

T-PRO50

1:50 CONC. HIGH RESIST. PASSIVATING SOLUTION FOR SILVER AND CU BASED ALLOYS

DESCRIPTION

T-PRO50 is the 50 times concentrated version of T-PRO anti-tarnish chemical passivation. It is sold in a 1 liter package that yields 50 liters of ready-to-use solution when mixed with deionized water. 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.

- Excellent protection from oxidization (tarnish)
- No physical alteration to treated surface
- Does not require electrical current for its standard use
- T-SALT available for electrolytic use
- Chromium and heavy metal free
- Easy to use

DEPOSIT DATA

Thickness from-to [µm]	0.001 - 0.01
Aspect	Invisible

PRODUCT FORM

Product pH	Acidic
Format	Concentrated liquid
Color of the product	White
Storage time	1.5 years
Volume	1 L

PRODUCT USAGE	RANGE	OPTIMAL
pH	5.0 - 7.0	6.0 - 7.0
Working temperature [°C]	55 - 60	55
Treatment time [min]	5 - 20	10
Voltage [V]	3.5 - 4.5 (electrolytic way)	4.5
Anode type	Ti/Pt or Mixed oxides (electrolytic way)	
Stirring	moderate	

RELATED PRODUCTS - INSTALLATION

T-R P50.1L	1:50 conc. high resist. passivating solution for silver and cu based alloys - 1 L
T-S ALT.100G	Conducting salts for passivating solutions - 100 g

RELATED PRODUCTS - MAINTAINING

T-RPO50.1L	1:50 conc. high resist. passivating solution for silver and cu based alloys - 1 L
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USER GUIDE

READY TO USE SOLUTION PREPARATION

T-PRO50 is a 50 concentrated passivating solution. To prepare the ready-to-use solution heat the T-PRO20 to 60-65°C for approximately 30 to 60 minutes (bain-marie) until getting a complete colorless and oily liquid. DO NOT ADD THE T-PRO20 WHEN COLD OR AT ROOM TEMPERATURE! The active ingredients are almost insoluble at low temperature, you will risk obtaining a ready diluted solution of not good performances. To prepare the ready to use solution dilute the liter of T-PRO20 with 49 liters of deionized water. Switch on the exhaust-hood system and start to mix the concentrated product with deionized water until getting an homogeneous solution. Keep it under agitation if possible. FOR STANDARD WAY 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. FOR ELECTROLYTIC WAY 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 for 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.

ANODES

For electrolytic way usage use MMO anodes. Titanium Platinized anodes with a layer in platinum not lower than 1.5 µm are also suitable to run the passivation in electrolytic way.

WORKING TANK MATERIALS

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.

DC POWER - RECTIFIER

For the electrolytic way only usage way use a current DC rectifier having an alternate current residue –ripple– less than 5% and having an output amperage enough to obtain a proper electroplating process. The rectifier should be equipped with:

- Amperemeter
- Voltmeter

HEATING SYSTEM

The admitted materials for heaters are: Pyrex, quartz or PTFE.

FILTRATION AND MOVEMENT

For bigger plating installations (> 5 liters) it is advisable to keep the plating solution continuously filtered and in movement through a magnetic driven filter pump with 5-15 µm cartridges in PP that must have been previously conditioned by boiling them for at least 3 hours and then washed with DI water in order to prevent any possible organic contamination.

WATER PURITY

To prevent contamination of the plating solution during any replenishing operations, use demineralized water with a conductivity of less than 3 µS/cm (containing no traces of organic compounds, Chlorine, Silicon, or Boron). To achieve maximum deposit quality, we suggest to use our high-grade purity WATER.

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PRODUCT USAGE

To get optimum results please follow these following steps.

FOR THE TREATMENT OF JUST SILVER PLATED PIECES: 1) Rinse and wash in D.I. water; 2) Rinse; 3) Acid neutralization; 4) Rinse; 5a) STANDARD T-PRO USAGE: Immersion in T-PRO ready to use for 10 minutes (with moderate agitation). 5b) ALTERNATIVE ELECTROLYTIC USAGE: Immersion in T-PRO ready to use 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).

- FOR THE TREATMENT OF OXIDIZED AND/OR SULFURATED PIECES: 1) Electrolytic degreasing; 2) Rinse; 3) Acid neutralization; 4) Rinse; 5a) STANDARD USAGE: Immersion in T-PRO ready to use for 10 minutes (with moderate agitation). 5b) ALTERNATIVE ELECTROLYTIC USAGE: Immersion in T-PRO ready to use 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.

PASSIVATION SOLUTION MAINTENANCE

REPLACING THE PASSIVATION SOLUTION: in case of reduction of the volume due to water evaporation, solution has to be replenished by demineralized water. T-PRO50 concentrate should be added to the solution if the effectiveness of the passivating solution becomes weaker. If this is the situation restore the working solution with warm (60-65°C) fresh T-PRO50 concentrate make-up. For this purpose, pre-dissolve the warm make-up in 55°C warm water in a 1:2,5 ratio. Stir the mixture well as it must be completely clear before addition. Standard values are 2-5 ml per liter and week. Effectiveness of the solution can be checked by submitting the pieces to a TAA test. Another important indicator can be represented by the level of the surface hydrophobicity. A properly working solution should give a surface with low water adherence, where water drops slip away easily.

ABOUT pH

pH for the working solution stays in an optimum range between 5 and 7 (acidic to neutral). Once the conducting salts for the electrolytical way usage have been dissolved note that the pH drops to about 3.5 - 4.5 (the working solution becomes more acidic).

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. This passivation system has got the main goal to protect versus tarnishing for storage or shop-windows exposition purposes. This protection will not so high while wearing. For the same reason it is strongly suggested to not touch the passivated items when its application process is concluded.

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.