

Gardoetch 8350

(Formerly Gardoetch 8300RTU)

Gardoetch 8350 is a liquid alkaline E6 long-life etching solution used to prepare aluminium for anodising. It is free of chlorate, nitrate, nitrite and chromate.

Gardoetch 8350 etch baths show low viscosity, low foam, and excellent draining behaviour, allowing a high aluminium content in operation. Best etching effect is achieved at a temperature of 55 – 65 °C and an aluminium content of more than 130 g/l.

A **Gardoetch 8350** etch bath operating at a high level of dissolved aluminium produces a very matt, fine-grained and uniform surface finish with a low rate of metal removal and consequent lower consumption of the etch solution.

Method of use

Before etching, the work must be degreased in a suitable non-etch, non-silicated cleaner. Rinsing after the cleaner is not usually required.

Etch Tank Materials: mild steel, stainless steel, plastics. Heating is required, and cooling is necessary in baths with a high work load.

Temperature: 45 – 70 °C (preferably 55 – 65 °C)

Treatment time: 8 – 25 minutes, depending on temperature, concentration, quality of material, desired etching and matt effect.

Bath make-up: **Start with a 7 % v/v solution of Gardoetch 8350**

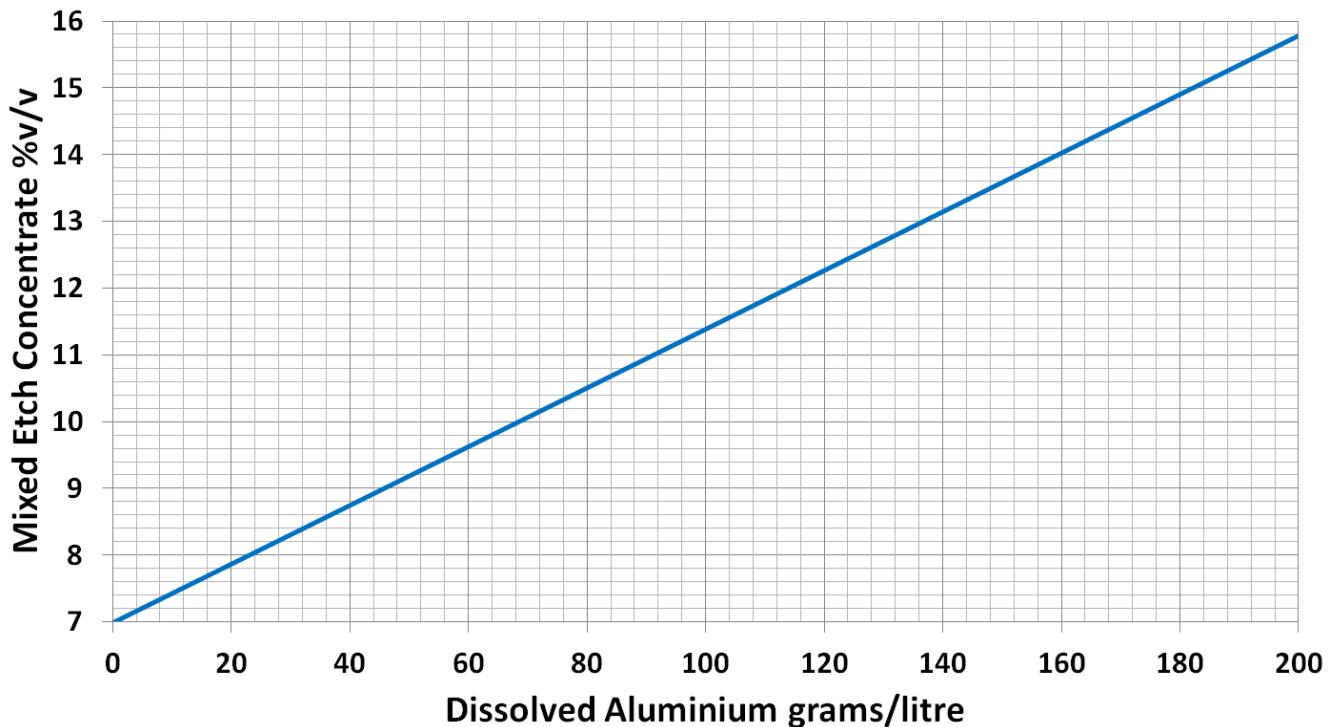
Solution Maintenance: **Gardoetch 8350** is added to the working bath as determined by titration and aluminium concentration.

Etch Bath Operation:

As etching is carried out, dissolved aluminium will build up in the etching tank and the etch appearance improves as aluminium increases. As the aluminium concentration increases, **Gardoetch 8350** must be increased, according to the chart below. This procedure is followed until “drag out” of dissolved aluminium from the etch tank is equal to the rate of dissolution and the bath attains equilibrium. This is indicated when the

aluminium concentration “levels off” and is in excess of 130 g/litre, depending on operating conditions. 140-160 g/litre aluminium is the normal maximum.

Gardoetch 8350 vs Aluminium



Etch Solution Control

Concentrations of **Gardoetch 8350** and Aluminium are determined by the following method:-

Titration Procedures:

- Step 1. Take a 2 ml sample from the etch tank, place in conical flask. The solution is viscous. Take care not to wet the outside of the pipette and wash out the pipette into the flask. Add 100 ml of water plus 15 ml of 20% sodium gluconate solution plus 5ml of 10% barium chloride solution.
- Step 2. To this add 5-6 drops of phenolphthalein indicator. The solution will turn pink . Using 1.0N acid, titrate until the colour disappears.
Number of ml of 1.0N acid used = Titration A.
- Step 3. To the flask add 25 ml of 20% potassium fluoride solution. The solution will again turn pink. Rezero the burette and begin a new titration with 1.0N acid until the pink colour disappears and record the additional number of ml of 1.0N acid used = Titration B.

(After titrating add an extra 10ml of potassium fluoride solution. If pink colour reappears, continue titration.)

Gardoetch 8350 by volume % v/v = 3 x (A-B/3).

Aluminium concentration g/litre = 5 x B.

After determining the **Gardoetch 8350** concentration in the bath, and aluminium concentration, by reference to the graph above, determine the recommended concentration of **Gardoetch 8350** and the quantity required to bring the bath up to the recommended value.

- Note 1: The function of the barium chloride addition is to remove carbonates from the solution. Carbonates are formed by the neutralisation of sodium hydroxide by carbon dioxide in the air. If a significant level of carbonates is present, the free alkalinity Titration A will be too high. Barium chloride removes carbonate as an insoluble precipitate.
- Note 2: The function of the sodium gluconate is to keep dissolved sodium aluminate in solution during the titration. Sodium aluminate may otherwise decompose to aluminium hydroxide and free sodium hydroxide, giving an incorrect titration.

Do not allow the Sodium hydroxide concentration to fall below the recommended level, as this may result in non-recoverable precipitation. Always ensure that bath replenishment is carried out before standstills (e.g. weekends, holidays),

Safety, Transport and Storage Information

Please refer to the Material Safety Data Sheet

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