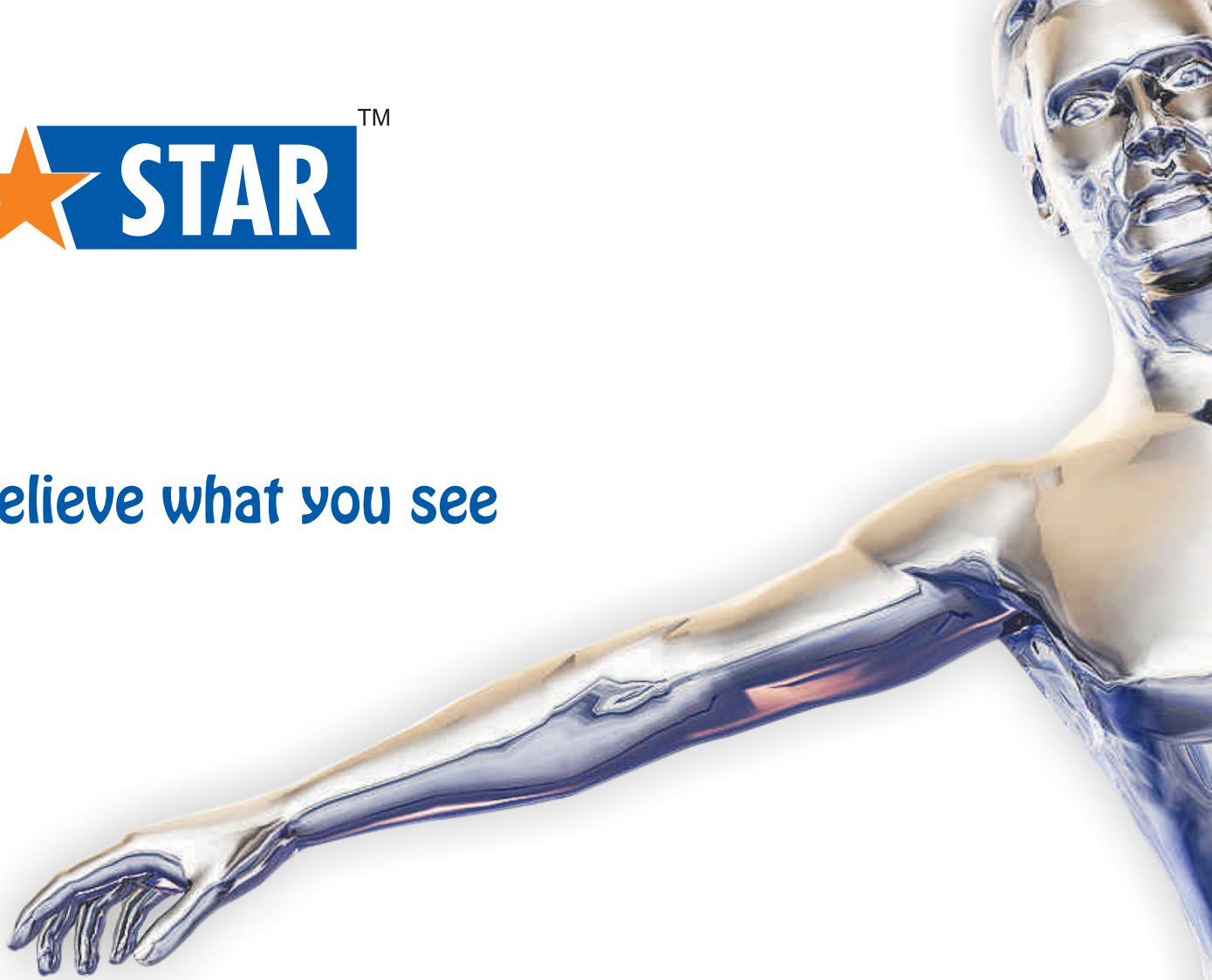




Believe what you see



A UNIQUE PRODUCT FOR FUMELESS PICKLING AND PASSIVATION ON STAINLESS STEEL

- ★ **Technological Breakthrough in India**
- ★ **Products approved by I.I.T. (Mumbai) under ASTM-A380**

We, at Krystal Surface Solution, manufacture wide range of surface treatment chemicals for different applications suiting various industries and application areas. We provide complete cleaning solution for Stainless Steel related products and equipments for safe in-house **Pickling and Passivation** for various kinds of job capacities. We also have the professional, sophisticated and fully integrated technically upgraded lab with latest lab equipments. We consistently strive to solve surface related issues of various industries by offering best quality products.

Star™ products are available in various physical forms giving the best results. Application of any Star™ Pass 1 or 2 is essential after the application of any form of Star™ products for Passivation and preventing from further corrosion and contamination.

★ STAR™ 100 (Powder Form)

Star™ 100 is a sulphur-free degreaser for removing mid rust, dirt, buffing compounds, oil, grease, soil etc. Star™ 100 can be used in hygienic industries such as Pharmaceutical etc. as it is sulphur-free.

🌀 How to apply:

Add 50-75 gm/litres in water (1kg Star™ 100 in 15-20 litres water), stir to dissolve. Wipe SS surface with cotton/ pressurised spray for 3-5 minutes or soak small parts for 10 minutes. Apply liquid Star™ 100 degreaser on to the surface for 5-10 minutes (depending upon components). Then rinse the surface thoroughly with water and allow it to dry.



★ STAR™ Gel™ (Gel/ Paste form)

Star™ Gel™ comes in gel form and is used for cleaning weld seams and surrounding areas with brush. It is also used for removing heavy scales, annealing colours, discolouration, rust particles near weld and welding-affected area by heat. It helps in detecting pinholes after welding.

Star™ Gel™ is stain-free and does not impart yellow or black stains after washing with water. Moreover, it does not necessarily demand separate Passivation chemical process.

Area coverage per kg: Approximately 90 to 100 meters of weld seam

🌀 How to apply:

- 1) Remove dirt and oil using Star™ 100 degreaser. Add 50-75 gm/litres in water (1kg Star™ 100 in 15-20 litres water), stir and dissolve. Apply liquid Star™ 100 degreaser onto the surface for 5-10 minutes. Then rinse the surface thoroughly with water. (Step 1 & 5 can be avoided for Star™ Gel™ on weld seam application)
- 2) Apply Star™ Gel™ on the weld seams and surrounding areas with a nylon plastic brush.
- 3) Leave the Star™ Gel™ on the weld seams areas for 20-45 minutes depending upon the thickness of oxide scale.
- 4) Use pressurised water Jet Spray or wipe the weld seam lightly with plastic scrubber & rinse the surface thoroughly with water.
- 5) Apply Star™ Passivation (Star™ Pass 1) on the surface area and leave it for about 15 minutes. This will prevent from further contamination and corrosion.
- 6) Rinse the surface area thoroughly with water and allow it to dry.



★ STAR™ Spray (Semi gel form)

Star™ Spray that comes in semi-gel form is extremely safe and easy to use. It is used for cleaning large fabricated equipments such as SS vessels, dairy machinery, dryers, agitators, and internal & external of pipes with the help of pump or pressurized plastic spray bottle. Simultaneously, it also removes ferritic contamination, weld burns, and annealing colours.

Area coverage per kg: Approximately 40 sq. ft.

🌀 How to apply:

- 1) Star™ 100 is a sulphur-free degreaser for removing mid rust, dirt, oil, grease, buffing compounds etc. Add 50-75 gm/litres in water (1kg Star™ 100 in 15-20 litres water). Stir it to dissolve. Wipe SS Surface with cotton cloth or pressurised spray for 5-10 minutes. Then rinse the surface thoroughly with water.
- 2) Star™ Spray must be sprayed on the SS surface using spray pump or a pressurised plastic spray bottle.
- 3) After spraying, leave it for about 30-60 minutes. Then rinse the surface thoroughly with water.
- 4) Apply Star™ Passivation (Star™ Pass 1) on the surface area and leave it for about 15 minutes that will prevent from further contamination and corrosion.
- 5) Rinse the surface area thoroughly with high-pressure water jet system.



★ STAR™ Dip (Liquid form)

Star™ Dip comes in liquid form and is used in cleaning complicated and non-reachable areas of SS components such as external and internal of pipes, wire rolls, and internal recessed areas of machinery. Parts of heavy machineries are dipped in huge tanks using chain pulley or circulation system for de-scaling and cleaning of pipelines. Star™ Dip is circulated inside pipelines with the help of pumps.

Area coverage per kg: Approximately 40 sq. ft.

🌀 How to apply:

- 1) Remove dirt and oil using Star™ 100 degreaser. Add 50-75 gm/litres in water (1kg Star™ 100™ in 15-20 litres water), stir and dissolve. Apply liquid Star™ 100 Degreaser onto the surface for 5-10 minutes. Then rinse the surface area thoroughly with water.
- 2) Just dip the objects (SS components) in the Star™ Dip tank. Use plastic tank in the process time only.
- 3) Leave them for 5-20 minutes, depending on SS type and internal condition of SS parts & thickness of the scale. Then rinse the surface thoroughly with water.
- 4) Apply Star™ Passivation (Star™ Pass 1) on the surface & leave it for 15 minutes. This will prevent from further contamination and corrosion.
- 5) Remove and rinse the objects thoroughly with high pressure water.

Importance of Pickling & Passivation Stainless Steel: Pickling and Passivation process ensures corrosion resistance and removes free iron contamination left on the SS surface from fabricating and machinery. These contaminants are prospective corrosion sites resulting in premature corrosion, ultimately resulting in decline of component if not removed. Corrosion resistance of SS is because of the presence of 13 percent chromium in alloy. The chromium, with oxygen, forms a thick chemically resistant passive layer of chromic oxide thus shielding the SS surface against corrosion. The passive layer generally forms again after abrasion. All mechanical treatments damage the topmost layer of components i.e.

- ♦ Structural modifications in top layers of SS
- ♦ Development of in-built stress
- ♦ Contamination with ferritic matter
- ♦ Reduction of chromium content on top layer of SS

High temperature applications such as annealing and welding make the SS surface oxide scaly and discoloured. This reduces the value of Stainless Steel by appearance and lower corrosion resistant because of ferric oxide. Because of these contaminations, the preventive layer of chromium layer fails to form at a given spot and corrosion stain mounts up on insufficiently passivated SS. Proper pickling and passivation of SS and weld seams offer qualities such as:

- ♦ Smooth surface that is metallically pure and free from scaling and discolouration
- ♦ Good and decorative metallic appearance
- ♦ Improved corrosion resistance of Stainless Steel components
- ♦ Optimum restoration of chromium oxide passive layer



★ STAR™ Pass-2 (Liquid form)

Star™ Pass-2 is a natural organic liquid chemical compound that is used for cleaning and passivating SS equipments in food, dairy, cosmetic, beverage and pharmaceutical industries. This chemical compound has common edible material that works as a catalyst for Stainless Steel Passivation.

Star™ Pass-2 is environment friendly due to its biodegradable, non-hazardous, and non-toxic properties. Due to its compatibility with environment, it can be easily fused into sanitary sewage systems. This Star™ product is well-acclaimed and worldwide accepted technology.

★ STAR™ Passivation

Star™ Passivation must be used after the application of Star™ Gel™, Star™ Spray or Star™ Dip as it is necessary to passivate SS surface after pickling. Star™ Passivation products help to form a thin passive film on Stainless Steel surface that will protect corrosion and contamination.

There are 2 types of passivation products depending on the end use of SS pipelines/ equipments/ parts.

Area coverage per kg: Approximately 40 sq. ft.



★ STAR™ Pass-1 (Liquid form)

Passivation is a necessity after every pickling operation procedure. Star™ Pass-1 is used for general industrial purpose SS equipments and pipings to be used in various industries such as paper, nuclear, chemical plant, non-hygienic industries, etc.

🔧 How to apply:

Star™ Passivation must be used after the application of Star™ Gel™, Star™ Spray or Star™ Dip as it is necessary to passivate SS surface after pickling. Star™ Passivation products helps to form a thin passive film on Stainless Steel surface that will protect corrosion and contamination. Dip or spray in Star™ Pass-1 or Pass-2 solution and leave it for about 15-20 minutes. Then rinse thoroughly with water.

Benefits of Star™ Pass-2

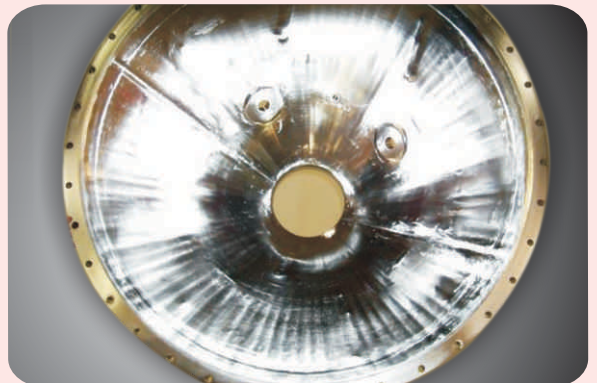
1. Gives superior and faster removal of free iron from SS surface without touching or damaging the parent metal
2. Does not have impact on epoxy flooring
3. Ideal for intermediary cleaning in-between production lots
4. Useful in pre and post operational cleaning of Stainless Steel equipments
5. Produces a truly passive surface area and the chelating agents have no negative impact on the SS surfaces thus making the SS metal completely corrosion resistant
6. Environmentally safe offering ease in disposing in sewage system
7. Enhances the passive layer on SS giving an optimum chrome iron ratio thereby making the surface corrosion resistant
8. Increases corrosion resistance ability when applied over pickled and electro-polished surfaces
9. Provides a non-rusting and clean surface area

For Passivating Mirror Bright Buffed / Polished Stainless Steel Areas

The below mentioned procedure will maintain and retain the shine of mirror bright buffed or polished Stainless Steel areas. Moreover, it will provide contamination-free & sterile particle free passivated SS surface.

1. Apply Star™ Gel™ on weld seam & areas surrounding to welds using a nylon-bristled plastic brush. After 15-30 minutes, wipe with plastic brush or cloth and rinse thoroughly with water. (Tip: Applying of Star™ Gel™ prevents weld seams from rust that is usually observed after bright buffing).
2. Complete the procedure of bright buffing or polishing for making the surface mirror bright and shiny. (Tip: If SS pipe or equipment is already polished or bright buffed then refrain Step 1 and 2. Start the following steps).
3. Use Star™ 100, a sulphur-free degreaser, for removing buffing compounds, dirt, oil, etc. Add 50-75 gm/litres in water (1kg Star™ 100 in 15-20 litres water), stir to dissolve. Wipe SS surface with cotton/ pressurised spray for 3-5 minutes or soak small parts for 10 minutes. Rinse the surface thoroughly with water and allow it to dry.
4. Dip or Spray in Star™ Pass-1 or Star™ Pass-2 and leave it for about 15-25 minutes. Rinse thoroughly with water.

(Note: It is better to rinse SS surface with 10 gm/litres of Star™ 100 solution as the last step and then rinse with water. This ensures complete removal of the previously applied Star™ product from the surface).



Unique Features of STAR™ Fumeless Pickling and Passivation on Stainless Steel

- ◆ Removes all kinds of scales, spot welding colours, burn spots, rust particles, discolouration, ferritic contamination without brushing or wire grinding, and oxide scale formation caused by welding
- ◆ Retains mill finish
- ◆ Prevents corrosion and ensures absolute corrosion resistant
- ◆ Gives a passive, flawless, clean, sterile particle-free SS surface
- ◆ Deferroxyl treatment and descaling on SS is achieved forming a complete pickled and passive coating
- ◆ Micro deburring gives a uniform smooth and even finishing
- ◆ No change in the chemical and physical properties of the metal

Advantages of Star™ over Conventional Pickling and Passivation

Star™	Conventional
Metal removal may be controlled	Metal removal is beyond control
Removes welding scales with ease	Difficult to remove welding scales
Improved surface finish	Surface finish deteriorates
Negligible fuming	Heavy fuming
Can detect pin holes	Cannot detect pin holes
Uniform smooth and satin like finish is achieved on the surface area	Non-uniform, rough, patchy and discoloured surface is achieved
Stops corrosion and makes the surface complete corrosion resistant	Neither stops nor prevents corrosion and deteriorates the surface area

Fields of Application

Star™ is successfully & widely used in: All Stainless Steel Pharmaceutical Machinery, Dairy Machinery, Chemical Machinery, Food & Beverages, SS Vessels, Filters, Pressure Vessels, Process Plants, Heat Exchangers, Reactors, Mixers, Agitators, Pipelines, Storage Tanks, Tubes, Stirrers, Fermentations, huge SS Equipments, Silos etc. can be cleaned as per **ASTM - A380 Standards**

Safety Measures

Person handling this product must wear protective clothing such as PVC Suit, PVC Hand Gloves, PVC Safety Glasses for eye protection, Gumboots, Air Respirator & Half Mask Air Filter covering mouth & nose. In case of any contact with any body part, wash with plenty of fresh water. (Refer MSDS)

Krystal Surface Solution not only manufactures Star™ range of chemicals but also supply accessories and equipments required for carrying out safe in-house Pickling & Passivation for all kinds of jobs.

Services

- ◆ Services available all over India
- ◆ In-house lab deposit analysis
- ◆ Customized chemistry solutions for removing tough and adherent surface deposits
- ◆ Wide range of fully transportable equipments and lab facilities
- ◆ Evaluation & System Inspection for recurring corrosion problems
- ◆ Post-project consultation in passivation treatment of SS process systems
- ◆ One stop solution for all your Cleaning, Pickling and Passivation requirements

We undertake job work at site



We manufacture special Star™ Chemicals for Duplex and Super Duplex SS and 400 series SS.



Krystal Surface Solution