TECHNICAL DATA SHEET

Zincate/ Aluminium Plating process

The zincate/ Aluminium process is a treatment for aluminium and its alloys which enables direct dull or bright nickel deposits to be applied without intermediate brass or copper plating. The process is simple to operate and has an additional advantage over earlier processes in that the nickel plated articles do not need to be stoves prior to chromium plating.
The zincate process produce a film on aluminium or aluminium alloy, which may be plated directly with nickel, copper, brass or silver, chromium, tin and zinc.
Nickel may be applied to a wide range of alloys including those containing up to 5% copper, 9% manganese or 13% silicon. Model

Process Flow of Aluminium Plating:

1. Degreasing (30-50 gm/ltr)
   (At 40-50 ºC)
   (40-50 seconds)
2. Cathodic Cleaner (30-50 gm/ltr)
   (At 40-50ºC)
   (4 to 6 volts)
   (1 to 3 minutes)
3. Rinse in cold running water
4. Nitric Acid Dip 50% (30 to 75 seconds)
5. Water rinse
6. Zincate concentrated dip (at 15 to 30 °C) 30 to 45 seconds (Air/ Mechanical agitation are required)
7. Water rinse
8. Nitric Acid Dip 50% (10 to 30 seconds)
9. Water rinse
10. Zincate Dip (10 to 15 seconds)
11. Water rinse
12. Water rinse
13. Electroplate in dull or bright nickel plating solution

On certain magnesium alloys particularly those having high silicon and are copper content a double zincate dip is required as this gives even better adhesion of the nickel plating

If necessary the same solution can be used for stage 4 and 8, also 6 and 10.

Replenishment of Aluminium Plating Bath:-

If the zincate dip is being maintained as recommended and any deterioration is notice, in the excellent adhesion normally given, the cathodic cleaner should be discarded and fresh solution made up.
This solution is ready to use and it is only necessary to pour the liquid into the tank, which should be of steel, rubber or plastic. The solution is used at room temperature. It is an immersion process and no electric current is needed.
The zincate dip has a long life. It may be used to exhaustion and then discarded and fresh solution made up, alternatively, the strength of the solution may be maintained by the addition of special powder mixture. The solution can be used without maintenance addition it will be possible to treat $2m^2$ of surface per liter using a 2 minute immersion time before it is exhausted. But in practice area up to 15m2 per ltr are usually achieved depending the time of aluminum process and the nature and concentration of impurities dragged into the solution.

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Some alloys are the best treated in acids other than straight 50 % nitric acid. The table below is a guide to the selection of the most suitable acid etch solutions.

Silicon	1% hydrofluoric acid
Copper	30 % nitric acid plus 3 % sodium bifluoride
Tin	33 % sulphuric acid plus 5 % chromic acid

Cautions:-

- Must wear PP rubber gloves during chemical mixing.
- Also avoid eye, and skin contact.
- Care should be taken while adding chemical.

Equipment's:-

- MS tanks recommended with FRP or PVC lined. Suitable exhaust system with scrubbing facilities should be provided.

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