

---

## Esma DeOx 964

### Safe DeOxidizer for Stainless Steel, Copper, and Aluminum ASTM Designation A967-01 Standard

**DESCRIPTION:** Esma DeOX 964 is a concentrated blend of citric acid and detergents designed as a safe to handle alternative to traditional nitric acid passivation processes for stainless steel components. Esma DeOX 964 is designed to meet ASTM Designation A967-01 standard for passivation of stainless steel. The detergent included in Esma DeOX 964 accelerates passivation and helps assure uniformity. Pre-cleaning of components prior to passivation is recommended. Esma DeOX 964 also removes tarnish and brightens copper and brass components, and descales, desmuts, and deoxidizes aluminum and electronic components. Esma DeOX 964 also removes rust and heat scale from ferrous metal surfaces. Because of its acidity use of an acid-resistant tank is recommended.

#### PROPERTIES:

Appearance:	Clear water-white liquid, mild odor.
Specific Gravity:	1.24
Solubility:	Complete
pH (1%):	2.0-3.0
HIMS	1,0,0

#### USE INFORMATION:

Concentration:	20% by volume
Temperature / Contact Time:	For proper ASTM A967-01 Standard stainless steel passivation exposure time is proportional to operating temperature as follows:

140 -160°F = (4) minutes minimum  
120 -140°F = (10) minutes minimum  
70 -120°F = (20) minutes minimum

Rinse Conditions: A thorough water rinse containing less than 200-ppm total dissolved solids is required.

DeOxidation time for copper, brass, bronze, and/or aluminum is 10-seconds to 10 minutes. Depending on severity of corrosion, concentration, particulate build-up, and bath temperature.



ESMA Incorporated  
450 Taft Drive  
South Holland, IL 60473  
800-276-2466

---

## Esma DeOx 964

Safe DeOxidizer for Stainless Steel, Copper, and Aluminum  
ASTM Designation A967-01 Standard

### Maintenance Procedures for E964

**Caution: Proper care should be used when handling acids.**

During normal use some of the water in the solution mixture will evaporate. Furthermore, there is dragout water from previous rinse steps which can mix with the solution as well. As such the solution mixture will need to be “balanced” on a periodic basis to ensure that the mixture is a proper ratio.

DeOx 964 should be mixed to a 20% diluted ratio. The specific gravity when mixed properly is 1.05.

Use a hydrometer with a range of 1.00 – 1.22

Specific Gravity Range = 1.04 – 1.06

If the specific gravity of the solution is not within the above range then add water or concentrated DeOx 964 as necessary.

If the solution mixture measurement is less than above range, then add concentrated E964. If the solution mixture measurement is greater than the above range, then add water.

Be careful not to add excessive amounts of water or acid as the gravity will change rather quickly.



ESMA Incorporated  
450 Taft Drive  
South Holland, IL 60473  
800-2766  
Emergency telephone: Chemtrec 800-424-9300