

SAFETY DATA SHEET

according to Regulation (EC) No. 453/2010

RED III DETONATOR

Revision Date: 08-Sep-2015

Revision Number: 12

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product Identifier

Product Name RED III DETONATOR
Synonyms: DETONATOR, RED®, , CAPSULE, PLUG-IN - 101272600

Internal ID Code HM005289

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

Recommended Use Explosive Charge

1.3. Details of the supplier of the safety data sheet

Halliburton Energy Services
 Halliburton House, Howemoss Place
 Kirkhill Industrial Estate
 Dyce
 Aberdeen, AB21 0GN
 United Kingdom

www.halliburton.com

For further information, please contact

E-Mail address: fdunexchem@halliburton.com

1.4. Emergency telephone number

+44 8 08 189 0979 / 1-760-476-3961

Emergency telephone - §45 - (EC)1272/2008	
Europe	112
Croatia	Centar za kontrolu otrovanja (CKO): (+385 1) 23-48-342 (Poison Control Center (PCC) - Institute for Medical Research and Occupational Health)
Cyprus	+210 7793777
Denmark	Poison Control Hotline (DK): +45 82 12 12 12
France	ORFILA (FR): + 01 45 42 59 59
Germany	Poison Center Berlin (DE): +49 030 30686 790
Italy	Poison Center, Milan (IT): +39 02 6610 1029
Netherlands	National Poisons Information Center (NL): +31 30 274 88 88 (NB: this service is only available to health professionals)
Norway	Poisons Information (NO):+ 47 22 591300
Poland	Poison Control and Information Centre, Warsaw (PL): +48 22 619 66 54; +48 22 619 08 97
Romania	+40 21 318 36 06
Spain	Poison Information Service (ES): +34 91 562 04 20
United Kingdom	NHS Direct (UK): +44 0845 46 47

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Acute Oral Toxicity	Category 3 - H301
Acute Toxicity - Dermal	Category 3 - H311
Acute Inhalation Toxicity - Dusts and Mists	Category 4 - H332
Reproductive Toxicity	Category 1A - H360
Specific Target Organ Toxicity - (Single Exposure)	Category 1 - H370

Specific Target Organ Toxicity - (Repeated Exposure)	Category 2 - H372
Acute Aquatic Toxicity	Acute 1 - H400
Chronic Aquatic Toxicity	Chronic 1 - H410
Explosives.	Division 1.4 - H204

2.2. Label Elements

Hazard Pictograms



Signal Word

Danger

Hazard Statements

H204 - Fire or projection hazard
 H301 - Toxic if swallowed
 H311 - Toxic in contact with skin
 H332 - Harmful if inhaled
 H360 - May damage fertility or the unborn child
 H370 - Causes damage to organs
 H372 - Causes damage to organs through prolonged or repeated exposure
 H410 - Very toxic to aquatic life with long lasting effects

Precautionary Statements - EU (§28, 1272/2008)

P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
 P250 - Do not subject to grinding/shock/friction
 P273 - Avoid release to the environment
 P280 - Wear protective gloves/eye protection/face protection
 P308 + P313 - IF exposed or concerned: Get medical advice/attention
 P370 + P380 - In case of fire: Evacuate area

Contains

Substances

Hexanitrostilbene (HNS)
 Cyclotrimethylenetrinitramine (RDX)
 Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene
 Lead styphnate
 Iron
 Copper
 2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)
 Lead azide
 Cyclotetramethylene tetranitramine (HMX)
 Aluminum

CAS Number

20062-22-0
 121-82-4
 25243-36-1
 15245-44-0
 7439-89-6
 7440-50-8
 38082-89-2
 13424-46-9
 2691-41-0
 7429-90-5

2.3. Other Hazards

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).
 This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

SECTION 3: Composition/information on Ingredients

3.2. Mixtures

Mixture

Substances	EINECS	CAS Number	PERCENT (w/w)	EU - CLP Substance Classification	REACH No.
Hexanitrostilbene (HNS)	243-494-5	20062-22-0	5 - 10%	Expl. 1.1 (H201)	No data available
Cyclotrimethylenetrinitramine (RDX)	204-500-1	121-82-4	5 - 10%	Acute Tox. 3 (H301) STOT SE 1 (H370) STOT RE 2 (H373) Expl. 1.1 (H201)	No data available
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	246-752-5	25243-36-1	5 - 10%	Expl. 1.1 (H201)	No data available

Lead styphnate	239-290-0	15245-44-0	Unknown	Acute Tox. 4 (H302) Acute Tox. 4 (H332) Repr. 1A (H360) STOT RE 1 (H372) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410) Expl. Unstable explosive (H200)	No data available
Iron	231-096-4	7439-89-6	Unknown	Flam. Sol. 1 (H228) Self-heat. 1 (H251)	No data available
Copper	231-159-6	7440-50-8	Unknown	Acute Tox. 4 (H302) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410) Flam. Sol. 2 (H228)	No data available
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	Not applicable	38082-89-2	5 - 10%	Expl. 1.1 (H201)	No data available
Lead azide	236-542-1	13424-46-9	Unknown	Acute Tox. 4 (H302) Acute Tox. 4 (H332) Repr. 1 (H360) STOT RE 2 (H373) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410) Expl. Unstable explosive (H200)	No data available
Cyclotetramethylene tetranitramine (HMX)	220-260-0	2691-41-0	5 - 10%	Acute Tox. 3 (H311) STOT SE 1 (H370) Expl. 1.1 (H201)	No data available
Aluminum	231-072-3	7429-90-5	Unknown	Flam. Sol. 1 (H228) Water-react. 2 (H261)	No data available

For the full text of the H-phrases mentioned in this Section, see Section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation

If inhaled, move victim to fresh air and seek medical attention.

Eyes

In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.

Skin

Wash with soap and water. Get medical attention if irritation persists.

Ingestion

Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

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

Toxic if swallowed. Toxic in contact with skin. May cause damage to internal organs. Prolonged or repeated exposure may cause damage to organs.

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

Notes to Physician

Treat symptomatically

SECTION 5: Firefighting Measures

5.1. Extinguishing media

Suitable Extinguishing Media

Do NOT fight fire. Isolate area and evacuate personnel to a safe area. Guard against intruders. Allow fire to burn itself out.

Extinguishing media which must not be used for safety reasons

None known.

5.2. Special hazards arising from the substance or mixture

Special Exposure Hazards

May detonate with impact or on heating. May explode and throw fragments 1 mile or more in fire. Evacuate all persons, including emergency responders.

5.3. Advice for firefighters

Special Protective Equipment for Fire-Fighters

Not applicable.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Remove sources of ignition. Use appropriate protective equipment. Use only competent persons for cleanup. Avoid contact with skin, eyes and clothing.

See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Isolate area and remove sources of friction, impact, heat, low level electrical current, and RF energy. Remove ignition sources and work with non-sparking tools.

6.4. Reference to other sections

See Section 8 and 13 for additional information.

SECTION 7: Handling and Storage

7.1. Precautions for Safe Handling

Remove sources of ignition. Avoid contact with eyes, skin, or clothing. Do NOT consume food, drink, or tobacco in contaminated areas. Wash hands after use. Launder contaminated clothing before reuse. Ground and bond containers when transferring from one container to another.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Store only in ATF approved magazines. Keep away from friction, impact, and heat.

7.3. Specific End Use(s)

Exposure Scenario No information available

Other Guidelines No information available

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters

Exposure Limits

Substances	CAS Number	EU	UK	Netherlands	France
Hexanitrostilbene (HNS)	20062-22-0	Not applicable	Not applicable	Not applicable	Not applicable
Cyclotrimethylenetrinitramine (RDX)	121-82-4	Not applicable	1.5 mg/m ³	0,1 mg/m ³	1.5 mg/m ³
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	Not applicable	Not applicable	Not applicable	Not applicable
Lead styphnate	15245-44-0	Not applicable	0.15 mg/m ³	Not applicable	0.1 mg/m ³
Iron	7439-89-6	Not applicable	Not applicable	Not applicable	Not applicable
Copper	7440-50-8	Not applicable	TWA: 1 mg/m ³ TWA: 0.2 mg/m ³ STEL: 0.6 mg/m ³ STEL: 2 mg/m ³	TWA: 0.1 mg/m ³	0.2 mg/m ³
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	Not applicable	Not applicable	Not applicable	Not applicable
Lead azide	13424-46-9	Not applicable	0.15 mg/m ³	Not applicable	0.1 mg/m ³
Cyclotetramethylene tetranitramine (HMX)	2691-41-0	Not applicable	Not applicable	Not applicable	Not applicable
Aluminum	7429-90-5	Not applicable	TWA: 10 mg/m ³ TWA: 4 mg/m ³ STEL: 30 mg/m ³ STEL: 12 mg/m ³	0.05 mg/m ³	10 mg/m ³

Substances	CAS Number	Germany	Spain	Portugal	Finland
Hexanitrostilbene (HNS)	20062-22-0	Not applicable	Not applicable	Not applicable	Not applicable
Cyclotrimethylenetrinitramine (RDX)	121-82-4	1,5 mg/m ³	TWA: 0.5 mg/m ³	TWA: 0.5 mg/m ³	TWA: 1.5 mg/m ³ STEL: 4.5 mg/m ³
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	Not applicable	Not applicable	Not applicable	Not applicable
Lead styphnate	15245-44-0	Not applicable	Not applicable	Not applicable	Not applicable
Iron	7439-89-6	Not applicable	Not applicable	Not applicable	Not applicable
Copper	7440-50-8	TWA: 0.01 mg/m ³ TWA: 0.1 mg/m ³	TWA: 0.2 mg/m ³ TWA: 1 mg/m ³	TWA: 0.2 mg/m ³ TWA: 1 mg/m ³	TWA: 1 mg/m ³ TWA: 0.1 mg/m ³

2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	Not applicable	Not applicable	Not applicable	Not applicable
Lead azide	13424-46-9	Not applicable	TWA: 0.15 mg/m ³	TWA: 0.05 mg/m ³	Not applicable
Cyclotetramethylene tetranitramine (HMX)	2691-41-0	Not applicable	Not applicable	Not applicable	Not applicable
Aluminum	7429-90-5	TWA: 4 mg/m ³ TWA: 1.5 mg/m ³	TWA: 10 mg/m ³ TWA: 5 mg/m ³	TWA: 10 mg/m ³ TWA: 5 mg/m ³	TWA: 1.5 mg/m ³

Substances	CAS Number	Austria	Ireland	Switzerland	Norway
Hexanitrostilbene (HNS)	20062-22-0	Not applicable	Not applicable	Not applicable	Not applicable
Cyclotrimethylenetrinitramine (RDX)	121-82-4	TWA: 1.5 mg/m ³ STEL" 3 mg/m ³	0.5 ppm TWA 1.5 mg/m ³ STEL (calculated)	TWA: 1.5 mg/m ³	TWA: 1.5 mg/m ³ STEL: 3 mg/m ³
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	Not applicable	Not applicable	Not applicable	Not applicable
Lead styphnate	15245-44-0	TWA: 0.1 mg/m ³ STEL" 0.4 mg/m ³	0.15 mg/m ³ TWA (except tetraethyl lead)	Not applicable	Not applicable
Iron	7439-89-6	Not applicable	Not applicable	Not applicable	Not applicable
Copper	7440-50-8	TWA: 1 mg/m ³ TWA: 0.1 mg/m ³ STEL" 4 mg/m ³ STEL" 0.4 mg/m ³	0.2 mg/m ³ TWA (fume); 1 mg/m ³ TWA (dust and mist) 0.6 mg/m ³ STEL (calculated, fume); 2 mg/m ³ STEL (dust and mist)	TWA: 0.1 mg/m ³ STEL: 0.2 mg/m ³	TWA: 0.1 mg/m ³ TWA: 1 mg/m ³ STEL: 0.3 mg/m ³ STEL: 3 mg/m ³
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	Not applicable	Not applicable	Not applicable	Not applicable
Lead azide	13424-46-9	TWA: 0.1 mg/m ³ STEL" 0.4 mg/m ³	0.15 mg/m ³ TWA (except tetraethyl lead)	Not applicable	TWA: 0.05 mg/m ³ STEL: 0.15 mg/m ³
Cyclotetramethylene tetranitramine (HMX)	2691-41-0	Not applicable	Not applicable	Not applicable	Not applicable
Aluminum	7429-90-5	TWA: 10 mg/m ³ STEL" 20 mg/m ³	1 mg/m ³ TWA (respirable dust) 3 mg/m ³ STEL (calculated, respirable dust)	TWA: 3 mg/m ³	TWA: 5 mg/m ³ STEL: 10 mg/m ³

Substances	CAS Number	Italy	Poland	Hungary	Czech Republic
Hexanitrostilbene (HNS)	20062-22-0	Not applicable	Not applicable	Not applicable	Not applicable
Cyclotrimethylenetrinitramine (RDX)	121-82-4	Not applicable	TWA: 1 mg/m ³ STEL: 3 mg/m ³	Not applicable	Not applicable
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	Not applicable	Not applicable	Not applicable	Not applicable
Lead styphnate	15245-44-0	0.15 mg/m ³	0.05 mg/m ³	0.05 mg/m	0.05 mg/m ³
Iron	7439-89-6	Not applicable	Not applicable	Not applicable	Not applicable
Copper	7440-50-8	Not applicable	0.2 mg/m ³	TWA: 1 mg/m ³ TWA: 0.1 mg/m ³ STEL: 4 mg/m ³ STEL: 0.4 mg/m ³	TWA: 1 mg/m ³ TWA: 0.1 mg/m ³
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	Not applicable	Not applicable	Not applicable	Not applicable
Lead azide	13424-46-9	0.15 mg/m ³	0.05 mg/m ³	0.05 mg/m	0.05 mg/m ³
Cyclotetramethylene tetranitramine (HMX)	2691-41-0	Not applicable	Not applicable	Not applicable	Not applicable
Aluminum	7429-90-5	Not applicable	TWA: 2.5 mg/m ³ TWA: 1.2 mg/m ³	TWA: 6 mg/m ³	TWA: 10.0 mg/m ³

Substances	CAS Number	Denmark	Romania	Croatia	Cyprus
Hexanitrostilbene (HNS)	20062-22-0	Not applicable	Not applicable	Not applicable	Not applicable
Cyclotrimethylenetrinitramine (RDX)	121-82-4	TWA: 1.5 mg/m ³	TWA: 2 mg/m ³ STEL: 6 mg/m ³	Not applicable	Not applicable
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	Not applicable	Not applicable	Not applicable	Not applicable
Lead styphnate	15245-44-0	0.05 mg/m ³	Not applicable	Not applicable	Not applicable
Iron	7439-89-6	Not applicable	Not applicable	Not applicable	Not applicable
Copper	7440-50-8	TWA: 1.0 mg/m ³ TWA: 0.1 mg/m ³	TWA: 0.50 mg/m ³ STEL: 0.20 mg/m ³ STEL: 1.50 mg/m ³	TWA: 0.2 mg/m ³ TWA: 1 mg/m ³ STEL: 2 mg/m ³	Not applicable
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	Not applicable	Not applicable	Not applicable	Not applicable
Lead azide	13424-46-9	0.05 mg/m ³	Not applicable	Not applicable	Not applicable
Cyclotetramethylene	2691-41-0	Not applicable	Not applicable	Not applicable	Not applicable

tetranitramine (HMX)					
Aluminum	7429-90-5	TWA: 5 mg/m ³ TWA: 2 mg/m ³	TWA: 3 mg/m ³ TWA: 1 mg/m ³ STEL: 10 mg/m ³ STEL: 3 mg/m ³	TWA: 10 mg/m ³ TWA: 4 mg/m ³	Not applicable

Derived No Effect Level (DNEL) No information available.
Worker

General Population

Predicted No Effect Concentration (PNEC) No information available.

8.2. Exposure controls

Engineering Controls Use in a well ventilated area.

Personal protective equipment

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

- Respiratory Protection** Dust/mist respirator. (N95, P2/P3)
- Hand Protection** Cloth gloves.
- Skin Protection** Cotton coveralls, undergarments, and socks. Conductive soled shoes.
- Eye Protection** Wear safety glasses or goggles to protect against exposure.
- Other Precautions** None known.

Environmental Exposure Controls Do not allow material to contaminate ground water system

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Solid **Color:** Metallic
Odor: Odorless **Odor Threshold:** No information available

Property	Values
Remarks/ - Method	
pH:	No data available
Freezing Point/Range	No data available
Melting Point/Range	No data available
Boiling Point/Range	No data available
Flash Point	No data available
Flammability (solid, gas)	No data available
upper flammability limit	No data available
lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	No data available
Water Solubility	Insoluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

VOC Content (%) No data available

SECTION 10: Stability and Reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical Stability

Stable

10.3. Possibility of Hazardous Reactions

Will Not Occur

10.4. Conditions to Avoid

May detonate with friction, impact, heat, and low level electrical current.

10.5. Incompatible Materials

Strong acids. Strong alkalis.

10.6. Hazardous Decomposition Products

Shrapnel. Oxides of nitrogen. Metal oxides. Carbon monoxide and carbon dioxide.

SECTION 11: Toxicological Information**11.1. Information on Toxicological Effects****Acute Toxicity****Inhalation**

Harmful if inhaled. May cause central nervous system depression including headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.

May cause damage to the nervous, urinary, and reproductive systems. May cause effects to the blood and blood system. Nitrogen oxides generated during use are irritating to the respiratory system.

Eye Contact

May cause eye irritation.

Skin Contact

Toxic in contact with skin. May be absorbed through the skin and contribute to the symptoms listed under ingestion. Nitrogen oxides generated during use are skin irritants.

Ingestion

Toxic if swallowed. May cause abdominal pain, vomiting, nausea, and diarrhea.

Chronic Effects/Carcinogenicity

Prolonged or repeated exposure may cause blood forming system, nervous, urinary tract and reproductive system damage. Prolonged or repeated exposure may cause embryo and fetus toxicity.

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Hexanitrostilbene (HNS)	20062-22-0	No data available	No data available	No data available
Cyclotrimethylenetrinitramine (RDX)	121-82-4	100 mg/kg (Rat) 187 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	No data available
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	No data available	No data available	No data available
Lead styphnate	15245-44-0	No data available	> 2000 mg/kg bw (rat, similar substance)	No data available
Iron	7439-89-6	984000 mg/kg (Rat)	No data available	> 250 mg/m ³ (Rat, 6h)
Copper	7440-50-8	> 2500 mg/kg (Rat)	> 2000 mg/kg (Rat)	> 5.11 mg/L (Rat) 4h
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	> 5000 mg/kg (Rat)	No data available	No data available
Lead azide	13424-46-9	No data available	No data available	No data available
Cyclotetramethylene tetranitramine (HMX)	2691-41-0	6490 mg/kg (Rat) 2300 mg/kg (Rat)	5 g/kg (Rat) 630 mg/kg (Rabbit) 982 mg/kg (Rabbit)	No data available
Aluminum	7429-90-5	> 5000 mg/kg (Rat) (Similar substance)	> 5000 mg/kg (Rabbit) (Similar substance)	> 2.3 mg/L (Rat, 4 h) (Similar substance)

Substances	CAS Number	Skin corrosion/irritation
Hexanitrostilbene (HNS)	20062-22-0	No information available.
Cyclotrimethylenetrinitramine (RDX)	121-82-4	Not irritating to skin in rabbits.
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	No information available.
Lead styphnate	15245-44-0	Not irritating to skin in rabbits. (similar substances)
Iron	7439-89-6	Not irritating to skin in rabbits.
Copper	7440-50-8	Non-irritating to the skin (Rabbit)
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	No information available.
Lead azide	13424-46-9	No information available.
Cyclotetramethylene tetranitramine (HMX)	2691-41-0	Not irritating to skin in rabbits.
Aluminum	7429-90-5	Non-irritating to the skin (Rabbit) (similar substances)

Substances	CAS Number	Eye damage/irritation
Hexanitrostilbene (HNS)	20062-22-0	No information available.

Cyclotrimethylenetrinitramine (RDX)	121-82-4	Non-irritating to rabbit's eye
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	No information available.
Lead styphnate	15245-44-0	Non-irritating to rabbit's eye (similar substances)
Iron	7439-89-6	Non-irritating to rabbit's eye
Copper	7440-50-8	Non-irritating to the eye (Rabbit)
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	No information available.
Lead azide	13424-46-9	No information available.
Cyclotetramethylene tetranitramine (HMX)	2691-41-0	Non-irritating to rabbit's eye
Aluminum	7429-90-5	Non-irritating to the eye (Rabbit) (similar substances)

Substances	CAS Number	Skin Sensitization
Hexanitrostilbene (HNS)	20062-22-0	No information available
Cyclotrimethylenetrinitramine (RDX)	121-82-4	Did not cause sensitization on laboratory animals (guinea pig)
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	No information available
Lead styphnate	15245-44-0	Did not cause sensitization on laboratory animals (guinea pig) (similar substances)
Iron	7439-89-6	Did not cause sensitization on laboratory animals (guinea pig)
Copper	7440-50-8	Did not cause sensitization on laboratory animals (guinea pig)
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	No information available
Lead azide	13424-46-9	No information available
Cyclotetramethylene tetranitramine (HMX)	2691-41-0	Did not cause sensitization on laboratory animals (guinea pig)
Aluminum	7429-90-5	Did not cause sensitization on laboratory animals (guinea pig) (similar substances)

Substances	CAS Number	Respiratory Sensitization
Hexanitrostilbene (HNS)	20062-22-0	No information available
Cyclotrimethylenetrinitramine (RDX)	121-82-4	No information available
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	No information available
Lead styphnate	15245-44-0	No information available
Iron	7439-89-6	No information available
Copper	7440-50-8	No information available
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	No information available
Lead azide	13424-46-9	No information available
Cyclotetramethylene tetranitramine (HMX)	2691-41-0	No data of sufficient quality are available.
Aluminum	7429-90-5	Did not cause sensitization on laboratory animals (mouse) (similar substances)

Substances	CAS Number	Mutagenic Effects
Hexanitrostilbene (HNS)	20062-22-0	No information available
Cyclotrimethylenetrinitramine (RDX)	121-82-4	In vitro tests did not show mutagenic effects. In vivo tests did not show mutagenic effects.
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	No information available
Lead styphnate	15245-44-0	No data of sufficient quality are available.
Iron	7439-89-6	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects.
Copper	7440-50-8	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects. (similar substances)
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	No information available
Lead azide	13424-46-9	No information available
Cyclotetramethylene tetranitramine (HMX)	2691-41-0	In vitro tests did not show mutagenic effects. In vivo tests did not show mutagenic effects. (similar substances)
Aluminum	7429-90-5	In vivo tests did not show mutagenic effects. (similar substances)

Substances	CAS Number	Carcinogenic Effects
Hexanitrostilbene (HNS)	20062-22-0	No information available.
Cyclotrimethylenetrinitramine (RDX)	121-82-4	No data of sufficient quality are available.
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	No information available.

Lead styphnate	15245-44-0	No data of sufficient quality are available.
Iron	7439-89-6	Did not show carcinogenic effects in animal experiments
Copper	7440-50-8	Did not show carcinogenic effects in animal experiments (similar substances)
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	No information available.
Lead azide	13424-46-9	No information available.
Cyclotetramethylene tetranitramine (HMX)	2691-41-0	No information available.
Aluminum	7429-90-5	Did not show carcinogenic or teratogenic effects in animal experiments

Substances	CAS Number	Reproductive toxicity
Hexanitrostilbene (HNS)	20062-22-0	No information available
Cyclotrimethylenetrinitramine (RDX)	121-82-4	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	No information available
Lead styphnate	15245-44-0	Prolonged or repeated exposure may cause reproductive system damage. Prolonged or repeated exposure may cause embryo and fetus toxicity. (similar substances)
Iron	7439-89-6	No information available
Copper	7440-50-8	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments. (similar substances)
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	No information available
Lead azide	13424-46-9	Fetotoxic and teratogenic effects observed in experimental animals at concentrations that did not produce maternal toxicity. (similar substances)
Cyclotetramethylene tetranitramine (HMX)	2691-41-0	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments. (similar substances)
Aluminum	7429-90-5	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.

Substances	CAS Number	STOT - single exposure
Hexanitrostilbene (HNS)	20062-22-0	No information available
Cyclotrimethylenetrinitramine (RDX)	121-82-4	May cause disorder and damage to the Central Nervous System (CNS)
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	No information available
Lead styphnate	15245-44-0	No significant toxicity observed in animal studies at concentration requiring classification. (similar substances)
Iron	7439-89-6	No significant toxicity observed in animal studies at concentration requiring classification.
Copper	7440-50-8	No significant toxicity observed in animal studies at concentration requiring classification.
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	No information available
Lead azide	13424-46-9	No information available
Cyclotetramethylene tetranitramine (HMX)	2691-41-0	May cause disorder and damage to the Central Nervous System (CNS)
Aluminum	7429-90-5	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
Hexanitrostilbene (HNS)	20062-22-0	No information available
Cyclotrimethylenetrinitramine (RDX)	121-82-4	Causes damage to organs through prolonged or repeated exposure if swallowed: Central Nervous System (CNS)
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	No information available
Lead styphnate	15245-44-0	Causes damage to organs through prolonged or repeated exposure: Central Nervous System (CNS)
Iron	7439-89-6	No significant toxicity observed in animal studies at concentration requiring classification.
Copper	7440-50-8	No significant toxicity observed in animal studies at concentration requiring classification. (similar substances)
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	No information available
Lead azide	13424-46-9	Causes damage to organs through prolonged or repeated exposure: (Blood)
Cyclotetramethylene tetranitramine (HMX)	2691-41-0	No significant toxicity observed in animal studies at concentration requiring classification.
Aluminum	7429-90-5	No significant toxicity observed in animal studies at concentration requiring classification. (similar substances)

Substances	CAS Number	Aspiration hazard
Hexanitrostilbene (HNS)	20062-22-0	Not applicable
Cyclotrimethylenetrinitramine	121-82-4	Not applicable

e (RDX)		
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	No information available
Lead styphnate	15245-44-0	Not applicable
Iron	7439-89-6	Not applicable
Copper	7440-50-8	Not applicable
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	No information available Not applicable
Lead azide	13424-46-9	Not applicable
Cyclotetramethylene tetranitramine (HMX)	2691-41-0	Not applicable
Aluminum	7429-90-5	Not applicable

SECTION 12: Ecological Information

12.1. Toxicity Ecotoxicity Effects

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Hexanitrostilbene (HNS)	20062-22-0	No information available	No information available	No information available	No information available
Cyclotrimethylenetrinitramine (RDX)	121-82-4	EC50 (96h) 36.7 mg/L (Pseudokircheriella subcapitata)	LC50 (96h) 11.14-14.97 mg/L (Pimephales promelas) NOEC (28d) 1.4 mg/L (Pimephales promelas)	NOEC (12wk) 6143 mg/kg (Soil dwelling bacteria)	EC50 (56d) 3.7 mg/kg (Eisenia fetida) EC50 (48h) >17 mg/L (Ceriodaphnia dubia) LOEC (7d) 6.01 mg/L (Ceriodaphnia dubia)
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	No information available	No information available	No information available	No information available
Lead styphnate	15245-44-0	No information available	LC50(96h): 0.107 mg/L (Oncorhynchus mykiss) (similar substance) NOEC(30D): 0.242 mg/L (Oncorhynchus mykiss) (similar substance)	No information available	EC50(48h): 7.02 mg/L (Daphnia magna) (similar substance)
Iron	7439-89-6	No information available	LC50(96h): > 10000 mg/L (Danio rerio) NOEC(21d): 0.52 mg/L (Cyprinus carpio)	No information available	No information available
Copper	7440-50-8	EC50 (72h) 0.0238 mg/L (Skeletonema costatum) (similar substance) NOEC (10d) 0.022 mg/L (Chlamydomonas reinhardtii) (similar substance)	LC50 (96h) 0.094 mg/L (Oncorhynchus mykiss) (similar substance) NOEC (45d) 0.011 mg/L (Oncorhynchus mykiss) (similar substance)	EC50 (10d) 0.025 mg/L (sewage, domestic) (similar substance)	EC50 (48h) 0.0409 mg/L (Daphnia magna) (similar substance) NOEC (10d) 0.017 mg/L (Chironomus repair) (similar substance)
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	No information available	No information available	No information available	No information available
Lead azide	13424-46-9	No information available	No information available	No information available	No information available
Cyclotetramethylene tetranitramine (HMX)	2691-41-0	EC50 (96h) > 22 umol/L (Scendesmus capricornutum)	LC50 8.8-26 mg/L (Pimephales promelas) LC50 (96h) >15 mg/L (Pimephales promelas) LC50 (96h) > 32 mg/L (Lepomis macrochirus) NOEC (32d) > 3.3 mg/L (Pimephales promelas)	No information available	EC50 (48h) > 15 mg/L (Daphnia magna) NOEC (28d) > 3.9 mg/L (Daphnia magna)
Aluminum	7429-90-5	EC50(72h): 6919.83 mg/L (Skeletonema costatum)	LC50(96h): >10000 mg/L (Scophthalmus maximus)	No information available	LC50(48h): 190 mg/L (Arcatia tonsa)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Hexanitrostilbene (HNS)	20062-22-0	No information available
Cyclotrimethylenetrinitramine (RDX)	121-82-4	Readily biodegradable (69% @ 10d)
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	No information available
Lead styphnate	15245-44-0	No information available
Iron	7439-89-6	The methods for determining biodegradability are not applicable to inorganic substances.

Copper	7440-50-8	The methods for determining biodegradability are not applicable to inorganic substances.
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	No information available
Lead azide	13424-46-9	No information available
Cyclotetramethylene tetranitramine (HMX)	2691-41-0	Not readily biodegradable (2% @ 29d)
Aluminum	7429-90-5	The methods for determining biodegradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Hexanitrostilbene (HNS)	20062-22-0	No information available
Cyclotrimethylenetrinitramine (RDX)	121-82-4	0.87
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	No information available
Lead styphnate	15245-44-0	-2.19
Iron	7439-89-6	No information available
Copper	7440-50-8	No information available
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	No information available
Lead azide	13424-46-9	No information available
Cyclotetramethylene tetranitramine (HMX)	2691-41-0	0.165
Aluminum	7429-90-5	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Hexanitrostilbene (HNS)	20062-22-0	No information available
Cyclotrimethylenetrinitramine (RDX)	121-82-4	KOC = 42-167
Tetranitrodibenzo-1,3a,4,6a-tetra-azapentalene	25243-36-1	No information available
Lead styphnate	15245-44-0	No information available
Iron	7439-89-6	No information available
Copper	7440-50-8	No information available
2,6-Bis(picrylamino)-3,5-dinitro-pyridine (PYX)	38082-89-2	No information available
Lead azide	13424-46-9	No information available
Cyclotetramethylene tetranitramine (HMX)	2691-41-0	No information available.
Aluminum	7429-90-5	No information available

12.5. Results of PBT and vPvB assessment

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT). This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

Substances	PBT and vPvB assessment
Aluminum	Not applicable

12.6. Other adverse effects

Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

SECTION 13: Disposal Considerations

13.1. Waste treatment methods

Disposal Method Contaminated Packaging

Disposal should be made in accordance with federal, state, and local regulations.
Do NOT reuse container. Store only in ATF approved magazines.

SECTION 14: Transport Information

IMDG/IMO

UN Number:	UN0255
UN Proper Shipping Name:	Detonators, Electric
Transport Hazard Class(es):	1.4B
Packing Group:	II
EX Number:	EX1995010044
Environmental Hazards:	Not applicable

RID

UN Number:	UN0255
------------	--------

UN Proper Shipping Name: Detonators, Electric
Transport Hazard Class(es): 1.4B
Packing Group: II
EX Number: EX1995010044
Environmental Hazards: Not applicable

ADR

UN Number: UN0255
UN Proper Shipping Name: Detonators, Electric
Transport Hazard Class(es): 1.4B
Packing Group: II
EX Number: EX1995010044
Environmental Hazards: Not applicable

IATA/ICAO

UN Number: UN0255
UN Proper Shipping Name: Detonators, Electric
Transport Hazard Class(es): 1.4B
Packing Group: II
EX Number: EX1995010044
Environmental Hazards: Not applicable

14.1. UN Number: UN0255

14.2. UN Proper Shipping Name: Detonators, Electric

14.3. Transport Hazard Class(es): 1.4B

14.4. Packing Group: II

14.5. Environmental Hazards: Not applicable

14.6. Special Precautions for User: None

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

SECTION 15: Regulatory Information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**International Inventories**

EINECS Inventory This product, and all its components, complies with EINECS
US TSCA Inventory All components listed on inventory or are exempt.
Canadian DSL Inventory Product contains one or more components not listed on the inventory.

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List

Germany, Water Endangering Classes (WGK) Not determined.

Substances	CAS Number	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization
Lead styphnate	15245-44-0	Use restricted. See item 30. Use restricted. See item 30. except those specified elsewhere in Annex XVII to Regulation 1907/2006	Not applicable
Lead azide	13424-46-9	Use restricted. See item 30. Use restricted. See item 30. except those specified elsewhere in Annex XVII to Regulation 1907/2006	Not applicable

15.2. Chemical Safety Assessment

No information available

SECTION 16: Other Information

Full text of H-Statements referred to under sections 2 and 3

H200 - Unstable explosive
H201 - Explosive; mass explosion hazard
H204 - Fire or projection hazard
H228 - Flammable solid
H251 - Self-heating: may catch fire
H261 - In contact with water releases flammable gases
H301 - Toxic if swallowed
H302 - Harmful if swallowed
H311 - Toxic in contact with skin
H332 - Harmful if inhaled
H360 - May damage fertility or the unborn child
H360Df - May damage the unborn child. Suspected of damaging fertility
H370 - Causes damage to organs
H372 - Causes damage to organs through prolonged or repeated exposure
H373 - May cause damage to organs (a,b,c) through prolonged or repeated exposure
H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects

Key or legend to abbreviations and acronyms

bw – body weight
CAS – Chemical Abstracts Service
CLP – REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Classification, Labelling and Packaging of substances and mixtures
EC – European Commission
EC10 – Effective Concentration 10%
EC50 – Effective Concentration 50%
EEC – European Economic Community
ErC50 – Effective Concentration growth rate 50%
IBC Code – International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL0 – Lethal Loading 0%
LL50 – Lethal Loading 50%
MARPOL – International Convention for the Prevention of Pollution from Ships
mg/kg – milligram/kilogram
mg/L – milligram/liter
NIOSH – National Institute for Occupational Safety and Health
NOEC – No Observed Effect Concentration
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PBT – Persistent Bioaccumulative and Toxic
PC – Chemical Product category
PEL – Permissible Exposure Limit
ppm – parts per million
PROC – Process category
REACH – REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals
STEL – Short Term Exposure Limit
SU – Sector of Use category

Key literature references and sources for data

www.ChemADVISOR.com/

Revision Date: 08-Sep-2015

Revision Note

SDS sections updated: 1

This safety data sheet complies with the requirements of Regulation (EC) No. 453/2010

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

End of Safety Data Sheet