SECTION 1: IDENTIFICATION OF THE SUBSTANCE OR MIXTURE AND THE COMPANY

1.1. Product identifier

Product name : Non-electric detonator

Synonyms : Shock*Star series, In-Hole Delays, Surface Delay Connectors, Quick-Relay Connectors, Dual*Delays, Shorty, Long Period Delays, STD (Shock Tube whit Detonator) Quick*Start, MS Connector, Lead-in-Line

SDS :

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Main use category : 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.

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Supplier
AUSTIN STAR DETONATOR Co.
901 Cantu Rd.
Brownsville, TX 78521
956-831-7751 during normal business hours

877-836-8286 Toll Free 24/7
www.austinpowder.com

1.4. Emergency telephone number

Country	Organisation/Company	Address	Emergency number	Comment
United States of America	CHEMTREC	Not available	TOLL FREE 24/7: (800) 424-9300 Domestic 1-703-527-3887 International and Marine	www.chemtrec.com

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the item ("Article") – Hazard Statements (GFHS-US)

Physical Hazards:

H201 – May mass explode in a fire, Division 1.1

Adverse physicochemical, human heath and evironmental effects:

No additional information available

2.2. Label elements

Signal Word: Explosive, mass explosion hazard

Hazard pictograms (GHS-US) :

GHS01

Precautionary statements (CLP) : P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P250 - Do not subject to grinding, friction, impact or shock.
P270 – Do not eat, drink or smoke when using this product
P273 – Avoid release to the environment
P280 – Wear eye protection
P370+P372+P373+P380 - In case of fire: Extreme risk of explosion. Evacuate area. **DO NOT** fight fire when fire reaches explosives.
P401+P403+P405 – Store locked-up in a ventilated space, in accordance with all applicable regulations
P501 - Dispose of contents/container in accordance with all applicable regulations

2.3. Other hazards

Other hazards not contributing to the classification : None expected

Unknown Acute Toxicity (GHS-US) : Not available

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1. Substances

Not applicable

3.2. Mixtures

Comments : 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	0-70%
Zinc	(CAS-No.) 7440-66-6	0-60%
Aluminum	(CAS-No.) 7429-90-5	0-40%
Pentaerythritol tetranitrate (PETN)	(CAS-No.) 121-82-4	0-15%
Barium chromate	(CAS-No.) 10294-40-3	0-5%
Boron	(CAS-No.) 7440-42-8	0-5%
Lead tetraoxide	(CAS-No.) 13424-46-9	0-5%
Silicon	(CAS-No.) 7440-21-3	0-2%
Tungsten (W)	(CAS-No.) 7440-33-7	0-5%
Potasium Perchlorate	(CAS-No.) 7778-74-7	0-5%
Molybdenum	(CAS-No.) 7439-98-7	0-5%
Diatomaceous Earth	(CAS-No.) 68855-54-9	0-10%
NHN (Nickel Hydrazine Nitrate)	(CAS-No.) 69101-54-8	0-5%

Comments : 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%
Cyclotetramethylene-tetranitramine (HMX)	(CAS-No.) 2691-41-0	0- 0.4%
Polyethylene	(CAS No.) 9002-88-4	50-80%
Ethylene copolymers	(CAS No.) N/A	10-40%

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

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.

First-aid measures after inhalation : Not an expected route of exposure.

First-aid measures after skin contact : Not an expected route of exposure.

First-aid measures after eye contact : Not an expected route of exposure.

First-aid measures after ingestion : Not an expected route of exposure.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects after inhalation : Not an expected route of exposure.

Symptoms/effects after skin contact : Not an expected route of exposure.

Symptoms/effects after eye contact : Not an expected route of exposure.

Symptoms/effects after ingestion : Not an expected route of exposure.

4.3. Indication of any immediate medical attention and special treatment needed

No special means are stated.
If any health troubles appear or in case of doubt, please inform the doctor and provide the information from this safety sheet.

SECTION 5: FIREFIGHTING 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 1 mile or more if any amount of explosives are 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 an 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.

5.1. Extinguishing media

Suitable extinguishing media : None

Unsuitable extinguishing media : For fires near explosives, dry chemical, foams, steam and smothering devides are not affective, can lead to possible explosion and must not be used.

5.2. Special hazards arising from the item (“Article”):

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

5.3. Advice for firefighters

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

Firefighting instructions : When figthing the initial fire, not involving explosives, firefighters should follow standard firefighting producers for the materials involved.

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

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

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

6.1.1. For non-emergency personnel

Protective equipment : Use appropriate personal protection equipment (PPE)

Emergency procedures : Isolate the area from unnecessary personnel.

6.1.2. For emergency responders

Protective equipment : Provide cleanup crew with proper PPE.

Emergency precautions : Avoid release to the environment.

6.2. Environmental precautions

Avoid release to the enviroment

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Contact manufacturer or Chemtrec

6.4. Reference to other sections

See Section 8 and 13 of this safety data sheet.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Precautions for safe handling : Avoid heating explosives in a confined apace. 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.

7.2. Conditions for safe storage, including any incompatibilities

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

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

Storage conditions : Storage areas should be inspected relularly 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 or NRCAN regulations.

Special rules on packaging : Packaging in accordance with USDOT or NRCAN regilations.

SECTION 8: EXPOSURE CONTROL / PERSONAL PROTECTION

8.1. Occupational control limits

Occupational exposure limits : Not applicable, sealed item.

8.2. Exposure controls

Appropriate engineering controls:

Product should be handled and used under strictly controlled conditions.

Personal protective equipment:

Eye/face protection: Use safety glasses
Protection of skin (whole body): Don't eat, drink and smoke during work. Use clothes suitable for work that do not accumulate the static charge (cotton).
Hands protection: Not required.
Respiratory protection: Not required

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance	:	Article – 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
Vapour 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
Explosive Data – sensitivity to machanical impact	:	Sensitive to mechanical impact
Explosive Data – sensitivity to static discharge	:	Sensitive to static discharge

SECTION 10: STABLILITY AND REACTIVITY

10.1. Reactivity and chemical stability

Stable and non-reactive under normal conditions of transportation, storage, handling and use.

10.2. Possibility of hazardous reactions

Polymerization will not occur.

10.3. Conditions to avoid

Open flame and elevated temperatures.

10.4. Incompatible materials

Strong acids, strong bases and organic solvents

10.5. Hazardous decomposition products

No unusual fumes or descomposition products expected. However, toxic fumes will be present.

SECTION 11: TOXICOLOGY INFORMATION

11.1. Information on toxicological effects

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 classified
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

Information on toxicological Effects, Ingredients

LD50 and LC50 Data (ingredients):

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

Barium Chromate, CAS No. 10294-40-3	
US ATE (oral)	500 mg/kg of body weight
US ATE (dust, mist)	1.5 mg/l/4h
IARC Group	1
Included in OSHA Hazard Communication Carcinogen List	

Cyclotetramethylenetetranitramine (HMX), CAS No. 2691-41-0	
LD50 oral rat	1,670 mg/kg
LD 50 dermal rat	982 mg/kg Species: New Zealand White

Lead tetraoxide, CAS No. 1314-41-6	
LD50 oral rat	500 mg/kg of body weight
LC50 inhalation rat	1.5 mg/l/4h
IARC Group	2A
Included in OSHA Hazard Communication Carcinogen List	

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

NHN (Nickel Hydrazine Nitrate) Cas No. 69101-54-8	
LD/LC50	No data available

Pentarythrutol tetranitrate (PETN), CAS No. 78-11-5	
LD50 oral rat	19,500 mg/kg of body weight

Tungsten (W), CAS No. 7440-33-7	
LD50 oral rat	2,000 mg/kg of body weight

Potasium Perchlorate, CAS No. 7778-74-7	
Toxic Dose LD 50	No data available

Molybdenum, CAS No. 7439-98-7	
LD/LC50 Values that are relevant for Classification	No data available

Diatomaceous Earth, CAS No. 68855-54-9	
Oral LD50	No data available
Dermal LD50	No data available

Ethylene copolymer, CAS No. 800-258-2436	
LD50 rat	>5000 mg/kg
LD50 rabbit	>2000 mg/kg

Polyethylene, CAS No. 9002-88-4	
LD50 rat	>8000 mg/kg

SECTION 12: ECOLOGY INFORMATION

12.1. Toxicity

Ecology - general : Not available

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

No additional information available

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Call manufacturer or CHEMTREC

SECTION 14: Transport information

When packaged as a 1.4B:							
Agency	**UN Number**	**Proper shipping Name**	**Hazard Class**	**Label Codes**	**PG**	**Marine Pollutant**	**Other**
US DOT	UN0361	Detonators, non-electric, for blasting	1.4B	1.4B	II	No	ERG-114
Canadian TDG	UN0361	Detonators, non-electric, for blasting	1.4B	1.4B	II	No	--
IMDG (Vessel)	UN0361	Detonators, non-electric, for blasting	1.4B	1.4B	II	No	EMs-No, Fire: F-B Spillage: S-X
IATA (Air)	Contact the manufacturer.						

SECTION 15: REGULATORY INFORMATION

15.1. US Federal Relulations:

SARA section 311/312	Fire hazard, Sudden Release of pressure hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard
TSCA	All ingredients are listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. Canadian Relulations:

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

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) Requirement

Party Responsible for the Preraration of This Document:

AUSTIN STAR DETONATOR Co.
901 Cantu Rd.
Brownsville, TX 78521
956-831-7751 during normal business hours

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.