WATERBASED SELECTIVE RUST REMOVER FOR STEEL, IRON, CAST IRON AND CHROME PLATINGS

SHORT-TERM CORROSION INHIBITOR

MADE IN U.S.A.

OPERATIVE: utilized by the U.S.Navy, U.S.Air Force, U.S.Army, NATO, FBI, CIA, Engine Builders, Auto Enthusiasts, Gunsmiths, Forensic Labs, OEM's, Farmers, Antique Restorers and recommended by the NRA *Gunsmithing School*, ***EVAPO-RUST®*** removes even deep rust on all types of mild steel, iron and chrome platings.

EVAPO-RUST® will remove sacrificial oxide coatings and is perfect for removing weapon finishes such as Bluing, Parkerizing, Zinc Phosphate, and Browning within 30 minutes.

EVAPO-RUST® is perfect for removing rust because:

a. unlike traditional acid-based rust removers, ***EVAPO-RUST®*** does not harm the underlying not-rusted metal, because it works through selective chelation, without any necessity to check periodically the rust removal process, to avoid both the underlying not-rusted metal corrosion, and the final acid neutralization. Even more so whenever the rust layer does not extend to the whole metal surface, with unavoidable resulting corrosion of the not-rusted metal surface in contact with the acid-based rust remover.

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b. unlike rust converters, ***EVAPO-RUST®*** avoids the danger, especially in case of heavy rust, that the rust-converted layer will not extend to the whole rust thickness; that is, it may remain a residual rust layer between the superficial rust-converted layer, and the underlying not-rusted metal.

c. unlike both traditional acid-based rust removers, and rust converters, ***EVAPO-RUST®*** reduces *hydrogen embrittlement* following exposure to hydrogen, which may weaken the metal structure inside.

SELECTIVE RUST REMOVAL: works through selective chelation: it can only remove iron oxide, but is too weak to remove iron from steel because the iron is held much more strongly.

CHEAP: can be used over and over, for several cycles, before final disposal of spent solution according to your local and national regulation concerning waste disposal.

One liter removes up to 60 gr. of pure dry rust.

SAFE:

- not flammable, not toxic, not corrosive, not eye and skin irritant or sensitizing
- no fumes or bad odors, no Volatile Organic Compounds (VOC)
- no acid, caustic or hazardous substances according to Annex XIV (SVHC), Annex XVII
- biodegradable (not readily) and 100% watersoluble
- will not harm unrusted steel, safe on other metals will not affect plastic, PVC, Viton and most paints

EASY: no special equipment (**NOT brushable**, unless the end-user will be so patient to continue brushing, until the rust removal process completion; it can take several hours, so it is feasible only for light rust).

OXIDATION INHIBITION: after rust removal, the treated component can be water-rinsed for painting, plating, or other type of corrosion protective coating.

If left unrinsed, ***EVAPO-RUST®*** will dry on the treated surface to a hard, short-term corrosion resistant coating.

As a dry film, ***EVAPO-RUST®*** inhibits oxidation indoors up to 14 days, depending on local room-humidity & temperature and metal item shape (the more irregular will be the shape (with high energy points), the shorter the protection will last).

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WATER-BASED: is non-corrosive to steel and does not harm brass, copper, aluminum, gold, lead, titanium, steel, cast iron, chrome, solder points, vinyl, plastic, rubber, silicone, glass, cork or wood.

Anodizing, Cobalt Tungsten Carbide, Powder Coating, Chrome, Nickel, Paint, and most other coatings will not be removed as long as they do not contain oxides.

High carbon steel and tool alloy steel items, when derusted, will have a darker appearance; much of the carbon can be partially removed simply by wiping with a cloth.

It is highly recommended to fully immerse the metal items, because some items not fully immersed for extended periods may experience etching at the water-line.

SIZES: 1/5/25/220 Lt.

GASTANKS: ***EVAPO-RUST®*** is ideal for rust removal inside gastanks because:

- thanks to its selective action, it preserves the whole underlying not-rusted metal, avoiding the corrosion of the underlying not-rusted metal
- thanks to its water-based formula, it reduces *hydrogen embrittlement* following exposure to hydrogen (eg.: vibrations, resonance, etc.).

It does not need filling the gastank with abrasive material (eg.: screws, bolts, etc.): it will be enough to grant the minimum contact time with rust and ***EVAPO-RUST®*** will solubilize the whole rust stopping itself automatically once reached the underlying not-rusted metal layer.

Unlike traditional acid-based rust removers ***EVAPO-RUST®*** will not either harm not-rusted metal, or gaskets (eg.: gasoline float valve, etc.) and not-iron metal (eg.: aluminum, chrome platings, etc.).

In case of medium/long term indoor storage, instead of the traditional oil-based dewatering anticorrosive protectives, we recommend the innovative water-based liquid anticorrosive protective ***RUST-BANDIT®***.

The operating procedure suggested to remove rust inside a gastank has been detailed in the Fill Method shown below.

COOLING SYSTEM: ***EVAPO-RUST®*** is perfect to remove rust from cooling systems; it will not harm gaskets, aluminum alloys, etc., but it will not remove deposits such as lime, oily deposits, etc..

The operating procedure suggested to remove rust inside a cooling system has been detailed in the Pressure Flushing Method shown below.

WATER-MIXING RATIO: even if sold ready-to-use with exactly the same formulation and water content as sold by the U.S. manufacturers, ***EVAPO-RUST®*** may be further water diluted.

We import ***EVAPO-RUST®*** in concentrated form (made in USA) then we mix it with water (made in Italy).

As sold with its original U.S. brand, we are legally obliged to sell ***EVAPO-RUST®*** with the exact water-mixing ratio prescribed by the U.S. Manufacturer.

That means granting up to 60 gr. of pure dry rust for each liter of ***EVAPO-RUST®***.

Further water-mixing is not recommended:

1. as 1 Lt. of ***EVAPO-RUST®*** removes till 60 gr. of pure dry rust, further water-mixing does not increase the total amount of rust removed
2. the more you water-mix, the more time it needs to complete the rust removal process

In order to avoid lowering excessively the speed of the rust removal process, do not further water-mix beyond 1:1 ratio (eg.: 1 Lt. *EVAPO-RUST®* + 1 Lt. water).

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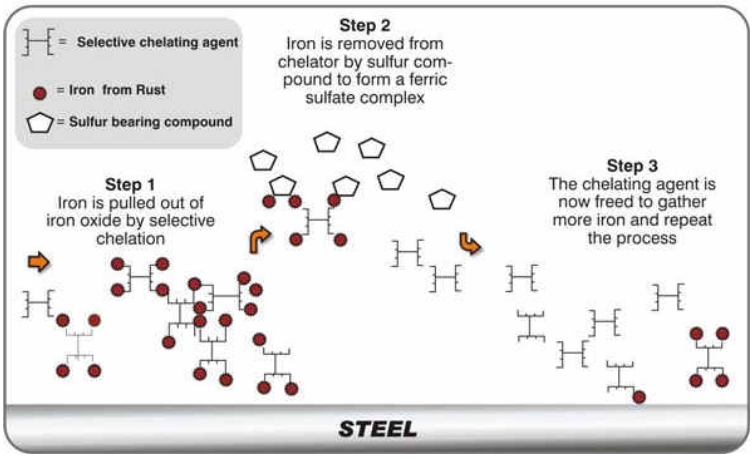
OPERATIVE TEMPERATURE: we recommend to use the solution of ***EVAPO-RUST®*** at a bath temperature above 15°C, as the chemistry is endothermic so it requires some ambient heat to work.

In temperatures below 5°C, the reaction is severely retarded.

At 15-20°C it is pleasantly quick, and at 35-50°C it is very active.

In order to speed the process, first always remove oil & greases by using dedicated detergent prior to derusting.

HOW IT WORKS:



EVAPO-RUST® works at a pH of 6.1 to 7 (neutral) through selective chelation: this is a process in which a large synthetic molecule forms a bond with metals and holds them in solution.

Most chelating agents bind many different metals; the active ingredient in ***EVAPO-RUST®*** bonds to iron exclusively.

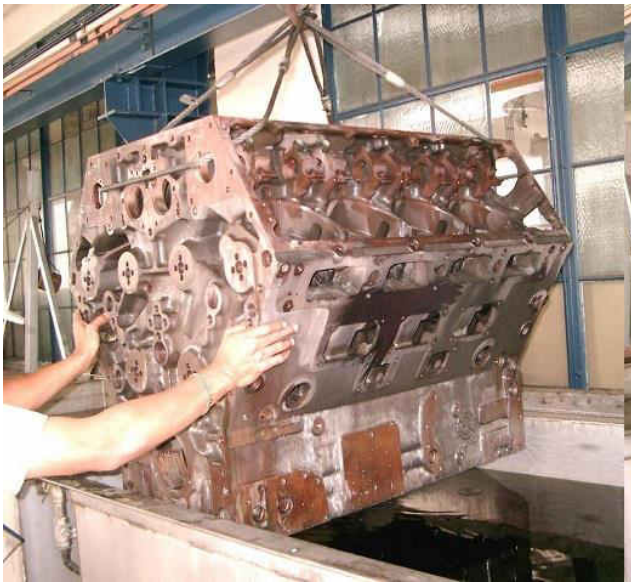
It can remove iron from iron oxide, but is too weak to remove iron from steel because the iron is held much more strongly.

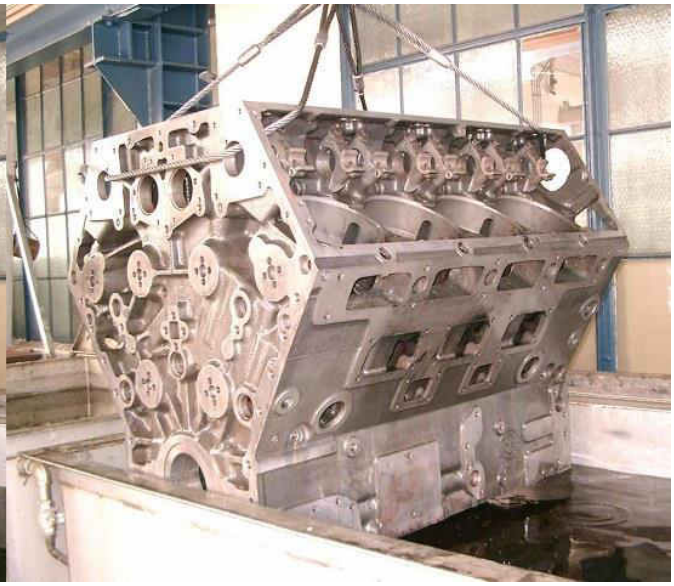
The chelator is too expensive to use large quantities in the finished product.

An organic chemical that easily loses sulfur to form ferric sulfate was added to remove iron from the iron-chelator complex.

This allows the chelator to remove more iron from iron oxide.

The sulfur-bearing compound is much less expensive than the chelator and makes ***EVAPO-RUST®*** economical to use.





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METAL INCOMPATIBILITIES: at moment, there are only n° 2 tested metal incompatibilities:

1. magnesium and magnesium alloys (eg.: carter, carburetors, injection pumps, etc.)
2. cadmium and cadmium alloys (eg.: cadmium platings, cadmium-based paints, etc.)

High carbon steel and tool alloy steel items, when derusted, will have a darker appearance after using ***EVAPO-RUST®***.

The black is carbon from the steel.

Generally high carbon steel is used in making items that are flexible (e.g. springs, saw blades, etc.).

Much of the carbon can be partially removed simply by wiping with a cloth.

The black film is carbon from the steel.

Steel is composed of a combination of carbon and iron.

This is a natural phenomenon that chemists refer to as *carbon migration*.

The carbon from the steel moves, or *migrates*, to the outer layer of the metal and settles into the pores.

The removal of the rust (iron oxide) reduces the proportion of iron to carbon, leaving a higher concentration of carbon on the outer surface.

This heavier layer of carbon could cause a darkening of the metal due to the attributes of the carbon.

The darkening does not have an adverse effect on the metal.

It merely represents the movement of carbon from the interior of the metal to the exterior of the metal.

EVAPO-RUST® is non-corrosive to steel and does not harm brass, copper, aluminum, gold, lead, titanium, steel, cast iron, chrome solder points, vinyl, plastic, rubber, silicone, glass, cork, or wood.

Conversely, anodizing, powder coating, chrome, nickel, paint, and most other coatings will not be removed as long as they do not contain oxides (the precise types of iron oxide and coatings affected are: Maghemite ($Fe_2^{3+}O_3$), Magnetite ($Fe^{2+}Fe_2^{3+}O_4$), Wustite (FeO), Iron hydroxide ($Fe(OH)_2$), Iron trihydroxide (bernalite) ($Fe(OH)_3$), Akageneite (ß-$Fe^{3+}O(OH,Cl)$), Feroxyhite ($Fe^{3+}O(OH)$), Lepidocrocite (γ-$Fe^{3+}O(OH)$) and Parkerizing (both types: manganese & zinc)).

Hematite (Fe_2O_3) and Goethite (α-$Fe^{3+}O(OH)$) are not affected by ***EVAPO-RUST®***.

EVAPO-RUST® will not harm lead or solder points.

Zinc coatings will be removed by prolonged exposure to ***EVAPO-RUST®***.

There will be no stress change in the metal due to treatment with ***EVAPO-RUST®***.

The only change that will occur will be rust damage that was caused prior to any treatment with ***EVAPO-RUST®***.

STORAGE: ***EVAPO-RUST®*** has an indefinite shelf life and can be used over and over until it absolutely stops working; mainly water is lost to evaporation.

Shelf life is for un-opened product; once opened, the life of the bath will vary due to biodegradability (bacteria introduced into the solution).

After using ***EVAPO-RUST®***, it is better to cover the solution, but still allow air to the bath: pouring the solution back into a sealed container will allow the anaerobic bacteria to begin the degradation process.

Used, open baths have continued to operate for over a 12 months period.

The water content in ***EVAPO-RUST®*** is the only thing that will evaporate.

If the water content is replaced to bring the content back to the capacity of the original container purchased, ***EVAPO-RUST®*** will be revitalized.

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It is suggested that when using ***EVAPO-RUST®*** mark the top of fluid level in container before use and maintain this level by continual top up with fresh water to circumvent evaporation.

DISPOSAL: The more you derust, the blacker the solution becomes.

EVAPO-RUST® is spent when it is pitch black and no longer performs.

Also the specific gravity will change from 1.04 to 1.08 and pH from 6.1 to 7.2.

Dispose of both the water rinse solution (if necessary), and the spent (or not) solution of ***EVAPO-RUST®*** and its container at hazardous or special waste collection point according to your local and national regulation concerning waste disposal.

HOW TO USE IT:

1. **DIP METHOD**
2. **FILL METHOD**
3. **ULTRASONIC METHOD**
4. **SPRAY METHOD**
5. **PRESSURE FLUSHING METHOD**
6. **WRAP METHOD**

You will use the first 4 methods (Dip/Fill/Ultrasonic/Pressure Flushing) whenever you can submerge the metal items inside a suitable tank or the metal items themselves may work as tank (eg.: gastank); the others (Spray/Wrap) whenever the metal items are too big to be submerged.

1. DIP METHOD

PRELIMINARY DEGREASING: first always remove oil & greases by using dedicated detergent/degreaser prior to derusting.

DIP: take a sufficient quantity of ***EVAPO-RUST®*** required to fully submerse the rusty object; then submerse it.

The duration for derusting will depend upon the severity of rust: for flash rust removal it takes about 30 minutes and up to 24/48 hours for extremely heavy rust.

Periodically check the object during the derusting process to know the status.

It is highly recommended to fully immerse the metal items, because some items not fully immersed for extended periods may experience etching at the water-line.

If water-mixed the above time interval will increase: the more you water-mix, the more time it needs to complete the rust removal process.

To avoid the rust removal process became too slow, do not further water-mix beyond 1:1 ratio (eg.: 1 Lt. ***EVAPO-RUST®*** plus 1 Lt. water).

As 1 Lt. of ***EVAPO-RUST®*** removes till 60 gr. of pure dry rust, further water-mixing does not increase the total amount of rust removed.

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NOTE: for extremely heavy rust, periodically rinse item with water and/or softly brush item with a scrubbing tool (e.g.: a wire brush): this stage is VERY important in getting the best results because residual rust may still be embedded in the metal (pits, crevices) after the initial soaking.

AFTER-TREATMENT: after treatment, the part can be water rinsed for painting, plating, or other type of corrosion protective coating.

It is important to always rinse the metal after a treatment with ***EVAPO-RUST®***: tiny molecules of iron will still be embedded in the ***EVAPO-RUST®*** solution, and these molecules must be rinsed off with water or they will activate the re-formation of rust on the metal object.

If left unrinsed, the fluid will dry on the treated surface to a hard, short-term corrosion resistant coating with no corrosion removal properties.

As a dry film, it inhibits oxidation indoors up to 14 days, depending on local room-humidity & temperature and metal item shape (the more irregular will be the shape (with high energy points), the shorter the protection will last).

For long term (up to 12 months) metal protection use the innovative water-based anticorrosion protective with dewatering properties: ***RUST-BANDIT®***.

2. FILL METHOD

PRELIMINARY DEGREASING: the same as the previous method.

FILL: take a sufficient quantity of ***EVAPO-RUST®*** required to fill (eg.: gastanks) the rusty object; then fill it.

We can divide n° 2 possible different application methods depending on if the whole rusty metal surface inside the items to be treated may be fully seen with naked eyes:

1. **if the whole rusty metal surface inside the items to be treated may be fully seen with naked eyes (es.: blind threaded holes, etc.):** the same as the previous method; or
2. **if the whole rusty metal surface inside the items to be treated may NOT be fully seen with naked eyes (es.: gastanks, etc.):** the operating procedure suggested is the following:

1. empty the whole residual fuel, lubricant, etc., and then put the gastank inside a suitable tank wide enough to collect the whole ***EVAPO-RUST®*** volume (in case of through-metal rust)
2. in case of presence of organic and/or inorganic deposits, first preliminary degreasing with suitable detergent or solvent
3. close every valve (refueling tap, gasoline float valve, air vent), and pour ***EVAPO-RUST®*** inside the gastank (do NOT dilute):
   a. if the gastank is still installed on the chassis, the quantity of ***EVAPO-RUST®*** must be sufficient to submerge the whole rusted metal surface inside
   b. if the gastank is not installed on the chassis anymore, the quantity of ***EVAPO-RUST®*** may be lesser and will depend on both the effective rust quantity to remove, and the

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number of progressive gastank rotations required to submerge the whole internal rusted metal surface: indeed, the more ***EVAPO-RUST®*** you use, the lesser number of consecutive gastank rotations will be needed. It does not need rotating uninterruptedly the gastank; it will be enough granting the sufficient contact time. We suggest a period of 24/48 hours for each consecutive rotation, especially when it is difficult or even impossible to check the rust removal process from the refueling tap (only if ***EVAPO-RUST®*** will be not water-mixed, otherwise it may be needed more than 24/48 hours, depending on the effective water-dilution ratio).

In both cases, for extremely heavy rust, periodically (every 6/12 hours) shake energetically the gastank, together with the ***EVAPO-RUST®*** solution poured inside: indeed, being the rust structure intrinsically porous, some metal fragments detached from the underlying metal surface, only externally oxidized (and, as such, not fully solubilized thanks to ***EVAPO-RUST®*** selective action) may be trapped and still be embedded in the metal (pits, crevices); the points of contact between detached metal fragments and underlying rusted metal asperity will prevent ***EVAPO-RUST®*** access and, so that, any rust removal action.

4. once finished, you have 2 possible solutions:

a. gastank ready to use:

- ✓ empty the gastank and water rinse
- ✓ immediately after water rinsing, in order to avoid flush rust, quickly rinse with Ethanol (Ethanol will be disposed of according to law)
- ✓ immediately after Ethanol-rinsing refuel the gastank

b. gastank ready for successive metalworking operation (eg.: internal facing) within 10/14 days after rust removal

- ✓ empty the gastank without water-rinsing in order to use ***EVAPO-RUST®*** as excellent inter-operational metal protective
- ✓ immediately before the following metalworking operation, accurately water-rinse the item
- ✓ immediately after water rinsing, in order to avoid flush rust, quickly rinse with Ethanol (Ethanol will be disposed of according to law)
- ✓ immediately after Ethanol-rinsing, carry out the following metalworking operation

c. long term indoor storage (warehouse, museum, etc.), or further metalworking operation (eg .: resin) beyond 10/14 days after rust removal:

- ✓ empty the gastank and water rinse
- ✓ immediately after water-rinsing, in order to avoid flush rust, quickly apply on metal still wet the innovative water-based anticorrosion protective with dewatering properties: ***RUST-BANDIT®***
- ✓ empty the gastank and allow to air dry
- ✓ if necessary, apply again after 6 months

AFTER-TREATMENT: the same as the previous method.

3. ULTRASONIC METHOD

PRELIMINARY DEGREASING: the same as the previous method

FILL: take a sufficient quantity of ***EVAPO-RUST®*** to fill the ultrasonic tank to the required level.

Submerse the component and switch on ultrasonic power.

The duration for derusting will depend upon the severity of rust: for flash rust removal it takes about a minute and about an hour for removal of medium to sever rust.

Basically this is the faster way to remove rust

AFTER-TREATMENT: the same as the previous method

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4. SPRAY METHOD

PRELIMINARY DEGREASING: the same as the previous method.

SPRAY: fill the sprayer tank with a sufficient amount of ***EVAPO-RUST®*** to continually spray the rusted object.

Collect the runoff in a suitable tank/container.

Continuously spray the rusty object about 30 minutes for flash rust removal and up to 24/48 hours for extremely heavy rust (the rusty object must be always wetted).

If there is light rust on a flat surface area (e.g. appliances, countertops, etc.), then spraying on ***EVAPO-RUST®*** solution can work very effectively.

The longer the contact time, the better results.

NOTE: for extremely heavy rust, periodically rinse item with water and/or softly brush item with a scrubbing tool (e.g.: a wire brush): this stage is VERY important in getting the best results because residual rust may still be embedded in the metal (pits, crevices) after the initial soaking.

AFTER TREATMENT: the same as the previous method.

5. PRESSURE FLUSHING METHOD

PRELIMINARY DEGREASING: the same as the previous method.

PRESSURE FLUSHING: we suggest the following operative procedure:

1. drain cooling system and rinse with water

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2. fill system with ***EVAPO-RUST®*** (do NOT dilute)
3. run engine under normal conditions, shut engine down and let sit overnight
4. drain system into a container for later use
5. flush system with water
6. repeat process (1-5) if necessary
7. fill system with proper coolant/antifreeze

NOTE: whenever it has been flushed inside a pipe, ***EVAPO-RUST®*** produces foam in direct proportion to the nominal flow rate: the higher will be the flow rate, the more will be the foam produced.

Conversely, if you lower the nominal flow rate to limit the foam production, you may collect foam escaping out from the air valves once you drop below the critical flow rate, which depends mainly on the diameter of pipe and the roughness of the pipe surface; moreover, the gas bubbles inside the pipe locally prevent the contact between rust Vs. ***EVAPO-RUST®***, preventing rust removal.

Therefore, we suggest the following operating solutions to mediate between such conflicting requirements:

a. add a proper anti-foam additive to ***EVAPO-RUST®*** (proper refers also to the post-treatment use of the pipe)
b. limit the nominal flow rate, even if keeping it higher than the critical flow rate, to seal the air valves, together with getting the fully saturation of the pipe (as the critical flow rates increases with the diameter of the pipe, such solution is suitable only for small diameter pipes)

AFTER-TREATMENT: the same as the previous method.

6. WRAP METHOD

PRELIMINARY DEGREASING: the same as the previous method.

WRAP: take a suitable size of smooth paper towel or a fake chamois or other tightly knit material.

Soak it in ***EVAPO-RUST®*** and wrap it over the rusty surface (collecting any percolation liquid in order to avoid any release to the environment).

Cover it properly with a plastic sheet to avoid the evaporation lose of ***EVAPO-RUST®***.

Remove everything after the rust is removed.

Duration will depend upon the severity of rust: for flash rust removal it takes about 30 minutes for flash rust, up to 24/48 hours for removal of medium to sever rust.

Periodically check the object during the derusting process to know the status.

If desired result is not achieved in one time, repeat one or more times.

AFTER TREATMENT: the same as the previous method.

ALWAYS PRE-TEST

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Conforms to EU Regulation 1907/2006/EC as amended.

EVAPO-RUST®

1. IDENTIFICATION OF THE MIXTURE AND OF THE COMPANY

1.1 Product identifier:
Trade name: EVAPO-RUST®
1.2 Relevant identified uses of the mixture and uses advised against:
Identified uses of the mixture: Waterbased selective rust remover for steel, iron, cast iron and chrome platings.
Uses advised against: Keep away from both magnesium and magnesium alloys, and cadmium and cadmium alloys.
1.3 Details of the supplier of the safety data sheet:
ENVIREM® S.R.L. A SOCIO UNICO – Via Antonio Meucci, 11 - 40138 Bologna (BO) – Italy (IT) – Tel.: +39 051 302273 - Fax: +39 051 4072900 – E-Mail: info@envirem.it – PEC: envirem@pec.it
Product Information: info@envirem.it - envirem@pec.it
1.4 Emergency telephone number:
ENVIREM® S.R.L. A SOCIO UNICO – Via Antonio Meucci, 11 - 40138 Bologna (BO) – Italy (IT) – Tel.: +39 051 302273 - Fax: +39 051 4072900 – E-Mail: info@envirem.it – PEC: envirem@pec.it

2. HAZARDS IDENTIFICATION

2.1 Classification of the mixture:
Classification REGULATION (EC) No 1272/2008 (CLP): not dangerous mixture.
2.2 Label elements:
Labelling REGULATION (EC) No 1272/2008 (CLP):
Hazard pictograms: no provision.
Signal word: no provision.
Hazard statements: no provision.
Precautionary statements: no provision.
Hazardous components which must be listed on the label: no provision.
2.3 Other hazards:
Additional advice: No information available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures:

Hazardous components: no hazardous ingredient.

Ingredient	CAS	EC	N° Reg.	% Weight	Reg.1272 /2008
Proprietary - non-hazardous[1] chelating agent	Proprietary	Proprietary	Proprietary	<16%[2]	N/A[1]
Proprietary - non-hazardous[1] detergent	Proprietary	Proprietary	Proprietary	<1%[2]	N/A[1]
Water	7732-18-5	231-791-2	N/A	>83%[2]	N/A[1]

[1]: according to Reg. 1272/2008 (CLP) the substance is not classified as dangerous. According to Annex XIII the substance is not classified as persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB), or has been included for reasons other than those referred to in point (a) in the list established in accordance with Article 59(1) if in an individual concentration of ≥ 0,1% by weight
[2]: specific percentages of composition are being withheld as a trade secret

4. FIRST AID MEASURES

4.1 Description of first aid measures:

General advice: No adverse effects.
Treat symptomatically.

If inhaled: Non-reactive.
Move to fresh air.
If symptoms persist, call a physician.

In case of skin contact: Acute Dermal Irritation: OECD404/2002/24950/8594/040226: no irritating effect.
Delayed Dermal Sensitisation: OECD 406/1992/24970/8594/040323: no sensitisation effect.
After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water.
Wash contaminated clothing before re-use.

In case of eye contact: Acute Eye Irritation: OECD 405/2002/24960/8594/040301: no irritating effect.
Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Remove contact lenses.

If swallowed: Acute Oral Toxicity: OECD 423/2001/24940/8594/040218: no toxic effect.
In case of ingestion, give victim two glasses of water and induce vomiting by using ipecac syrup or placing two fingers at the back of the throat.
Do not give anything by mouth to an unconscious person.
Get immediate medical attention.

4.2 Most important symptoms and effects, both acute and delayed:

Symptom: Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: no data available.

Risks: No data available.

4.3 Indication of any immediate medical attention and special treatment needed:

Medical attention: As general rule, in case of doubt and/or if symptoms persist, get medical attention.

Treatment: No data available.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media:

Suitable extinguishing media: ABC powder; water mist; carbon dioxide (CO2); dry chemical.

Unsuitable extinguishing media: Halons.

5.2 Special hazards arising from the substance or mixture:

Specific hazards during firefighting: Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products: The product is neither flammable, nor auto-inflammable.

5.3 Advice for firefighters:

Special protective equipment for firefighters: In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

Specific extinguishing methods: Product is compatible with standard fire-fighting agents.

Further information: Keep containers and surroundings cool with water spray.
Prevent fire extinguishing water from contaminating surface water or the ground water system.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

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6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

Personal precautions: Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.
During spill/leak containment, avoid ingestion, inhalation (aerosol), skin and eyes contact.
Caution floor may be slippery.

6.2 Environmental precautions:

Environmental precautions: Prevent further leakage or spillage if safe to do so.
Dispose of the spent (or not) solution and its container at hazardous or special waste collection point according to your local and national regulament concerning waste disposal.
Do not empty into drains.

6.3 Methods and materials for containment and cleaning up:

Methods for cleaning up: Large spills should be collected mechanically (remove by pumping) for disposal.
Keep in suitable, closed containers for disposal.

6.4 Reference to other sections: No data available.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling:

Advice on safe handling: Avoid formation of aerosol.
Do not breathe vapours or spray mist.
Avoid contact with skin and eyes.
For personal protection see section 8.
Provide sufficient air exchange and/or exhaust in work rooms.
Smoking, eating and drinking should be prohibited in the application area.

Advice on protection against fire and explosion: Normal measures for preventive fire protection.

Hygiene measures: Wash hands before breaks and at the end of workday.
When using do not eat or drink.
When using do not smoke.

7.2 Conditions for safe storage, including any incompatibilities:

Requirements for storage areas and containers: Keep out of the reach of children.
Keep containers tightly closed in a dry, cool and well-ventilated place.

Other data: Stable under recommended storage conditions.
Do not freeze.

7.3 Specific end uses: Water-based selective rust remover for steel. iron, cast iron and chromium platings (Recommended methods: Dip, Fill; Ultrasonic; Pressure Flushing; Spray; Wrap).
Short-term corrosion inhibitor (up to 2 weeks).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters: Contains no substances with occupational exposure limit values.

8.2 Exposure controls:

Engineering measures: Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below level of overexposure (from known, suspected or apparent adverse effects).

Personal protective equipment:

Respiratory protection: In the presence of aerosol and/or mist must be used appropriate certified respirators.

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Hand protection: Not irritant. Use appropriate protective equipment to avoid contact with hands. In case of contact, wash immediately with plenty of water.
Wear resistant gloves such as: nitrile rubber; neoprene rubber.
The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection: Not irritant. Use appropriate protective equipment to avoid contact with eyes. In case of contact, wash immediately with plenty of water.

Skin and body protection: Not irritant. Use appropriate protective equipment to avoid contact with skin. In case of contact, wash immediately with plenty of water.

Hygiene measures: Keep away from food, drink and animal feeding stuffs.
When using do not eat, drink or smoke.

Environmental exposure controls:

General advice: Prevent further leakage or spillage if safe to do so.
Use appropriate containment to avoid environmental contamination during handling, storage and disposal.
Dispose of the spent (or not) solution and its container in accordance with the European Directives on waste and hazardous waste.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Do not empty into drains.
Use appropriate containment to avoid environmental contamination.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance: Liquid.
Colour: light yellow.
Odour Threshold: no data available.
Odour: no data available.
Boiling point: >93°C
Freezing point/Melting point: 0°C
pH: 6.00 – 7.00
Flash point: no data available.
Flammability (solid, gas): no data available.
Evaporation rate: >1 (ether=1)
Burning rate: no data available.
Lower explosion limit: no data available.
Upper explosion limit: no data available.
Vapour pressure: no data available.
Relative vapour density: no data available.
Density: ≥□1.042 (H_2O=1)
Water solubility: 100% water-soluble.
Solubility in other solvents: no data available.
Partition coefficient: n-octanol/water: no data available.
Autoignition temperature: no data available.
Ignition temperature: no data available.
Thermal decomposition: no data available.
Viscosity, dynamic: no data available.
Viscosity, kinematic: no data available.
Explosive properties: no data available.
Oxidizing properties: no data available.

9.2 Other information:

Conductivity: no data available.
Oxidising potential: no data available.

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Refractive index: no data available.
Glowing Temperature: no data available.
Burning number: no data available.
Molecular Weight: no data available.
Sublimation point: no data available.
Bulk density: no data available.
Flow time: no data available.
Impact Sensitivity: no data available.
Surface tension: no data available.

10. STABILITY AND REACTIVITY

10.1 Reactivity:
Hazardous polymerisation does not occur. Corrosivity NACE TH0169: <6.35 mm/year.
10.2 Chemical stability:
No hazards to be specially mentioned.
10.3 Possibility of hazardous reactions:
Hazardous reactions: Further information: No hazards to be specially mentioned.
Hazardous polymerisation does not occur.
10.4 Conditions to avoid: the product is normally stable.
10.5 Incompatible materials: Avoid contact with strong oxidizing agents or other reactive materials.
10.6 Hazardous decomposition products:
Hazardous decomposition products: carbon dioxide and carbon monoxide.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:
Information on likely routes of exposure: Inhalation, Skin contact, Eye Contact, Ingestion
Acute toxicity:
Product:
Acute oral toxicity: No toxic effect - LD50>2000 mg/kg body weight (rat) (OECD 423/2001/24940/8594/040218).
Acute inhalation toxicity: no data available.
Acute dermal toxicity: No toxic effect (OECD 404/2002/24950/8594/040226).
Acute toxicity (other routes of administration): no data available.
Components: Not classified based on available information.
Skin corrosion/irritation:
Product: No toxic effect (OECD 404/2002/24950/8594/040226)
Components: Not classified based on available information.
Serious eye damage/eye irritation:
Product: Acute Eye Irritation: OECD 405/2002/24960/8594/040301: no irritating effect.
Components: Not classified based on available information.
Respiratory or skin sensitisation:
Product:
Skin sensitisation: Delayed Dermal Sensitisation: OECD 406/1992/24970/8594/040323: no sensitisation effect.
Respiratory sensitisation: Not classified based on available information.
Components: Not classified based on available information.
Germ cell mutagenicity:
Product: Not classified based on available information.
Components: Not classified based on available information.
Carcinogenicity:
Product: Not classified based on available information.
Components: Not classified based on available information.

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Reproductive toxicity:
Product: Not classified based on available information.
Components: Not classified based on available information.
STOT - single exposure:
Product: Not classified based on available information.
Components: Not classified based on available information.
STOT - repeated exposure:
Product: Not classified based on available information.
Components: Not classified based on available information.
Aspiration toxicity:
Product: Not classified based on available information.
Components: Not classified based on available information.
Further information: Remarks: No data available

12. ECOLOGICAL INFORMATION

12.1 Toxicity:
Product: LD50>2000 mg/kg body weight (rat).
Components: no data available.
12.2 Persistence and degradability:
Product: Modified Sturm Test - OECD 301B/1992/31470/040511RC/AST96342 (>60% CO_2 at 28 days – Regulament EC 64/2004): the product is inherently (not readily) biodegradable; without inhibiting the proliferation of the test bacterial colonies.
Components: no data available.
12.3 Bioaccumulative potential:
Product: no data available.
Components: no data available.
12.4 Mobility in soil:
Product: no data available.
Components: no data available.
12.5 Results of PBT and vPvB assessment:
Product: no data available.
Components: no data available.
12.6 Other adverse effects:
Product: no data available.
Components: no data available.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods:
Product: Dispose of in accordance with the European Directives on waste and hazardous waste. According to EC Regulaments concerning waste disposal, prior to first use the product is a special waste; after first use, the classification of the product as a waste may be significantly varied depending on the chemical nature and concentration of organic and/or inorganic treated substrate; before waste disposal, it is always advisable to performe the solution (spent or not) waste classification by specific chemical lab analysis, in order to determine both the C.E.R. Code and the potential hazardous class.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Container hazardous when empty.
Dispose of in accordance with local regulations.
Contaminated packaging: Empty remaining contents.
Dispose of as unused product.
Empty containers should be taken to an approved waste handling site for recycling or disposal.

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Do not re-use empty containers.
Do not burn, or use a cutting torch on, the empty drum.

14. TRANSPORT INFORMATION

14.1 UN number:
ADR: Not dangerous goods
ADNR: Not dangerous goods
RID: Not dangerous goods
INTERNATIONAL MARITIME DANGEROUS GOODS: Not dangerous goods
INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO: Not dangerous goods
INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER: Not dangerous goods
14.2 UN proper shipping name:
ADR: Not dangerous goods
ADNR: Not dangerous goods
RID: Not dangerous goods
INTERNATIONAL MARITIME DANGEROUS GOODS: Not dangerous goods
INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO: Not dangerous goods
INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER: Not dangerous goods
14.3 Transport hazard class(es):
ADR: Not dangerous goods
ADNR: Not dangerous goods
RID: Not dangerous goods
INTERNATIONAL MARITIME DANGEROUS GOODS: Not dangerous goods
INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO: Not dangerous goods
INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER: Not dangerous goods
14.4 Packing group:
ADR: Not dangerous goods
ADNR: Not dangerous goods
RID: Not dangerous goods
INTERNATIONAL MARITIME DANGEROUS GOODS: Not dangerous goods
INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO: Not dangerous goods
INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER: Not dangerous goods
14.5 Environmental hazards:
ADR: Not applicable
ADNR: Not applicable
RID: Not applicable
INTERNATIONAL MARITIME DANGEROUS GOODS: Not applicable
INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO: Not dangerous goods
INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER: Not dangerous goods
14.6 Special precautions for user:
Not applicable
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:
Ship Type: Not applicable
Hazard code(s): Not applicable
Pollutant Category: Not applicable
Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:
REACH - Candidate List of Substances of Very High Concern for Authorization (Article 57): Not applicable

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REACH - List of substances subject to authorization (Annex XIV): Not applicable.
REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) Not applicable.
Regulation (EC) No 850/2004 on persistent organic pollutants: Not applicable
Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances: Not applicable.
15.2 Chemical Safety Assessment: No data available.

16. OTHER INFORMATION

Further information
Revision Date: 12.12.2019
Full text of H-Statements referred to under sections 2 and 3.
Not applicable.
Further information

Other information: The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not.
Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.
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List of abbreviations and acronyms that could be, but not necessarily are, used in this safety data sheet:
ACGIH: American Conference of Industrial Hygienists
BEI: Biological Exposure Index
CAS: Chemical Abstracts Service (Division of the American Chemical Society).
CMR: Carcinogenic, Mutagenic or Toxic for Reproduction
FG: Food grade
GHS: Globally Harmonized System of Classification and Labeling of Chemicals.
H-statement: Hazard Statement
IATA: International Air Transport Association.
IATA-DGR: Dangerous Goods Regulation by the "International Air Transport Association" (IATA).
ICAO: International Civil Aviation Organization
ICAO-TI (ICAO): Technical Instructions by the "International Civil Aviation Organization"
IMDG: International Maritime Code for Dangerous Goods
ISO: International Organization for Standardization
logPow: octanol-water partition coefficient
LCxx: Lethal Concentration, for xx percent of test population
LDxx: Lethal Dose, for xx percent of test population.
ICxx: Inhibitory Concentration for xx of a substance
Ecxx: Effective Concentration of xx
N.O.S.: Not Otherwise Specified
OECD: Organization for Economic Co-operation and Development
OEL: Occupational Exposure Limit
P-Statement: Precautionary Statement
PBT: Persistent, Bioaccumulative and Toxic
PPE: Personal Protective Equipment

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STEL: Short-term exposure limit
STOT: Specific Target Organ Toxicity
TLV: Threshold Limit Value
TWA: Time-weighted average
vPvB: Very Persistent and Very Bioaccumulative
WEL: Workplace Exposure Level
ABM: Water Hazard Class for the Netherlands
ADR: Agreement concerning the International Carriage of Dangerous Goods by Road.
ADNR: Regulation for the Carriage of Dangerous Substances on the Rhine
CLP: Classification, Labelling and Packaging
CSA: Chemical Safety Assessment
CSR: Chemical Safety Report
DNEL: Derived No Effect Level.
EINECS: European Inventory of Existing Commercial Chemical Substances.
ELINCS: European List of Notified Chemical Substances
PEC: Predicted Effect Concentration
PEL: Permissible Exposure Limits
PNEC: Predicted No Effect Concentration
R-phrase: Risk phrase
REACH: Registration, Evaluation, Authorization and Restriction of Chemicals
RID: Regulation Concerning the International Transport of Dangerous Goods by Rail
S-phrase: Safety phrase
WGK: German Water Hazard Class

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