

# Metal Rescue™

## Rust Removal Bath

### Metal Rescue™ Rust Remover Bath - Safe On Everything Except Rust™! Frequently Asked Questions

#### Do parts have to be completely clean before using Metal Rescue™?

No. Metal Rescue™ will penetrate oil and dirt. However, it's recommended to pre-clean your parts before applying Metal Rescue™. Detergents are more economical and are designed to remove various contaminants. This will also speed up the process of rust removal and extend the life of the Metal Rescue™. Cosmoline, heavy greases, and similar materials should be removed prior to de-rusting.

#### What will Metal Rescue™ remove?

Metal Rescue™ will remove iron oxide (rust) from ferrous based substrates in 5 minutes to 24 hours depending on the degree and age of the rust. It will remove zinc phosphate, bluing, browning, and other oxide finishes in about 20 – 40 minutes immersion time. It also brightens copper and copper based alloys such as brass and bronze.

#### What coatings will not be removed?

Metal Rescue™ will not remove anodizing, chrome, nickel, powder coating, and paint as long as the paints do not contain metal oxides and are intact. If rust has gotten in behind the paint, then Metal Rescue™ will remove the rust from behind the paint and thus take the paint along with it. If in doubt, check a small section of part prior to use.

#### Is Metal Rescue™ safe to use on painted surfaces?

Yes, Metal Rescue™ will not remove or harm the vast majority of paint coatings. However, if there is a layer of rust under the paint some of the paint coating will be lost as Metal Rescue™ removes the rust. Also, some paints (and inks) may use iron oxide pigments (usually orange or red). Since Metal Rescue™ has been engineered to remove iron oxide, it may dissolve the pigment in these types of paints. It is always best to test on a small section or hidden area prior to use.

#### What other metals can be used with Metal Rescue™?

Metal Rescue™ is a rust remover designed for iron and steel. It is safe on metals other than iron and steel as long as they are not left in a Metal Rescue™ soak too long. Metal Rescue™ will remove some oxides from copper, brass, nickel and certain aluminums, however, immersion time is critical. The length of immersion time is dependent upon the amount of oxidation present and alloy composition. It is recommended that the following metals be checked approximately every hour so as not to damage the surface under the oxidation layer: aluminum, brass, copper, chrome, gold, lead, nickel, silver, titanium, tungsten, solder or solder points.

#### Will Metal Rescue™ harm other materials?

No. It will not harm rubber, plastic, clothing, glass, and other surfaces that are unharmed by water alone. However, as with any materials soaked in a liquid, do not soak these materials longer than you would have them soak in water.

#### There is a black film on some parts after using Metal Rescue™. What is it?

Metal Rescue™ may leave a black film on some parts. The black is from iron oxide II, often referred to as black oxide. Black oxide is a corrosion inhibiting film that is a more stable state of oxidized iron. It is not detrimental to the metal surface and is only cosmetic in nature. It can form on certain steel alloys and high carbon steel when left in Metal Rescue™ for longer periods of time. For these metals, reducing the time that the part is immersed in the liquid will minimize the black film. Much of the black oxide film can be removed simply by rinsing with mild detergent or wiping with a cloth. Also, it is best to remove it immediately after removing parts from Metal Rescue™ and before the parts dry. The black oxide becomes more difficult to remove for parts that have soaked for long periods of time. It is best to soak rusted parts only as long as needed to remove the rust.

#### The steel has developed a dull grey finish after using Metal Rescue™. What is it?

Some steels may develop a dull grey finish on polished surfaces. This is attributed to a phosphate-like coating formed and can typically be removed using abrasive pads or similar substances. This can be minimized by checking the parts and removing from the bath when rust has been removed. Leave parts immersed in Metal Rescue™ only as long as needed to remove rust.

#### What materials should not be used with Metal Rescue™?

Metal Rescue™ is not recommended for use on magnesium or magnesium alloys.

#### Can Metal Rescue™ be sprayed on the rusted surface?

Metal Rescue™ only works in the liquid form. When sprayed on a surface, Metal Rescue™ will dry before de-rusting can be completed. However, Metal Rescue™ is effective in removing rust if continuously sprayed onto the surface until the rust has been dissolved. Typical operations are continuous spray washers with the Metal Rescue™ fluid being re-circulated. The best method for using Metal Rescue™ is a bath or soak. For more specific information about the re-circulating pump method, please contact ARMOR at 1-800-365-1117.

#### How can I use Metal Rescue™ on an item that can not be immersed or sprayed?

A smooth absorbent material can be soaked with Metal Rescue™ and applied to the rusted area. The area will need to be covered with plastic film to prevent evaporation and drying. When the surface is de-rusted, rinse with water and use a brush or sponge if necessary. Another method for less severe rust is to scrub the rusted surface with Metal Rescue™. The key is to keep the area moist as Metal Rescue™ must be in liquid contact form to work properly. While this is not the intended form to use Metal Rescue™, it is still much safer than scrubbing with acids and alkalis.

#### What is the Metal Rescue™ Use Life?

One gallon of Metal Rescue™ will remove approximately a ½ pound of dry rust. That is equivalent to removing rust from approximately 300 pounds of moderately rusted steel. If any of the Metal Rescue™ solution evaporates, simply replace it with fresh tap water to original level.



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### How do I know when Metal Rescue's™ de-rusting capabilities are used up?

The bath will turn completely black and rust removal rates significantly decrease. The specific gravity will change from 1.02 to 1.06.

### What is the best way to measure specific gravity?

One way to determine when Metal Rescue™ is used up is to measure specific gravity. There are many ways to measure specific gravity. One way is to use a hydrometer. They are easily available and cost between \$5 and \$15. They are commonly used for home brewing and wine making, and also used by people who keep salt water aquariums. Additionally, most manufacturing facilities with labs or chemicals have several ways to measure the specific gravity of a liquid.

### Metal Rescue™ Rust Remover Liquid becomes darker as it de-rusts; does it continue to work?

Metal Rescue™ will continue to work even after changing color. The liquid turns darker due to the iron oxide particles removed from the iron/steel. Upon de-rusting a heavily rusted item, the bath will turn darker. Metal Rescue™ will cease to be effective when the liquid turns completely black.

### If I strain the liquid after usage, can I prolong the useful life of Metal Rescue™?

No. The rust particles from the part are actually absorbed into the liquid, hence, the change of color from clear to black. Typically, there will be only a small percentage of rust particles on the bottom of the tub itself compared to the amount of rust removed from the object(s).

### What happens if I leave the substrate in the Metal Rescue™ liquid too long?

If left in too long (over 24 hours) a darker film may be noticed on the metal. The dark appearance is from iron oxide II, often referred to as black oxide. Black oxide is a corrosion inhibiting film that is a more stable state of oxidized iron. It is not detrimental to the metal surface and is only cosmetic in nature. It can form on certain steel alloys and high carbon steel when left in Metal Rescue™ for longer periods of time. For these metals, reducing the time that the part is immersed in the liquid will minimize the black film. Much of the black oxide film can be removed simply by rinsing with mild detergent or wiping with a cloth. Also, it is best to remove it immediately after removing parts from Metal Rescue™ and before the parts dry. The black oxide becomes more difficult to remove for parts that have soaked for long periods of time. It is best to soak rusted parts only as long as needed to remove the rust.

### How do I properly de-rust bulk parts with Metal Rescue™?

Metal Rescue™ works best when the liquid is in direct contact with the metal. Bulk parts that are lying on top of each other may need to be agitated or moved in order to have liquid contact with Metal Rescue™.

### What is the proper disposal method for Metal Rescue™?

As supplied, Metal Rescue™ is non-corrosive, non-flammable, non-toxic, biodegradable, and contains no VOCs, solvents, acids, bases or hazardous ingredients. Metal Rescue™ is considered to be a non-hazardous, non-toxic product and typically does not pose a problem with disposal. Although the product is not hazardous, contaminants may be introduced during the use of the product that could render the product hazardous if in amounts that are above the hazardous waste limits. You should always check with your local, state & federal authorities to ensure proper and legal disposal to the drain.

### How can I speed up the time that it takes to remove the rust?

Heating up the fluid to 140°F will increase the rate of rust removal and reduce the time it takes to remove the rust. Operating temperatures for Metal Rescue™ are between 60°F and 155°F. If too cold, Metal Rescue™ will not work or will take much longer to de-rust.

### What if the Metal Rescue™ accidentally freezes?

Move the Metal Rescue™ to a warmer area and let stand to thaw. Once completely thawed, you can use as directed.

### How do I remove the Metal Rescue™ solution from the parts prior to painting?

Metal Rescue™ is completely water miscible and easily rinsed off. Use warm clean water to rinse off parts and dry thoroughly after rinsing.

### Can I use Metal Rescue™ as a rust preventative?

Metal Rescue™ can be used as a short term rust preventative. Dip parts into a clean solution of Metal Rescue™, remove and let dry. Use only as a short interim rust preventative. Simply rinse off prior to painting or other coating. For longer term protection, use Armor Protective Packaging VCI Products or DryCoat™ Rust Preventative spray.

### Why should I use a plastic container with Metal Rescue™ to soak parts?

While Metal Rescue™ is "safe on everything except rust", moderation is always a key, as with anything. If Metal Rescue™ liquid is left in a metal container for a long period of time, two things will happen. 1) The metal container may develop a black film on it due to the formation of iron oxide II, often referred to as black oxide. Black oxide is a corrosion inhibiting film that is a more stable state of oxidized iron. It is not detrimental to the metal surface and is only cosmetic in nature. However, the main concern with this is that it will use up your Metal Rescue™ liquid. 2) As a metal (metal container) is in contact with Metal Rescue™ for extended periods, carbon can be pulled to the surface, causing the container to become darker. This phenomenon will especially occur with high carbon steel and certain alloys. We recommend using a plastic container when soaking parts in Metal Rescue™.

For a copy of ARMOR's terms and conditions of warranty, contact the ARMOR HQ at [info@armorvci.com](mailto:info@armorvci.com), by phone at 517-546-1117 or visit our website and download a copy at <http://www.metalrescue.com/consumerfaq.aspx>.

Revised 09-29-10

MRFAQINSERT0910E



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