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: dnnn.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
- DYNOSPLOT® AP

Other Means of Identification
Product Class: Emulsion Explosives, Packaged

Intended Use of the Product
Industrial blasting applications

Emergency Telephone Number
FOR 24 HOUR EMERGENCY, CALL CHEMTREC (USA) 800-424-9300
CANUTEC (CANADA) 613-996-6666

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

<table>
<thead>
<tr>
<th>Mixture</th>
<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>
<td></td>
</tr>
<tr>
<td>Sodium nitrate</td>
<td>(CAS No) 7631-99-4</td>
<td>10 - 22</td>
<td>Ox. Sol. 3, H272, Eye Irrit. 2A, H319</td>
<td></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>
<td></td>
</tr>
<tr>
<td>Mineral oil</td>
<td>(CAS No) 64742-54-7</td>
<td>0 – 4</td>
<td>Asp. Tox. 1, H304</td>
<td></td>
</tr>
<tr>
<td>Sorbitan monooleate</td>
<td>(CAS No) 1338-43-8</td>
<td>0.2 – 1.5</td>
<td>Not Classified</td>
<td></td>
</tr>
<tr>
<td>Polymeric Emulsifier</td>
<td>(CAS No) 165526-49-8</td>
<td>0 – 2.0</td>
<td>Not Classified</td>
<td></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-phrases: 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.
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
Hazardous Combustion Products: Nitrogen Oxides (NO\textsubscript{X}), Carbon Monoxide (CO), Ammonia.
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>Occupational Exposure Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium nitrate (CAS No) 6484-52-2</td>
<td>ACGIH TLV-TWA</td>
<td>None</td>
</tr>
<tr>
<td>Sodium nitrate (CAS No) 7631-99-4</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Aluminum (CAS No) 7429-90-5</td>
<td>10 mg/m³ (dust)</td>
<td>15 mg/m³ (total)</td>
</tr>
<tr>
<td>Mineral Oil (CAS No) 64742-54-7</td>
<td>5 mg/m³ (mist)</td>
<td>5 mg/m³ (mist)</td>
</tr>
<tr>
<td>Sorbitan monooleate (CAS No) 1338-43-8</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Polymeric Emulsifier (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

<table>
<thead>
<tr>
<th>Physical State</th>
<th>Solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>White or pink opaque semi-solid, which will appear gray if product contains aluminum. Typically paper or plastic chub packaging.</td>
</tr>
<tr>
<td>Odor</td>
<td>Faint petroleum odor</td>
</tr>
</tbody>
</table>
## 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
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 Oral Rat</th>
<th>LC50 Oral Rat</th>
<th>Ammonium nitrate (6484-52-2)</th>
<th>LC50 Inhalation Rat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium nitrate (7631-99-4)</td>
<td>&gt; 2000 mg/kg</td>
<td></td>
<td>2217 mg/kg</td>
<td>&gt; 88.8 mg/l/4h</td>
</tr>
<tr>
<td>Ammonium nitrate (6484-52-2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50 Oral Rat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50 Inhalation Rat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>LD50 Oral Rat</th>
<th>LC50 Oral Rat</th>
<th>Mineral Oil (64742-54-7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 Oral Rat</td>
<td>&gt; 15000 mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50 Dermal Rabbit</td>
<td>&gt; 5000 mg/kg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION 12: ECOLOGICAL INFORMATION
Toxicity Not classified

<table>
<thead>
<tr>
<th>Sodium nitrate (7631-99-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 Fish 1 2000 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])</td>
</tr>
<tr>
<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

Sodium nitrate (7631-99-4)
Persistence and Degradability: Readily biodegradable in water.

Bioaccumulative Potential

Sodium nitrate (7631-99-4)
Bioaccumulative Potential: Not expected to bioaccumulate.

Ammonium nitrate (6484-52-2)
BCF fish 1 No bioaccumulation expected.

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

Hazard Class: 1.1D
Identification Number: UN0241
Label Codes: 1.1D
Packing Group: II
ERG Number: 112

14.2 In Accordance with IMDG
Proper Shipping Name: EXPLOSIVE, BLASTING, TYPE E
Hazard Class: 1.1D
Identification Number: UN0241
Label Codes: 1.1D
EmS-No. (Fire): F-B
EmS-No. (Spillage): S-X

14.3 In Accordance with IATA
Proper Shipping Name: EXPLOSIVE, BLASTING, TYPE E
Identification Number: UN0241
Hazard Class: 1
Label Codes: 1.1D
ERG Code (IATA): 1L

14.4 In Accordance with TDG
Proper Shipping Name: EXPLOSIVE, BLASTING, TYPE E
Packing Group: II
Hazard Class: 1.1D
Identification Number: UN0241
Label Codes: 1.1D

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

Revision date: 03/18/2015
Other Information: This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:
Expl. 1.1  Explosive Category 1.1
H201  Explosive; mass explosion hazard

Party Responsible for the Preparation of This Document
Dyno Nobel Inc.
2795 East Cottonwood Parkway, Suite 500
Salt Lake City, Utah 84121
Phone: 801-364-4800

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Dyno Nobel SDS