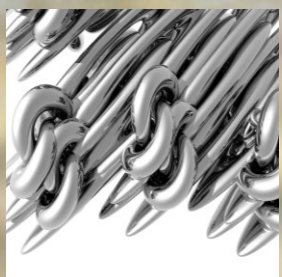


CHEMICAL PRODUCTS  
FOR TITANIUM  
PICKLING

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WITH AN ATTENTIVE  
EYE TO NATURE



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**CONDOROILCHEMICAL**

THE SUPPORTABLE CHEMICAL FOR INDUSTRY



# Pickling products for Titanium and its alloys

## - DESCAL SERIES -



CONDOROIL CHEMICAL has developed a series of specific pickling products for titanium and its alloys that allow to excellently solve problems caused by the common use of solutions based on nitric and hydrofluoric acid.

Characteristics that the new developed products have in common are the fact of being free of nitric and hydrochloric acids as well as presence of hydrogen peroxide properly stabilized.

Formation of a titanile complex promotes the superficial oxides rather than the dissolution of the base metal. This makes the metal pickling with gentle solutions possible in order to avoid superficial corrosion, to protect the weld bead and to avoid aggression, and therefore wear of the metal.

Moreover the rare reactivity of the solution toward the metal avoids its acid etching and the hydrogen evolution.

Two products developed by CONDOROIL CHEMICAL find large use in the industry

### DESCAL 09 TI

DESCAL 09 TI is mostly used in the pickling of welded tubes, annealed tubes, sheets, rods and equipment for chemical and petrochemical industry in general.

In its formula there is a small concentration of free hydrofluoric acid which allows to reach high pickling speed. Depending upon the operative conditions it is possible to decide the degree of the base metal etching until eventual surface defects are erased and an homogenous satin finished surface is produced.

### DESCAL 08 TI

DESCAL 08 TI is mainly used for aerospace, aeronautics and automotive industry.

The product, compared to 09 TI, has the characteristic to be also free of hydrofluoric acid. This reduces to very low values the etching speed of the base metal and therefore the evolution of hydrogen is almost null.

The surface of the treated metal doesn't suffer at sight of any alteration since the solution acts only on the titanium oxides.

By working at high concentrations it is possible to have a leveling of the metal roughness and therefore to make the surface bright and smooth.

Absence of hydrofluoric acid allows to use stainless steel tanks, to avoid installation of safety devices and to store a harmless product.

*For medical sector, a similar product with the above mentioned characteristics has been designed under the name of **Decapante Ti 80**.*

## QUALITATIVE ADVANTAGES

**NO** more metallurgic problems due to the use of very aggressive pickling solutions that act on the base metal causing, besides corrosion, a production of hydrogen that is absorbed by the matrix of the metal causing embrittlement

**NO** general corrosion of the surface

**NO** local corrosion of the weld bead

**NO** embrittlement metal

## ENVIRONMENTAL AND SAFETY ADVANTAGES

**NO** formation of nitrogen oxides that liberate into the atmosphere

These gases are extremely pollutant and aggressive for the metallic structures, they are dangerous for the health and contribute to the acid rains.

Harmless solutions to the operators

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## - DESCAL SERIES -

### EVALUATION OF THE GAS ABSORPTION IN THE METAL

State of the tube	Ti	Fe	C	N <sub>2</sub>	O <sub>2</sub>	H <sub>2</sub>
After blocking	Balance	0,036	Nd	Nd	Nd	0,00324
After rolling	Balance	0,036	0,02	0,014	0,13	0,00392
After degreasing	Balance	0,036	0,04	0,015	0,11	0,00361
After pickling in DESCAL 08 TI	Balance	0,036	0,04	0,015	0,11	0,00362
After thermal treatment in Argon at 620°	Balance	0,036	0,03	0,013	0,10	0,00366

State of the tube	Ti	Fe	C	N <sub>2</sub>	O <sub>2</sub>	H <sub>2</sub>
After blocking	Balance	0,045	0,013	0,011	0,11	0,00309
After rolling	Balance	0,045	0,015	0,013	0,12	0,00349
After degreasing	Balance	0,045	0,015	0,013	0,12	0,00396
After pickling in DESCAL 08 TI	Balance	0,045	0,02	0,017	0,11	0,00352
After thermal treatment in Argon at 620°	Balance	0,045	0,02	0,014	0,11	0,00405

**Note:** The above mentioned analysis have been kindly put into disposal by Company DMV Stainless that cooperated with us to setup the pickling process actually in use.

The targets which include: no more superficial aggression of the tube, a homogenously whitened and passivated surface and no more hydrogen increase, have been achieved by the use of a pickling solution of DESCAL 08 TI



### ELECTROPOLISHING AGENT 857 TI

Pickling Agent 857/Ti is used as electropolishing agent for Titanium and its alloys.

The treated parts become perfectly bright in only a couple of minutes. The result is obtained by applying an external current to the part, the passage of current cause the selective removal of material.

By using this process is possible to achieve these effects:

1. reduction of surface microrugosity: By reducing the surface rugosity, the bacteria adhesion to the surface is also reduced.
2. removal of imperfections caused by machining (presence of burrs, contaminants inclusion). The removal of exogenous material and surface imperfections, substantially, enhance the corrosion resistance of the treated material.





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