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BC300 Mask Washing Solutions

Barrier Coats are specific blends of biodegradable water-soluble polymers that are used in the process of removing [water base or solvent base] paint overspray in repetitive decorative painting.

Understand The Barrier Coat Process:

Step one: A clean mask/tool is placed in the mask washer and sprayed under pressure with a proper concentration of heated water-soluble barrier coat. The barrier coat applies a uniform protective film to the clean mask/tooling. This protective film when dried keeps paint over-spray from adhering to the mask/tooling.

Step two: Barrier coated mask/tooling is placed into the painting process.

Step three: When the paint-covered mask/tool needs to be cleaned, it is placed back into in the mask washer. Here it is sprayed under pressure with the heated barrier coat solution. The Paint over-spray is removed from the mask/tool as the initial barrier coat dissolves, carrying the paint over-spray into the solution. As the barrier coating becomes a paint stripping solution, the mask/tooling acquires a new barrier coat film while shedding the old barrier coating.

The paint soils are removed from the barrier coat solution generally by filtration, for proper disposal.

The Basic requirements:

1. Proper Masks

To accept barrier coating, tools must be clean and free of dirt, oil, and have no prior paint residual.

A smooth tooling surface with ground solder joints and nickel-plating or clean stainless steel is preferred to accept a proper Barrier Coat.

Mask/Tooling with significant points of mechanical attachment can interfere with barrier coat process paint stripping. Rough or porous tooling will require a higher concentration of barrier coat film.

2. Chemical Concentration

Barrier Coat concentration must be properly monitored and maintained to insure complete removal of the paint over-spray.

Chemical concentration is easily monitored with a hand refractometer.

Maintaining proper chemical concentration of Barrier Coat helps to set/harden certain paints to insure paint removal from the mask tooling.

3. Heat

Heat is essential in the drying of the barrier film so there is no transference of the Barrier Coat film to the parts being painted.

Heat helps to set the paint film, making it easier to remove from the tooling.

4. Directed Impingement

Impingement is the force of the barrier coat being sprayed from the nozzles directed at the tooling;

A properly directed spray separates the paint film from the tooling surface. Be mindful to adjust Spray patterns as tools change, select proper distance from the tooling, impact duration, are factors in proper removal of paint overspray. Impingement of the Barrier Coat removes the paint over spray and recoats the tooling with fresh barrier coat. Improper impingement (plugged, or missing nozzles, improper nozzle alignment, improper distance from the tooling, cause paint to not separate from the tooling.

5. Soil Removal

Soil removal is the most important aspect of process paint stripping effectively.

Without continuous soil removal the following problems occur:

1. The bath life is short, chemical must be prematurely dumped and chemical operating costs increase.
2. Heavy soil build-up can plug nozzles, thus reducing impingement jeopardizing cleaning efficiency.
3. Paint and soil can clog the pump and headers_.
4. Soil can affect the operation of the water level controls.
5. Alkyd resins can create foaming problems.
6. Finely ground soil can impede barrier coating. Large amounts of Paint soil dispersed in the barrier coat can interfere with the cleaning process.

Startup and beginning system setup

- BC 300 is supplied in 22.72 kilo pails.
- The initial chemical addition is typically 252 grams/litre of system capacity.

- To calculate system capacity, measure the height, depth and length of the holding tank in centimeters.
  - Multiply height times depth times length to get cubic centimeters.
  - Divide the result by a factor of 1000 to determine the number of litres in your system

- Optimum operating range will require a minimum of 220 grams of BC 300 per system volume litre and a maximum of 285 grams per system volume litre.

- The paint composition will dictate the exact ratio based on test results.

- The recommended temperature range is: 77° - 88°C

- The recommended pump pressure is: 70 PSI (minimum)

- **Use the entire contents of a pail when it is opened.** The slurry composition may experience some precipitation of solids to the bottom of the container but it does not have any impact on the concentration of the product. When placed in active circulation washer the material will go into solution as precipitated solids solublise.

- The chemical concentration testing method is: Hand-Refractometer times (Factor = 26.5)

- As required, the recommended defoaming agent is: PHOS-PREP® PP **Phosprep PP Defoamer 1**

Daily Process Maintenance Requirements

- The nozzles must be in place, unrestricted and aimed at the mask.

- Cleaning time and pressure should be sufficient to allow complete paint removal.

  1. Normal cleaning time - 3 to 4 minutes

  2. Minimum pressure of 70 PSI

  3. Normal Dry-Off Cycle - 30 to 45 Seconds

- The operating temperature must be within the recommended range.

- Visually inspect the bath level and make sure the water level controls are working properly.

Daily Soil Removal

The continuous removal of paint soils from the mask washing solution MUST be performed on a continuous basis. Regular cleaning at set times daily will extend the bath life and greatly reduce maintenance requirements.

The filtration system should be cleaned frequently to remove paint soil build up, adequate liquid flow is essential for proper operation. Soil removal is of prime importance to ensure that paint is not re-deposited on the mask.

Chemical Concentration

The chemical concentration of the mask washer reservoir must be maintained above the minimum concentration to maintain a proper barrier coating on the mask. The concentration should be tested weekly and appropriate additions made to insure proper chemical concentration. Method of chemical measurement is the Hand Refractometer. The particular Barrier Coat chemical that is chosen is determined by paint type. Chemical additions are made only when the chemical concentration falls below the established minimum concentration. Chemical additions should be made with an entire pail to ensure material consistency.

Measuring Chemical Concentration

The hand-refractometer quickly and accurately measures the refractive index of the test solution and correlates it to an arbitrary scale of % dissolved solids.

The higher the % of dissolved solids, the higher the chemical concentration.

With the use of a multiplication factor, this relationship allows you to easily calculate concentration.

Take the Hand-Refractometer reading times product factor (26.5) and determine the weight in grams of BC 300 for each system litre needed for your application.

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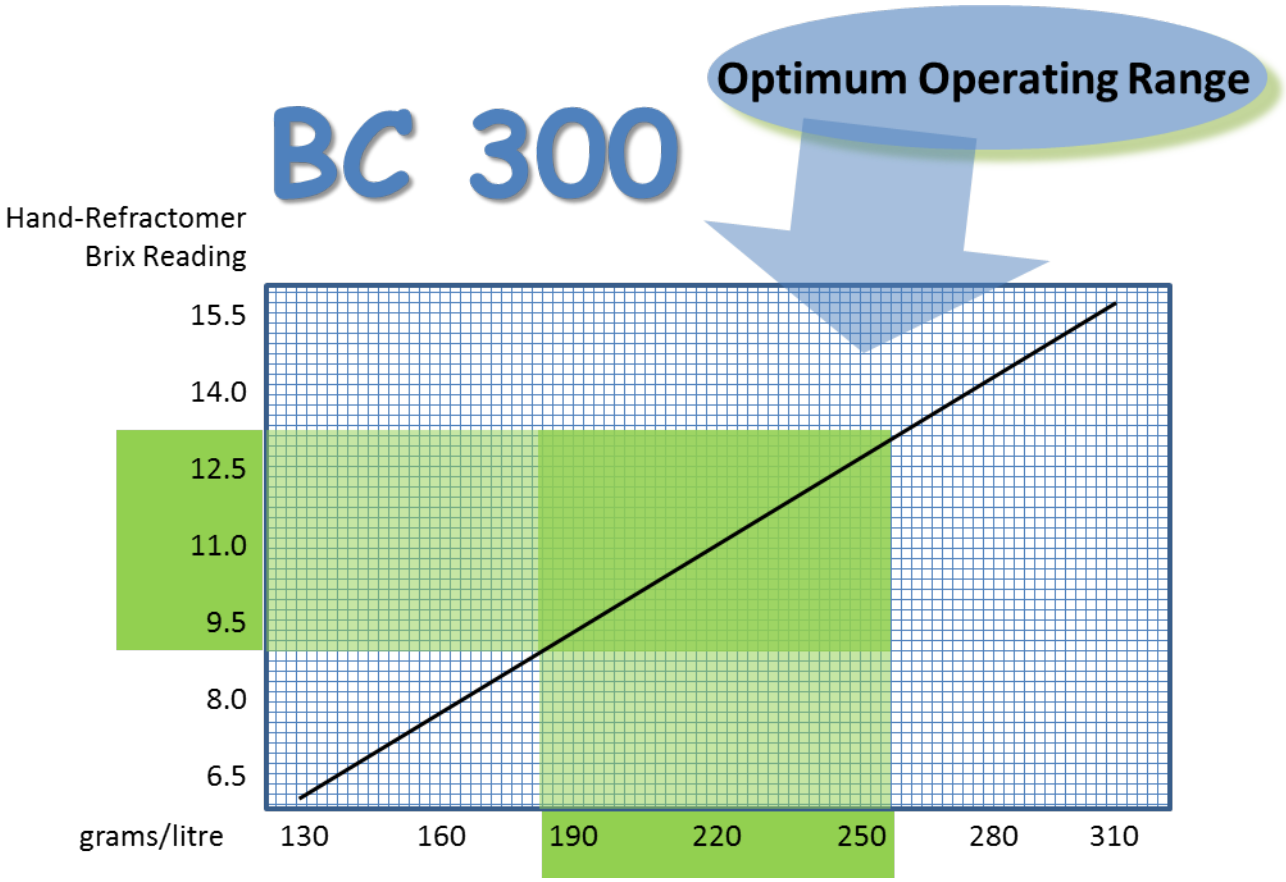

Hand-Refractometer procedure:

1. Obtain a small sample from the reservoir while it's thoroughly mixed.
2. Put several drops of the sample on the window and close the cover.
3. Point and hold the Hand-Refractometer to the strongest nearest light.
4. Read the number remember [0] at the bottom so read the index at the dark line.
5. Use the reading on the scale to calculate concentration.

Calibration of the Hand-Refractometer; Place several drops of clean water on the window and close the cover. The Hand Refractometer should read Zero.

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How to calculate additions

If the concentration is below minimum level, calculate the amount of chemical to add to bring bath to proper level.

The examples below are based on the following parameters:

220 grams per litre concentration is the established standard
1250 litre bath volume
If the sample hand refractometer reading is 7.5, a calculated concentration of 150 grams/litre
Adjust the concentration level to the established standard.

EXAMPLE: 220 grams/litre – 150 grams/litre = 70 grams/litre.

70 grams/litre X 1250 litres = 87.5 kilograms

Add four 22.72 kilogram pails to the system. After chemical additions run several mask cleaning cycles to mix the chemical and retest. Always use an entire pail.

Tooling Preparation

New Tools

New tooling with smooth solder joints made of Nickel plated steel or of Stainless Steel is preferred in a polished condition. New tools should be cleaned with soap and water and/or clean solvent to remove any dirt, grease or paint that they may have acquired during testing or shipping. After cleaning, scrub with a scotch-brite type pad using a mild abrasive cleaner.

Repeat these two steps until residue is removed. Clean the tooling with water and rinse completely before testing and barrier coating. After the tooling has been cleaned, you can test it by rinsing with clean water.

The water should not "bead up" and should form a continuous film on the tool. If the film doesn't form correctly, the tooling should be re-cleaned. After cleaning the tooling it should be properly barrier coated to ensure complete coverage before applying paint.

Old Tools

Old tools can also be used if they are properly prepared. If they are in good condition and are not going to be replaced it is very important that they be thoroughly cleaned.

If the tooling has been used in a solvent system a thin film of dilute paint usually remains on the surface of the tool. This film prevents our barrier coat from evenly covering the surface. This film must be completely removed with clean solvent and a clean cloth or scrub brush using mild abrasive cleaners, such as abrasive scourer.. After the tooling is clean, wash it in warm soapy water and rinse completely before testing and barrier coating as above.

If the tooling has been used in a silicate type barrier coat system, any paint or residue must be removed. This residue will have an adverse effect on the life of our products and will prevent our barrier coat from coating the tool properly. The tooling can usually be cleaned by soaking in hot water with a 25% solution of PHOS PREP PP 937 (a phosphoric based acid solution).

After soaking, scrub with a scotch-brite type pad using mild abrasive cleaners, such as abrasive scourer. Repeat these two steps until the residue is removed. Clean the tooling with water and rinse completely before testing and barrier coating as above.

If the masks are not in good serviceable condition, after they have been cleaned they should have the solder joints rebuilt if necessary and possibly be replaced and cleaned as above.

NOTE: After the tooling has been barrier coated in at least (2) wash cycles, the coating should uniformly cover the tool. If it doesn't, or if it "beads up" on the tool, the tooling is not clean,

Defoamers

The use of defoamers in Process Paint Stripping is critical to the process. It is important that only Non silicone defoamer be used in Process Paint Stripping. Defoamers can have emulsifying, as well as defoaming properties, which are chemically related. Water-Based [emulsified] paints can be difficult to remove from the Barrier Coat bath and can shorten the bath life.

Because of the varying types of paint introduced into the system and the amount of paint soils left in the bath it is difficult to predict the amount of foam that may be produced. Alkyd resins are especially susceptible to forming soaps with alkaline solutions and producing subsequent foam.

An inch of foam on the surface of the bath should not cause any problem if the filters are kept clean and the water level controls are working properly. If the foam exceeds several inches, PHOS-PREP® PP Defoamer 1 should be added. (Approximately 30 ml. for every 600 litres. in the reservoir)

The defoamers are also much more effective if they are used to prevent excessive foam.

Water borne coatings

Our water-based barrier coatings are designed for use with Water-Based coatings specifically and can also be

used with Solvent borne coatings under certain conditions. Please contact us for specific recommendations. Our recommendations are based on laboratory testing of specific paints.

Water borne coatings and our water-soluble polymers share the common solvent (water), which can allow the water borne coating to possibly disperse in the chemical solution. Water based coatings can contaminate the solution, which greatly reduces cleaning efficiency and bath life and can also cause excessive foaming.

These problems can be greatly reduced by completely curing the water borne coating where practical on the tool before it is put into the mask washer. Water Based coatings when fully cured, are no longer water-soluble which fortunately minimizes the contamination of the barrier coat and allows paints to be filtered from the chemical after it is removed from the tool surface.

Usage Notes

Always use the entire pail when adding material. Do not attempt to use a partial pail as buffering and solids will precipitate within the container. All of the material will go into solutions in the washer.

In small systems where adding an entire pail of BC300 creates an over the range concentration level and there is adverse impact on the tools such as tackiness, lower the concentration level by removing 8 – 10 litres from the washer and replace with water. Re-test using the refractomter procedure.

If the concentration levels are still too high, remove another 8 - 10 litres and retest. Complete a cycle to insure the tackiness has been resolved and that your concentration levels are near normal.

You can reuse the material you removed as additions to the washer as it is consumed during use.

As in all cases, the effective concentrations levels vary based on the entire scenario including paint types, temperatures, and cleanliness of tools and effectiveness of the sprayers.

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Problem	Probable Cause	Remedy
➢ Paint not stripping	A. Tooling not cleaned and barrier coated before painting B. Insufficient barrier C. Excessive soil load D. Low temperature E. Poor impingement F. Dirty tooling G. Bath contaminated .	A. Clean tooling and run thru washer prior to painting. B. Check concentration C. Improve filtration D. Check and adjust if necessary E. Clean, align or replace nozzles , Check pressure F. Clean tooling G. Filter and dump system, Clean equipment and recharge system.
➢ Paint sticky / not denatured	A. Temperature to low	A. Increase temp. 88°C max. .
➢ Line on refractometer hard to read	A. Pigment suspended in solution B. Excessive soil load C. Defoamer not compatible D. Insufficient light	A. Improve filtration B. Check and clean filtration equipment more often C. Use PHOS-PREP® PP Defoamer 1. D. Use brighter light
➢ Foaming	A. Alkyd paint resins B Excessive Paint soil in bath (pH 8.0 - 10)	A. Set film if possible before stripping B Add PHOS-PREP® PP Defoamer 1 sparingly
➢ pH below 7.0 Corrosion	A. Acidic paint	A. Call PTS Ltd.
➢ Nozzle erosion	A. Abrasive paint pigments B. pH too low, below 8.0	A. Improve filtration B. Call PTS Ltd.