SECTION 1: PRODUCT AND COMPANY IDENTIFICATION
Product Name: Dynamic Descaler
Product Code(s): Dynamic Descaler

Manufactured by:
Precision Dynamics, Inc.
P.O. Box 1595, Burleson Texas 76097 U.S.A.
Telephone 817-447-9898
Fax 817-447-1126
Toll free 1-800-388-5818
For chemical emergency, call Infotrac at 1-800-535-5053 (outside U.S. and Canada, call collect 1-352-323-3500)

Relevant identified uses of the substance or mixture and uses advised against
General Use: Descaler for hard scale/mineral salt buildup in condensers and boilers
Uses advised against: No uses advised against

SECTION 2: HAZARDS IDENTIFICATION
Classification of substance or mixture
Product definition: Mixture
Classification (REGULATION (EC) No 1272/2008)
Skin irritant – Category 2 [H315]
Eye irritant – Category 2A [H319]

Label Elements
Labeling (REGULATION (EC) No 1272/2008)

Hazard Symbol(s):

Signal Word: Warning

Hazard Statement(s):
H315 - Causes skin irritation
H319 - Causes serious eye irritation

Precautionary Statements:
[Prevention]
P264 - Wash hands or other skin areas contacting this product thoroughly after handling.
P280 - Wear protective gloves and eye protection.
P261 - Avoid breathing mist and spray.

[Response]
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water.
P321 - Specific treatment: Seek medical attention; refer to Section 4 of this SDS.
P332 + P313 - If skin irritation occurs: Get medical attention.
P362 - Take off contaminated clothing and wash before reuse.
P337 + P313 - If eye irritation persists: Get medical attention.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS
Substances
Not applicable

Mixtures
Chemical characterization (preparation)

<table>
<thead>
<tr>
<th>% by Weight</th>
<th>Ingredient</th>
<th>CAS Number</th>
<th>EC Number</th>
<th>Index Number</th>
<th>EC Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-10</td>
<td>HCL</td>
<td>7647-01-0</td>
<td>1272/2008</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There are no additional ingredients present, which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to the health or the environment and hence require reporting in this section.

SECTION 4: FIRST AID MEASURES

Description of first aid measures
Eye contact: Flush eyes immediately with large quantities of water for at least 15 minutes holding eyelids apart to ensure flushing of the entire surface. Washing eyes within one (1) minute is necessary to achieve maximum effectiveness. If irritation persists, get medical attention.
Skin contact: Wash with plenty of water for 15 minutes. Remove contaminated clothing and wash before reuse. Seek medical attention if symptoms are present.
Ingestion: Never give anything by mouth to an unconscious person. If swallowed, do not induce vomiting. Give large quantities of water or milk of magnesia; if available, several glasses of milk.
Inhalation: Remove to fresh air. If person is not breathing, administer mouth-to-mouth resuscitation. Seek medical attention if loss of consciousness occurs or breathing stops. Seek medical attention if irritation persists.

Most important symptoms and effects, both acute and delayed
Eyes: Causes serious eye irritation and possible burns. Symptoms may include redness, swelling, pain, tearing and blurred vision. May cause chemical conjunctivitis. May cause eye damage. The degree of injury depends on the concentration and duration of contact.
**SECTION 5: FIRE FIGHTING MEASURES**

<table>
<thead>
<tr>
<th>Flash Point</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extinguishing Media:</td>
<td>Water spray, foam, CO₂</td>
</tr>
<tr>
<td>Special Fire Fighting Procedures:</td>
<td>Use NIOSH/MSHA approved self-contained breathing apparatus in areas where this material is involved in a fire. This product is nonflammable.</td>
</tr>
</tbody>
</table>

**Unusual Fire Fighting and Explosion Hazards:** Protective clothing for skin and eye protection should be worn. Not considered to be an explosion hazard. If possible, fire fighters should contain water contaminated by this material from being discharged to any waterway, sewer or drain to prevent environmental contamination.

**SECTION 6: ACCIDENTAL RELEASE MEASURES**

**Steps to be taken if material is spilled or released:** This material is biodegradable. Use appropriate protection—rubber gloves, goggles or safety glasses. Contain spill. Neutralize with copious amounts of water. Slowly add a soda ash mixture to the residue. This mixture should be 10 pounds of soda ash to 5 gallons of water. This should bring the spill residue within normal pH range of 6-8.

**SECTION 7: HANDLING AND STORAGE**

**Precautions for safe handling:** Wear all appropriate personal protective equipment specified in Section 8. Do not get in eyes or on skin or clothing. If normal use of material presents a respiratory hazard, use only adequate ventilation or wear appropriate respiratory protection.

**Conditions for safe storage, including any incompatibilities:**

- The product has a wide temperature storage range (-15°C to 82°C). Make sure containers are sealed in storage when not used. Shelf life is 4 (four) years.
- Protect container against physical damage. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Containers of this material may be hazardous when empty as they contain product residues. Use appropriate containment to avoid environmental contamination.
- Ventilate closed areas. Do not take internally. Keep out of reach of children.
- Prolonged and repeated skin contact can result in allergic contact dermatitis. Treat symptomatically and supportively.

**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Control parameters**

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Ingredient</th>
<th>OSHA PEL - TWA</th>
<th>ACGIH TLV</th>
<th>NIOSH - TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>7647-01-0</td>
<td>HCL</td>
<td>5ppm</td>
<td>2ppm</td>
<td></td>
</tr>
</tbody>
</table>

**Exposure controls**

- **Engineering measures:** Technical measures and appropriate working operations should be given priority over the use of personal protective equipment. Use adequate ventilation. Local exhaust is preferable.
- **Individual protection measures:** Wear protective clothing to prevent repeated or prolonged contact with product. Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the representative supplier.
- **Hygiene measures:** Facilities storing or using this material should be equipped with an eyewash station and safety shower. Change contaminated clothing. Preventive skin protection is recommended. Wash hands thoroughly after use, before eating, drinking or using the lavatory.
- **Eye/face protection:** Wear safety glasses with non-perforated side shields. Refer to 29 CFR 1910.133, ANSI Z87.4 or Standard EN166.
- **Hand protection:** Wear gloves recommended by glove supplier for protection against materials in Section 3. Gloves should be impermeable to chemicals and oil. Breakthrough time of gloves must be greater than the intended use period.
- **Other protective equipment:** Protective clothing. Protective boots, if the situation requires.
- **Respiratory protection:** None needed with normal handling. Wear an approved filter type dust respirator if needed when handling this product. Where risk assessment shows air purifying respirators are appropriate use a full-faced respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respiratory and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Follow OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiling Point</td>
<td>108°C</td>
</tr>
<tr>
<td>Vapor Pressure (mm. Hg):</td>
<td>20 Torr</td>
</tr>
<tr>
<td>Vapor Density (air=1):</td>
<td>N/A</td>
</tr>
<tr>
<td>Solubility in Water:</td>
<td>Complete</td>
</tr>
<tr>
<td>Appearance and Odor:</td>
<td>Amber, Citrus Odor</td>
</tr>
<tr>
<td>pH:</td>
<td>&lt; 2</td>
</tr>
</tbody>
</table>

**SECTION 10: STABILITY AND REACTIVITY**

- **Conditions contributing to instability:** Under normal conditions this product is stable.
- **Incompatibility:** Do not mix with alkaline products.
- **Hazards Decomposition Products:** None.
- **Conditions Contributing to Hazardous Polymerization:** None.
SECTION 11: TOXICOLOGICAL INFORMATION
This product has been approved by the U.S. Navy, British Royal Navy, Ford Motor Company, Dow Chemical and General Motors Corp., following complete toxicological and environmental health evaluations. This product does not contain any material shown to be carcinogen by the National Toxicology Program (NTP) or The International Agency for Research in Cancer (IRAC).

Information on toxicological effects
Acute Oral Toxicity
Expected to have low acute oral toxicity

Acute inhalation toxicity
No data available

Acute dermal toxicity
No data available

Skin irritation/corrosion
Causes skin irritation

Eye irritation/corrosion
Causes serious eye irritation and possible burns

Sensitization
May cause allergic skin reaction in susceptible individuals.

Genotoxicity in vitro/in vivo
No data available

Mutagenicity
No data available

Specific organ toxicity - single exposure
No data available

Specific organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Chronic Effects:
None of the chemicals in this product are listed as a carcinogen by IARC, ACGIH, NTP or OSHA. No data is available regarding the mutagenicity or teratogenicity of this product, nor is there any available data that indicates it causes adverse developmental or fertility effects. Handle in accordance with good industrial hygiene and safety practice.

SECTION 12: ECOLOGICAL INFORMATION
Toxicity
Large discharges of this product to the environment may decrease the pH of aquatic systems to a value <2, which may be fatal to aquatic life and soil micro-organisms.

Persistence and degradability
The organic components in this product are readily biodegradable. The inorganic substances are not biodegradable. Methods for the determination of biodegradability are not applicable to inorganic substances.

Bioaccumulation potential
Product is not expected to bioaccumulate.

Mobility in soil
Expected to have high mobility in soil.

Results of PBT and vPvB assessment
PBT/vPvB assessment not available.

Other adverse effects
Additional ecological information
Do not allow material to enter into surface waters, wastewater or soil. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13: DISPOSAL CONSIDERATIONS
Waste Disposal Method: This product is diluted and expended during use. It is recommended that it be pumped back into the delivery container and disposed of with non-hazardous by-products and production residues. Residues can also be disposed of through normal sump and sewage treatment systems.

Precautions to be Taken in Handling and Storage: Good industrial hygiene practices should be adhered to when storing and handling this product. Avoid contact with undiluted product. This material when used or completely spent is non-hazardous. It neutralizes itself in use.

SECTION 14: TRANSPORT INFORMATION
Note: Transportation information provided is for reference only. UN Number: Dot- Not Regulated, IMDG/IATA-Not applicable. Un proper name shipping name: DOT/IATA-Not applicable, IMDG-Not regulated. Transport Hazard class, DOT/IMDG/IATA-Not applicable. Packing group, DOT/IMDG/IATA-Not applicable, Marine pollutant, no. Special precautions, wear rubber gloves and safety glasses.

SECTION 15: REGULATORY INFORMATION
This product complies with current Workplace Hazardous Information Systems. This product is NSF Registered, category A3. NSF Registered for use in beverage, pharmaceutical, bottling, poultry, and other food processing operations, but not intended for direct food contact.

Safety, health and environmental regulations/legislation specific for substance or mixture

U. S. Federal Regulations
OSHA Hazard Communication Standard: This material is classified as hazardous in accordance with OSHA 29 CFR 1910.1200.


TSCA Status: All components of this product are listed on the Toxic Substance Control Act (TSCA) Inventory. This product is subject to
This product is distributed by Plastic Process Equipment, INC. PPE Part # DYN05 Precision Dynamics Inc. product Dynamic Descaler
8303 Corporate Park Drive, Macedonia, OH 44056 Ph# 800-362-0706 WWW.PPE.COM

TSCA 12(b) Export Notification.

Superfund Amendments and Reauthorization Act (SARA)
SARA 313 Information: None of the chemicals in this product exceed the threshold (de minimis) reporting levels established by Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986.
SARA Section 311/312 Hazard Categories: Acute Health Hazard
SARA 302/304 Extremely Hazardous Substance: None of the components of this product are subject to reporting requirements of these sections of Title III of SARA.
SARA 302/304 Emergency Planning & Notification: None of the chemicals in this product are subject to reporting requirements of these sections of Title III of SARA.

Comprehensive Response Compensation and Liability Act (CERCLA): None of the components of this product exceed the threshold (de minimis) reporting levels for hazardous wastes established by CERCLA.
Clean Air Act (CCA):
This product does not contain any substances that are listed as Hazardous Air Pollutants (HAPs) designated in CAA Section 112 (b).
This product does not contain any Class 1 Ozone depleters.
This product does not contain any Class 2 Ozone depleters.
Clean Water Act (CWA):
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

U.S. State Regulations
California Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986
This product contains no chemical(s) known to the State of California to cause cancer or other reproductive harm.
Canadian Controlled Products Regulations (CPR): This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations, and the SDS contains all the information required by the Controlled Products Regulations.

Canadian Ingredient Disclosure List (IDL): Hydrochloric Acid (7647-01-0)

Canadian National Pollutant Release Inventory (NPRI): None of the substances in this product are listed on the NPRI. European Economic Community

Risk Phrases: R36/38 - Irritating to eyes and skin.
Safety Phrases: S2 - Keep out of the reach of children.
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37/39 - Wear suitable gloves and eye/face protection.

WGK, Germany (Water danger/protection): 1

Global Chemical Inventory Lists

<table>
<thead>
<tr>
<th>Country</th>
<th>Inventory Name</th>
<th>Inventory Listing*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>Domestic Substance List (DSL).</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substance List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>Europe</td>
<td>Inventory of New and Existing Chemicals (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States</td>
<td>Toxic Substance Control Act (TSCA)</td>
<td>Yes</td>
</tr>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory of Chemicals (NZIoC)</td>
<td>Yes</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>No</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*"Yes" indicates that all components of this product are in compliance with the inventory requirements administered by the governing country.
**"No" indicates that one or more components of this product are not on the inventory and are not exempt from listing.

Chemical safety assessment
For this product a chemical safety assessment was not carried out.

SECTION 16: OTHER INFORMATION:
Do not circulate this product for more than a four (4) hour period without consulting the manufacturer or your local representative. Most cleaning cycles can be accomplished within a two (2) to four (4) hour cycle. For Stainless Steel, contact manufacture for instructions and precautions. This material should be used only as directed. Use at ambient temperatures. Increase in temperature places personnel at risk.

This Material Safety Data Sheet was prepared in accordance with 29 CFR 1910:1200 and the ANSI Z400.1 sixteen-part format. All information, recommendations and suggestions appearing herein concerning our product are based upon tests and data believed to be reliable; however it is the user’s responsibility to determine the safety, toxicity and suitability for their own use of the product described herein. Since actual use by others is beyond our control, no guarantees, expressed or implied, are made by Precision Dynamics, Inc. and its representatives as to the effects of such use, the results to be obtained or the safety and toxicity of the product, nor does Precision Dynamics, Inc. or its representatives assume any liability arising out of the use by others of the product referred herein. The information herein is not be construed as absolutely complete since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws of government regulations.

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