



**Type of Bulletin:** Technical Process Bulletin  
**Product Title:** TURCO DW 514L L  
**Product View:**  
**Description:** Liquid Aluminum Deoxidizer/Desmutter  
**Status:** complete

# Technical Process Bulletin

Technical Process Bulletin No. 239706  
This Revision: 09/18/2006

**TURCO DW 514L L**  
Liquid Aluminum Deoxidizer/Desmutter

## DESCRIPTION:

TURCO DW 514L L is a chromated deoxidizer/desmutter for aluminum and its alloys. TURCO DW 514L L provides excellent "hold-over times" when used for deoxidizing prior to resistance welding. TURCO DW 514L L is also used for desmutting aluminum alloys after etching, as a pre-treatment of aluminum surfaces prior to etching to prevent "selective etching", prior to chromate conversion coating, anodizing, and bright dip operations.

TURCO DW 514L L is not recommended for use with high silicon aluminum alloys and castings.

Note: TURCO DW 514L L is exactly a 60% w/w solution of DW 514.

## HANDLING CHARACTERISTICS:

TURCO DW 514L L contains aluminum salts, is strongly acidic, and is an oxidizing material. Contact with the skin or eyes may cause severe irritation or burns. The same safety precautions should be observed as when handling acid products. Personnel should wear eye protection, NIOSH approved air mask, rubber gloves and apron or other protective clothing when working with TURCO DW 514L L. Tanks used for TURCO DW 514L L should be provided with an adequate exhaust system to protect workers against irritating or corrosive airborne contaminants. Material Safety Data Sheets are available upon request from Henkel Surface Technologies.

TURCO DW 514L L is a concentrated liquid. Some separation of the materials may occur over time. It is recommended that the solution be mixed before addition to the tank.

## EQUIPMENT RECOMMENDATIONS:

Rigid polyethylene, polypropylene or polyvinyl chloride lined tanks are satisfactory. Racks and other equipment should also be constructed of the same materials. Fiberglass, cold rolled steel or stainless steels of the 200 or 400 series are unsatisfactory.

## OPERATING INSTRUCTIONS:

Suggested operating conditions are:

Concentration: 10-16.5gal/100 gallons (100-165ml/L)

Temperature: 70-100°F (20-40°C)

Time: Dependent on smut and oxide to be removed and the alloy involved; usually 2-10 minutes.

Agitation: Air or mechanical agitation can reduce deoxidizing/desmutting time up to 50%.

Typical Cycle:

1. Clean using an appropriate Henkel Surface Technologies cleaner.
2. Cold water rinse.
3. Deoxidize in TURCO DW 514L L.
4. Cold water rinse.
5. Etch using an appropriate Henkel Surface Technologies etchant.
6. Cold water rinse.
7. Desmut in TURCO DW 514L L.
8. Cold water rinse.
9. Anodize, bright dip, apply a conversion coating, resistance weld, zincate prior to electroplate, etc.

The preceding deoxidizing Steps 3 and 4, prior to etching, usually can be eliminated if the aluminum alloys have not been heat treated and if non-silicated Henkel cleaners are used. If chromate coatings streak following this procedure, Steps 3 and 4 above may still be necessary.

Where etching must be avoided as in some resistance welding procedures, the preceding Steps 5, 6, 7 and 8 are eliminated. The quality of the aluminum stock before chemical processing will determine the final uniformity of the finish under these conditions.

Laboratory Procedures:

Method 1: Acid Content:

1. Pipette a 10 mL sample of the TURCO DW 514L L bath into a 250 mL Erlenmeyer flask and add 50 mL D.I. water.
2. Add 5 drops Bromocresol Green Indicator (Indicator 2) and titrate to a yellow to green end point with 1.0N Sodium Hydroxide (Titrating Solution 89).
3. CALCULATIONS:

Factor = 13.8

% TURCO DW 514L L 1.66 x number mL 1.0N Sodium Hydroxide

ml TURCO DW 514L L per liter = 12.45 x number mL 1.0N Sodium Hydroxide

Method 2: Chromate Content:

1. Pipette a 5 mL sample of the TURCO DW 514L L bath into a 250 mL Erlenmeyer flask. Add 50 mL D.I. water, 25 mL of 25% Potassium Iodide solution (Titrating Solution 52) and 10 mL of 50% Sulfuric Acid (Reagent Solution 44).
2. Titrate with 0.1N Sodium Thiosulfate (Titrating Solution 104) to a straw color.
3. Add 3 mL Soluble Starch Indicator (Indicator 10).
4. Continue Thiosulfate titration from deep blue to a pale blue color that lasts for 10 seconds.
5. CALCULATIONS:

Factor: 12.3

% TURCO DW 514L L = 12.3 x number mL 0.1N Sodium Thiosulfate

ml TURCO DW 514L L per liter of solution = 12.3 x number mL 0.1N Sodium Thiosulfate

ADDITIONS:

The amount of TURCO DW 514L L to be added as upkeep is determined by comparing the TURCO DW 514L L concentrations by the chromate titration and the acid concentration. The lower of the two titrations is to be used for determining the amount of upkeep to be added. This is performed to insure optimum results when using TURCO DW 514L L.

STORAGE:

TURCO DW 514L L should be stored in sealed containers located in a cool dry, ventilated area away from alkaline materials. Avoid contact with chlorinated products. Keep containers tightly closed when not in use.

WASTE DISPOSAL:

TURCO DW 514L L may require neutralization to a specified pH range depending on Federal, State and local waste treatment regulations..

PRECAUTION:

Consult the appropriate Material Safety Data Sheets for safety and handling guidelines for the products listed in this bulletin.

TESTING REAGENTS AND APPARATUS

(Order only those items which are not already on hand.)

<u>Code</u>	<u>Quantity</u>	<u>Item</u>
592477	1	Buret assembly, 25 mL automatic
592488	2*	Flask, Erlenmeyer, 250 mL
592475	1	Indicator dropping bottle
592491	2*	Pipette, 5 mL volumetric
592492	2*	Pipette, 10 mL volumetric
592493	2*	Pipette, 25 mL volumetric
592494	1	Pipette filler
592499	1	Pitcher, graduated, plastic
594334	1	Thermometer, floating
592396	1 qt	Indicator 2 (Bromocresol Green)
592401	1 pt	Indicator 10 (Soluble Starch Indicator)
592445	1 gal	Titrating solution 89 (1.0N NaOH)
592416	1 qt	Titrating Solution 104 (0.1N Sodium Thiosulfate)
593846	2.5 L	Reagent Solution 44 (Sulfuric Acid 50%)
592448	1.0 L	Titrating Solution 52 (Potassium Iodide 25% solution)

\*Includes one more than actually required, to allow for possible breakage.

\*\*Not available.

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