THE

BLASTER'S GUIDE

A Resource for the Explosives and Blasting Industry

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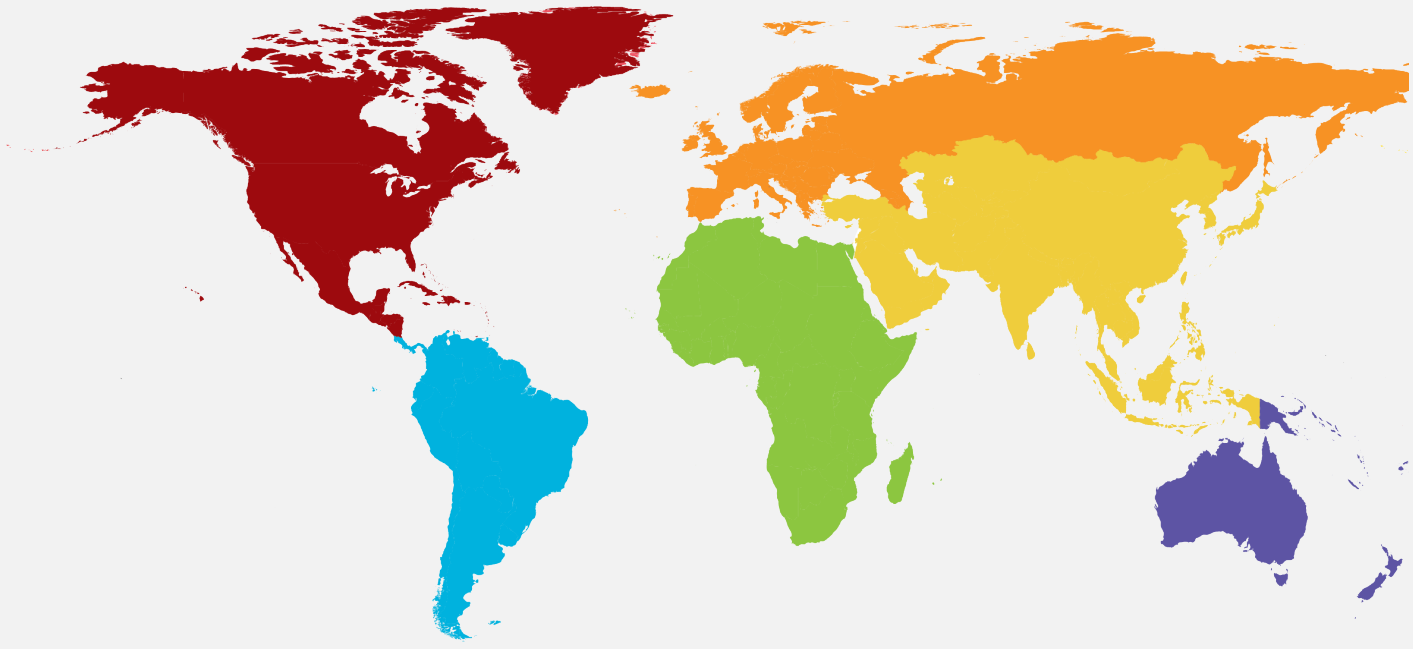
Blasters Guide – Austin Powder Company

Safety Data Sheets (SDS)

2021 SDS Catalog

USED IN 1833 & EVER SINCE



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AUSTIN POWDER

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SECTION 1: IDENTIFICATION

Product Identifier: Ammonium Nitrate Solution
Product Names and Synonyms: Ammonium Nitrate Solution, ANS, ANSOL
Intended Use: As an ingredient in commercial explosives.
Intended Users: For use only under strictly controlled conditions and only by qualified personnel who are fully trained in the handling and use of this product.

Name, Address, and Telephone of the Responsible Party:

Austin Powder Company
25800 Science Park Dr.
Cleveland, OH 44122
216-464-2400 during normal business hours
877-836-8286 Toll Free 24/7
www.austinpowder.com

In Case of Emergency Call CHEMTREC – TOLL FREE 24/7
800-424-9300 DOMESTIC
1-703-527-3887 INTERNATIONAL AND MARINE

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture:

Code	Hazard Class	Hazard Category
H272	Oxidizing Liquid	3
H303	Acute Toxicity, oral	5
H315	Skin Corrosion / Irritation	2
H319	Serious eye damage / eye irritation	2A
H335	Specific target organ toxicity, single exposure; Respiratory tract irritation	3

Label Elements

Warning

Hazard Statements

May intensify fire; oxidizer
May be harmful if swallowed
Causes skin irritation
Causes eye irritation
May cause respiratory irritation

Precautionary Statements

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not breathe fumes.
Wear eye protection, protective gloves recommended.

IF SWALLOWED: Get immediate medical attention. DO NOT induce vomiting.
IF ON SKIN: Wash contact area with soap and water. If irritation occurs, get medical attention. Take off contaminated clothing and wash before reuse.
IF INHALED: Remove person to fresh air. Keep at rest in a position comfortable for breathing.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical attention.
If exposed or concerned, or you do not feel well: Get medical attention.
Store locked-up in a ventilated space, in accordance with all applicable regulations.
Dispose of contents/container in accordance with all applicable regulations.

Other Hazards:

In case of fire: Extreme risk of explosion. Evacuate area.

Exposure reaction may be aggravated for those with pre-existing eye, skin, or respiratory conditions. Causes methemoglobinemia. Methemoglobinemia decreases the blood's ability to carry oxygen and results in symptoms such as dizziness, drowsiness, headache, shortness of breath, blue skin and lips, rapid heart rate, unconsciousness, and possibly death.

Unknown Acute Toxicity: Not available

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Name	CAS No.	% (w/w)
Ammonium nitrate	CAS No. 6484-52-2	75-90

SECTION 4: FIRST AID MEASURES

General: This material may be hot during transportation and storage, up to 115°C (240°F); take the proper precautions. Never give anything by mouth to an unconscious person. If you feel unwell, get medical attention, show the label where possible.

Inhalation: When symptoms occur: move to open air, keep at rest and in a position comfortable for breathing. Get medical attention. Ventilate suspected area.

Skin Contact: Wash contact areas with soap and water. Remove contaminated clothing. Wash contaminated clothing before reuse.

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

Ingestion: Rinse mouth. DO NOT induce vomiting. Get medical attention.

Most Important Symptoms and Effects both Acute and Delayed:

Inhalation: May cause irritation to the respiratory tract, symptoms include: sneezing, coughing, burning sensation of throat with constricting sensation of the larynx and difficulty in breathing.

Skin Contact: May cause mild skin irritation. Symptoms may include: redness, pain, swelling, itching, burning, dryness and dermatitis. May cause a more severe irritation or allergic reaction in sensitive individuals.

Eye Contact: May cause serious eye irritation. Symptoms may include redness, pain, swelling, itching, burning, tearing and blurred vision.

Ingestion: Ammonium nitrate ingestion may cause methemoglobinemia. Initial manifestation of methemoglobinemia is cyanosis, characterized by blue lips, tongue and mucous membranes, with skin color being slate grey. Further manifestation is characterized by headache, weakness, dyspnea, dizziness, stupor, respiratory distress and death

due to anoxia. If ingested, nitrates may be reduced to nitrites by bacteria in the digestive tract. Signs and symptoms of nitrite poisoning include methemoglobinemia, nausea, dizziness, increased heart rate, hypotension, fainting and, possibly shock.

Chronic Symptoms: May cause irritation to the respiratory tract.

Indication of Any Immediate Medical Attention and Special Treatment Needed:

If exposed, concerned or you don't feel well, get medical attention.

SECTION 5: FIRE FIGHTING MEASURES

DO NOT fight fires involving Ammonium Nitrate. There is an extreme risk that ammonium nitrate involved in a fire may detonate, especially if confined. Evacuate the area in all directions for one (1) mile or more if any amount of ammonium nitrate is involved in a fire. Evacuation is recommended if the initial (incipient) fire, not involving ammonium nitrate, becomes intense. General extinguishers may be used on the initial fire, not involving ammonium nitrate, such as electrical equipment fires, tire fires or a general plant fire. Water may be used to cool ammonium nitrate not involved in the initial fire. Consult the most current Emergency Response Guidebook (ERG), Guide 140 for additional information.

Extinguishing Media

Suitable Extinguishing Media: None.

Unsuitable Extinguishing Media: For fires near ammonium nitrate solution, dry chemical, foams, steam and smothering devices are not effective, can lead to possible explosion and must not be used.

Special Hazards Arising from the Substance or Mixture

Fire Hazard: There is an extreme risk that ammonium nitrate involved in a fire may detonate. In a fire, the water portion of the solution boils off quickly, leaving solid or molten ammonium nitrate.

Advice for Firefighters

Precautionary Measures: It is recommended that the amount and location of ammonium nitrate solution stored near a fire be determined prior to committing firefighters to fight the fire.

Firefighting Instructions: When fighting the initial fire, not involving ammonium nitrate, firefighters should follow standard firefighting procedures for the materials involved.

Hazardous Combustion No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Contact the manufacturer or CHEMTREC. No smoking, open flames or flame/spark producing items in the area. This material may be hot during transportation and storage, up to 115ºC (240ºF), take the proper precautions.

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Isolate the area from unnecessary personnel.

For Emergency Personnel

Protective Equipment: Provide cleanup crew with proper PPE.

Emergency Procedures: Ventilate area.

Emergency Precautions: Stop the discharge if safe to do so. Ventilate area.

Methods and Material for Containment and Cleaning Up: Contact manufacturer or CHEMTREC.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards when Processed: Any proposed use of this product in elevated temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. A "hot work" program consistent with OSHA requirements at 29 CFR 1910.252 must be used when performing hot work on ammonium nitrate process equipment, storage areas or containers related to the intended use.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with soap and water before eating, drinking, or smoking and again when leaving work. Wash contaminated clothing before reuse.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: May be corrosive to metals. Smoking, open flames, and unauthorized sparking or flame-producing devices are prohibited.

Storage Conditions: Storage areas should be inspected regularly by an individual trained to identify potential hazards and ensure that all safety and security control measures are being properly implemented. All ammonium nitrate storage sites must comply with ATF, OSHA or NRCAN regulations.

Incompatible Materials: Avoid contamination with combustible or flammable materials, strong acids, strong bases, strong oxidizing agents, reducing agents, chlorinated compounds, copper (any alloys like bronze and brass), metal powders and peroxides.

Special Rules on Packaging: Packaging in accordance with USDOT or NRCAN regulations.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits:

Ammonium nitrate, CAS No. 6484-52-2		
USA ACGIH (nuisance dust)	ACGIH TWA (mg/m^3)	10 mg/m^3 – Inhalable particulate
USA OSHA (nuisance dust)	OHSA PEL (TWA) (mg/m^3)	5 mg/m^3 – Respirable (particulate)

Exposure Controls:

Appropriate Engineering Controls: Product should be handled and used under strictly controlled conditions. Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure, but are not required.

Personal Protective Equipment:

Hand Protection: Chemical and heat resistant gloves.

Eye Protection: Safety glasses with side shields or safety goggles.

Respiratory Protection: Approved respiratory protection should be worn when recommended by a risk assessment or if irritation is experienced.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Physical and Chemical Properties:

Appearance:	Clear liquid
Odor:	Slight ammonia odor
Odor threshold:	Not available
Vapor density:	Not relevant
pH:	4-6
Freezing point (Crystal point):	75% solution – 40°C (105°F) 90% solution – 95°C (202°F)
Initial boiling point and boiling range:	Not available
Flash point:	Not relevant
Evaporation rate:	Not available
Flammability:	Will not burn
Upper / lower flammability or explosive limits:	Not available
Vapor pressure:	Not available
Bulk Density:	75% solution – 1.35 g/cc (11.3 lb/gal) 90% solution – 1.41 g/cc (11.8 lb/gal)
Solubility (for ammonium nitrate in water):	118 g/100 ml @ 0°C (32°F)
Partition coefficient: n-octol/water:	Not available
Auto-ignition temperature:	Not available
Decomposition temperature:	210°C (410°F)
Viscosity:	Not relevant
Explosive properties:	Mass detonation hazard when involved in a fire
Explosion Data – Sensitivity to Mechanical Impact:	Not sensitive to mechanical impact
Explosion Data – Sensitivity to Static Discharge:	Not sensitive to static discharge

SECTION 10: STABILITY AND REACTIVITY

Reactivity and Chemical Stability: Stable and non-reactive under normal conditions of transportation, storage, handling and use.

Possibility of Hazardous Reactions: Polymerization will not occur.

Conditions to Avoid: Open flame and elevated temperatures.

Incompatible Materials: Avoid contamination with combustible or flammable materials, strong acids, strong bases, strong oxidizing agents, reducing agents, chlorinated compounds, copper (any alloys like bronze and brass), metal powders and peroxides.

Hazardous Decomposition Products: No unusual fumes or decomposition products expected. However, toxic fumes will be present.

SECTION 11: TOXICOLOGY INFORMATION

Acute Toxicity: See section 2

LD50 and LC50 Data: Not classified

Skin Corrosion/Irritation: May cause skin irritation

Eye Damage/Irritation: May cause serious eye irritation

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): May cause drowsiness or dizziness

Specific Target Organ Toxicity (Repeated Exposure): Not classified.

Aspiration Hazard: Not classified

Symptoms/Injuries after Inhalation: Harmful if inhaled, causes methemoglobinemia. Symptoms may include headache, dizziness, nausea and a loss of coordination.

Symptoms/Injuries after Skin Contact: May cause mild skin irritation. Symptoms may include: redness, pain, swelling, itching, burning, dryness and dermatitis. May cause a more severe or allergic reaction in sensitive individuals.

Symptoms/Injuries after Eye Contact: May cause serious eye irritation. Symptoms may include redness, pain, swelling, itching, burning, tearing and blurred vision.

Symptoms/Injuries after Ingestion: Burning sensation. Abdominal pain. Abdominal cramps. Vomiting. Ammonium nitrate ingestion may cause methemoglobinemia.

Chronic Symptoms: Although none are expected under normal conditions, inhalation exposure may cause methemoglobinemia and may damage respiratory tract.

LD50 and LC50 Data (ingredients):

Ammonium nitrate, CAS No. 6484-52-2	
LD50 Oral Rat	2,217 mg/kg of body weight
LC50 Inhalation Rat	> 88.8 mg/l/4h

SECTION 12: ECOLOGY INFORMATION

Not available

SECTION 13: DISPOSAL CONSIDERATIONS

Call manufacturer or CHEMTREC.

SECTION 14: TRANSPORTATION INFORMATION

Agency	UN Number	Proper Shipping Name	Hazard Class	Label Codes	PG	Marine Pollutant	Other
US DOT	UN2426	Ammonium nitrate, liquid, *(hot concentrated solution).*	5.1	5.1	--	No	ERG-140
Canadian TDG	UN2426	Ammonium nitrate liquid, *(hot concentrated solution).*	5.1	5.1	--	No	--
IMDG (Vessel)	UN1942	Ammonium nitrate, liquid	5.1	5.1	--	No	EmS-No, Fire: F-H Spillage: S-Q
IATA (Air)	Contact the manufacturer						

SECTION 15: REGULATORY INFORMATION

US Federal Regulations:

Emergency Planning and Community Right-To-Know Act (EPCRA), a/k/a Superfund Amendments and Reauthorization Act (SARA) Title III
Toxic Substances Control Act (TSCA)
TSCA Section 8

Ammonium nitrate, CAS No. 6484-52-2

SARA Section 311/312	Reactive Hazard Fire Hazard Health Hazard
TSCA	Listed on the United States TSCA inventory

Canadian Regulations:

Domestic Substances List (DSL)
Workplace Hazardous Materials Information System (WHMIS)

Ammonium nitrate, CAS No. 6484-52-2

DSL	Listed on the Canadian DSL
WHMIS Classification	Class C – Oxidizing Substance Class D, Division 2, Subdivision B – Toxic material causing other toxic effects.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF LAST REVISION

This SDS was prepared in accordance with US (29 CFR 1900.1200) and Canadian (WHMIS 2015) requirements.

SDS: P-2 Initial Issue Date: 6/1/2015 Last Revision Date: 06/03/2015 Version: 5

Party Responsible for the Preparation of this Document:
Austin Powder Company
Cleveland, OH 44122
216-464-2400

This information is based on Austin Powder Company's current knowledge and is intended to describe the product for the purposes of health and safety requirements only. It should not be construed as guaranteeing any specific property of the product.

SECTION 1: IDENTIFICATION

Product Identifier: Austinite Series
Product Names and Synonyms: Austinite 15, VX-100, VX-101, Austinite WR series, Austinite HE series
Intended Use: As a commercial explosive.
Intended Users: For use only under strictly controlled conditions and only by qualified personnel who are fully trained in the handling and use of this product.

Name, Address, and Telephone of the Responsible Party:

Austin Powder Company
25800 Science Park Dr.
Cleveland, OH 44122
216-464-2400 during normal business hours
877-836-8286 Toll Free 24/7
www.austinpowder.com

In Case of Emergency Call CHEMTREC – TOLL FREE 24/7
800-424-9300 DOMESTIC
1-703-527-3887 INTERNATIONAL AND MARINE

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture:

Code	Hazard Class	Hazard Category
H205	Explosives	Division 1.5
H227	Flammable Liquid	4
H272	Oxidizing Solid	3
H303	Acute Toxicity, oral	5
H315	Skin Corrosion / Irritation	2
H319	Serious eye damage / eye irritation	2A
H333	Acute Toxicity, inhalation	5
H335	Specific target organ toxicity, single exposure; Respiratory tract irritation	3

Label Elements

Danger

Hazard Statements

May mass explode in a fire
Combustible Liquid
May intensify fire; oxidizer
May be harmful if swallowed
Causes skin irritation
Causes eye irritation
May be harmful if inhaled
May cause respiratory irritation

Precautionary Statements

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not breathe dust or fumes.
Do not subject to grinding, friction, impact or shock.
Wash hands and other contact areas thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear eye protection, protective gloves recommended.
IF SWALLOWED: Get immediate medical attention. DO NOT induce vomiting.
IF ON SKIN: Wash contact area with soap and water. If irritation occurs, get medical attention.
Take off contaminated clothing and wash before reuse.
IF INHALED: Remove person to fresh air. Keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical attention.
If exposed or concerned, or you do not feel well: Get medical attention.
Store locked-up in a ventilated space, in accordance with all applicable regulations.
Dispose of contents/container in accordance with all applicable regulations.

Other Hazards:

In case of fire: Extreme risk of explosion. Evacuate area. **DO NOT** fight fire when fire reaches explosives.

Exposure reaction may be aggravated for those with pre-existing eye, skin, or respiratory conditions.
Causes methemoglobinemia. Methemoglobinemia decreases the blood's ability to carry oxygen and results in symptoms such as dizziness, drowsiness, headache, shortness of breath, blue skin and lips, rapid heart rate, unconsciousness, and possibly death.

Unknown Acute Toxicity: Not available

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Name	Product Identifier	% (w/w)
Ammonium nitrate	CAS No. 6484-52-2	85-95%
Fuels, diesel, no.2	CAS No. 68476-34-6	4-6%
Aluminum	CAS No. 7429-90-5	0-10%
Guar gum	CAS No. 9000-30-0	0-5%
Sodium carboxymethyl cellulose	CAS No. 9004-32-4	0-5%

SECTION 4: FIRST AID MEASURES

General: Never give anything by mouth to an unconscious person. If you feel unwell, get medical attention, show the label where possible.

Inhalation: When symptoms occur: move to open air, keep at rest and in a position comfortable for breathing. Get medical attention. Ventilate suspected area.

Skin Contact: Wash contact areas with soap and water. Remove contaminated clothing. Wash contaminated clothing before reuse.

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

Ingestion: Rinse mouth. DO NOT induce vomiting. Get medical attention.

Most Important Symptoms and Effects both Acute and Delayed:

Inhalation: May cause irritation to the respiratory tract, symptoms include:
sneezing, coughing, burning sensation of throat with constricting sensation of the larynx and difficulty in breathing.

Skin Contact: May cause mild skin irritation. Symptoms may include: redness, pain, swelling, itching, burning, dryness and dermatitis. May cause a more severe irritation or allergic reaction in sensitive individuals.

Eye Contact: May cause serious eye irritation. Symptoms may include redness, pain, swelling, itching, burning, tearing and blurred vision.

Ingestion: Ammonium nitrate ingestion may cause methemoglobinemia. Initial manifestation of methemoglobinemia is cyanosis, characterized by blue lips, tongue and mucous membranes, with skin color being slate grey. Further manifestation is characterized by headache, weakness, dyspnea, dizziness, stupor, respiratory distress and death due to anoxia. If ingested, nitrates may be reduced to nitrites by bacteria in the digestive tract. Signs and symptoms of nitrite poisoning include methemoglobinemia, nausea, dizziness, increased heart rate, hypotension, fainting and, possibly shock.

Chronic Symptoms: May cause irritation to the respiratory tract. May cause damage to organs through exposure.

Indication of Any Immediate Medical Attention and Special Treatment Needed:

If exposed, concerned or you don't feel well, get medical attention.

SECTION 5: FIRE FIGHTING MEASURES

DO NOT fight fires involving Ammonium Nitrate. There is an extreme risk that ammonium nitrate involved in a fire may detonate, especially if confined. Evacuate the area in all directions for one (1) mile or more if any amount of ammonium nitrate is involved in a fire. Evacuation is recommended if the initial (incipient) fire, not involving ammonium nitrate, becomes intense. General extinguishers may be used on the initial fire, not involving ammonium nitrate, such as electrical equipment fires, tire fires or a general plant fire. Water may be used to cool ammonium nitrate not involved in the initial fire. Consult the most current Emergency Response Guidebook (ERG), Guide 140 for additional information.

Extinguishing Media

Suitable Extinguishing Media: None.

Unsuitable Extinguishing Media: For fires near explosives, dry chemical, foams, steam and smothering devices are not effective, can lead to possible explosion and must not be used.

Special Hazards Arising from the Substance or Mixture

Fire Hazard: There is an extreme risk that explosives involved in a fire may detonate.

Advice for Firefighters

Precautionary Measures: It is recommended that the amount and location of any explosives stored near a fire be determined prior to committing firefighters to fight the fire.

Firefighting Instructions: When fighting the initial fire, not involving explosives, firefighters should follow standard firefighting procedures for the materials involved.

Hazardous Combustion Products: No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures:	Contact the manufacturer or CHEMTREC. No smoking, open flames or flame/spark producing items in the area.
For Non-Emergency Personnel	
Protective Equipment:	Use appropriate personal protection equipment (PPE).
Emergency Procedures:	Isolate the area from unnecessary personnel.
For Emergency Personnel	
Protective Equipment:	Provide cleanup crew with proper PPE.
Emergency Procedures:	Stop the discharge if safe to do so. Ventilate area.
Emergency Precautions:	Avoid release to the environment.
Methods and Material for Containment and Cleaning Up	Contact manufacturer or CHEMTREC.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards when Processed:	Avoid heating explosives in a confined space. Any proposed use of this product in elevated temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. A "hot work" program consistent with OSHA requirements at 29 CFR 1910.252 must be used when performing hot work on explosive process equipment, storage areas or containers related to the intended use.
Hygiene Measures:	Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with soap and water before eating, drinking, or smoking and again when leaving work. Wash contaminated clothing before reuse.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures:	May be corrosive to metals. Smoking, open flames, and unauthorized sparking or flame-producing devices are prohibited.
Storage Conditions:	Storage areas should be inspected regularly by an individual trained to identify potential hazards and ensure that all safety and security control measures are being properly implemented. All explosives storage sites must comply with ATF, OSHA or NRCAN regulations.
Incompatible Materials:	Avoid contamination with combustible or flammable materials, strong acids, strong bases, strong oxidizing agents, reducing agents, chlorinated compounds, copper (any alloys like bronze and brass), metal powders and peroxides.
Special Rules on Packaging:	Packaging in accordance with USDOT or NRCAN regulations.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits:

Ammonium nitrate, CAS No. 6484-52-2		
USA ACGIH (nuisance dust)	ACGIH TWA (mg/m^3)	10 mg/m^3 – Inhalable particulate
USA OSHA (nuisance dust)	OHSA PEL (TWA) (mg/m^3)	5 mg/m^3 – Respirable (particulate)

Fuels, diesel, no. 2, CAS No. 68476-34-6		
US ACGIH	ACGIH TWA	100 mg/m^3 (inhalable fraction and vapor)
Alberta	OEL TWA	100 mg/m^3
British Columbia	OEL TWA	100 mg/m^3 (aerosol, inhalable, and vapor)
Manitoba	OEL TWA	100 mg/m^3 (inhalable fraction and vapor)
Newfoundland & Labrador	OEL TWA	100 mg/m^3 (inhalable fraction and vapor)
Nova Scotia	OEL TWA	100 mg/m^3 (inhalable fraction and vapor)
Ontario	OEL TWA	100 mg/m^3 (inhalable fraction and vapor)
Prince Edward Island	OEL TWA	100 mg/m^3 (inhalable fraction and vapor)
Saskatchewan	OEL STEL	150 mg/m^3 (inhalable fraction and vapor)
Saskatchewan	OEL TWA	100 mg/m^3 (inhalable fraction and vapor)

Aluminum granules, CAS No. 7429-90-5		
USA ACGIH	ACGIH TWA	1 mg/m^3 (respirable fraction)
USA ACGIH	ACGIH category	Not Classifiable as a Human Carcinogen
USA OSHA	OSHA PEL (TWA)	15 mg/m^3 (total dust), 5 mg/m^3 (respirable fraction)
USA NIOSH	NIOSH REL (TWA)	10 mg/m^3 (total dust), 5 mg/m^3 (respirable dust)
Alberta	OEL TWA	10 mg/m^3 (dust)
British Columbia	OEL TWA	1.0 mg/m^3 (respirable)
Manitoba	OEL TWA	1 mg/m^3 (respirable fraction)
New Brunswick	OEL TWA	10 mg/m^3 (metal dust)
Newfoundland & Labrador	OEL TWA	1 mg/m^3 (respirable fraction)
Nova Scotia	OEL TWA	1 mg/m^3 (respirable fraction)
Nunavut	OEL STEL	20 mg/m^3
Nunavut	OEL TWA	10 mg/m^3
Northwest Territories	OEL STEL	20 mg/m^3
Northwest Territories	OEL TWA	10 mg/m^3
Ontario	OEL TWA	1 mg/m^3 (respirable)
Prince Edward Island	OEL TWA	1 mg/m^3 (respirable fraction)
Québec	VEMP	10 mg/m^3
Saskatchewan	OEL STEL	20 mg/m^3 (dust)
Saskatchewan	OEL TWA	10 mg/m^3 (dust)

Exposure Controls:

Appropriate Engineering Controls: Product should be handled and used under strictly controlled conditions. Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure, but are not required.

Personal Protective Equipment:

Hand Protection: Chemically resistant gloves are recommended, but not required.

Eye Protection: Safety glasses with side shields or safety goggles.

Respiratory Protection: Approved respiratory protection should be worn when recommended by a risk assessment or if irritation is experienced.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Physical and Chemical Properties:

Appearance:	Solid, small spheres
Odor:	Fuel
Odor threshold:	Not available
Vapor density:	Not available
pH:	Not relevant
Melting point (ammonium nitrate):	165°C (330°F)
Initial boiling point and boiling range:	Not available
Flash point:	Not available
Evaporation rate:	Not relevant
Flammability:	Not available
Upper / lower flammability or explosive limits:	Not available
Vapor pressure:	Not available
Bulk Density:	0.75 – 0.95 g/cc (49 - 59 lb/cf)
Solubility:	Soluble in water
Partition coefficient: n-octol/water:	Not available
Auto-ignition temperature:	Not available
Decomposition temperature:	>210°C (>410°F)
Viscosity:	Not relevant
Explosive properties:	Mass detonation hazard when involved in a fire
Explosion Data – Sensitivity to Mechanical Impact:	Not sensitive to mechanical impact
Explosion Data – Sensitivity to Static Discharge:	Not sensitive to static discharge

SECTION 10: STABILITY AND REACTIVITY

Reactivity and Chemical Stability: Stable and non-reactive under normal conditions of transportation, storage, handling and use.

Possibility of Hazardous Reactions: Polymerization will not occur.

Conditions to Avoid: Open flame and elevated temperatures.

Incompatible Materials: Avoid contamination with combustible or flammable materials, strong acids, strong bases, strong oxidizing agents, reducing agents, chlorinated compounds, copper (any alloys like bronze and brass), metal powders and peroxides.

Hazardous Combustion Products: No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 11: TOXICOLOGY INFORMATION

Acute Toxicity: Not classified

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: May cause skin irritation

Eye Damage/Irritation: May cause serious eye irritation

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Specific Target Organ Toxicity (Repeated Exposure): May cause drowsiness or dizziness

Aspiration Hazard: Not classified

Symptoms/Injuries after Inhalation: Harmful if inhaled, causes methemoglobinemia. Symptoms may include headache, dizziness, nausea and a loss of coordination.

Symptoms/Injuries after Skin Contact: May cause mild skin irritation. Symptoms may include: redness, pain, swelling, itching, burning, dryness and dermatitis. May cause a more severe or allergic reaction in sensitive individuals.

Symptoms/Injuries after Eye Contact: May cause serious eye irritation. Symptoms may include redness, pain, swelling, itching, burning, tearing and blurred vision.

Symptoms/Injuries after Ingestion: Burning sensation. Abdominal pain. Abdominal cramps. Vomiting. Ammonium nitrate ingestion may cause methemoglobinemia.

Chronic Symptoms: Although none are expected under normal conditions, inhalation exposure may cause methemoglobinemia and may damage respiratory tract.

LD50 and LC50 Data (ingredients):

Ammonium nitrate, CAS No. 6484-52-2	
LD50 Oral Rat	2,217 mg/kg of body weight
LC50 Inhalation Rat	> 88.8 mg/l/4h

Fuels, diesel, no. 2, CAS No 68476-34-6	
LD50 Oral Rat	>5000 mg/kg
LD50 Dermal Rabbit	>2000 mg/kg
LC50 Inhalation Rat	1 - 5 mg/l/4h

Guar gum, CAS No 9000-30-0	
LD50 Oral Rat	6,770 mg/kg

Sodium carboxymethyl cellulose, CAS No 9004-32-4	
LD50 Oral Rat	27,000 mg/kg
LC50 Dermal Rabbit	> 2,000 mg/l/4h
LC50 Inhalation Rat	> 5,800 mg/l/4h

SECTION 12: ECOLOGY INFORMATION

Not available

SECTION 13: DISPOSAL CONSIDERATIONS

Call manufacturer or CHEMTREC.

SECTION 14: TRANSPORTATION INFORMATION

Austinite 15, VX-100, VX-101

Agency	UN Number	Proper Shipping Name	Hazard Class	Label Codes	PG	Marine Pollutant	Other
US DOT	NA0331	Ammonium nitrate-fuel oil mixture *containing only prilled ammonium nitrate and fuel oil.*	1.5D	1.5D		No	ERG-112
Canadian TDG	UN0331	Explosive, blasting, type B	1.5D	1.5D		No	--
IMDG (Vessel)	UN0331	Explosive, blasting, type B	1.5D	1.5D		No	EmS-No, Fire: F-B Spillage: S-Y
IATA (Air)	Contact the manufacturer.						

Austinite WR Series, Austinite HE series

Agency	UN Number	Proper Shipping Name	Hazard Class	Label Codes	PG	Marine Pollutant	Other
US DOT	UN0331	Explosive, blasting, type B	1.5D	1.5D		No	ERG-112
Canadian TDG	UN0331	Explosive, blasting, type B	1.5D	1.5D		No	--
IMDG (Vessel)	UN0331	Explosive, blasting, type B	1.5D	1.5D		No	EmS-No, Fire: F-B Spillage: S-Y
IATA (Air)	Contact the manufacturer.						

SECTION 15: REGULATORY INFORMATION

US Federal Regulations:

Emergency Planning and Community Right-To-Know Act (EPCRA), a/k/a Superfund Amendments and Reauthorization Act (SARA) Title III
Toxic Substances Control Act (TSCA)
TSCA Section 8

SARA Section 311/312	Reactive hazard Fire hazard Sudden Release of pressure hazard. Immediate (acute) health hazard Delayed (chronic) health hazard
TSCA	All the ingredients are on the United States TSCA inventory.

Canadian Regulations:

Domestic Substances List (DSL)
Workplace Hazardous Materials Information System (WHMIS)

WHMIS Classification	Note: Explosives are regulated by NRCAN and not classified under WHMIS
DSL	All ingredients are listed on the Canadian DSL

Ammonium nitrate (CAS No. 6484-52-2)

WHMIS Classification	Class C – Oxidizing Substance Class D, Division 2, Subdivision B – Toxic material causing other toxic effects.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF LAST REVISION

This SDS was prepared in accordance with US (29 CFR 1900.1200) and Canadian (WHMIS 2015) requirements.

SDS: P-3 Initial Issue Date: 06/01/2015 Last Revision Date: 07/05/2016 Version: 7

Party Responsible for the Preparation of This Document:

Austin Powder Company
Cleveland, OH 44122
216-464-2400

This information is based on Austin Powder Company's current knowledge and is intended to describe the product for the purposes of health and safety requirements only. It should not be construed as guaranteeing any specific property of the product.

SECTION 1: IDENTIFICATION

Product Identifier: 1.5D Emulsion Explosives
Product Names and Synonyms: Hydromite series, Hydromite Advance series, HEET series, VX series AXE series, Trenchpro
Intended Use: As a commercial explosive.
Intended Users: For use only under strictly controlled conditions and only by qualified personnel who are fully trained in the handling and use of this product.

Name, Address, and Telephone of the Responsible Party:

Austin Powder Company
25800 Science Park Dr.
Cleveland, OH 44122
216-464-2400 during normal business hours
877-836-8286 Toll Free 24/7
www.austinpowder.com

In Case of Emergency Call CHEMTREC – TOLL FREE 24/7
800-424-9300 DOMESTIC
1-703-527-3887 INTERNATIONAL AND MARINE

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture:

Code	Hazard Class	Hazard Category
H205	Explosives	Division 1.5
H227	Flammable Liquid	4
H272	Oxidizing Solid / Oxidizing Liquid	3
H303	Acute Toxicity, oral	5
H315	Skin Corrosion / Irritation	2
H319	Serious eye damage / eye irritation	2A
H333	Acute Toxicity, inhalation	5
H335	Specific target organ toxicity, single exposure; Respiratory tract irritation	3

Label Elements

Danger

Hazard Statements

May mass explode in a fire
Combustible Liquid
May intensify fire; oxidizer
May be harmful if swallowed
Causes skin irritation
Causes eye irritation
May be harmful if inhaled
May cause respiratory irritation

Precautionary Statements

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not breathe dust or fumes.
Do not subject to grinding, friction, impact or shock.
Wash hands and other contact areas thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear eye protection, protective gloves recommended.
IF SWALLOWED: Get immediate medical attention. DO NOT induce vomiting.
IF ON SKIN: Wash contact area with soap and water. If irritation occurs, get medical attention. Take off contaminated clothing and wash before reuse.
IF INHALED: Remove person to fresh air. Keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical attention.
If exposed or concerned, or you do not feel well: Get medical attention.
Store locked-up in a ventilated space, in accordance with all applicable regulations.
Dispose of contents/container in accordance with all applicable regulations.

Other Hazards:

In case of fire: Extreme risk of explosion. Evacuate area. **DO NOT** fight fire when fire reaches explosives.

Exposure reaction may be aggravated for those with pre-existing eye, skin, or respiratory conditions. Causes methemoglobinemia. Methemoglobinemia decreases the blood's ability to carry oxygen and results in symptoms such as dizziness, drowsiness, headache, shortness of breath, blue skin and lips, rapid heart rate, unconsciousness, and possibly death.

Unknown Acute Toxicity: Not available

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Name	Product Identifier	% (w/w)
Ammonium nitrate	CAS No. 6484-52-2	70-95%
Petroleum distillates, hydrotreated light	CAS No. 64742-47-8	0-6%
Distillates, petroleum, hydrotreated middle	CAS No. 64742-46-7	0-6%
White Mineral Oil	CAS No. 8042-47-5	0-6%
Fuels, diesel, no.2	CAS No. 68476-34-6	0-6%
Aluminum	CAS No. 7429-90-5	0-10%
Polyolefin alkanolamine ester emulsifier	CAS No. Proprietary	<1%
Glass microspheres	CAS No. 65997-17-3	0-2%
Plastic microspheres	CAS No. Proprietary	0-0.5%

SECTION 4: FIRST AID MEASURES

General: Never give anything by mouth to an unconscious person. If you feel unwell, get medical attention, show the label where possible.

Inhalation: When symptoms occur: move to open air, keep at rest and in a position comfortable for breathing. Get medical attention. Ventilate suspected area.

Skin Contact: Wash contact areas with soap and water. Remove contaminated clothing. Wash contaminated clothing before reuse.

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

Ingestion: Rinse mouth. DO NOT induce vomiting. Get medical attention.

Most Important Symptoms and Effects both Acute and Delayed:

Inhalation: May cause irritation to the respiratory tract, symptoms include: sneezing, coughing, burning sensation of throat with constricting sensation of the larynx and difficulty in breathing.

Skin Contact: May cause mild skin irritation. Symptoms may include: redness, pain, swelling, itching, burning, dryness and dermatitis. May cause a more severe irritation or allergic reaction in sensitive individuals.

Eye Contact: May cause serious eye irritation. Symptoms may include redness, pain, swelling, itching, burning, tearing and blurred vision.

Ingestion: Ammonium nitrate ingestion may cause methemoglobinemia. Initial manifestation of methemoglobinemia is cyanosis, characterized by blue lips, tongue and mucous membranes, with skin color being slate grey. Further manifestation is characterized by headache, weakness, dyspnea, dizziness, stupor, respiratory distress and death due to anoxia. If ingested, nitrates may be reduced to nitrites by bacteria in the digestive tract. Signs and symptoms of nitrite poisoning include methemoglobinemia, nausea, dizziness, increased heart rate, hypotension, fainting and, possibly shock.

Chronic Symptoms: May cause irritation to the respiratory tract. May cause damage to organs through exposure.

Indication of Any Immediate Medical Attention and Special Treatment Needed:

If exposed, concerned or you don't feel well, get medical attention.

SECTION 5: FIRE FIGHTING MEASURES

DO NOT fight fires involving Explosives. There is an extreme risk that explosives involved in a fire may detonate, especially if confined. Evacuate the area in all directions for one (1) mile or more if any amount of explosives is involved in a fire. Evacuation is recommended if the initial (incipient) fire, not involving explosives, becomes intense. General extinguishers may be used on the initial fire not involving explosives, such as electrical equipment fires, tire fires or a general plant fire. Water may be used to cool explosives not involved in the initial fire. Consult the most current Emergency Response Guidebook (ERG), Guide 112 for additional information.

Extinguishing Media

Suitable Extinguishing Media: None.

Unsuitable Extinguishing Media: For fires near explosives, dry chemical, foams, steam and smothering devices are not effective, can lead to possible explosion and must not be used.

Special Hazards Arising from the Substance or Mixture

Fire Hazard: There is an extreme risk that explosives involved in a fire may detonate.

Advice for Firefighters

Precautionary Measures: It is recommended that the amount and location of any explosives stored near a fire be determined prior to committing firefighters to fight the fire.

Firefighting Instructions: When fighting the initial fire, not involving explosives, firefighters should follow standard firefighting procedures for the materials involved.

Hazardous Combustion Products: No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures:	Contact the manufacturer or CHEMTREC. No smoking, open flames or flame/spark producing items in the area.
For Non-Emergency Personnel	
Protective Equipment:	Use appropriate personal protection equipment (PPE).
Emergency Procedures:	Isolate the area from unnecessary personnel.
For Emergency Personnel	
Protective Equipment:	Provide cleanup crew with proper PPE.
Emergency Procedures:	Stop the discharge if safe to do so. Ventilate area.
Emergency Precautions:	Avoid release to the environment.
Methods and Material for Containment and Cleaning Up:	Contact manufacturer or CHEMTREC.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards when Processed:	Avoid heating explosives in a confined space. Any proposed use of this product in elevated temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. A "hot work" program consistent with OSHA requirements at 29 CFR 1910.252 must be used when performing hot work on explosive process equipment, storage areas or containers related to the intended use.
Hygiene Measures:	Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with soap and water before eating, drinking, or smoking and again when leaving work. Wash contaminated clothing before reuse.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures:	May be corrosive to metals. Smoking, open flames, and unauthorized sparking or flame-producing devices are prohibited.
Storage Conditions:	Storage areas should be inspected regularly by an individual trained to identify potential hazards and ensure that all safety and security control measures are being properly implemented. All explosives storage sites must comply with ATF, OSHA or NRCAN regulations.
Incompatible Materials:	Avoid contamination with combustible or flammable materials, strong acids, strong bases, strong oxidizing agents, reducing agents, chlorinated compounds, copper (any alloys like bronze and brass), metal powders and peroxides.
Special Rules on Packaging:	Packaging in accordance with USDOT or NRCAN regulations.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits:

Ammonium nitrate, CAS No. 6484-52-2		
USA ACGIH (nuisance dust)	ACGIH TWA (mg/m^3)	10 mg/m^3 – Inhalable particulate
USA OSHA (nuisance dust)	OHSA PEL (TWA) (mg/m^3)	5 mg/m^3 – Respirable (particulate)

Fuels, diesel, no. 2, CAS No. 68476-34-6		
US ACGIH	ACGIH TWA	100 mg/m^3 (inhalable fraction and vapor)
Alberta	OEL TWA	100 mg/m^3
British Columbia	OEL TWA	100 mg/m^3 (aerosol, inhalable, and vapor)
Manitoba	OEL TWA	100 mg/m^3 (inhalable fraction and vapor)
Newfoundland & Labrador	OEL TWA	100 mg/m^3 (inhalable fraction and vapor)
Nova Scotia	OEL TWA	100 mg/m^3 (inhalable fraction and vapor)
Ontario	OEL TWA	100 mg/m^3 (inhalable fraction and vapor)
Prince Edward Island	OEL TWA	100 mg/m^3 (inhalable fraction and vapor)
Saskatchewan	OEL STEL	150 mg/m^3 (inhalable fraction and vapor)
Saskatchewan	OEL TWA	100 mg/m^3 (inhalable fraction and vapor)

Aluminum granules, CAS No. 7429-90-5		
USA ACGIH	ACGIH TWA	1 mg/m^3 (respirable fraction)
USA ACGIH	ACGIH category	Not Classifiable as a Human Carcinogen
USA OSHA	OSHA PEL (TWA)	15 mg/m^3 (total dust), 5 mg/m^3 (respirable fraction)
USA NIOSH	NIOSH REL (TWA)	10 mg/m^3 (total dust), 5 mg/m^3 (respirable dust)
Alberta	OEL TWA	10 mg/m^3 (dust)
British Columbia	OEL TWA	1.0 mg/m^3 (respirable)
Manitoba	OEL TWA	1 mg/m^3 (respirable fraction)
New Brunswick	OEL TWA	10 mg/m^3 (metal dust)
Newfoundland & Labrador	OEL TWA	1 mg/m^3 (respirable fraction)
Nova Scotia	OEL TWA	1 mg/m^3 (respirable fraction)
Nunavut	OEL STEL	20 mg/m^3
Nunavut	OEL TWA	10 mg/m^3
Northwest Territories	OEL STEL	20 mg/m^3
Northwest Territories	OEL TWA	10 mg/m^3
Ontario	OEL TWA	1 mg/m^3 (respirable)
Prince Edward Island	OEL TWA	1 mg/m^3 (respirable fraction)
Québec	VEMP	10 mg/m^3
Saskatchewan	OEL STEL	20 mg/m^3 (dust)
Saskatchewan	OEL TWA	10 mg/m^3 (dust)

Glass, oxide, CAS No. 65997-17-3		
USA OSHA	OSHA PEL (TWA)	15 mg/m^3 (total dust) 5 mg/m^3 (inhalable fraction)
USA NIOSH	NIOSH REL (TWA)	5 mg/m^3 (total dust)
Yukon	OEL TWA	30 mg/m^3 (inhalable fraction) 10 mg/m^3 (dust)

Plastic microspheres, CAS No. Proprietary		
US ACGIH	ACGIH TWA	15 mg/m^3 (dust)

Exposure Controls:

Appropriate Engineering Controls: Product should be handled and used under strictly controlled conditions. Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure, but are not required.

Personal Protective Equipment:

Hand Protection: Chemically resistant gloves are recommended, but not required.

Eye Protection: Safety glasses with side shields or safety goggles.

Respiratory Protection: Approved respiratory protection should be worn when recommended by a risk assessment or if irritation is experienced.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Physical and Chemical Properties:

Appearance:	Opaque, viscous (thick) creamy substance
Odor:	Fuel
Odor threshold:	Not available
Vapor density:	Not available
pH:	Not relevant
Melting point (ammonium nitrate):	165°C (330°F)
Initial boiling point and boiling range:	Not available
Flash point:	Not available
Evaporation rate:	Not relevant
Flammability:	Not available
Upper / lower flammability or explosive limits:	Not available
Vapor pressure:	Not available
Bulk Density:	1.02 – 1.30 g/cc (9.2 – 10.8 lb/gal)
Solubility:	Not soluble in water
Partition coefficient: n-octol/water:	Not available
Auto-ignition temperature:	Not available
Decomposition temperature:	>210°C (>410°F)
Viscosity:	Not relevant
Explosive properties:	Mass detonation hazard when involved in a fire
Explosion Data – Sensitivity to Mechanical Impact:	Not sensitive to mechanical impact
Explosion Data – Sensitivity to Static Discharge:	Not sensitive to static discharge

SECTION 10: STABILITY AND REACTIVITY

Reactivity and Chemical Stability: Stable and non-reactive under normal conditions of transportation, storage, handling and use.

Possibility of Hazardous Reactions: Polymerization will not occur.

Conditions to Avoid: Open flame and elevated temperatures.

Incompatible Materials: Avoid contamination with combustible or flammable materials, strong acids, strong bases, strong oxidizing agents, reducing agents, chlorinated compounds, copper (any alloys like bronze and brass), metal powders and peroxides.

Hazardous Combustion Products: No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 11: TOXICOLOGY INFORMATION

Acute Toxicity: Not classified

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: May cause skin irritation

Eye Damage/Irritation: May cause serious eye irritation

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): May cause drowsiness or dizziness

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries after Inhalation: Harmful if inhaled, causes methemoglobinemia. Symptoms may include headache, dizziness, nausea and a loss of coordination.

Symptoms/Injuries after Skin Contact: May cause mild skin irritation. Symptoms may include: redness, pain, swelling, itching, burning, dryness and dermatitis. May cause a more severe or allergic reaction in sensitive individuals.

Symptoms/Injuries after Eye Contact: May cause serious eye irritation. Symptoms may include redness, pain, swelling, itching, burning, tearing and blurred vision.

Symptoms/Injuries after Ingestion: Burning sensation. Abdominal pain. Abdominal cramps. Vomiting. Ammonium nitrate ingestion may cause methemoglobinemia.

Chronic Symptoms: Although none are expected under normal conditions, inhalation exposure may cause methemoglobinemia and may damage respiratory tract.

LD50 and LC50 Data (ingredients):

Ammonium nitrate, CAS No. 6484-52-2	
LD50 Oral Rat	2,217 mg/kg of body weight
LC50 Inhalation Rat	> 88.8 mg/l/4h

Fuels, diesel, no. 2, CAS No 68476-34-6	
LD50 Oral Rat	>5000 mg/kg
LD50 Dermal Rabbit	>2000 mg/kg
LC50 Inhalation Rat	1 - 5 mg/l/4h

Petroleum distillates, hydrotreated light, CAS No. 64742-47-8	
LD50 Oral Rat	> 5,000 mg/kg
LD50 Dermal Rabbit	> 2,000 mg/kg
ATE US (mist)	>< 5.2 mg/l/4h

Distillates, petroleum, hydrotreated middle, CAS No. 64742-46-7	
LD50 Oral Rat	27,000 mg/kg
LC50 Dermal Rabbit	> 2,000 mg/l/4h
LC50 Inhalation Rat	> 5,800 mg/l/4h

SECTION 12: ECOLOGY INFORMATION

Not available

SECTION 13: DISPOSAL CONSIDERATIONS

Call manufacturer or CHEMTREC.

SECTION 14: TRANSPORTATION INFORMATION

Agency	UN Number	Proper Shipping Name	Hazard Class	Label Codes	PG	Marine Pollutant	Other
US DOT	UN0332	Explosive, blasting, type E	1.5D	1.5D		No	ERG-112
Canadian TDG	UN0332	Explosive, blasting, type E	1.5D	1.5D		No	--
IMDG (Vessel)	UN0332	Explosive, blasting, type E	1.5D	1.5D		No	EmS-No, Fire: F-B Spillage: S-Y
IATA (Air)	Contact the manufacturer.						

SECTION 15: REGULATORY INFORMATION

US Federal Regulations:

Emergency Planning and Community Right-To-Know Act (EPCRA), a/k/a Superfund Amendments and Reauthorization Act (SARA) Title III
Toxic Substances Control Act (TSCA)
TSCA Section 8

SARA Section 311/312	Reactive hazard Fire hazard Sudden Release of pressure hazard. Immediate (acute) health hazard Delayed (chronic) health hazard
TSCA	All the ingredients are on the United States TSCA inventory.

Canadian Regulations:

Domestic Substances List (DSL)
Workplace Hazardous Materials Information System (WHMIS)

WHMIS Classification	Note: Explosives are regulated by NRCAN and not classified under WHMIS
DSL	All ingredients are listed on the Canadian DSL

Ammonium nitrate (CAS No. 6484-52-2)

WHMIS Classification	Class C – Oxidizing Substance Class D, Division 2, Subdivision B – Toxic material causing other toxic effects.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF LAST REVISION

This SDS was prepared in accordance with US (29 CFR 1900.1200) and Canadian (WHMIS 2015) requirements.

SDS: P-4 Initial Issue Date: 06/01/2015 Last Revision Date: 05/21/2018 Version: 8

Party Responsible for the Preparation of This Document:

Austin Powder Company
Cleveland, OH 44122
216-464-2400

This information is based on Austin Powder Company's current knowledge and is intended to describe the product for the purposes of health and safety requirements only. It should not be construed as guaranteeing any specific property of the product.

SECTION 1: IDENTIFICATION

Product Identifier: Hydrox Emulsion
Product Names and Synonyms: Hydrox series, VX-Matrix, AXE series.
Intended Use: As an ingredient in an commercial explosive.
Intended Users: For use only under strictly controlled conditions and only by qualified personnel who are fully trained in the handling and use of this product.

Name, Address, and Telephone of the Responsible Party:

Austin Powder Company
25800 Science Park Dr.
Cleveland, OH 44122
216-464-2400 during normal business hours
877-836-8286 Toll Free 24/7
www.austinpowder.com

In Case of Emergency Call CHEMTREC – TOLL FREE 24/7
800-424-9300 DOMESTIC
1-703-527-3887 INTERNATIONAL AND MARINE

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture (GHS-US)

Code	Hazard Class	Hazard Category
H227	Flammable Liquid	4
H272	Oxidizing Liquid	3
H303	Acute Toxicity, oral	5
H315	Skin Corrosion / Irritation	2
H319	Serious eye damage / eye irritation	2A
H333	Acute Toxicity, inhalation	5
H335	Specific target organ toxicity, single exposure; Respiratory tract irritation	3

Additional Classification of the Substance or Mixture (GHS-Canada)

Code	Hazard Class	Hazard Category
H205	Explosives	Division 1.5

Label Elements

Danger

Hazard Statements

Combustible Liquid
May intensify fire; oxidizer
May be harmful if swallowed
Causes skin irritation
Causes eye irritation
May be harmful if inhaled
May cause respiratory irritation

Additional Hazard Statement (GHS-Canada)

May mass explode in a fire

Precautionary Statements

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not breathe dust or fumes.
Do not subject to grinding, friction, impact or shock.
Wash hands and other contact areas thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear eye protection, protective gloves recommended.

IF SWALLOWED: Get immediate medical attention. DO NOT induce vomiting.
IF ON SKIN: Wash contact area with soap and water. If irritation occurs, get medical attention.
Take off contaminated clothing and wash before reuse.
IF INHALED: Remove person to fresh air. Keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical attention.
If exposed or concerned, or you do not feel well: Get medical attention.
Store locked-up in a ventilated space, in accordance with all applicable regulations.
Dispose of contents/container in accordance with all applicable regulations.

Other Hazards:

In case of fire: Extreme risk of explosion. Evacuate area. **DO NOT** fight fire when fire reaches explosives.

Exposure reaction may be aggravated for those with pre-existing eye, skin, or respiratory conditions. Causes methemoglobinemia. Methemoglobinemia decreases the blood's ability to carry oxygen and results in symptoms such as dizziness, drowsiness, headache, shortness of breath, blue skin and lips, rapid heart rate, unconsciousness, and possibly death.

Unknown Acute Toxicity: Not available

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Name	Product Identifier	% (w/w)
Ammonium nitrate	CAS No. 6484-52-2	70-85%
Petroleum distillates, hydrotreated Light	CAS No. 64742-47-8	0-8%
Distillates, petroleum, hydrotreated Middle	CAS No. 64742-46-7	0-8%
White Mineral Oil *	CAS No. 8042-47-5	0-8%
Fuels, diesel, no.2	CAS No. 68476-34-6	0-8%
Polyolefin alkanolamine ester emulsifier	CAS No. Proprietary	<1%

* Hydrox 505 contains only this oil, no other distillate or fuel is used.

SECTION 4: FIRST AID MEASURES

General: Never give anything by mouth to an unconscious person. If you feel unwell, get medical attention, show the label where possible.

Inhalation: When symptoms occur: move to open air, keep at rest and in a position comfortable for breathing. Get medical attention. Ventilate suspected area.

Skin Contact: Wash contact areas with soap and water. Remove contaminated clothing. Wash contaminated clothing before reuse.

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

Ingestion: Rinse mouth. DO NOT induce vomiting. Get medical attention.

Most Important Symptoms and Effects both Acute and Delayed:

Inhalation: May cause irritation to the respiratory tract, symptoms include: sneezing, coughing, burning sensation of throat with constricting sensation of the larynx and difficulty in breathing.

Skin Contact: May cause mild skin irritation. Symptoms may include: redness, pain, swelling, itching, burning, dryness and dermatitis. May cause a more severe irritation or allergic reaction in sensitive individuals.

Eye Contact: May cause serious eye irritation. Symptoms may include redness, pain, swelling, itching, burning, tearing and blurred vision.

Ingestion: Ammonium nitrate ingestion may cause methemoglobinemia. Initial manifestation of methemoglobinemia is cyanosis, characterized by blue lips, tongue and mucous membranes, with skin color being slate grey. Further manifestation is characterized by headache, weakness, dyspnea, dizziness, stupor, respiratory distress and death due to anoxia. If ingested, nitrates may be reduced to nitrites by bacteria in the digestive tract. Signs and symptoms of nitrite poisoning include methemoglobinemia, nausea, dizziness, increased heart rate, hypotension, fainting and, possibly shock.

Chronic Symptoms: Exposure may cause irritation to the respiratory tract or damage to organs.

Indication of Any Immediate Medical Attention and Special Treatment Needed:

If exposed, concerned or you don't feel well, get medical attention.

SECTION 5: FIRE FIGHTING MEASURES

DO NOT fight fires involving Explosives. There is an extreme risk that explosives involved in a fire may detonate, especially if confined. Evacuate the area in all directions for one (1) mile or more if any amount of explosives is involved in a fire. Evacuation is recommended if the initial (incipient) fire, not involving explosives, becomes intense. General extinguishers may be used on the initial fire, not involving explosives, such as electrical equipment fires, tire fires or a general plant fire. Water may be used to cool explosives not involved in the initial fire. Consult the most current Emergency Response Guidebook (ERG), Guide 140 for additional information.

Extinguishing Media

Suitable Extinguishing Media: None.

Unsuitable Extinguishing Media: For fires near explosives, dry chemical, foams, steam and smothering devices are not effective, can lead to possible explosion and must not be used.

Special Hazards Arising from the Substance or Mixture

Fire Hazard:	There is an extreme risk that explosives involved in a fire may detonate.

Advice for Firefighters

Precautionary Measures:	It is recommended that the amount and location of any explosives stored near a fire be determined prior to committing firefighters to fight the fire.
Firefighting Instructions:	When fighting the initial fire, not involving explosives, firefighters should follow standard firefighting procedures for the materials involved.
Hazardous Combustion Products:	No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures:	Contact the manufacturer or CHEMTREC. No smoking, open flames or flame/spark producing items in the area.

For Non-Emergency Personnel

Protective Equipment:	Use appropriate personal protection equipment (PPE).
Emergency Procedures:	Isolate the area from unnecessary personnel.

For Emergency Personnel

Protective Equipment:	Provide cleanup crew with proper PPE.
Emergency Procedures:	Stop the discharge if safe to do so. Ventilate area.
Emergency Precautions:	Avoid release to the environment.
Methods and Material for Containment and Cleaning Up:	Contact manufacturer or CHEMTREC.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards when Processed:	Any proposed use of this product in elevated temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. A "hot work" program consistent with OSHA requirements at 29 CFR 1910.252 must be used when performing hot work on ammonium nitrate process equipment, storage areas or containers related to the intended use.
Hygiene Measures:	Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with soap and water before eating, drinking, or smoking and again when leaving work. Wash contaminated clothing before reuse.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures:	May be corrosive to metals. Smoking, open flames, and unauthorized sparking or flame-producing devices are prohibited.
Storage Conditions:	Storage areas should be inspected regularly by an individual

trained to identify potential hazards and ensure that all safety and security control measures are being properly implemented. All ammonium nitrate storage sites must comply with ATF, OSHA or NRCAN regulations.

Incompatible Materials: Avoid contamination with combustible or flammable materials, strong acids, strong bases, strong oxidizing agents, reducing agents, chlorinated compounds, copper (any alloys like bronze and brass), metal powders and peroxides.

Special Rules on Packaging: Packaging in accordance with USDOT or NRCAN regulations.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits:

Ammonium nitrate, CAS No. 6484-52-2		
USA ACGIH (nuisance dust)	ACGIH TWA (mg/m^3)	10 mg/m^3 – Inhalable particulate
USA OSHA (nuisance dust)	OHSA PEL (TWA) (mg/m^3)	5 mg/m^3 – Respirable (particulate)

Fuels, diesel, no. 2, CAS No. 68476-34-6		
US ACGIH	ACGIH TWA	100 mg/m^3 (inhalable fraction and vapor)
Alberta	OEL TWA	100 mg/m^3
British Columbia	OEL TWA	100 mg/m^3 (aerosol, inhalable, and vapor)
Manitoba	OEL TWA	100 mg/m^3 (inhalable fraction and vapor)
Newfoundland & Labrador	OEL TWA	100 mg/m^3 (inhalable fraction and vapor)
Nova Scotia	OEL TWA	100 mg/m^3 (inhalable fraction and vapor)
Ontario	OEL TWA	100 mg/m^3 (inhalable fraction and vapor)
Prince Edward Island	OEL TWA	100 mg/m^3 (inhalable fraction and vapor)
Saskatchewan	OEL STEL	150 mg/m^3 (inhalable fraction and vapor)
Saskatchewan	OEL TWA	100 mg/m^3 (inhalable fraction and vapor)

Exposure Controls:

Appropriate Engineering Controls: Product should be handled and used under strictly controlled conditions. Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure, but are not required.

Personal Protective Equipment:

Hand Protection: Chemically resistant gloves are recommended, but not required.

Eye Protection: Safety glasses with side shields or safety goggles.

Respiratory Protection: Approved respiratory protection should be worn when recommended by a risk assessment or if irritation is experienced.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Physical and Chemical Properties:

Appearance:	Opaque, viscous (thick) creamy substance
Odor:	Fuel
Odor threshold:	Not available
Vapor density:	Not available
pH:	Not relevant
Melting point:	Not available
Initial boiling point and boiling range:	Not available
Flash point:	Not available
Evaporation rate:	Not relevant
Flammability:	Not available
Upper / lower flammability or explosive limits:	Not available
Vapor pressure:	Not available
Bulk Density:	1.27 – 1.36 g/cc (10.6 – 11.3 lb/gal)
Solubility:	Not soluble in water
Partition coefficient: n-octol/water:	Not available
Auto-ignition temperature:	Not available
Decomposition temperature:	>210°C (>410°F)
Viscosity:	Not relevant
Explosive properties:	Mass detonation hazard when involved in a fire
Explosion Data – Sensitivity to Mechanical Impact:	Not sensitive to mechanical impact
Explosion Data – Sensitivity to Static Discharge:	Not sensitive to static discharge

SECTION 10: STABILITY AND REACTIVITY

Reactivity and Chemical Stability: Stable and non-reactive under normal conditions of transportation, storage, handling and use.

Possibility of Hazardous Reactions: Polymerization will not occur.

Conditions to Avoid: Open flame and elevated temperatures.

Incompatible Materials: Avoid contamination with combustible or flammable materials, strong acids, strong bases, strong oxidizing agents, reducing agents, chlorinated compounds, copper (any alloys like bronze and brass), metal powders and peroxides.

Hazardous Decomposition Products: No unusual fumes or decomposition products expected. However, toxic fumes will be present.

SECTION 11: TOXICOLOGY INFORMATION

Acute Toxicity: Not classified

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: May cause skin irritation

Eye Damage/Irritation: May cause serious eye irritation

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): May cause drowsiness or dizziness

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries after Inhalation: Harmful if inhaled, causes methemoglobinemia. Symptoms may include headache, dizziness, nausea and a loss of coordination.

Symptoms/Injuries after Skin Contact: May cause mild skin irritation. Symptoms may include: redness, pain, swelling, itching, burning, dryness and dermatitis. May cause a more severe or allergic reaction in sensitive individuals.

Symptoms/Injuries after Eye Contact: May cause serious eye irritation. Symptoms may include redness, pain, swelling, itching, burning, tearing and blurred vision.

Symptoms/Injuries after Ingestion: Burning sensation. Abdominal pain. Abdominal cramps. Vomiting. Ammonium nitrate ingestion may cause methemoglobinemia.

Chronic Symptoms: Although none are expected under normal conditions, inhalation exposure may cause methemoglobinemia and may damage respiratory tract.

LD50 and LC50 Data (ingredients):

Ammonium nitrate, CAS No. 6484-52-2	
LD50 Oral Rat	2,217 mg/kg of body weight
LC50 Inhalation Rat	> 88.8 mg/l/4h

Fuels, diesel, no. 2, CAS No 68476-34-6	
LD50 Oral Rat	>5000 mg/kg
LD50 Dermal Rabbit	>2000 mg/kg
LC50 Inhalation Rat	1 - 5 mg/l/4h

Petroleum distillates, hydrotreated light, CAS No. 64742-47-8	
LD50 Oral Rat	> 5,000 mg/kg
LD50 Dermal Rabbit	> 2,000 mg/kg
ATE US (mist)	>< 5.2 mg/l/4h

Distillates, petroleum, hydrotreated middle, CAS No. 64742-46-7	
LD50 Oral Rat	27,000 mg/kg
LC50 Dermal Rabbit	> 2,000 mg/l/4h
LC50 Inhalation Rat	> 5,800 mg/l/4h

SECTION 12: ECOLOGY INFORMATION

Not available

SECTION 13: DISPOSAL CONSIDERATIONS

Call manufacturer or CHEMTREC.

SECTION 14: TRANSPORTATION INFORMATION

Agency	UN Number	Proper Shipping Name	Hazard Class	Label Codes	PG	Marine Pollutant	Other
US DOT	UN3375	Ammonium nitrate emulsion, *intermediate for blasting explosives*	5.1	5.1	II	No	ERG-140
Canadian TDG	UN0332	Explosive, blasting, type E	1.5D	1.5D		No	--
IMDG (Vessel)	UN3375	Ammonium nitrate emulsion, *intermediate for blasting explosives*	5.1	5.1	II	No	EmS-No, Fire: F-H Spillage: S-Q
IATA (Air)	Contact the manufacturer						

SECTION 15: REGULATORY INFORMATION

US Federal Regulations:

Emergency Planning and Community Right-To-Know Act (EPCRA), a/k/a Superfund Amendments and Reauthorization Act (SARA) Title III
Toxic Substances Control Act (TSCA)
TSCA Section 8

SARA Section 311/312	Reactive hazard Fire hazard Sudden Release of pressure hazard. Immediate (acute) health hazard Delayed (chronic) health hazard
TSCA	All the ingredients are on the United States TSCA inventory.

Canadian Regulations:

Domestic Substances List (DSL)
Workplace Hazardous Materials Information System (WHMIS)

WHMIS Classification	Note: Explosives are regulated by NRCAN and not classified under WHMIS
DSL	All ingredients are listed on the Canadian DSL

Ammonium nitrate (CAS No. 6484-52-2)

WHMIS Classification	Class C – Oxidizing Substance Class D, Division 2, Subdivision B – Toxic material causing other toxic effects.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF LAST REVISION

This SDS was prepared in accordance with US (29 CFR 1900.1200) and Canadian (WHMIS 2015) requirements.

SDS: P-5 Initial Issue Date: 06/01/2015 Last Revision Date: 07/05/2016 Version: 6

Party Responsible for the Preparation of This Document:
Austin Powder Company
Cleveland, OH 44122
216-464-2400

This information is based on Austin Powder Company's current knowledge and is intended to describe the product for the purposes of health and safety requirements only. It should not be construed as guaranteeing any specific property of the product.

SECTION 1: IDENTIFICATION

Product Identifier: 1.1D Emulsion Explosives
Product Names and Synonyms: Emulex series, Red-D Prime, Coalmex, Enviroseis, Red-D-Lite E, Thrifty Snowlauncher, AXE series
Intended Use: As a commercial explosive.
Intended Users: For use only under strictly controlled conditions and only by qualified personnel who are fully trained in the handling and use of this product.

Name, Address, and Telephone of the Responsible Party:

Austin Powder Company
25800 Science Park Dr.
Cleveland, OH 44122
216-464-2400 during normal business hours
877-836-8286 Toll Free 24/7
www.austinpowder.com

In Case of Emergency Call CHEMTREC – TOLL FREE 24/7
800-424-9300 DOMESTIC
1-703-527-3887 INTERNATIONAL AND MARINE

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture:

Code	Hazard Class	Hazard Category
H201	Explosives	Division 1.1
H272	Oxidizing Liquid	3
H303	Acute Toxicity, oral	5
H315	Skin Corrosion / Irritation	2
H319	Serious eye damage / eye irritation	2A
H333	Acute Toxicity, inhalation	5
H335	Specific target organ toxicity, single exposure; Respiratory tract irritation	3

Label Elements

Danger

Hazard Statements

Explosive; mass explosion hazard
May intensify fire; oxidizer
May be harmful if swallowed
Causes skin irritation
Causes eye irritation
May be harmful if inhaled
May cause respiratory irritation

Precautionary Statements

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not breathe dust or fumes.
Do not subject to grinding, friction, impact or shock.
Do not eat, drink or smoke when using this product.
Wear eye protection, protective gloves recommended.

IF SWALLOWED: Get immediate medical attention. DO NOT induce vomiting.
IF ON SKIN: Wash contact area with soap and water. If irritation occurs, get medical attention.
Take off contaminated clothing and wash before reuse.
IF INHALED: Remove person to fresh air. Keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical attention.
If exposed or concerned, or you do not feel well: Get medical attention.
Store locked-up in a ventilated space, in accordance with all applicable regulations.
Dispose of contents/container in accordance with all applicable regulations.

Other Hazards:

In case of fire: Extreme risk of explosion. Evacuate area. **DO NOT** fight fire when fire reaches explosives.

Exposure reaction may be aggravated for those with pre-existing eye, skin, or respiratory conditions. Causes methemoglobinemia. Methemoglobinemia decreases the blood's ability to carry oxygen and results in symptoms such as dizziness, drowsiness, headache, shortness of breath, blue skin and lips, rapid heart rate, unconsciousness, and possibly death.

Unknown Acute Toxicity: Not available

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Name	Product Identifier	% (w/w)
Ammonium nitrate	CAS No. 6484-52-2	70-80%
Sodium nitrate	CAS No. 7631-99-4	0-10%
Aluminum	CAS No. 7429-90-5	0-6%
Paraffin oils (petroleum), catalytic dewaxed, light	CAS No. 64742-71-8	0-4%
Distillates, petroleum, hydrotreated heavy, naphthenic	CAS No. 64742-52-5	0-5%
Polyolefin alkanolamine ester emulsifier	CAS No. Proprietary	0-2%
Glass microspheres	CAS No. 65997-17-3	0-2%
Plastic microspheres	CAS No. Proprietary	0-0.5%

SECTION 4: FIRST AID MEASURES

General: Never give anything by mouth to an unconscious person. If you feel unwell, get medical attention, show the label where possible.

Inhalation: When symptoms occur: move to open air, keep at rest and in a position comfortable for breathing. Get medical attention. Ventilate suspected area.

Skin Contact: Wash contact areas with soap and water. Remove contaminated clothing. Wash contaminated clothing before reuse.

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

Ingestion: Rinse mouth. DO NOT induce vomiting. Get medical attention.

Most Important Symptoms and Effects both Acute and Delayed:

Inhalation: May cause irritation to the respiratory tract, symptoms include: sneezing, coughing, burning sensation of throat with constricting sensation of the larynx and difficulty in breathing.

Skin Contact: May cause mild skin irritation. Symptoms may include: redness, pain, swelling, itching, burning, dryness and dermatitis. May cause a more severe irritation or allergic reaction in sensitive individuals.

Eye Contact: May cause serious eye irritation. Symptoms may include redness, pain, swelling, itching, burning, tearing and blurred vision.

Ingestion: Ammonium nitrate ingestion may cause methemoglobinemia. Initial manifestation of methemoglobinemia is cyanosis, characterized by blue lips, tongue and mucous membranes, with skin color being slate grey. Further manifestation is characterized by headache, weakness, dyspnea, dizziness, stupor, respiratory distress and death due to anoxia. If ingested, nitrates may be reduced to nitrites by bacteria in the digestive tract. Signs and symptoms of nitrite poisoning include methemoglobinemia, nausea, dizziness, increased heart rate, hypotension, fainting and, possibly shock.

Chronic Symptoms: May cause irritation to the respiratory tract or damage to organs.

Indication of Any Immediate Medical Attention and Special Treatment Needed:

If exposed, concerned or you don't feel well, get medical attention.

SECTION 5: FIRE FIGHTING MEASURES

DO NOT fight fires involving Explosives. There is an extreme risk that explosives involved in a fire may detonate, especially if confined. Evacuate the area in all directions for one (1) mile or more if any amount of explosives is involved in a fire. Evacuation is recommended if the initial (incipient) fire, not involving explosives, becomes intense. General extinguishers may be used on the initial fire, not involving explosives, such as electrical equipment fires, tire fires or a general plant fire. Water may be used to cool explosives not involved in the initial fire. Consult the most current Emergency Response Guidebook (ERG), Guide 140 for additional information.

Extinguishing Media

Suitable Extinguishing Media: None.

Unsuitable Extinguishing Media: For fires near explosives, dry chemical, foams, steam and smothering devices are not effective, can lead to possible explosion and must not be used.

Special Hazards Arising from the Substance or Mixture

Fire Hazard: There is an extreme risk that explosives involved in a fire may detonate.

Advice for Firefighters

Precautionary Measures: It is recommended that the amount and location of any explosives stored near a fire be determined prior to committing firefighters to fight the fire.

Firefighting Instructions: When fighting the initial fire, not involving explosives, firefighters should follow standard firefighting procedures for the materials involved.

Hazardous Combustion Products: No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures:	Contact the manufacturer or CHEMTREC. No smoking, open flames or flame/spark producing items in the area.
For Non-Emergency Personnel	
Protective Equipment:	Use appropriate personal protection equipment (PPE).
Emergency Procedures:	Isolate the area from unnecessary personnel.
For Emergency Personnel	
Protective Equipment:	Provide cleanup crew with proper PPE.
Emergency Procedures:	Stop the discharge if safe to do so. Ventilate area.
Emergency Precautions:	Avoid release to the environment.
Methods and Material for Containment and Cleaning Up:	Contact manufacturer or CHEMTREC.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards when Processed:	Avoid heating explosives in a confined space. Any proposed use of this product in elevated temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. A "hot work" program consistent with OSHA requirements at 29 CFR 1910.252 must be used when performing hot work on explosive process equipment, storage areas or containers related to the intended use.
Hygiene Measures:	Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with soap and water before eating, drinking, or smoking and again when leaving work. Wash contaminated clothing before reuse.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures:	May be corrosive to metals. Smoking, open flames, and unauthorized sparking or flame-producing devices are prohibited.
Storage Conditions:	Storage areas should be inspected regularly by an individual trained to identify potential hazards and ensure that all safety and security control measures are being properly implemented. All explosives storage sites must comply with ATF, OSHA or NRCAN regulations.
Incompatible Materials:	Avoid contamination with combustible or flammable materials, strong acids, strong bases, strong oxidizing agents, reducing agents, chlorinated compounds, copper (any alloys like bronze and brass), metal powders and peroxides.
Special Rules on Packaging:	Packaging in accordance with USDOT or NRCAN regulations.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits:

Ammonium nitrate, CAS No. 6484-52-2		
USA ACGIH (nuisance dust)	ACGIH TWA (mg/m^3)	10 mg/m^3 – Inhalable particulate
USA OSHA (nuisance dust)	OHSA PEL (TWA) (mg/m^3)	5 mg/m^3 – Respirable (particulate)

Aluminum granules, CAS No. 7429-90-5		
USA ACGIH	ACGIH TWA	1 mg/m^3 (inhalable fraction)
USA ACGIH	ACGIH category	Not Classifiable as a Human Carcinogen
USA OSHA	OSHA PEL (TWA)	15 mg/m^3 (total dust) 5 mg/m^3 (inhalable fraction)
USA NIOSH	NIOSH REL (TWA)	10 mg/m^3 (total dust) 5 mg/m^3 (inhalable dust)
Alberta	OEL TWA	10 mg/m^3 (dust)
British Columbia	OEL TWA	1.0 mg/m^3 (inhalable)
Manitoba	OEL TWA	1 mg/m^3 (inhalable fraction)
New Brunswick	OEL TWA	10 mg/m^3 (metal dust)
Newfoundland & Labrador	OEL TWA	1 mg/m^3 (inhalable fraction)
Nova Scotia	OEL TWA	1 mg/m^3 (inhalable fraction)
Nunavut	OEL STEL	20 mg/m^3
Nunavut	OEL TWA	10 mg/m^3
Northwest Territories	OEL STEL	20 mg/m^3
Northwest Territories	OEL TWA	10 mg/m^3
Ontario	OEL TWA	1 mg/m^3 (inhalable)
Prince Edward Island	OEL TWA	1 mg/m^3 (inhalable fraction)
Québec	VEMP	10 mg/m^3
Saskatchewan	OEL STEL	20 mg/m^3 (dust)
Saskatchewan	OEL TWA	10 mg/m^3 (dust)

Glass, oxide, CAS No. 65997-17-3		
USA OSHA	OSHA PEL (TWA)	15 mg/m^3 (total dust) 5 mg/m^3 (inhalable fraction)
USA NIOSH	NIOSH REL (TWA)	5 mg/m^3 (total dust)
Yukon	OEL TWA	30 mg/m^3 (inhalable fraction) 10 mg/m^3 (dust)

Plastic Microspheres, CAS No. Propriety		
USA ACGIH	ACGIH TWA	15 mg/m^3 (dust)

Exposure Controls:

Appropriate Engineering Controls: Product should be handled and used under strictly controlled conditions. Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure, but are not required.

Personal Protective Equipment:

Hand Protection: Chemically resistant gloves are recommended, but not required.

Eye Protection: Safety glasses with side shields or safety goggles.

Respiratory Protection: Approved respiratory protection should be worn when recommended by a risk assessment or if irritation is experienced.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Physical and Chemical Properties:

Appearance:	Paste or putty like material
Odor:	None
Odor threshold:	Not available
Vapor density:	Not available
pH:	Not relevant
Melting point (ammonium nitrate):	165°C (330°F)
Initial boiling point and boiling range:	Not available
Flash point:	Not available
Evaporation rate:	Not relevant
Flammability:	Not available
Upper / lower flammability or explosive limits:	Not available
Vapor pressure:	Not available
Density:	1.05 – 1.25 g/cc
Solubility:	Not soluble in water
Partition coefficient: n-octol/water:	Not available
Auto-ignition temperature:	Not available
Decomposition temperature:	>210°C (>410°F)
Viscosity:	Not relevant
Explosive properties:	Mass detonation hazard when involved in a fire
Explosion Data – Sensitivity to Mechanical Impact:	Not sensitive to mechanical impact
Explosion Data – Sensitivity to Static Discharge:	Not sensitive to static discharge

SECTION 10: STABILITY AND REACTIVITY

Reactivity and Chemical Stability: Stable and non-reactive under normal conditions of transportation, storage, handling and use.

Possibility of Hazardous Reactions: Polymerization will not occur.

Conditions to Avoid: Open flame and elevated temperatures.

Incompatible Materials: Avoid contamination with combustible or flammable materials, strong acids, strong bases, strong oxidizing agents, reducing agents, chlorinated compounds, copper (any alloys like bronze and brass), metal powders and peroxides.

Hazardous Combustion Products: No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 11: TOXICOLOGY INFORMATION

Acute Toxicity: Not classified

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: May cause skin irritation

Eye Damage/Irritation: May cause serious eye irritation

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): May cause drowsiness or dizziness

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries after Inhalation: Not classified

Symptoms/Injuries after Skin Contact: May cause mild skin irritation. Symptoms may include: redness, pain, swelling, itching, burning, dryness and dermatitis. May cause a more severe or allergic reaction in sensitive individuals.

Symptoms/Injuries after Eye Contact: May cause serious eye irritation. Symptoms may include redness, pain, swelling, itching, burning, tearing and blurred vision.

Symptoms/Injuries after Ingestion: Burning sensation. Abdominal pain. Abdominal cramps. Vomiting. Ammonium nitrate ingestion may cause methemoglobinemia.

Chronic Symptoms: Although none are expected under normal conditions, inhalation exposure may cause methemoglobinemia and may damage respiratory tract.

LD50 and LC50 Data (ingredients):

Ammonium nitrate, CAS No. 6484-52-2	
LD50 Oral Rat	2,217 mg/kg of body weight
LC50 Inhalation Rat	> 88.8 mg/l/4h

Sodium nitrate, CAS No. 7631-99-4	
LD50 Oral Rat	1,267 mg/kg of body weight

SECTION 12: ECOLOGY INFORMATION

Not available

SECTION 13: DISPOSAL CONSIDERATIONS

Call manufacturer or CHEMTREC.

SECTION 14: TRANSPORTATION INFORMATION

Agency	UN Number	Proper Shipping Name	Hazard Class	Label Codes	PG	Marine Pollutant	Other
US DOT	UN0241	Explosive, blasting, type E	1.1D	1.1D		No	ERG-112
Canadian TDG	UN0241	Explosive, blasting, type E	1.1D	1.1D		No	--
IMDG (Vessel)	UN0241	Explosive, blasting, type E	1.1D	1.1D		No	EmS-No, Fire: F-B Spillage: S-X
IATA (Air)	Contact the manufacturer.						

SECTION 15: REGULATORY INFORMATION

US Federal Regulations:

Emergency Planning and Community Right-To-Know Act (EPCRA), a/k/a Superfund Amendments and Reauthorization Act (SARA) Title III

Toxic Substances Control Act (TSCA)
TSCA Section 8

SARA Section 311/312	Fire hazard Sudden Release of pressure hazard. Immediate (acute) health hazard Delayed (chronic) health hazard
TSCA	All the ingredients are on the United States TSCA inventory.

Canadian Regulations:

Domestic Substances List (DSL)

Workplace Hazardous Materials Information System (WHMIS)

WHMIS Classification	Note: Explosives are regulated by NRCAN and not classified under WHMIS
DSL	All ingredients are listed on the Canadian DSL

Ammonium nitrate (CAS No. 6484-52-2)

WHMIS Classification	Class C – Oxidizing Substance Class D, Division 2, Subdivision B – Toxic material causing other toxic effects.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF LAST REVISION

This SDS was prepared in accordance with US (29 CFR 1900.1200) and Canadian (WHMIS 2015) requirements.

SDS: P-6 Initial Issue Date: 06/01/2015 Last Revision Date: 07/05/2016 Version: 6

Party Responsible for the Preparation of This Document:

Austin Powder Company
Cleveland, OH 44122
216-464-2400

This information is based on Austin Powder Company's current knowledge and is intended to describe the product for the purposes of health and safety requirements only. It should not be construed as guaranteeing any specific property of the product.

SECTION 1: IDENTIFICATION

Product Identifier: Cast Boosters
Product Names and Synonyms: ACP Booster Series, Orange Cap Series, Red Cap Series, Black Cap Series, Blue Cap Series, Brown Cap Series, Green Cap Series, Purple Cap Series, White Cap Series, Gray Cap Series, NDS Booster Series, ADP Booster Series, Gold Nugget, Diamond Nugget, DES Series, DES Pentolite Charges, DES Shaped Charges, Rock Crushers, 60, 90, 110 Gram Booster, Prime Gel, Renforcateurs, HDP Series, Snow Launcher Series, Delta K Series, Avalanche Guard, Hornet Series, Enviroprime Series, Electro Star Series, E-Star Series, Seisprime Series, Oil Well Special Series, DP Series, Crack Shot Series, Eagle Series, Trenchprime Series
Intended Use: As a commercial explosive.
Intended Users: For use only under strictly controlled conditions and only by qualified personnel who are fully trained in the handling and use of this product.

Name, Address, and Telephone of the Responsible Party:

Austin Powder Company
25800 Science Park Dr.
Cleveland, OH 44122
216-464-2400 during normal business hours
877-836-8286 Toll Free 24/7
www.austinpowder.com

In Case of Emergency Call CHEMTREC – TOLL FREE 24/7
800-424-9300 DOMESTIC
1-703-527-3887 INTERNATIONAL AND MARINE

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture:

Code	Hazard Class	Hazard Category
H201	Explosives	Division 1.1
H301	Acute toxicity, oral	3
H311	Acute toxicity, dermal	3
H361	Reproductive toxicity	2
H372	Specific target organ toxicity, repeated exposure	1

Label Elements

Danger

Hazard Statements

Explosive, mass explosion hazard
Toxic if swallowed
Toxic in contact with skin
Suspected of damaging fertility or the unborn child
Causes damage to organs through prolonged or repeated exposure

Precautionary Statements

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not breathe dust or fumes.
Do not subject to grinding, friction, impact or shock.
Do not eat, drink or smoke when using this product.
Wear eye protection, protective gloves recommended.
IF SWALLOWED: Get immediate medical attention. DO NOT induce vomiting.
IF ON SKIN: Wash contact area with soap and water. If irritation occurs, get medical attention.
Take off contaminated clothing and wash before reuse.
IF INHALED: Remove person to fresh air. Keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical attention.
If exposed or concerned, or you do not feel well: Get medical attention.
Store locked-up in a ventilated space, in accordance with all applicable regulations.
Dispose of contents/container in accordance with all applicable regulations.

Other Hazards:

In case of fire: Extreme risk of explosion. Evacuate area. **DO NOT** fight fire when fire reaches explosives.

Unknown Acute Toxicity: Not available

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Name	Product Identifier	% (w/w)
2,4,6-Trinitrotoluene (TNT)	CAS No. 118-96-7	30-70%
Cyclonite (RDX)	CAS No. 121-82-4	0-70%
Pentaerythritol tetranitrate (PETN)	CAS No. 78-11-5	0-70%
Octogen (HMX)	CAS No. 2691-41-0	0-70%
Aluminum	CAS No. 7429-90-5	0-20%

SECTION 4: FIRST AID MEASURES

General: Never give anything by mouth to an unconscious person. If you feel unwell, get medical attention, show the label where possible.

Inhalation: Not expected to be a hazard under normal conditions of use.

Skin Contact: Not expected to be a hazard under normal conditions of use.

Eye Contact: Not expected to be a hazard under normal conditions of use.

Ingestion: Not expected to be a hazard under normal conditions of use.

Most Important Symptoms and Effects both Acute and Delayed:

Inhalation: None expected.

Skin Contact: None expected.

Eye Contact: None expected.

Ingestion: None expected.

Chronic Symptoms: None expected.

Indication of Any Immediate Medical Attention and Special Treatment Needed:

If exposed, concerned or you don't feel well, get medical attention.

SECTION 5: FIRE FIGHTING MEASURES

DO NOT fight fires involving Explosives. There is an extreme risk that explosives involved in a fire may detonate, especially if confined. Evacuate the area in all directions for one (1) mile or more if any amount of explosives is involved in a fire. Evacuation is recommended if the initial (incipient) fire, not involving explosives, becomes intense. General extinguishers may be used on the initial fire not involving explosives, such as electrical equipment fires, tire fires or a general plant fire. Water may be used to cool explosives not involved in the initial fire. Consult the most current Emergency Response Guidebook (ERG), Guide 112 for additional information.

Extinguishing Media

Suitable Extinguishing Media: None.

Unsuitable Extinguishing Media: For fires near explosives, dry chemical, foams, steam and smothering devices are not effective, can lead to possible explosion and must not be used.

Special Hazards Arising from the Substance or Mixture

Fire Hazard: There is an extreme risk that explosives involved in a fire may detonate.

Advice for Firefighters

Precautionary Measures: It is recommended that the amount and location of any explosives stored near a fire be determined prior to committing firefighters to fight the fire.

Firefighting Instructions: When fighting the initial fire, not involving explosives, firefighters should follow standard firefighting procedures for the materials involved.

Hazardous Combustion Products: No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Contact the manufacturer or CHEMTREC. No smoking, open flames or flame/spark producing items in the area.

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Isolate the area from unnecessary personnel.

For Emergency Personnel

Protective Equipment: Provide cleanup crew with proper PPE.

Emergency Procedures: Stop the discharge if safe to do so. Ventilate area.

Emergency Precautions: Avoid release to the environment.

Methods and Material for Containment and Cleaning Up: Contact manufacturer or CHEMTREC.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards when Processed: Avoid heating explosives in a confined space. Any proposed use of this product in elevated temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. A "hot work" program consistent with OSHA requirements at 29 CFR 1910.252 must be used when performing hot work on explosive process equipment, storage areas or containers related to the intended use.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with soap and water before eating, drinking, or smoking and again when leaving work. Wash contaminated clothing before reuse.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: May be corrosive to metals. Smoking, open flames, and unauthorized sparking or flame-producing devices are prohibited.

Storage Conditions: Storage areas should be inspected regularly by an individual trained to identify potential hazards and ensure that all safety and security control measures are being properly implemented. All explosives storage sites must comply with ATF, OSHA or NRCAN regulations.

Incompatible Materials: Avoid contamination with combustible or flammable materials, strong acids, strong bases, strong oxidizing agents, reducing agents, chlorinated compounds, copper (any alloys like bronze and brass), metal powders and peroxides.

Special Rules on Packaging: Packaging in accordance with USDOT or NRCAN regulations.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits:

2,4,6-Trinitrotoluene (TNT), CAS N0. 118-96-7		
USA ACGIH	ACGIH TWA	0.1 mg/m³
USA OSHA	OSHA PELTWA)	1.5 mg/m³
USA NIOSH	NIOSH REL (TWA)	0.5 mg/m³
USA IDLH	US IDLH	500 mg/m³
Alberta	OEL TWA	0.1 mg/m³
British Columbia	OEL TWA	0.1 mg/m³
Manitoba	OEL TWA	0.1 mg/m³
New Brunswick	OEL TWA	0.1 mg/m³
Newfoundland & Labrador	OEL TWA	0.1 mg/m³
Nova Scotia	OEL TWA	0.1 mg/m³
Nunavut	OEL Ceiling	0.5 mg/m³
Northwest Territories	OEL Ceiling	0.5 mg/m³
Ontario	OEL TWA	0.1 mg/m³
Prince Edward Island	OEL TWA	0.1 mg/m³
Québec	VEMP	0.5 mg/m³
Saskatchewan	OEL STEL	0.3 mg/m³
Saskatchewan	OEL TWA	0.1 mg/m³
Yukon	OEL Ceiling	0.5 mg/m³

Cyclonite (RDX), CAS No. 121-82-4		
USA ACGIH	ACGIH TWA	0.5 mg/m³
USA NIOSH	NIOSH REL (TWA)	1.5 mg/m³
USA NIOSH	NIOSH REL (STEL)	3 mg/m³
Alberta	OEL TWA	0.5 mg/m³
British Columbia	OEL TWA	0.5 mg/m³
Manitoba	OEL TWA	0.5 mg/m³
New Brunswick	OEL TWA	0.5 mg/m³
Newfoundland & Labrador	OEL TWA	0.5 mg/m³
Nova Scotia	OEL TWA	0.5 mg/m³
Nunavut	OEL STEL	3 mg/m³
Nunavut	OEL TWA	1.5 mg/m³
Northwest Territories	OEL STEL	3 mg/m³
Northwest Territories	OEL TWA	1.5 mg/m³
Ontario	OEL TWA	0.5 mg/m³
Prince Edward Island	OEL TWA	0.5 mg/m³
Québec	VEMP	1.5 mg/m³
Saskatchewan	OEL STEL	1.5 mg/m³
Saskatchewan	OEL TWA	0.5 mg/m³
Yukon	OEL STEL	3 mg/m³
Yukon	OEL TWA	1.5 mg/m³

Aluminum granules, CAS No. 7429-90-5		
USA ACGIH	ACGIH TWA	1 mg/m³ (inhalable fraction)
USA ACGIH	ACGIH category	Not Classifiable as a Human Carcinogen
USA OSHA	OSHA PEL (TWA)	15 mg/m³ (total dust) 5 mg/m³ (inhalable fraction)
USA NIOSH	NIOSH REL (TWA)	10 mg/m³ (total dust) 5 mg/m³ (inhalable dust)
Alberta	OEL TWA	10 mg/m³ (dust)
British Columbia	OEL TWA	1.0 mg/m³ (inhalable)
Manitoba	OEL TWA	1 mg/m³ (inhalable fraction)
New Brunswick	OEL TWA	10 mg/m³ (metal dust)
Newfoundland & Labrador	OEL TWA	1 mg/m³ (inhalable fraction)
Nova Scotia	OEL TWA	1 mg/m³ (inhalable fraction)
Nunavut	OEL STEL	20 mg/m³
Nunavut	OEL TWA	10 mg/m³
Northwest Territories	OEL STEL	20 mg/m³
Northwest Territories	OEL TWA	10 mg/m³
Ontario	OEL TWA	1 mg/m³ (inhalable)
Prince Edward Island	OEL TWA	1 mg/m³ (inhalable fraction)
Québec	VEMP	10 mg/m³
Saskatchewan	OEL STEL	20 mg/m³ (dust)
Saskatchewan	OEL TWA	10 mg/m³ (dust)

Exposure Controls:

Appropriate Engineering Controls: Product should be handled and used under strictly controlled conditions. Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure, but are not required.

Personal Protective Equipment:

Hand Protection: Chemically resistant gloves are recommended, but not required.

Eye Protection: Safety glasses with side shields or safety goggles.

Respiratory Protection: Approved respiratory protection should be worn when recommended by a risk assessment or if irritation is experienced.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Physical and Chemical Properties:

Appearance:	Solid
Odor:	None
Odor threshold:	Not available
Vapor density:	Not available
pH:	Not relevant
Melting point:	70°C - 75°C (158°F - 167°F)
Initial boiling point and boiling range:	Not available
Flash point (oil):	Not available
Evaporation rate:	Not relevant
Flammability:	Not available
Upper / lower flammability or explosive limits:	Not available
Vapor pressure:	Not available
Density:	1.5 – 1.7 g/cc
Solubility:	Not soluble in water
Partition coefficient: n-octol/water:	Not available
Auto-ignition temperature:	Not Available
Decomposition temperature:	210°C (410°F)
Viscosity:	Not relevant
Explosive properties:	Mass detonation hazard when involved in a fire
Explosion Data – Sensitivity to Mechanical Impact:	Not sensitive to mechanical impact
Explosion Data – Sensitivity to Static Discharge:	Not sensitive to static discharge

SECTION 10: STABILITY AND REACTIVITY

Reactivity and Chemical Stability: Stable and non-reactive under normal conditions of transportation, storage, handling and use.

Possibility of Hazardous Reactions: Polymerization will not occur.

Conditions to Avoid: Open flame and elevated temperatures.

Incompatible Materials: Avoid contamination with combustible or flammable materials, strong acids, strong bases, strong oxidizing agents, reducing agents, chlorinated compounds, copper (any alloys like bronze and brass), metal powders and peroxides.

Hazardous Combustion Products: No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 11: TOXICOLOGY INFORMATION

Acute Toxicity: Not classified

LD50 and LC50 Data: Not available for product

Skin Corrosion/Irritation: Not classified

Eye Damage/Irritation: Not classified

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): None

Specific Target Organ Toxicity (Repeated Exposure): None

Aspiration Hazard: Not classified

Symptoms/Injuries after Inhalation: Not expected to be a hazard under normal conditions of use.

Symptoms/Injuries. after Skin Contact: Not expected to be a hazard under normal conditions of use

Symptoms/Injuries after Eye Contact: Not expected to be a hazard under normal conditions of use.

Symptoms/Injuries after Ingestion: Not expected to be a hazard under normal conditions of use.

Chronic Symptoms: None

LD50 and LC50 Data (ingredients):

2,4,6-Trinitrotoluene (TNT), CAS No. 118-96-7	
ATE US (oral)	100 mg/kg of body weight
ATE US (dermal)	300 mg/kg of body weight
ATE US (dust)	0.5 mg/kg of body weight
IARC	3

Cyclonite (RDX), CAS No. 121-82-4	
LD50 Oral Rat	100 mg/kg of body weight
LC50 Inhalation Rat	> 88.8 mg/l/4h

Octogen (HMX), CAS No. 2691-41-0	
LD50 Oral Rat	1,670 mg/kg
LD50 Dermal Rat	982 mg/kg species: New Zealand White

SECTION 12: ECOLOGY INFORMATION

Not available

SECTION 13: DISPOSAL CONSIDERATIONS

Call manufacturer or CHEMTREC.

SECTION 14: TRANSPORTATION INFORMATION

Agency	UN Number	Proper Shipping Name	Hazard Class	Label Codes	PG	Marine Pollutant	Other
US DOT	UN0042	Boosters, *without detonator*	1.1D	1.1D		No	ERG-112
Canadian TDG	UN0042	Boosters, *without detonator*	1.1D	1.1D		No	--
IMDG (Vessel)	UN0042	Boosters, *without detonator*	1.1D	1.1D		No	EmS-No, Fire: F-B Spillage: S-X
IATA (Air)	Contact the manufacturer.						

SECTION 15: REGULATORY INFORMATION

US Federal Regulations:

Emergency Planning and Community Right-To-Know Act (EPCRA), a/k/a Superfund Amendments and Reauthorization Act (SARA) Title III
Toxic Substances Control Act (TSCA)
TSCA Section 8

SARA Section 311/312	Fire hazard Sudden Release of pressure hazard. Immediate (acute) health hazard Delayed (chronic) health hazard
TSCA	All the ingredients are on the United States TSCA inventory.

Canadian Regulations:

Domestic Substances List (DSL)
Workplace Hazardous Materials Information System (WHMIS)

WHMIS Classification	Note: Explosives are regulated by NRCAN and not classified under WHMIS
DSL	All ingredients are listed on the Canadian DSL

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF LAST REVISION

This SDS was prepared in accordance with US (29 CFR 1900.1200) and Canadian (WHMIS 2015) requirements.

SDS: P-7 Initial Issue Date: 06/01/2015 Last Revision Date: 05/21/2018 Version: 8

Party Responsible for the Preparation of This Document:

Austin Powder Company
Cleveland, OH 44122
216-464-2400

This information is based on Austin Powder Company's current knowledge and is intended to describe the product for the purposes of health and safety requirements only. It should not be construed as guaranteeing any specific property of the product.

SECTION 1: IDENTIFICATION

Product Identifier: Detonating Cord
Product Names and Synonyms: Lite Line, Scotch Cord, A-Cord, No. 10 to No. 400 cord series, Seismic Detonating Cord, Slide Line Series, Special Series, Detonating Cords, *Cordeau detonant fuse*
Intended Use: As a commercial explosive.
Intended Users: For use only under strictly controlled conditions and only by qualified personnel who are fully trained in the handling and use of this product.

Name, Address, and Telephone of the Responsible Party:

Austin Powder Company
25800 Science Park Dr.
Cleveland, OH 44122
216-464-2400 during normal business hours
877-836-8286 Toll Free 24/7
www.austinpowder.com

In Case of Emergency Call CHEMTREC – TOLL FREE 24/7
800-424-9300 DOMESTIC
1-703-527-3887 INTERNATIONAL AND MARINE

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture:

Code	Hazard Class	Hazard Category
H201	Explosives	Division 1.1
H302	Acute toxicity, oral	4

Label Elements

Danger

Hazard Statements

Explosive, mass explosion hazard
Harmful if swallowed

Precautionary Statements

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not breathe dust or fumes.
Do not subject to grinding, friction, impact or shock.
Do not eat, drink or smoke when using this product.
Wear eye protection, protective gloves recommended.
If exposed or concerned, or you do not feel well: Get medical attention.
Store locked-up in a ventilated space, in accordance with all applicable regulations.
Dispose of contents/container in accordance with all applicable regulations.

Other Hazards:

In case of fire: Extreme risk of explosion. Evacuate area. **DO NOT** fight fire when fire reaches explosives.

Unknown Acute Toxicity: Not available

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Name	Product Identifier	% (w/w)
Pentaerythritol tetranitrate (PETN)	CAS No. 78-11-5	20 - 80%

SECTION 4: FIRST AID MEASURES

General: Never give anything by mouth to an unconscious person. If you feel unwell, get medical attention, show the label where possible.

Inhalation: Not expected to be a hazard under normal conditions of use.

Skin Contact: Not expected to be a hazard under normal conditions of use.

Eye Contact: Not expected to be a hazard under normal conditions of use.

Ingestion: Not expected to be a hazard under normal conditions of use.

Most Important Symptoms and Effects both Acute and Delayed:

Inhalation: None expected.

Skin Contact: None expected.

Eye Contact: None expected.

Ingestion: None expected.

Chronic Symptoms: None expected.

Indication of Any Immediate Medical Attention and Special Treatment Needed:

If exposed, concerned or you don't feel well, get medical attention.

SECTION 5: FIRE FIGHTING MEASURES

DO NOT fight fires involving Explosives. There is an extreme risk that explosives involved in a fire may detonate, especially if confined. Evacuate the area in all directions for one (1) mile or more if any amount of explosives is involved in a fire. Evacuation is recommended if the initial (incipient) fire, not involving explosives, becomes intense. General extinguishers may be used on the initial fire not involving explosives, such as electrical equipment fires, tire fires or a general plant fire. Water may be used to cool explosives not involved in the initial fire. Consult the most current Emergency Response Guidebook (ERG), Guide 112 for additional information.

Extinguishing Media

Suitable Extinguishing Media: None.

Unsuitable Extinguishing Media: For fires near explosives, dry chemical, foams, steam and smothering devices are not effective, can lead to possible explosion and must not be used.

Special Hazards Arising from the Substance or Mixture

Fire Hazard:	There is an extreme risk that explosives involved in a fire may detonate.

Advice for Firefighters

Precautionary Measures:	It is recommended that the amount and location of any explosives stored near a fire be determined prior to committing firefighters to fight the fire.
Firefighting Instructions:	When fighting the initial fire, not involving explosives, firefighters should follow standard firefighting procedures for the materials involved.
Hazardous Combustion Products:	No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures:	Contact the manufacturer or CHEMTREC. No smoking, open flames or flame/spark producing items in the area.

For Non-Emergency Personnel

Protective Equipment:	Use appropriate personal protection equipment (PPE).
Emergency Procedures:	Isolate the area from unnecessary personnel.

For Emergency Personnel

Protective Equipment:	Provide cleanup crew with proper PPE.
Emergency Procedures:	Stop the discharge if safe to do so. Ventilate area.
Emergency Precautions:	Avoid release to the environment.
Methods and Material for Containment and Cleaning Up:	Contact manufacturer or CHEMTREC.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards when Processed:	Avoid heating explosives in a confined space. Any proposed use of this product in elevated temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. A "hot work" program consistent with OSHA requirements at 29 CFR 1910.252 must be used when performing hot work on explosive process equipment, storage areas or containers related to the intended use.
Hygiene Measures:	Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with soap and water before eating, drinking, or smoking and again when leaving work.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures:	Smoking, open flames, and unauthorized sparking or flame-producing devices are prohibited.
Storage Conditions:	Storage areas should be inspected regularly by an individual trained to identify potential hazards and ensure that all safety and security control measures are being properly implemented. All explosives storage sites must comply with ATF, OSHA or NRCAN regulations.
Incompatible Materials:	Avoid contamination with combustible or flammable materials, strong acids, strong bases, strong oxidizing agents, reducing agents, chlorinated compounds, copper (any alloys like bronze and brass), metal powders and peroxides.
Special Rules on Packaging:	Packaging in accordance with USDOT or NRCAN regulations.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits:	Not available
Exposure Controls:	
Appropriate Engineering Controls:	Product should be handled and used under strictly controlled conditions.
Personal Protective Equipment:	
Hand Protection:	Chemically resistant gloves are recommended, but not required.
Eye Protection:	Safety glasses with side shields or safety goggles.
Respiratory Protection:	Approved respiratory protection should be worn when recommended by a risk assessment or if irritation is experienced.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Physical and Chemical Properties:

Appearance:	Small diameter rope with white powdery core
Odor:	None
Odor threshold:	Not available
Vapor density:	Not available
pH:	Not relevant
Melting point:	140°C (284°F)
Initial boiling point and boiling range:	Not available
Flash point (oil):	Not available
Evaporation rate:	Not relevant
Flammability:	Not available
Upper / lower flammability or explosive limits:	Not available
Vapor pressure:	Not available
Density:	Not relevant
Solubility:	Not soluble in water
Partition coefficient: n-octol/water:	Not available
Auto-ignition temperature:	Not Available
Decomposition temperature:	>150°C (300°F)
Viscosity:	Not relevant
Explosive properties:	Mass detonation hazard when involved in a fire
Explosion Data – Sensitivity to Mechanical Impact:	Sensitive to mechanical impact
Explosion Data – Sensitivity to Static Discharge:	Sensitive to static discharge

SECTION 10: STABILITY AND REACTIVITY

Reactivity and Chemical Stability: Stable and non-reactive under normal conditions of transportation, storage, handling and use.

Possibility of Hazardous Reactions: Polymerization will not occur.

Conditions to Avoid: Open flame and elevated temperatures.

Incompatible Materials: Strong acids

Hazardous Combustion Products: No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 11: TOXICOLOGY INFORMATION

Acute Toxicity: Not classified

LD50 and LC50 Data: Not available for product

Skin Corrosion/Irritation: Not classified

Eye Damage/Irritation: Not classified

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): None

Specific Target Organ Toxicity (Repeated Exposure): None

Aspiration Hazard: Not classified

Symptoms/Injuries after Inhalation: Not expected to be a hazard under normal conditions of use.

Symptoms/Injuries. after Skin Contact: Not expected to be a hazard under normal conditions of use

Symptoms/Injuries after Eye Contact: Not expected to be a hazard under normal conditions of use.

Symptoms/Injuries after Ingestion: Not expected to be a hazard under normal conditions of use.

Chronic Symptoms: None

LD50 and LC50 Data (ingredients): Not available

SECTION 12: ECOLOGY INFORMATION

Not available

SECTION 13: DISPOSAL CONSIDERATIONS

Call manufacturer or CHEMTREC.

SECTION 14: TRANSPORTATION INFORMATION

Agency	UN Number	Proper Shipping Name	Hazard Class	Label Codes	PG	Marine Pollutant	Other
US DOT	UN0065	Cord, detonating, *flexible*	1.1D	1.1D		No	ERG-112
Canadian TDG	UN0065	Cord, detonating, *flexible*	1.1D	1.1D		No	
IMDG (Vessel)	UN0065	Cord, detonating, *flexible*	1.1D	1.1D		No	EmS-No, Fire: F-B Spillage: S-X
IATA (Air)	Contact the manufacturer						

SECTION 15: REGULATORY INFORMATION

US Federal Regulations:

Emergency Planning and Community Right-To-Know Act (EPCRA), a/k/a Superfund Amendments and Reauthorization Act (SARA) Title III
Toxic Substances Control Act (TSCA)
TSCA Section 8

SARA Section 311/312	Fire hazard Sudden release of pressure hazard.
TSCA	All the ingredients are on the United States TSCA inventory.

Canadian Regulations:

Domestic Substances List (DSL)
Workplace Hazardous Materials Information System (WHMIS)

WHMIS Classification	Note: Explosives are regulated by NRCAN and not classified under WHMIS
DSL	Pentaerythritol tetranitrate (PETN) is listed on the Canadian DSL

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF LAST REVISION

This SDS was prepared in accordance with US (29 CFR 1900.1200) and Canadian (WHMIS 2015) requirements.

SDS: P-8 Initial Issue Date: 06/01/2015 Last Revision Date: 07/05/2016 Version: 6

Party Responsible for the Preparation of This Document:

Austin Powder Company
Cleveland, OH 44122
216-464-2400

This information is based on Austin Powder Company's current knowledge and is intended to describe the product for the purposes of health and safety requirements only. It should not be construed as guaranteeing any specific property of the product.

SECTION 1: IDENTIFICATION

Product Identifier: Electric & Electronic Detonators
Product Names and Synonyms: Rock*Star series, Coal Mine Delay, Coal*Star, E*Star series, Static Star, Oil*Star Series, Rockbuster Special
Intended Use: As a commercial explosive.
Intended Users: For use only under strictly controlled conditions and only by qualified personnel who are fully trained in the handling and use of this product.

Name, Address, and Telephone of the Responsible Party:

Austin Powder Company
25800 Science Park Dr.
Cleveland, OH 44122
216-464-2400 during normal business hours
877-836-8286 Toll Free 24/7
www.austinpowder.com

In Case of Emergency Call CHEMTREC – TOLL FREE 24/7
800-424-9300 DOMESTIC
1-703-527-3887 INTERNATIONAL AND MARINE

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Item ("Article"):

Code	Hazard Class	Hazard Category
H204	Explosives	Division 1.4

Label Elements

Warning

Hazard Statements

Fire or projection hazard

Precautionary Statements

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not subject to grinding, friction, impact or shock.
Do not eat, drink or smoke when using this product.
Wear eye protection.
In case of fire: Extreme risk of explosion. Evacuate area. **DO NOT** fight fire when fire reaches explosives.
Store locked-up in a ventilated space, in accordance with all applicable regulations.
Dispose of contents/container in accordance with all applicable regulations.

Other Hazards: None expected

Unknown Acute Toxicity: Not available

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

The hazardous substances are sealed inside the metal detonator capsule. The values in column 3 are shown as a percent of the total detonator shell weight, not including the coated wire to the detonator.

Name	Product Identifier	% (w/w)
Zinc	CAS No. 7440-66-6	0-60%
Copper	CAS No. 7440-50-8	0-60%
Aluminum	CAS No. 7429-90-5	0-40%
Cyclonite (RDX)	CAS No. 121-82-4	0-15%
Hexanitrostilbene (HNS)	CAS No. 20062-22-0	0-15%
Pentaerythritol tetranitrate (PETN)	CAS No. 78-11-5	0-15%
Barium chromate	CAS No. 10294-40-3	0-5%
Boron	CAS No. 7440-42-8	0-5%
Lead Azide	CAS No. 13424-46-9	0-5%
Lead tetraoxide	CAS No. 1314-41-6	0-5%
Tungsten (W)	CAS No. 7440-33-7	0-5%
Silicon	CAS No. 7440-21-3	0-2%

SECTION 4: FIRST AID MASURES

General: Never give anything by mouth to an unconscious person. If you feel unwell, get medical attention, show the label where possible.

Inhalation: Not an expected route of exposure.

Skin Contact: Not an expected route of exposure.

Eye Contact: Not an expected route of exposure.

Ingestion: Not an expected route of exposure.

Most Important Symptoms and Effects both Acute and Delayed:

Inhalation: Not an expected route of exposure.

Skin Contact: Not an expected route of exposure.

Eye Contact: Not an expected route of exposure.

Ingestion: Not an expected route of exposure.

SECTION 5: FIRE FIGHTING MEASURES

DO NOT fight fires involving Explosives. There is an extreme risk that explosives involved in a fire may detonate, especially if confined. Evacuate the area in all directions for one (1) mile or more if any amount of explosives is involved in a fire. Evacuation is recommended if the initial (incipient) fire, not involving explosives, becomes intense. General extinguishers may be used on the initial fire not involving explosives, such as electrical equipment fires, tire fires or a general plant fire. Water may be used to cool explosives not involved in the initial fire. Consult the most current Emergency Response Guidebook (ERG), Guide 112 for additional information.

Extinguishing Media

Suitable Extinguishing Media: None.

Unsuitable Extinguishing Media: For fires near explosives, dry chemical, foams, steam and smothering devices are not effective, can lead to possible explosion and must not be used.

Special Hazards Arising from the

Fire Hazard: There is an extreme risk that explosives involved in a fire may detonate.

Advice for Firefighters

Precautionary Measures: It is recommended that the amount and location of any explosives stored near a fire be determined prior to committing firefighters to fight the fire.

Firefighting Instructions: When fighting the initial fire, not involving explosives, firefighters should follow standard firefighting procedures for the materials involved.

Hazardous Combustion Products: No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Contact the manufacturer or CHEMTREC. No smoking, open flames or flame/spark producing items in the area.

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Isolate the area from unnecessary personnel.

For Emergency Personnel

Protective Equipment: Provide cleanup crew with proper PPE.

Emergency Precautions: Avoid release to the environment.

Methods and Material for Containment and Cleaning Up Contact manufacturer or CHEMTREC.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards when Processed: Avoid heating explosives in a confined space. Any proposed use of this product in elevated temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. A "hot work" program consistent with OSHA requirements at 29 CFR 1910.252 must be used when preforming hot work on explosive process equipment, storage areas or containers related to the intended use.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Smoking, open flames, and unauthorized sparking or flame-producing devices are prohibited.

Storage Conditions: Storage areas should be inspected regularly by an individual trained to identify potential hazards and ensure that all safety and security control measures are being properly implemented. All explosives storage sites must comply with ATF, OSHA or NRCAN regulations.

Incompatible Materials: Strong acids, strong bases and organic solvents.

Special Rules on Packaging: Packaging in accordance with USDOT or NRCAN regulations.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits: Not applicable, sealed item

Exposure Controls:

Appropriate Engineering Controls: Product should be handled and used under strictly controlled conditions.

Personal Protective Equipment:

Hand Protection: Not required.

Eye Protection: Safety glasses.

Respiratory Protection: Not required.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Physical and Chemical Properties:

Appearance:	Plastic coated wire attached to a sealed metal detonator capsule
Odor:	None
Odor threshold:	Not relevant
Vapor density:	Not relevant
pH:	Not relevant
Melting point:	Not relevant
Initial boiling point and boiling range:	Not relevant
Flash point (oil):	Not relevant
Evaporation rate:	Not relevant
Flammability:	Not relevant

Upper / lower flammability or explosive limits:	Not relevant
Vapor pressure:	Not relevant
Density:	Not relevant
Solubility:	Not soluble in water
Partition coefficient: n-octol/water:	Not relevant
Auto-ignition temperature:	Not relevant
Decomposition temperature):	Not relevant
Viscosity:	Not relevant
Explosive properties:	Mass detonation hazard when involved in a fire
Explosion Data – Sensitivity to Mechanical Impact:	Sensitive to mechanical impact
Explosion Data – Sensitivity to Static Discharge:	Sensitive to static discharge

SECTION 10: STABILITY AND REACTIVITY

Reactivity and Chemical Stability: Stable and non-reactive under normal conditions of transportation, storage, handling and use.

Possibility of Hazardous Reactions: Polymerization will not occur.

Conditions to Avoid: Open flame and elevated temperatures.

Incompatible Materials: Strong acids, strong bases and organic solvents.

Hazardous Combustion Products: No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 11: TOXICOLOGY INFORMATION

Acute Toxicity: Not classified

LD50 and LC50 Data: Not classified

Skin Corrosion/Irritation: Not classified

Eye Damage/Irritation: Not classified

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): None

Specific Target Organ Toxicity (Repeated Exposure): None

Aspiration Hazard: Not classified

Symptoms/Injuries after Inhalation: Not expected to be a hazard under normal conditions of use.

Symptoms/Injuries. after Skin Contact: Not expected to be a hazard under normal conditions of use

Symptoms/Injuries after Eye Contact: Not expected to be a hazard under normal conditions of use.

Symptoms/Injuries after Ingestion: Not expected to be a hazard under normal conditions of use.

Chronic Symptoms: None

LD50 and LC50 Data (ingredients):

Boron, CAS No. 7440-42-8	
LD50 Oral Rat	650 mg/kg of body weight

Copper, CAS No. 7440-50-8	
LD50 Oral (mouse)	413 mg/kg of body weight

Cyclonite (RDX), CAS No. 121-82-4	
LD50 Oral Rat	71 mg/kg of body weight

Lead azide, CAS No. 13424-46-9	
LD50 Oral Rat	500 mg/kg of body weight
LC50 Inhalation Rat	1.5 mg/l/4h

Lead tetraoxide, CAS No. 1314-41-6	
LD50 Oral Rat	500 mg/kg of body weight
LC50 Inhalation Rat	1.5mg/l/4h
Included in OSHA Hazard Communication Carcinogen List	

Silicon, CAS No. 7440-21-3	
LD50 Oral Rat	3,160 mg/kg of body weight

Pentarythritol tetranitrate (PETN), CAS No. 78-11-5	
LD50 Oral Rat 19500 mg/kg of	LD50 Oral Rat 19500 mg/kg of body

Tungsten (W) CAS No. 7440-33-7	
LD50 Oral Rat 2000 mg/kg of	LD50 Oral Rat 2000 mg/kg of body

SECTION 12: ECOLOGY INFORMATION

Not available

SECTION 13: DISPOSAL CONSIDERATIONS

Call manufacturer or CHEMTREC.

SECTION 14: TRANSPORTATION INFORMATION

Agency	UN Number	Proper Shipping Name	Hazard Class	Label Codes	PG	Marine Pollutant	Other
US DOT	UN0255	Detonators, electric, *for blasting.*	1.4B	1.4B		No	ERG-114
Canadian TDG	UN0255	Detonators, electric, *for blasting.*	1.4B	1.4B		No	--
IMDG (Vessel)	UN0255	Detonators, electric, *for blasting.*	1.4B	1.4B		No	EmS-No, Fire: F-B Spillage: S-X
IATA (Air)	UN0255	Detonators, electric, *for blasting.*	1.4B	1.4B		No	See Note 1

Note 1: Aircraft shipment of material is for Cargo Aircraft Only and each package not to exceed 75kg (165 lbs.) Net Explosive Weight. See 49CFR 172.101 HMT, Column 9.

SECTION 15: REGULATORY INFORMATION

US Federal Regulations:
Emergency Planning and Community Right-To-Know Act (EPCRA), a/k/a Superfund Amendments and Reauthorization Act (SARA) Title III
Toxic Substances Control Act (TSCA)
TSCA Section 8

SARA Section 311/312	Fire hazard Sudden Release of pressure hazard. Immediate (acute) health hazard Delayed (chronic) health hazard
TSCA	All the ingredients are on the United States TSCA inventory.

Canadian Regulations:

Domestic Substances List (DSL)
Workplace Hazardous Materials Information System (WHMIS)

WHMIS Classification	Note: Explosives are regulated by NRCAN and not classified under WHMIS
DSL	All ingredients are listed on the Canadian DSL

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF LAST REVISION

This SDS was prepared in accordance with US (29 CFR 1900.1200) and Canadian (WHMIS 2015) requirements.

SDS: P-9 Initial Issue Date: 06/01/2015 Last Revision Date: 01/24/2019 Version: 11

Party Responsible for the Preparation of This Document:
Austin Powder Company
Cleveland, OH 44122
216-464-2400

This information is based on Austin Powder Company's current knowledge and is intended to describe the product for the purposes of health and safety requirements only. It should not be construed as guaranteeing any specific property of the product.

SECTION 1: IDENTIFICATION

Product Identifier: Non-Electric Detonators
Product Names and Synonyms: Shock*Star series, In-Hole Delays, Surface Delay Connectors, Quick-Relay Connectors, Dual*Delays, Shorty, Long Period Delays, STD (Shock Tube with Detonator), Quick*Start, MS Connector
Intended Use: As a commercial explosive.
Intended Users: For use only under strictly controlled conditions and only by qualified personnel who are fully trained in the handling and use of this product.

Name, Address, and Telephone of the Responsible Party:

Austin Powder Company
25800 Science Park Dr.
Cleveland, OH 44122
216-464-2400 during normal business hours
877-836-8286 Toll Free 24/7
www.austinpowder.com

In Case of Emergency Call CHEMTREC – TOLL FREE 24/7
800-424-9300 DOMESTIC
1-703-527-3887 INTERNATIONAL AND MARINE

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Item ("Article"):

Code	Hazard Class	Hazard Category
H201	Explosives	Division 1.1

Label Elements

Danger

Hazard Statements

Explosive, mass explosion hazard

Precautionary Statements

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not subject to grinding, friction, impact or shock.
Do not eat, drink or smoke when using this product.
Wear eye protection.
In case of fire: Extreme risk of explosion. Evacuate area. **DO NOT** fight fire when fire reaches explosives.
Store locked-up in a ventilated space, in accordance with all applicable regulations.
Dispose of contents/container in accordance with all applicable regulations.

Other Hazards: None expected

Unknown Acute Toxicity: Not available

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

The hazardous substances in Table 1 are sealed inside the metal detonator capsule. The values in column 3 are shown as a percent of the total detonator capsule weight and do not include the tube leading to the detonator capsule.

Table 1

Name	Product Identifier	% (w/w)
Copper	CAS No. 7440-50-8	0-60%
Zinc	CAS No. 7440-66-6	0-60%
Aluminum	CAS No. 7429-90-5	0-40%
Hexanitrostilbene (HNS)	CAS No. 20062-22-0	0-15%
Cyclonite (RDX)	CAS No. 121-82-4	0-15%
Pentaerythritol tetranitrate (PETN)	CAS No. 78-11-5	0-15%
Barium chromate	CAS No. 10294-40-3	0-5%
Boron	CAS No. 7440-42-8	0-5%
Lead Azide	CAS No. 13424-46-9	0-5%
Lead tetraoxide	CAS No. 1314-41-6	0-5%
Tungsten (W)	CAS No. 7440-33-7	0-5%
Silicon	CAS No. 7440-21-3	0-2%

The hazardous substances in Table 2 are sealed inside the plastic tube. The values in column 3 are shown as a percent of the total weight of tube. The tube length may vary depending on the specific product.

Table 2

Name	Product Identifier	% (w/w)
Aluminum	CAS No. 7429-90-5	0-0.2%
Octogen (HMX)	CAS No. 2691-41-0	0-0.4%

SECTION 4: FIRST AID MEASURES

General: Never give anything by mouth to an unconscious person. If you feel unwell, get medical attention, show the label where possible.

Inhalation: Not an expected route of exposure.

Skin Contact: Not an expected route of exposure.

Eye Contact: Not an expected route of exposure.

Ingestion: Not an expected route of exposure.

Most Important Symptoms and Effects both Acute and Delayed:

Inhalation: Not an expected route of exposure.

Skin Contact: Not an expected route of exposure.

Eye Contact: Not an expected route of exposure.

Ingestion: Not an expected route of exposure.

SECTION 5: FIRE FIGHTING MEASURES

DO NOT fight fires involving Explosives. There is an extreme risk that explosives involved in a fire may detonate, especially if confined. Evacuate the area in all directions for one (1) mile or more if any amount of explosives is involved in a fire. Evacuation is recommended if the initial (incipient) fire, not involving explosives, becomes intense. General extinguishers may be used on the initial fire not involving explosives, such as electrical equipment fires, tire fires or a general plant fire. Water may be used to cool explosives not involved in the initial fire. Consult the most current Emergency Response Guidebook (ERG), Guide 112 for additional information.

Extinguishing Media

Suitable Extinguishing Media: None.

Unsuitable Extinguishing Media: For fires near explosives, dry chemical, foams, steam and smothering devices are not effective, can lead to possible explosion and must not be used.

Special Hazards Arising from the Item ("Article"):

Fire Hazard: There is an extreme risk that explosives involved in a fire may detonate.

Advice for Firefighters

Precautionary Measures: It is recommended that the amount and location of any explosives stored near a fire be determined prior to committing firefighters to fight the fire.

Firefighting Instructions: When fighting the initial fire, not involving explosives, firefighters should follow standard firefighting procedures for the materials involved.

Hazardous Combustion Products: No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Contact the manufacturer or CHEMTREC. No smoking, open flames or flame/spark producing items in the area.

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Isolate the area from unnecessary personnel.

For Emergency Personnel

Protective Equipment: Provide cleanup crew with proper PPE.

Emergency Precautions: Avoid release to the environment.

Methods and Material for Containment and Cleaning Up Contact manufacturer or CHEMTREC.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards when Processed: Avoid heating explosives in a confined space. Any proposed use of this product in elevated temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. A "hot work" program consistent with OSHA requirements at 29 CFR 1910.252 must be used when performing hot work on explosive process equipment, storage areas or containers related to the intended use.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Smoking, open flames, and unauthorized sparking or flame-producing devices are prohibited.

Storage Conditions: Storage areas should be inspected regularly by an individual trained to identify potential hazards and ensure that all safety and security control measures are being properly implemented. All explosives storage sites must comply with ATF, OSHA or NRCAN regulations.

Incompatible Materials: Strong acids, strong bases and organic solvents.

Special Rules on Packaging: Packaging in accordance with USDOT or NRCAN regulations.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits: Not applicable, sealed item

Exposure Controls:

Appropriate Engineering Controls: Product should be handled and used under strictly controlled conditions.

Personal Protective Equipment:

Hand Protection: Not required.

Eye Protection: Safety glasses.

Respiratory Protection: Not required.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Physical and Chemical Properties:

Appearance:	Long plastic tube that may be attached to a sealed metal capsule
Odor:	None
Odor threshold:	Not relevant
Vapor density:	Not relevant
pH:	Not relevant
Melting point:	Not relevant
Initial boiling point and boiling range:	Not relevant
Flash point (oil):	Not relevant
Evaporation rate:	Not relevant
Flammability:	Not relevant
Upper / lower flammability or explosive limits:	Not relevant
Vapor pressure:	Not relevant
Density:	Not relevant
Solubility:	Not soluble in water
Partition coefficient: n-octol/water:	Not relevant
Auto-ignition temperature:	Not relevant
Decomposition temperature):	Not relevant
Viscosity:	Not relevant
Explosive properties:	Mass detonation hazard when involved in a fire
Explosion Data – Sensitivity to Mechanical Impact:	Sensitive to mechanical impact
Explosion Data – Sensitivity to Static Discharge:	Sensitive to static discharge

SECTION 10: STABILITY AND REACTIVITY

Reactivity and Chemical Stability: Stable and non-reactive under normal conditions of transportation, storage, handling and use.

Possibility of Hazardous Reactions: Polymerization will not occur.

Conditions to Avoid: Open flame and elevated temperatures.

Incompatible Materials: Strong acids, strong bases and organic solvents.

Hazardous Combustion Products: No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 11: TOXICOLOGY INFORMATION

Acute Toxicity: Not classified

LD50 and LC50 Data: Not classified

Skin Corrosion/Irritation: Not classified

Eye Damage/Irritation: Not classified

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): None

Specific Target Organ Toxicity (Repeated Exposure): None

Aspiration Hazard: Not classified

Symptoms/Injuries after Inhalation: Not expected to be a hazard under normal conditions of use.

Symptoms/Injuries. after Skin Contact: Not expected to be a hazard under normal conditions of use

Symptoms/Injuries after Eye Contact: Not expected to be a hazard under normal conditions of use.

Symptoms/Injuries after Ingestion: Not expected to be a hazard under normal conditions of use.

Chronic Symptoms: None

LD50 and LC50 Data (ingredients):

Boron, CAS No. 7440-42-8	
LD50 Oral Rat	650 mg/kg of body weight

Octogen (HMX), CAS No. 2691-41-0	
LD50 Oral Rat	1,670 mg/kg of body weight
LD50 Dermal Rat	982 mg/kg species: New Zealand White

Cyclonite (RDX), CAS No. 121-82-4	
LD50 Oral Rat	71 mg/kg of body weight

Lead azide, CAS No. 13424-46-9	
LD50 Oral Rat	500 mg/kg of body weight
LC50 Inhalation Rat	1.5 mg/l/4h

Copper, CAS No. 7440-50-8	
LD50 Oral Mouse	413 mg/kg of body weight

Lead tetraoxide, CAS No. 1314-41-6	
LD50 Oral Rat	500 mg/kg of body weight
LC50 Inhalation Rat	1.5mg/l/4h
Included in OSHA Hazard Communication Carcinogen List	

Silicon, CAS No. 7440-21-3	
LD50 Oral Rat	3,160 mg/kg of body weight

Pentarythritol tetranitrate (PETN), CAS No. 78-11-5	
LD50 Oral Rat	19500 mg/kg of body weight

Tungsten (W) CAS No. 7440-33-7	
LD50 Oral Rat	2000 mg/kg of body weight

SECTION 12: ECOLOGY INFORMATION

Not available

SECTION 13: DISPOSAL CONSIDERATIONS

Call manufacturer or CHEMTREC.

SECTION 14: TRANSPORTATION INFORMATION

Depending on product and packaging configuration, these products may be classified as either a 1.1B, 1.4B or 1.4S.

When packaged as a 1.1B:

Agency	UN Number	Proper Shipping Name	Hazard Class	Label Codes	PG	Marine Pollutant	Other
US DOT	UN0360	Detonator assemblies, non-electric, *for blasting.*	1.1B	1.1B		No	ERG-112
Canadian TDG	UN0360	Detonator assemblies, non-electric, *for blasting.*	1.1B	1.1B		No	--
IMDG (Vessel)	UN0360	Detonator assemblies, non-electric, *for blasting.*	1.1B	1.1B		No	EmS-No, Fire: F-B Spillage: S-X
IATA (Air)	Contact the manufacturer						

When packaged as a 1.4B:

Agency	UN Number	Proper Shipping Name	Hazard Class	Label Codes	PG	Marine Pollutant	Other
US DOT	UN0361	Detonator assemblies, non-electric, *for blasting.*	1.4B	1.4B		No	ERG-114
Canadian TDG	UN0361	Detonator assemblies, non-electric, *for blasting.*	1.4B	1.4B		No	--
IMDG (Vessel)	UN0361	Detonator assemblies, non-electric, *for blasting.*	1.4B	1.4B		No	EmS-No, Fire: F-B Spillage: S-X
IATA (Air)	Contact the manufacturer						

SECTION 15: REGULATORY INFORMATION

US Federal Regulations:

Emergency Planning and Community Right-To-Know Act (EPCRA), a/k/a Superfund Amendments and Reauthorization Act (SARA) Title III
Toxic Substances Control Act (TSCA)
TSCA Section 8

SARA Section 311/312	Fire hazard Sudden Release of pressure hazard. Immediate (acute) health hazard Delayed (chronic) health hazard
TSCA	All the ingredients are on the United States TSCA inventory.

Canadian Regulations:

Domestic Substances List (DSL)
Workplace Hazardous Materials Information System (WHMIS)

WHMIS Classification	Note: Explosives are regulated by NRCAN and not classified under WHMIS
DSL	All ingredients are listed on the Canadian DSL

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF LAST REVISION

This SDS was prepared in accordance with US (29 CFR 1900.1200) and Canadian (WHMIS 2015) requirements.

SDS: P-10 Initial Issue Date: 6/1/2015 Last Revision Date: 03/08/2019 Version: 8

Party Responsible for the Preparation of This Document:

Austin Powder Company
Cleveland, OH 44122
216-464-2400

This information is based on Austin Powder Company's current knowledge and is intended to describe the product for the purposes of health and safety requirements only. It should not be construed as guaranteeing any specific property of the product.

SECTION 1: IDENTIFICATION

Product Identifier: Dynamite
Product Names and Synonyms: Apcogel series, Extra Gelatin series, 60% Seis Gel, AL series, Red-D Gel B, Rockbuster II, Red Diamond series, NG product
Intended Use: As a commercial explosive.
Intended Users: For use only under strictly controlled conditions and only by qualified personnel who are fully trained in the handling and use of this product.

Name, Address, and Telephone of the Responsible Party:

Austin Powder Company
25800 Science Park Dr.
Cleveland, OH 44122
216-464-2400 during normal business hours
877-836-8286 Toll Free 24/7
www.austinpowder.com

In Case of Emergency Call CHEMTREC – TOLL FREE 24/7
800-424-9300 DOMESTIC
1-703-527-3887 INTERNATIONAL AND MARINE

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture:

Code	Hazard Class	Hazard Category
H201	Explosives	Division 1.1

Label Elements

Danger

Hazard Statements

May mass explode in a fire

Precautionary Statements

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not subject to grinding, friction, impact or shock.
Do not breathe dust or fumes.
Do not eat, drink or smoke when using this product.
Wear eye protection, protective gloves recommended.
IF SWALLOWED: Get immediate medical attention. DO NOT induce vomiting.
IF ON SKIN: Wash contact area with soap and water. If irritation occurs, get medical attention. Take off contaminated clothing and wash before reuse.
IF INHALED: Remove person to fresh air. Keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical attention.
If exposed or concerned, or you do not feel well: Get medical attention.
In case of fire: Extreme risk of explosion. Evacuate area. **DO NOT** fight fire when fire reaches explosives.

Store locked-up in a ventilated space, in accordance with all applicable regulations.
Dispose of contents/container in accordance with all applicable regulations.

Other Hazards:

Exposure reaction may be aggravated for those with pre-existing eye, skin, or respiratory conditions. Causes methemoglobinemia. Methemoglobinemia decreases the blood's ability to carry oxygen and results in symptoms such as dizziness, drowsiness, headache, shortness of breath, blue skin and lips, rapid heart rate, unconsciousness, and possibly death.

Unknown Acute Toxicity: Not available

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Name	Product Identifier	% (w/w)
Ammonium nitrate	CAS No. 6484-52-2	Note 1
Sodium nitrate	CAS No. 7631-99-4	Note 1
Ethylene dinitrate / nitroglycol	CAS No. 628-96-6	Note 1
Glycerol trinitrate / nitroglycerine	CAS No. 55-63-0	Note 1
Nitrocellulose	CAS No. 9004-70-0	Note 1
Sulfur	CAS No. 7704-34-9	Note 1

Note 1: For the listed ingredients exact percentages are being withheld as CBI (confidential business information).

SECTION 4: FIRST AID MEASURES

General: Never give anything by mouth to an unconscious person. If you feel unwell, get medical attention, show the label where possible.

Inhalation: When symptoms occur: move to open air, keep at rest and in a position comfortable for breathing. Get medical attention. Ventilate suspected area.

Skin Contact: Wash contact areas with soap and water. Remove contaminated clothing. Wash contaminated clothing before reuse.

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

Ingestion: Rinse mouth. DO NOT induce vomiting. Get medical attention.

Most Important Symptoms and Effects both Acute and Delayed:

Inhalation: Prolonged exposure may cause irritation to the respiratory tract, symptoms include: sneezing, coughing, burning sensation of throat with constricting sensation of the larynx and difficulty in breathing.

Skin Contact: May cause mild skin irritation. Symptoms may include: redness, pain, swelling, itching, burning, dryness and dermatitis. May cause a more severe irritation or allergic reaction in sensitive individuals.

Eye Contact: May cause serious eye irritation. Symptoms may include redness, pain, swelling, itching, burning, tearing and blurred vision.

Ingestion: May cause vasodilatory effect. Ammonium nitrate ingestion may cause methemoglobinemia. Initial manifestation of methemoglobinemia is cyanosis, characterized by blue lips, tongue and mucous membranes, with skin color being slate grey. Further manifestation is characterized by headache, weakness, dyspnea, dizziness, stupor, respiratory distress and death due to anoxia. If ingested, nitrates may be reduced to nitrites by bacteria in the digestive tract. Signs and symptoms of nitrite poisoning include methemoglobinemia, nausea, dizziness, increased heart rate, hypotension, fainting and, possibly shock.

Chronic Symptoms: Prolonged exposure may cause irritation to the respiratory tract. May cause damage to organs through prolonged or repeated exposure.

Indication of Any Immediate Medical Attention and Special Treatment Needed:

If exposed, concerned or you don't feel well, get medical attention.

SECTION 5: FIRE FIGHTING MEASURES

DO NOT fight fires involving Explosives. There is an extreme risk that explosives involved in a fire may detonate, especially if confined. Evacuate the area in all directions for one (1) mile or more if any amount of explosives is involved in a fire. Evacuation is recommended if the initial (incipient) fire, not involving explosives, becomes intense. General extinguishers may be used on the initial fire not involving explosives, such as electrical equipment fires, tire fires or a general plant fire. Water may be used to cool explosives not involved in the initial fire. Consult the most current Emergency Response Guidebook (ERG), Guide 112 for additional information.

Extinguishing Media

Suitable Extinguishing Media: None.

Unsuitable Extinguishing Media: For fires near explosives, dry chemical, foams, steam and smothering devices are not effective, can lead to possible explosion and must not be used.

Special Hazards Arising from the Substance or Mixture

Fire Hazard: There is an extreme risk that explosives involved in a fire may detonate.

Advice for Firefighters

Precautionary Measures: It is recommended that the amount and location of any explosives stored near a fire be determined prior to committing firefighters to fight the fire.

Firefighting Instructions: When fighting the initial fire, not involving explosives, firefighters should follow standard firefighting procedures for the materials involved.

Hazardous Combustion Products: No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures:	Contact the manufacturer or CHEMTREC. No smoking, open flames or flame/spark producing items in the area.
For Non-Emergency Personnel	
Protective Equipment:	Use appropriate personal protection equipment (PPE).
Emergency Procedures:	Isolate the area from unnecessary personnel.
For Emergency Personnel	
Protective Equipment:	Provide cleanup crew with proper PPE.
Emergency Procedures:	Stop the discharge if safe to do so. Ventilate area.
Emergency Precautions:	Avoid release to the environment.
Methods and Material for Containment and Cleaning Up	Contact manufacturer or CHEMTREC.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling	Open and handle receptacle with care. Avoid jolting, friction and impact, use only in well ventilated areas
Additional Hazards when Processed:	Avoid heating explosives in a confined space. Any proposed use of this product in elevated temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. A "hot work" program consistent with OSHA requirements at 29 CFR 1910.252 must be used when performing hot work on explosive process equipment, storage areas or containers related to the intended use.
Hygiene Measures:	Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with soap and water before eating, drinking, or smoking and again when leaving work. Wash contaminated clothing before reuse.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures:	Smoking, open flames, and unauthorized sparking or flame-producing devices are prohibited.
Storage Conditions:	Storage areas should be inspected regularly by an individual trained to identify potential hazards and ensure that all safety and security control measures are being properly implemented. All explosives storage sites must comply with ATF, OSHA or NRCAN regulations.
Incompatible Materials:	Protect from humidity and water.
Special Rules on Packaging:	Packaging in accordance with USDOT or NRCAN regulations.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits:

Ethylene glycol, dinitrate, CAS No. 628-96-6		
USA ACGIH	ACGIH TWA	0.05 ppm
USA OSHA	OSHA PEL (TWA)	1 mg/m³
USA NIOSH	NIOSH REL (STEL)	0.1 mg/m³
Alberta	OEL TWA	0.3 mg/m³
British Columbia	OEL TWA	0.05 ppm
Manitoba	OEL TWA	0.05 ppm
New Brunswick	OEL TWA	0.31 mg/m³
Newfoundland & Labrador	OEL TWA	0.05 ppm
Nova Scotia	OEL TWA	0.05 ppm
Nunavut	OEL STEL	0.31 mg/m³
Nunavut	OEL TWA	1.2 mg/m³
Northwest Territories	OEL STEL	0.31 mg/m³
Northwest Territories	OEL TWA	1.2 mg/m³
Ontario	OEL TWA	0.05 ppm
Prince Edward Island	OEL TWA	0.05 ppm
Québec	PLAFOND	1.2 mg/m³
Saskatchewan	OEL STEL	0.15 ppm
Saskatchewan	OEL TWA	0.05 ppm

Nitroglycerine, CAS No. 55-63-0		
USA ACGIH	ACGIH TWA	0.05 ppm
USA OSHA	OSHA PEL	2 mg/m³
USA NIOSH	NIOSH REL (STEL)	0.1 mg/m³
Alberta	OEL TWA	0.5 mg/m³
British Columbia	OEL TWA	0.05 ppm
Manitoba	OEL TWA	0.05 ppm
New Brunswick	OEL TWA	0.46 mg/m³
Newfoundland & Labrador	OEL TWA	0.05 ppm
Nova Scotia	OEL TWA	0.05 ppm
Nunavut	OEL STEL	0.46 mg/m³
Nunavut	OEL TWA	1.9 mg/m³
Northwest Territories	OEL STEL	0.46 mg/m³
Northwest Territories	OEL TWA	1.9 mg/m³
Ontario	OEL TWA	0.05 ppm
Prince Edward Island	OEL TWA	0.05 ppm
Québec	PLAFOND	1.86 mg/m³
Saskatchewan	OEL STEL	0.15 ppm
Saskatchewan	OEL TWA	0.05 ppm

Exposure Controls:

Appropriate Engineering Controls: Product should be handled and used under strictly controlled conditions. Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure, but are not required.

Personal Protective Equipment:

Hand Protection: Chemically resistant gloves are recommended, but not required.

Eye Protection: Safety glasses with side shields or safety goggles.

Respiratory Protection: Approved respiratory protection should be worn when recommended by a risk assessment or if irritation is experienced.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Physical and Chemical Properties:

Appearance:	Solid material
Odor:	None
Vapor density:	Not available
pH:	Not relevant
Melting point (ammonium nitrate):	Not relevant
Initial boiling point and boiling range:	Not available
Flash point (oil):	Not available
Evaporation rate:	Not relevant
Flammability:	Not available
Upper / lower flammability or explosive limits:	Not available
Vapor pressure:	Not available
Density:	Variable depending on product
Solubility:	Variable depending on product
Partition coefficient: n-octol/water:	Not available
Auto-ignition temperature:	Not available
Decomposition temperature	Not determined
Viscosity:	Not relevant
Explosive properties:	Mass detonation hazard when involved in a fire
Explosion Data – Sensitivity to Mechanical Impact:	Sensitive to mechanical impact
Explosion Data – Sensitivity to Static Discharge:	Not sensitive to static discharge

SECTION 10: STABILITY AND REACTIVITY

Reactivity and Chemical Stability: Stable and non-reactive under normal conditions of transportation, storage, handling and use.

Possibility of Hazardous Reactions: Polymerization will not occur.

Conditions to Avoid: Open flame and elevated temperatures.

Incompatible Materials: No information available

Hazardous Decomposition Products: No unusual decomposition products expected. However, toxic fumes will be present.

SECTION 11: TOXICOLOGY INFORMATION

Acute Toxicity: Not classified

LD50 and LC50 Data: Not available for product

Skin Corrosion/Irritation: Not classified

Eye Damage/Irritation: May cause serious eye irritation

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Suspected of causing cancer

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): None

Specific Target Organ Toxicity (Repeated Exposure): None

Aspiration Hazard: Not classified

Symptoms/Injuries after Inhalation: Not expected to be a hazard under normal conditions of use.

Symptoms/Injuries. after Skin Contact: Not expected to be a hazard under normal conditions of use

Symptoms/Injuries after Eye Contact: May cause serious eye irritation. Symptoms may include redness, pain, swelling, itching, burning, tearing and blurred vision.

Symptoms/Injuries after Ingestion: Burning sensation. Abdominal pain. Abdominal cramps. Vomiting. Ammonium nitrate ingestion may cause methemoglobinemia.

Chronic Symptoms: None

LD50 and LC50 Data (ingredients):

Ammonium nitrate, CAS No. 6484-52-2	
LD50 Oral Rat	2,217 mg/kg of body weight
LC50 Inhalation Rat	> 88.8 mg/l/4h

Sodium nitrate, CAS No. 7631-99-4	
LD50 Oral Rat	1,267 mg/kg of body weight

Nitroglycerine, CAS No. 55-63-0	
LD50 Oral Rat	105 mg/kg of body weight
LC50 Inhalation Rat	> 88.8 mg/l/4h

SECTION 12: ECOLOGY INFORMATION

Not available

SECTION 13: DISPOSAL CONSIDERATIONS

Call manufacturer or CHEMTREC.

SECTION 14: TRANSPORTATION INFORMATION

Agency	UN Number	Proper Shipping Name	Hazard Class	Label Codes	PG	Marine Pollutant	Other
US DOT	UN0081	Explosive, blasting, type A	1.1D	1.1D		No	ERG-112
Canadian TDG	UN0081	Explosive, blasting, type A	1.1D	1.1D		No	--
IMDG (Vessel)	UN0081	Explosive, blasting, type A	1.1D	1.1D		No	EmS-No, Fire: F-B Spillage: S-Y
IATA (Air)	Contact the manufacturer.						

SECTION 15: REGULATORY INFORMATION

US Federal Regulations:

Emergency Planning and Community Right-To-Know Act (EPCRA), a/k/a Superfund Amendments and Reauthorization Act (SARA) Title III
Toxic Substances Control Act (TSCA)
TSCA Section 8

SARA Section 311/312	Fire hazard Sudden Release of pressure hazard. Immediate (acute) health hazard Delayed (chronic) health hazard
TSCA	All the ingredients are on the United States TSCA inventory.

Canadian Regulations:

Domestic Substances List (DSL)
Workplace Hazardous Materials Information System (WHMIS)

WHMIS Classification	Note: Explosives are regulated by NRCAN and not classified under WHMIS
DSL	All ingredients are listed on the Canadian DSL

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF LAST REVISION

This SDS was prepared in accordance with US (29 CFR 1900.1200) and Canadian (WHMIS 2015) requirements.

SDS: P-11 Initial Issue Date: 6/1/2015 Last Revision Date: 03/21/2018 Version: 7

Party Responsible for the Preparation of This Document:

Austin Powder Company
Cleveland, OH 44122
216-464-2400

This information is based on Austin Powder Company's current knowledge and is intended to describe the product for the purposes of health and safety requirements only. It should not be construed as guaranteeing any specific property of the product.

SECTION 1: IDENTIFICATION

Product Identifier: Emuline
Product Names and Synonyms: Emuline Series
Intended Use: As a commercial explosive.
Intended Users: For use only under strictly controlled conditions and only by qualified personnel who are fully trained in the handling and use of this product.

Name, Address, and Telephone of the Responsible Party:

Austin Powder Company
25800 Science Park Dr.
Cleveland, OH 44122
216-464-2400 during normal business hours
877-836-8286 Toll Free 24/7
www.austinpowder.com

In Case of Emergency Call CHEMTREC – TOLL FREE 24/7
800-424-9300 DOMESTIC
1-703-527-3887 INTERNATIONAL AND MARINE

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture:

Code	Hazard Class	Hazard Category
H201	Explosives	Division 1.1
H272	Oxidizing Liquid	3
H303	Acute Toxicity, oral	5
H315	Skin Corrosion / Irritation	2
H319	Serious eye damage / eye irritation	2A
H333	Acute Toxicity, inhalation	5
H335	Specific target organ toxicity, single exposure; Respiratory tract irritation	3

Label Elements

Danger

Hazard Statements

Explosive; mass explosion hazard
May intensify fire; oxidizer
May be harmful if swallowed
Causes skin irritation
Causes eye irritation
May be harmful if inhaled
May cause respiratory irritation

Precautionary Statements

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not breathe dust or fumes.
Do not subject to grinding, friction, impact or shock.
Do not eat, drink or smoke when using this product.
Wear eye protection, protective gloves recommended.

IF SWALLOWED: Get immediate medical attention. DO NOT induce vomiting.
IF ON SKIN: Wash contact area with soap and water. If irritation occurs, get medical attention.
Take off contaminated clothing and wash before reuse.
IF INHALED: Remove person to fresh air. Keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical attention.
If exposed or concerned, or you do not feel well: Get medical attention.
Store locked-up in a ventilated space, in accordance with all applicable regulations.
Dispose of contents/container in accordance with all applicable regulations.

Other Hazards:

In case of fire: Extreme risk of explosion. Evacuate area. **DO NOT** fight fire when fire reaches explosives.

Exposure reaction may be aggravated for those with pre-existing eye, skin, or respiratory conditions.
Causes methemoglobinemia. Methemoglobinemia decreases the blood's ability to carry oxygen and results in symptoms such as dizziness, drowsiness, headache, shortness of breath, blue skin and lips, rapid heart rate, unconsciousness, and possibly death.

Unknown Acute Toxicity: Not available

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Name	Product Identifier	% (w/w)
Ammonium nitrate	CAS No. 6484-52-2	70-80%
Paraffin oils (petroleum), catalytic dewaxed, light	CAS No. 64742-71-8	0-4%
Light napthenic hydrotreated distillates	CAS No. 64742-53-6	0-6%
Polyolefin alkanolamine ester emulsifier	CAS No. Proprietary	0-1%
Glass microspheres	CAS No. 65997-17-3	0-4%
Plastic microspheres	CAS No. Proprietary	0-0.5%
Pentaerythritol tetranitrate (PETN)	CAS No. 78-11-5	1 – 4%

SECTION 4: FIRST AID MEASURES

General: Never give anything by mouth to an unconscious person. If you feel unwell, get medical attention, show the label where possible.

Inhalation: When symptoms occur: move to open air, keep at rest and in a position comfortable for breathing. Get medical attention. Ventilate suspected area.

Skin Contact: Wash contact areas with soap and water. Remove contaminated clothing. Wash contaminated clothing before reuse.

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

Ingestion: Rinse mouth. DO NOT induce vomiting. Get medical attention.

Most Important Symptoms and Effects both Acute and Delayed:

Inhalation: May cause irritation to the respiratory tract, symptoms include: sneezing, coughing, burning sensation of throat with constricting sensation of the larynx and difficulty in breathing.

Skin Contact: May cause mild skin irritation. Symptoms may include: redness, pain, swelling, itching, burning, dryness and dermatitis. May cause a more severe irritation or allergic reaction in sensitive individuals.

Eye Contact: May cause serious eye irritation. Symptoms may include redness, pain, swelling, itching, burning, tearing and blurred vision.

Ingestion: Ammonium nitrate ingestion may cause methemoglobinemia. Initial manifestation of methemoglobinemia is cyanosis, characterized by blue lips, tongue and mucous membranes, with skin color being slate grey. Further manifestation is characterized by headache, weakness, dyspnea, dizziness, stupor, respiratory distress and death due to anoxia. If ingested, nitrates may be reduced to nitrites by bacteria in the digestive tract. Signs and symptoms of nitrite poisoning include methemoglobinemia, nausea, dizziness, increased heart rate, hypotension, fainting and, possibly shock.

Chronic Symptoms: May cause irritation to the respiratory tract or damage to organs.

Indication of Any Immediate Medical Attention and Special Treatment Needed:

If exposed, concerned or you don't feel well, get medical attention.

SECTION 5: FIRE FIGHTING MEASURES

DO NOT fight fires involving Explosives. There is an extreme risk that explosives involved in a fire may detonate, especially if confined. Evacuate the area in all directions for one (1) mile or more if any amount of explosives is involved in a fire. Evacuation is recommended if the initial (incipient) fire, not involving explosives, becomes intense. General extinguishers may be used on the initial fire not involving explosives, such as electrical equipment fires, tire fires or a general plant fire. Water may be used to cool explosives not involved in the initial fire. Consult the most current Emergency Response Guidebook (ERG), Guide 112 for additional information.

Extinguishing Media

Suitable Extinguishing Media: None.

Unsuitable Extinguishing Media: For fires near explosives, dry chemical, foams, steam and smothering devices are not effective, can lead to possible explosion and must not be used.

Special Hazards Arising from the Substance or Mixture

Fire Hazard: There is an extreme risk that explosives involved in a fire may detonate.

Advice for Firefighters

Precautionary Measures: It is recommended that the amount and location of any explosives stored near a fire be determined prior to committing firefighters to fight the fire.

Firefighting Instructions: When fighting the initial fire, not involving explosives, firefighters should follow standard firefighting procedures for the materials involved.

Hazardous Combustion Products: No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures:	Contact the manufacturer or CHEMTREC. No smoking, open flames or flame/spark producing items in the area.
For Non-Emergency Personnel	
Protective Equipment:	Use appropriate personal protection equipment (PPE).
Emergency Procedures:	Isolate the area from unnecessary personnel.
For Emergency Personnel	
Protective Equipment:	Provide cleanup crew with proper PPE.
Emergency Procedures:	Stop the discharge if safe to do so. Ventilate area.
Emergency Precautions:	Avoid release to the environment.
Methods and Material for Containment and Cleaning Up:	Contact manufacturer or CHEMTREC.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards when Processed:	Avoid heating explosives in a confined space. Any proposed use of this product in elevated temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. A "hot work" program consistent with OSHA requirements at 29 CFR 1910.252 must be used when performing hot work on explosive process equipment, storage areas or containers related to the intended use.
Hygiene Measures:	Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with soap and water before eating, drinking, or smoking and again when leaving work. Wash contaminated clothing before reuse.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures:	May be corrosive to metals. Smoking, open flames, and unauthorized sparking or flame-producing devices are prohibited.
Storage Conditions:	Storage areas should be inspected regularly by an individual trained to identify potential hazards and ensure that all safety and security control measures are being properly implemented. All explosives storage sites must comply with ATF, OSHA or NRCAN regulations.
Incompatible Materials:	Avoid contamination with combustible or flammable materials, strong acids, strong bases, strong oxidizing agents, reducing agents, chlorinated compounds, copper (any alloys like bronze and brass), metal powders and peroxides.
Special Rules on Packaging:	Packaging in accordance with USDOT or NRCAN regulations.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits:

Ammonium nitrate, CAS No. 6484-52-2		
USA ACGIH (nuisance dust)	ACGIH TWA (mg/m^3)	10 mg/m^3 – Inhalable particulate
USA OSHA (nuisance dust)	OHSA PEL (TWA) (mg/m^3)	5 mg/m^3 – Respirable (particulate)

Glass, oxide, CAS No. 65997-17-3		
USA OSHA	OSHA PEL (TWA)	15 mg/m³ (total dust) 5 mg/m³ (inhalable fraction)
USA NIOSH	NIOSH REL (TWA)	5 mg/m³ (total dust)
Yukon	OEL TWA	30 mg/m³ (inhalable fraction) 10 mg/m³ (dust)

Plastic Microspheres, CAS No. Propriety		
USA ACGIH	ACGIH TWA	15 mg/m³ (dust)

Exposure Controls:

Appropriate Engineering Controls: Product should be handled and used under strictly controlled conditions. Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure, but are not required.

Personal Protective Equipment:

Hand Protection: Chemically resistant gloves are recommended, but not required.

Eye Protection: Safety glasses with side shields or safety goggles.

Respiratory Protection: Approved respiratory protection should be worn when recommended by a risk assessment or if irritation is experienced.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Physical and Chemical Properties:

Appearance:	Casing (filled with paste or putty like material) with attached cord (filled with powdery substance)
Odor:	None
Odor threshold:	Not available
Vapor density:	Not available
pH:	Not relevant
Melting point (ammonium nitrate):	165°C (330°F)
Initial boiling point and boiling range:	Not available
Flash point:	Not available
Evaporation rate:	Not relevant
Flammability:	Not available
Upper / lower flammability or explosive limits:	Not available
Vapor pressure:	Not available
Density:	1.05 – 1.25 g/cc
Solubility:	Not soluble in water
Partition coefficient: n-octol/water:	Not available
Auto-ignition temperature:	Not available
Decomposition temperature:	>210°C (>410°F)
Viscosity:	Not relevant
Explosive properties:	Mass detonation hazard when involved in a fire
Explosion Data – Sensitivity to Mechanical Impact:	Cord sensitive to mechanical impact
Explosion Data – Sensitivity to Static Discharge:	Emulsion not sensitive to static discharge

SECTION 10: STABILITY AND REACTIVITY

Reactivity and Chemical Stability: Stable and non-reactive under normal conditions of transportation, storage, handling and use.

Possibility of Hazardous Reactions: Polymerization will not occur.

Conditions to Avoid: Open flame and elevated temperatures.

Incompatible Materials: Avoid contamination with combustible or flammable materials, strong acids, strong bases, strong oxidizing agents, reducing agents, chlorinated compounds, copper (any alloys like bronze and brass), metal powders and peroxides.

Hazardous Combustion Products: No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 11: TOXICOLOGY INFORMATION

Acute Toxicity: Not classified

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: May cause skin irritation

Eye Damage/Irritation: May cause serious eye irritation

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): May cause drowsiness or dizziness

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries after Inhalation: Not classified

Symptoms/Injuries after Skin Contact: May cause mild skin irritation. Symptoms may include: redness, pain, swelling, itching, burning, dryness and dermatitis. May cause a more severe or allergic reaction in sensitive individuals.

Symptoms/Injuries after Eye Contact: May cause serious eye irritation. Symptoms may include redness, pain, swelling, itching, burning, tearing and blurred vision.

Symptoms/Injuries after Ingestion: Burning sensation. Abdominal pain. Abdominal cramps. Vomiting. Ammonium nitrate ingestion may cause methemoglobinemia.

Chronic Symptoms: Although none are expected under normal conditions, inhalation exposure may cause methemoglobinemia and may damage respiratory tract.

LD50 and LC50 Data (ingredients):

Ammonium nitrate, CAS No. 6484-52-2	
LD50 Oral Rat	2,217 mg/kg of body weight
LC50 Inhalation Rat	> 88.8 mg/l/4h

Sodium nitrate, CAS No. 7631-99-4	
LD50 Oral Rat	1,267 mg/kg of body weight

Pentaerythritol tetranitrate (PETN), CAS No. 78-11-5	
LD50 Oral Rat, oral	3,224 mg/kg of body weight

SECTION 12: ECOLOGY INFORMATION

Not available

SECTION 13: DISPOSAL CONSIDERATIONS

Call manufacturer or CHEMTREC.

SECTION 14: TRANSPORTATION INFORMATION

Agency	UN Number	Proper Shipping Name	Hazard Class	Label Codes	PG	Marine Pollutant	Other
US DOT	UN0241	Explosive, blasting, type E	1.1D	1.1D		No	ERG-112
Canadian TDG	UN0241	Explosive, blasting, type E	1.1D	1.1D		No	--
IMDG (Vessel)	UN0241	Explosive, blasting, type E	1.1D	1.1D		No	EmS-No, Fire: F-B Spillage: S-X
IATA (Air)	Contact the manufacturer.						

SECTION 15: REGULATORY INFORMATION

US Federal Regulations:

Emergency Planning and Community Right-To-Know Act (EPCRA), a/k/a Superfund Amendments and Reauthorization Act (SARA) Title III
Toxic Substances Control Act (TSCA)
TSCA Section 8

SARA Section 311/312	Fire hazard Sudden Release of pressure hazard. Immediate (acute) health hazard Delayed (chronic) health hazard
TSCA	All the ingredients are on the United States TSCA inventory.

Canadian Regulations:

Domestic Substances List (DSL) Workplace Hazardous Materials Information System (WHMIS)

WHMIS Classification	Note: Explosives are regulated by NRCAN and not classified under WHMIS
DSL	All ingredients are listed on the Canadian DSL

Ammonium nitrate (CAS No. 6484-52-2)

WHMIS Classification	Class C – Oxidizing Substance Class D, Division 2, Subdivision B – Toxic material causing other toxic effects.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF LAST REVISION

This SDS was prepared in accordance with US (29 CFR 1900.1200) and Canadian (WHMIS 2015) requirements.

SDS: P-12 Initial Issue Date: 06/03/2015 Last Revision Date: 07/05/2016 Version: 2

Party Responsible for the Preparation of This Document:

Austin Powder Company
Cleveland, OH 44122
216-464-2400

This information is based on Austin Powder Company's current knowledge and is intended to describe the product for the purposes of health and safety requirements only. It should not be construed as guaranteeing any specific property of the product.

SECTION 1: IDENTIFICATION

Product Identifier: Aqua Ammonia
Product Names and Synonyms: Ammonia water, Aqueous ammonia, Ammonium hydrate, Ammonium hydroxide
Intended Use: Industrial applications
Intended Users: For use only under strictly controlled conditions and only by qualified personnel who are fully trained in the handling and use of this product.

Name, Address, and Telephone of the Responsible Party:

Austin Powder Company
25800 Science Park Dr.
Cleveland, OH 44122
216-464-2400 during normal business hours
877-836-8286 Toll Free 24/7
www.austinpowder.com

In Case of Emergency Call CHEMTREC – TOLL FREE 24/7
800-424-9300 DOMESTIC
1-703-527-3887 INTERNATIONAL AND MARINE

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture:

Code	Hazard Class	Hazard Category
H302	Acute toxicity, oral	4
H332	Acute toxicity, inhalation	4
H314	Skin corrosion / irritation	1A
H318	Serious eye damage / eye irritation	1

Label Elements

Danger

Hazard Statements

Harmful if swallowed
Harmful if inhaled
Causes severe skin burns and eye damage
Causes serious eye damage

Precautionary Statements

Wash skin thoroughly after handling.
Avoid release to the environment.
Wear protective gloves/ protective clothing/ eye protection/ face protection.

IF SWALLOWED: Rinse mouth. DO NOT induce vomiting.

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air. Keep at rest in a position comfortable for breathing.

Immediately call a POISON CENTER/doctor.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical attention.
If exposed or concerned, or you do not feel well: Get medical attention.
Wash contaminated clothing before reuse.
Store locked up.
Dispose of contents/container to an approved waste disposal plant.

Other Hazards:

Lachrymator.

Unknown Acute Toxicity: Not available

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Name	Product Identifier	% (w/w)
Ammonium hydroxide	CAS No. 1336-21-6	10-19.5

SECTION 4: FIRST AID MEASURES

General: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

Inhalation: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

Skin Contact: Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

Eye Contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

Ingestion: Rinse mouth. DO NOT induce vomiting. Get medical attention.

Most Important Symptoms and Effects both Acute and Delayed:

The most important known symptoms and effects are described in the labeling (see section 2) and/or in section 11

Indication of Any Immediate Medical Attention and Special Treatment Needed:

No data available

SECTION 5: FIRE FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Use water spray

Unsuitable Extinguishing Media: Reacts violently with fire extinguishing agents such as carbon dioxide (CO_2)

Special Hazards Arising from the Substance or Mixture

Fire Hazard:	Not flammable. Under conditions of fire this material may produce: Nitrogen oxides, nitrogen, ammonia.
Explosion hazard:	Ammonia vapor concentrations between 16% and 25% can explode on contact with ignition source.
Advice for Firefighters:	Keep upwind. Use water spray or fog for cooling exposed containers. Wear self-contained breathing apparatus for firefighting if necessary.
Other information:	Do not allow run-off from fire fighting to enter drains or water ways.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures:	Keep away from open flames, hot surfaces and sources of ignition. No smoking. Avoid all contact with skin, eyes, or clothing. Do NOT breathe vapor, mist, spray.

For Non-Emergency Personnel

Protective Equipment:	Use appropriate personal protection equipment (PPE).
Emergency Procedures:	Evacuate unnecessary personnel. Eliminate ignition sources.

For Emergency Personnel

Protective Equipment:	Equip cleanup crew with proper protection.
Emergency Procedures:	Stop leak if safe to do so. Ventilate area.
Emergency Precautions:	Prevent entry to sewers and public waters. Notify authorities if product enters sewers or public waters.
Methods and Material for Containment and Cleaning Up:	Stop the flow of material, if this is without risk. Ventilate area. Contain any spills with dikes or absorbents. Clean up spills immediately and dispose of waste safely. Never neutralize spill with acid.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards when Processed:	Do NOT enter (storage areas, confined spaces) unless adequately ventilated. Emits ammonia vapors. Flammable gas. Ammonium hydroxide reacts with many heavy metals and their salts forming explosive compounds. The solution in water is a strong base, it reacts violently with acids.
Hygiene Measures:	Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with soap and water before eating, drinking, or smoking and again when leaving work. Wash contaminated clothing before reuse.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures:	Any proposed use of this product in elevated-temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. Ensure adequate ventilation. Comply with applicable regulations.

Storage Conditions: Store in a dry, cool and well-ventilated place. Storage containers should have safety relief valves. Store locked up.

Incompatible Materials: Forms explosive compounds with calcium hypochlorite, bleaches, gold, mercury, silver, chlorine and other halogens.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits:

Ammonia, CAS No. 7664-41-7		
USA ACGIH	ACGIH TWA	25 ppm
USA ACGIH	ACGIH STEL	35 ppm
USA OSHA	OSHA PEL (TWA)	50 ppm
USA NIOSH	NIOSH REL (TWA)	25 ppm
USA NIOSH	NIOSH REL (STEL)	35 ppm
Alberta	TWA / STEL	25 ppm(TWA), 35 ppm
British Columbia	TWA / STEL	25 ppm(TWA), 35 ppm
Manitoba	TWA / STEL	25 ppm(TWA), 35 ppm
New Brunswick	TWA / STEL	25 ppm(TWA), 35 ppm
Newfoundland & Labrador	TWA / STEL	25 ppm(TWA), 35 ppm
Northwest Territories	TWA / STEL	25 ppm(TWA), 35 ppm
Nova Scotia	TWA / STEL	25 ppm(TWA), 35 ppm
Nunavut	TWA / STEL	25 ppm(TWA), 35 ppm
Ontario	TWA / STEL	25 ppm(TWA), 35 ppm
Prince Edward Island	TWA / STEL	25 ppm(TWA), 35 ppm
Québec	TWA / STEL	25 ppm(TWA), 35 ppm
Saskatchewan	TWA / STEL	25 ppm(TWA), 35 ppm
Yukon	TWA / STEL	25 ppm(TWA), 35 ppm

Exposure Controls:

Appropriate Engineering Controls: Provide sufficient ventilation to keep ammonia vapors below the permissible exposure limit. Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure.

Personal Protective Equipment:

Hand Protection: Chemical resistant gloves.

Eye Protection: Chemical safety goggles and face shield.

Respiratory Protection: If exposure limits are exceeded or irritation is experienced, approved respirator protection should be worn.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Physical and Chemical Properties:

Appearance:	Colorless
Odor:	Pungent
Odor threshold:	1 – 50 ppm
Vapor density:	0.6
pH:	12 - 14
Evaporation Rate:	Not available
Melting Point:	-77 °C (-105 °F) (< 44% NH_3)
Freezing Point:	-38 °C (-36 °F)
Flash point:	Not relevant
Auto-ignition Temperature:	651 °C (1,204 °F)
Decomposition Temperature:	Not available
Flammability (solid, gas):	Not available
Lower Flammable Limit:	16% (ammonia vapor)
Upper Flammable Limit:	25% (ammonia vapor)
Vapor Pressure:	49642.2 Pa at 68 °F (20 °C)
Relative Vapor Density at 20 °C:	0.6 (ammonia vapor over aqua ammonia at 0°C)
Relative Density:	Not available
Specific Gravity:	0.90 at 60 °F (19% NH_3)
Solubility:	Soluble in water.
Partition Coefficient: n-Octanol/water:	-1.14 at 25 °C
Auto-ignition temperature:	Not available
Viscosity:	Not relevant

SECTION 10: STABILITY AND REACTIVITY

Reactivity and Chemical Stability: Forms explosive compounds with calcium hypochlorite, bleaches, gold, mercury, silver, chlorine and other halogens. Contact with strong oxidizers can result in fires and explosions. Corrosive to copper, brass, silver, zinc, and galvanized steel. Stable under recommended handling and storage conditions (see section 7).

Possibility of Hazardous Reactions: Polymerization will not occur.

Conditions to Avoid: Direct sunlight. Extremely high or low temperatures. Heat. Sources of ignition.

Incompatible Materials: Strong acids. Strong bases. Strong oxidizers. Hypochlorites.

Hazardous Decomposition Products: Thermal decomposition generates: Ammonia, Nitrogen oxides, Nitrogen.

SECTION 11: TOXICOLOGY INFORMATION

Acute Toxicity: Oral: Harmful if swallowed Inhalation: Harmful if inhaled.

LD50 and LC50 Data: derived: LD50 Oral Rat: 1842 mg/kg (19% Ammonium hydroxide solution)

Skin Corrosion/Irritation: Causes severe skin burns and eye damage

Eye Damage/Irritation: Causes serious eye damage.

Respiratory or Skin Sensitization: May cause respiratory irritation.

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): May cause respiratory irritation.

Specific Target Organ Toxicity (Repeated Exposure): Not classified.

Aspiration Hazard: Not classified

Symptoms/Injuries after Inhalation: Symptoms may include: Sneezing, coughing, burning sensation of throat with constricting sensation of the larynx and difficulty in breathing. Damage to lungs. Harmful if inhaled.

Symptoms/Injuries after Skin Contact: Corrosive. Causes burns. Symptoms may include: Redness. Pain. Serious skin burns. Blisters.

Symptoms/Injuries after Eye Contact: Causes serious eye damage. Symptoms may include: Redness. Pain. Blurred vision. Severe burns. Causes permanent damage to the cornea, iris, or conjunctiva.

Symptoms/Injuries after Ingestion: Harmful if swallowed. May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract.

Chronic Symptoms: None known.

LD50 and LC50 Data (ingredients):

Ammonium hydroxide, CAS No. 1336-21-6	
LD50 Oral Rat	350 mg/kg
ATE US (gases)	10,256.41 ppmV/4h

SECTION 12: ECOLOGY INFORMATION

Not available

SECTION 13: DISPOSAL CONSIDERATIONS

Call manufacturer or CHEMTREC.

SECTION 14: TRANSPORTATION INFORMATION

Agency	UN Number	Proper Shipping Name	Hazard Class	Label Codes	PG	Marine Pollutant	Other
US DOT	UN2672	Ammonia Solutions (with more than 10% but not more than 35% ammonia)	8	8	III	Yes	ERG-154
Canadian TDG	UN2672	Ammonia Solutions (with more than 10% but not more than 35% ammonia)	8	8	III	Yes	---
IMDG (Vessel)	UN2672	Ammonia Solutions (with more than 10% but not more than 35% ammonia)	8	8	III	Yes	MP(P) F-A S-B
IATA (Air)	Contact the manufacturer						

SECTION 15: REGULATORY INFORMATION

US Federal Regulations:

Emergency Planning and Community Right-To-Know Act (EPCRA), a/k/a Superfund Amendments and Reauthorization Act (SARA) Title III
Toxic Substances Control Act (TSCA)
TSCA Section 8

Ammonium hydroxide, CAS No. 1336-21-6

SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard

Ammonium hydroxide, CAS No. 1336-21-6

Listed on the United States TSCA (Toxic Substance Control Act) Inventory

Canadian Regulations:

Domestic Substances List (DSL)
Workplace Hazardous Materials Information System (WHMIS)

Ammonium hydroxide, CAS No. 1336-21-6

DSL IDL	Listed on the Canadian DSL Listed on the Canadian IDL
IDL Concentration	1%
WHMIS Classification	Class E – Corrosive Material Class D Division 1 Subdivision A – Very toxic material causing immediate and serious toxic effects.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF LAST REVISION

This SDS was prepared in accordance with US (29 CFR 1900.1200) and Canadian (WHMIS 2015) requirements.

SDS: P-14 Initial Issue Date: 09/28/2016 Last Revision Date: n/a Version: 1

Party Responsible for the Preparation of this Document:

Austin Powder Company
Cleveland, OH 44122
216-464-2400

This information is based on Austin Powder Company's current knowledge and is intended to describe the product for the purposes of health and safety requirements only. It should not be construed as guaranteeing any specific property of the product.

SECTION 1: IDENTIFICATION

Product Identifier: Shockstar™ Shock Tubing
Product Names and Synonyms: Lead-in-Line, L-I-L, Signal Transmission Tubing
Intended Use: As part of an commercial explosives device initiation system
Intended Users: For use only under strictly controlled conditions and only by qualified personnel who are fully trained in the handling and use of this product.

Name, Address, and Telephone of the Responsible Party:

Austin Powder Company
25800 Science Park Dr.
Cleveland, OH 44122
216-464-2400 during normal business hours
877-836-8286 Toll Free 24/7
www.austinpowder.com

In Case of Emergency Call CHEMTREC – TOLL FREE 24/7
800-424-9300 DOMESTIC
1-703-527-3887 INTERNATIONAL AND MARINE

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Item ("Article"):

Code	Hazard Class	Hazard Category
H204	Explosives	Division 1.4

Label Elements

Warning

Hazard Statements

Fire or projection hazard

Precautionary Statements

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not subject to grinding, friction, impact or shock.
Do not eat, drink or smoke when using this product.
Wear eye protection.
In case of fire: Evacuate area. Explosion risk in case of fire.
Store locked-up in a ventilated space, in accordance with all applicable regulations.
Dispose of contents/container in accordance with all applicable regulations.

Other Hazards: None expected

Unknown Acute Toxicity: Not available

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

The hazardous substances are sealed inside a plastic tube. The values in column 3 are shown as a percent of the total weight of tube. The tube length may vary depending on the specific product.

Name	Product Identifier	% (w/w)
Aluminum	CAS No. 7429-90-5	0-0.2%
Octogen (HMX)	CAS No. 2691-41-0	0-0.4%

SECTION 4: FIRST AID MEASURES

General: Never give anything by mouth to an unconscious person. If you feel unwell, get medical attention, show the label where possible.

Inhalation: Not an expected route of exposure.

Skin Contact: Not an expected route of exposure.

Eye Contact: Not an expected route of exposure.

Ingestion: Not an expected route of exposure.

Most Important Symptoms and Effects both Acute and Delayed:

Inhalation: Not an expected route of exposure.

Skin Contact: Not an expected route of exposure.

Eye Contact: Not an expected route of exposure.

Ingestion: Not an expected route of exposure.

SECTION 5: FIRE FIGHTING MEASURES

DO NOT fight fires involving Explosives. There is an extreme risk that explosives involved in a fire may detonate, especially if confined. Evacuate the area in all directions for one (1) mile or more if any amount of explosives is involved in a fire. Evacuation is recommended if the initial (incipient) fire, not involving explosives, becomes intense. General extinguishers may be used on the initial fire not involving explosives, such as electrical equipment fires, tire fires or a general plant fire. Water may be used to cool explosives not involved in the initial fire. Consult the most current Emergency Response Guidebook (ERG), Guide 112 for additional information.

Extinguishing Media

Suitable Extinguishing Media: None.

Unsuitable Extinguishing Media: For fires near explosives, dry chemical, foams, steam and smothering devices are not effective, can lead to possible explosion and must not be used.

Special Hazards Arising from the Item ("Article"):

Fire Hazard:	There is an extreme risk that explosives involved in a fire may detonate.

Advice for Firefighters

Precautionary Measures:	It is recommended that the amount and location of any explosives stored near a fire be determined prior to committing firefighters to fight the fire.
Firefighting Instructions:	When fighting the initial fire, not involving explosives, firefighters should follow standard firefighting procedures for the materials involved.
Hazardous Combustion Products:	No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures:	Contact the manufacturer or CHEMTREC. No smoking, open flames or flame/spark producing items in the area.

For Non-Emergency Personnel

Protective Equipment:	Use appropriate personal protection equipment (PPE).
Emergency Procedures:	Isolate the area from unnecessary personnel.

For Emergency Personnel

Protective Equipment:	Provide cleanup crew with proper PPE.
Emergency Precautions:	Avoid release to the environment.
Methods and Material for Containment and Cleaning Up	Pick up containers or units by hand. Contact manufacturer or CHEMTREC.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards when Processed:	Avoid heating explosives in a confined space. Any proposed use of this product in elevated temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. A "hot work" program consistent with OSHA requirements at 29 CFR 1910.252 must be used when performing hot work on explosive process equipment, storage areas or containers related to the intended use.
Hygiene Measures:	Handle in accordance with good industrial hygiene and safety procedures.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures:	Smoking, open flames, and unauthorized sparking or flame-producing devices are prohibited.
Storage Conditions:	Storage areas should be inspected regularly by an individual trained to identify potential hazards and ensure that all safety and security control measures are being properly implemented. All explosives storage sites must comply with ATF, OSHA or NRCAN regulations.
Incompatible Materials:	Strong acids, strong bases and organic solvents.
Special Rules on Packaging:	Packaging in accordance with USDOT or NRCAN regulations.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits:	Not applicable, sealed item
Exposure Controls:	
Appropriate Engineering Controls:	Product should be handled and used under strictly controlled conditions.
Personal Protective Equipment:	
Hand Protection:	Not required.
Eye Protection:	Safety glasses.
Respiratory Protection:	Not required.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Physical and Chemical Properties:

Appearance:	Flexible ionomer resin plastic tubing with minute amount of very fine silver colored powder on interior tube wall
Odor:	None
Odor threshold:	Not relevant
Vapor density:	Not relevant
pH:	Not relevant
Melting point:	Not relevant
Initial boiling point and boiling range:	Not relevant
Flash point (oil):	Not relevant
Evaporation rate:	Not relevant
Flammability:	Not relevant
Upper / lower flammability or explosive limits:	Not relevant
Vapor pressure:	Not relevant
Density:	Not relevant
Solubility:	Not soluble in water
Partition coefficient: n-octol/water:	Not relevant
Auto-ignition temperature:	Not relevant
Decomposition temperature):	Not relevant
Viscosity:	Not relevant
Explosive properties:	Mass detonation hazard when involved in a fire
Explosion Data – Sensitivity to Mechanical Impact:	Sensitive to mechanical impact
Explosion Data – Sensitivity to Static Discharge:	Sensitive to static discharge

SECTION 10: STABILITY AND REACTIVITY

Reactivity and Chemical Stability: Stable and non-reactive under normal conditions of transportation, storage, handling and use.

Possibility of Hazardous Reactions: Polymerization will not occur.

Conditions to Avoid: Open flame and elevated temperatures.

Incompatible Materials: Strong acids, strong bases and organic solvents.

Hazardous Combustion Products: No unusual combustion products are expected. However, toxic fumes will be present.

SECTION 11: TOXICOLOGY INFORMATION

Acute Toxicity: Not classified

LD50 and LC50 Data: Not classified

Skin Corrosion/Irritation: Not classified

Eye Damage/Irritation: Not classified

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): None

Specific Target Organ Toxicity (Repeated Exposure): None

Aspiration Hazard: Not classified

Symptoms/Injuries after Inhalation: Not expected to be a hazard under normal conditions of use.

Symptoms/Injuries. after Skin Contact: Not expected to be a hazard under normal conditions of use

Symptoms/Injuries after Eye Contact: Not expected to be a hazard under normal conditions of use.

Symptoms/Injuries after Ingestion: Not expected to be a hazard under normal conditions of use.

Chronic Symptoms: None

SECTION 12: ECOLOGY INFORMATION

Not available

SECTION 13: DISPOSAL CONSIDERATIONS

Call manufacturer or CHEMTREC.

SECTION 14: TRANSPORTATION INFORMATION

Agency	UN Number	Proper Shipping Name	Hazard Class	Label Codes	PG	Marine Pollutant	Other
US DOT	UN0349	Articles, Explosives, N.O.S.	1.4S	1.4S		No	ERG-112
Canadian TDG	UN0349	Articles, Explosives, N.O.S.	1.4S	1.4S		No	--
IMDG (Vessel)	UN0349	Articles, Explosives, N.O.S.	1.4S	1.4S		No	EmS-No, Fire: F-B Spillage: S-X
IATA (Air)	Contact the manufacturer						

SECTION 15: REGULATORY INFORMATION

US Federal Regulations:
Emergency Planning and Community Right-To-Know Act (EPCRA), a/k/a Superfund Amendments and Reauthorization Act (SARA) Title III
Toxic Substances Control Act (TSCA)
TSCA Section 8

SARA Section 311/312	Fire hazard Sudden Release of pressure hazard.
TSCA	All the ingredients are on the United States TSCA inventory.

Canadian Regulations:
Domestic Substances List (DSL)
Workplace Hazardous Materials Information System (WHMIS)

WHMIS Classification	Note: Explosives are regulated by NRCAN and not classified under WHMIS
DSL	All ingredients are listed on the Canadian DSL

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF LAST REVISION

This SDS was prepared in accordance with US (29 CFR 1900.1200) and Canadian (WHMIS 2015) requirements.

SDS: P-15 Initial Issue Date: 10/01/2016 Last Revision Date: n/a Version: 1

Party Responsible for the Preparation of This Document:
Austin Powder Company
Cleveland, OH 44122
216-464-2400

This information is based on Austin Powder Company's current knowledge and is intended to describe the product for the purposes of health and safety requirements only. It should not be construed as guaranteeing any specific property of the product.

SECTION 1: IDENTIFICATION

Product Identifier: Anhydrous Ammonia
Product Names and Synonyms: Ammonia
Intended Use: Manufacture of fertilizer, explosive, chemicals, synthetic fibers, Refrigerant, Cleaning solutions, Pollution Control
Intended Users: For use only under strictly controlled conditions and only by qualified personnel who are fully trained in the handling and use of this product.

Name, Address, and Telephone of the Responsible Party:

Austin Powder Company
25800 Science Park Dr.
Cleveland, OH 44122
216-464-2400 during normal business hours
877-836-8286 Toll Free 24/7
www.austinpowder.com

In Case of Emergency Call CHEMTREC – TOLL FREE 24/7
800-424-9300 DOMESTIC
1-703-527-3887 INTERNATIONAL AND MARINE

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture:

Code	Hazard Class	Hazard Category
H221	Flammable gas	2
H280	Gases under pressure, liquefied gas	Liquefied gas
H314	Skin corrosion/irritation	1B
H332	Acute Toxicity, inhalation	4
H335	Specific target organ toxicity, single exposure. Respiratory tract irritation	3
H400	Aquatic Toxicity (acute)	1

Label Elements

Danger

Hazard Statements

Flammable gas
Contains gas under pressure; may explode if heated
Causes severe skin burns and eye damage
Harmful if inhaled
May cause respiratory irritation
Very toxic to aquatic life

Precautionary Statements

Keep away from heat, hot surfaces, open flames, sparks. No smoking.
Do not breathe mist, spray, vapors, gas.
Wash hands, forearms, and exposed areas thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Avoid release to the environment.
Wear eye protection, protective clothing, and protective gloves.

IF SWALLOWED: Rinse mouth. DO NOT induce vomiting. Immediately call a poison center or doctor.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air. Keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Wash contaminated clothing before reuse.
Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
Eliminate all ignition sources if safe to do so.
Collect spillage.
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Protect from sunlight. Store in a well-ventilated place. Wear protective gloves/ protective clothing/ eye protection/ face protection.

Other Hazards:

Ammonia vapor, in concentrations of 16-25% volume by weight in air, is flammable, toxic by inhalation and corrosive. Take all appropriate precautions.

Unknown Acute Toxicity: Not available

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Name	Product Identifier	% (w/w)
Anhydrous Ammonia	CAS No. 7664-41-7	99 - 100

SECTION 4: FIRST AID MEASURES

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible). If frostbite or freezing occurs, immediately flush with plenty of lukewarm water to GENTLY warm the affected area. Do not use hot water. Do not rub affected area. Get immediate medical attention.

Inhalation: When symptoms occur: go into open air and ventilate suspected area. Immediately call a POISON CENTER or doctor/physician.

Skin Contact: FROSTBITE: Immediately flush skin with plenty of water for at least 60 minutes. Remove contaminated clothing. Immediately call a POISON CENTER or doctor/physician. Wash contaminated clothing before reuse.

Eye Contact: FROSTBITE: Rinse cautiously with water for at least 60 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention.

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

Most Important Symptoms and Effects both Acute and Delayed

The most important known symptoms and effects are described in the labeling (see section 2) and/or in section 11.

SECTION 5: FIRE FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Water spray, fog.

Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire. Do not use water directly on liquid ammonia as this will increase formation of ammonia vapors.

Special Hazards Arising From the Substance or Mixture

Fire Hazard: Flammable gas. Ammonia concentrations in the range of 16-25% by volume in air can be ignited if heated to the auto-ignition temperature. Oil or other combustible materials increases the fire hazard.

Explosion Hazard: Forms explosive compounds with calcium hypochlorite, bleaches, gold, mercury, silver, chlorine and other halogens. Contact with strong oxidizers can result in fires and explosions.

Reactivity: Corrosive to copper, brass, silver, zinc and galvanized steel.

Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire. Do not allow ammonia vapors to accumulate in confined areas where ignition may occur.

Firefighting Instructions: Stop leak if safe to do so. For a serious leak, use fire hose with fog nozzle and plenty of water to absorb ammonia vapors. Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Move undamaged containers from immediate hazard area if it can be done with minimal risk. Water spray may be useful in minimizing or dispersing vapors and to protect persons shutting off flow. Cool equipment exposed to fire with water, if it can be done with minimal risk. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

Protection during Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection. Firefighters must use full bunker gear including NIOSH-approved positive-pressure self-contained breathing apparatus to protect against potential hazardous combustion and decomposition products.

Hazardous Combustion Products: Nitrogen oxides.

Other Information: Compressed gas or refrigerated liquid. Intense heating particularly in contact with hot metallic surfaces may cause decomposition of ammonia generating hydrogen, a flammable gas. Note that many materials, particularly plastics, become brittle upon contact with liquid ammonia.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Cleanup workers should stay upwind and keep out of low areas where ammonia vapors can accumulate. Keep away from open flames, hot surfaces and sources of ignition. Use special care to avoid static electric charges. No smoking. Do not get in eyes, on skin, or on clothing. Do not breathe gas. If small spill, allow to vaporize or absorb vapor in water. For a large spill refer to section 5.3 for advice. Neutralization with acid is NOT recommended.

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE). Persons without proper PPE should be restricted from the spill area until cleanup has been completed.

Emergency Procedures: Evacuate unnecessary personnel. Eliminate ignition sources.

For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Stop leak if safe to do so. Ventilate area.

Environmental Precautions: Prevent entry to sewers and public waters.

Methods and Material for Containment and Cleaning Up

For Containment: Stop the flow of material, if this is without risk. Ventilate area.

Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely. Allow to vaporize or absorb the vapor in water. Use only non-sparking tools.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards When Processed: Do NOT enter storage areas unless adequately ventilated. Emits ammonia vapors. Flammable gas. Ammonium hydroxide reacts with many heavy metals and their salts forming explosive compounds. It may attack metals forming flammable/explosive gas. The solution in water is a strong base, it reacts violently with acids.

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.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Contents under pressure. The use of explosion proof equipment is recommended. Anhydrous ammonia is a product which must be handled in approved equipment and by trained personnel. Any proposed use of this product in elevated-temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. Ensure adequate ventilation. Proper grounding procedures to avoid static electricity should be followed. System design and training programs must comply with applicable regulations and in addition to good engineering practices. Pressure vessels, piping and appurtenances should be regularly inspected and tested using methods designed to reveal external and internal deterioration or defects that may impair integrity of the equipment such that an unintended release of anhydrous ammonia may result. Consult with State Department of Agriculture and other experts, as applicable, concerning methods that would be appropriate given the particular circumstances. Refer to 29 CFR 1910.111 Storage and Handling of Anhydrous Ammonia, 29 CFR 1910.119 Process Safety Management of Highly Hazardous Materials and the current ANSI/CGA G-2.1-2014 standard, *Requirements for the Storage and Handling of Anhydrous Ammonia* for additional information.

Storage Conditions: Store in a dry, cool and well-ventilated place. Keep in fireproof place. Store locked up. Storage containers should have safety relief valves. Note that many materials, particularly plastics, become brittle upon contact with liquid ammonia.

Incompatible Materials: Forms explosive compounds with calcium hypochlorite, bleaches, gold, mercury, silver, chlorine and other halogens. Contact with strong oxidizers can result in fires and explosions. Corrosive to copper, brass, silver, zinc and galvanized steel.

Storage Area: Post readily visible warning signs in the storage area listing emergency measures. Water hoses should be readily available to disperse vapors in case of a spill.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits:

Anhydrous ammonia, CAS No. 7664-41-7		
USA ACGIH	ACGIH TLV/STEL	25 ppm/35 ppm (15 minutes)
USA OSHA	OHSA PEL (TWA)	50 ppm

Exposure Controls

Appropriate Engineering Controls: Gas detectors should be used when flammable gases/vapors may be released. Gas detectors should be used when toxic gases may be released. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use explosion-proof equipment. Ensure all national/local regulations are observed.

Personal Protective Equipment: Protective goggles. Gloves. Protective clothing. Insufficient ventilation: wear respiratory protection. Face shield.

Materials for Protective Clothing: Chemically resistant materials and fabrics.

Hand Protection: Wear chemically resistant protective gloves.

Eye Protection: Chemical safety goggles.

Skin and Body Protection: Wear suitable protective clothing.

Respiratory Protection: If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn.

Thermal Hazard Protection: Wear cold insulating gloves.

Other Information: When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Physical and Chemical Properties:

Appearance:	Colorless liquid or gas
Upper/Lower Flammability/Explosive Limits:	Flammability limits: 16-25% (vol/vol)
Odor:	Pungent odor considered suffocating
Vapor Pressure:	756 kPa at 68 °F
Odor threshold:	5 – 50 ppm in humans
Vapor density:	Relative vapor density (air=1): 0.77
pH:	>12 (10% solution) 10.6 – 11.6 (0.02-1.7% solution)
Relative Density:	Specific gravity liquid: 0.682 (water=1); Specific gravity of gas: 0.770 (air=1)
Evaporation Rate:	Not available
Melting Point/Freezing Point:	-108 °F
Solubility:	in water: 51 g at 68 °F
Flash point:	Not applicable
Auto-ignition Temperature:	1,204 °F
Decomposition Temperature:	Not available
Flammability (solid, gas):	Not available
Vapor Pressure:	8.5 atm at 68 °F
Specific Gravity:	Specific gravity liquid: 0.682 (water=1); Specific gravity of gas: 0.770 (air=1)
Partition Coefficient: n-Octanol/water:	Not applicable
Viscosity:	0.475 cP at -92 °F
Explosion Data – Sensitivity to Mechanical Impact:	Not sensitive to mechanical impact
Explosion Data – Sensitivity to Static Discharge:	Not sensitive to static discharge

SECTION 10: STABILITY AND REACTIVITY

Reactivity and Chemical Stability: Forms explosive compounds with calcium hypochlorite, bleaches, gold, mercury, silver, chlorine and other halogens. Contact with strong oxidizers can result in fires and explosions. Corrosive to copper, brass, silver, zinc, and galvanized steel.

Possibility of Hazardous Reactions: Polymerization will not occur.

Conditions to Avoid: Extremely high or low temperatures. Open flame. Overheating. Heat. Sparks.

Incompatible Materials: Strong acids. Strong bases. Strong oxidizers. Hypochlorites.

Hazardous Decomposition Products: Nitrogen oxides.

SECTION 11: TOXICOLOGY INFORMATION

Acute Toxicity: Inhalation

LD50 and LC50 Data: see table below

Skin Corrosion/Irritation: Causes severe skin burns and eye damage

Serious Eye Damage/Irritation: Causes serious eye damage.

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): May cause respiratory irritation.

Aspiration Hazard: Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified.

Aspiration Hazard: Not classified

Symptoms/Injuries after Inhalation: Harmful if inhaled.

Symptoms/Injuries after Skin Contact: Corrosive. Causes burns. Symptoms may include: Redness. Pain. Serious skin burns. Blisters.

Symptoms/Injuries after Eye Contact: Causes serious eye damage. Symptoms may include: Redness. Pain. Blurred vision. Severe burns. Causes permanent damage to the cornea, iris, or conjunctiva.

Symptoms/Injuries after Ingestion: Ingestion is an unlikely route of exposure for a gas.

LD50 and LC50 Data:

Anhydrous Ammonia, CAS No. 7664-41-7	
LC50 Inhalation Rat	7338 - 16600 / 60 min exposure
LC50 Inhalation Rat	3669 – 8300 / 4h exposure
LD50 oral Rat	350 mg/kg

SECTION 12: ECOLOGY INFORMATION

Toxicity

Ecology - General: Toxic to aquatic life with long lasting effects. Very toxic to aquatic life.

Anhydrous Ammonia, CAS No. 7664-41-7	
LC50 Daphnia magna (water flea)	25.4 mg/l in 48 h
LC50 rainbow trout	Adults: 0.097 mg/l in 24 h

Persistence and Degradability: Not established

Bioaccumulative Potential: Not established

Mobility in Soil: Not available

Other Adverse Effects: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

Additional Information: Handle empty containers with care because residual vapors are flammable. Prevent runoff from entering drains, sewers or waterways.

Ecology – Waste Materials: This material is hazardous to the aquatic environment. Keep out of sewers and waterways.

SECTION 14: TRANSPORTATION INFORMATION

Agency	UN Number	UN Proper Shipping Name	Hazard Class	Marine Pollutant
TDG	UN1005	Ammonia, Anhydrous	2.3	Yes*
US DOT	UN1005	Ammonia, Anhydrous	2.2	Yes*
IMDG	UN1005	Ammonia, Anhydrous	2.3	Yes

*The marine pollutant mark is not required when transported by road or rail

** This product is not regulated as a marine pollutant when transported on inland waterways in sizes of≤5 L or ≤5 kg or by road, rail, or inland air in non-bulk sizes, provided the packaging meet the general provisions of§§ 173.24 and 173.24a.

SECTION 15: REGULATORY INFORMATION

US Federal Regulations:

Emergency Planning and Community Right-To-Know Act (EPCRA), a/k/a Superfund Amendments and Reauthorization Act (SARA) Title III
Toxic Substances Control Act (TSCA)
TSCA Section 8

Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on the United States SARA Section 302 Listed on United States SARA Section 313	
SARA Section 302 Threshold Planning Quantity (TPQ)	500
SARA Section 311/312 Hazard Classes	Fire hazard Immediate (acute) health hazard Sudden release of pressure hazard
SARA Section 313 – Emission Reporting	1.0% (includes anhydrous Ammonia and aqueous Ammonia from water dissociable Ammonium salts and other sources, 10% of total aqueous Ammonia is reportable under this listing)

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF LAST REVISION

This SDS was prepared in accordance with US (29 CFR 1900.1200) requirements.

SDS: P-16 Initial Issue Date: 05/01/2015 Last Revision Date: 11/07/2016 Version: 2

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This information is based on Austin Powder Company's current knowledge and is intended to describe the product for the purposes of health and safety requirements only. It should not be construed as guaranteeing any specific property of the product.