



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 1 (6)
Product denomination Ikaros Parachute Rocket Red			Document no. MSDS Red Parachute Rocket	Edition no. 1

1 Identification of the substance and of the company/undertaking

Product name	Ikaros Parachute Rocket Red
Article Nos.	340100, 340170, 340180
Product use	Distress signal
Chemical name	50 g of propellant composition, 6.5 g of black powder and 95 g of red illuminating composition
Document number	MSDS Red Parachute Rocket-01
Company/Manufacturer	Hansson PyroTech AB
Company address	P O Box 51, SE-711 22 Lindesberg, Sweden
E-mail, internet	per.alenfelt@hansson-pyrotech.com, www.hansson-pyrotech.com
Telephone number	+46 581 872 50
Telefax number	+46 581 872 51
Emergency telephone number	+46 19 32 43 25
Contact person	Ask for officer on duty at Nammo LIAB AB

2 Hazard identification

Main health hazard	Hazards refer to contents of rocket
Inhalation	May be mildly irritating to respiratory system
Skin contact	May be mildly irritating to skin. Contact with exhaust flame or burning flare can cause severe burns
Eye contact	Irritating to eyes
Ingestion	Harmful if swallowed
Fire and explosive hazards	Risk of explosion by shock, friction, fire or other sources of ignition.
Environmental hazards	Not classified as hazardous to the environment

3 Composition/Information on ingredients

Substances	CAS No.	EC No.	%	Gram	Symbol & Risk phrases
Strontium nitrate	10042-76-9	233-131-9	31.35	47.5	O, Xn: R8-22-36
Potassium perchlorate	7778-74-7	231-912-9	24.09	36.5	O, Xn: R9-22
Magnesium powder	7439-95-4	231-104-6	18.81	28.5	F: R15-17
Potassium nitrate	7757-79-1	231-818-8	3.17	4.8	O, N: R8-50
Linseed oil	8001-26-1	232-278-6	1.25	1.9	F: R17
Sulphur	7704-34-9	231-722-6	0.46	0.7	Xi: R36/37/38 52/53



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 2 (6)
Product denomination Ikaros Parachute Rocket Red			Document no. MSDS Red Parachute Rocket	Edition no. 1

4 First-aid measures

After inhalation	Move patient to fresh air.
After skin contact	If burned, wash with plenty of water for at least 20 min.
After eye contact	Keep eyelids apart. Wash with a lot of water. If needed visit physician.
After ingestion	Contact a physician.

5 Fire-fighting measures

Extinguishing media	
- Suitable extinguishing media	Use any fire extinguishing media at early stages of fire. Once the product has ignited it cannot be extinguished.
- Extinguishing media no to be used	No restriction.
Special exposure hazard arising	Product is explosive, evolving large quantities of gases and emitting large quantities of heat radiation if involved in fire.
Special protective equipment for fire-fighters	Normal equipment.

6 Accidental release measures

Personal precautions	Normal industrial hygiene, use protective gloves.
Environmental precautions	Do not let waste reach drains, sewers and bodies of water or leak into ground.
Methods for cleaning up	Collect using non-sparking tools, reuse if undamaged. Otherwise, keep for disposal by experts. See also Section 13.

7 Handling and storage

Handling	Avoid dropping the signal on hard surfaces.
Storage	Temperature should not exceed +75° C

8 Personal protection/Exposure controls

Engineering measures	No fire, sparks or welding close to the items. If cleaning up spillage, use tools which can not strike sparks.
Personal protective equipment	Normally none needed. But in case of spillage:
- Respiratory protection	In case of dust use particle filter mask such as EN143 Type P or EN149 Type FFP-S.
- Hand protection	Leather or similar protective gloves.
- Eye protection	Shatter-proof glasses or goggles.
- Skin protection	Normal industrial hygiene
Specific hygiene measures	No smoking.
Further information	Always check applicability with your supplier of protective equipment.



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 3 (6)
Product denomination Ikaros Parachute Rocket Red			Document no. MSDS Red Parachute Rocket	Edition no. 1

9 Physical and chemical properties

Appearance	Plastic tube with plastic lids
Colour	Dark red tube, red lids and orange label
Odour	None
Autoignition temperature (°C)	> 250
Explosion properties	Intrinsically explosive. Contains rocket motor and very hot and intense burning red flare.
Solubility in water	Insoluble
Other data	Contents have oxidising properties

10 Stability and reactivity

Conditions to avoid	High temperatures, above 75 °C
Materials to avoid	Not applicable.
Hazardous decomposition products	Product is explosive, evolving large quantities of gases and emitting large quantities of heat radiation if involved in fire.
Other information	-

11 Toxicological information

LD ₅₀ oral rat	No test data on product.
Hazardous ingredients	Potassium perchlorate, Strontium nitrate, and Sulphur.
Immediate health effects	Harmful if swallowed. Irritating to eyes. Minor ingredient irritating to skin and respiratory tract.
Delayed health effects	No deleterious effects known.
Acute toxicity	No deleterious effects known.
Chronic toxicity (long-term)	No deleterious effects known.
Carcinogenicity	No deleterious effects known.
Mutagenicity	No deleterious effects known.
Reproductive toxicity	No deleterious effects known.
Inhalation	Powders may be mildly irritating to the respiratory tract.
Skin	Powders may be mildly irritating to the skin.
Eye	Powders can be irritating to the eyes
Ingestion	May cause gastric irritation, nausea and vomiting.



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 4 (6)
Product denomination Ikaros Parachute Rocket Red			Document no. MSDS Red Parachute Rocket	Edition no. 1

12 Ecological information

Microtox (mg/l, LC ₅₀)/(mg/l, EC ₅₀)	No test data on product.
Mobility	None – product in form of solid article.
Persistence degradability	No test data on product.
Bioaccumulative potential	No test data on product.
Aquatic toxicity and other data	No test data on product.
Marine pollutant (IMDG Code)	No.

13 Disposal considerations

Disposal of waste materials	Waste should be kept in separate container. NO SMOKING! Destruction must only be done by experts. Used product may be disposed as ordinary plastic/metallic waste. DO NOT TRY TO DISMANTLE THE PRODUCT!
Contaminated packing	May burn rapidly.

14 Transport information

Transport Classification	In Fibre Board Box	In Steel Cage + Fibre Board Box	In Paper Tubes + Steel Cage + Fibre Board Box
Article Number	340100	340170	340180
- UN No.	0195	0404	0431
- Proper shipping name	Signals, distress, ship	Flares, aerial	Articles, pyrotechnic for technical purposes
- Transport Class	1.3G	1.4S	1.4G
- Packing Instruction	P135	P135	P135
Label	1	1.4	1.4
IMO-IMDG code			
- EMS code	F-B, S-X	F-B, S-X	F-B, S-X
EX number (DOT/USA)	N/A	N/A	EX2005020233
Swedish Rescue Service Agency Cert. No.	13/420/97	711/4817/2004	711/4817/2004
Comment	Not classified as Marine Pollutants		



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 5 (6)
Product denomination Ikaros Parachute Rocket Red			Document no. MSDS Red Parachute Rocket	Edition no. 1

15 Regulatory information

Health hazard product	Yes
Environmentally hazardous product	N/A
EC directive (67/548/EEC)	N/A
Symbols	E, Explosive, Xn, Harmful
Risk phrases	R 2; Risk of explosion by shock, friction, fire or other sources of ignition R 22; Harmful if swallowed R 36; Irritating to eyes
Safety phrases	S 2, Keep out of the reach of children S 15; Keep away from heat. S 16; Keep away from sources of ignition -No smoking. S 17; Keep away from combustible material S 35; This material and its container must be disposed of in a safe way. S 43; In case of fire, use water S 45; In case of accident or if you feel unwell, seek medical advise immediately. S 46; If swallowed, seek medical advice immediately and show this container or label



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 6 (6)
Product denomination Ikaros Parachute Rocket Red			Document no. MSDS Red Parachute Rocket	Edition no. 1

16 Other information

Sources of key data used	Annex 1 of the Dangerous Substances Directive (67/548/EEC as amended and adapted) Suppliers' Safety Data Sheets RTECS, EU ESIS web site	
Version number	1	
Date prepared	07.12.07	
Supersedes Version	Not applicable	
Nature of revision	First issue	
R-phrases used in document	R2	Risk of explosion by shock, friction, fire or other sources of ignition
	R8	Contact with combustible material may cause fire
	R9	Explosive when mixed with combustible material
	R15	Contact with water liberates extremely flammable gases
	R17	Spontaneously flammable in air
	R22	Harmful if swallowed
	R36	Irritating to eyes
	R36/37/38	Irritating to eyes, respiratory system and skin
	R50	Very toxic to aquatic organisms
	R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Based on EU Regulation 1907/2006

The current Material Safety Data Sheet was defined by Hansson PyroTech AB on the basis of knowledge of the product at the date of issue.

Therefore, data provided in this form can not be considered as exhaustive.

It is the duty of the operator

- to develop under his own responsibility, the safety dispositions regarding the operation of the product taking into account the data from this form
- to pass to all users and operators the appropriate safety data and warning regarding the risks mentioned in the documentation relative to the utilisation of the product
- to be cautious of possible risks faced when the product is used for other utilisation than those for which it has been designed



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 1 (6)
Product denomination Ikaros Hand-held Flare, Red			Document no. MSDS Red Handflare	Edition no. 1

1 Identification of the substance and of the company/undertaking

Product name	Ikaros Hand-held Flare, Red
Article Nos.	341500, 341570
Product use	Distress signal
Chemical name	2 g of ignition composition and 74 g of red illuminating composition
Document number	MSDS Red Handflare-01
Company/Manufacturer	Hansson PyroTech AB
Company address	P O Box 51, SE-711 22 Lindesberg, Sweden
E-mail, internet	per.alenfelt@hansson-pyrotech.com, www.hansson-pyrotech.com
Telephone number	+46 581 872 50
Telefax number	+46 581 872 51
Emergency telephone number	+46 19 32 43 25
Contact person	Ask for officer on duty at Nammo LIAB AB

2 Hazard identification

Main health hazard	Hazards refer to contents of flare
Inhalation	May be mildly irritating to respiratory system
Skin contact	May be mildly irritating to skin. Contact with exhaust flame or burning flare can cause severe burns.
Eye contact	Irritating to eyes
Ingestion	Harmful if swallowed
Fire and explosive hazards	Risk of explosion by shock, friction, fire or other sources of ignition.
Environmental hazards	Not classified as hazardous to the environment

3 Composition/Information on ingredients

Substances	CAS No.	EC No.	%	Gram	Symbol & Risk phrases
Strontium nitrate	10042-76-9	233-131-9	40.92	31.1	O, Xn: R8-22-36
Magnesium powder	7439-95-4	231-104-6	38.95	29.6	F: R15-17
Linseed oil	8001-26-1	232-278-6	3.82	2.9	F: R17
Potassium nitrate	7757-79-1	231-818-8	1.97	1.5	O, N: R8-50



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 2 (6)
Product denomination Ikaros Hand-held Flare, Red			Document no. MSDS Red Handflare	Edition no. 1

4 First-aid measures

After inhalation	Move patient to fresh air.
After skin contact	If burned, wash with plenty of water for at least 20 min.
After eye contact	Keep eyelids apart. Wash with a lot of water. If needed visit physician.
After ingestion	Contact a physician.

5 Fire-fighting measures

Extinguishing media	
- Suitable extinguishing media	Use any fire extinguishing media at early stages of fire. Once the product has ignited it cannot be extinguished.
- Extinguishing media no to be used	No restriction.
Special exposure hazard arising	Product is explosive, evolving large quantities of gases and emitting large quantities of heat radiation if involved in fire.
Special protective equipment for fire-fighters	Normal equipment.

6 Accidental release measures

Personal precautions	Normal industrial hygiene, use protective gloves.
Environmental precautions	Do not let waste reach drains, sewers and bodies of water or leak into ground.
Methods for cleaning up	Collect using non-sparking tools, reuse if undamaged, otherwise keep for disposal by experts. See also Section 13.

7 Handling and storage

Handling	Avoid dropping the signal on hard surfaces.
Storage	Temperature should not exceed +75° C

8 Personal protection/Exposure controls

Engineering measures	No fire, sparks or welding close to the items. If cleaning up spillage, use tools which can not strike sparks.
Personal protective equipment	Normally none needed. But in case of spillage:
- Respiratory protection	In case of dust use particle filter mask such as EN143 Type P or EN149 Type FFP-S.
- Hand protection	Leather or similar protective gloves.
- Eye protection	Shatter-proof glasses or goggles.
- Skin protection	Normal industrial hygiene
Specific hygiene measures	No smoking.
Further information	Always check applicability with your supplier of protective equipment.



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 3 (6)
Product denomination Ikaros Hand-held Flare, Red			Document no. MSDS Red Handflare	Edition no. 1

9 Physical and chemical properties

Appearance	Metal tube with plastic handle and plastic top lid
Colour	Black tube with orange label, red handle and black top lid
Odour	None
Autoignition temperature (°C)	> 250
Explosion properties	Intrinsically explosive. Very hot and intense burning red flare.
Solubility in water	Insoluble
Other data	Contents have oxidising properties

10 Stability and reactivity

Conditions to avoid	High temperatures, above 75 °C
Materials to avoid	Not applicable.
Hazardous decomposition products	Product is explosive, evolving large quantities of gases and emitting large quantities of heat radiation if involved in fire.
Other information	-

11 Toxicological information

LD ₅₀ oral rat	No test data on product.
Hazardous ingredients	Strontium nitrate
Immediate health effects	Harmful if swallowed. Irritating to eyes.
Delayed health effects	No deleterious effects known.
Acute toxicity	No deleterious effects known.
Chronic toxicity (long-term)	No deleterious effects known.
Carcinogenicity	No deleterious effects known.
Mutagenicity	No deleterious effects known.
Reproductive toxicity	No deleterious effects known.
Inhalation	Powders may be mildly irritating to the respiratory tract.
Skin	Powders may be mildly irritating to the skin.
Eye	Powders can be irritating to the eyes
Ingestion	May cause gastric irritation, nausea and vomiting.



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 4 (6)
Product denomination Ikaros Hand-held Flare, Red			Document no. MSDS Red Handflare	Edition no. 1

12 Ecological information

Microtox (mg/l, LC ₅₀)/(mg/l, EC ₅₀)	No test data on product.
Mobility	None – product in form of solid article.
Persistence degradability	No test data on product.
Bioaccumulative potential	No test data on product.
Aquatic toxicity and other data	No test data on product.
Marine pollutant (IMDG Code)	No.

13 Disposal considerations

Disposal of waste materials	Waste should be kept in separate container. NO SMOKING! Destruction must only be done by experts. Used product may be disposed as ordinary plastic/metallic waste. DO NOT TRY TO DISMANTLE THE PRODUCT!
Contaminated packing	May burn rapidly.

14 Transport information

Transport Classification	In Fibre Board Box	In Steel Cage + Fibre Board Box
Article Number	341500	341570
- UN No.	0191	0373
- Proper shipping name	Signal devices, hand	Signal devices, hand
- Transport Class	1.4G	1.4S
- Packing Instruction	P135	P135
Label	1.4	1.4
IMO-IMDG code		
- EMS code	F-B, S-X	F-B, S-X
EX number (DOT/USA)	EX2006030023	N/A
Swedish Rescue Service Agency Cert. No.	1312-2349-2006	1312-2349-2006
Comment	Not classified as Marine Pollutants	



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 5 (6)
Product denomination Ikaros Hand-held Flare, Red			Document no. MSDS Red Handflare	Edition no. 1

15 Regulatory information

Health hazard product	Yes
Environmentally hazardous product	N/A
EC directive (67/548/EEC)	N/A
Symbols	E, Explosive, Xn, Harmful
Risk phrases	R 2; Risk of explosion by shock, friction, fire or other sources of ignition R 22; Harmful if swallowed R 36; Irritating to eyes
Safety phrases	S 2, Keep out of the reach of children S 15; Keep away from heat. S 16; Keep away from sources of ignition -No smoking. S 17; Keep away from combustible material S 35; This material and its container must be disposed of in a safe way. S 43; In case of fire, use water S 45; In case of accident or if you feel unwell, seek medical advise immediately. S 46; If swallowed, seek medical advice immediately and show this container or label



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 6 (6)
Product denomination Ikaros Hand-held Flare, Red			Document no. MSDS Red Handflare	Edition no. 1

16 Other information

Sources of key data used Annex 1 of the Dangerous Substances Directive (67/548/EEC as amended and adapted)
Suppliers' Safety Data Sheets
RTECS, EU ESIS web site

Version number 1
Date prepared 12.12.07
Supersedes Version Not applicable
Nature of revision First issue

R-phrases used in document R2 Risk of explosion by shock, friction, fire or other sources of ignition
R8 Contact with combustible material may cause fire
R15 Contact with water liberates extremely flammable gases
R17 Spontaneously flammable in air
R22 Harmful if swallowed
R36 Irritating to eyes
R50 Very toxic to aquatic organisms

Based on EU Regulation 1907/2006

The current Material Safety Data Sheet was defined by Hansson PyroTech AB on the basis of knowledge of the product at the date of issue.

Therefore, data provided in this form can not be considered as exhaustive.

It is the duty of the operator

- to develop under his own responsibility, the safety dispositions regarding the operation of the product taking into account the data from this form
- to pass to all users and operators the appropriate safety data and warning regarding the risks mentioned in the documentation relative to the utilisation of the product
- to be cautious of possible risks faced when the product is used for other utilisation than those for which it has been designed



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 1 (6)
Product denomination Ikaros Hand-held Flare, White			Document no. MSDS White Handflare	Edition no. 1

1 Identification of the substance and of the company/undertaking

Product name	Ikaros Hand-held Flare, White
Article Nos.	341600, 341670
Product use	A warn-off signal for use by vessels and pleasure craft.
Chemical name	2 g of ignition composition and 74 g of white illuminating composition
Document number	MSDS White Handflare-01
Company/Manufacturer	Hansson PyroTech AB
Company address	P O Box 51, SE-711 22 Lindesberg, Sweden
E-mail, internet	per.alenfelt@hansson-pyrotech.com, www.hansson-pyrotech.com
Telephone number	+46 581 872 50
Telefax number	+46 581 872 51
Emergency telephone number	+46 19 32 43 25
Contact person	Ask for officer on duty at Nammo LIAB AB

2 Hazard identification

Main health hazard	Hazards refer to contents of flare
Inhalation	May be mildly irritating to respiratory system
Skin contact	May be mildly irritating to skin. Contact with exhaust flame or burning flare can cause severe burns.
Eye contact	Irritating to eyes
Ingestion	May give rise to upset stomach, sickness, vomiting
Fire and explosive hazards	Risk of explosion by shock, friction, fire or other sources of ignition.
Environmental hazards	Not classified as hazardous to the environment

3 Composition/Information on ingredients

Substances	CAS No.	EC No.	%	Gram	Symbol & Risk phrases
Magnesium powder	7439-95-4	231-104-6	36.48	27.8	F: R15-17
Sodium nitrate	7631-99-4	231-554-3	22.97	17.5	O, Xn: R8-22-36
Potassium nitrate	7757-79-1	231-818-8	21.13	16.1	O, N: R8-50
Linseed oil	8001-26-1	232-278-6	3.81	2.9	F: R17



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 2 (6)
Product denomination Ikaros Hand-held Flare, White			Document no. MSDS White Handflare	Edition no. 1

4 First-aid measures

After inhalation	Move patient to fresh air.
After skin contact	If burned, wash with plenty of water for at least 20 min.
After eye contact	Keep eyelids apart. Wash with a lot of water. If needed visit physician.
After ingestion	Contact a physician.

5 Fire-fighting measures

Extinguishing media	
- Suitable extinguishing media	Use any fire extinguishing media at early stages of fire. Once the product has ignited it cannot be extinguished.
- Extinguishing media no to be used	No restriction.
Special exposure hazard arising	Product is explosive, evolving large quantities of gases and emitting large quantities of heat radiation if involved in fire.
Special protective equipment for fire-fighters	Normal equipment.

6 Accidental release measures

Personal precautions	Normal industrial hygiene, use protective gloves.
Environmental precautions	Do not let waste reach drains, sewers and bodies of water or leak into ground.
Methods for cleaning up	Collect using non-sparking tools, reuse if undamaged. Otherwise, keep for disposal by experts. See also Section 13.

7 Handling and storage

Handling	Avoid dropping the signal on hard surfaces.
Storage	Temperature should not exceed +75° C

8 Personal protection/Exposure controls

Engineering measures	No fire, sparks or welding close to the items. If cleaning up spillage, use tools which can not strike sparks.
Personal protective equipment	Normally none needed. But in case of spillage:
- Respiratory protection	In case of dust use particle filter mask such as EN143 Type P or EN149 Type FFP-S.
- Hand protection	Leather or similar protective gloves.
- Eye protection	Shatter-proof glasses or goggles.
- Skin protection	Normal industrial hygiene
Specific hygiene measures	No smoking.
Further information	Always check applicability with your supplier of protective equipment.



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 3 (6)
Product denomination Ikaros Hand-held Flare, White			Document no. MSDS White Handflare	Edition no. 1

9 Physical and chemical properties

Appearance	Metal tube with plastic handle and plastic top lid
Colour	Black tube with orange label, white handle and black top lid
Odour	None
Autoignition temperature (°C)	> 250
Explosion properties	Intrinsically explosive. Very hot and intense burning white flare.
Solubility in water	Insoluble
Other data	Contents have oxidising properties

10 Stability and reactivity

Conditions to avoid	High temperatures, above 75 °C
Materials to avoid	Not applicable.
Hazardous decomposition products	Product is explosive, evolving large quantities of gases and emitting large quantities of heat radiation if involved in fire.
Other information	-

11 Toxicological information

LD ₅₀ oral rat	No test data on product.
Hazardous ingredients	Sodium nitrate
Immediate health effects	Irritating to eyes.
Delayed health effects	No deleterious effects known.
Acute toxicity	No deleterious effects known.
Chronic toxicity (long-term)	No deleterious effects known.
Carcinogenicity	No deleterious effects known.
Mutagenicity	No deleterious effects known.
Reproductive toxicity	No deleterious effects known.
Inhalation	Powders may be mildly irritating to the respiratory tract.
Skin	Powders may be mildly irritating to the skin.
Eye	Powders can be irritating to the eyes
Ingestion	May cause gastric irritation, nausea and vomiting.



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 4 (6)
Product denomination Ikaros Hand-held Flare, White			Document no. MSDS White Handflare	Edition no. 1

12 Ecological information

Microtox (mg/l, LC ₅₀)/(mg/l, EC ₅₀)	No test data on product.
Mobility	None – product in form of solid article.
Persistence degradability	No test data on product.
Bioaccumulative potential	No test data on product.
Aquatic toxicity and other data	No test data on product.
Marine pollutant (IMDG Code)	No.

13 Disposal considerations

Disposal of waste materials	Waste should be kept in separate container. NO SMOKING! Destruction must only be done by experts. Used product may be disposed as ordinary plastic/metallic waste. DO NOT TRY TO DISMANTLE THE PRODUCT!
Contaminated packing	May burn rapidly.

14 Transport information

Transport Classification	In Fibre Board Box	In Steel Cage + Fibre Board Box
Article Number	341600	341670
- UN No.	0191	0373
- Proper shipping name	Signal devices, hand	Signal devices, hand
- Transport Class	1.4G	1.4S
- Packing Instruction	P135	P135
Label	1.4	1.4
IMO-IMDG code		
- EMS code	F-B, S-X	F-B, S-X
EX number (DOT/USA)	EX2006030025	N/A
Swedish Rescue Service Agency Cert. No.	1312-2349-2006	1312-2349-2006
Comment	Not classified as Marine Pollutants	



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 5 (6)
Product denomination Ikaros Hand-held Flare, White			Document no. MSDS White Handflare	Edition no. 1

15 Regulatory information

Health hazard product	Yes
Environmentally hazardous product	N/A
EC directive (67/548/EEC)	N/A
Symbols	E, Explosive, Xi, Irritating
Risk phrases	R 2; Risk of explosion by shock, friction, fire or other sources of ignition R 36; Irritating to eyes
Safety phrases	S 2, Keep out of the reach of children S 15; Keep away from heat. S 16; Keep away from sources of ignition -No smoking. S 17; Keep away from combustible material S 35; This material and its container must be disposed of in a safe way. S 43; In case of fire, use water S 45; In case of accident or if you feel unwell, seek medical advise immediately. S 46; If swallowed, seek medical advice immediately and show this container or label



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 6 (6)
Product denomination Ikaros Hand-held Flare, White			Document no. MSDS White Handflare	Edition no. 1

16 Other information

Sources of key data used Annex 1 of the Dangerous Substances Directive (67/548/EEC as amended and adapted)
Suppliers' Safety Data Sheets
RTECS, EU ESIS web site

Version number 1
Date prepared 12.12.07
Supersedes Version Not applicable
Nature of revision First issue

R-phrases used in document R2 Risk of explosion by shock, friction, fire or other sources of ignition
R8 Contact with combustible material may cause fire
R15 Contact with water liberates extremely flammable gases
R17 Spontaneously flammable in air
R22 Harmful if swallowed
R36 Irritating to eyes
R50 Very toxic to aquatic organisms

Based on EU Regulation 1907/2006

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Therefore, data provided in this form can not be considered as exhaustive.

It is the duty of the operator

- to develop under his own responsibility, the safety dispositions regarding the operation of the product taking into account the data from this form
- to pass to all users and operators the appropriate safety data and warning regarding the risks mentioned in the documentation relative to the utilisation of the product
- to be cautious of possible risks faced when the product is used for other utilisation than those for which it has been designed



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 1 (6)
Product denomination Ikaros Buoyant Smoke Orange			Document no. MSDS Buoyant Smoke-04	Edition no. 4

1 Identification of the substance and of the company/undertaking

Product name	Ikaros Buoyant Smoke Orange
Article Nos.	342130, 342170
Product use	Distress signal
Chemical name	10 g of ignition composition and 260 g of orange smoke composition
Document number	MSDS Buoyant Smoke-04
Company/Manufacturer	Hansson PyroTech AB
Company address	P O Box 51, SE-711 22 Lindesberg, Sweden
E-mail, internet	per.alenfelt@hansson-pyrotech.com, www.hansson-pyrotech.com
Telephone number	+46 581 872 50
Telefax number	+46 581 872 51
Emergency telephone number	+46 19 32 43 25
Contact person	Ask for officer on duty at Nammo LIAB AB

2 Hazard identification

Main health hazard	Hazards refer to contents of smoke canister
Inhalation	Harmful by inhalation
Skin contact	May be mildly irritating to skin. Contact with exhaust gasses can cause severe burns
Eye contact	May be mildly irritating to eyes
Ingestion	Harmful if swallowed
Fire and explosive hazards	Risk of explosion by shock, friction, fire or other sources of ignition.
Environmental hazards	Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment

3 Composition/Information on ingredients

Substances	CAS No.	EC No.	%	Gram	Symbol & Risk phrases
Potassium Chlorate	3811-04-9	223-289-7	30.37	82.0	O, Xn, N: R9-20/22-51/53



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 2 (6)
Product denomination Ikaros Buoyant Smoke Orange			Document no. MSDS Buoyant Smoke-04	Edition no. 4

4 First-aid measures

After inhalation	Move patient to fresh air.
After skin contact	If burned, wash with plenty of water for at least 20 min.
After eye contact	Keep eyelids apart. Wash with a lot of water. If needed visit physician.
After ingestion	Contact a physician.

5 Fire-fighting measures

Extinguishing media	
- Suitable extinguishing media	Use any fire extinguishing media at early stages of fire. Once the product has ignited it cannot be extinguished.
- Extinguishing media no to be used	No restriction.
Special exposure hazard arising	Product is explosive, evolving large quantities of gases and orange coloured smoke if involved in fire.
Special protective equipment for fire-fighters	Normal equipment.

6 Accidental release measures

Personal precautions	Normal industrial hygiene, use protective gloves.
Environmental precautions	Do not let waste reach drains, sewers and bodies of water or leak into ground.
Methods for cleaning up	Collect using non-sparking tools, reuse if undamaged, otherwise keep for disposal by experts. See also Section 13.

7 Handling and storage

Handling	Avoid dropping the signal on hard surfaces.
Storage	Temperature should not exceed +75° C

8 Personal protection/Exposure controls

Engineering measures	No fire, sparks or welding close to the items. If cleaning up spillage, use tools which can not strike sparks.
Personal protective equipment	Normally none needed. But in case of spillage:
- Respiratory protection	In case of dust use particle filter mask such as EN143 Type P or EN149 Type FFP-S.
- Hand protection	Leather or similar protective gloves.
- Eye protection	Shatter-proof glasses or goggles.
- Skin protection	Normal industrial hygiene
Specific hygiene measures	No smoking.
Further information	Always check applicability with your supplier of protective equipment.



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 3 (6)
Product denomination Ikaros Buoyant Smoke Orange			Document no. MSDS Buoyant Smoke-04	Edition no. 4

9 Physical and chemical properties

Appearance	Metal can with plastic lid
Colour	Yellow can with orange label and red plastic lid
Odour	None
Autoignition temperature (°C)	> 190
Explosion properties	Intrinsically explosive. Emits orange smoke.
Solubility in water	Insoluble
Other data	Contents have oxidising properties

10 Stability and reactivity

Conditions to avoid	High temperatures, above 75 °C
Materials to avoid	Not applicable.
Hazardous decomposition products	Product is explosive, evolving large quantities of gases and orange coloured smoke if involved in fire.
Other information	-

11 Toxicological information

LD ₅₀ oral rat	No test data on product.
Hazardous ingredients	Potassium chlorate
Immediate health effects	Harmful by inhalation and if swallowed
Delayed health effects	No deleterious effects known.
Acute toxicity	Powders are classified as "Harmful by inhalation and if swallowed" due to potassium chlorate content
Chronic toxicity (long-term)	No deleterious effects known.
Carcinogenicity	No deleterious effects known.
Mutagenicity	No deleterious effects known.
Reproductive toxicity	No deleterious effects known.
Inhalation	Powders may be mildly irritating to the respiratory tract.
Skin	Powders may be mildly irritating to the skin.
Eye	Powders may be mildly irritating to the eyes
Ingestion	May cause gastric irritation, nausea and vomiting. Ingestion of large amounts may lead to chemical burns in stomach and intestines along with possible damage to blood cells, liver and kidney.



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 4 (6)
Product denomination Ikaros Buoyant Smoke Orange			Document no. MSDS Buoyant Smoke-04	Edition no. 4

12 Ecological information

Microtox (mg/l, LC ₅₀)/(mg/l, EC ₅₀)	No test data on product.
Mobility	None – product in form of solid article.
Persistence degradability	No test data on product.
Bioaccumulative potential	No test data on product.
Aquatic toxicity and other data	No test data on product. Classified as “Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment” due to potassium chlorate content
Marine pollutant (IMDG Code)	No.

13 Disposal considerations

Disposal of waste materials	Waste should be kept in separate container. NO SMOKING! Destruction must only be done by experts. Used product may be disposed as ordinary plastic/metallic waste. DO NOT TRY TO DISMANTLE THE PRODUCT!
Contaminated packing	May burn rapidly.

14 Transport information

Transport Classification	In Fibre Board Box	In Steel Cage
Article Number	342130	342170
- UN No.	0197	0349
- Proper shipping name	Signals, smoke	Articles, Explosive, NOS
- Transport Class	1.4G	1.4S
- Packing Instruction	P135	P101
Label	1.4	1.4
IMO-IMDG code		
- EMS code	F-B, S-X	F-B, S-X
EX number (DOT/USA)	EX-9904090	N/A
Swedish Rescue Service Agency Cert. No.	13/458/99	1312-5962-2005
Comment	Not classified as Marine Pollutants	



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 5 (6)
Product denomination Ikaros Buoyant Smoke Orange			Document no. MSDS Buoyant Smoke-04	Edition no. 4

15 Regulatory information

Health hazard product	Yes
Environmentally hazardous product	N/A
EC directive (67/548/EEC)	N/A
Symbols	E, Explosive, Xn, Harmful, N, Dangerous for the environment
Risk phrases	R 2; Risk of explosion by shock, friction, fire or other sources of ignition R 20/22; Harmful by inhalation and if swallowed R 51/53; Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment
Safety phrases	S 2, Keep out of the reach of children S 15; Keep away from heat. S 16; Keep away from sources of ignition -No smoking. S 17; Keep away from combustible material S 35; This material and its container must be disposed of in a safe way. S 43; In case of fire, use water S 45; In case of accident or if you feel unwell, seek medical advise immediately. S 46; If swallowed, seek medical advice immediately and show this container or label



Material Safety Data Sheet MSDS

Issued by Per Alenfelt	Department R&D	Telephone +46 581 872	Date 18 December 2007	Page no 6 (6)
Product denomination Ikaros Buoyant Smoke Orange			Document no. MSDS Buoyant Smoke-04	Edition no. 4

16 Other information

Sources of key data used Annex 1 of the Dangerous Substances Directive (67/548/EEC as amended and adapted)
Suppliers' Safety Data Sheets
RTECS, EU ESIS web site

Version number 4
Date prepared 13.12.07
Supersedes Version Not applicable
Nature of revision Fourth issue

R-phrases used in document R2 Risk of explosion by shock, friction, fire or other sources of ignition
 R9 Explosive when mixed with combustible material
 R20/22 Harmful by inhalation and if swallowed
 R51/53 Toxic to aquatic organisms. May cause long-term adverse effects in the
 aquatic environment

Based on EU Regulation 1907/2006

The current Material Safety Data Sheet was defined by Hansson PyroTech AB on the basis of knowledge of the product at the date of issue.

Therefore, data provided in this form can not be considered as exhaustive.

It is the duty of the operator

- to develop under his own responsibility, the safety dispositions regarding the operation of the product taking into account the data from this form
- to pass to all users and operators the appropriate safety data and warning regarding the risks mentioned in the documentation relative to the utilisation of the product
- to be cautious of possible risks faced when the product is used for other utilisation than those for which it has been designed