

## RED HANDFLARE

WesCom Signal and Rescue Germany GmbH

Chemwatch: 63-8488

Version No: 3.1.1.1

Safety Data Sheet

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L.GHS.CAN.EN

### SECTION 1 IDENTIFICATION

#### Product Identifier

Product name	RED HANDFLARE
Synonyms	Comet Red Handflare, Art.-No. 9162800,9162801,9162803,9162806, 9162807, 9162850, Pains Wessex Red Handflare MK8, Art.-No.: 9529000, 9529007, 9529050, Aurora Red Handflare, Art.-No. 9162900, 9528500, 9528550, Oroquieta Handflare, Red, Chim2, Art.-No. 9162400
Proper shipping name	SIGNAL DEVICES, HAND
Other means of identification	Not Available

#### Recommended use of the chemical and restrictions on use


Relevant identified uses	Use according to manufacturer's directions. Sea distress signal. For use day or night Red Handflare is a short range distress signal used to pinpoint position. May be carried on ships bridge and six are required to be fitted in ships lifeboats and lifer afts. The handflare is suitable for use on other commercial and recreational boats.
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### SECTION 2 HAZARD(S) IDENTIFICATION

#### Classification of the substance or mixture

Classification	Explosive Division 1.4, Eye Irritation Category 2B
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#### Label elements

Hazard pictogram(s)	
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SIGNAL WORD	<b>WARNING</b>
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#### Hazard statement(s)

H204	Fire or projection hazard.
H320	Causes eye irritation.

#### Hazard(s) not otherwise specified

Not Applicable

#### Precautionary statement(s) Prevention

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P234	Keep only in original packaging.
P250	Do not subject to grinding/shock/sources of friction.

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

**Precautionary statement(s) Response**

P370+P372+P380+P373	In case of fire: Explosion risk. Evacuate area. DO NOT fight fire when fire reaches explosives.
P370+P380+P375	In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313	If eye irritation persists: Get medical advice/attention.

**Precautionary statement(s) Storage**

P401	Store in accordance with local regulations for explosives.
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**Precautionary statement(s) Disposal**

P501	Dispose of contents/container in accordance with local regulations.
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**SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS****Substances**

See section below for composition of Mixtures

**Mixtures**

CAS No	%[weight]	Name
		device contains
		lighter composition, delay composition and ignition composition
		polytechnic materials of;
7757-79-1	>60	<u>potassium nitrate</u>
7439-95-4	30-60	<u>magnesium</u>
10042-76-9	30-60	<u>strontium nitrate</u>
9002-86-2	10-30	<u>polyvinyl chloride</u>
10022-31-8	30-60	<u>barium nitrate</u>
7429-90-5	5-10	<u>aluminium</u>

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

**SECTION 4 FIRST-AID MEASURES****Description of first aid measures**

<b>Eye Contact</b>	<p>If this product comes in contact with eyes:</p> <ul style="list-style-type: none"> <li>▶ Wash out immediately with water.</li> <li>▶ If irritation continues, seek medical attention.</li> <li>▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li> </ul>
<b>Skin Contact</b>	<p>If skin contact occurs:</p> <ul style="list-style-type: none"> <li>▶ Immediately remove all contaminated clothing, including footwear.</li> <li>▶ Flush skin and hair with running water (and soap if available).</li> <li>▶ Seek medical attention in event of irritation.</li> </ul>
<b>Inhalation</b>	<ul style="list-style-type: none"> <li>▶ If fumes or combustion products are inhaled remove from contaminated area.</li> <li>▶ Lay patient down. Keep warm and rested.</li> <li>▶ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.</li> <li>▶ 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.</li> <li>▶ Transport to hospital, or doctor, without delay.</li> </ul>
<b>Ingestion</b>	<ul style="list-style-type: none"> <li>▶ Not considered a normal route of entry.</li> <li>▶ <b>If swallowed do NOT induce vomiting.</b></li> <li>▶ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.</li> <li>▶ Observe the patient carefully.</li> <li>▶ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.</li> <li>▶ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.</li> <li>▶ Seek medical advice.</li> </ul>

**Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.

**SECTION 5 FIRE-FIGHTING MEASURES****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. Fight all fires from a remote and explosion resistant site.

#### Special hazards arising from the substrate or mixture

<b>Fire Incompatibility</b>	Avoid contact with other chemicals.
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#### Special protective equipment and precautions for fire-fighters

<b>Fire Fighting</b>	<p><b>WARNING: EXPLOSIVE MATERIALS / ARTICLES PRESENT!</b></p> <ul style="list-style-type: none"> <li>▶ Evacuate all personnel and move upwind.</li> <li>▶ Prevent re-entry.</li> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▶ May detonate and burning material may be propelled from fire.</li> <li>▶ Wear full-body protective clothing with breathing apparatus.</li> <li>▶ Prevent, by any means available, spillage and fire effluent from entering drains and water courses.</li> <li>▶ Fight fire from safe distances and from protected locations.</li> <li>▶ Use flooding quantities of water.</li> <li>▶ <b>DO NOT</b> approach containers or packages suspected to be hot.</li> <li>▶ Cool any exposed containers not involved in fire from a protected location.</li> <li>▶ Equipment should be thoroughly decontaminated after use.</li> </ul> <p>Slight hazard when exposed to heat, flame and oxidisers.</p>
<b>Fire/Explosion Hazard</b>	<p>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.</p> <p>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).</p> <p>Combustible. Will burn if ignited.</p> <p>Combustion products include:</p> <ul style="list-style-type: none"> <li>, carbon monoxide (CO)</li> <li>, carbon dioxide (CO2)</li> <li>, other pyrolysis products typical of burning organic material.</li> </ul>

## SECTION 6 ACCIDENTAL RELEASE MEASURES

#### Personal precautions, protective equipment and emergency procedures

See section 8

#### Environmental precautions

See section 12

#### Methods and material for containment and cleaning up

<b>Minor Spills</b>	<p><b>WARNING! EXPLOSIVE.</b></p> <p>BLAST and/or PROJECTION and/or FIRE HAZARD</p> <ul style="list-style-type: none"> <li>▶ Clean up all spills immediately.</li> <li>▶ Avoid inhalation of the material and avoid contact with eyes and skin.</li> <li>▶ Wear impervious gloves and safety glasses.</li> <li>▶ Remove all ignition sources.</li> <li>▶ Use spark-free tools when handling.</li> <li>▶ Sweep into non-sparking containers or barrels and moisten with water.</li> <li>▶ Place spilled material in clean, sealable, labelled container for disposal.</li> <li>▶ Flush area with large amounts of water.</li> </ul>
<b>Major Spills</b>	<p><b>WARNING! EXPLOSIVE.</b></p> <ul style="list-style-type: none"> <li>▶ Clear area of personnel and move upwind.</li> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▶ May be violently or explosively reactive.</li> <li>▶ Wear full body protective clothing with breathing apparatus.</li> <li>▶ Consider evacuation (or protect in place).</li> <li>▶ In case of transport accident notify Police, Emergency Authority, Competent Explosives Authority or Manufacturer.</li> <li>▶ No smoking, naked lights, heat or ignition sources.</li> <li>▶ Increase ventilation.</li> <li>▶ Use extreme caution to prevent physical shock.</li> <li>▶ Use only spark-free shovels and explosion-proof equipment.</li> <li>▶ Collect recoverable material and segregate from spilled material.</li> <li>▶ Wash spill area with large quantities of water.</li> </ul>

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

## SECTION 7 HANDLING AND STORAGE

#### Precautions for safe handling

<b>Safe handling</b>	<ul style="list-style-type: none"> <li>▶ Handle gently. Use good occupational work practice.</li> <li>▶ Observe manufacturer's storage and handling recommendations contained within this SDS.</li> <li>▶ Avoid all personal contact, including inhalation.</li> <li>▶ Avoid smoking, naked lights, heat or ignition sources.</li> <li>▶ Explosives must not be struck with metal implements.</li> <li>▶ Avoid mechanical and thermal shock and friction.</li> <li>▶ Use in a well ventilated area.</li> <li>▶ Avoid contact with incompatible materials.</li> </ul>
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	<ul style="list-style-type: none"> <li>▶ <b>When handling DO NOT eat, drink or smoke.</b></li> <li>▶ Avoid physical damage to containers.</li> <li>▶ Always wash hands with soap and water after handling.</li> <li>▶ Work clothes should be laundered separately.</li> </ul>
<b>Other information</b>	<ul style="list-style-type: none"> <li>▶ Store cases in a well ventilated magazine licensed for the appropriate Class, Division and Compatibility Group.</li> <li>▶ Rotate stock to prevent ageing. Use on FIFO (first in-first out) basis.</li> <li>▶ Observe manufacturer's storage and handling recommendations contained within this SDS.</li> <li>▶ Store in a cool place in original containers.</li> <li>▶ Keep containers securely sealed.</li> <li>▶ No smoking, naked lights, heat or ignition sources.</li> <li>▶ Store in an isolated area away from other materials.</li> <li>▶ Keep storage area free of debris, waste and combustibles.</li> <li>▶ Protect containers against physical damage.</li> <li>▶ Check regularly for spills and leaks</li> </ul> <p><b>NOTE:</b> If explosives need to be destroyed contact the Competent Authority.</p> <ul style="list-style-type: none"> <li>▶ Store away from incompatible materials.</li> </ul> <p>Keep out of reach of children.</p>

**Conditions for safe storage, including any incompatibilities**

<b>Suitable container</b>	<ul style="list-style-type: none"> <li>▶ All packaging for Class 1 Goods shall be in accordance with the requirements of the relevant Code for the transport of Dangerous Goods.</li> <li>▶ 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</li> </ul>
<b>Storage incompatibility</b>	<ul style="list-style-type: none"> <li>▶ Avoid contact with other explosives, pyrotechnics, solvents, adhesives, paints, cleaners and unauthorized metals, plastics, packing equipment and materials.</li> <li>▶ Avoid contamination with acids, alkalis, reducing agents, amines and phosphorus.</li> <li>▶ Explosion hazard may follow contact with incompatible materials</li> </ul>

**SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION****Control parameters****OCCUPATIONAL EXPOSURE LIMITS (OEL)****INGREDIENT DATA**

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	magnesium	Particles (Insoluble or Poorly Soluble) Not Otherwise Specified: Inhalable fraction++	10 mg/m3	20 mg/m3	Not Available	Not Available
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	magnesium	Particles (Insoluble or Poorly Soluble) Not Otherwise Specified: Respirable fraction++	3 mg/m3	6 mg/m3	Not Available	Not Available
Canada - Ontario Occupational Exposure Limits	magnesium	Particles (Insoluble or Poorly Soluble) Not Otherwise Specified (PNOS)	10, 3 mg/m3	Not Available	Not Available	Not Available
Canada - Northwest Territories Occupational Exposure Limits (English)	magnesium	Particles (Insoluble or Poorly Soluble) Not Otherwise Specified: Respirable fraction	3 mg/m3	6 mg/m3	Not Available	Not Available
Canada - Northwest Territories Occupational Exposure Limits (English)	magnesium	Particles (Insoluble or Poorly Soluble) Not Otherwise Specified: Inhalable fraction	10 mg/m3	20 mg/m3	Not Available	Not Available
Canada - Nova Scotia Occupational Exposure Limits	polyvinyl chloride	Polyvinyl chloride [PVC]	1 mg/m3	Not Available	Not Available	TLV Basis: Pneumoconiosis; lower respiratory tract irritation; pulmonary function changes
Canada - Manitoba Occupational Exposure Limits	polyvinyl chloride	Not Available	1 mg/m3	Not Available	Not Available	Not Available
Canada - British Columbia Occupational Exposure Limits	polyvinyl chloride	Polyvinyl chloride (PVC), Respirable	1 mg/m3	Not Available	Not Available	Not Available
Canada - Prince Edward Island Occupational Exposure Limits	polyvinyl chloride	Polyvinyl chloride	1 mg/m3	Not Available	Not Available	TLV® Basis: Pneumoconiosis; LRT irr; pulm func changes
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	barium nitrate	Barium (soluble compounds) (as Ba)	0.5 mg/m3	0.5 mg/m3	Not Available	Not Available
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	barium nitrate	Barium and soluble compounds, (as Ba)	0.5 mg/m3	1.5 mg/m3	Not Available	Not Available
Canada - Northwest Territories Occupational Exposure Limits (English)	barium nitrate	Barium and soluble compounds, (as Ba)	0.5 mg/m3	1.5 mg/m3	Not Available	Not Available
Canada - Nova Scotia Occupational Exposure Limits	aluminium	Aluminum - Metal	1 mg/m3	Not Available	Not Available	TLV Basis: Pneumoconiosis; lower respiratory tract irritation; neurotoxicity
Canada - Alberta Occupational Exposure Limits	aluminium	Aluminum - Metal Dust	10 mg/m3	Not Available	Not Available	Not Available

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Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	aluminium	Aluminum and compounds (as Al); Pyro powders	5 mg/m3	10 mg/m3	Not Available	Not Available
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	aluminium	Aluminum (as Al): Welding fumes	5 mg/m3	Not Available	Not Available	Not Available
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	aluminium	Aluminum (as Al)	Not Available	Not Available	Not Available	Not Available
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	aluminium	Aluminum (as Al): Metal	10 mg/m3	Not Available	Not Available	Not Available
Canada - Northwest Territories Occupational Exposure Limits (English)	aluminium	Aluminum and compounds (as Al); Pyro powders	5 mg/m3	10 mg/m3	Not Available	Not Available


## EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
potassium nitrate	Potassium nitrate	9 mg/m3	100 mg/m3	600 mg/m3
magnesium	Magnesium	18 mg/m3	200 mg/m3	1,200 mg/m3
strontium nitrate	Strontium nitrate	5.7 mg/m3	62 mg/m3	370 mg/m3
polyvinyl chloride	Polyvinyl chloride	3 mg/m3	33 mg/m3	200 mg/m3
barium nitrate	Barium nitrate	2.9 mg/m3	350 mg/m3	2,100 mg/m3

Ingredient	Original IDLH	Revised IDLH
potassium nitrate	Not Available	Not Available
magnesium	Not Available	Not Available
strontium nitrate	Not Available	Not Available
polyvinyl chloride	Not Available	Not Available
barium nitrate	50 mg/m3	Not Available
aluminium	Not Available	Not Available

## MATERIAL DATA

## Exposure controls

<b>Appropriate engineering controls</b>	<p>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.</p> <p>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.</p> <p>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.</p>
<b>Personal protection</b>	
<b>Eye and face protection</b>	<ul style="list-style-type: none"> <li>▶ Safety glasses with side shields</li> <li>▶ Chemical goggles</li> </ul>
<b>Skin protection</b>	See Hand protection below
<b>Hands/feet protection</b>	<ul style="list-style-type: none"> <li>▶ Wear chemical protective gloves, e.g. PVC.</li> <li>▶ Wear safety footwear or safety gumboots, e.g. Rubber</li> </ul>
<b>Body protection</b>	See Other protection below
<b>Other protection</b>	<ul style="list-style-type: none"> <li>▶ Fire resistant/ heat resistant gloves where practical, otherwise</li> <li>▶ Heavy-duty chemically resistant gloves capable of providing short-term protection against spontaneous ignition.</li> <li>▶ Safety footwear</li> </ul> <p>Hard hat  Ear Protection.</p>
<b>Thermal hazards</b>	Not Available

## Respiratory protection

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

## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

## Information on basic physical and chemical properties

<b>Appearance</b>	Steel tube with orange/yellow/green outer casing pressed with black/grey polytechnical ingredients, contains ignitor and a grip.		
<b>Physical state</b>	Manufactured	<b>Relative density (Water = 1)</b>	Not Applicable

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<b>Odour</b>	Not Available	<b>Partition coefficient n-octanol / water</b>	Not Available
<b>Odour threshold</b>	Not Available	<b>Auto-ignition temperature (°C)</b>	Not Applicable
<b>pH (as supplied)</b>	Not Applicable	<b>Decomposition temperature</b>	>71
<b>Melting point / freezing point (°C)</b>	Not Applicable	<b>Viscosity (cSt)</b>	Not Applicable
<b>Initial boiling point and boiling range (°C)</b>	Not Applicable	<b>Molecular weight (g/mol)</b>	Not Applicable
<b>Flash point (°C)</b>	160	<b>Taste</b>	Not Available
<b>Evaporation rate</b>	Not Applicable	<b>Explosive properties</b>	Not Available
<b>Flammability</b>	Not Applicable	<b>Oxidising properties</b>	Not Available
<b>Upper Explosive Limit (%)</b>	Not Available	<b>Surface Tension (dyn/cm or mN/m)</b>	Not Applicable
<b>Lower Explosive Limit (%)</b>	Not Available	<b>Volatile Component (%vol)</b>	Not Applicable
<b>Vapour pressure (kPa)</b>	Not Applicable	<b>Gas group</b>	Not Available
<b>Solubility in water (g/L)</b>	Immiscible	<b>pH as a solution (1%)</b>	Not Applicable
<b>Vapour density (Air = 1)</b>	Not Applicable	<b>VOC g/L</b>	Not Available

## SECTION 10 STABILITY AND REACTIVITY

<b>Reactivity</b>	See section 7
<b>Chemical stability</b>	<ul style="list-style-type: none"> <li>▶ Presence of shock and friction</li> <li>▶ Presence of heat source and ignition source</li> <li>▶ Product is considered stable under normal handling conditions.</li> <li>▶ Stable under normal storage conditions.</li> <li>▶ Hazardous polymerization will not occur.</li> </ul> Avoid contact with other chemicals.
<b>Possibility of hazardous reactions</b>	See section 7
<b>Conditions to avoid</b>	See section 7
<b>Incompatible materials</b>	See section 7
<b>Hazardous decomposition products</b>	See section 5

## SECTION 11 TOXICOLOGICAL INFORMATION

## Information on toxicological effects

<b>Inhaled</b>	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
<b>Ingestion</b>	Not normally a hazard due to physical form of product.
<b>Skin Contact</b>	Not normally a hazard due to physical form of product. The vapour is discomforting
<b>Eye</b>	Not normally a hazard due to physical form of product. The vapour is discomforting
<b>Chronic</b>	<ul style="list-style-type: none"> <li>▶ Generally not applicable.</li> </ul>  Principal hazards are related to the explosive/ decomposition by products of the cartridge, if inadvertently discharged or launched without adequate control and safety measures in place. Normal exposure to the article by all route is considered to be practically non-harmful. Over exposure to fumes from firing is harmful.

<b>RED HANDFLARE</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	Not Available	Not Available
<b>potassium nitrate</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	dermal (rat) LD50: >5000 mg/kg <sup>[1]</sup> Oral (rat) LD50: >2000 mg/kg <sup>[1]</sup>	Not Available
<b>magnesium</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	Oral (rat) LD50: >2000 mg/kg <sup>[1]</sup>	Not Available
<b>strontium nitrate</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	Oral (rat) LD50: 1892 mg/kg <sup>[2]</sup>	Not Available
<b>polyvinyl chloride</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	Not Available	Not Available

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barium nitrate	<b>TOXICITY</b>	<b>IRRITATION</b>
	Oral (rat) LD50: 355 mg/kg <sup>[2]</sup>	Eye (rabbit): 100 mg/24h - moderate Skin (rabbit): 500 mg/24h - mild
aluminium	<b>TOXICITY</b>	<b>IRRITATION</b>
	Oral (rat) LD50: >2000 mg/kg <sup>[1]</sup>	Not Available
<b>Legend:</b>	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	

<b>POLYVINYL CHLORIDE</b>	The substance is classified by IARC as Group 3: <b>NOT</b> classifiable as to its carcinogenicity to humans. Evidence of carcinogenicity may be inadequate or limited in animal testing.
<b>BARIUM NITRATE</b>	The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.
<b>STRONTIUM NITRATE &amp; POLYVINYL CHLORIDE</b>	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.
<b>POLYVINYL CHLORIDE &amp; ALUMINIUM</b>	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 available to make classification  
 ☉ – Data Not Available to make classification

## SECTION 12 ECOLOGICAL INFORMATION

## Toxicity

	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
<b>RED HANDFLARE</b>	Not Available	Not Available	Not Available	Not Available	Not Available
<b>potassium nitrate</b>	LC50	96	Fish	22.5mg/L	4
<b>magnesium</b>	LC50	96	Fish	541mg/L	2
	EC50	72	Algae or other aquatic plants	>20mg/L	2
	NOEC	72	Algae or other aquatic plants	>25.5mg/L	2
<b>strontium nitrate</b>	LC50	96	Fish	>40.3mg/L	2
	EC50	72	Algae or other aquatic plants	>43.3mg/L	2
	NOEC	96	Fish	>=40.3mg/L	2
<b>polyvinyl chloride</b>	Not Available	Not Available	Not Available	Not Available	Not Available
<b>barium nitrate</b>	LC50	96	Fish	>3.5mg/L	2
	EC50	72	Algae or other aquatic plants	>1.92mg/L	2

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	NOEC	72	Algae or other aquatic plants	>=1.92mg/L	2
aluminium	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	0.078-0.108mg/L	2
	EC50	48	Crustacea	0.7364mg/L	2
	EC50	96	Algae or other aquatic plants	0.0054mg/L	2
	BCF	360	Algae or other aquatic plants	9mg/L	4
	NOEC	72	Algae or other aquatic plants	>=0.004mg/L	2

**Legend:** Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - 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

## Persistence and degradability

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

## Bioaccumulative potential

Ingredient	Bioaccumulation
potassium nitrate	LOW (LogKOW = 0.209)
polyvinyl chloride	LOW (LogKOW = 1.6233)

## Mobility in soil

Ingredient	Mobility
potassium nitrate	LOW (KOC = 14.3)
polyvinyl chloride	LOW (KOC = 23.74)


## SECTION 13 DISPOSAL CONSIDERATIONS

## Waste treatment methods

Product / Packaging disposal	<ul style="list-style-type: none"> <li>Explosives must not be thrown away, buried, discarded or placed with garbage.</li> <li>Explosives which are surplus, deteriorated or considered unsafe for transport, storage or use shall be destroyed and the statutory authorities shall be notified.</li> <li>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.</li> </ul> <p>Refer to local Waste Disposal Authority and supplier for suitable disposal procedure.</p>
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## SECTION 14 TRANSPORT INFORMATION

## Labels Required

	
Marine Pollutant	NO

## Land transport (TDG)

UN number	0191
UN proper shipping name	SIGNAL DEVICES, HAND
Transport hazard class(es)	Class : 1.4G Subrisk : Not Applicable
Packing group	Not Applicable
Environmental hazard	Not Applicable
Special precautions for user	Special provisions : Not Applicable Explosive Limit and Limited Quantity Index : 25 ERAP Index : Not Applicable

## Air transport (ICAO-IATA / DGR)

UN number	0191
UN proper shipping name	Signal devices, hand



## RED HANDFLARE

<b>Transport hazard class(es)</b>	ICAO/IATA Class	1.4G
	ICAO / IATA Subrisk	Not Applicable
	ERG Code	1L
<b>Packing group</b>	Not Applicable	
<b>Environmental hazard</b>	Not Applicable	
<b>Special precautions for user</b>	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)**

<b>UN number</b>	0191	
<b>UN proper shipping name</b>	SIGNAL DEVICES, HAND	
<b>Transport hazard class(es)</b>	IMDG Class	1.4G
	IMDG Subrisk	Not Applicable
<b>Packing group</b>	Not Applicable	
<b>Environmental hazard</b>	Not Applicable	
<b>Special precautions for user</b>	EMS Number	F-B , S-X
	Special provisions	Not Applicable
	Limited Quantities	0

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

Not Applicable

**SECTION 15 REGULATORY INFORMATION****Safety, health and environmental regulations / legislation specific for the substance or mixture**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

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

Canada Categorization decisions for all DSL substances

Canada Domestic Substances List (DSL)

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

Canada - Northwest Territories Occupational Exposure Limits (English)

Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits

Canada - Alberta Occupational Exposure Limits

Canada Categorization decisions for all DSL substances

Canada - Nova Scotia Occupational Exposure Limits

Canada Domestic Substances List (DSL)

Canada - Ontario Occupational Exposure Limits

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

Canada Categorization decisions for all DSL substances

Canada Domestic Substances List (DSL)

**POLYVINYL CHLORIDE(9002-86-2) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

Canada - British Columbia Occupational Exposure Limits

Canada Categorization decisions for all DSL substances

Canada - Nova Scotia Occupational Exposure Limits

Canada Domestic Substances List (DSL)

Canada - Prince Edward Island Occupational Exposure Limits

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

**BARIUM NITRATE(10022-31-8) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

Canada - Northwest Territories Occupational Exposure Limits (English)

Canada - Quebec Permissible Exposure Values for Airborne Contaminants (French)

Canada - Alberta Occupational Exposure Limits

Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits

Canada - British Columbia Occupational Exposure Limits

Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances

Canada - Nova Scotia Occupational Exposure Limits

Canada Categorization decisions for all DSL substances

Canada - Prince Edward Island Occupational Exposure Limits

Canada Domestic Substances List (DSL)

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

Canada - Northwest Territories Occupational Exposure Limits (English)

Canada - Quebec Permissible Exposure Values for Airborne Contaminants (French)

Canada - Alberta Occupational Exposure Limits

Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits

Canada - British Columbia Occupational Exposure Limits

Canada Categorization decisions for all DSL substances

Canada - Nova Scotia Occupational Exposure Limits

Canada Domestic Substances List (DSL)

Canada - Prince Edward Island Occupational Exposure Limits

<b>National Inventory</b>	<b>Status</b>
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## RED HANDFLARE

Australia - AICS	Y
Canada - DSL	Y
Canada - NDSL	N (strontium nitrate; barium nitrate; magnesium; polyvinyl chloride; aluminium; potassium nitrate)
China - IECSC	Y
Europe - EINEC / ELINCS / NLP	N (polyvinyl chloride)
Japan - ENCS	N (magnesium; aluminium)
Korea - KECI	Y
New Zealand - NZIoC	Y
Philippines - PICCS	Y
USA - TSCA	Y
<b>Legend:</b>	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

## Other information

## Ingredients with multiple cas numbers

Name	CAS No
strontium nitrate	10042-76-9, 13470-05-8
barium nitrate	10022-31-8, 34053-87-7
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.

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.

## Definitions and abbreviations

PC – TWA: Permissible Concentration-Time Weighted Average  
 PC – STEL: Permissible Concentration-Short Term Exposure Limit  
 IARC: International Agency for Research on Cancer  
 ACGIH: American Conference of Governmental Industrial Hygienists  
 STEL: Short Term Exposure Limit  
 TEEL: Temporary Emergency Exposure Limit,  
 IDLH: Immediately Dangerous to Life or Health Concentrations  
 OSF: Odour Safety Factor  
 NOAEL :No Observed Adverse Effect Level  
 LOAEL: Lowest Observed Adverse Effect Level  
 TLV: Threshold Limit Value  
 LOD: Limit Of Detection  
 OTV: Odour Threshold Value  
 BCF: BioConcentration Factors  
 BEI: Biological Exposure Index



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## CERTIFICATE OF TYPE APPROVAL ISSUED ON BEHALF OF TRANSPORT CANADA

This is to certify that

The product detailed below will be accepted for compliance with the applicable Lloyd's Register Rules and Regulations with regards to the International Convention for the Safety of Life at Sea, (SOLAS), 1974, as amended, for use on ships and offshore installations classed with Lloyd's Register, and for use on ships and offshore installations when authorised by Transport Canada to issue the relevant certificates, licences, permits etc.

**Manufacturer** WesCom Signal and Rescue Germany GmbH

**Type** Pyrotechnic Distress Signal - Red Hand Flare


**Description** Pains Wessex Red Handflare MK8 (Art.9529050)  
Comet Red Handflare, red (Art. 9162800)

**Specified Standard** LSA Code I/1.2 & III/3.2  
MSC.81(70),Part 1, as amended,  
TP 14475E

**The attached Design Appraisal Document forms part of this certificate.**

**This certificate remains valid unless cancelled or revoked, provided the conditions in the attached Design Appraisal Document are complied with and the equipment remains satisfactory in service.**

Date of issue 11 May 2018 Expiry date 22 June 2022

Certificate No. LRTC 0000154/M2 Signed 

Sheet No 1 of 3 Name L. Thomas  
Surveyor to Lloyd's Register EMEA  
A Member of the Lloyd's Register Group

**Note:**

**This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Lloyd's Register of any modification or changes to the equipment in order to obtain a valid Certificate.**

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as the 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.



Document number	LRTC 0000154/M2
Issue number	1

## DESIGN APPRAISAL DOCUMENT

Date 11 May 2018	Quote this reference on all future communications SOUTSO/SFS/TA/LT/WP31542146
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### ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. LRTC 0000154/M2

The undernoted documents have been appraised for compliance with the relevant requirements of International Conventions, and this Design Appraisal Document forms part of the Certificate.

This Design Appraisal Document forms part of the Certificate.

This certificate is an amendment of LRTC 0000154.

### EXAMINED DOCUMENTATION

Comet Red Handflare (Art. No. 9162800) datasheet, Issue: 4 02/14, dated 06/02/2014

Pains Wessex Red Handflare MK8 (Art. No. 9529000) datasheet, Issue: 6 02/14, dated 06/02/2014

SOLAS Handflare, red Art. 9162800/9529000 - Drawing no 0589-P1-0617, dated Feb.2015

Drawing No PW9529050 red handflare MK8 ENG Fr.indd 1, dated 14/06/2016

### TEST REPORTS

Evaluation and Test Report, Hand Flare, Red, Model No. 426.004 (Comet)/426.005 (Pains Wessex), dated 2016-10-17 - 2016-10-20, witnessed by BG-Verkehr and BAM

Annual Test Report BG-Verkehr and BAM - Chemring Defence, Design Certificate, Issue 1 Certificate Number 001/2011 9162800 5290, dated 02.02.2011 and 06.11.2011

### CONDITIONS OF CERTIFICATION

1. Hand flares are to be permanently marked with the month and year of manufacture, as well as its lot number, on its casing
2. The instructions for operating the hand flares are to be permanently marked on its casing or the hand flare is to carry a diagram clearly showing the manner of operating the flare as required by LSA code regulation 3.2.1.2
3. Each hand flare is to be marked with the information required by LSA Code, regulations 1.2.2.9
4. The expiration date not to exceed 48 months after the month of manufacture
5. If the specified standards are amended during the validity of this certificate, this product type is to be re-approved prior to it being supplied to vessels to which the amended standards apply
6. Production items are to be manufactured in accordance with a quality control system which shall be maintained to ensure that items are of the same standard as the approved prototype
7. Production tests are to be conducted in accordance with the applicable requirements of IMO Resolution MSC.81(70), Part 2, Paragraph 1.2. This does not preclude any further testing to additional requirements of the Marine Administration of the country where the ship is registered (i.e. the flag state) or those acting on behalf of that Administration



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### ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. LRTC 0000154/M2

- All instructions or markings that accompany life-saving appliances or are printed directly on the appliances must be in both English and French, as per Canadian procedures for approval of life-saving appliances and fire safety systems, equipment and products document no. TP 14612E (05/2011) paragraph 2.2.1.3. However independent signage can be accepted in lieu of the instructions or marking required in paragraph 2.2.1.3 if it is in both English and French, highly visible (size, colour, posting location), water and weather proof and posted at each muster station and where the appliance is stored
- Should a change of Place of Production from that stated below be required i.e. where the stages of manufacture/assembly/testing of this product take place, the new Place of Production is to be advised to us prior to the change taking place. This Certificate will require to be updated for Approval to be maintained

#### PLACE OF PRODUCTION

WesCom Signal and Rescue Germany GmbH

Germany



Lijo Thomas  
Senior Specialist  
Statutory Fire & Safety  
Southampton Technical Support Office, Marine & Offshore  
Lloyd's Register EMEA

#### Supplementary Type Approval Terms and Conditions

*This certificate and Design Appraisal Document relates to type approval, it certifies that the prototype(s) of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein, it does not mean or imply approval for any other use, nor approval of any products designed or manufactured otherwise than in strict conformity with the said prototype(s).*

**EU Declaration of Conformity**  
**9162800 / 9529000 – Rev. 04**

Registration No:  
**0589-P1-0617**

Manufacturer:  
**WesCom Signal & Rescue Germany GmbH**

This declaration of conformity is issued under the  
sole responsibility of the manufacturer:

**WesCom Signal & Rescue Germany GmbH**

Object of the declaration:  
**Handflare, red**  
**Art.-No. 9162806, 9529250, 9529260**  
**Art.-No. 9528500**

The object of the declaration described above is in  
conformity with the relevant Union harmonisation  
legislation:  
**Directive 2013/29/EU as amended**

References to the relevant harmonised standards  
used or references to the other technical  
specifications in relation to which conformity is  
declared  
**EN 16263-1 until EN 16263-5**  
**as amended**  
**EC Type Examination Certificate**  
**0589.PYR.2271/13**

The notified body, Bundesanstalt für Materialforschung  
Materialforschung und -prüfung 0589,  
performed besides the EC-Type Examination  
Certificate and issued the following certificates:

**Module D Certificate 2.3/1961/17**

**Notice No. D/BAM-4324/12 Storage Group**

**EU Declaration of Conformity**  
**9162800 / 9529000 – Rev. 04**

**Notice No. D/BAM-4319/12 Transportation**  
**Classification**

Additional information:  
**None**

Signed for an on behalf of:

Bremerhaven, 27.08.2019

WesCom Signal & Rescue Germany GmbH

  
Jan-Dirk Hellwege  
Managing Director

  
Regina Diekert  
Director Projects and Commercials