

PRE-TREATMENT QUALITY ASSURANCE SPECIFICATION

The following tests are required as a part of Quality Control for pre-treatment of metal.

Any Non-conformance must be recorded including corrective repairs etc. that are done. If repairs are not documented it will be understood that no corrective action was taken!

When non-conformances are filed all appropriate parameters from the wash etc. should be documented along with the non-conformance.

SHOT BLASTER SURFACE PROFILE TEST

This profile test is to be done by the Maintenance only. Please file any requests through them.

1. Equipment required

- a. Modified anvil thickness gauge
- b. Burnishing tool
- c. X-Coarse Press - O - film tape.

2. Test areas

- a. Anywhere on a flat or round surface that has a profile.
- b. Inside and outside of the shot blaster Ahot@ spot.

3. Testing Procedure

- a. Locate a representative surface site.
- b. Select grade of Press - (O Film 0 to 2 mils use ACoarse@; 1.5 to 4.5 mils use AX-Coarse).
- c. Prepare snap gauge, clean anvils, adjust dial gauge to read a minus 2 mils (8 mils when anvils are shut.)
- d. Peel Press - O - Film from slide.
- e. Check unexposed film with gauge. Film may vary in thickness and maximum limits of profiles cannot exceed thickness of film coating.
- f. Apply film on blasted surface.
- g. Rub burnishing tool over the round cut-out portion of Press-O-Film. Press-O-Film will become darker when replicated, so make sure that the entire circular area has uniformly darkened.
- h. Remove replica and place between anvils on snap gauge, making sure replica is centred in between anvils. Gauge reading is the maximum peak to valley heights of the blasted surface.
(When snap gauge is adjusted as per Step 3.)

4. Evaluation

- a. North Paint Line target is 2.2 mils.
- b. Tillage Paint Line target is 1.5 - 2.5 mils.

WHITE RAG TEST

This test is to be done after the wash pre-treatment and can be performed when the part is wet or dry. It is used to determine whether or not the part is clean.

1. Equipment required.

Clean white rag or paper towel.

2. Test Area:

- a. Any pre-treated area of a part.
- b. Suspect areas such as welds, tight corners or areas that receive minimal cleaning.

3. Testing Procedure.

- a. Select a test area.
- b. Wipe the test area with the white rag using moderate force. The wipe should be approximately 2 - 3 inches in length.
- c. Inspect the area of rag that was in contact with the part for any dirt or oil etc. This will be evident by a darkening or Adirty@ rag.

4. Evaluation

Evaluation is divided into 2 categories:

? Powder Application

? Liquid Application

a. Powder Application

Rate the results using the following guide:

5 = excellent - No removal of dirt or oil etc.

4 = very good - No change in colour of the rag.

3 = fair - Between 4 & 2

2 = poor - some dirt or darkening of rag but not black yet. Evidence that the rag was white in test area can still be seen easily.

1 = reject - rag is completely black or Adirty@ in test area.

- Should be able to see an Awipe@ mark on the piece.

A rating of 2 or less is definitely a reject and a non-conformance must be filed. Any rating less than 5 means there are improvements that need to be sourced out and implemented immediately.

b. Liquid Application

Rate the results using the following guide:

5 = excellent - no removal of dirt or oil etc.

- no change in colour of the rag.

4 = good - between 5 & 3.

3 = acceptable - some dirt or darkening of rag but not black yet.

2 = poor - between 1 and 3, rag is partially brown/black in test area.

1 = reject - rag is completely black or Adirty@ in test area.

- should be able to see an Awipe@ mark on the piece.

A rating of 1 is a reject and a non-conformance filed. Any rating less than 5 means that there are improvements that should be sourced out and implemented.

WATER BREAK TEST

This test is used to find out if any oils etc. are present on the surface of the part and can be applied at any time during pre-treatment - wet or dry. If the surface is dirty or oily, the water will bead like water on a freshly waxed car.

1. Equipment required.

Squirt bottle filled with deionized water only.

2. Test areas

Any pre-treated/cleaned surface after the rinse following the cleaning stage. It should be done prior to the application of phosphate if possible.

3. Testing Procedure

- a. Select a test area.
- b. Squirt water over the area.
- c. Observe whether or not the water Abeads@ or simply sheets off in a flat even pattern.

Note: On Tank Line, this observation may be made after the rinse through the wash cabinet window.

4. Evaluation

- a. Rate observation as follows:
 - 4 = Excellent- no Abeading@ present; no water separation.
 - 3 = Good - no Abeading@ present; some water separation.
 - 2 = Reject - water beads covering half of the test area.
 - 1 = Reject - water Abeads@ all over test area.
- b. Any classification of 2 or below is a reject and a non-conformance filed.
- c. A rating of 2 indicates that there may be some traces of oil still present on the surface and it should be checked out and taken care of immediately. Rewash if necessary.

PHOSPHATE TESTING SOLUTION 47 (Oakite Inc.)

This test is used to determine whether or not a coating of phosphate is present on a pre-treated part.

Warning: Solution 47 contains 7% Hydrochloric acid. Wear latex gloves when handling. Consult MSDS for more information on the safe handling of this chemical.

1. Equipment required.

- a. Testing Solution 47.
- b. Q-tips or syringe.
- c. Clean cloth or rag.

2. Test areas.

- a. Any surface area of a part that has been pre-treated.
- b. The test works better if test area is positioned is such a way so that the solution will not run or drip off of the test area.

3. Testing Procedures.

- a. Select a test area.
Quality: Since the solution #47 actually removes the phosphate coating, test area should be one which is relatively hidden from view.
- b. Ensure the test area is clean and free of contaminants.
- c. Using a Q-tip or syringe (this works the best) apply 2 - 3 drops of Testing Solution 47.
- d. Wait several seconds and observe the colour of the solution applied. The colour will range from yellow to deep blue.
- e. A Dab@ the test area dry using a clean cloth or rag. A small light coloured mark will be left on the test piece where the Solution 47 was applied.

4. Evaluation

- a. Rate the colour that the Testing Solution 47 changed to using the following guide:
 - 4 = Excellent - colour is a uniform dark blue
 - 3 = Good - colour distinctly changed to blue.
 - 2 = Reject - colour has only a slightly blue appearance.
 - 1 = Reject - colour stayed yellow.
- b. Any rating less than 3 requires a non-conformance to be filed and immediate corrective action taken.

VISUAL TESTING

Because of the broad scope of visually checking over parts it is difficult to put a rating system in place that will be accurate and precise. They require a lot of flexibility in interpretation and keeping this in mind visually inspect parts for the following:

1. Even Ablueing@.

This is sometimes difficult to see. It is most easily observable on test panels and on Seeder tanks etc.

ABlueing@ can be an indication of good phosphate coating however a lack of Ablueing@ does not necessarily mean no or poor phosphate coating. Be sure to do a Phosphate testing Solution 47 test to determine whether or not phosphate is present.

An Agolden@ appearance is sometimes evident and is caused by the pH adjustor in the phosphate bath. This is okay. Be sure to distinguish between a golden appearance and flash rust. They are not the same (see flash rust for more details).

2. **Rusting and Flash Rusting.**

a. Rust

Check for rusting that the shot blaster did not completely remove. This will often be found in the Apits@ or valleys of the profile etc. Use a magnifying glass if necessary.

b. Flash rusting

Flash rusting is an orange looking A coating@ that is evident on a part after pre-treatment. In worst cases you can actually watch the rust spread. Flash rusting will wipe off using the white rag test and that is the simplest method of ensuring that it is flash rust.

c. Evaluation

When any kind of rusting is evident inform the paint Supervisor who will make a decision on whether or not to reject the part. If a part is rejected a non-conformance must be filed.

Tillage Paint Line Quality Assurance Documentation - Pre-treatment

1. Once per shift, perform one test as per procedure PLS802.
2. Document your results on the Quality Assurance Test Results - Pre-treatment log sheet.
3. If any non-conformance is discovered, document the information on the log sheet and report it to your supervisor immediately.

TPPL QUALITY ASSURANCE TEST RESULTS PRE-TREATMENT

Date	Time	Emp #	Part #	White Rag	Water Break	Sol. 47 Test	Blueing	Flash Rust

Comments: _____

