


GENERAL INFORMATION

T-PRO, part of the T-FENDER line, is a chemical passivation agent developed for metallic substrates which naturally have poor corrosion resistance, like silver, brass, bronze, low karat gold, and some electroplated layers. By applying T-PRO to these metals, resistance to oxidation (tarnish) is dramatically elevated by providing an invisible layer which seals the substrate from external elements. Laboratory tests have proven that chemical passivation protects from corrosion originating from hydrogen sulfide, UV radiation, synthetic sweat, and humidity. T-PRO is easy to use, not requiring any electrical current and works simply by heating up the product and dipping in your object. By adding T-SALT, Legor Group conductive salt solutions, T-PRO can also be used by galvanic process to increase its protection level.

Product form

Product's pH	Acidic/Neutral
Solution form	Ready-to-use
Plating solution color	White-Transparent
Storage time	18 months
Volume	5 L

Deposit data

Solution appearance	Totally transparent
Plating solution color	Transparent
Thickness range [μm]	0,001 - 0,010



Operating data	RANGE	OPTIMAL
pH	5-7 and 3-4 after salts dissolution	4.0
Voltage [V]	3.5 - 4.5 (electrolytic way)	4.5
Working temperature [°C]	55-60	55
Exposure time (sec)	5 - 20 (minutes)	7.0
Anode-cathode ratio	2-4/1	2-4/1
Anode type	Mixed metal oxide (MMO) or Titanium	
Agitation	Moderate	

**PREPARATION**

Fill your vessel with T-PRO under ventilation.

Standard Use: For optimum results the solution must be in a transparent state. Heat up to 55-60° C. The solution becomes transparent in this range: higher or lower temperatures will make the solution turbid.

Electrolytic use: In case of electrolytic usage through direct current application, add 2.5 g of T-SALT conducting salts per liter of ready-to use solution and wait their complete dissolution. Then heat up at the same temperature of the standard usage and apply a voltage using a DC power-rectifier in the range of 3.5 - 4.5 V for 5-6 minutes.

EQUIPMENT

For a correct use of this product you are advised to use PVC, polypropylene or PYREX glass tanks provided with thermostat-controlled heaters. Do not use stainless steel or iron tanks.

PRODUCT USAGE

To get optimum results please follow these following steps:

TREATMENT OF SILVER PLATED PIECES

1. Rinse and wash in D.I. water
2. Rinse
3. Acid neutralization
4. Rinse
5. **STANDARD USAGE:** Immersion in T-PRO for 10 minutes (with moderate agitation)
ELECTROLYTIC USAGE: Immersion in T-PRO with T-SALT conducting salts (previously dissolved in) for 5-6 minutes (with moderate agitation) at about 3.5 - 4.5 V
6. Rinse with demineralized water
7. Rinse in hot water (70-75° C)(*)
8. Dry with hot air (avoid drying systems that could remove the passivation)

TREATMENT OF OXIDIZED AND/OR SULFURATED PIECES

1. Electrolytic degreasing
2. Rinse
3. Acid neutralization
4. Rinse
5. **STANDARD USAGE:** Immersion in T-PRO for 10 minutes (with moderate agitation)
ELECTROLYTIC USAGE: Immersion in T-PRO with T-SALT conducting salts (previously dissolved in) for 5-6 minutes (with moderate agitation) at about 3.5 - 4.5 V
6. Rinse with demineralized water
7. Rinse in hot water (70-75° C)(*)
8. Dry with hot air (avoid drying systems that could remove the passivation)

⚠(*) In case of items with complicated designs, liquid residuals can be removed more efficiently by rinsing in very hot water (85° C).

(**) If you are dealing with Argentium alloys, never use electrolytic degreasing. Use only neutral pH detergents (7-9) by simple dipping or by ultrasonic bath. Optimal cleaning results may be achieved by using the LEGOR CLEANING KIT system.

SUPPLEMENTARY INFORMATION**EFFECTIVENESS OF THE SURFACE PROTECTION**

The formation of the initial monolayer deposits within seconds or minutes. After the initial monolayer has formed, the layer still contains defects and is not fully ordered. Over time (hours to days), the layer comes to a more uniform and stable configuration.

**SAFETY INFORMATION**

Classification and designation are noted in the Material Safety Data Sheet (according to the European legislation). The safety instructions and the instructions for the environmental protection have to be followed in order to avoid hazards for people and environment. Please consider the explicit details in our Material Safety Data Sheets.

DISCLAIMER

All recommendations and suggestions in this bulletin concerning the use of our products are based upon tests and data believed to be reliable. Since the actual use by others is beyond our control, no guarantee expressed or implied, is made by Legor Group, its subsidiaries or distributors, as to the effects of such use or results to be obtained, nor is any information to be construed as a recommendation to infringe any patent.