

SAFETY DATA SHEET

HiTRONIC™ (1.4S)

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION**GHS Product Identifier**

HiTRONIC™

Company Name

HANWHA CORPORATION

Address

Cheonggyecheon-Ro 86, Jung-Gu, Seoul, 04541

Telephone/Fax Number

Tel: +82 2 729 1211

Fax: +82 2 729 1850

Emergency phone number

+82 2 729 1211 (9-5pm)

Recommended use of the chemical and restrictions on use

Electronic detonators for blasting

Other Names

HiTRONIC II™

SECTION 2: HAZARD IDENTIFICATION**GHS classification of the substance/mixture**

Classified as Hazardous according to the Globally Harmonised System of Classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia
Classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. (7th edition)
Explosives: Division 1.4

Signal Word (s)

WARNING

Hazard Statement (s)

H204 Fire or projection hazard.

Pictogram (s)

Exploding bomb

**Precautionary statement – Prevention**

P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
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.

Precautionary statement – Response

P370+P380 In case of fire: Evacuate area.

P372 Explosion risk in case of fire.

P373 DO NOT fight fire when fire reaches explosives..

Precautionary statement – Storage

P401 Store in accordance with regulations.

Precautionary statement – Disposal

P501 Dispose of contents/container to an approved disposal plant.

SECTION 3: COMPOSITION AND INFORMATION ON INGREDIENTS

Name	CAS	Proportion
Pentaerythritol tetranitrate (PETN)	78-11-5	<1.5 %
Diazodinitrophenol (DDNP)	4682-03-5	<1 %
Other ingredients determined not to be hazardous		Balance

SECTION 4: FIRST AID MEASURES**Inhalation**

Unlikely route of exposure unless detonator is fired. If the sealed unit is damaged and exposure occurs, remove affected person from contaminated area. Keep at rest until recovered. If symptoms develop and/or persist seek medical attention.

Ingestion

Not considered a potential route of exposure for intact product, when used as intended. Unlikely route of exposure unless detonator is fired.

Skin

Not considered a potential route of exposure for intact product, when used as intended. Unlikely route of exposure unless detonator is fired.

If the sealed unit is damaged and exposure occurs: Wash affected area thoroughly with soap and water. If symptoms develop seek medical attention.

Eye contact

Not considered a potential route of exposure for intact product, when used as intended. If the sealed unit is damaged and exposure occurs: If in eyes, hold eyelids apart and flush the eyes continuously with running water. Continue flushing for several minutes until all contaminants are washed out completely. If symptoms develop and persist seek medical attention.

Unlikely route of exposure unless detonator is fired.

First Aid Facilities

Eyewash and normal washroom facilities.

Advice to Doctor

Treat symptomatically.

Other Information

For advice in an emergency, contact a Poisons Information Centre (Phone Australia 131 126) or a doctor at once.

SECTION 5: FIRE FIGHTING MEASURES**Suitable Extinguishing Media**

Use carbon dioxide, dry powder or water mist. Use only remote or fixed extinguishing systems (sprinklers).

Hazards from Combustion Products

Under fire conditions this product may emit toxic and/ or irritating fumes including oxides of nitrogen, carbon monoxide and carbon dioxide

Specific Hazards Arising From the Chemical

May burn vigorously with detonations and projection of fragments. Toxic smoke from combustion of the plastic material may be emitted. If product functions, high heat and pressure are released from the end of the tube if not covered or enclosed, typically by a metal device.

Extreme risk of explosion by shock, friction, fire or other sources of ignition. In case of fire: Evacuate area. DO NOT fight fire when fire reaches explosives

Hazchem Code

1YE

Decomposition Temperature

Not available

Precautions in connection with Fire

DO NOT fight fire when fire reaches explosives. In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Use only remote or fixed extinguishing systems (sprinklers).

SECTION 6: ACCIDENTAL RELEASE MEASURES**Emergency Procedures**

Avoid breathing fumes or gases from detonation of explosives. Protect from all ignition sources within at least 20m. Notify authorities in accordance with emergency response procedures. Only personnel trained in emergency response should respond. If no fire danger is present, and product is undamaged and/or uncontaminated, repackage product in original packaging or other clean approved container. Ensure that a complete account of product has been made and is verified. If loose explosive powder is spilled, such as from a broken detonator, only properly qualified and authorised personnel should be involved with handling and clean-up activities. Spilled explosive powder is extremely sensitive to initiation and may detonate. Dispose of waste according to applicable local and national regulations. If contamination of sewers or waterways occurs inform the local water and waste management authorities in accordance with local regulations.

SECTION 7: HANDLING AND STORAGE**Precautions for Safe Handling**

Only properly qualified and authorised personnel should handle and use explosives. Handle with great care. Unintended detonation of explosives or explosive devices can cause serious injury or death. Use in designated areas with adequate ventilation. Avoid sources of shock, friction, heat and ignition. Avoid contact with oxidising materials. Detonation in confined or unventilated areas may result in exposure to hazardous fumes or oxygen deficiency. Have emergency equipment (for spills, leaks, etc.) readily available. Label containers. Keep containers closed when not in use. Wear appropriate protective equipment to prevent inhalation, skin and eye contact. Maintain high standards of personal hygiene ie. washing hands prior to eating, drinking, smoking or using toilet facilities

Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well-ventilated area away from sources of ignition, oxidising agents, strong acids, foodstuffs, and clothing. Only properly qualified and authorised personnel should handle and use explosives.

Keep containers closed when not in use, securely sealed and protected against physical damage. Inspect regularly for deficiencies such as damage or leaks. Have appropriate fire extinguishers available in and near the storage area. Keep away from heat, sparks, open flames, hot surfaces. Take precautions against static electricity discharges. Use proper grounding procedures. Do not subject to friction. Ensure that storage conditions comply with applicable local and national regulations.

For information on the design of the storeroom, reference should be made to Australian Standard AS 2187 Explosives - Storage, transport and use. For information on the design of the storeroom, reference should be made to *Australian Standard AS 2187 Explosives - Storage, transport and use*.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Occupational exposure limit values

No exposure standards have been established for the mixture. However, over- exposure to some chemicals may result in enhancement of pre-existing adverse medical conditions and/or allergic reactions and should be kept to the least possible levels.

Biological Limit Values

No biological limits allocated.

Appropriate Engineering Controls

None required as use intended.

Respiratory Protection

Engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements.

Reference should be made to Australian Standards AS/ NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

Eye Protection

Safety glasses with side shields, chemical goggles or full-face shield as appropriate should be used. Final choice of appropriate eye/ face protection will vary according to individual circumstances. Eye protection devices should conform to relevant regulations.

Eye protection should conform to Australian/New Zealand Standard AS/NZS 1337 - Eye Protectors for Industrial Applications.

Hand Protection

Wear gloves of impervious material. Final choice of appropriate gloves will vary according to individual circumstances. i.e. methods of handling or according to risk assessments undertaken. Occupational protective gloves should conform to relevant regulations.

Reference should be made to AS/NZS 2161.1: Occupational protective gloves - Selection, use and maintenance

Body Protection

Suitable protective workwear, e. g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Properties	Description	Properties	Description
Form	Article	Appearance	Metal shell with metal wire(covered) and plastic block attached at the end
Odour	Not available	Decomposition Temperature	Not available
Melting Point	Not available	Boiling Point	Not applicable
Solubility in Water	Not available	Specific Gravity	Not available
pH	Not applicable	Vapour Pressure	Not applicable
Vapour Density (Air=1)	Not applicable	Evaporation Rate	Not available
Odour Threshold	Not available	Volatile Component	Not available
Partition Coefficient: n-	Not available	Flash Point	Not applicable
Auto-Ignition Temperature	Not applicable	Explosion Limit - Upper	Not available
Explosion Limit - Lower	Not available	Explosion Properties	Explosive class 1.4S
Oxidising Properties	Not available		

SECTION 10: STABILITY AND REACTIVITY
Chemical Stability

Stable under normal conditions.

Reactivity and Stability

Reacts with incompatible materials

Conditions to Avoid

Keep away from heat, flame, ignition sources

Incompatible materials

Incompatible with strong oxidizers.

Hazardous Decomposition Products

Hazardous carbon monoxide (CO), nitrogen oxide (NOX) gases and products of plastic decomposition produced.

Possibility of hazardous reactions

Reacts with incompatible materials

SECTION 11: TOXICOLOGICAL INFORMATION
Toxicology Information

No toxicity data available for this product.

Acute Toxicity – Oral

Pentaerythritol tetranitrate (PETN)

LD50(rat): 1660 mg/kg

Ingestion

Ingestion unlikely due to form of product. If the sealed unit is damaged and exposure occurs: Ingestion of large amounts of the reactive powder may irritate the gastric tract causing nausea and vomiting.

Inhalation

Unlikely due to form of product. If the sealed unit is damaged and exposure occurs: Inhalation of dusts may irritate the respiratory system.

Skin

Unlikely due to form of product. If the sealed unit is damaged and exposure occurs: May be irritating to skin. The symptoms may include redness, itching and swelling

Eye

Unlikely due to form of product. If the sealed unit is damaged and exposure occurs: Eye contact may cause mechanical irritation. May result in mild abrasion.

Respiratory sensitisation

Not expected to be a respiratory sensitiser.

Skin Sensitisation

Not expected to be a skin sensitiser.

Pentaerythritol tetranitrate (PETN)

Skin sensitisation: No irritation for human according to Patch tests

Germ cell mutagenicity

Not considered to be a mutagenic hazard. Pentaerythritol tetranitrate (PETN)

Germ cell mutagenicity: Sister Chromatid Exchanges: positive, Chromosome Aberrations: negative(NTP), AMES SALMONNELLA TYPHIMURIUM TA100, TA1535, TA1537, TA100: negative

Carcinogenicity

Not considered to be a carcinogenic hazard.

Reproductive Toxicity

Not considered to be toxic to reproduction.

STOT-single exposure

Not expected to cause toxicity to a specific target organ.

STOT-repeated exposure

Not expected to cause toxicity to a specific target organ.

Aspiration Hazard

Not expected to be an aspiration hazard

SECTION 12: ECOLOGICAL INFORMATION**Ecotoxicity**

No ecological data available for this material.

Persistence and degradability

Not available

Mobility

Not available

Bioaccumulative Potential

Not available

Other Adverse Effects

Not available

Environmental Protection

Do not discharge this material into waterways, drains and sewers.

SECTION 13: DISPOSAL CONSIDERATIONS**Disposal considerations**

Dispose of according to relevant local, state and federal government regulations.

Destruction of explosives must be carried out by suitably qualified personnel. If necessary, the relevant statutory authorities must be notified. In all circumstances, detonation is the preferred method of disposal. The explosives to be destroyed must be placed in direct contact with fresh priming charge in a hole and then adequately stemmed. No detonators are to be inserted into defective explosives. Personnel must be evacuated to a safe distance in accordance with relevant local regulations prior to initiation of the charge.

NOTE: Detonations in loose or stony ground may be expected to cause fly rock.

SECTION 14: TRANSPORT INFORMATION**Transport Information**

Road and Rail:

This material is classified as Dangerous Goods Class 1 Explosives.

- Class 1 Dangerous Goods are incompatible in a placard load with any of the following:
- Division 2.1: Flammable gases
- Division 2.2: Non-flammable Non-toxic Gases
- Division 2.3: Toxic Gases
- Class 3: Flammable Liquids
- Division 4.1: Flammable Solids
- Division 4.2: Spontaneously Combustible Substances
- Division 4.3: Dangerous when wet Substances
- Division 5.1: Oxidising substances
- Division 5.2: Organic Peroxides
- Class 6: Toxic or Infectious Substances
- Class 7: Radioactive materials unless specifically exempted
- Class 8: Corrosive Substances
- Class 9: Miscellaneous substances
- Fire risk substances

Marine Transport (IMO/IMDG):

Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.

Division: 1.4S

EmS: F-B, S-X

UN-No: 0456

Proper Shipping Name: DETONATORS, ELECTRIC

Special provisions: 347

Air Transport (ICAO/IATA):

Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

UN-No: 0456

Division: 1.4S

Proper Shipping Name: Detonators, electric

Hazard Label: Explosive 1.4

Packaging Instructions (passenger): 131

Packaging Instructions (cargo): 131

Special provisions: A165, A802

U.N. Number

0456

UN proper shipping name

DETONATORS, ELECTRIC

Transport hazard class (es)

1.4S

Hazchem Code

1YE

Special Precautions for User

Not available

IERG Number

03

IMDG Marine pollutant

No

Transport in Bulk

Not available

SECTION 15 – REGULATORY INFORMATION**Regulatory information**

Classified as Hazardous according to the Globally Harmonised System of Classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia

Not classified as a Scheduled Poison according to the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP)

Poisons Schedule

Not Scheduled

SECTION 16 – OTHER INFORMATION**Last Revision Date:**

February 28th, 2020

References:

- Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice Standard for the Uniform Scheduling of Medicines and Poisons.
- Australian Code for the Transport of Dangerous Goods by Road & Rail.
- Model Work Health and Safety Regulations, Schedule 10: Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.
- Workplace exposure standards for airborne contaminants, Safe work Australia. American Conference of Industrial Hygienists (ACGIH)
- Globally Harmonised System of classification and labelling of chemicals.

End of SDS