SAFETY DATA SHEET

Ikaros Buoyant Smoke Orange

The safety data sheet is in accordance with Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

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

Date issued	01.03.2017
Revision date	24.11.2017

1.1. Product identifier

Product name	Ikaros Buoyant Smoke Orange
Article no.	342130 (order number 342130, 342170)
Product definition	10 g ignition composition and 260 g orange smoke composition

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

Use of the substance / preparation	Buoyant smoke.

1.3. Details of the supplier of the safety data sheet

Company name	Nammo Sweden AB

SECTION 2: Hazards identification

2.1. Classification of substance or mixture

Classification according to Regulation (EC) No 1272/ 2008 [CLP / GHS]	Expl. 1.4; H204 Skin Irrit. 2; H315 Skin Sens. 1; H317 Eye Irrit. 2; H319 STOT SE 3; H335 Aquatic Chronic 2; H411
Substance / mixture hazardous properties	Main health hazard: Pyrotechnic product. Inhalation: Respiratory irritant. Contact with skin: Irritating to the skin. May cause an allergic skin reaction. Contact with burning product can cause severe burns. Contact with eyes: Causes serious eye irritation. Ingestion: May cause nausea and vomiting. Fire and explosion hazard: Risk of explosion if the product is exposed to electric shock, friction, fire or other sources of ignition. Environmental hazard: Toxic to aquatic life with long-lasting effects.

2.2. Label elements

Hazard pictograms (CLP)

Composition on the label	Solvent Orange 86 = 33,6 %, Potassium chlorate = 27,5 %
Signal word	Warning
Hazard statements	H204 Fire or projection hazard.
Precautionary statements	P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P234 Keep only in original container. P240 Ground / bond container and receiving equipment. P250 Do not subject to grinding / shock / / friction. P280 Wear protective gloves / protective clothing / eye protection / face protection. 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.
Special supplemental label information mixtures	Contains: Potassium Chlorate and 1,4-dihydroxyanthraquinone

2.3. Other hazards

SECTION 3: Composition / information on ingredients

3.2. Mixtures

Substance	Identification	Classification	Contents
Solvent Orange 86	CAS No.: 81-64-1 EC No.: 201-368-7 REACH Reg. No.: 01-2119971261-41	Skin Sens. 1; H317 Eye Irrit. 2; H319 Skin Irrit. 2; H315 STOT SE3; H335	= 33,6 %

Potassium chlorate	CAS No.: 3811-04-9 EC No.: 223-289-7 Index No.: 017-004-00-3 REACH Reg. No.: 01-2119494917-18	Ox. Sol. 1; H271 Acute tox. 4; H332 Acute tox. 4; H302 Aquatic Chronic 2; H411	= 27,5 %

SECTION 4: First aid measures

4.1. Description of first aid measures

General	Contaminated work clothing should be washed before using again. Special treatment is urgent (see label on this label).
Inhalation	Move the person to fresh air and keep at rest in a position comfortable for breathing. Consult a doctor if symptoms persist.
Skin contact	If burned, rinse with plenty of water for at least 20 minutes. In case of any other contact with skin, wash with soap and water for several minutes.
Eye contact	Hold eyelids open and rinse with soft, lukewarm water or eye wash liquid for at least five minutes. Remove contact lenses. Consult a doctor if symptoms persist.
Ingestion	Get medical advice/attention.

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

Acute symptoms and effects	Contact with burning product can cause severe burns. May cause nausea and vomiting. Causes serious eye irritation. Irritating to the skin. May cause an allergic skin reaction. Irritating to the respiratory system.

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

Medical treatment	None other than the one listed above.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Use foam, dry chemical, CO2 or mist early in the fire. Once the product is lit up, it is very difficult to extinguish.
Improper extinguishing media	No restrictions.

5.2. Special hazards arising from the substance or mixture

Fire and explosion hazards	The product is an explosion hazard, as it generates large quantities of gas and heat, once lit.

5.3. Advice for firefighters

Personal protective equipment	Wear full protective clothing for chemical fires, including breathing apparatus. If possible, remove undamaged containers from the danger area. Remove all ignition sources.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal protection measures	Ensure good ventilation. Use appropriate protective equipment, see section 8. Avoid skin and eye contact. Remove all ignition sources.

6.2. Environmental precautions

Environmental precautionary measures	Prevent discharge into sewers or the local environment/streams. Contact emergency services upon greater emissions.

6.3. Methods and material for containment and cleaning up

Cleaning method	Collect with tools that do not give rise to ignition. The waste is placed in closed containers and disposed of as hazardous waste in accordance with section 13.

6.4. Reference to other sections

Other instructions	See sections 8 and 13 for information about protection and waste management.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Handling	Avoid sparks, shock and friction. Use personal protective equipment, see section 8. Avoid skin and eye contact. Protect the product from sources of ignition.

7.2. Conditions for safe storage, including any incompatibilities

Storage	Store cool and dry in a well-ventilated place. Keep away from sources of ignition - no smoking. Keep out of reach of children.

7.3. Specific end use(s)

Specific use(s)	Buoyant smoke.

SECTION 8: Exposure controls / personal protection

8.1. Control parameters

Other Information about threshold limit values	No exposure limits.
Control parameters comments	PNEC/DNEL are not available.

8.2. Exposure controls

Precautionary measures to prevent exposure

Appropriate engineering controls	Keep away from fire, sparks and other ignition sources. When cleaning, use equipment that does not cause sparks.

Eye / face protection

Eye protection	Shatterproof goggles or visors.

Hand protection

Hand protection	Leather gloves or the like.

Skin protection

Skin protection (except hands)	Normal industrial hygiene.

Respiratory protection

Respiratory protection	Upon dust formation, use a particle filter EN143 Type P or EN149 type FFP-S.
Recommended type of equipment	Particle filter EN143 Type P or EN149 type FFP-S.

Hygiene / environmental

Personal protection equipment, comments	Contact your protective equipment supplier for more information.
Specific hygiene measures	No smoking.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Yellow metal can with orange label and red cap.
Colour	See under "Physical state".
Odour	None.
pH	Status: In delivery state Comments: No information available. Status: In aqueous solution Comments: No information available.
Melting point / melting range	Comments: No information available.
Boiling point / boiling range	Comments: No information available.
Flash point	Comments: No information available.
Evaporation rate	Comments: No information available.
Flammability (solid, gas)	The contents are flammable.
Explosion limit	Comments: No information available.
Vapour pressure	Comments: No information available.
Vapour density	Comments: No information available.
Specific gravity	Comments: No information available.
Solubility in water	Insoluble.
Spontaneous combustability	Value: > 200 °C Method: Ignition temperature
Viscosity	Comments: No information available.

Explosive properties	The product is explosive. Emits orange smoke.
Oxidising properties	Content is oxidizing.

9.2. Other information

Other physical and chemical properties

Comments	These are typical values and do not constitute an exact product specification.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	Stable product under recommended storage and handling conditions.

10.2. Chemical stability

Stability	Stable product under recommended storage and handling conditions.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	Stable product under recommended storage and handling conditions.

10.4. Conditions to avoid

Conditions to avoid	Avoids temperatures above 75°C.

10.5. Incompatible materials

Materials to avoid	Not applicable.

10.6. Hazardous decomposition products

Hazardous decomposition products	The product is explosive, generating large quantities of gas and heat once ignited. Also emits large quantities of orange smoke.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Substance	Solvent Orange 86
Acute toxicity	**Type of toxicity:** Acute **Effect tested:** LD50 **Route of exposure:** Oral **Value:** > 5000 mg/kg **Animal test species:** Rat **Comments:** Non-acute toxic.
Substance	Potassium chlorate
Acute toxicity	**Type of toxicity:** Acute **Effect tested:** LD50 **Route of exposure:** Oral

	Value: = 1870 kg/mg **Animal test species:** Rat **Comments:** Acute toxic when ingested. **Type of toxicity:** Acute **Effect tested:** LD50 **Route of exposure:** Dermal **Value:** > 2000 mg/kg **Animal test species:** Rabbit **Comments:** Non-acute toxic.
Other toxicological data	No data available for the product itself. The data below is based on individual ingredients of the product.

Other information regarding health hazards

General	Hazardous ingredients: potassium chlorate and 1,4-dihydroxyanthraquinone . Calculated ATE by ingestion: 6805 mg/kg (not classified as harmful) Calculated ATE by inhalation: 5,4 (dust) mg/mg (not classified as harmful)
Inhalation	May be irritating to the respiratory system.
Skin contact	Irritating to the skin. May cause an allergic skin reaction.
Eye contact	Causes serious eye irritation.
Ingestion	May cause irritation of the gastrointestinal tract with nausea and vomiting as a result.
General respiratory or skin sensitisation	Irritating to the respiratory system.
Inhalation	Powder may be irritating to the respiratory system.
Skin contact	Irritating to the skin.
Eye contact	Causes serious eye irritation.
Ingestion	May cause nausea and vomiting.
Sensitisation	May cause an allergic skin reaction.
Germ cell mutagenicity, human experience	No known mutagenicity.
Carcinogenicity, other information	No known carcinogenicity.
Reproductive toxicity	No known reproductive toxicity.
STOT-repeated exposure	Not known.
Aspiration hazard	No aspiration hazard known.

SECTION 12: Ecological information

12.1. Toxicity

Substance	Potassium chlorate
Acute aquatic, fish	**Value:** = 1,75 mg/l **Test duration:** 96h **Species:** Oncorhynchus mykiss **Method:** LC50

	Comments: Toxic to aquatic organisms.
Ecotoxicity	Producted has not been tested. The data below is based on individual ingredients of the product. The product is toxic to aquatic life with long-lasting effects.

12.2. Persistence and degradability

Persistence and degradability, comments	Not applicable. Contains inorganic materials and is in solid form.

12.3. Bioaccumulative potential

Bioaccumulative potential	Not expected to bioaccumulate.
Substance	Solvent Orange 86
Bioconcentration factor (BCF)	**Value:** = 30,9 **Comments:** No bioaccumulation expected.

12.4. Mobility in soil

Mobility	None – product in form of solid article.
Water solubility	Comments: Insoluble.

12.5. Results of PBT and vPvB assessment

PBT assessment results	Does not fulfil the criteria for classification as PBT.
vPvB evaluation results	Does not fulfil the criteria for classification pub.

12.6. Other adverse effects

Environmental details, summation	The product is toxic to aquatic life with long-lasting effects.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Specify the appropriate methods of disposal	Waste should be collected in a separate container. NO SMOKING!
Relevant waste regulation	Waste regulation, SFS 2011:927.
Hazardous waste product	Unused product is hazardous waste and must be disposed of in accordance with national and local regulations. Contact approved waste disposal service to dispose of this material.
Hazardous waste packing	Used product treated as ordinary plastic / metallic waste. DO NOT TRY TO DISASSEMBLE UNUSED PRODUCT! Contaminated packaging may pose a fire hazard.
Product classified as hazardous waste	Yes
Packaging classified as hazardous waste	Yes
EWC waste code	EWC: 160402 fireworks wastes
Other information	Contaminated packing may burn rapidly.

SECTION 14: Transport information

14.1. UN number

ADR / RID / ADN	0197
IMDG	0197
ICAO / IATA	0197
Comments	Article Number: 342130

14.2. UN proper shipping name

ADR / RID / ADN	SIGNALS, SMOKE
IMDG	SIGNALS, SMOKE
ICAO / IATA	SIGNALS, SMOKE

14.3. Transport hazard class(es)

ADR / RID / ADN	1.4G
Classificaton code ADR / RID / ADN	1.4 G
Subsidiary risk ADR / RID / ADN	1.4 G
IMDG	1.4G
Classificaton code IMDG	1.4 G
ICAO / IATA	1.4G
Classificaton code ICAO	1.4 G

14.4. Packing group

14.5. Environmental hazards

IMDG Marine pollutant	Yes

14.6. Special precautions for user

Special safety precautions for user	See P-statements in Section 2.2.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Additional information

Additional information	UN-number: 0197 Smoke signals Packaging in cardboard 1.4G. Packaging instructions: P135. UN-number: 0507 Smoke signals Packaging in steel cage + cardboard: 1.4S. Packaging instructions: P135. Order article number: 342170

IMDG / ICAO / IATA Other information

IMDG Other information	Swedish Rescue Service Agency Cert. No.: 2015-3834 (20-21)

	EX-nr (DOT/USA): EX2006030019 (UN-nr 0197) , EX2008060159 (UN-nr 0507)
EmS	F-B, S-X

SECTION 15: Regulatory information

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

Legislation and regulations	Safety data sheet and classification in accordance with regulation 1272/2008 /EC (CLP) and regulation 830/2015/EC.

15.2. Chemical safety assessment

Chemical safety assessment performed	Yes

SECTION 16: Other information

List of relevant H-phrases (Section 2 and 3)	H204 Fire or projection hazard. H271 May cause fire or explosion; strong 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. H411 Toxic to aquatic life with long lasting effects.
Classification according to Regulation (EC) No 1272/ 2008 [CLP / GHS]	Expl. 1.4; H204 Skin Irrit. 2; H315 Skin Sens. 1; H317 Eye Irrit. 2; H319 STOT SE 3; H335 Aquatic Chronic 2; H411
CLP classification, comments	Classification and labelling are based on CLP (Regulation 1272/2008/EC and Regulation 830/2015/EC)
Last update date	24.11.2017
Version	5

SAFETY DATA SHEET
Ikaros Handflare, Red

The safety data sheet is in accordance with Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

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

Date issued	22.11.2016

1.1. Product identifier

Product name	Ikaros Handflare, Red
Chemical name	2 g ignition composition, 74 g red illuminating composition
Article no.	341500 (order number 341500, 341570)

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

Use of the substance/preparation	Pyrotechnic distress flare.

1.3. Details of the supplier of the safety data sheet

Company name	Nammo Sweden AB

SECTION 2: Hazards identification

2.1. Classification of substance or mixture

Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]	Expl. 1.4; H204 Acute tox. 4; H302 Eye Irrit. 2; H319
Substance / mixture hazardous properties	Main health hazard: Pyrotechnic product. Inhalation: May be mildly irritating to the respiratory system. Contact with skin: May be mildly irritating to the skin. Contact with burning product can cause severe burns. Contact with eyes: Causes serious eye irritation. Ingestion: Harmful if swallowed. Fire and explosion hazard: Risk of explosion if the product is exposed to electric shock, friction, fire or other sources of ignition. Environmental hazard: Not classified as dangerous to the environment.

2.2. Label elements

Hazard Pictograms (CLP)

Composition on the label	Strontium nitrate:= 40,92
Signal word	Warning
Hazard statements	H204 Fire or projection hazard. H302 Harmful if swallowed. H319 Causes serious eye irritation.
Precautionary statements	P102 Keep out of reach of children. P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P501 Dispose of contents / container to
Special supplemental label info mixtures	Contains: Strontium nitrate .

2.3. Other hazards

Description of hazard	Contact with burning product can cause severe burns.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Substance	Identification	Classification	Contents
Strontium nitrate	CAS no.: 10042-76-9 EC no.: 233-131-9 Registration number: 01-2120007501-75	Ox. Sol. 3; H272 Acute tox. 4; H302 Eye Irrit. 2; H319	= 40,92
Potassium nitrate	CAS no.: 7757-79-1 EC no.: 231-818-8 Registration number: 01-2119488224-35	Ox. Sol. 3; H272 Aquatic Acute 1; H400	= 1,97 %

SECTION 4: First aid measures

4.1. Description of first aid measures

General	Contaminated work clothing should be washed before using again. Special treatment is urgent (see label on this label).
Inhalation	Move the person to fresh air and keep at rest in a position comfortable for breathing. Consult a doctor if symptoms persist.
Skin contact	If burned, rinse with plenty of water for at least 20 minutes. In case of any other contact with skin, wash with soap and water for several minutes.
Eye contact	Hold eyelids open and rinse with soft, lukewarm water or eye wash liquid for at least five minutes. Remove contact lenses. Consult a doctor if symptoms persist.
Ingestion	Get medical advice/attention.

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

Acute symptoms and effects	Contact with burning product can cause severe burns. May cause nausea and vomiting. Harmful if swallowed. Causes serious eye irritation. May be mildly irritating to the skin and respiratory system.

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

Medical treatment	None other than the one listed above.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Use foam, dry chemical, CO2 or mist early in the fire. Once the product is lit up, it is very difficult to extinguish.
Improper extinguishing media	No restrictions.

5.2. Special hazards arising from the substance or mixture

Fire and explosion hazards	The product is an explosion hazard, as it generates large quantities of gas and heat, once lit.

5.3. Advice for firefighters

Personal protective equipment	Wear full protective clothing for chemical fires, including breathing apparatus. If possible, remove undamaged containers from the danger area. Remove all ignition sources.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal protection measures	Ensure good ventilation. Use appropriate protective equipment, see section 8. Avoid skin and eye contact. Remove all ignition sources.

6.2. Environmental precautions

Environmental precautionary measures	Prevent discharge into sewers or the local environment/streams. Contact emergency services upon greater emissions.

6.3. Methods and material for containment and cleaning up

Cleaning method	Collect with tools that do not give rise to ignition. The waste is placed in closed containers and disposed of as hazardous waste in accordance with section 13.

6.4. Reference to other sections

Other instructions	See sections 8 and 13 for information about protection and waste management.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Handling	Avoid sparks, shock and friction. Use personal protective equipment, see section 8. Avoid skin and eye contact. Protect the product from sources of ignition.

7.2. Conditions for safe storage, including any incompatibilities

Storage	Store cool and dry in a well-ventilated place. Keep away from sources of ignition - no smoking. Keep out of reach of children.

7.3. Specific end use(s)

Specific use(s)	Pyrotechnic distress flare.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Other Information about threshold limit values	No exposure limits.

DNEL / PNEC

Control parameters comments	PNEC/DNEL are not available.

8.2. Exposure controls

Precautionary measures to prevent exposure

Appropriate engineering controls	Keep away from fire, sparks and other ignition sources. When cleaning, use equipment that does not cause sparks.

Respiratory protection

Respiratory protection	Upon dust formation, use a particle filter EN143 Type P or EN149 type FFP-S.
Recommended type of equipment	Particle filter EN143 Type P or EN149 type FFP-S.

Hand protection

Hand protection	Leather gloves or the like.

Eye / face protection

Eye protection	Shatterproof goggles or visors.

Skin protection

Skin protection (except hands)	Normal industrial hygiene.

Hygiene / Environmental

Personal protection equipment, comments	Contact your protective equipment supplier for more information.
Specific hygiene measures	No smoking.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Black metal tube with red plastic handle, black plastic top lid and orange label.
Colour	See under "Physical state".
Odour	None.
Comments, pH (as supplied)	No information available.
Comments, pH (aqueous solution)	No information available.
Comments, Melting point / melting range	No information available.
Comments, Boiling point / boiling range	No information available.
Comments, Flash point	No information available.
Comments, Evaporation rate	No information available.
Flammability (solid, gas)	The contents are flammable.
Comments, Explosion limit	No information available.
Comments, Vapour pressure	No information available.
Comments, Vapour density	No information available.
Comments, Specific gravity	No information available.
Solubility in water	Insoluble.
Spontaneous combustability	**Value:** > 250 °C **Method of testing:** Ignition temperature
Comments, Viscosity	No information available.
Explosive properties	The product is explosive.
Oxidising properties	Content is oxidizing.

9.2. Other information

Other physical and chemical properties

Comments	These are typical values and do not constitute an exact product specification.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	Stable product under recommended storage and handling conditions.

10.2. Chemical stability

Stability	Stable product under recommended storage and handling conditions.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	Stable product under recommended storage and handling conditions.

10.4. Conditions to avoid

Conditions to avoid	Avoids temperatures above 75°C.

10.5. Incompatible materials

Materials to avoid	Not applicable.

10.6. Hazardous decomposition products

Hazardous decomposition products	The product is explosive, generating large quantities of gas and heat once

	ignited. Also emits large quantities of orange smoke.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Toxicological Information:

Other toxicological data	No data available for the product itself. The data below is based on individual ingredients of the product.

Toxicological data for substances

Substance	Strontium nitrate
LD50 oral	**Value:** = 1892 mg/kg **Animal test species:** Rat **Comments:** Hazardous if ingested.
Other toxicological information for the substance	For strontium compounds the health hazards are mainly related to the anion, here nitrate. Nitrates may be hazardous, if swallowed in large amounts, or in low doses for a long period.
Substance	Potassium nitrate
LD50 oral	**Value:** = 3750 mg/kg **Animal test species:** Rat
Other toxicological information for the substance	Nitrates may be hazardous, if swallowed in large amounts, or in low doses over a longer period.

Other information regarding health hazards

General	Hazardous ingredients: strontium nitrate . Calculated ATE: 1221 mg/kg (classified as harmful)

Potential acute effects

Inhalation	May be mildly irritating to the respiratory system.
Skin contact	May be mildly irritating to the skin.
Eye contact	Causes serious eye irritation.
Ingestion	Harmful if swallowed. May cause irritation of the gastrointestinal tract with nausea and vomiting as a result.
Aspiration hazard	No aspiration hazard known.

Delayed effects / repeated exposure

Inhalation	May be mildly irritating to the respiratory system.
Skin contact	May be mildly irritating to the skin.
Eye contact	Causes serious eye irritation.
Ingestion	May cause nausea and vomiting.
General respiratory or skin sensitisation	No known sensitizing effect.
STOT-repeated exposure	Not known.

Carcinogenic, Mutagenic or Reprotoxic

Carcinogenicity	No known carcinogenicity.
Germ Cell Mutagenicity, human experience	No known mutagenicity.
Reproductive toxicity	No known reproductive toxicity.

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity	Producted has not been tested. The data below is based on individual ingredients of the product.

Toxicological data for substances

Substance	Strontium nitrate
Bioaccumulation	Log Pow: 0,19. No bioaccumulation expected.
Substance	Potassium nitrate

Acute aquatic, algae	**Value:** = 0,14 mg/l **Method of testing:** IC50 **Duration:** 72h **Remarks:** Very toxic to aquatic organisms.
Bioaccumulation	LogPow: < 0. No bioaccumulation expected.

12.2. Persistence and degradability

Persistence and degradability	Not applicable. Contains inorganic materials and is in solid form.

12.3. Bioaccumulative potential

Bioaccumulative potential	Not expected to bioaccumulate.

12.4. Mobility in soil

Mobility	None – product in form of solid article.
Comments, Water solubility	Insoluble.

12.5. Results of PBT and vPvB assessment

PBT assessment results	Does not fulfil the criteria for classification as PBT.
vPvB evaluation results	Does not fulfil the criteria for classification pub.

12.6. Other adverse effects

Environmental details, summation	Not classified as toxic to water (the IMDG-code).

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Specify the appropriate methods of disposal	Waste should be collected in a separate container. NO SMOKING!
Relevant waste regulation	Waste regulation, SFS 2011:927.
Hazardous waste product	Unused product is hazardous waste and must be disposed of in accordance with national and local regulations. Contact approved waste disposal service to dispose of this material.
Hazardous waste packing	Used product treated as ordinary plastic / metallic waste. DO NOT TRY TO DISASSEMBLE UNUSED PRODUCT! Contaminated packaging may pose a fire hazard.
Product classified as hazardous waste	Yes
Packaging classified as hazardous waste	Yes
EWC waste code	EWC: 160402 fireworks wastes
Other Information	Contaminated packing may burn rapidly.

SECTION 14: Transport information

14.1. UN number

ADR / RID / ADN	0191
RID	0191
IMDG	0191
ICAO/IATA	0191
Comments	Article Number: 341500

14.2. UN proper shipping name

ADR	SIGNAL DEVICES, HAND
RID	SIGNAL DEVICES, HAND
IMDG	SIGNAL DEVICES, HAND
ICAO/IATA	SIGNAL DEVICES, HAND

14.3. Transport hazard class(es)

ADR / RID / ADN	1.4G
Class Code ADR/RID/ADN	1.4 G
Subsidiary Risk ADR/RID/ADN	1.4 G

RID	1.4G
IMDG	1.4G
Class Code IMDG	1.4 G
ICAO/IATA	1.4G
Class Code ICAO	1.4 G

14.4. Packing group

14.5. Environmental hazards

IMDG Marine pollutant	No

14.6. Special precautions for user

EmS	F-B, S-X
Special safety precautions for user	See P-statements in Section 2.2.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Additional information.

Additional information.	UN-number: 0191 Signal devices, hand. Packaging in cardboard 1.4G. Packaging instructions: P135. Order article number: 341500 UN-number: 0373 Signal devices, hand Packaging in steel cage + cardboard: 1.4S. Packaging instructions: P135. Order article number: 341570

IMDG / ICAO / IATA Other information

IMDG Other information	Swedish Rescue Service Agency Cert. No.: 2009-4268 (11-12) (UN-nr 0191 och 0373) EX-nr (DOT/USA): EX2006030023 (UN-nr 0191)

SECTION 15: Regulatory information

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

Legislation and regulations	Safety data sheet and classification in accordance with regulation 1272/2008 /EC (CLP) and regulation 830/2015/EC.

15.2. Chemical safety assessment

Chemical safety assessment performed	Yes
Chemical Safety Assessment	Chemical safety investigation (CSI) is established for the product.

SECTION 16: Other information

CLP Classification, Comments	Classification and labelling are based on CLP (Regulation 1272/2008/EC and Regulation 830/2015/EC)
Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]	Expl. 1.4; H204; Acute tox. 4; H302; Eye Irrit. 2; H319;
List of relevant H-phrases (Section 2 and 3).	H302 Harmful if swallowed. H400 Very toxic to aquatic life. H272 May intensify fire; oxidiser. H204 Fire or projection hazard. H319 Causes serious eye irritation.
Version	2
Responsible for safety data sheet	Nammo Sweden AB

MarED

The Group of Notified Bodies for the Implementation of the European Marine Equipment Directive EU Directive 2014/90/EU (MED) as amended

Mared Product Database

Product Information

Product name:	**IKAROS Buoyant Smoke, Orange, Art.N° 342 130**
Trade name:	Buoyant smoke signals (pyrotechnics)
Restriction of use:	

APPLICANT/MANUFACTURER (PLACING THE PRODUCT ON THE MARKET)

Applicant:	Nammo Sweden AB

MED Conformity Information

Applied directive:	2014/93/EU MED (10th Amendment)
Item category:	96/98/EC
Item number and designation:	A.1/1.10 Buoyant smoke signals (pyrotechnics)
Applied module(s):	B+D
Status of MED certificates (Combined validity period):	2016-09-05 - 2019-07-17

Information on MED certificate(s)

Certificate number of type examination (B):	05786/D1 EC
Period of validity of type examination certificate:	2015-11-12 - 2019-07-17
Comments to type examination certificate:	
Certificate number of production/product module (D, E, F) or unit verification (G):	MEDD00000DV Rev. 1
Comments to production/product module or unit verification:	
Period of validity of production/product module or unit verification certificate:	2016-09-05 - 2021-09-04
Comments to date of expiry of production module certificate:	
USCG MRA approval number:	160.122/EC0062/05786-D1EC/EC0575
Comments to USCG approval:	

Notified Body

Notified Body issuing type approval (B) certification:	0062 - Bureau Veritas
Notified Body responsible for the MED assessment:	DNV GL AS (former DNV AS)

Please note, that the information provided has been prepared accurately and to the best knowledge. However, the information is indicative only. There is no guarantee for completeness, actuality or an absolute correctness. For further clarification, please contact the indicated Notified Bodies or the companies offering the products to the market directly.

DNV·GL

Certificate No:
MEDB00005F2

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED), issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Authority. This Certificate is issued by DNV GL AS under the authority of the Government of Norway.

This is to certify:

That the Buoyant smoke signals (pyrotechnics)

with type designation(s)
IKAROS Buoyant Smoke Signal, Orange

Issued to
Hansson PyroTech AB

is found to comply with the requirements in the following Regulations/Standards:
Regulation **(EU) 2018/773,**
item No. MED/1.10. SOLAS 74 as amended, Regulation III/4, III/34 & X/3 and LSA Code

Further details of the equipment and conditions for certification are given overleaf.

DNV GL local station:
Sweden CMC

Approval Engineer:
Jasna Jovovic-Lainis

Notified Body
No.: **0575**

for **DNV GL AS**

A U.S. Coast Guard approval number will be assigned to the equipment when the production module has been completed and will appear on the production module certificate (module D, E or F), as allowed by the "Agreement between the United States of America and the EEA EFTA states on the mutual recognition of Certificates of Conformity for Marine Equipment" signed 17 October 2005.

The mark of conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU.

This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV GL AS of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled.

Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.

NORWEGIAN ACCREDITATION PROD 019

Job Id: **344.1-009401-1**
Certificate No: **MEDB00005F2**

Product description

"IKAROS Buoyant Smoke Signal, Orange"
buoyant smoke signals producing orange smoke for at least 3 minutes.

Design weight: 540 g

Application/Limitation

Approved for use as Buoyant smoke signals (pyrotechnics).

Acceptable lifetime: 4 years

Liferaft drop test has to be performed before installation on liferafts.

The design assessment is based on IMO Res. MSC.48(66) as amended by IMO Res. MSC.207(81) and IMO Res. MSC.218(82).

A statistically adequate sample of the production shall be tested in accordance with IMO Res. MSC.81(70), Part 2, Ch.4.

Type Examination documentation

The following documentation is basis for the DNV GL approval:

Documents	Date
Drawings as listed in "Document structure", No. DS 342130 Rev. 2	2019-04-05
Prototype test reports witnessed by Bureau Veritas	2015-03-30~04-02 and 2015-08-17 2013-09-30~10-02 2012-05-29~06-01 2011-08-16~18
Temperature cycling test and Salt spray test report No. SBTC 15-0082R by Bofors Test Center, Sweden	2015-03-30
Wave test report No. SBTC 15-0070 by Bofors Test Center, Sweden	2015-04-13
Laboratory measurements report No. TR 15-007 by Nammo LIAB, Sweden	2015-04-08

Tests carried out

Tests are documented in accordance with recommendation on testing of Lifesaving Appliances, IMO Res. MSC.81(70), Part 1, including IMO Res. MSC.200(80), IMO Res. MSC.226(82) and IMO Res. MSC.323(89).

Marking of product

The product is to be marked with name and address of manufacturer, type designation, date of manufacture, date of expiry, operational restrictions, Mark of Conformity and USCG number if applicable (see first page).

The product should be provided with brief instructions or diagrams clearly illustrating the use printed on the casing.

DNV·GL

Certificate No:
MEDD00001TR

QS – CERTIFICATE OF ASSESSMENT – EC (MODULE D)

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED), issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Authority. This Certificate is issued by DNV GL AS under the authority of the Government of Norway.

This is to certify:

That the Quality System for the products

with type designation(s) as specified in the Appendix to this Certificate

Issued to

Hansson PyroTech AB

is found to comply with the applicable requirements.
The quality system has been assessed with respect to the procedure of conformity assessment described in Annex II, Module D in the directive 2014/90/EU and regulation (EU) 2018/773.

DNV GL local station:
Stockholm

Approval Engineer:
Jasna Jovovic-Lainis

Notified Body
No.: **0575**

for **DNV GL AS**

Head of Notified Body

The manufacturer is allowed to affix the U.S. Coast Guard approval number(s) as stated in the appendix attached hereto and as allowed by the "Agreement between the United States of America and the EEA EFTA states on the mutual recognition of Certificates of Conformity for Marine Equipment" signed 17 October 2005.

0575/yyyy

0575: Notified Body number undertaking quality surveillance
yyyy: The year in which the mark is affixed

NORWEGIAN ACCREDITATION PROD 019

The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU.
This certificate authorizes the manufacturer in conjunction with the valid EC Type Examination (Module B) Certificate(s) of the equipment listed before to affix the Mark of Conformity (wheelmark) to the product described herein.
This certificate loses its validity if the manufacturer makes any changes to the approved quality system which have not been notified to and agreed with the notified body named on this certificate.
This certificate remains valid unless suspended, withdrawn, recalled or cancelled.
The Manufacturer has to apply for periodical audits to verify the maintenance and application fo the quality system every 12 months.

Job Id: **344.1-009138-1**
Certificate No: **MEDD00001TR**

APPENDIX

Item no. MED/1.10 Buoyant smoke signals (pyrotechnics)

Type designation	EC Type-Examination Certificate No.	Expiry date	Notified Body No.	USCG approval number
IKAROS Buoyant Smoke Signal, Orange[1]	MEDB00005F2	2024-07-03	0575	160.122/EC0575/MEDB00005F2

Item no. MED/1.11 Line-throwing appliances (pyrotechnics)

Type designation	EC Type-Examination Certificate No.	Expiry date	Notified Body No.	USCG approval number
Ikaros line thrower[1]	MEDB00003R4	2023-10-28	0575	160.040/EC0575/MEDB00003R4

Item no. MED/1.2b Position indicating lights for lifebuoys

Type designation	EC Type-Examination Certificate No.	Expiry date	Notified Body No.	USCG approval number
Ikaros MOB Mk IV Light Signal[1]	MEDB000046Y Rev.1	2023-12-16	0575	161.110/EC0575/MEDB000046Y Rev.1

Item no. MED/1.3 Lifebuoys self-activating smoke signals

Type designation	EC Type-Examination Certificate No.	Expiry date	Notified Body No.	USCG approval number
Ikaros MOB IV smoke signal[1]	MEDB000046X	2023-12-16	0575	160.157/EC0575/MEDB000046X

Item no. MED/1.8 Rocket parachute flares (pyrotechnics)

Type designation	EC Type-Examination Certificate No.	Expiry date	Notified Body No.	USCG approval number
IKAROS Parachute Rocket, Red[1]	MEDB000053J	2024-07-03	0575	160.136/EC0575/MEDB000053J

Item no. MED/1.9 Hand flares (pyrotechnics)

Type designation	EC Type-Examination Certificate No.	Expiry date	Notified Body No.	USCG approval number
IKAROS Hand Flare, Red[1]	MEDB00005F3	2024-07-03	0575	160.121/EC0575/MEDB00005F3

DNV·GL

Certificate No:
TALB0000031

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Buoyant smoke signals (pyrotechnics)

with type designation(s)
IKAROS Buoyant Smoke Signal, Orange

Issued to
Hansson PyroTech AB

is found to comply with
SOLAS 74 as amended, LSA Code as amended. IMO Resolution MSC.81(70) as amended

Application :

Approved for use as Buoyant smoke signals (pyrotechnics).

This certificate is recognized by Transport Canada.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2024-07-03**.
DNV GL local station: **Sweden CMC**

Approval Engineer: **Jasna Jovovic-Lainis**

for **DNV GL**

Head of Section

Job Id: **262.1-031510-1**
Certificate No: **TALB0000031**

Product description
"IKAROS Buoyant Smoke Signal, Orange"
buoyant smoke signals producing orange smoke for at least 3 minutes.

Design weight: 540 g

Application/Limitation
Approved for use as Buoyant smoke signals (pyrotechnics).

Acceptable lifetime: 4 years

Liferaft drop test has to be performed before installation on liferafts.

The design assessment is based on IMO Res. MSC.48(66) as amended by IMO Res. MSC.207(81) and IMO Res. MSC.218(82).

A statistically adequate sample of the production shall be tested in accordance with IMO Res. MSC.81(70), Part 2, Ch.4.

Type Approval documentation
Certification in accordance with Class Program DNVGL-CP-0338, September 2018.

The following documentation is basis for the DNV GL approval:

Documents	Date
Drawings as listed in "Document structure", No. DS 342130 Rev. 2	2019-04-05
Prototype test reports witnessed by Bureau Veritas	2015-03-30~04-02 and 2015-08-17 2013-09-30~10-02 2012-05-29~06-01 2011-08-16~18
Temperature cycling test and Salt spray test report No. SBTC 15-0082R by Bofors Test Center, Sweden	2015-03-30
Wave test report No. SBTC 15-0070 by Bofors Test Center, Sweden	2015-04-13
Laboratory measurements report No. TR 15-007 by Nammo LIAB, Sweden	2015-04-08

Tests carried out
Tests are documented in accordance with recommendation on testing of Lifesaving Appliances, IMO Res. MSC.81(70), Part 1, including IMO Res. MSC.200(80), IMO Res. MSC.226(82) and IMO Res. MSC.323(89).

Marking of product
The product is to be marked with name and address of manufacturer, type designation, date of manufacture, date of expiry and operational restrictions. The marking shall comply with the LSA Code (IMO Res. MSC.48(66)), item 1.2.2.9.

The product should be provided with brief instructions or diagrams clearly illustrating the use printed on the casing.

Transport Canada Approval
Based on the procedures laid down in the Transport Canada Publication entitled "Approval Procedures for Life Saving Equipment and Structural Fire Protection Products (TP 14612)", DNV GL confirms that the product/s listed in this certificate is/are in accordance with Transport Canada's requirements.

Job Id: **262.1-031510-1**
Certificate No: **TALB0000031**

Transport Canada Application/Limitation

All of the required instructions and markings must be in both French and English.

Periodical assessment

DNV GL's surveyor is to be given permission to perform Periodical Assessments at any time during the validity of this certificate and at least every second year. The arrangement is to be in accordance with procedure described in Class Program DNVGL-CP-0338, Section 4.

Marine & Offshore Division

Certificate number: 05786/B1 BV
File number: PYR 2466/01
Product code: 6009H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

TYPE APPROVAL CERTIFICATE

This certificate is issued to

Nammo LIAB AB

Lindesberg - SWEDEN

for the type of product

BUOYANT SMOKE SIGNALS

IKAROS Buoyant Smoke, Orange
Article N° 342130

Requirements:
Australian Standard AS 2092-2004

This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 28 Jul 2019

For BUREAU VERITAS,
At BV GOTHENBURG, on 12 Nov 2015,
Magne MOLLER

BUREAU VERITAS SURVEYORS AT PARIS 1828 GOTHENBURG INTERNATIONAL REGISTER

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

Article N°	Trademark	Designation	Diameter	Overall length
342 130	Nammo LIAB AB	IKAROS Buoyant Smoke, Orange	95mm	101mm

2. DOCUMENTS AND DRAWINGS :

- Drawings and specifications:

Number	Title	Revision	Date
DS 342130	IKAROS Buoyant Smoke, Orange	1	2015/08/24

- Manual(s) for installation use and maintenance.

No departure from these documents is permitted without the prior consent of the society.

3. TEST REPORTS :

The product has been type tested by the manufacturer and witnessed by Bureau Veritas as per test reports listed :

DATE	TEST	
23/09/1994	TB 2421/6.3	Initial type tests
23/09/1994	TB 3421/95	Initial type tests
23/09/1994	TB 3421/9.2.5	Initial type tests
23/09/1994	TB 3421/9.4	Initial type tests
28/06/1994	94 M 51609	Salt spray test by the Swedish National Testing and Research Institute
14/03/1998	---	Fully retested for approval of a modification
03/11/2004	---	Evaluation and Type report as per IMO Circ.980
16/10/2008	---	Annual Tests 2008 - Taking into account the amended IMO resolutions
25/09/2009	SBTC 09-0646	Specific test - Australian standard
02/10/2013	---	Additional Type Tests (Annual Tests 2013)
02/04/2014	---	Additional Type Tests (Linked to annual Tests 2013)
17/08/2015	---	Additional Type Tests (2015)

4. APPLICATION / LIMITATION :

- As per requirements of regulations stated on front page of this certificate.
- Each Buoyant Smoke Signal will be supplied with its instructions for use, inspections and on-board maintenance complying with Regulations stated on the front page of this certificate.
- The equipment shall be replaced prior the date of expiry which is marked in the signal casing (but not later than 3 years from the manufacture date).
- Shall be used as per Manufacturer's operational instructions.

5. PRODUCTION SURVEY REQUIREMENTS :

The manufacturer shall institute a quality control procedure to ensure that the Orange Buoyant Smoke Signals are produced to the same standard as the approved prototype and shall keep records of any production tests carried out in accordance with AS 2092-2004.

The Orange Buoyant Smoke Signals are to be supplied by **Nammo LIAB AB** in compliance with the type described in this certificate.

This type of product is within the category HBV of Bureau Veritas Rule Note NR320.

Nammo LIAB AB has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.

6. MARKING OF PRODUCT :

Every item, or batch of items, to be affixed with the following marking:

- Identification of the type of signal
- Manufacturer name or logo
- Type designation
- Date of manufacture
- Date of expiry
- Batch number

Brief instructions or diagrams clearly illustrating the use of the product shall be printed indelibly on its casing;

7. OTHERS :

This approval is given on the understanding that the Society reserves the right to require check tests to be carried out at any time and that the manufacturer will accept full responsibility for informing Shipowners of proper methods of use, storing and maintenance of Orange Buoyant Smoke Signals and the conditions of this approval.

This certificate supersedes the EC Type Examination Certificate No 05786/B0 BV issued on 28/07/2014 by the Society.

***** END OF CERTIFICATE *****

Marine & Offshore Division

Certificate number: 05786/D1 EC
File number: PYR 2466/01
Annex A1 Item number: A.1/1.10
USCG Module B number: 160.122 / EC0062

This certificate is not valid when presented without the full attached schedule composed of 7 sections

Notified Body 0062 - MARINE EQUIPMENT DIRECTIVE 96/98/EC

EC TYPE EXAMINATION CERTIFICATE

as per Module B of European Union Council Directive 96/98/EC on marine equipment as amended by Commission Directive 2014/93/EU

This certificate is issued to

Nammo LIAB AB

Lindesberg - SWEDEN

for the type of product

BUOYANT SMOKE SIGNALS (PYROTECHNICS)

IKAROS Buoyant Smoke,Orange
Art.N° 342 130

Requirements:
SOLAS 74 Convention as amended, Reg. III/4, III/34 & X/3
IMO Res. MSC.48(66) -(LSA Code)- amended by MSC.207(81),MSC.218(82),MSC.272(85),MSC.293(87),MSC.320(89) & MSC.368(93), I, III
IMO Res. MSC.81(70) amended by MSC.200(80),MSC.226(82),MSC.274(85),MSC.295(87),MSC.321(89),MSC.323(89) & MSC.378(93)
IMO MSC/Circ. 980

This certificate is issued on behalf of the French Maritime Authorities to attest that BUREAU VERITAS did undertake the relevant type-examination procedures for the product identified above which was found to comply with the relevant requirements of the Council Directive 96/98/EC of 20 December 1996 as amended.

This certificate will expire on: 17 Jul 2019

BUREAU VERITAS SURVEYORS AT PARIS 1828 GOTHENBURG INTERNATIONAL REGISTER

This certificate does not allow to issue the Declaration of Conformity and to affix the mark of conformity (wheelmark ⚙) to the products corresponding to this type. To this end, the production-control phase module (D, E or F) of Annex B of the Directive is to be complied with and controlled by a written inspection agreement with a notified body.

This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. BUREAU VERITAS is designated by the French Maritime Authority as a "notified body" under the terms of the French Regulations Division 140 Chapter 140-2. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine & Offshore Division available on the internet site. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

Article N°	Trademark	Designation	Diameter	Overall length
342 130	Nammo LIAB AB	IKAROS Buoyant Smoke, Orange	95mm	101mm

2. DOCUMENTS AND DRAWINGS :

- Drawings and specifications:

Number	Title	Revision	Date
DS 342130	IKAROS Buoyant Smoke, Orange	1	2015/08/24

- Manual(s) for installation use and maintenance.

No departure from these documents is permitted without the prior consent of the society.

3. TEST REPORTS :

The product has been type tested by the manufacturer and witnessed by Bureau Veritas as per test reports listed :

DATE	TEST	
23/09/1994	TB 2421/6.3	Initial type tests
23/09/1994	TB 3421/95	Initial type tests
23/09/1994	TB 3421/9.2.5	Initial type tests
23/09/1994	TB 3421/9.4	Initial type tests
28/06/1994	94 M 51609	Salt spray test by the Swedish National Testing and Research Institute
14/03/1998	---	Fully retested for approval of a modification
03/11/2004	---	Evaluation and Type report as per IMO Circ.980
16/10/2008	---	Annual Tests 2008 - Taking into account the amended IMO resolutions
02/10/2013	---	Additional Type Tests (Annual Tests 2013)
02/04/2014	---	Additional Type Tests (Linked to annual Tests 2013)
17/08/2015	---	Additional Type Tests (2015)

4. APPLICATION / LIMITATION :

- As per requirements of regulations stated on front page of this certificate.
- Each Buoyant Smoke Signal will be supplied with its instructions for use, inspections and on-board maintenance complying with Regulations stated on the front page of this certificate.
- Expiration date not to exceed 48 months after month of manufacture
- The equipment shall be replaced prior the date of expiry which is marked on the signal casing.
- Shall be used as per Manufacturer's operational instructions.

5. PRODUCTION SURVEY REQUIREMENTS :

This certificate alone does not allow the applicant to issue the Declaration of Conformity and to affix the mark of conformity (wheelmark) to the products corresponding to this type. To this end, the production-control phase module D "Production Quality Assurance" or E "Product Quality Assurance" or F "Product Verification" of Annex B of the Directive is to be complied with and controlled by a written inspection agreement with a Notified Body.

The manufacturer shall institute a quality control procedure to ensure that the Buoyant Smoke Signals are produced to the same standard as the approved prototype and shall keep records of any production tests carried out in accordance with instructions given in IMO Resolution MSC.81 (70) Part 2.

Each equipment or batch of equipment is to be supplied with its manual(s) for installation, use and maintenance.

6. MARKING OF PRODUCT :

Brief instructions or diagrams clearly illustrating the use of the Buoyant Smoke Signal shall be indelibly marked on the casing.

The signal body shall bear the following marks

- Manufacturer name or logo
- Trade name
- SOLAS approved.
- Lot number
- Means of determining its age or the date by which they must be replaced
- Markings as per MED 96/98/EC ¤ YYYY/XX where YYYY is the number of the Notified Body undertaking surveillance module (where BV, 0062) and XX are the last two digits of year mark affixed.

In pursuance of the EU/US MRA+, and in accordance with the Council Decision 2004/425/EC of 21 April 2004, the manufactured item(s) can be affixed with the USCG conformity marking, subject to the authorization of the Conformity Assessment Body undertaking surveillance module.

7. OTHERS :

This approval is given on the understanding that the Society reserves the right to require check tests to be carried out at any time and that the manufacturer will accept full responsibility for informing Shipowners or their sub-contractors of the proper methods of use, storing and maintenance of the approved life-saving appliances and of the conditions of this approval.

This certificate supersedes the EC Type Examination Certificate No 05786/D0 EC issued on 17/07/2014 by the Society.

***** END OF CERTIFICATE *****

RUSSIAN MARITIME REGISTER OF SHIPPING

TYPE APPROVAL CERTIFICATE

Manufacturer *Nammo LIAB AB*

Product*

Buoyant smoke signal

IKAROS Buoyant Smoke Signal (Article No. 342130)

Code of nomenclature *03040000MK*

This is to certify that on the basis of the survey and tests carried out the above mentioned item(s) complies(ly) with the requirements of Russian Maritime Register of Shipping.

items 6.1, 6.7.3 of the part II of Rules for Equipment of Sea-going Ships, ed.2015. The product complies with the requirements of items 1.2, 3.3 of LSA Code (IMO Res. MSC.48(66) as amended by MSC.207(81), MSC.218(82)) and tested in accordance with recommendations of item 4 chapter I of IMO Resolution MSC.81(70) as amended.

This Type Approval Certificate is valid until *10.02.2020*

This Type Approval Certificate becomes invalid in cases stipulated in Rules for the Technical Supervision during Construction of Ships and Manufacture of Shipboard Materials and Products.

Date of issue *10.02.2015* № *15.10028.262*

Russian Maritime Register of Shipping *R.Litvinets*

(signature) (name)

L.S.

* Additional information see overleaf.

Technical data

Smoke colour - orange.
Period of smoke emission - not less than 3 min.
Does not emit any flame during the entire smoke emission time.
Continues to emit smoke when fully submerged in water for a period of 10 s on depth 100 m.
It is not swamped in a sea way.
Weight - 510 g.
Heigth/Diameter - 101 mm / 95 mm.
The case is made of a water-resistant material.

Technical documentation and the date of its approval by Russian Maritime Register of Shipping

The set of technical documentation has been approved by letter No.262-381-121-32829 dd 26.01.2015.

Product's specimen has been tested under the technical supervision of Russian Maritime Register of Shipping.

Report No. ***15.00167.262*** of ***10.02.2015***

Application and limitations

It is applied as visual signals for supply sea-going ships.

The equipment shall be replaced prior to expiry of date marked on the case.

Type of document issued for product

The product shall be delivered with Russian Maritime Register of Shipping Certificate in accordance with form 6.5.30 / 6.5.31.