

Safety Data Sheet

Revision date: 09/17/2018

Revision: 0

SAFETY DATA SHEET

EZshot

According to Appendix D, OSHA Hazard Communication Standard 29 CFR § 1910.1200

EZshot (Class 1.1B) SDS - pages 2-19

EZshot (Class 1.4B) SDS - pages 20-37

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EZshot

According to Appendix D, OSHA Hazard Communication Standard 29 CFR § 1910.1200

1. Identification

Product identifier

Product name EZshot

Recommended use of the chemical and restrictions on use

Application Explosive detonator used in mining and commercial blasting applications.

Uses advised against No specific uses advised against are identified.

Details of the supplier of the safety data sheet

Supplier Dyno Nobel Inc.
2795 East Cottonwood Parkway, Suite 500
Salt Lake City,
Utah 84121
+1 801-364-4800 +1
801-321-6703
www.dynonobel.com

Emergency telephone number

Emergency telephone CHEMTREC (USA) +1 800-424-9300
CANUTEC (CANADA) +1 613-996-6666

2. Hazard(s) identification

Classification of the substance or mixture

OSHA Regulatory Status This Product is Hazardous under the OSHA Hazard Communication Standard.
Comment(s) As supplied, this product is an article. Expl. 1.1 - H201 Explosive; mass explosion hazard.
This set contains many components.
Physical hazards Expl. 1.1 - H201
Health hazards Not classified
Environmental hazards Not classified

Physiochemical Caution. Risk of explosion. Explosive; mass explosion hazard. Handle with care.

Label elements

Pictogram

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Signal word

Danger

Hazard statements

H201 Explosive; mass explosion hazard.

Precautionary statements

P210 Keep away from heat, sparks, open flames and hot surfaces. No smoking.

P230 Keep wetted with water.

P240 Ground/ bond container and receiving equipment.

P250 Do not subject to grinding/ shock/ friction.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P370+P380 In case of fire: Evacuate area.

P372 Explosion risk in case of fire.

P373 DO NOT fight fire when fire reaches explosives.

P401 Store in accordance with national regulations.

P501 Dispose of contents/ container in accordance with national regulations.

Other hazards

This product does not contain any substances classified as PBT or vPvB.

PREVENTION OF ACCIDENTS IN THE USE OF EXPLOSIVES - The prevention of accidents in the use of explosives is a result of careful planning and observance of the best known practices. The explosives user must remember that he is dealing with a powerful force and that various devices and methods have been developed to assist him in directing this force. He should realize that this force, if misdirected, may either kill or injure both him and his fellow workers.

WARNING - All explosives are dangerous and must be carefully handled and used following approved safety procedures either by or under the direction of competent, experienced persons in accordance with all applicable federal, state, and local laws, regulations, or ordinances. If you have any questions or doubts as to how to use any explosive product, DO NOT USE IT before consulting with your supervisor, or the manufacturer, if you do not have a supervisor. If your supervisor has any questions or doubts, he should consult the manufacturer before use.

3. Composition/information on ingredients

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Mixtures

Product description

This set contains many components. The information below relates to the chemical components contained in the explosive item.

Potassium perchlorate CAS number: 7778-74-7
Classification Ox. Sol. 1 - H271 Acute Tox. 4 - H302
Nitrocellulose CAS number: 9004-70-0
Classification Expl. 1.1 - H201
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine CAS number: 2691-41-0
Classification Expl. 1.1 - H201 Acute Tox. 4 - H302 Acute Tox. 3 - H311
Zirconium CAS number: 7440-67-7
Classification Pyr. Sol. 1 - H250 Water-react. 1 - H260
Pentaerythritol tetranitrate CAS number: 78-11-5
Classification Unst. Expl. - H200

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Lithium CAS number: 7439-93-2
Classification Water-react. 1 - H260 Skin Corr. 1B - H314 Eye Dam. 1 - H318
Lead picrate CAS number: 25721-38-4 M factor (Chronic) = 1
Classification Expl. 1.1 - H201 Acute Tox. 3 - H301 Acute Tox. 3 - H311 Acute Tox. 3 - H331 Repr. 1A - H360 STOT RE 2 - H373 Aquatic Chronic 1 - H410
aluminium powder (stabilised) CAS number: 7429-90-5
Classification Flam. Sol. 1 - H228 Water-react. 2 - H261
Polycarbonmonofluoride CAS number: 51311-17-2
Classification Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 STOT SE 3 - H335
Lead picramate CAS number: -

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Classification

Unst. Expl. - H200
Acute Tox. 4 - H302
Acute Tox. 4 - H332
Repr. 1A - H360Df
STOT RE 2 - H373
Aquatic Acute 1 - H400
Aquatic Chronic 1 - H410

Lead diazide

CAS number: 13424-46-9
M factor (Acute) = 1

M factor (Chronic) = 1

Classification

Unst. Expl. - H200
Acute Tox. 4 - H302
Acute Tox. 4 - H332
Repr. 1A - H360Df
STOT RE 2 - H373
Aquatic Acute 1 - H400
Aquatic Chronic 1 - H410

The full text for all hazard statements is displayed in Section 16.

Composition comments The exact percentage is withheld as a trade secret in accordance with 29 CFR 1910.1200.

4. First-aid measures

Description of first aid measures

General information	Class 1: Explosive substances and articles. Get medical attention immediately. Show this Safety Data Sheet to the medical personnel. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Inhalation	Due to the physical nature of this product, exposure by this route is unlikely. If exposed to the chemical contents, then proceed as follows: Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen.
Ingestion	Due to the physical nature of this product, it is unlikely that ingestion will occur. If exposed to the chemical contents, then proceed as follows: If swallowed: Rinse nose and mouth with water. Give plenty of water to drink. Do not induce vomiting unless under the

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direction of medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs.

Skin Contact	If exposed to the chemical contents, then proceed as follows: Brush off loose particles from skin. Wash skin thoroughly with soap and water.
Eye contact	Due to the physical nature of this product, exposure by this route is unlikely. If exposed to the chemical contents, then proceed as follows: If in eyes: Rinse with water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 10 minutes. Do not rub eye.
Protection of first aiders	First aid personnel should wear appropriate protective equipment during any rescue.
<u>Most important symptoms and effects, both acute and delayed</u>	
General information	The information below relates to the chemical components contained in the explosive item. The severity of the symptoms described will vary dependent on the concentration and the length of exposure. Suspected of damaging fertility or the unborn child.
Inhalation	May cause respiratory irritation.
Ingestion	Harmful if swallowed. Stomach pain.
Skin contact	Prolonged skin contact may cause temporary irritation.
Eye contact	May cause temporary eye irritation.
<u>Indication of immediate medical attention and special treatment needed</u>	
Notes for the doctor	Treat symptomatically.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media The product is not flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Special hazards arising from the substance or mixture

Specific hazards	Risk of explosion. DO NOT ATTEMPT TO FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions. Can explode or detonate under fire conditions. Burning material may produce toxic vapors. It is recommended that users of explosives material be familiar with the Institute of Makers of Explosives Safety Library publications.
Hazardous combustion products	Thermal decomposition or combustion products may include the following substances: Harmful gases or vapors. Oxides of carbon. Carbon monoxide (CO).

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Advice for firefighters

Protective actions during firefighting	Leave danger zone immediately. Evacuate area. No action shall be taken without appropriate training or involving any personal risk. Keep upwind to avoid inhalation of gases, vapors, fumes and smoke. Fight fire remotely due to the risk of explosion. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify appropriate authorities.
Special protective equipment for firefighters	Class 1: Explosive substances and articles. Regular protection may not be safe. Wear chemical protective suit. Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Standard Firefighter's clothing including helmets, protective boots and gloves will provide a basic level of protection for chemical incidents.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precaution	Wear protective clothing as described in Section 8 of this safety data sheet. No action shall be taken without appropriate training or involving any personal risk. No smoking, sparks, flames or other sources of ignition near spillage. Evacuate area. Isolate area and prevent access.
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Environmental precautions

Environmental precautions	Environmental precautions Avoid discharge into drains or watercourses or onto the ground. Large Spillages: Inform the relevant authorities if environmental pollution occurs (sewers, waterways, soil or air).
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Methods and material for containment and cleaning up

Methods for cleaning up	Wear protective clothing as described in Section 8 of this safety data sheet. No smoking, sparks, flames or other sources of ignition near spillage. Pick up mechanically. Send for recovery or disposal in suitable receptacles. Use only non-sparking tools. For waste disposal, see Section 13.
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Reference to other sections	For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.
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7. Handling and storage

Precautions for safe handling

Usage precautions	Read and follow manufacturer's recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from heat, hot
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surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from food, drink and animal feeding stuffs. Use only non-sparking tools. Handle with care. Do not drop or knock. Risk of explosion. Do not handle until all safety precautions have been read and understood. Do not handle broken packages without protective equipment. Do not disassemble.

Advice on general occupational hygiene

Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Wash at the end of each work shift and before eating, smoking and using the toilet. Change work clothing daily before leaving workplace.

Conditions for safe storage, including any incompatibilities

Storage precautions

Class 1: Explosive substances and articles. Store in accordance with local regulations. Licenced storage. Keep in a cool, well ventilated place. Keep containers upright. Protect containers from damage. Ensure product is stored securely and cannot fall.

Storage class

Class 1: Explosive substances and articles. Compatibility group B.

Specific end uses(s)

Specific end use(s)

The identified uses for this product are detailed in Section 1.

8. Exposure Controls/personal protection

Control parameters

Occupational exposure limits

Ingredient comments

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

aluminium powder (stabilised)

Long-term exposure limit (8-hour TWA): ACGIH 1 mg/m³ respirable fraction A4

Long-term exposure limit (8-hour TWA): OSHA 5 mg/m³ respirable fraction as Al

Long-term exposure limit (8-hour TWA): OSHA 15 mg/m³ total dust as Al

Lead diazide

Long-term exposure limit (8-hour TWA): OSHA 0.05 mg/m³ as Pb

ACGIH = American Conference of Governmental Industrial Hygienists.

OSHA = Occupational Safety and Health Administration. A4 = Not Classifiable as a Human Carcinogen.

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Exposure controls

Appropriate engineering controls	Provide adequate ventilation. Ensure the ventilation system is regularly maintained and tested. Good general ventilation should be adequate to control worker exposure to airborne contaminants. Observe any occupational exposure limits for the product or ingredients. Take precautionary measures against static discharges.
Eye/face protection	Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. The following protection should be worn: Tight-fitting safety glasses. Personal protective equipment for eye and face protection should comply with OSHA 1910.133.
Hand protection	Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. Wear protective gloves made of the following material: Polyethylene.
Other skin and body protection	Wear suitable coveralls to prevent exposure to the skin. Wear fire/flame resistant/retardant clothing. Wear anti-static protective clothing if there is a risk of ignition from static electricity.
Hygiene measures	Good personal hygiene procedures should be implemented. When using do not eat, drink or smoke.
Respiratory protection	No specific requirements are anticipated under normal conditions of use. Provide adequate ventilation. Respiratory protection may be required if excessive airborne contamination occurs. Wear a respirator fitted with the following cartridge: Organic vapor + dust and mist filter.
Thermal hazards	If there is a risk of contact with hot product, all protective equipment worn should be suitable for use with high temperatures.
Environmental exposure controls	The product in its supplied state is not believed to present an exposure hazard.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Product comments	This set contains many components. The information below relates to the chemical components contained in the explosive item.
Appearance	Solid.
Color	Not determined.
Odor	Not determined.

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Odor threshold	Not determined.
pH	Not determined.
Freezing point	Not available.
Initial boiling point and range	Not available.
Flash point	Not available.
Evaporation rate	Not determined.
Evaporation factor	Not determined.
Flammability (solid, gas)	Not relevant.
Upper/lower flammability or explosive limits	Not relevant.
Vapor pressure	Not determined.
Vapor density	Not determined.
Relative density	Not determined.
Bulk density	Not determined.
Solubility	Not determined.
Partition coefficient	Not determined.
Auto-ignition temperature	Not relevant.
Decomposition Temperature	Not relevant.
Viscosity	Not determined.
Explosive properties	Class 1: Explosive substances and articles. Compatibility group B.
Oxidizing properties	Not considered to be oxidising.
Other information	No information required.

10. Stability and reactivity

Reactivity	See the other subsections of this section for further details.
Stability	Risk of explosion by shock, friction, fire or other sources of ignition. Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.

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Possibility of hazardous reactions	Risk of explosion.
Conditions to avoid	Protect from sunlight. Avoid heat, flames and other sources of ignition. Risk of explosion if heated under confinement. Do not subject to grinding/ shock/ friction.
Materials to avoid	Strong oxidizing agents. Strong reducing agents.
Hazardous decomposition products	Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Harmful gases or vapors. Carbon monoxide (CO).

11. Toxicological information

Information on toxicological effects

Toxicological effects	Exposure to components of the product are limited due to the physical form of the product. The information below relates to the chemical components contained in the explosive item.
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Acute toxicity - oral

Notes (oral LD ₅₀)	Based on available data the classification criteria are not met.
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Acute toxicity - dermal

Notes (dermal LD ₅₀)	Based on available data the classification criteria are not met.
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Acute toxicity - inhalation

Notes (inhalation LC ₅₀)	Based on available data the classification criteria are not met.
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Skin corrosion/irritation

Animal data	Based on available data the classification criteria are not met.
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Serious eye damage/irritation

Serious eye damage/irritation	Based on available data the classification criteria are not met.
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Respiratory sensitization

Respiratory sensitization	Based on available data the classification criteria are not met.
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Skin sensitization

Skin sensitization	Based on available data the classification criteria are not met.
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Germ cell mutagenicity

Genotoxicity - in vitro	Based on available data the classification criteria are not met.
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Carcinogenicity

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Carcinogenicity Based on available data the classification criteria are not met.

Reproductive toxicity

Reproductive toxicity - fertility Based on available data the classification criteria are not met.

Reproductive toxicity development Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure

STOT - single exposure Not classified as a specific target organ toxicant after a single exposure.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure Based on available data the classification criteria are not met.

Aspiration hazard

Aspiration hazard Based on available data the classification criteria are not met.

General information

The information below relates to the chemical components contained in the explosive item. The severity of the symptoms described will vary dependent on the concentration and the length of exposure. Suspected of damaging fertility or the unborn child.

Inhalation May cause respiratory irritation.

Ingestion Harmful if swallowed. Stomach pain.

Skin contact Prolonged skin contact may cause temporary irritation.

Eye contact May cause temporary eye irritation.

Route of exposure Ingestion Inhalation Skin and/or eye contact

Target Organs No specific target organs known.

12. Ecological Information

Toxicity Harmful to aquatic life with long lasting effects.

Persistence and degradability

Persistence and degradability The product contains inorganic substances which are not biodegradable.

Bioaccumulative potential

Bio-Accumulative Potential No data available on bioaccumulation.

Partition coefficient Not determined.

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Mobility in soil

Mobility The product is water-soluble and may spread in water systems.

Other adverse effects

Other adverse effects None known.

13. Disposal considerations

Waste treatment methods

General information This material and its container must be disposed of in a safe way. When handling waste, the safety precautions applying to handling of the product should be considered. Empty containers or liners may retain some product residues and hence be potentially hazardous. Do not handle broken packages without protective equipment. Do not disassemble.

Disposal methods Dispose of waste via a licensed waste disposal contractor. If broken/damaged and the contents exposed, submerge in water. Dispose of contents/container in accordance with local regulations.

14. Transport information

General Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Handle with care. Do not drop or knock. Ensure product is stored securely and cannot fall.

UN Number

UN No. (TDG) UN0360

UN No. (IMDG) UN0360

UN No. (IATA) FORBIDDEN

UN No. (DOT) UN0360

UN proper shipping name

Proper shipping name (TDG) DETONATORS ASSEMBLIES, NON-ELECTRIC

Proper shipping name (IMDG) DETONATORS ASSEMBLIES, NON-ELECTRIC

Proper shipping name (IATA) FORBIDDEN

Proper shipping name (DOT) DETONATORS ASSEMBLIES, NON-ELECTRIC

Transport hazard class(es)

DOT hazard class 1.1B

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DOT hazard label	1.1B
TDG class	1.1B
TDG label(s)	1.1B
IMDG Class	1.1B
IATA class/division	FORBIDDEN

Transport labels



Packing group

Packing group (International) Not applicable.

DOT packing group II

Environmental hazards

Environmentally Hazardous Substance

No.

Special precautions for user

Always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage. Compatibility group B: Article containing a primary explosive substance and not having two or more effective protective features. Some articles such as detonators for blasting, detonator assemblies for blasting and primers, cap-type, are included, even though they do not contain primary explosives.

EmS F-B, S-X

15. Regulatory information

US Federal Regulations

SARA Section 302 Extremely Hazardous Substances Tier II Threshold Planning Quantities

None of the ingredients are listed or exempt.

CERCLA/Superfund, Hazardous Substances/Reportable Quantities (EPA)

None of the ingredients are listed or exempt.

SARA Extremely Hazardous Substances EPCRA Reportable Quantities

None of the ingredients are listed or exempt.

SARA 313 Emission Reporting

The following ingredients are listed or exempt:

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Lead diazide

0%

aluminium powder (stabilised)

1.0 %

CAA Accidental Release Prevention

None of the ingredients are listed or exempt.

FDA - Essential Chemical

None of the ingredients are listed or exempt.

FDA - Precursor Chemical

None of the ingredients are listed or exempt.

SARA (311/312) Hazard Categories

None of the ingredients are listed or exempt.

OSHA Highly Hazardous Chemicals

The following ingredients are listed or exempt:

Nitrocellulose

Threshold Quantity: 2500 lbs

US State Regulations

California Proposition 65 Carcinogens and Reproductive Toxins

None of the ingredients are listed or exempt.

California Air Toxics "Hot Spots" (A-I)

The following ingredients are listed or exempt:

aluminium powder (stabilised)

California Air Toxics "Hot Spots" (A-II)

None of the ingredients are listed or exempt.

California Directors List of Hazardous Substances

The following ingredients are listed or exempt:

aluminium powder (stabilised)

Massachusetts "Right To Know" List

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The following ingredients are listed or exempt:

Potassium perchlorate
Lead diazide
Nitrocellulose Lithium
aluminium powder (stabilised)

Rhode Island "Right To Know" List

The following ingredients are listed or exempt:

Potassium perchlorate
Nitrocellulose Lithium
aluminium powder
(stabilised)

Minnesota "Right To Know" List

The following ingredients are listed or exempt:

aluminium powder (stabilised)

New Jersey "Right To Know" List

The following ingredients are listed or exempt:

Potassium perchlorate
Nitrocellulose
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
Pentaerythritol tetranitrate
Lithium
aluminium powder (stabilised)

Pennsylvania "Right To Know" List

The following ingredients are listed or exempt:

Potassium perchlorate
Nitrocellulose
Lithium
aluminium powder (stabilised)

Inventories

US - TSCA

All the ingredients are listed or exempt.

US - TSCA 12(b) Export Notification

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The following ingredients are listed or exempt:

Pentaerythritol tetranitrate

16. Other information

Abbreviations and acronyms used in the safety data sheet C.A.S. = Chemical Abstracts Service; E.C. No = European Commission number; GHS = Globally Harmonised System; OSHA = Occupational Safety and Health Administration; WHMIS = Workplace Hazardous Materials Information System; DOT = Department of Transport; TDG = Transport of Dangerous Goods Regulations; IMDG = International Maritime Dangerous Goods; IATA = International Air Transport Association; SARA = Superfund Amendments and Reauthorization Act; CERCLA = Comprehensive Environmental; EPCRA = Emergency Planning and Community Right-to-Know Act; TSCA = Toxic Substances Control Act; LD/LC/EC = Lethal Dose, Lethal Concentration/Effect Concentration for 50% of population; NOEC = No Overall Effect Concentration; NOEL = No Overall Effect Level; REACH = Registration, Evaluation, Authorisation & Restriction of Chemicals; STOT-RE = Single Target Organ Toxicity - Repeat Exposure; STOT-SE = Specific Target Organ Toxicity Single Exposure; PBT = Persistent, Bioaccumulative, Toxic; vPvB = Very Persistent, Very Bioaccumulative.

Classification abbreviations/acronyms Expl. = Explosive

Key literature references for data Source: European Chemicals Agency, <http://echa.europa.eu/>

Training advice Read and follow manufacturer's recommendations. Only trained personnel should use this material.

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Hazard statements in full
H200 Unstable explosive.
H201 Explosive; mass explosion hazard.
H228 Flammable solid.
H250 Catches fire spontaneously if exposed to air.
H260 In contact with water releases flammable gases which may ignite spontaneously.
H261 In contact with water releases flammable gases.
H271 May cause fire or explosion; strong oxidizer.
H301 Toxic if swallowed.

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H302 Harmful if swallowed.
H311 Toxic in contact with skin.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H331 Toxic if inhaled.
H332 Harmful if inhaled.
H360 May damage fertility or the unborn child.
H360Df May damage the unborn child. Suspected of damaging fertility.
H373 May cause damage to organs through prolonged or repeated exposure.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.

*** END OF SAFETY DATA SHEET ***

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.

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According to Appendix D, OSHA Hazard Communication Standard 29 CFR § 1910.1200

1. Identification

Product identifier

Product name EZshot

Recommended use of the chemical and restrictions on use

Application Explosive detonator used in mining and commercial blasting applications.

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Uses advised against No specific uses advised against are identified.

Details of the supplier of the safety data sheet

Supplier Dyno Nobel Inc.
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Salt Lake City,
Utah 84121
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801-321-6703
www.dynonobel.com

Emergency telephone number

Emergency telephone CHEMTREC (USA) +1 800-424-9300
CANUTEC (CANADA) +1 613-996-6666

2. Hazard(s) identification

Classification of the substance or mixture

OSHA Regulatory Status This Product is Hazardous under the OSHA Hazard Communication Standard.
Comment(s) As supplied, this product is an article. Expl. 1.1 - H201 Explosive; mass explosion hazard.
This set contains many components.
Physical hazards Expl. 1.1 - H201
Health hazards Not classified
Environmental hazards Not classified
Physiochemical Caution. Risk of explosion. Explosive; mass explosion hazard. Handle with care.

Label elements

Pictogram



Signal word Danger
Hazard statements H201 Explosive; mass explosion hazard.

Precautionary statements

P210 Keep away from heat, sparks, open flames and hot surfaces. No smoking.
P230 Keep wetted with water.
P240 Ground/ bond container and receiving equipment.
P250 Do not subject to grinding/ shock/ friction.

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P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P370+P380 In case of fire: Evacuate area.

P372 Explosion risk in case of fire.

P373 DO NOT fight fire when fire reaches explosives.

P401 Store in accordance with national regulations.

P501 Dispose of contents/ container in accordance with national regulations.

Other hazards

This product does not contain any substances classified as PBT or vPvB.

PREVENTION OF ACCIDENTS IN THE USE OF EXPLOSIVES - The prevention of accidents in the use of explosives is a result of careful planning and observance of the best known practices. The explosives user must remember that he is dealing with a powerful force and that various devices and methods have been developed to assist him in directing this force. He should realize that this force, if misdirected, may either kill or injure both him and his fellow workers.

WARNING - All explosives are dangerous and must be carefully handled and used following approved safety procedures either by or under the direction of competent, experienced persons in accordance with all applicable federal, state, and local laws, regulations, or ordinances. If you have any questions or doubts as to how to use any explosive product, DO NOT USE IT before consulting with your supervisor, or the manufacturer, if you do not have a supervisor. If your supervisor has any questions or doubts, he should consult the manufacturer before use.

3. Composition/information on ingredients

Mixtures

Product description This set contains many components. The information below relates to the chemical components contained in the explosive item.

Potassium perchlorate
CAS number: 7778-74-7

Classification
Ox. Sol. 1 - H271
Acute Tox. 4 - H302

Nitrocellulose
CAS number: 9004-70-0

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Classification Expl. 1.1 - H201
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine CAS number: 2691-41-0
Classification Expl. 1.1 - H201 Acute Tox. 4 - H302 Acute Tox. 3 - H311
Zirconium CAS number: 7440-67-7
Classification Pyr. Sol. 1 - H250 Water-react. 1 - H260
Pentaerythritol tetranitrate CAS number: 78-11-5
Classification Unst. Expl. - H200
Lithium CAS number: 7439-93-2
Classification Water-react. 1 - H260 Skin Corr. 1B - H314 Eye Dam. 1 - H318
Lead picrate CAS number: 25721-38-4 M factor (Chronic) = 1

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Classification Expl. 1.1 - H201 Acute Tox. 3 - H301 Acute Tox. 3 - H311 Acute Tox. 3 - H331 Repr. 1A - H360 STOT RE 2 - H373 Aquatic Chronic 1 - H410	
aluminium powder (stabilised) CAS number: 7429-90-5	
Classification Flam. Sol. 1 - H228 Water-react. 2 - H261	
Polycarbonmonofluoride CAS number: 51311-17-2	
Classification Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 STOT SE 3 - H335	
Lead picramate CAS number: -	
Classification Unst. Expl. - H200 Acute Tox. 4 - H302 Acute Tox. 4 - H332 Repr. 1A - H360Df STOT RE 2 - H373 Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410	
Lead diazide	

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CAS number: 13424-46-9

M factor (Acute) = 1

M factor (Chronic) = 1

Classification

Unst. Expl. - H200

Acute Tox. 4 - H302

Acute Tox. 4 - H332

Repr. 1A - H360Df

STOT RE 2 - H373

Aquatic Acute 1 - H400

Aquatic Chronic 1 - H410

The full text for all hazard statements is displayed in Section 16.

Composition comments The exact percentage is withheld as a trade secret in accordance with 29 CFR 1910.1200.

4. First-aid measures

Description of first aid measures

General information	Class 1: Explosive substances and articles. Get medical attention immediately. Show this Safety Data Sheet to the medical personnel. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Inhalation	Due to the physical nature of this product, exposure by this route is unlikely. If exposed to the chemical contents, then proceed as follows: Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen.
Ingestion	Due to the physical nature of this product, it is unlikely that ingestion will occur. If exposed to the chemical contents, then proceed as follows: If swallowed: Rinse nose and mouth with water. Give plenty of water to drink. Do not induce vomiting unless under the direction of medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs.
Skin Contact	If exposed to the chemical contents, then proceed as follows: Brush off loose particles from skin. Wash skin thoroughly with soap and water.
Eye contact	Due to the physical nature of this product, exposure by this route is unlikely. If exposed to the chemical contents, then proceed as follows: If in eyes: Rinse with water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 10 minutes. Do not rub eye.
Protection of first aiders	First aid personnel should wear appropriate protective equipment during any rescue.

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Most important symptoms and effects, both acute and delayed

General information	The information below relates to the chemical components contained in the explosive item. The severity of the symptoms described will vary dependent on the concentration and the length of exposure. Suspected of damaging fertility or the unborn child.
Inhalation	May cause respiratory irritation.
Ingestion	Harmful if swallowed. Stomach pain.
Skin contact	Prolonged skin contact may cause temporary irritation.
Eye contact	May cause temporary eye irritation.

Indication of immediate medical attention and special treatment needed

Notes for the doctor	Treat symptomatically.
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5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media The product is not flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Special hazards arising from the substance or mixture

Specific hazards Risk of explosion. DO NOT ATTEMPT TO FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions. Can explode or detonate under fire conditions. Burning material may produce toxic vapors. It is recommended that users of explosives material be familiar with the Institute of Makers of Explosives Safety Library publications.

Hazardous combustion products Thermal decomposition or combustion products may include the following substances: Harmful gases or vapors. Oxides of carbon. Carbon monoxide (CO).

Advice for firefighters

Protective actions during firefighting Leave danger zone immediately. Evacuate area. No action shall be taken without appropriate training or involving any personal risk. Keep upwind to avoid inhalation of gases, vapors, fumes and smoke. Fight fire remotely due to the risk of explosion. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify appropriate authorities.

Special protective equipment for firefighters Class 1: Explosive substances and articles. Regular protection may not be safe. Wear chemical protective suit. Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Standard Firefighter's clothing including

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helmets, protective boots and gloves will provide a basic level of protection for chemical incidents.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precaution Wear protective clothing as described in Section 8 of this safety data sheet. No action shall be taken without appropriate training or involving any personal risk. No smoking, sparks, flames or other sources of ignition near spillage. Evacuate area. Isolate area and prevent access.

Environmental precautions

Environmental precautions Environmental precautions Avoid discharge into drains or watercourses or onto the ground. Large Spillages: Inform the relevant authorities if environmental pollution occurs (sewers, waterways, soil or air).

Methods and material for containment and cleaning up

Methods for cleaning up Wear protective clothing as described in Section 8 of this safety data sheet. No smoking, sparks, flames or other sources of ignition near spillage. Pick up mechanically. Send for recovery or disposal in suitable receptacles. Use only non-sparking tools. For waste disposal, see Section 13.

Reference to other sections For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.

7. Handling and storage

Precautions for safe handling

Usage precautions Read and follow manufacturer's recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from food, drink and animal feeding stuffs. Use only non-sparking tools. Handle with care. Do not drop or knock. Risk of explosion. Do not handle until all safety precautions have been read and understood. Do not handle broken packages without protective equipment. Do not disassemble.

Advice on general occupational hygiene Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Wash at the end of each work shift and before eating, smoking and using the toilet. Change work clothing daily before leaving workplace.

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Conditions for safe storage, including any incompatibilities

Storage precautions Class 1: Explosive substances and articles. Store in accordance with local regulations. Licenced storage. Keep in a cool, well ventilated place. Keep containers upright. Protect containers from damage. Ensure product is stored securely and cannot fall.

Storage class Class 1: Explosive substances and articles. Compatibility group B.

Specific end uses(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.

8. Exposure Controls/personal protection

Control parameters

Occupational exposure limits

Ingredient comments The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

aluminium powder (stabilised)

Long-term exposure limit (8-hour TWA): ACGIH 1 mg/m³ respirable fraction
A4

Long-term exposure limit (8-hour TWA): OSHA 5 mg/m³ respirable fraction as Al

Long-term exposure limit (8-hour TWA): OSHA 15 mg/m³ total dust as Al

Lead diazide

Long-term exposure limit (8-hour TWA): OSHA 0.05 mg/m³ as Pb

ACGIH = American Conference of Governmental Industrial Hygienists.

OSHA = Occupational Safety and Health Administration. A4 = Not Classifiable as a Human Carcinogen.

Exposure controls

Appropriate engineering controls Provide adequate ventilation. Ensure the ventilation system is regularly maintained and tested. Good general ventilation should be adequate to control worker exposure to airborne contaminants. Observe any occupational exposure limits for the product or ingredients. Take precautionary measures against static discharges.

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Eye/face protection	Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. The following protection should be worn: Tight-fitting safety glasses. Personal protective equipment for eye and face protection should comply with OSHA 1910.133.
Hand protection	Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. Wear protective gloves made of the following material: Polyethylene.
Other skin and body protection	Wear suitable coveralls to prevent exposure to the skin. Wear fire/flame resistant/retardant clothing. Wear anti-static protective clothing if there is a risk of ignition from static electricity.
Hygiene measures	Good personal hygiene procedures should be implemented. When using do not eat, drink or smoke.
Respiratory protection	No specific requirements are anticipated under normal conditions of use. Provide adequate ventilation. Respiratory protection may be required if excessive airborne contamination occurs. Wear a respirator fitted with the following cartridge: Organic vapor + dust and mist filter.
Thermal hazards	If there is a risk of contact with hot product, all protective equipment worn should be suitable for use with high temperatures.
Environmental exposure controls	The product in its supplied state is not believed to present an exposure hazard.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Product comments	This set contains many components. The information below relates to the chemical components contained in the explosive item.
Appearance	Solid.
Color	Not determined.
Odor	Not determined.
Odor threshold	Not determined.
pH	Not determined.
Freezing point	Not available.
Initial boiling point and range	Not available.

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Flash point	Not available.
Evaporation rate	Not determined.
Evaporation factor	Not determined.
Flammability (solid, gas)	Not relevant.
Upper/lower flammability or explosive limits	Not relevant.
Vapor pressure	Not determined.
Vapor density	Not determined.
Relative density	Not determined.
Bulk density	Not determined.
Solubility	Not determined.
Partition coefficient	Not determined.
Auto-ignition temperature	Not relevant.
Decomposition Temperature	Not relevant.
Viscosity	Not determined.
Explosive properties	Class 1: Explosive substances and articles. Compatibility group B.
Oxidizing properties	Not considered to be oxidising.
Other information	No information required.

10. Stability and reactivity

Reactivity	See the other subsections of this section for further details.
Stability	Risk of explosion by shock, friction, fire or other sources of ignition. Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.
Possibility of hazardous reactions	Risk of explosion.
Conditions to avoid	Protect from sunlight. Avoid heat, flames and other sources of ignition. Risk of explosion if heated under confinement. Do not subject to grinding/ shock/ friction.
Materials to avoid	Strong oxidizing agents. Strong reducing agents.

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Hazardous decomposition products Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Harmful gases or vapors. Carbon monoxide (CO).

11. Toxicological information

Information on toxicological effects

Toxicological effects Exposure to components of the product are limited due to the physical form of the product.
The information below relates to the chemical components contained in the explosive item.

Acute toxicity - oral

Notes (oral LD₅₀) Based on available data the classification criteria are not met.

Acute toxicity - dermal

Notes (dermal LD₅₀) Based on available data the classification criteria are not met.

Acute toxicity - inhalation

Notes (inhalation LC₅₀) Based on available data the classification criteria are not met.

Skin corrosion/irritation

Animal data Based on available data the classification criteria are not met.

Serious eye damage/irritation

Serious eye damage/irritation Based on available data the classification criteria are not met.

Respiratory sensitization

Respiratory sensitization Based on available data the classification criteria are not met.

Skin sensitization

Skin sensitization Based on available data the classification criteria are not met.

Germ cell mutagenicity

Genotoxicity - in vitro Based on available data the classification criteria are not met.

Carcinogenicity

Carcinogenicity Based on available data the classification criteria are not met.

Reproductive toxicity

Reproductive toxicity - fertility Based on available data the classification criteria are not met.

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Reproductive toxicity development	Based on available data the classification criteria are not met.
<u>Specific target organ toxicity - single exposure</u>	
STOT - single exposure	Not classified as a specific target organ toxicant after a single exposure.
<u>Specific target organ toxicity - repeated exposure</u>	
STOT - repeated exposure	Based on available data the classification criteria are not met.
<u>Aspiration hazard</u>	
Aspiration hazard	Based on available data the classification criteria are not met.
General information	The information below relates to the chemical components contained in the explosive item. The severity of the symptoms described will vary dependent on the concentration and the length of exposure. Suspected of damaging fertility or the unborn child.
Inhalation	May cause respiratory irritation.
Ingestion	Harmful if swallowed. Stomach pain.
Skin contact	Prolonged skin contact may cause temporary irritation.
Eye contact	May cause temporary eye irritation.
Route of exposure	Ingestion Inhalation Skin and/or eye contact
Target Organs	No specific target organs known.

12. Ecological Information

Toxicity	Harmful to aquatic life with long lasting effects.
<u>Persistence and degradability</u>	
Persistence and degradability	The product contains inorganic substances which are not biodegradable.
<u>Bioaccumulative potential</u>	
Bio-Accumulative Potential	No data available on bioaccumulation.
Partition coefficient	Not determined.
<u>Mobility in soil</u>	
Mobility	The product is water-soluble and may spread in water systems.
<u>Other adverse effects</u>	
Other adverse effects	None known.

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13. Disposal considerations

Waste treatment methods

General information This material and its container must be disposed of in a safe way. When handling waste, the safety precautions applying to handling of the product should be considered. Empty containers or liners may retain some product residues and hence be potentially hazardous. Do not handle broken packages without protective equipment. Do not disassemble.

Disposal methods Dispose of waste via a licensed waste disposal contractor. If broken/damaged and the contents exposed, submerge in water. Dispose of contents/container in accordance with local regulations.

14. Transport information

General Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Handle with care. Do not drop or knock. Ensure product is stored securely and cannot fall.

UN Number

UN No. (TDG)	UN0361
UN No. (IMDG)	UN0361
UN No. (IATA)	UN0361
UN No. (DOT)	UN0361

UN proper shipping name

Proper shipping name (TDG)	DETONATORS ASSEMBLIES, NON-ELECTRIC
Proper shipping name (IMDG)	DETONATORS ASSEMBLIES, NON-ELECTRIC
Proper shipping name (IATA)	DETONATORS ASSEMBLIES, NON-ELECTRIC
Proper shipping name (DOT)	DETONATORS ASSEMBLIES, NON-ELECTRIC

Transport hazard class(es)

DOT hazard class	1.4B
DOT hazard label	1.4B
TDG class	1.4B
TDG label(s)	1.4B
IMDG Class	1.4B
IATA class/division	1.4B

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Transport labels



Packing group

Packing group (International) Not applicable.

DOT packing group II

Environmental hazards

Environmentally Hazardous Substance

No.

Special precautions for user

Always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage. Compatibility group B: Article containing a primary explosive substance and not having two or more effective protective features. Some articles such as detonators for blasting, detonator assemblies for blasting and primers, cap-type, are included, even though they do not contain primary explosives.

EmS F-B, S-X

15. Regulatory information

US Federal Regulations

SARA Section 302 Extremely Hazardous Substances Tier II Threshold Planning Quantities

None of the ingredients are listed or exempt.

CERCLA/Superfund, Hazardous Substances/Reportable Quantities (EPA)

None of the ingredients are listed or exempt.

SARA Extremely Hazardous Substances EPCRA Reportable Quantities

None of the ingredients are listed or exempt.

SARA 313 Emission Reporting

The following ingredients are listed or exempt:

Lead diazide

0%

aluminium powder (stabilised)

1.0 %

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None of the ingredients are listed or exempt.

FDA - Essential Chemical

None of the ingredients are listed or exempt.

FDA - Precursor Chemical

None of the ingredients are listed or exempt.

SARA (311/312) Hazard Categories

None of the ingredients are listed or exempt.

OSHA Highly Hazardous Chemicals

The following ingredients are listed or exempt:

Nitrocellulose

Threshold Quantity: 2500 lbs

US State Regulations

California Proposition 65 Carcinogens and Reproductive Toxins

None of the ingredients are listed or exempt.

California Air Toxics "Hot Spots" (A-I)

The following ingredients are listed or exempt:

aluminium powder (stabilised)

California Air Toxics "Hot Spots" (A-II)

None of the ingredients are listed or exempt.

California Directors List of Hazardous Substances

The following ingredients are listed or exempt:

aluminium powder (stabilised)

Massachusetts "Right To Know" List

The following ingredients are listed or exempt:

Potassium perchlorate

Lead diazide

Nitrocellulose Lithium

aluminium powder (stabilised)

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Rhode Island "Right To Know" List

The following ingredients are listed or exempt:

Potassium perchlorate
Nitrocellulose Lithium
aluminium powder (stabilised)

Minnesota "Right To Know" List

The following ingredients are listed or exempt:

aluminium powder (stabilised)

New Jersey "Right To Know" List

The following ingredients are listed or exempt:

Potassium perchlorate
Nitrocellulose
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
Pentaerythritol tetranitrate
Lithium
aluminium powder (stabilised)

Pennsylvania "Right To Know" List

The following ingredients are listed or exempt:

Potassium perchlorate
Nitrocellulose
Lithium
aluminium powder (stabilised)

Inventories

US - TSCA

All the ingredients are listed or exempt.

US - TSCA 12(b) Export Notification

The following ingredients are listed or exempt:

Pentaerythritol tetranitrate

16. Other information

Abbreviations and acronyms used in the safety data sheet C.A.S. = Chemical Abstracts Service; E.C. No = European Commission number; GHS = Globally Harmonised System; OSHA = Occupational Safety and Health

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Administration; WHMIS = Workplace Hazardous Materials Information System; DOT = Department of Transport; TDG = Transport of Dangerous Goods Regulations; IMDG = International Maritime Dangerous Goods; IATA = International Air Transport Association; SARA = Superfund Amendments and Reauthorization Act; CERCLA = Comprehensive Environmental; EPCRA = Emergency Planning and Community Right-to-Know Act; TSCA = Toxic Substances Control Act; LD/LC/EC = Lethal Dose, Lethal Concentration/Effect Concentration for 50% of population; NOEC = No Overall Effect Concentration; NOEL = No Overall Effect Level; REACH = Registration, Evaluation, Authorisation & Restriction of Chemicals; STOT-RE = Single Target Organ Toxicity - Repeat Exposure; STOT-SE = Specific Target Organ Toxicity Single Exposure; PBT = Persistent, Bioaccumulative, Toxic; vPvB = Very Persistent, Very Bioaccumulative.

Classification abbreviations/acronyms Expl. = Explosive

Key literature references for data	Source: European Chemicals Agency, http://echa.europa.eu/
Training advice	Read and follow manufacturer's recommendations. Only trained personnel should use this material.
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Hazard statements in full	H200 Unstable explosive. H201 Explosive; mass explosion hazard. H228 Flammable solid. H250 Catches fire spontaneously if exposed to air. H260 In contact with water releases flammable gases which may ignite spontaneously. H261 In contact with water releases flammable gases. H271 May cause fire or explosion; strong oxidizer. H301 Toxic if swallowed. H302 Harmful if swallowed. H311 Toxic in contact with skin. H314 Causes severe skin burns and eye damage. H318 Causes serious eye damage. H331 Toxic if inhaled. H332 Harmful if inhaled.
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H360 May damage fertility or the unborn child.

H360Df May damage the unborn child. Suspected of damaging fertility.

H373 May cause damage to organs through prolonged or repeated exposure.

H400 Very toxic to aquatic life.

H410 Very toxic to aquatic life with long lasting effects.

*** END OF SAFETY DATA SHEET ***

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.

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