SAFETY DATA SHEET

In accordance with ISO 11014: 2009 for Transport purpose

Section 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Product name	Seat-belt pretensioner
SDS Number	PT-002-001

Manufacture/supplier

Manufacture/supplier	TRQSS, Inc.
Department in Charge	Engineering Division
Address	255 Patillo Road R.R.#1 Tecumseh On CANADA N8N 2L9
Telephone number	(519)973-7400
Fax number	(519)727-6365
e-mail address	
Emergency telephone number	(519)973-7400

Recommended use and restriction on use

Seat-belt pretensioner

Section 2: HAZARDS IDENTIFICATION

Important hazards

GHS classification

Physical Hazards

Explosive	Division 1.4S

Health Hazards

Eye damage/irritation:	Category 1
Reproductive toxicity:	Category 2
Specific target organ toxicity (single exposure):	Category 1 (central nervous system, blood system) Category 2 (respiratory)
Specific target organ toxicity (single exposure):	Category 3 (respiratory tract irritation, narcotic effects)
Specific target organ toxicity (repeated exposure):	Category 2 (blood system, kidney, respiratory)

Environmental Hazards

Ecotoxicity (acute)	Category 1
Ecotoxicity (chronic)	Category 1

Label Elements

Pictogram	**None**
Signal word	**Danger**
Hazard Statements	Fire or projection hazard Causes serious eye damage May cause respiratory irritation May cause drowsiness or dizziness Suspected of damaging fertility or the unborn child Causes damage to central nervous system, blood system May causes damage to respiratory May cause damage to blood system, kidney, respiratory through prolonged or repeated exposure Very toxic to aquatic life Very toxic to aquatic life with long lasting effects
Precautionary Statements	
[Prevention]	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. No smoking. Ground/bond container and receiving equipment. Do not subject to grinding/shock/friction. Do not breathe dust/fume/gas/mist/vapours/spray. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.
[Emergency response]	IF INHALED: Remove person to fresh air and keep 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 exposed or concerned: Get medical advice/attention. Immediately call a POISON CENTER/doctor. In case of fire: Evacuate area. Explosion risk in case of fire. DO NOT fight fire when fire reaches explosives. Fight fire with normal precautions from a reasonable distance. Collect spillage.
[Storage]	Store in accordance with applicable local, regional and international regulations and standards. Store in a well-ventilated place. Keep container tightly closed. Store locked up.

[Disposal] Dispose of contents/ container in accordance with related laws and local/ regional regulations.

Other hazards

Gas generator may be activated by flame, high temperature, impact and static electricity, etc.
Generates high temperature gases on activation.
There is no possibility of entering chemicals to the human body from sealed gas generator.
Chemicals might be taken through eyes, nose, and mouth when gas generator is damaged before actuation.
There are possibilities of burns by actuation and laceration by scattered fragment of gas generator.
There is no possibility of entering chemicals to the human body from sealed gas generator.
See section 11 when gas generator is damaged before actuation.

Important symptoms and an outline of an anticipated emergency

Causes serious eye damage
May cause respiratory irritation
May cause drowsiness or dizziness
Suspected of damaging fertility or the unborn child
Causes damage to central nervous system, blood system
May causes damage to respiratory
May cause damage to blood system, kidney, respiratory through prolonged or repeated exposure

Section 3: COMPOSITION/ INFORMATION ON INGREDIENTS

Substance/Mixture

Mixture

Compositions

1. Squib Charge (Ignition Charge) (Total weight 30 mg or less)

Chemical name/ Generic name	CAS number	Concentration (wt %)
Zirconium	7440-67-7	1.6 or less
Basic Copper (II)	12158-75-7	
Potassium Perchlorate	7778-74-7	
Aluminum	7429-90-5	

2. Secondary Charge (Total weight 100 mg or less)

Chemical name/ Generic name	CAS number	Concentration (wt %)
Titanium Hydride	7704-98-5	5.2 or less
Potassium Perchlorate	7778-74-7	

3. Gas Generant (Smokeless Powder) (Total weight 1,800 mg or less)

Type 1

Chemical name/ Generic name	CAS number	Concentration (wt %)
Nitrocellulose	9004-70-0	93.2 or less
Diphenylamine	122-39-4	
Potassium Sulfate	7778-80-5	

Type 2

Chemical name/ Generic name	CAS number	Concentration (wt %)
Nitrocellulose	9004-70-0	93.2 or less
Diphenylamine	122-39-4	
Potassium Sulfate	7778-80-5	
Methyl Diphenylurea	13114-72-2	

Either Type 1 or Type 2 is used as Gas Generant

Section 4: FIRST-AID MEASURES

First aid procedures

IF INHALED	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a doctor/physician. Give oxygen or artificial respiration if needed.
IF ON SKIN	Rinse with plenty of water and soap. Call a doctor/physician.
IF IN EYES	Immediately rinse cautiously with water for 15 - 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a doctor/physician.
IF SWALLOWED	Immediately rinse cautiously with water for 15 - 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a doctor/physician.

Anticipated acute effects, anticipated delayed effects and most important symptoms/effects

Bring about the possibility of irritation to respiratory.
Possibility of angiopathy.
Possibility of serious damage of eyes (Diphenylamine)

Protection of first-aiders

Wear appropriate eyes and skin protective equipment.

Note to an attending physician

No information

Section 5: FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media

Water or other normal extinguish materials

Unsuitable extinguishing media

Not known

Specific hazards arising from the chemical

In the event of fire, evacuate the area immediately and stay behind shield.
Gases with stimulation, toxicity or corrosion might be emitted.
It is effective of using large amount of water in order to extinguish a fire.
However, keep clear the area in case of accidental explosion.
Therefore, facility with automatic water sprinkler is recommended.

Protective equipment and precautions for firefighters

Wear full protective equipment.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal precautions

Wear appropriate protective equipment on work in order to prevent dust from clinging to skin or eyes.
Work from windward area and evacuate people from leeward.
Worker should wear appropriate protective equipment, and avoid contact to eyes and skin, and inhalation of dust. (Antidust mask approved by NIOSH/MSHA, goggle, heat resistance protective clothing which does not expose skin, impermeable gloves)

Environmental precautions

Prevent the leakage to drain, soil, water sources. If the preparation releases into water sources, inform competent organs.

Methods and materials for containment and cleaning up

Collect into conductive container as much as possible and dispose based on Explosives Control Law.

Secondary disaster prevention measures

No information

Section 7: HANDLING AND STORAGE

Handling

Technical measures	All propellant in gas generator cannot be taken out from sealed aluminum container. *Sealed gas generator will not ignite unless it is heated more than 170°C or set to pass an electric current. However, it might activate untimely with static electricity, radio wave or drop impact. And if retainer w/o shunt bar is used, possibility to happen unexpected deployment increases.
Precautions such as local/total ventilation	Toxic gases are produced on activation, therefore, ventilate well when the product is actuated.
Precautions for safe handling	Wash hands thoroughly after handling.
Prevention of contact	Avoid flame, high temperature, impact and static electricity.

Storage

Technical measures	No information

Incompatible materials and mixtures	Strong acid and strong bases which decompose aluminum container.
Conditions for safe storage	Avoid direct sun and store at room temperature.
Packing material	Use designated container.

Section 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Permissible concentration

Occupational Exposure Limits

ACGIH TLV-TWA (2016)	5 mg/m^3 (Zirconium and compounds, as Zr) 1 mg/m^3 (Alminum metal and insoluble compounds) (Respirable fraction) 10 mg/m^3 (Diphenylamine)
ACGIH TLV-STEL (2016)	10 mg/m^3 (Zirconium and compounds, as Zr)

Engineering controls

No information

Personal protective equipment

Respiratory protection	Wear mask.
Hand protection	Wear protective glove.
Eye protection	Wear safety glasses or goggles.
Skin and body protection	Wear antistatic clothes and conductive shoes.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, form and colour)	Form: Specific sealed unit (ϕ 17mm×L35mm) Colour: Silver
Odour	No odour at normal conditions
Odour threshold	Not applicable
pH	Not applicable
Melting point/ freezing point	Not applicable
Boiling point, initial boiling point and boiling range	Not applicable
Flashpoint	Not applicable
Evaporation rate	Not applicable
Flammability	Not applicable
Upper/lower explosive limits	Not applicable
Vapour pressure	Not applicable
Vapour density	Not applicable
Specific gravity	Not applicable
Solubility	The solubility in water of the chemical materials inside the Sealed unit is as follows: (a) Ignition charge Insoluble (b) Secondary charge Soluble (c) Smokeless powder Insoluble
n-octanol/water partition coefficient	Not applicable

Auto-ignition temperature	200°C (DSC), 170°C (Krupp method)
Decomposition temperature	No information
Viscosity	Not applicable
Other information	No information

Section 10: STABILITY AND REACTIVITY

Chemical stability	Sealed gas generator is stable under normal storage and handling condition.
Hazardous reactions	No hazardous reaction expected under normal handling.
Conditions to avoid	Flame, high temperature, friction, impact static electricity
Incompatible materials	Avoid strong acid and strong bases which decompose aluminum container.
Hazardous decomposition products	Gases and residue are produced on activation of gas generator.

Section 11: TOXICOLOGICAL INFORMATION

Toxicological information for product

No information

Toxicological information for ingredients

Zirconium

Specific target organ toxicity (single exposure):	This substance has been reported that there is respiratory tract irritation.

Potassium Perchlorate

Skin irritation/corrosion:	Skin is stimulated as affect of the humans.
Eye damage/irritation:	Eye is stimulated as affect of the humans.
Specific target organ toxicity (single exposure):	Airway is stimulated as effect on the humans, it was judged that it has respiratory irritant.
Specific target organ toxicity (repeated exposure):	Report of effect of long-term or repeated exposure, blood may be affected and methemoglobin may be generated.

Aluminum

Specific target organ toxicity (single exposure):	In humans, inhalation of this material (dust), may cause lung disorders such as pneumoconiosis (aluminum lung disease).
Specific target organ toxicity (repeated exposure):	For humans, 1,142 people workers of aluminum and aluminum compound manufacturing in epidemiological studies (1975- 1981), at the exposure to high concentrations of dust (> 100 mg / m^3- year as total dust) pulmonary function influence was seen, and small irregular nodules in the lower part of the lung have been reported in 7-8% by chest X-ray inspection.

Nitrocellulose

Acute toxicity (oral):	Rat LD_{50} > 5,000 mg/kg
Specific target organ toxicity (single exposure):	Ingestion poisoning with the substance is similar to ethanol overdose except for a more rapid onset and a shorter duration of symptoms. Inhalation of the substance may result in dizziness, giddiness, euphoria, and CNS depression. In addition, labored breathing and unconsciousness may occur.

Diphenylamine

Acute toxicity (oral):	Rat LD_{50} = 2,960 mg/kg, 2,480 mg/kg, 3,000 mg/kg, 2,700 mg/kg, 3,200 mg/kg
Acute toxicity (dermal):	Rabbit LD_{50} > 2,000 mg/kg
Eye damage/irritation:	Report on rabbit eye irritation tests: "corrosive"
Reproductive toxicity:	Report on the evidence of adverse effects on reproduction at dosing levels toxic to parental animals or in the absence of data on parental toxicity.
Specific target organ toxicity (single exposure):	In humans, respiratory tract irritation. In addition, report of the methemoglobinemia or impact on the urinary.
Specific target organ toxicity (repeated exposure):	As poisoning symptoms caused by occupational exposure to this substance in humans, bladder irritation symptoms, tachycardia, hypertension, eczema are reported.

Section 12: ECOLOGICAL INFORMATION

Ecological information for product

Ecotoxicity	No information
Persistence and degradability	No information
Bioaccumulative potential	No information
Mobility in soil	No information
Hazardous to the ozone layer	Not applicable

Ecological information for ingredients

Potassium Perchlorate

Ecotoxicity (acute)	Algae (*Dunaliella*) 72h EC_{50} = 11,000 μg/L
Ecotoxicity (chronic)	No information
Persistence and degradability	No information
Bioaccumulative potential	No information
Mobility in soil	No information
Hazardous to the ozone layer	Not applicable

Nitrocellulose

Ecotoxicity (acute)	Algae (*Pseudokirchneriella subcapitata*) 96h EC_{50} = 579,000 μg/L
Ecotoxicity (chronic)	No information

Persistence and degradability	No information
Bioaccumulative potential	No information
Mobility in soil	No information
Hazardous to the ozone layer	Not applicable

Diphenylamine

Ecotoxicity (acute)	Crustaceans (*Daphnia magna*) 48h EC_{50} = 0.31 mg/L
Ecotoxicity (chronic)	Algae (*Pseudokirchneriella subcapitata*) 72h NOEC = 0.0273 mg/L
Persistence and degradability	Biodegradability by BOD = 0%
Bioaccumulative potential	No information
Mobility in soil	No information
Hazardous to the ozone layer	Not applicable

Section 13: DISPOSAL CONSIDERATIONS

Remaining product

Should be disposed at approved incinerator.
Should not be thrown to river, or ocean dumping.
Should not mix with other garbage or industrial discharge.

Contaminated containers and packaging

Should be disposed as industrial discharge.

Section 14: TRANSPORT INFORMATION

International regulation

UN number	3268
UN proper shipping name	SAFETY DEVICES, electrically initiated
Transport hazard class(es)	9
Subsidiary risk	-
Packing group	-
Marine pollutant	Not applicable
IBC Code	Not applicable

When transporting, confirm no damage to containers. Avoid handling violently or leaking wet. Load to prevent fall or falling down containers and take preventive measures of collapse.

Section 15: REGULATORY INFORMATION

No information

Section 16: OTHER INFORMATION

Reference

Information of TOKAI RIKA CO., LTD.
NITE GHS classification (2016)
ACGIH, American Conference of Governmental Industrial Hygienists (2016) TLVs and BEIs.

[Disclaimer]

This SDS has been prepared on the basis of laws, regulations and information available at this time. It is user's responsibility to modify or update any contents in this SDS regarding information on hazardous properties and/or instruction for safe handling of the product when they become available. Precautionary measures in this SDS are only applicable for normal handling conditions and it is necessary to take appropriate additional measures to ensure safe handling which depend on your specific use conditions or situations.