Material Safety Data Sheet

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Section I

Identity (As used on Label and List)
ALUMINUM ETCHANT TYPE A
AlSi ETCHANT
PAN ETCH 10
PAN ETCH 11
Emergency # Chemtrec 1-800-424-9300
Revised: 4-04

Section II - Hazardous Ingredients / Identity Information

| Hazardous Components (Specific Chemical Identity; Common Name(s)) | OSHA PEL | ACGIH TLV Other Limits Recommended | % (option:
|---------------------------------------------------------------|---------|-----------------------------------|----------------
| PHOSPHORIC ACID H₃PO₄ CAS # 7664-38-2                         |         | 1.0 mg/M³                         | 40-80%
| NITRIC ACID HNO₃ CAS# 7697-37-2 ACGIH TLV: 2ppm (TWA)        |         | 2ppm                             | 1-5%
| ACETIC ACID C₂H₄O₂ CAS # 64-19-7                             |         | 4ppm (STEL)                      | 10 ppm
| Balance Distilled Water - Non Hazardous                      |         |                                  | 3-20%
| ONE OF THE INGREDIENTS IN THIS PRODUCTS ARE SUSPECTED CARCINOGENS.

Section III - Physical / Chemical Characteristics

| Boiling Point | Water at 20°C | Specific Gravity (H₂O = 1) | 1.45
|---------------|---------------|---------------------------|---
| Vapor Pressure (mm Hg.) | N/A | Melting Point | N/A
| Vapor Density (AIR = 1) | N/A | Evaporation Rate (Butyl Acetate = 1) | N/A
| Solubility in Water | Miscible + | Appearance and Odor | CLEAR, COLORLESS, SYRUPY LIQUID, ODORLESS

Section IV - Fire and Explosion Hazard Data

<table>
<thead>
<tr>
<th>Flash Point (Method Used)</th>
<th>Flammable Limits</th>
<th>LEL</th>
<th>UEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>NON-FLAMMABLE</td>
<td>NOT APPLICABLE</td>
<td>-----</td>
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</tbody>
</table>

Extinguishing Media: WATER SPRAY, DRY CHEMICAL, OR FOAM. CONTACT WITH COMMON METALS PRODUCES HYDROGEN (H₂) WHICH MAY FORM FLAMMABLE MIXTURES WITH AIR UNDER CONDITIONS OF FIRE, TOXIC VAPORS MAY FORM, CORROSIVE LIQUID.
Special Fire Fighting Procedures: WEAR SELF-CONTAINED BREATHING APPARATUS DURING THE FIRE AND PROTECT SKIN FROM VAPORS OR MIST.
### Section V - Reactivity Data

<table>
<thead>
<tr>
<th>Stability</th>
<th>Unstable</th>
<th>□</th>
<th>Conditions to Avoid</th>
<th>AVOID CONTACT WITH COMMON METALS, STRONG BASES, OXIDIZERS AND COMBUSTIBLE ORGANICS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stable</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Incompatibility (Materials to Avoid)**
- STRONG BASES, OXIDIZERS, MOST METALS AND COMBUSTIBLE ORGANICS.

**Hazardous Decomposition or Byproducts**
- VARIOUS OXIDES OF PHOSPHORUS, NITROGEN & SOME CARBON DIOXIDE (CO₂)

**Hazardous Polymerization**
- May □ Conditions to Avoid
- Occur X NOT APPLICABLE

### Section VI - Health Hazard Data

<table>
<thead>
<tr>
<th>Route(s) of Entry:</th>
<th>Inhalation</th>
<th>Skin?</th>
<th>Ingestion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

**Health Hazards (Acute and Chronic)**
- SOLUTION IS MODERATELY IRRITATING TO THE EYES, SKIN, AND MUCOUS MEMBRANES. CONCENTRATED SOLUTIONS MODERATELY TOXIC BY INGESTION. DIRECT CONTACT CAN CAUSE SEVERE BURNS. PERSONS WITH PRE-EXISTING SKIN DISORDERS OR DISEASE MAY BE MORE SUSCEPTIBLE TO THE EFFECTS OF THIS SUBSTANCE.

**Carcinogenicity**
- NTP? N/A
- IARC Monographs? N/A
- OSHA Regulated? N/A

**Signs and Symptoms of Exposure**

**EYE CONTACT:** FLOOD WITH EXCESS OF WATER FOR AT LEAST 15 MINUTES. CONTACT A PHYSICIAN.

**SKIN CONTACT:** FLOOD WITH WATER & COVER WITH MOIST BAKING SODA. CONTACT A PHYSICIAN.

**INHALATION:** REMOVAL TO CLEAN AIR IS USUALLY SUFFICIENT. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. CONTACT A PHYSICIAN.

**INGESTION:** DO NOT INDUCE VOMITING! GIVE WATER WITH MILK OF MAGNESIA OR BEATEN EGGS

**Medical Conditions**
- SEE SIGNS & SYMPTOMS OF EXPOSURE

**Generally Aggravated by Exposure**
- N/A

**First Aid:**
- **EYE CONTACT:** FLOOD WITH EXCESS OF WATER FOR AT LEAST 15 MINUTES. CONTACT A PHYSICIAN
- **SKIN CONTACT:** FLOOD WITH WATER & COVER WITH MOIST BAKING SODA. CONTACT A PHYSICIAN
- **INHALATION:** REMOVAL TO CLEAN AIR IS USUALLY SUFFICIENT. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. CONTACT A PHYSICIAN.
- **INGESTION:** DO NOT INDUCE VOMITING! GIVE WATER WITH MILK OF MAGNESIA OR BEATEN EGGS

### Section VII - Precautions for Safe Handling and Use

**Steps to Be Taken in Case Material is Released or Spilled**
- COVER CONTAMINATED AREA WITH SODA ASH, SLAKED LIME MIXTURE (50:50) MIX AND ADD WATER TO FORM A SLURRY. SCOOP UP SLURRY AND SAVE FOR DISPOSAL.

**Waste Disposal Method**
- ADD ABOVE SLURRY OF MIXTURE (AS IS) SLOWLY TO A LARGE VOLUME OF SODA ASH SOLUTION WITH AGITATION. NEUTRALIZE AND FLUSH TO SEWER WITH RUNNING WATER IN A CONCENTRATION PERMITTED BY LOCAL, STATE AND FEDERAL REGULATIONS.

**Precautions to be taken in handling and storing:**
- PROTECT CONTAINERS AGAINST PHYSICAL DAMAGE. STOR
CÖOL, DRY, WELL VENTILATED LOCATION, AWAY FROM AREA WHERE FIRE HAZARDS MAY BE ACUTE. KEEP AWAY FROM OXIDIZERS AND BASES. PROTECT UNITS FROM DIRECT SUNLIGHT. LOOSEN CONTAINERS CAUTIOUSLY.

Other Precautions VENTILATION: A SYSTEM OF LOCAL EXHAUST IS RECOMMENDED TO KEEP EMPLOYEE EXPOSURES BELOW THE AIRBORNE EXPOSURE LIMITS. LOCAL EXHAUST VENTILATION IS GENERALLY PREFERRED BECAUSE IT CAN CONTROL THE EMISSIONS OF THE DUST OR VAPOR AT ITS SOURCE EVENTING DISPERSION INTO THE GENERAL WORK AREA. REFER TO ACGIH DOCUMENT, "INDUSTRIAL VENTILATION, A MANUAL OF RECOMMENDED PRACTICES" FOR DETAILS.

Section VIII - Control Measures
Respiratory Protection (Specify Type) ORGANIC VAPORS/ACID GASES (NIOSH APPROVED). HNO₃ IS AN OXIDIZER AND SHOULD NOT COME IN CONTACT WITH CARTRIDGES AND CANISTERS THAT CONTAIN OXIDIZABLE MATERIALS, SUCH AS ACTIVATED CHARCOAL.
Ventilation                Local Exhaust  X Special
Mechanical (General)       Other

Protective Gloves          VITON WITH COTTON LINING
Eye Protection             FACE SHIELD OR SPLASH-PROOF GOGGLES. DO NOT WEAR CONTACT LENSES WHEN WORKING WITH THIS PRODUCT.

Other Protective Clothing or Equipment      LAB COAT, COVERALLS, OR APRON.
Work/Hygienic Practices        HANDLE WITH CARE. WASH AFTER HANDLING.

DOT CLASS: CORROSIVE LIQUID ACIDIC INORGANIC NOS
UN3264