



## **TECHNICAL NOTES**

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### **DE-HYDROGENATION THERMAL-TREATMENT**

#### **1. GENERALS**

THE SURFACE-WEAKNESS CAUSED BY THE HYDROGEN DIFFUSION ON FASTENERS SUCH US BOLTS, NUTS OR ODDS AND ENDS IS ONE OF THE MOST IMPORTANT WORRIES OF THE AUTOMOTIVE INDUSTRIES AND OTHER RELATED SECTORS. ON THE STEEL, THE LACK OF ITS MECHANICAL RESISTANCE IS DUE TO THE WEAKNESS OF THE CRYSTALLINE LATTICE LIKELY AND OFTEN CAUSED BY THE NASCENT ATOMIC HYDROGEN.

ELECTROLYTIC PROCESSES AND THE ELETRODEPOSITIONS' PRE-TREATMENTS MIGHT BE THE MAIN CAUSE OF THE HYDROGEN DIFFUSION.

ONE OF THE COMMON TECNIQUE STILL WIDELY APPLIED IS THE ELIMINATION OF THE HYDROGEN THROUGH THE THERMAL TREATMENT. OBVIOUSLY IT IS NOT A COMPLETE ELIMINATION BUT A DECREASE OF THE AMOUNT OF HYDROGEN BECAUSE THE THERMAL PROCESS ELIMINATES ONLY THE MOLECULAR HYDROGEN AS H<sub>2</sub>, ASSUMING APPROXIMATELY THAT ALL THE ATOMIC HYDROGEN HAS BEEN RE-COMBINED TO A MOLECULAR ONE.

AS TO THE GALVANIZING FOR EXAMPLE, WE PROCESS THE ITEMS WITH REGARDS TO THE NORM UNI-ISO 2081/89 WHICH PRESCRIBES DIFFERENT WAYS OF PERFORMANCE DEPENDING ON THE DIFFERENT SUBSTRATES' BLENDS.

IT IS POSSIBLE TO DEEM DIFFERENT TIPES OF THERMAL-TREATMENT PARAMETERS ACCORDING TO THE COSTUMERS' REQUIRES.

#### **2. APPLICATION**

THE PRESENT PROCEDURE IS SUITABLE TO ALL METALS AND ALLOYS WITH RESPECT TO THEIR MELTING-POINTS. IN PARTICULAR ON BOLTS, NUTS, ODDS AND ENDS AND SMALL ITEMS UP TO 1,5 METRES LONG.

#### **3. PERFORMANCE**

THE TREATMENT IS PROCEEDED FIXING THE OVEN TO AN ELECTRONIC SELF-CONTROLLED TEMPERATURE. THE ALREADY PASSIVATED PRODUCTS ENTER INTO THE PLANT WITHIN FOUR HOURS FROM THE ELECTROLYTIC DEPOSITION (OR THE SUSPECTED HYDROGENS' DIFFUSION) AS PRESCRIBED BY THE NORMS.

IN GENERAL, THE STANDARD PARAMETERS OF PROCESS ON THE BOLTS, NUTS, ODDS AND ENDS OR SEALS ARE THE FOLLOWING:

|            |              |
|------------|--------------|
| STEEL 12.9 | 200°C/ 8 HRS |
| STEEL 10.9 | 200°C/ 4 HRS |
| STEEL 8.8  | 200°C/ 4 HRS |
| OTHERS     | 200°C/ 4 HRS |

THE PARAMETER ON SMALL ITEMS UP TO 1,5 METRES LONG ARE THE FOLLOWING:  
200°C/ 2 HRS