SECTION 1 – IDENTIFICATION

Name, Address, and Telephone of the Responsible Party
Dyno Nobel Inc.
2795 East Cottonwood Parkway, Suite 500
Salt Lake City, Utah 84121
Phone: 801-364-4800  Fax 801-321-6703
E-Mail: dnna.hse@am.dynonobel.com
www.dynonobel.com

Product Identifier
Product Form: Mixture
Product Name: Packaged Emulsion Explosives

Trade Name(s):
- DYNO® AP
- DYNO® AP PLUS
- DYNO® E5
- DYNO® SL
- DYNO® SL PLUS
- DYNO® TX
- DYNOSPLIT® AP
- DYNOSPLIT® SL
- DYNOSPLIT® PLUS
- DYNOSPLIT® THERMO
- DYNO® XTRA

SECTION 2 – HAZARD(S) IDENTIFICATION

Classification of the Substance or Mixture

General Advice: This is a packaged product that will not result in exposure to the contents under normal conditions of use. In the event of contact, administer first aid appropriate for symptoms present.

Classification (GHS-US)
Expl. 1.1

H201

Label Elements
GHS-US Labeling
Hazard Pictograms (GHS-US):

- GHS01
- GHS07

Signal Word (GHS-US): Danger

Precautionary Statements (GHS-US):
- P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking.
- P264 - Wash hands, forearms, and exposed areas thoroughly after handling.
- P280 - Wear eye protection, protective clothing, protective gloves.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P370+P378 - In case of fire: DO NOT attempt to fight fire.
P370+P380 - In case of fire: Evacuate area.
P372 - Explosion risk in case of fire.
P373 - DO NOT fight fire when fire reaches explosives.
P401 - Store as defined in the Explosives Act of Canada and the provisions of the Bureau of Alcohol, Tobacco and Firearms regulations contained in 27 CFR part 555.
P501 - Dispose of contents/container according to local, regional, national, territorial, provincial, and international regulations.

Other Hazards
Hazards Not Otherwise Classified (HNOC): None

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>% (w/w)</th>
<th>Ingredient Classification (GHS-US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium nitrate</td>
<td>(CAS No) 6484-52-2</td>
<td>50 - 75</td>
<td>Ox. Sol. 3, H272, Eye Irrit. 2A, H319</td>
</tr>
<tr>
<td>Sodium nitrate</td>
<td>(CAS No) 7631-99-4</td>
<td>8 - 22</td>
<td>Ox. Sol. 3, H272, Eye Irrit. 2A, H319</td>
</tr>
<tr>
<td>Aluminum</td>
<td>(CAS No) 7429-90-5</td>
<td>0 - 6</td>
<td>Comb. Dust Flam. Sol. 1, H228, Water-react. 2, H261</td>
</tr>
<tr>
<td>Mineral oil</td>
<td>(CAS No) 64742-54-7</td>
<td>0 – 4</td>
<td>Asp. Tox. 1, H304</td>
</tr>
<tr>
<td>Sorbitan monooleate</td>
<td>(CAS No) 1338-43-8</td>
<td>0.2 – 1.5</td>
<td>Not Classified</td>
</tr>
<tr>
<td>Polymeric Emulsifier</td>
<td>(CAS No) 165526-49-8</td>
<td>0 – 3</td>
<td>Not Classified</td>
</tr>
</tbody>
</table>

Ingredients, other than those mentioned above, as used in this product are not hazardous as defined under current Department of Labor regulations, or are present in deminimus concentrations (less than 0.1% for carcinogens, less than 1.0% for other hazardous materials).
Full text of H- phosphrases: see section 16

SECTION 4 - FIRST AID MEASURES

Description of First Aid Measures
This is a packaged product that will not result in exposure to the contents under normal conditions of use. In the event of exposure, administer first aid appropriate for symptoms present.

General: Never give anything by mouth to an unconscious person. If exposed person feels unwell, seek medical advice.

Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Obtain medical attention if breathing difficulty persists.

Skin Contact: Remove contaminated clothing. Gently wash with plenty of soap and water followed by rinsing with water for at least 15 minutes. Wash contaminated clothing before reuse.

Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists.

Ingestion: Rinse mouth. Do not induce vomiting. Immediately call a POISON CENTER or doctor/physician.

Most Important Symptoms and Effects Both Acute and Delayed

General: Avoid ingestion, contact with eyes or skin.

Inhalation: May cause respiratory irritation.

Skin Contact: May cause skin irritation.

Eye Contact: May cause serious eye irritation.

Ingestion: Seek medical attention.
Chronic Symptoms: None expected under normal conditions of use.

Indication of Any Immediate Medical Attention and Special Treatment Needed
If exposed or concerned, get medical advice and attention.

SECTION 5 - FIRE-FIGHTING MEASURES

Extinguishing Media
Suitable Extinguishing Media: DO NOT ATTEMPT TO FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions.

Unsuitable Extinguishing Media: (See above)

Special Hazards Arising From the Substance or Mixture
Fire Hazard: Can explode or detonate under fire conditions. Burning material may produce toxic vapors.
Explosion Hazard: This product is an explosive with mass detonation hazard. Heating may cause an explosion.
Reactivity: Stable under normal conditions, may explode when subjected to fire, supersonic shock or high-energy projectile impact, especially when confined or in a large quantity.

Advice for Firefighters
Firefighting Instructions: DO NOT ATTEMPT TO FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions. Guard against re-entry.
Protection During Firefighting: See above
Reference to Other Sections: Refer to section 9 for flammability properties.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures
General Measures: Avoid all contact with skin, eyes, or clothing. Keep away from heat/sparks/open flames/hot surfaces. No smoking. Eliminate every possible source of ignition.
For Non-Emergency Personnel
Protective Equipment: Use appropriate personal protection equipment (PPE).
For Emergency Personnel
Protective Equipment: Use appropriate personal protection equipment (PPE).

Environmental Precautions
Prevent entry to sewers and public waters.

Methods and Material for Containment and Cleaning Up
Methods for Cleaning Up: Protect from all ignition sources. If no fire danger is present, and product is undamaged and/or uncontaminated, pick up or sweep up and repackage product in original packaging or other clean DOT approved container. Ensure that a complete account of product has been made and is verified. Follow applicable Federal, State, and local spill reporting requirements.
Reference to Other Sections
See heading 8, Exposure Controls and Personal Protection. Concerning disposal elimination after cleaning, see section 13.

SECTION 7 - HANDLING AND STORAGE

Precautions for Safe Handling
This is a packaged product that will not result in exposure to the contents under normal conditions of use.
Additional Hazards When Processed: This product is an explosive and should only be used under the supervision of trained and licensed personnel. Use accepted safe industry practices when handling and using explosive materials. Unintended detonation of explosives or explosive devices can cause serious injury or death.
Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Do not eat, drink or smoke when using this product.
SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Product identifier</th>
<th>ACGIH TLV-TWA</th>
<th>OSHA PEL-TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium nitrate</td>
<td>(CAS No) 6484-52-2</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Sodium nitrate</td>
<td>(CAS No) 7631-99-4</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Aluminum</td>
<td>(CAS No) 7429-90-5</td>
<td>10 mg/m³ (dust)</td>
<td>15 mg/m³ (total)</td>
</tr>
<tr>
<td>Mineral Oil</td>
<td>(CAS No) 64742-54-7</td>
<td>5 mg/m³ (mist)</td>
<td>5 mg/m³ (mist)</td>
</tr>
<tr>
<td>Sorbitan monooleate</td>
<td>(CAS No) 1338-43-8</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Polymeric Emulsifier</td>
<td>(CAS No) 165526-49-8</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

Ingredients, other than those mentioned above, as used in this product are not hazardous as defined under current Department of Labor regulations, or are present in deminimus concentrations (less than 0.1% for carcinogens, less than 1.0% for other hazardous materials).

Exposure Controls
Appropriate Engineering Controls: Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed.

Materials for Protective Clothing: protective clothing.
Hand Protection: Protect against incidental skin contact.
Eye Protection: Chemical goggles or safety glasses.
Skin and Body Protection: Wear suitable protective clothing.
Respiratory Protection: Use a NIOSH-approved respirator or self-contained breathing apparatus whenever exposure may exceed established Occupational Exposure Limits.

Environmental Exposure Controls: Do not allow the product to be released into the environment.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State: Solid
Appearance: White or pink opaque semi-solid, which will appear gray if product contains aluminum. Typically paper or plastic chub packaging.
Odor: Faint petroleum odor
Odor Threshold: Not available
pH: Not applicable
Evaporation Rate: < 1
Melting Point: Not applicable
Freezing Point: Not applicable
Boiling Point: Not applicable
Flash Point: Not applicable
Auto-ignition Temperature: Not available
 Decomposition Temperature: Ammonium nitrate: 210 °C (410 °F)
Flammability (solid, gas): Not applicable
Lower Flammable Limit: Not applicable
Upper Flammable Limit: Not applicable
Vapor Pressure: Not applicable
Relative Vapor Density at 20 °C: Not applicable
Relative Density: Not applicable
Density: 0.95 - 1.25 g/cc
Specific Gravity: Not applicable
Solubility: Partially soluble in water
Partition coefficient: n-octanol/water: Not available
Viscosity: Not available
Explosive properties: Explosive; mass explosion hazard
Explosion Data – Sensitivity to Mechanical Impact: Not sensitive
Explosion Data – Sensitivity to Static Discharge: Not sensitive

SECTION 10 - STABILITY AND REACTIVITY
Reactivity: Stable under normal conditions, may explode when subjected to fire, supersonic shock or high-energy projectile impact, especially when confined or in a large quantity.
Chemical Stability: Stable under normal temperature and pressure.
 Possibility of Hazardous Reactions: Hazardous polymerization will not occur.
Conditions to Avoid: Keep away from heat, flame, ignition sources and strong shock.
Incompatible Materials: Corrosives (strong acids and strong bases or alkalis).
Hazardous Decomposition Products: Nitrogen Oxides (NOx), Carbon Monoxide (CO), Ammonia

SECTION 11 - TOXICOLOGICAL INFORMATION
Information on Toxicological Effects - Product
Acute Toxicity: Not classified
LD50 and LC50 Data: Not available
Skin Corrosion/Irritation: Not classified
Serious Eye Damage/Irritation: May cause eye irritation.
Respiratory or Skin Sensitization: Not classified
Germ Cell Mutagenicity: Not classified
Teratogenicity: Not classified
Carcinogenicity: Not classified
Specific Target Organ Toxicity (Repeated Exposure): Not classified
Reproductive Toxicity: Not classified
Specific Target Organ Toxicity (Single Exposure): Not classified

SDS# 1030 Date: 10/12/2018
**Aspiration Hazard:** Not classified
**Symptoms/Injuries After Inhalation:** May cause respiratory irritation.
**Symptoms/Injuries After Skin Contact:** May cause skin irritation.
**Symptoms/Injuries After Eye Contact:** Causes eye irritation.
**Symptoms/Injuries After Ingestion:** If ingested, seek medical attention.

**Information on Toxicological Effects - Ingredient(s)**
**LD50 and LC50 Data:**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>LD50 and LC50 Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium nitrate (7631-99-4)</td>
<td>LD50 Oral Rat: &gt; 2000 mg/kg</td>
</tr>
<tr>
<td></td>
<td>LC50 Oral Rat: &gt; 2217 mg/kg</td>
</tr>
<tr>
<td>Ammonium nitrate (6484-52-2)</td>
<td>LC50 Oral Rat: &gt; 2217 mg/kg</td>
</tr>
<tr>
<td></td>
<td>LC50 Inhalation Rat: &gt; 88.8 mg/l/4h</td>
</tr>
<tr>
<td>Mineral Oil (64742-54-7)</td>
<td>LD50 Oral Rat: &gt; 15000 mg/kg</td>
</tr>
<tr>
<td></td>
<td>LD50 Dermal Rabbit: &gt; 5000 mg/kg</td>
</tr>
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</table>

**SECTION 12: ECOLOGICAL INFORMATION**
**Toxicity** Not classified

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Toxicity Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium nitrate (7631-99-4)</td>
<td>LC50 Fish 1: 2000 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])</td>
</tr>
<tr>
<td></td>
<td>LC 50 Fish 2: 994.4 - 1107 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [static])</td>
</tr>
</tbody>
</table>

**Persistence and Degradability**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Persistence and Degradability</th>
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</thead>
<tbody>
<tr>
<td>Sodium nitrate (7631-99-4)</td>
<td>Readily biodegradable in water.</td>
</tr>
</tbody>
</table>

**Bioaccumulative Potential**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Bioaccumulative Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium nitrate (7631-99-4)</td>
<td>Not expected to bioaccumulate.</td>
</tr>
<tr>
<td>Ammonium nitrate (6484-52-2)</td>
<td>BCF fish 1: No bioaccumulation expected.</td>
</tr>
</tbody>
</table>

**Mobility in Soil** Not available

**Other Adverse Effects**

**Other Information:** Avoid release to the environment.

**SECTION 13 - DISPOSAL CONSIDERATIONS**
**Waste Disposal Recommendations:** Disposal must comply with Federal, State and local regulations. If product becomes a waste, it is potentially regulated as a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR, part 261. Review disposal requirements with a person knowledgeable with applicable environmental law (RCRA) before disposing of any explosive material.

**Additional Information:** None

**SECTION 14 - TRANSPORT INFORMATION**
**14.1 In Accordance with DOT**

- EXPLOSIVE, BLASTING, TYPE E

**Proper Shipping Name**
### Safety Data Sheet

<table>
<thead>
<tr>
<th>Hazard Class</th>
<th>1.1D</th>
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</thead>
<tbody>
<tr>
<td>Identification Number</td>
<td>UN0241</td>
</tr>
<tr>
<td>Label Codes</td>
<td>1.1D</td>
</tr>
<tr>
<td>Packing Group</td>
<td>II</td>
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<td>ERG Number</td>
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#### 14.2 In Accordance with IMDG

<table>
<thead>
<tr>
<th>Proper Shipping Name</th>
<th>EXPLOSIVE, BLASTING, TYPE E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard Class</td>
<td>1.1D</td>
</tr>
<tr>
<td>Identification Number</td>
<td>UN0241</td>
</tr>
<tr>
<td>Label Codes</td>
<td>1.1D</td>
</tr>
<tr>
<td>EmS-No. (Fire)</td>
<td>F-B</td>
</tr>
<tr>
<td>EmS-No. (Spillage)</td>
<td>S-X</td>
</tr>
</tbody>
</table>

#### 14.3 In Accordance with IATA

<table>
<thead>
<tr>
<th>Proper Shipping Name</th>
<th>EXPLOSIVE, BLASTING, TYPE E</th>
</tr>
</thead>
<tbody>
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<td>Identification Number</td>
<td>UN0241</td>
</tr>
<tr>
<td>Hazard Class</td>
<td>1</td>
</tr>
<tr>
<td>Label Codes</td>
<td>1.1D</td>
</tr>
<tr>
<td>ERG Code (IATA)</td>
<td>1L</td>
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#### 14.4 In Accordance with TDG

<table>
<thead>
<tr>
<th>Proper Shipping Name</th>
<th>EXPLOSIVE, BLASTING, TYPE E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packing Group</td>
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<tr>
<td>Hazard Class</td>
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<tr>
<td>Identification Number</td>
<td>UN0241</td>
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<tr>
<td>Label Codes</td>
<td>1.1D</td>
</tr>
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</table>

### SECTION 15 - REGULATORY INFORMATION

**US Federal Regulations**
- Packaged Emulsion Explosives
- Bureau of Alcohol Tobacco & Firearms (BATF)
- Department of Transportation (DOT)
- Mine Safety & Health Administration (MSHA)

**Canadian Regulations**
- Packaged Emulsion Explosives

**WHMIS Classification**

| Note: Explosives are not regulated under WHMIS. They are subject to the regulations of the Explosives Act of Canada. |

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

### SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

<table>
<thead>
<tr>
<th>Revision date</th>
<th>10/12/2018</th>
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<tbody>
<tr>
<td>Other Information</td>
<td>This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.</td>
</tr>
</tbody>
</table>

**GHS Full Text Phrases:**

SDS# 1030 Date: 10/12/2018
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Dyno Nobel SDS