of treated metal surfaces. Additionally they contain significant amounts of non-volatile corrosion inhibitors, which after evaporation of the solvent leave an effective protective film.

Advantages:

- Easy to apply and therefore suitable for most processes.
- Combined drying and protection, eliminating a step in the manufacturing process.
- Broad range of film characteristics (oily, greasy) and thicknesses enables uncompromised product selection for each application
- Some products are particularly well-suited to applications that require high levels of protection under severe conditions.
- Predominantly firm and greasy films that possess good mechanical strength and allow treated components to be handled without harming the protection performance.

Application:

Dewatering corrosion preventives effectively remove water or any other aqueous metalworking fluid from components as well as leave a residual protective film on the metal surface. Depending on type and thickness, the residual film provides effective inter-operational, short or long term protection against corrosion for components during storage or transportation. Some dewatering corrosion preventives are used where severe conditions are encountered and a high degree of protection is required. They are ideal for the protection of engine components such as fuel injector nozzles and other highly finished parts.

Although dewatering corrosion preventives can be applied by brushing or spraying, the dewatering action and the deposited film is most effective if items are immersed in a dip tank. Displaced water can be drained from the bottom of the tank.

NEAT CORROSION PREVENTIVE OILS

Corrosion Preventive Oils

These are mainly mineral oil-based liquids that are used at ambient temperatures and provide non-drying, non-volatile liquid films.

Advantages:

- Ideal for use wherever solvent-based products are unacceptable.
- Wide range of viscosities available to meet different requirements.
- Easy to apply and therefore suitable for most processes.
- Forms an even film giving more reliable protection.
- Resistant to oxidation, easier to remove after extended storage.
- Compatible with mineral oil, often avoiding additional cleaning steps.
- Easy to remove.

Application:

These products are suitable for external application to semi-finished metal (e.g., rod and wire drawing works), finished components (e.g., instrument parts) and bulk quantities of very small items (e.g., nuts, bolts). They may be applied by brushing, spraying, dipping or roller coating and electrostatic methods.

Thixotropic Corrosion Preventive Oils

These are mineral oil-based liquids that are not truly fluid at normal temperatures. They do not contain volatile solvents but 'set' to give a viscous oily film which provides protection.

Advantages:

- As per Corrosion Preventive Oils.
- Increased, more stable coating weights and therefore greatly improved protection performance.

Application:

Depending on product characteristics, these are mainly used as steel mill applied corrosion preventives in the production of metal sheet. They are also good for protecting machinery and associated components, even during long-term storage or overseas transportation.

Thixotropic oils can be applied by airless spray, immersion or brushing. Generally they have to be agitated and/or heated to become fluid and so achieve complete coverage.

VCI Corrosion Preventive Oils

These have the same characteristics as Corrosion Preventive Oils but contain a Vapor Corrosion Inhibitor (VCI) that also prevents corrosion by covering parts with a protective atmosphere.

Advantages:

- As per Corrosion Preventive Oils.
- In a sealed package/environment, the VCI component offers maximum long-term protection against corrosion.
- Can eliminate the need for separate VCI packaging components.

Application:

These are suitable for protecting all types of delicate or highly finished engineering products, particularly those with moving parts (e.g., bearings) that cannot be protected with greasy film coatings. They can be applied by immersion and spray.

Our range of neat corrosion preventive oils are under the Castrol Rustilo®, Castrol SafeCoat® and Castrol Tarp® names.

QUALITY AND
RELIABILITY
FROM START
TO FINISH

