



TECHNICAL NOTES

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Page 1 of 2

TREATMENT OF ELECTROLYTIC TIN COATING ON RADIATORS

1. GENERALS

A CONDUCTIVE MATHERIAL DIPPED IN A PROPER SOLUTION COULD GIVE RISE TO INSOLUBLE ELECTRODEPOSITIONS' PRODUCTS BECAUSE OF THE TRANSFORMATION OF THE ELECTRIC WORK OF THE EQUIPMENT TO A CHEMICAL WORK.

ALL THE ELECTROLYTICAL PROCESSES MAY CAUSE THE DEPOSITION OF THE INSOLUBLE FILM THAT SUIT THE METALLIC-SURFACE IN ORDER TO PROTECT IT AND IMPROVE SOME CHEMICAL AND PHYSICAL DETAILS.

COMPARED TO A SURFACE-CONVERTING REACTION, THE SUPERFICIAL METAL DOES NOT REACT CHEMICALLY BUT IS SIMPLY PROTECTED (CATODIC PROTECTION) BY A LESS NOBLE METAL THAT CAN BE EASILY EARLY OXIDIZED: IN THIS CASE TIN ACTS AS A SACRIFICIAL ANODE.

THE TIN COATING IS OFTEN PREFERRED TO OTHER METAL-SURFACE TREATMENTS BECAUSE OF THE GREAT ELECTRICAL CHARACTERISTIC OF THE TIN AND OF THE REALLY GOOD ANTICORROSION RESISTANCE (SALT-FOG TEST).

IN ORDER TO OBTAIN A PERFECT PERFORMANCE OF THE TREATMENT, THE SUBSTRATES' SURFACE HAS TO BE PRIOR PREPARED THROUGH THE PARAMETERS DESCRIBED AS FOLLOW, FURTHERMORE THE ALREADY PROCESSED ITEM CAN BE EASILY IMPROVED AS CHEMICAL AND PHYSICAL CHARACTERISTICS BY A PROPER SEALING STEP.

2. APPLICATION

THE PRESENT PROCEDURE IS SUITABLE TO ALL METALS AND ALLOYS THAT PRESENTS ELECTIC-CONDUCTIVITY PROPERTIES. IN PARTICULAR ON BOLTS, NUTS, ODDS AND ENDS AND SMALL ITEMS UP TO 3,5 METRES LONG. THE PRESENT PROCEDURE IS PERFORMED WITH RESPECT TO THE NORM UNI-ISO 2093/90. THE MAXIMUM DIMENSION OF THE ITEMS CAN BE 3500X1200X800 MM.

3. CYCLE

CHEMICAL-CLEANING: THIS STEP CONCERNS THE ITEMS DIPPING IN A CONCENTRATED ALKALINE-BATH AT THE OPERATIVE TEMPERATURE OF 55°C FOR ABOUT 15 MINUTES, IN ORDER TO DEGREASE THE SURFACE AND ELIMINATE ALL THE ORGANIC COMPOUNDS (THE TIME IS STRICTLY RELATED TO THE AMOUNT OF GREASE-OIL ON THE GOODS). IN FACT THE ORGANIC SUBSTANCES ACT AS INSULATOR AGAINST THE ELECTRONIC TRANSFER WHICH IS THE CORE OF THE ELECTROLYTIC SYSTEM.

ACTIVATION: TO ELIMINATE THE PRESENCE OF INORGANIC OXIDES ON THE ITEMS' SURFACE THIS STEP BECOMES INDISPENSABLE. THE BATH CONSISTS IN AN ELECTROLYTIC SOLUTION WHERE THE ITEMS MAY STOP FOR ABOUT 30 MINUTES.



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RINSING: THE RINSING STEP ALLOWS TO NEUTRALIZE THE SUPERFICIAL pH THEREFORE WITH A NEUTRAL pH THE REACTIONS ON THE SURFACE ARE MORE EFFICIENT AND IT ALLOWS TO AVOID THE POLLUTION BETWEEN DIFFERENT CHEMICAL BATHS. IT IS PERFORMED BY A WATER-FLOW COMBINED WITH AIR-BUBBLING FOR AT LEAST ONE MINUTE.

ELECTROLYTIC TIN COATING: IT IS THE ELECTRODEPOSITION OF A PROTECTIVE TIN-FILM ON A SURFACE THROUGH AN ELECTRONIC TRANSFER APPLIED BY A VOLTAGE.

THE PROTECTIVE FILM GUARANTEES THE CORROSIONS' RESISTANCE WHEN IT APPEARS HOMOGENEOUS AND THICK ENOUGH (MINIMUM THICKNESS ADVISED IS 3 MICRONS) BECAUSE IT PROTECTS THE ITEM AS A CATHODIC PROTECTIVE FILM. IN FACT, THE TIN FILM SELF PASSIVATES ITSELF BY A THIN LAYER OF TIN OXIDE THAT IMPROVES ITS RESISTANCE AGAINST THE AGGRESSIVE AGENTS. THE PROCESS IS CONTROLLED BY FREQUENT AESTHETIC CONTROLS ON THE PROCESSED GOODS, BY THE THICKNESS TEST, BY THE SALT-FOG CABINET TO CHECK THE CORROSION RESISTANCE.

SEALING (OPTIONAL): IN ORDER TO OBTAIN A BETTER PRODUCT TO RESIST MORE AGAINST THE AGGRESSIVE AGENTS THIS STEP BECOMES FUNDAMENTAL. IT IS PERFORMED THROUGH AN ITEM-SOAKAGE INTO EMULSIFYING OIL LIKE THE TORQUE-N-TENSION OR CRUDE OIL LIKE ANTICORIT 77 (FUCHS).

DRYING: DEPENDING ON THE KIND OF MATERIAL IT IS PERFORMED BY A TIMED AND TEMPERATURE-CONTROLLED OVEN.