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**A2LA Accredited ISO/IEC 17025:2005 Certificate # 2558.01**

## 327 NICKEL STRIP

**327 NICKEL STRIP** is non-cyanide, alkaline stripper system that dissolves electroless and electrolytic nickel deposits from steel, copper and copper alloys. A separate inhibitor may be added to allow the removal of nickel from aluminum and zinc die castings.

**327 NICKEL STRIP** is supplied as two components: **327-A**, a liquid component and **327-B**, a powdered component. Both are combined with water to make up the operating solution.

### ADVANTAGES

- Minimal to no iron or copper substrate attack
- High stripping speed
- Cyanide free process
- Long life - Up to 4 oz/gal Nickel Metal

**327 NICKEL STRIP** is **NOT** recommended for stripping nickel coatings from substrates containing nickel, cobalt, cadmium, chromium, or molybdenum.

### BATH MAKEUP (100 gallons)

|               |               |            |
|---------------|---------------|------------|
| <b>327-A:</b> | 33% by volume | 33 gallons |
| <b>327-B:</b> | 8 oz/gal      | 50 pounds  |
| DI water:     | Balance       | Balance    |

1. To the operating tank, add water to ½ of the final operating level and heat to 100°F.
2. Add required amount of **327-B** (powder). Dissolve.
3. Add required amount of **327-A** (liquid).
4. Fill to operating level with DI water and heat to operating range of 170-190°F.

| BATH PARAMETER | RANGE     | OPTIMUM             |
|----------------|-----------|---------------------|
| Temperature:   | 170-190°F | 180°F               |
| pH:            | 12.0-13.0 | 12.5                |
| Loading:       |           | As much as possible |
| Dwell Time:    |           | As required         |

**BATH PERFORMANCE:** The stripping rate of **327** will vary, depending on the age of the electroless and electrolytic nickel deposit, its phosphorus content, and/or if the deposit has been heat treated the concentration of dissolved nickel in the stripper and the operating temperature.

A fresh solution will strip a 1 mil deposit of 0-9% phosphorus in 1 hour at 180°F. The life of the **327** operation solution is dependent upon the manner in which it is operated. Running at high temperatures without work throughput as well as operating the solution without a cover or fume balls will dramatically shorten its life. Mechanical solution movement to avoid hot spots in the tank is acceptable but NO air agitation.

Solutions of **327** operated according to the recommended procedures will dissolve between 3-4 oz/gal of nickel metal.

**SOLUTION CONTROL:** The **327** solutions can be maintained to provide maximum efficiency and economy. For every ounce/gallon of nickel metal dissolved in the solution, add 4 oz/gal (1/2 of a full charge) of **327-B** powder. When the stripping solution has been replenished with 16 oz/gal (2 full makeup charges) of **327-B** powder and the stripping rate slows, the solution is ready to be discarded.

The **327-A** component is lost through evaporation and is only added when small crystals begin attaching to the parts in the stripping solution. This is an indication that the solution is either oversaturated with nickel or is lacking suitable complexors. At this point add 5% increments of **327-A** liquid every 24 hours until the crystals redissolve.

## **ANALYTICAL PROCEDURE FOR 327 NICKEL STRIP SOLUTIONS**

There are several methods of control for this product. The 3 key components and how they are supplied are listed below:

1. The oxidizer, **327-B** is a yellow powder that promotes the stripping rate. At this point there is not a simple wet analysis to determine concentration. One method of control is to add 4 oz/gal of the B per ounce of nickel stripped. This would require a nickel metal analysis which is possible only by spectroscopy. A common method is to add 4 oz/gal of the powder when the strip rate decreases to an unacceptable level. **327** stripping solutions will hold between 2-4 oz/gal of nickel metal. Beyond this point it is not practical to maintain the strip rate by additions of the oxidizer.
2. The complexor, **327-A** is a clear, yellow liquid that assists in the dissolution of nickel metal and keeps the working solution relatively free of particulate matter and heavy sludge. This component is usually only replaced due to heavy drag out and/or evaporation. A very lengthy analysis involving the use of multiple test tubes and color evaluation can be utilized to determine the complexor concentration but often does very little in improving overall stripper performance.

3. The pH adjuster, **327-A** also contains Sodium Hydroxide to maintain the pH in the range of 12.0-13.0. If the pH falls below this range due to drag-in of acidic process solutions there may be some attack of certain base materials.

## **OPERATING GUIDELINES**

1. The solution should only be heated when nickel metal is to be stripped. Constantly heating the solution without stripping will shorten the solution life.
2. Air agitation will shorten the solution life. Mild mechanical agitation only!
3. Keep the solution covered to minimize **327-A** liquid evaporation loss.
4. Load as much surface area as possible when using solution.
5. If possible, activate nickel deposit before stripping. Suggestions include reverse electroclean, rinse, acid pickle, rinse and then nickel strip. Passive nickel is more difficult to strip than active nickel.
6. If the nickel metal is stripping slowly, sometimes reactivating the nickel deposit is helpful by repeating aforementioned activation procedure.
7. **327-A** liquid's function is to keep the nickel dissolved in the stripping solution. Excess **327-A** liquid will reduce the stripping rate. Low concentrations of **327-A** liquid will allow the nickel to salt out on the work as a purple crystal and prevent stripping; the recommended remedy is to add 5% by volume **327-A** every 24 hours until the purple crystal is dissolved. When large additions are made it is recommended to re-activate the parts to be stripped before resuming stripping operation.
8. **327-B** powder's function is to promote stripping rates. Excess **327-B** powder is not necessary. Low concentrations of **327-B** powder will greatly reduce stripping rates. When the stripping rate slows, 4 oz/gal (1/2 of a full charge) of **327-B** powder should be added, the nickel deposit should be reactivated and stripping resumed.
9. After 16 oz/gal (2 full makeup charges) of **327-B** powder has been replenished to the stripping solution and the stripping rate slows; the solution is ready to be discarded. At this point the strip solution should contain between 3-4 oz/gal of dissolved nickel.
10. The pH must be kept between 12.0-13.0. A pH below 12.0 will attack the base metal. The pH can be adjusted upwards by incrementally adding 50% sodium hydroxide.

**SAFETY:** Always wear personal protective gear when handling or working around this product, read MSDS prior to using this or any chemical product. Disposal of spent solutions should be in accordance with all applicable regulations.

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