

TECHNICAL DATA SHEET

GINBOND E-24

A SATIN-BRIGHT ALKALINE ETCHING COMPOUND FOR ALUMINIUM

Ginbond E-24 is a unique alkaline powdered material that is added to water to produce a solution which etches aluminium to a satin-bright finish. Unlike the more conventional alkaline etchants, Ginbond E-24 produces an ultra-fine etch which on many alloys actually brightens the surface. Furthermore, the etching is achieved at extremely high rates, yet with much less gas evolution than one would normally expect from an alkaline etching process.

Ginbond E-24 is particularly well suited for such work as name-plate manufacturers or other applications where high quality selective etching is required. The low rate of gassing has less tendency to lift stop-off materials; the high rate of etching calls for less exposure time of the resist to the solution; and the satin-bright finish is most attractive as a final finish and is an excellent base for lacquering and/or anodising.

Ginbond E-24 is suitable for etching all aluminium alloys. Naturally, the brightness and speed of etching varies with the composition of the aluminium. On 2024 alloy, for example, the etching rate may be as much as 50% faster than on 1100 aluminium.

The appearance of the final finish will also vary with the composition of aluminium. For some applications like when using for 2024 alloy, ginbond E-24 can serve as a low cost substitute for chemical polishing.

For certain special applications Ginbond E-24 can also be used such as the removal of aluminium residues from die casting moulds and for chemical milling.

OPERATING CONDITIONS

Concentration	-	45-60 g/l
Temperature	-	60-70°C
Time	-	5-120 seconds.

CONCENTRATION

While the normal operating concentration is as indicated above, the total operating range is very wide. It ranges from 8-80 g/l depending on the speed of etching desired and the temperature employed. For certain very special applications it can be used as high as 360 g/l and temperatures well over the normal boiling point of water.

TEMPERATURE

A general operating temperature of 60-70°C is recommended. However, successful etching can be done at as low as room temp. The rate of metal removal is a direct function of temperature and concentration. Thus for special applications, such as the removal of adherent aluminium from steel die casting moulds, temperatures as high as 100°C, can be used.

MAKE-UP

When making the solution, first add cold water to the tank, filling it approximately half full. Then carefully pour in the required amount of Ginbond E-24 with stirring, making certain that large quantities are not added at one time. The dissolution of Ginbond E-24 will raise the solution temperature, stir with an iron paddle. When the total salts are dissolved, dilute the solution to the proper level. When making fresh additions of salts, do not add the salts to a boiling solution. Cool the solution to at least 55°C and pour the salts carefully.

OPERATION

In most cases, work can be immersed directly in Ginbond E-24 solution. However, if the work is contaminated with heavy oil films, there is danger that an etch pattern may develop due to the fact that Ginbond E-24 will react with the clean portions of the aluminium first and the dirty portions later. Oil leaking out of crevices or folds in the metal may also cause irregularity in etching. In such cases, pre-cleaning should be done either by spray cleaner Sprean 67 or Ginbond NS-35 as recommended. Small amounts of oil that is cleaned from the aluminium in Ginbond E-24 solution will rise on the top and should be skimmed off periodically. The rising of oil to the surface is normal.

The etching time will be determined by the degree of etch required, the alloy composition and the operating temperature and concentration. It must be remembered, however, that Ginbond E-24 etches faster than equivalent concentrations of conventional aluminium etchants, or Sodium Hydroxide.

After etching, the work should be rinsed thoroughly with running water. Due to its alkaline nature, an absorbed film of alkali may remain and if the article is to be painted, this alkali should be neutralised with acid.

The extent of smut that forms on the work will depend upon the etching time and the composition of alloy. Pure aluminium leaves very little smut or residue. Alloys high in copper, such as 2024 aluminium, immediately form heavy black deposits of copper. Smut removal is achieved without the formation of fumes. If the alloy contains silicon as well as other metals, Nitric Acid + Gictane 70 mixtures are used.

EQUIPMENT

The tank can be made of steel or stainless steel. It should be provided with exhaust ventilation and facilities for heating. Where large quantities of work are etched in a small container, cooling coils may be necessary to maintain the temperature within the operating range.

The cleaner should not come in contact with containers or handling equipment that contain aluminium, zinc, lead and tin.

CONTROL

The bath should only be maintained by additions of Ginbond E-24 totalling two times the original make-up. Thereafter, once the etching action has slowed to an impractical degree, the solution should be discarded.

CAUTION

Ginbond E-24 is sold as an alkaline granular mixture. It should be handled in the same manner as caustic soda (Sodium Hydroxide), or other strong alkalis. In addition, Ginbond E-24 salts contain strong oxidising agents. Solutions containing these materials or the solid salts should not be allowed to come in contact with organic matter such as oil, wood, paper and sawdust and chemical reducing agents such as sulfur, phosphorous or sulphides. Use clean steel or stainless steel shovels, containers, scoops and paddles. Keep salts away from fire, heat, sparks, or flame.

Contact with the skin and eyes should be avoided by the use of proper safety clothing. Pouring of large quantities of the cleaner in hot solutions may cause splashing due to rapid dissolving of alkali causing generation of heat.

In case of contact of the salts or solution with skin or eyes, flush with water and wash with vinegar; for eyes, flush with water for at least 15 minutes and obtain medical attention.

*Issued on 11.1.1995
Supersedes all earlier*