



SurTec 650

RoHS Chromate

1. Description

SurTec 650 is a RoHS, REACH compliant and QPL approved liquid chemical used to form a protective conversion coating on aluminum surfaces without the use of hexavalent chromium.

- QPL Number 81706
- Mil-C-5541
- Document ID Mil-DTL-81706B, Type II, Class 1A, Form I, Method C
- Document ID Mil-DTL-81706B, Type II, Class 3, Form I, Method C
- Environmentally safe and non toxic.
- RoHS compliant
- REACH compliant

2. Application instructions (See Section 5)

To ensure a uniform coating, the aluminum surface must be clean and deoxidized.

Concentration: 20-30% by volume

pH: 3.8-3.95

Temperature: 70°F-100°F (90°F optimum)

Immersion time: 2-6 minutes

DO NOT BE ALARMED!

Class 1A coated surfaces are generally clear or faint tan, not gold, like you are accustomed to seeing.

3. Conditions for using SurTec 650

Equipment: Tanks should be made of stainless steel, PVC, Polyethylene or Polypropylene. Associated equipment should be constructed of stainless steel or chemically resistant polymers.

Racks: Titanium racks are recommended for work load.

pH adjustments: Avoid quick additions, as it may destabilize the solution.
Lower with 10% v/v sulfuric acid.
Raise with 1-10% w/v sodium hydroxide.
pH should be checked once per shift with a calibrated meter.

Water: Deionized

Temperature: Automatic temperature control is recommended.

Filtration: A light precipitate will form during the chromating process. Filter the bath on a regular basis. Use a 15-20 micron filter.

Concentration: **DO NOT ALLOW CONCENTRATION TO FALL BELOW 20% BY VOLUME.**

4. Solution makeup

Clean tank thoroughly before make-up. For new tanks or new liners, leach with 10% sulfuric acid, then rinse thoroughly before use.

1. Fill 50% of tank volume with deionized water.
2. Add the required amount of SurTec 650 liquid and mix.
3. Add more deionized water to about 90% of final volume.
4. Adjust solutions pH to 3.9 while slowly and constantly mixing.
5. Adjust to final volume.
6. For new tanks, allow solution to stand overnight and adjust pH the next morning if required.

5. Typical application cycle

SurTec 650 should be applied to surfaces that have been thoroughly cleaned and deoxidized. Alkaline etching should be avoided unless the surface is rough or heavily oxidized.

1. Clean
2. Rinse
3. Deoxidize (Field experience and laboratory tests confirm that the use of an iron base deoxidizer improves corrosion protection.)
4. Rinse
5. Chromate
25% by vol
90°F
2-3 minutes, top coat applications.
4-6 minutes, bare applications.
6. Rinse in cool, clean running water.
7. Optional warm water rinse, not to exceed 140°F.
8. Air dry at ambient temperature

6. Storage

Store in original container in a cool dry location.
Do not store with oxidizers.
Keep from freezing.

7. Packaging

5 gallons
55 gallons

8. Product safety

We recommend that the company/operator read and review the **Material Safety Data Sheet** for the appropriate health and safety warnings before use.

9. Titration procedure

Reagents: Sodium Hydroxide, 10%
Hydrogen Peroxide, 35%
Hydrochloric Acid, 50%
Potassium Iodide, 10%
0.1N Sodium Thiosulfate
Starch Solution, 1%

Sample preparation:

Take sample from well mixed working solution.
Let solution cool to room temperature.
If turbid, allow to settle.

- Procedure:
1. Pipette 100 ml of sample into 250 Erlenmeyer flask.
 2. Add 20 ml of Sodium Hydroxide.
 3. Add 5 ml of Hydrogen Peroxide and stir for 5 minutes.
 4. Add another 5 ml of Hydrogen Peroxide, stir for 5 minutes more.
 5. Boil the solution for 45 minutes in order to evaporate any excess Hydrogen Peroxide, but do not allow the solution to evaporate below 50 ml. Add di- water to boiling flask if needed.
 6. Cool solution and add di- water to 100 ml mark.
 7. Filter the solution slowly with a fine grained filter paper, Whatman #42 is recommended.
 8. Rinse filter paper with di-water to wash any yellow color into the flask.
 9. Add 40 ml Hydrochloric Acid. If you don't boil long enough to remove all of the Hydrogen Peroxide, the solution will turn a dark blue color.
 10. Allow solution to cool to room temperature.
 11. Add 2-4 ml Potassium Iodide.
 12. Titrate with 0.1N Sodium Thiosulfate until the solution is a straw-yellow color.
 13. Add some starch solution to develop a dark blue color.
 14. Continue to titrate until the blue color disappears.
 15. Record the mls of 0.1N Sodium Thiosulfate used.

Calculation: mls of Sodium Thiosulfate used x 1.613 = % by vol **SurTec 650**

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