

# ES Laboratory, LLC

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## TECHNICAL DATA SHEET

### 1. Product Identification

|                |                                           |
|----------------|-------------------------------------------|
| Product name   | S1093 Titanium Alloy Etchant              |
| Item number(s) | 1021                                      |
| Product type   | Pre-penetrant etchant for titanium alloys |

### 2. Description and Application

S1093 is a chemical listed in the CFM specifications for etching titanium alloys as part of the pre-penetrant etch process in non-destructive testing (NDT). It prepares titanium parts for subsequent fluorescent penetrant inspection (FPI).

The product removes smeared metal and surface contamination, so that surface-breaking discontinuities are open and detectable during penetrant inspection.

### 3. Composition

|                                   |                 |
|-----------------------------------|-----------------|
| Nitric acid (CAS 7697-37-2)       | 40 – 44 wt%     |
| Hydrofluoric acid (CAS 7664-39-3) | 2 – 4 wt%       |
| Balance                           | Deionized water |

*Concentration ranges are shown to protect formulation confidentiality and to allow for batch variation. Only hazardous components are listed.*

### 4. Physical Properties

|                     |                                                   |
|---------------------|---------------------------------------------------|
| Appearance          | Clear liquid                                      |
| Solubility in water | Miscible                                          |
| Chemical stability  | Stable under normal conditions of use and storage |
| Odor                | Not available                                     |

### 5. Directions for Use

- Use only in a well-ventilated area with appropriate personal protective equipment.
- Transfer and handle in plastic containers only. Hydrofluoric acid attacks glassware.
- Etch to the requirement of the governing specification or process sheet, then rinse thoroughly with water before penetrant inspection.
- Keep the container tightly closed when not in use.

### 6. Shelf Life, Storage and Packaging

|               |                                                                                                    |
|---------------|----------------------------------------------------------------------------------------------------|
| Shelf life    | 1 month from date of manufacture                                                                   |
| Made to order | Produced upon request to maximize freshness. Allow 1 business day to fulfill the order.            |
| Storage       | Store closed, upright, in a cool, well-ventilated area away from incompatible materials (see SDS). |
| Packaging     | Nalgene® leakproof bottle, HDPE                                                                    |

|                      |                                                                                                                  |
|----------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Documentation</b> | A Certificate of Conformance stating lot number, manufacture date and expiration date is available upon request. |
|----------------------|------------------------------------------------------------------------------------------------------------------|

## 7. Transport Classification (for US & Canada only)

|                             |                                                                              |
|-----------------------------|------------------------------------------------------------------------------|
| <b>D.O.T. shipping name</b> | Corrosive liquid, acidic, inorganic, n.o.s. (Nitric Acid, Hydrofluoric Acid) |
| <b>Hazard class</b>         | 8                                                                            |
| <b>UN number</b>            | UN3264                                                                       |
| <b>Packing group</b>        | II                                                                           |
| <b>Emergency Contact</b>    | CHEMTREC® 1-800-424-9300 (US & Canada Only)                                  |

## 8. Suggested Tariff Classification

|                                |                                                   |
|--------------------------------|---------------------------------------------------|
| <b>Suggested HS / HTS code</b> | 3822.90.00.00 — Diagnostic or laboratory reagents |
|--------------------------------|---------------------------------------------------|

*This code is offered as a suggestion only, based on the classification ES Laboratory uses for shipments to Canada. Tariff classification is the responsibility of the importer of record. Customers exporting outside North America should confirm the correct code with their customs broker for the destination country.*

## 9. Safety

This product contains hydrofluoric acid, a contact poison. Read the Safety Data Sheet (SDS) before use. First-aid procedures for hydrofluoric acid exposure should be pre-planned, and calcium gluconate gel should be available on site. The Safety Data Sheet is available at [www.eslaboratory.com/sds.html](http://www.eslaboratory.com/sds.html).

*The information above is believed to be accurate and represents the best information currently available to us. ES Laboratory, LLC makes no warranty, express or implied, as to its accuracy, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.*

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