SAFETY DATA SHEET

In according with ISO 14451:2013 for Transport purpose

Section 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Product name	Seat-belt pretensioner
SDS Number	PT-005-002

Manufacture/supplier

Manufacture/supplier	WUXI RISHO TECHNOLOGY CO.,LTD.
Department in Charge	Safety Engineering Division
Address	38 CHANGJIANG ROAD WUXI,JIANGSU ,P.R.CHINA
Telephone number	86-(0)510-85211511
Fax number	
e-mail address	
Emergency telephone number	86-(0)510-81815132

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

Acute toxicity (oral):	Category 4
Eye damage/irritation:	Category 1
Carcinogenicity:	Category 1
Reproductive toxicity:	Category 1
Specific target organ toxicity (single exposure):	Category 1 (central nervous system, blood system) Category 2 (respiratory, kidney)
Specific target organ toxicity (single exposure):	Category 3 (respiratory tract irritation, narcotic effects)
Specific target organ toxicity (repeated exposure):	Category 2 (central nervous system, blood system, kidney, respiratory, cardiovascular)

Environmental Hazards

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

Label Elements

Pictogram	**None**
Signal word	**Danger**
Hazard Statements	Fire or projection hazard Harmful if swallowed Causes serious eye damage May cause respiratory irritation May cause drowsiness or dizziness May cause cancer May damage fertility or the unborn child Causes damage to central nervous system, blood system May cause damage to respiratory, kidney May cause damage to central nervous system, blood system, kidney, respiratory, cardiovascular 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 SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. 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. Rinse mouth. 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

Explosive: Electrically and flame sensitive article. Sensitive, including but not limited to AC, DC and ESD. Upon ignition the articles emit a sharp crack and release high temperature gasses.
Health: The article is sealed and the inside ingredient is not exposed to outside but in case of the broken container there is possibility that the ingredient is contacted to the eyes, nose and mouth.
Environmental: The article is sealed and in this case this is harmless to the environment with correct handling.

Important symptoms and an outline of an anticipated emergency

Harmful if swallowed
Causes serious eye damage
May cause respiratory irritation
May cause drowsiness or dizziness
May cause cancer
May damage fertility or the unborn child
Causes damage to central nervous system, blood system
May cause damage to respiratory, kidney
May cause damage to central nervous system, blood system, kidney, respiratory, cardiovascular through prolonged or repeated exposure

Section 3: COMPOSITION/ INFORMATION ON INGREDIENTS

Substance/Mixture

Mixture

Compositions

1. Gas Generant of Smokeless Powder (Total weight up to1,300 mg)

Chemical name/ Generic name	CAS number	Concentration (wt %)
Nitrocellulose	9004-70-0	92.0 or less
Diphenylamine	122-39-4	
Potassium Sulfate	7778-80-5	
Akardite II	13114-72-2	

2. Initiator primary charge (Total weight up to 25 mg)

Chemical name/ Generic name	CAS number	Concentration (wt %)
Basic Copper (II) Nitrate	12158-75-7	1.8 or less
Lead Styphnate	15245-44-0	
Potassium Perchlorate	7778-74-7	
Zirconium	7440-67-7	
Aluminum	7429-90-5	

3. Initiator secondary charge (Total weight up to 88 mg)

Chemical name/ Generic name	CAS number	Concentration (wt %)
Potassium Perchlorate	7778-74-7	6.2 or less
Sodium Picramate	831-52-7	
Antimony Trisulfide	1345-04-6	
Titanium Hydride	7704-98-5	

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	After lots of water or saline solution is swallowed, try to get the person to vomit. And see a medical doctor immediately.

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

Inhalation of combustion products could irritate respiratory system or aggravate existing respiratory condition. Contact of skin or eyes may cause irritation. Overexposure to lead may lead to adverse effects on blood-forming, urinary, nervous, and reproductive systems and embryo toxic effects. Symptoms may include sleeplessness, appetite loss, anemia, and fatigue.

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

They may be activated by fire in surrounding packaging or combustibles. Utilize media appropriate for surrounding fire conditions if safe.

Unsuitable extinguishing media

Pyrotechnic devices are not extinguishable.

Specific hazards arising from the chemical

In the event of fire, evacuate the area immediately and stay behind shield.
Initiation of unit may result in some fragmentation as well as release of smoke fumes, and gases considered toxic and irritating.
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.)
If unit becomes damaged so as to expose sealed material, consult with KSM Engineers for guidance.

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 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 150℃ 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. Authorize handling only by trained, qualified personnel. Handle. Keep unit shunted until connection to circuitry. Never attempt to disassemble, machine or otherwise modify units or physical injury hazard may result.

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)	10 mg/m^3 (Diphenylamine) 0.05mg/m^3 (Lead and inorganic compounds, as Pb) 5 mg/m^3 (Zirconium and compounds, as Zr) 1 mg/m^3 (Alminum (metal) and insoluble compound) (Respirable fraction) 0.5 mg/m^3 (Antimony and compounds as Sb)
ACGIH TLV-STEL (2016)	10 mg/m^3 (Zirconium and compounds, as Zr)

Engineering controls

Test fire units only in a shielded location isolated from personnel and vented to outside work area.

Personal protective equipment

Respiratory protection	Wear organic vapor, acid gas cartridge respirator with HEPA dust filters. In emergency fire situations or when combustion products from large numbers of units are involved self-contained breathing air and full face protection is recommended.
Hand protection	Wear protective glove.
Eye protection	Wear safety glasses or goggles.
Skin and body protection	Wear antistatic clothes and conductive shoes. Flame retardant, cotton clothing; conductive footwear or other personnel grounding recommended, where appropriate and feasible, when handling exposed units. Operational shielding and hearing protection recommended for testing as needed.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, form and colour)	Form: Solid including cylinder portion Colour: Silver colour of the body
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	Avoid flame, high temperature over 150°C, electrostatic discharge, impact, friction, electrical current or RF energy.
Incompatible materials	Do not store with flammable liquids, strong acids or bases.
Hazardous decomposition products	Upon ignition, products of combustion may include the following gases, fumes or residues in small amounts: Oxides of Carbon, Nitrogen, Zirconium and Potassium, sulfur dioxide.

Section 11: TOXICOLOGICAL INFORMATION

Toxicological information for product

No information

Toxicological information for ingredients

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):	Rabbitt 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.

Lead Styphnate

Carcinogenicity:	Inorganic lead is rated as "Group 1B" by IARC V87 (2006).
Reproductive toxicity:	Inorganic lead compounds are associated with reproductive toxicity in humans.
Specific target organ toxicity (single exposure):	Inorganic lead compounds adversely affect the central nervous system, blood, and kidney in humans.
Specific target organ toxicity (repeated exposure):	Inorganic lead compounds adversely affect the central nervous system, blood, and kidney.

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.

Zirconium

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

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.

Sodium Picramate

Acute toxicity (oral):	Mouse LD_{50} = 378mg/kg

Antimony Trisulfide

Acute toxicity (oral):	Rat LD_{50} > 2,000 mg/kg
Acute toxicity (dermal):	Rat LD_{50} > 2,000 mg/kg
Acute toxicity (inhalation: dust/mist):	Rat LC_{50} > 5 mg/L/4h
Eye damage/irritation:	Report on results that slight corneal opacity was observed and was completely reversible within day 14 in a rabbit test following application of 100 mg (OECD TG405).
Specific target organ toxicity (repeated exposure):	Rats exposed to 3.1 mg/m3 by inhalation for six weeks developed electrocardiographic changes, notably with flattened T-waves. At autopsy, the heart was found to be dilated, with signs of degenerative changes. Focal haemorrhage and congestion in the lungs were considered to be secondary to heart failure. A second report indicates that there had been six deaths suspected due to cardiac disorder in a group of 125 workers exposed for 8 months to 2 years, but there had been no cardiac death or unusual increase in incidence of cardiovascular diseases after use of antimony trisulfide was discontinued.

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

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

Lead Styphnate

Ecotoxicity (acute)	Crustaceans (*Daphnia magna*) 48h LC_{50} = 7 mg/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

Potassium Perchlorate

Ecotoxicity (acute)	Algae (*Dunaliella*) 72 h 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

Section 13: DISPOSAL CONSIDERATIONS

Remaining product

Should be disposed in accordance with regulations of each country.
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 in accordance with regulations of each country.

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 WUXI RISHO TECHNOLOGY 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.