

TRINTERNATIONAL



THE WAVE OF THE FUTURE A WORLDWIDE LEADER IN CITRIC ACID-BASED PASSIVATION SOLUTIONS



- ⇒ Are you currently using nitric acid, or not passivating at all?
- ⇒ Is compliance to standards an issue?
- ⇒ Do you have regulatory concerns with worker safety and environmental protection?

Utilize the latest technology to optimize the quality of passivation of stainless steel with CitriSurf citric acid based solutions. Maximize corrosion resistance with superior removal of free iron, producing a high chromium to iron ratio at the surface.

CitriSurf is excellent for surface iron removal on non-ferrous alloys as well, such as titanium, aluminum, and nickle superalloys.

CitriSurf: Simply better results and safer to use!

CitriSurf has been tested against nitric acid and other chemicals by Dayton University, the Naturwissenschaftliches and Medizinisches Institute in Germany and Cork University in Ireland. Many companies such as Carpenter Steel and Boeing have also tested CitriSurf in comparison to nitric acid. Salt spray (B117) test data shows that CitriSurf equals or exceeds the performance of nitric acid. Other tests also show that CitriSurf gives superior passivation over the old nitric passivation methods.

CitriSurf is safe for workers and the environment

Utilizing citric acid chemistry, CitriSurf produces no acid fumes or hazardous waste. A CitriSurf passivation line can scale as small or large as you need it, can operate heated or at room temperature, and works excellently with ultrasonic cleaning units.

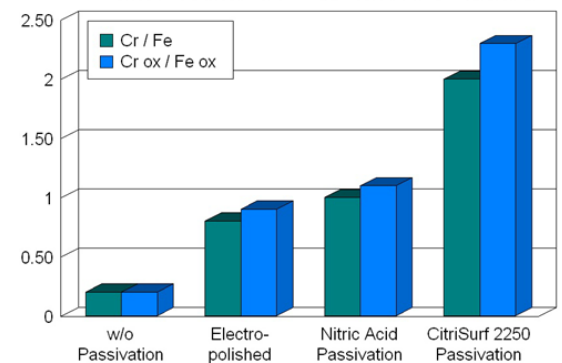
CitriSurf meets all modern passivation standards

One of the biggest obstacles early on to companies using any citric acid formulation was that all the industry standards called for nitric acid. Stellar Solutions worked with DOD, ASTM, and SAE to have the standards changed to include the environmentally friendly formulations. Citric acid passivation is now accepted in ASTM A967 and ASM 2700, as well as ASTM B600 for titanium.

Protecting your stainless steel investment with:

- Improved removal of free iron
- Faster removal of free iron
- Low hazard chemistry
- Environmentally safer chemistry
- Safe for all grades of stainless
- Lower cost
- Easy onsite treatment
- One step rust removal and passivation for surface recovery

420 Stainless - 3M brushed finish



ESCA and AES Analysis - 316 Stainless Steel

	Chromium to Iron ratio	Cr oxide to Fe oxide ratio	Oxide Thickness	Depth of Cr Enrichment
CitriSurf	2.5	5.4	27.5 D	17.0 D
Nitric acid	1.4	2.1	19.0 D	11.5 D

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TRI distributes a full line of Stellar Solutions CitriSurf products for all applications, including bath immersion, CIP tank spraying and pipeline system treatment, and manual surface application for on-site field operations and large items. These products are available for both primary passivation and one-step rust removal and passivation for recovery of corroded surfaces. Additionally, the Rust Rescue line of products also helps recover and protect severely corroded surfaces and stainless in highly corrosive environments.



As a state-of-the-art alternative to traditional toxic and environmentally hazardous chemistries for passivation, Stellar Solutions has gained a worldwide presence. As a family-owned and operated business, they are committed to providing all customers with the safest, most effective, and cost competitive products of their type available in the market today.

No customer is too small. If you have a need, Stellar Solutions and TRI will work to resolve your problem. We provide the necessary product information and procedures, test data, lab facility support for process testing, product application training, and ongoing customer service that assures performance satisfaction.

Together, TRI and Stellar Solutions' vision is one of customer satisfaction. We strive for excellence, providing our customers with a product that makes a difference in the environment and worker safety. As partners, we are committed to giving our customers what we promise and back our products with technical assistance.

At TRI, we believe in curiosity, flexibility, and creating success for our partners. Imagine the possibilities when you don't have to compromise. By taking the time to understand your business, challenges, and what success looks like for you – TRI presents unique sourcing options and custom solutions tailored to meet your needs and offers extensive product knowledge and industry experience. We are inspired by more than just solving your problems, we are inspired by you.



We hope that you will join our satisfied customers—making a difference in safety and our environment

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