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PHOS-PREP®

Experts in non Chrome Preparations

TECHNICAL DATA SHEET

PHOS-PREP® PP 981 / 982 EB PREPARTION

GENERAL

PHOS-PREP® PP 981 has been specially formulated to produce quality preparation coatings on steel and galvanised steel surfaces prior to painting, at temperatures of 35° C

PHOS-PREP® PP 981 solution produces a medium weight uniform zinc preparation conversion coating which gives excellent adhesion and flexibility whilst providing salt spray, detergent and humidity resistance.

PHOS-PREP® PP 981 is supplied as a single pack green coloured liquid for galvanised steel and as a two pack product for plain steel surfaces.

PHOS-PREP® PP 981 is suitable for both spray and immersion processes.

PLANT.

Equipment such as tanks, pipe work, pumps, heater tubes and elements, should ideally be constructed from 316 grade stainless steel. Mild steel may be used, but is not really recommended, as a shorter life span for the equipment must be expected.

Spray nozzles should be constructed from 316 grade stainless steel or a suitable plastic.

MAKE UP OF SOLUTION.

GALVANISED STEEL.

For spray application a 2% v/v solution of PHOS-PREP® PP 981 is used. This is achieved by adding 20ml PHOS-PREP® PP 981 concentrate in every litre of solution.

For immersion application a 4% v/v solution of PHOS-PREP® PP 981 is used, achieved by adding 40 ml PHOS-PREP® PP 981 concentrate in every litre of solution.

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PLAIN STEEL.

For spray / immersion application, PHOS-PREP® PP 981 may be run at a relatively high concentration and temperature of 7% v/v and 75 - 85ºC. Under these conditions, iron builds up in the bath and acts as accelerator. This is known as running the process 'on the iron side'.

Alternatively, PHOS-PREP® PP 981 may be operated at lower temperature frequent addition of PHOS-PREP® PP 982 accelerator must be made. The operating temperature used may be from 30ºC to 70ºC, with process times from 5 to 20 minutes, depending on the coating weight required. The amount of PHOS-PREP® PP 982 accelerator needed depends on the operating temperature, and may be from 0.6 ml/l to 4 ml/l. The lower the operating temperature the higher % of PHOS-PREP® PP 982 will be required example a temperature of 35°C will require 4 ml/l of PHOS-PREP® PP 982 to be used

METHOD OF PREPARATION.

Fill the process tank to approximately 60% of its working volume with clean water and heat to just below the operating temperature.

Add the required quantity of PHOS-PREP® PP 981, and then top up to the working volume and heat to the operating temperature, ensuring that the solution is thoroughly mixed. Bath concentration is expressed as total acid and free acid 'pointage'.

Before use, the total acid and free acid pointages should be checked, using the methods outlined below. The total acid : free acid ratio should ideally be between 7:1 and 9:1. If the free acid is too high, it may be reduced by adding sodium carbonate to the bath. A 100 g/l solution of sodium carbonate can be made, and typically 100 ml of this would be needed for each litre of PHOS-PREP® PP 981 concentrate added to the bath. When the acid ratio is correct, add PHOS-PREP® PP 982 accelerator to the bath as required.

PROCESSING.

Prior to the phosphating stage it is necessary to produce a surface that is free from oil, grease, scale, rust or other foreign matter. This may be achieved by a separate cleaning stage using a

PHOS-PREP® cleaner prior to phosphating, or alternatively by incorporating a PHOS-PREP® PP 975/ 976 additive into the PHOS-PREP® PP 981 bath itself, provided the work to be phosphated is not excessively dirty.

BATH CONTROL

The PHOS-PREP® PP 981 solution should be regularly analysed to determine the total acid pointage. This may be replenished by adding 1.6 litres of PHOS-PREP® PP 981 concentrate for each point increase required.

At 4% strength the pointage control is 25 points

At 7% strength the pointage control is 44 points

It is also necessary to check the accelerator pointage, as this is consumed during use, even if the process is not actually operating.

When used at 0.6 ml/l the pointage control is 2 points

When used at 4 ml/l the pointage control is 13.33 points

Periodically the free acid of the solution should also be analysed, to check that the total acid: free acid ratio is between 7:1 and 9:1.

LABORATORY CONTROL METHODS.

EQUIPMENT AND REAGENTS.

25ml / 50ml Burette.	0.1 Normal Sodium Hydroxide.
10ml Pipette.	Phenolphthalein Indicator.
250ml Conical Flask	Bromo phenol Blue Indicator.
50% Sulphuric Acid	0.1 Normal Potassium Permanganate

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ANALYSIS OF TOTAL ACID.

Pipette 10ml of working bath into a conical flask. Add 50 ml of deionised water and 5 to 6 drops of phenolphthalein indicator. Titrate against 0.1N sodium hydroxide from clear to a pink end point.

TITRE = TOTAL ACID POINTAGE

Example

ANALYSIS OF FREE ACID.

Pipette 10ml of working bath into Conical Flask. Add 50 ml of deionised water and 5 to 6 drops of bromophenol blue indicator. Titrate against 0.1N sodium hydroxide from yellow to a blue end point.

TITRE = FREE ACID POINTAGE

ANALYSIS OF PHOS-PREP® PP 982 ACCELERATOR POINTAGE.

The presence of PHOS-PREP® PP 982 may be detected with starch iodide papers, which turn blue if the accelerator is present. If this test is positive, the concentration may be determined.

Pipette a 10ml sample of the phosphate solution into a 250ml conical flask. Add 10 to 12 drops of 50% sulphuric acid. Titrate from a clear to a permanent pink colour with 0.1N potassium permanganate solution.

TITRE = ACCELERATOR POINTAGE

Each litre of PHOS-PREP® PP 982 per 1000 litres in the bath is equivalent to 3.5 points.

The operating pointage may be from 2 points to 15 points. Add 0.3 litres of PHOS-PREP® PP 982 per 1000 litres to increase the accelerator pointage by 1 point.

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GENERAL MAINTENANCE.

As a by-product of the phosphating reaction, some insoluble residue will be formed which settles to the bottom of the process tank. This residue should be removed periodically before its presence interferes with the process. Residue is removed by decanting the phosphate solution into a spare or empty rinse tank. Then the sludge may be removed whilst it is in a semi-liquid state, before it is allowed to dry out. Alternatively filtration methods may be employed.

To maintain satisfactory performance of the PHOS-PREP® PP 981 solution in spray processes, it is important that sufficient volume of the solution is sprayed on to the work whilst it passes through the phosphating zone. It is therefore advisable to adopt an inspection and cleaning schedule to ensure that no blocking or partial blocking of nozzles occurs.