RED PARACHUTE ROCKET

Drew Marine Signal and Safety Germany GmbH

Chemwatch: **65-6261**
Version No: **3.1.1.1**
Safety Data Sheet (Conforms to Regulation (EC) No 2015/830)

Issue Date: **05/09/2016**
Print Date: **07/09/2016**
S.REACH.GBR.EN

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

1.1. Product Identifier

Product name	RED PARACHUTE ROCKET
Synonyms	Comet Parachute Signal Rocket, red – Art.-No.: 9163100, 9163101, 9163103, 9163105, 9163106, 9163107, 9163110, 9163150, Pains Wessex Para Red Rocket MK8A – Art.-No.: 9506370, 9506720, 9506727, 9506850, 9506950, 9506970, Aurora PW Para Red Rocket, Art.-No. 9506960, 9506980, Oroquieta Parachute Signal Rocket, red, Oro2
Proper shipping name	SIGNALS, DISTRESS, ship
Other means of identification	Not Available

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

Relevant identified uses	Use according to manufacturer's directions. Sea distress signal. A day or night long-range distress signal. 12 may be carried on ships bridge and there is a requirement for 4 in ships lifeboats and liferafts. Also suitable for use in other commercial and recreational boats.
Uses advised against	Not Applicable

1.3. Details of the supplier of the safety data sheet

Registered company name	Drew Marine Signal and Safety Germany GmbH
Address	Vieländer Weg 147 Bremerhaven 27574 Germany
Telephone	+49 471 3930
Fax	+49 471 3932 10
Website	www.signalandsafety.com
Email	info@signalandsafety.com

1.4. Emergency telephone number

Association / Organisation	Consultant Lutz Harder GmbH
Emergency telephone numbers	+49 178 433 7434
Other emergency telephone numbers	CHEMWATCH: From whithin the US and CANADA: 1 877 715 9305 OR call +613 9573 3112. From outside the US and Canada: +800 2436 2255 (+800 CHEMCALL) or +61 3 9573 3112

SECTION 2 HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification according to regulation (EC) No 1272/2008 [CLP] [1]	Explosive Division 1.4
Legend:	*1. Classified by Chemwatch; 2. Classification drawn from EC Directive 67/548/EEC - Annex I ; 3. Classification drawn from EC Directive 1272/2008 - Annex VI*

2.2. Label elements

CLP label elements	
SIGNAL WORD	**WARNING**

Hazard statement(s)

H204	Fire or projection hazard.

Precautionary statement(s) Prevention

P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P250	Do not subject to grinding/shock/sources of friction.

Continued...

P280	Wear protective gloves/protective clothing/eye protection/face protection.
P240	Ground/bond container and receiving equipment.

Precautionary statement(s) Response

P370+P380	In case of fire: Evacuate area.
P372	Explosion risk in case of fire.
P374	Fight fire with normal precautions from a reasonable distance.
P373	DO NOT fight fire when fire reaches explosives.

Precautionary statement(s) Storage

P401	Store according to local regulations for explosives.

Precautionary statement(s) Disposal

P501	Dispose of contents/container in accordance with local regulations.

REACh - Art.57-59: The mixture does not contain Substances of Very High Concern (SVHC) at the SDS print date.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

3.1.Substances

See 'Composition on ingredients' in Section 3.2

3.2.Mixtures

1.CAS No 2.EC No 3.Index No 4.REACH No	%[weight]	Name	Classification according to regulation (EC) No 1272/2008 [CLP]
		device contains	
		lighter composition, delay composition and ignition composition	
		polytechnic materials of;	
1.7439-95-4 2.231-104-6 3.012-001-00-3, 012-002-00-9 4.01-2119537203-49-XXXX, 01-2119940954-29-XXXX	30-60	magnesium	Emit Flammable Gases with Water Category 1, Pyrophoric Solid Category 1; H260, H250 [3]
1.10042-76-9 2.233-131-9 3.Not Available 4.01-2119615605-42-XXXX	30-60	strontium nitrate	Oxidizing Solid Category 3, Skin Corrosion/Irritation Category 2, Eye Irritation Category 2, Specific target organ toxicity - single exposure Category 3 (respiratory tract irritation); H272, H315, H319, H335 [1]
1.7757-79-1 2.231-818-8 3.Not Available 4.01-2119488224-35-XXXX	70-80	potassium nitrate	Oxidizing Solid Category 3, Acute Toxicity (Oral) Category 4, Eye Irritation Category 2; H272, H302, H319 [1]
1.7429-90-5 2.231-072-3 3.013-001-00-6, 013-002-00-1 4.01-2119529243-45-XXXX	10-30	aluminium	Emit Flammable Gases with Water Category 3, Pyrophoric Solid Category 1; H261, H250 [3]
1.7778-74-7 2.231-912-9 3.017-008-00-5 4.Not Available	5-10	potassium perchlorate	Oxidizing Solid Category 1, Acute Toxicity (Oral) Category 4; H271, H302 [3]
		rocket propellant;	
1.10294-40-3 2.233-660-5 3.Not Available 4.Not Available	10-30	barium chromate	Oxidizing Solid Category 2, Acute Toxicity (Oral) Category 4, Acute Toxicity (Inhalation) Category 4, Eye Irritation Category 2, Skin Sensitizer Category 1, Carcinogenicity Category 1A, Acute Aquatic Hazard Category 1, Chronic Aquatic Hazard Category 1; H272, H302, H332, H319, H317, H350i, H410 [1]
Legend:	*1. Classified by Chemwatch; 2. Classification drawn from EC Directive 67/548/EEC - Annex I ; 3. Classification drawn from EC Directive 1272/2008 - Annex VI 4. Classification drawn from C&L*		

SECTION 4 FIRST AID MEASURES

4.1. Description of first aid measures

General	If skin contact occurs: ▸ Immediately remove all contaminated clothing, including footwear. ▸ Flush skin and hair with running water (and soap if available). ▸ Seek medical attention in event of irritation. If this product comes in contact with eyes: ▸ Wash out immediately with water. ▸ If irritation continues, seek medical attention.

Continued...

	▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel. ▸ If fumes or combustion products are inhaled remove from contaminated area. ▸ Lay patient down. Keep warm and rested. ▸ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. ▸ Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. ▸ Transport to hospital, or doctor, without delay. Not considered a normal route of entry. ▸ If swallowed do **NOT** induce vomiting. ▸ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. ▸ Observe the patient carefully. ▸ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. ▸ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. ▸ Seek medical advice.
Eye Contact	If this product comes in contact with eyes: ▸ Wash out immediately with water. ▸ If irritation continues, seek medical attention. ▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If skin contact occurs: ▸ Immediately remove all contaminated clothing, including footwear. ▸ Flush skin and hair with running water (and soap if available). ▸ Seek medical attention in event of irritation.
Inhalation	▸ If fumes or combustion products are inhaled remove from contaminated area. ▸ Lay patient down. Keep warm and rested. ▸ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. ▸ Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. ▸ Transport to hospital, or doctor, without delay.
Ingestion	Not considered a normal route of entry. ▸ If swallowed do **NOT** induce vomiting. ▸ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. ▸ Observe the patient carefully. ▸ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. ▸ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. ▸ Seek medical advice.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11

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

Treat symptomatically.

SECTION 5 FIREFIGHTING MEASURES

5.1. Extinguishing media

DANGER: Deliver media remotely.
- For minor fires: Flooding quantities only.
- For large fires: **Do not** attempt to extinguish.

|Apply by mechanical means only.

5.2. Special hazards arising from the substrate or mixture

Fire Incompatibility	Avoid contact with other chemicals.

5.3. Advice for firefighters

Fire Fighting	**WARNING**: EXPLOSIVE MATERIALS / ARTICLES PRESENT! ▸ Evacuate all personnel and move upwind. ▸ Prevent re-entry. ▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ May detonate and burning material may be propelled from fire. ▸ Wear full-body protective clothing with breathing apparatus. ▸ Prevent, by any means available, spillage and fire effluent from entering drains and water courses. ▸ Fight fire from safe distances and from protected locations. ▸ Use flooding quantities of water. ▸ **DO NOT** approach containers or packages suspected to be hot. ▸ Cool any exposed containers not involved in fire from a protected location. ▸ Equipment should be thoroughly decontaminated after use. Slight hazard when exposed to heat, flame and oxidisers.
Fire/Explosion Hazard	Division 1.4 Substances, mixtures and articles which present no significant hazard: substances, mixtures and articles which present only a small hazard in the event of ignition or initiation. The effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire shall not cause virtually instantaneous explosion of almost the entire contents of the package. Compatibility Group G explosives are pyrotechnic substances, or article containing a pyrotechnic substances, or article containing both an explosive substance and an illuminating, incendiary, tear- or smoke-producing substance (other than a water-activated article or one containing white phosphorus, phosphides, a pyrophoric substance, a flammable liquid or gel, or hypergolic liquids). Combustible. Will burn if ignited.Combustion products include; carbon monoxide (CO) carbon dioxide (CO_2) other pyrolysis products typical of burning organic material

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Continued...

See section 8

6.2. Environmental precautions

See section 12

6.3. Methods and material for containment and cleaning up

Minor Spills	**WARNING!: EXPLOSIVE.** BLAST and/or PROJECTION and/or FIRE HAZARD ▸ Clean up all spills immediately. ▸ Avoid inhalation of the material and avoid contact with eyes and skin. ▸ Wear impervious gloves and safety glasses. ▸ Remove all ignition sources. ▸ Use spark-free tools when handling. ▸ Sweep into non-sparking containers or barrels and moisten with water. ▸ Place spilled material in clean, sealable, labelled container for disposal. ▸ Flush area with large amounts of water.
Major Spills	**WARNING!** EXPLOSIVE. ▸ Clear area of personnel and move upwind. ▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ May be violently or explosively reactive. ▸ Wear full body protective clothing with breathing apparatus. ▸ Consider evacuation (or protect in place). ▸ In case of transport accident notify Police, Emergency Authority, Competent Explosives Authority or Manufacturer. ▸ No smoking, naked lights, heat or ignition sources. ▸ Increase ventilation. ▸ Use extreme caution to prevent physical shock. ▸ Use only spark-free shovels and explosion-proof equipment. ▸ Collect recoverable material and segregate from spilled material. ▸ Wash spill area with large quantities of water.

6.4. Reference to other sections

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 HANDLING AND STORAGE

7.1. Precautions for safe handling

Safe handling	▸ Handle gently. Use good occupational work practice. ▸ Observe manufacturer's storage and handling recommendations contained within this SDS. ▸ Avoid all personal contact, including inhalation. ▸ Avoid smoking, naked lights, heat or ignition sources. ▸ Explosives must not be struck with metal implements. ▸ Avoid mechanical and thermal shock and friction. ▸ Use in a well ventilated area. ▸ Avoid contact with incompatible materials. ▸ When handling **DO NOT** eat, drink or smoke. ▸ Avoid physical damage to containers. ▸ Always wash hands with soap and water after handling. ▸ Work clothes should be laundered separately.
Fire and explosion protection	See section 5
Other information	▸ Store cases in a well ventilated magazine licenced for the appropriate Class, Division and Compatibility Group. ▸ Rotate stock to prevent ageing. Use on FIFO (first in-first out) basis. ▸ Observe manufacturer's storage and handling recommendations contained within this SDS. ▸ Store in a cool place in original containers. ▸ Keep containers securely sealed. ▸ No smoking, naked lights, heat or ignition sources. ▸ Store in an isolated area away from other materials. ▸ Keep storage area free of debris, waste and combustibles. ▸ Protect containers against physical damage. ▸ Check regularly for spills and leaks **NOTE**: If explosives need to be destroyed contact the Competent Authority. ▸ Store away from incompatible materials. Keep out of reach of children.

7.2. Conditions for safe storage, including any incompatibilities

Suitable container	▸ All packaging for Class 1 Goods shall be in accordance with the requirements of the relevant Code for the transport of Dangerous Goods. ▸ Class 1 is unique in that the type of packaging used frequently has a very decisive effect on the hazard and therefore on the assignment to a particular division
Storage incompatibility	▸ Avoid contact with other explosives, pyrotechnics, solvents, adhesives, paints, cleaners and unauthorized metals, plastics, packing equipment and materials. ▸ Avoid contamination with acids, alkalis, reducing agents, amines and phosphorus. ▸ Explosion hazard may follow contact with incompatible materials

7.3. Specific end use(s)

See section 1.2

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

Continued...

DERIVED NO EFFECT LEVEL (DNEL)

Not Available

PREDICTED NO EFFECT LEVEL (PNEC)

Not Available

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
UK Workplace Exposure Limits (WELs)	aluminium	Aluminium metal inhalable dust / Aluminium metal respirable dust	10 mg/m3 / 4 mg/m3	Not Available	Not Available	Not Available
UK Workplace Exposure Limits (WELs)	barium chromate	Chromium (VI) compounds (as Cr)	0.05 mg/m3	Not Available	Not Available	Carc, sen, BMGV

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
magnesium	Magnesium	0.016 mg/m3	0.17 mg/m3	1 mg/m3
strontium nitrate	Strontium nitrate	0.2 mg/m3	2.2 mg/m3	370 mg/m3
potassium nitrate	Potassium nitrate	0.074 mg/m3	0.82 mg/m3	600 mg/m3
aluminium	Aluminum	3 mg/m3	33 mg/m3	200 mg/m3
potassium perchlorate	Potassium perchlorate	23 mg/m3	250 mg/m3	1500 mg/m3
barium chromate	Barium chromate	0.15 mg/m3	25 mg/m3	150 mg/m3

Ingredient	Original IDLH	Revised IDLH
magnesium	Not Available	Not Available
strontium nitrate	Not Available	Not Available
potassium nitrate	Not Available	Not Available
aluminium	Not Available	Not Available
potassium perchlorate	Not Available	Not Available
barium chromate	Not Available	Not Available

8.2. Exposure controls

8.2.1. Appropriate engineering controls	Engineering controls for explosive articles are designed to reduce or eliminate fragmentation and/or blast effects either by suppression of the source of detonation or by protection at the exposed location, or both. Barricades, shields, contained detonation chambers, and “zero quantity-distance (Q-D)” magazines are examples of engineering controls. Engineering controls are designed and tested in a rigorous fashion. The construction of the engineering control must be carefully duplicated in field applications to assure it will function properly. It is thus imperative that engineering controls be built exactly in accordance with the design package, and that they be used only for the articles (e.g.munitions) for which they are authorised.
8.2.2. Personal protection	
Eye and face protection	▸ Safety glasses with side shields ▸ Chemical goggles
Skin protection	See Hand protection below
Hands/feet protection	▸ Wear chemical protective gloves, e.g. PVC. ▸ Wear safety footwear or safety gumboots, e.g. Rubber
Body protection	See Other protection below
Other protection	▸ Fire resistant/ heat resistant gloves where practical, otherwise ▸ Heavy-duty chemically resistant gloves capable of providing short-term protection against spontaneous ignition. ▸ Safety footwear Hard hat |Ear Protection.
Thermal hazards	Not Available

Respiratory protection

Respiratory protection not normally required due to the physical form of the product.

8.2.3. Environmental exposure controls

See section 12

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance	Steel tube with orange/yellow plastic outer casing pressed with black/grey polytechnical ingredients.

Continued...

Physical state	Manufactured	**Relative density (Water = 1)**	Not Applicable
Odour	Not Available	**Partition coefficient n-octanol / water**	Not Available
Odour threshold	Not Available	**Auto-ignition temperature (°C)**	>160
pH (as supplied)	Not Applicable	**Decomposition temperature**	Not Applicable
Melting point / freezing point (°C)	Not Applicable	**Viscosity (cSt)**	Not Applicable
Initial boiling point and boiling range (°C)	Not Applicable	**Molecular weight (g/mol)**	Not Applicable
Flash point (°C)	160	**Taste**	Not Available
Evaporation rate	Not Applicable	**Explosive properties**	Not Available
Flammability	Not Applicable	**Oxidising properties**	Not Available
Upper Explosive Limit (%)	Not Applicable	**Surface Tension (dyn/cm or mN/m)**	Not Applicable
Lower Explosive Limit (%)	Not Applicable	**Volatile Component (%vol)**	Not Applicable
Vapour pressure (kPa)	Not Applicable	**Gas group**	Not Available
Solubility in water (g/L)	Immiscible	**pH as a solution (1%)**	Not Applicable
Vapour density (Air = 1)	Not Applicable	**VOC g/L**	Not Available

9.2. Other information

Not Available

SECTION 10 STABILITY AND REACTIVITY

10.1.Reactivity	See section 7.2
10.2. Chemical stability	▸ Presence of shock and friction ▸ Presence of heat source and ignition source ▸ Product is considered stable under normal handling conditions. ▸ Stable under normal storage conditions. ▸ Hazardous polymerization will not occur. Avoid contact with other chemicals.
10.3. Possibility of hazardous reactions	See section 7.2
10.4. Conditions to avoid	See section 7.2
10.5. Incompatible materials	See section 7.2
10.6. Hazardous decomposition products	See section 5.3

SECTION 11 TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Inhaled	Not normally a hazard due to physical form of product. Inhalation of vapour is more likely at higher than normal temperatures. The vapour is discomforting
Ingestion	Not normally a hazard due to physical form of product. Considered an unlikely route of entry in commercial/industrial environments
Skin Contact	Not normally a hazard due to physical form of product. The vapour is discomforting
Eye	Not normally a hazard due to physical form of product. The vapour is discomforting
Chronic	▸ Generally not applicable.

RED PARACHUTE ROCKET	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
magnesium	**TOXICITY**	**IRRITATION**
	Oral (rat) LD50: >2000 mg/kg[1]	Nil reported [Manufacturer]
strontium nitrate	**TOXICITY**	**IRRITATION**
	Oral (rat) LD50: 1892 mg/kg[2]	Nil reported
potassium nitrate	**TOXICITY**	**IRRITATION**
	dermal (rat) LD50: >5000 mg/kg[1]	Nil reported
	Oral (rat) LD50: >2000 mg/kg[1]	

Continued...

aluminium	**TOXICITY**	**IRRITATION**
	Oral (rat) LD50: >2000 mg/kg[1]	Not Available
potassium perchlorate	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
barium chromate	**TOXICITY**	**IRRITATION**
	Oral (rat) LD50: >2000 mg/kg[2]	[CCINFO - Dominion Colour]
		Nil reported

Legend:	*1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances*

STRONTIUM NITRATE	Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.
BARIUM CHROMATE	The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested. **WARNING:** This substance has been classified by the IARC as Group 1: **CARCINOGENIC TO HUMANS**.
ALUMINIUM & POTASSIUM PERCHLORATE	No significant acute toxicological data identified in literature search.

Acute Toxicity	⊘	**Carcinogenicity**	⊘
Skin Irritation/Corrosion	⊘	**Reproductivity**	⊘
Serious Eye Damage/Irritation	⊘	**STOT - Single Exposure**	⊘
Respiratory or Skin sensitisation	⊘	**STOT - Repeated Exposure**	⊘
Mutagenicity	⊘	**Aspiration Hazard**	⊘

Legend: ✗ *– Data available but does not fill the criteria for classification*
✓ *– Data required to make classification available*
⊘ *– Data Not Available to make classification*

SECTION 12 ECOLOGICAL INFORMATION

12.1. Toxicity

Ingredient	Endpoint	Test Duration (hr)	Species	Value	Source
magnesium	LC50	96	Fish	541mg/L	2
magnesium	EC50	48	Crustacea	344mg/L	2
magnesium	EC50	72	Algae or other aquatic plants	>12mg/L	2
magnesium	EC50	72	Algae or other aquatic plants	>12mg/L	2
magnesium	NOEC	72	Algae or other aquatic plants	>=12mg/L	2
strontium nitrate	LC50	96	Fish	>40.3mg/L	2
strontium nitrate	EC50	48	Crustacea	94mg/L	2
strontium nitrate	EC50	72	Algae or other aquatic plants	>43.3mg/L	2
strontium nitrate	EC50	72	Algae or other aquatic plants	>43.3mg/L	2
strontium nitrate	NOEC	480	Algae or other aquatic plants	15mg/L	2
potassium nitrate	LC50	96	Fish	22.5mg/L	4
potassium nitrate	EC50	48	Crustacea	490mg/L	2
potassium nitrate	EC50	96	Algae or other aquatic plants	1181.887mg/L	3
potassium nitrate	EC50	96	Crustacea	39mg/L	2
potassium nitrate	NOEC	96	Fish	98.9mg/L	2
aluminium	LC50	96	Fish	0.078-0.108mg/L	2
aluminium	EC50	48	Crustacea	0.7364mg/L	2
aluminium	EC50	96	Algae or other aquatic plants	0.0054mg/L	2

Continued...

aluminium	BCF	360	Algae or other aquatic plants	9mg/L	4
aluminium	EC50	120	Fish	0.000051mg/L	5
aluminium	NOEC	72	Algae or other aquatic plants	>=0.004mg/L	2
potassium perchlorate	EC10	24	Algae or other aquatic plants	>1000mg/L	4
Legend:	*Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data*				

12.2. Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
potassium nitrate	LOW	LOW

12.3. Bioaccumulative potential

Ingredient	Bioaccumulation
potassium nitrate	LOW (LogKOW = 0.209)

12.4. Mobility in soil

Ingredient	Mobility
potassium nitrate	LOW (KOC = 14.3)

12.5.Results of PBT and vPvB assessment

	P	B	T
Relevant available data	Not Available	Not Available	Not Available
PBT Criteria fulfilled?	Not Available	Not Available	Not Available

12.6. Other adverse effects

No data available

SECTION 13 DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Product / Packaging disposal	▸ Explosives must not be thrown away, buried, discarded or placed with garbage. ▸ Explosives which are surplus, deteriorated or considered unsafe for transport, storage or use shall be destroyed and the statutory authorities shall be notified. ▸ This material may be disposed of by burning or detonation but the operation may only be performed under the control of a person trained in the safe destruction of explosives. Refer to local Waste Disposal Authority and supplier for suitable disposal procedure.
Waste treatment options	Not Available
Sewage disposal options	Not Available

SECTION 14 TRANSPORT INFORMATION

Labels Required

	
Marine Pollutant	NO
HAZCHEM	E

Land transport (ADR)

14.1.UN number	0505
14.2.UN proper shipping name	SIGNALS, DISTRESS, ship
14.3. Transport hazard class(es)	Class: 1.4G Subrisk: Not Applicable
14.4.Packing group	Not Applicable
14.5.Environmental hazard	Not Applicable
14.6. Special precautions for user	Hazard identification (Kemler): Not Applicable Classification code: 1.4G Hazard Label: 1.4

Continued...

	Special provisions	Not Applicable
	Limited quantity	0

Air transport (ICAO-IATA / DGR)

14.1. UN number	0505
14.2. UN proper shipping name	Signals, distress ship
14.3. Transport hazard class(es)	ICAO/IATA Class: 1.4G ICAO / IATA Subrisk: Not Applicable ERG Code: 1L
14.4. Packing group	Not Applicable
14.5. Environmental hazard	Not Applicable
14.6. Special precautions for user	Special provisions: Not Applicable Cargo Only Packing Instructions: 135 Cargo Only Maximum Qty / Pack: 75 kg Passenger and Cargo Packing Instructions: Forbidden Passenger and Cargo Maximum Qty / Pack: Forbidden Passenger and Cargo Limited Quantity Packing Instructions: Forbidden Passenger and Cargo Limited Maximum Qty / Pack: Forbidden

Sea transport (IMDG-Code / GGVSee)

14.1. UN number	0505
14.2. UN proper shipping name	SIGNALS, DISTRESS ship
14.3. Transport hazard class(es)	IMDG Class: 1.4G IMDG Subrisk: Not Applicable
14.4. Packing group	Not Applicable
14.5. Environmental hazard	Not Applicable
14.6. Special precautions for user	EMS Number: F-B, S-X Special provisions: Not Applicable Limited Quantities: 0

Inland waterways transport (ADN)

14.1. UN number	0505
14.2. UN proper shipping name	SIGNALS, DISTRESS, ship
14.3. Transport hazard class(es)	1.4G | Not Applicable
14.4. Packing group	Not Applicable
14.5. Environmental hazard	Not Applicable
14.6. Special precautions for user	Classification code: 1.4G Special provisions: Not Applicable Limited quantity: 0 Equipment required: PP Fire cones number: 1

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

SECTION 15 REGULATORY INFORMATION

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

MAGNESIUM(7439-95-4) IS FOUND ON THE FOLLOWING REGULATORY LISTS

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles
European Customs Inventory of Chemical Substances ECICS (English)
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)
European Union (EU) Annex I to Directive 67/548/EEC on Classification and Labelling of Dangerous Substances - updated by ATP: 31
European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

Continued...

STRONTIUM NITRATE(10042-76-9) IS FOUND ON THE FOLLOWING REGULATORY LISTS

European Customs Inventory of Chemical Substances ECICS (English)
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)

POTASSIUM NITRATE(7757-79-1) IS FOUND ON THE FOLLOWING REGULATORY LISTS

European Customs Inventory of Chemical Substances ECICS (English)
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)

ALUMINIUM(7429-90-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles
European Customs Inventory of Chemical Substances ECICS (English)
European Trade Union Confederation (ETUC) Priority List for REACH Authorisation
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)
European Union (EU) Annex I to Directive 67/548/EEC on Classification and Labelling of Dangerous Substances - updated by ATP: 31
European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
UK Workplace Exposure Limits (WELs)

POTASSIUM PERCHLORATE(7778-74-7) IS FOUND ON THE FOLLOWING REGULATORY LISTS

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles
European Customs Inventory of Chemical Substances ECICS (English)
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)
European Union (EU) Annex I to Directive 67/548/EEC on Classification and Labelling of Dangerous Substances - updated by ATP: 31
European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI

BARIUM CHROMATE(10294-40-3) IS FOUND ON THE FOLLOWING REGULATORY LISTS

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles
European Customs Inventory of Chemical Substances ECICS (English)
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
UK Workplace Exposure Limits (WELs)

This safety data sheet is in compliance with the following EU legislation and its adaptations - as far as applicable - : 98/24/EC, 92/85/EC, 94/33/EC, 91/689/EEC, 1999/13/EC, Commission Regulation (EU) 2015/830, Regulation (EC) No 1272/2008 and their amendments

15.2. Chemical safety assessment

For further information please look at the Chemical Safety Assessment and Exposure Scenarios prepared by your Supply Chain if available.

National Inventory	Status
Australia - AICS	Y
Canada - DSL	Y
Canada - NDSL	N (barium chromate; strontium nitrate; magnesium; aluminium; potassium perchlorate; potassium nitrate)
China - IECSC	Y
Europe - EINEC / ELINCS / NLP	Y
Japan - ENCS	N (magnesium; aluminium)
Korea - KECI	Y
New Zealand - NZIoC	Y
Philippines - PICCS	Y
USA - TSCA	Y
Legend:	*Y = All ingredients are on the inventory* *N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)*

SECTION 16 OTHER INFORMATION

Full text Risk and Hazard codes

H250	Catches fire spontaneously if exposed to air.
H260	In contact with water releases flammable gases which may ignite spontaneously.
H261	In contact with water releases flammable gases.
H271	May cause fire or explosion; strong oxidiser.
H272	May intensify fire; oxidiser.
H302	Harmful if swallowed.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H350i	May cause cancer by inhalation.
H410	Very toxic to aquatic life with long lasting effects.

Other information

Continued...

Ingredients with multiple cas numbers

Name	CAS No
strontium nitrate	10042-76-9, 13470-05-8
aluminium	7429-90-5, 91728-14-2

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at:
www.chemwatch.net

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

For detailed advice on Personal Protective Equipment, refer to the following EU CEN Standards:
EN 166 Personal eye-protection
EN 340 Protective clothing
EN 374 Protective gloves against chemicals and micro-organisms
EN 13832 Footwear protecting against chemicals
EN 133 Respiratory protective devices

end of SDS