

Technical Data Sheet • CHEMEON® Etch 2200(A)

Description:

A liquid etch additive with grain refiners and chelators intended to be combined with the customer's sodium hydroxide to produce a good general purpose alkaline etch. The etch additive is used at 0.5 to 1 gallon per 100 lbs of dry caustic. The etch solution is operated at 120 °F to 150°F for 2 to 10 minutes.

Operating Conditions:

Method of Application:	Immersion
Concentration:	0.5 to 1 gal per 100 lbs dry caustic 5 - 10 oz/gal (38 - 75 g/L) dry caustic depending on the dissolved aluminum concentration
Time:	2 to 10 minutes
Temperature:	120 to 150 F
Equipment material:	Steel or stainless steel

Solution Control:

Free Caustic Concentration

New Bath:

1. Pipet 10 mL of a cooled sample taken from the etch tank into a 250 mL beaker.
2. Add ~50 mL of DI water and 4 drops of phenolphthalein indicator.
3. Titrate with 1.0 N HCl until the pink color disappears.
4. Record the mL of 1.0 N HCl titrated.
5. Calculation:

$$\text{Caustic (oz/gal)} = (\text{mL of 1.0 N HCl}) \times 0.5$$

$$\text{Caustic (g/L)} = (\text{mL of 1.0 N HCl}) \times 4.0$$

Used Bath:

1. Filter a sample from the etch bath through #54 filter paper.
2. Pipet a 10 mL sample of the clear filtered bath into a 250 mL beaker.
3. Add ~50 mL of DI water.
4. Titrate with 1.0 N HCl until the first permanent cloudiness or turbidity is detected.

NOTE: With each drop of acid some precipitate will be formed but this will re-dissolve on shaking. When the precipitate does not dissolve the end point has been reached.

5. Record the mL of 1.0 N HCl used to reach the permanent precipitate.
6. Calculation:

$$\text{Caustic (oz/gal)} = (\text{mL of 1.0 N HCl}) \times 0.5$$

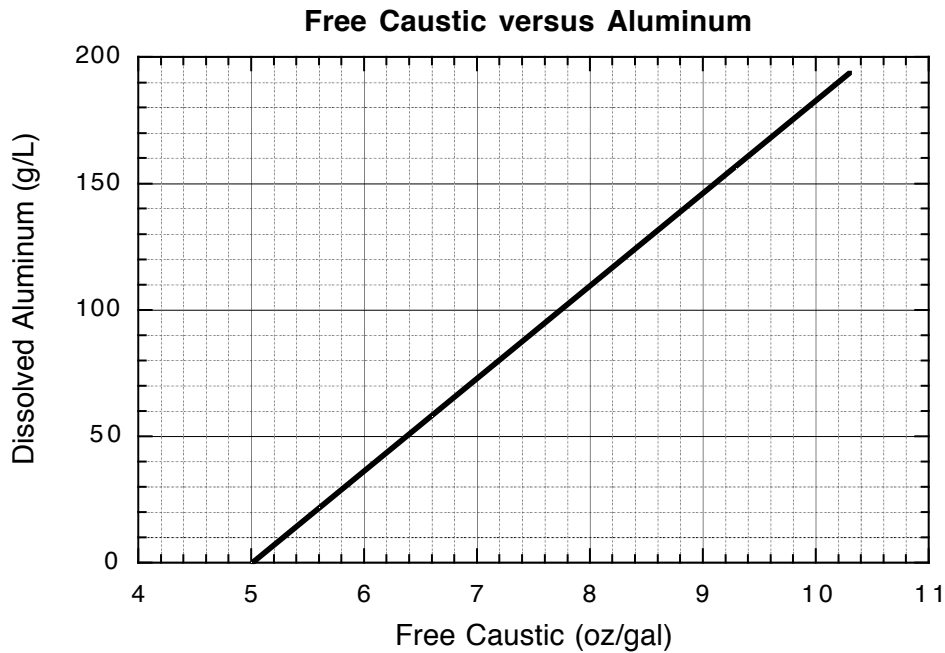
$$\text{Caustic (g/L)} = (\text{mL of 1.0 N HCl}) \times 4.0$$

7. To the above sample add 4 drops of phenolphthalein indicator.
8. Titrate with 1.0 N HCl until the color changes from pink to colorless.
9. Record the mL of 1.0 N HCl titrated.
10. Calculation:

$$\text{Concentration of Aluminum (g/L)} = (\text{mL of 1.0 N HCl}) \times 2.67$$

$$\text{Concentration of Aluminum (oz/gal)} = (\text{mL of 1.0 N HCl}) \times 0.36$$

The free caustic concentration should increase as the concentration of dissolved aluminum increases according to the graph below. The CHEMEON® Etch 2200(A) concentration is dependent on the concentration of free caustic in the etch solution.



Aluminum Concentration (g/L)	Free Caustic Concentration (oz/gal, g/L)		CHEMEON® Etch 2200(A) Concentration (% by volume)
0	5	38	0.16 – 0.32
25	5.7	43	0.18 – 0.34
50	6.4	48	0.20 – 0.40
75	7.1	53	0.22 – 0.44
100	7.7	58	0.24 – 0.48
125	8.4	63	0.26 – 0.52
150	9.1	68	0.28 – 0.56

CHEMEON® Etch 2200(A)

1. Pipet 1 mL of the cooled bath sample and 100 mL of distilled water into a 250 mL Erlenmeyer flask.
2. Add 5 mL of 50% sulfuric acid and a stir bar.
3. Pipet 25 mL of 0.1 N ceric sulfate solution into the flask.
4. Boil gently for 10 minutes without mixing.
5. Remove from heat and let cool.
6. To the cooled solution add 10 drops of ferroin indicator and titrate immediately with 0.1 N ferrous ammonium sulfate (FAS).
7. Record the number of mL of FAS to change color from blue to red as A.
8. Calculation:

$$\text{CHEMEON® Etch 2200(A) (\% by volume)} = [25 - (A \times \text{Factor})] \times 0.35$$

NOTE: Ferrous Ammonium Sulfate solutions are not stable for extended periods of time. Standardization is usually required at least bi-weekly to determine its effective concentration. The Factor F above, is thus incorporated in order that a more accurate determination may be obtained.

Determination of Factor: Using a volumetric pipet, transfer 25 mL of 0.1 N ferrous ammonium sulfate (FAS) to a clean 250 mL flask. Add 20 mL of 50% H₂SO₄ and 50 mL of DI water. Add 3 to 4 drops of ferroin indicator, titrate with 0.1 N ceric sulfate from red to blue. Record the number of mL of 0.1 N ceric sulfate necessary to reach the endpoint.

Calculation:

$$\text{Factor} = (\text{mL of 0.1 N ceric sulfate})/25$$

Physical and Safety Data:

CHEMEON® Etch 2200(A) is a clear liquid.

CHEMEON® Etch 2200(A) is non hazardous. Do not take internally. In case of contact with eyes flush with water for 15 minutes.

Packaging:

55 Gallon drums

Storage:

CHEMEON® Etch 2200(A) should be stored in a cool, dry area away from strong oxidizing acids. Keep drums closed when not in use.



2241 Park Place, Suite B
Minden, NV 89423
(888) 782-8324
www.CHEMEON.com

Waste Disposal:

Etch solutions with CHEMEON® Etch 2200(A) may require neutralization to a specified pH range depending on Federal, State, and local waste treatment regulations.

The information presented regarding this, or any other product manufactured or supplied by CHEMEON, is offered for your consideration, investigation and verification. Information presented is based on our own data and observations, or other sources believed to be reliable. CHEMEON shall have no liability with respect to any recommendations, instructions, or performance. CHEMEON's sole and exclusive warranty is that its products comply with CHEMEON's published chemical or physical specifications. CHEMEON makes no other warranties, either express or implied with respect to its recommendations, instructions, products, apparatus, process or otherwise, and specifically disclaims any implied warranties or merchantability, suitability, fitness for a particular purpose or otherwise. CHEMEON® Surface Technology LLC