
Polybond Ltd

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PHOSGUARD LW 323 - Technical Datasheet

PRODUCT FUNCTION

PHOSGUARD LW 323 is a liquid, low temperature, Lightweight Iron Phosphate conversion process designed to simultaneously degrease and phosphate in one operation. The process will treat iron, steel, zinc and aluminium in mixed metal production, however, when aluminium forms a significant part of the operation, other processes are preferred.

PHOSGUARD LW 323 produces a phosphated surface which when finished with, an organic coating, substantially increase the adhesion and durability when compared with conventional alkali or solvent cleaned surfaces.

PLANT AND EQUIPMENT

Equipment for use with PHOSGUARD LW 323 may be constructed from mild steel, however, longer life will be achieved using Grade 316 S16 Stainless Steel. Spray nozzles should be stainless steel or plastic. Pipework systems may be constructed from stainless steel or Schedule 80 CPVC.

PROCESS SPECIFICATION

PHOSGUARD LW 323 is normally operated as a one percent solution at temperatures between 30 and 50°C. The process will give satisfactory results at higher strengths and temperatures, particularly when used by immersion.

PHOSGUARD LW 323 produces uniform blue coatings on steel, giving a coating weight between 0.2 to 0.5g/m². The process meets the requirements of B.S. 3189: 1973 Type 4 and DEF STAN 03-11/1 Class IV. The corrosion protection is enhanced by the use of a passivation treatment.

SOLUTION MAKE UP

The process tank should be cleaned, purged if necessary, and then flushed out with water. After cleaning, the tank should be filled to eighty percent of its working volume with clean water. The water is then heated to 30°C to which is added 10.0 litres of PHOSGUARD LW 323 per 1000 litres of working solution. The solution is made up to operating level with clean water, thoroughly mixed and heated to the operating temperature.

OPERATING PROCEDURE – SPRAY PLANTS

The process consists of spraying the articles with the PHOSGUARD LW 323 in the following sequence.

Stage 1	Phosguard LW 323	for 1 to 2 minutes at 30 to 50°C.
Stage 2	Phosguard LW 323	for 1 to 2 minutes at 30 to 50°C.
Stage 3	Cold Water Rinse	for 30 to 60 seconds at ambient temperature.
Stage 4	Sealguard Passivation Rinse	for 30 to 60 seconds at ambient to 75°C.
Stage 5	Dry Off	for 5 to 10 minute at temperatures from 100 to 200°C.

On certain installations stages 1 and 2 may be combined to form one cleaner phosphate operation. Under certain conditions stage 4 can be replaced by a mains water ring.

The Phosguard LW 323 has been formulated to remove heavy surface contamination under normal operating parameters. When owing to limited operating conditions particularly on plants with one cleaner phosphate stage, the use of Desol degreasing supplement may be required to increase the cleaning efficiency.

After processing, the work is rinsed preferably in two stages of water, the first overflowing to prevent excessive contamination, the second cold or hot which may contain demineralised water or a Sealguard Passivation treatment.

After rinsing, all pockets of water should be removed by air blow off and the articles oven dried immediately to remove any moisture at temperatures up to 200°C.

Phowguard LW 323 is also suitable for use by spray lance or in pressure washing. A make up of around two to five percent is required, the articles being treated until the contaminant is removed and a blue phosphate coating is visible on mild steel. The components must be rinsed in clean water and dried prior to finishing.

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OPERATING PROCEDURE – IMMERSION PLANTS

Stage 1	Alkali Cleaner	for 5 - 15 mins at 60 to 90°C.
Stage 2	Cold Water Rinse	for 1 to 2 mins at ambient temperature.
Stage 3	Phosguard LW 323	for 3 to 5 mins at 30 to 60°C.
Stage 4	Cold Water Rinse	for 1 to 2 mins at ambient temperature.
Stage 5	Sealguard Passivation Rinse	for 1 to 2 mins at ambient temperature.
Stage 6	Dry Off	for 10 to 15 minute at temperatures from 100 to 200°C.

On some plants where the contamination is only light the cleaning and phosphating can be combined into one stage by incorporating a degreasing supplement in the following

Stage 1	Phosguard LW 323/Desol SD	for 3 to 5 mins at 30 to 60°C.
Stage 2	Cold Water Rinse	for 1 to 2 mins at ambient temperature.
Stage 3	Sealguard Passivation Rinse	for 1 to 2 mins at ambient temperature.
Stage 4	Dry Off	for 10 to 15 minute at temperatures from 100 to 200°C.

TESTING AND CONTROL

The Phosguard LW 323 working solution can be controlled automatically by using suitable Automatic Dosing Equipment.

The working solution should be tested at regular intervals and replenished accordingly, thus ensuring consistent processing results.

TOTAL ACID

Take a 10ml sample of the working solution; add 5 to 10 drops of Phenolphthalein Indicator Solution, then run in 0.1N Sodium Hydroxide Testing Solution from the burette until the colour changes from colourless to pink. A working solution made up as above will have strength of five and is known as a five point solution.

The process is normally operated in the range from 5 to 10 points; however this may be altered to cater for unusual plant conditions. An addition of 2 litres of Phosguard LW 323 per 1000 litres of working solution is required to increase the strength by one point. Small frequent additions are recommended for consistent results, rather than one occasional large addition.

PLANT AND MAINTANENCE

During the operation of spray plants the Phosguard LW 323 solution, oil, grease and contaminants are removed from the metal and float on top of the processing solution. This scum must be removed as its continued presence will prevent cleaning and phosphating. The following methods may be employed to remove this scum from the surface.

1. Install an oil separator.
2. Shut down the pumps and allow the process solution to settle overnight. Prior to starting up the pumps, run in cold water and allow to overflow.

This action skims the surface and removes the denatured oils.

For satisfactory operation it is important that the processing solution is continuously sprayed onto the components. Blockages in the spray nozzles will seriously affect the cleaning and processing efficiency, so it is essential that the nozzles are checked, removed and cleaned at regular intervals. Filter screens must also be removed and cleaned at regular intervals.

During the process some insoluble sludge is formed as a by-product of the processing reaction. This sludge settles to the bottom of the tank with the insoluble soils which should be removed before its presence interferes with the process or causes dusty coatings.

When necessary the Phosguard LW 323 is discarded, the tank cleaned and a new solution made up. On multi stage plants the first stage is discarded and replaced by the second stage which is then made up with a fresh solution. The sludge and contamination is removed from the tanks by convenient means.

When a chemical cleanout is required this is effected by using Metaclean DS 252 Acid Cleaner. This operation is normally carried out over a weekend or during a shut down period.

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HANDLING AND SAFETY PRECAUTIONS

Phosguard LW 323 is a mildly acidic and a slight irritant so contact with the skin should be avoided.

When handling this product, operators should wear protective clothing and face shields.

Phosguard LW 323 should not be taken internally and in case of accidental contact with the skin or clothing wash with large volumes of water. If contact with the eyes should occur, flush with liberal quantities of clean water and obtain immediate medical attention.

EFFLUENT DISPOSAL

Remove any separated oil and neutralise the working solution prior to disposal in accordance with local authority conditions.

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