POLIGRAT-Process POLINOX SINOX

Properties and effects

POLINOX SINOX removes oxide layers and rust from Stainless Steel and from Mild Steel without any attack to the base metal.
The dissolution of oxides and rust is caused by reduction under oxygen free conditions followed by complexing of metal ions.

Application

POLINOX SINOX is applied by dipping or spraying. Spray application significantly improves the effectivness in dissolving of oxidic layers and rust. POLINOX SINOX is a water based solution, which is mixed ready for use directly before application either from the components POLINOX SINOX F and POLINOX SINOX S or from the components POLINOX SINOX K and POLINOX SINOX H, depending on type of layer to be removed. The pH value of the solution is between 7 and 8.
The concentration of the components depends on the properties of the layers to be removed. The following concentrations are recommended:

For thin layers and heat discolorations:

1% wt. POLINOX SINOX F and 0,3% wt. POLINOX SI-
NOX S in demineralised water.

or

1% wt. POLINOX SINOX K and 0,1% wt. POLINOX SINOX H in demineralised water.

For scale, rust and thermal oxides:

2-4% wt. POLINOX SINOX F and 0,6-1%wt. POLI-NOX
SINOX S in demineralised water.

or

2-4% wt. POLINOX SINOX K and 0,5% wt. POLINOX SINOX H in demineralised water.

The concentration of oxygen must be kept below 0,5%.

Temperature of treatment is between 50°C and 90°C. Time of treatment is in the range of 3 to 12 hours, depending on temperature and consistence of layers. After mixing and during application oxygen must be sealed off to keep the reductive chemicals active. For example, air must be replaced within systems by inert protective gas.

Control of process

POLINOX SINOX / POLINOX SINOX H

The concentration of reducing components can be controlled by using a redox electrode, i.e. Ag/AgCI or Calomel/Pt.. As a qualitative analysis discoloration of methylene blue by the reductive compoment can be used.

Ingredients:

POLINOX SINOX S: reducing component
i.e. Ammoniumdithionit

POLINOX SINOX F: complexing component
i.e. Sodiumhydrogencarbonat, HEDP

POLINOX SINOX F / POLINOX SINOX K

During treatment the pH value in the solution is reduced and is to be kept higher than 6,5 by adding POLINOX SINOX F.

Ingredients:

POLINOX SINOX K: complexing component
i.e. EDTA; Citrate, Tartrate; Sodiumhydrogencarbonat

POLINOX SINOX H: reducing component
i.e. Hydrazinhydrat

Waste treatment

For final treatment and conditioning POLINOX SINOX is treated with an oxidising chemical like hydrogen peroxide to destroy the reducing component. Then the solution can be concentrated by evaporation without producing toxic gases.

When using POLINOX SINOX F and POLINOX SINOX S the metal remains as sulphate or phosphonate in the sump.

When using POLINOX SINOX K and POLINOX SINOX H the solution is decomposed after mixing with hydrogen peroxide into water, nitrogen and carbon

dioxide. After evaporation the metals remain as metal hydroxides in the sump.