

SAFETY DATA SHEET



Ikaros MOB Light and Smoke



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
Revision date	05.03.2019

1.1. Product identifier

Product name	Ikaros MOB Light and Smoke
Article no.	345105, 345185
Product definition	50 g ignition composition, 1300 g orange smoke composition and lithium battery

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

Use of the substance / preparation	Man over board signal.
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1.3. Details of the supplier of the safety data sheet

Company name	Nammo Sweden AB
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1.4. Emergency telephone number

Identification, comments	Ask for officer on duty at Nammo LIAB AB.
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SECTION 2: Hazards identification

2.1. Classification of the 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
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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 = 37,6 %, Potassium chlorate = 26,5 %
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 packaging. P240 Ground and 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

Description of hazard	Contact with burning product can cause severe burns.
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SECTION 3: Composition / information on ingredients

3.2. Mixtures

Substance	Identification	Classification	Contents	Notes
Solvent Orange 86	CAS No.: 81-64-1	Skin Sens. 1; H317	= 37,6 %	

Potassium chlorate	EC No.: 201-368-7	Eye Irrit. 2; H319	
	REACH Reg. No.: 01-2119971261-41	Skin Irrit. 2; H315 STOT SE3; H335	
	CAS No.: 3811-04-9	Ox. Sol. 1; H271	= 26,5 %
	EC No.: 223-289-7	Acute tox. 4; H332	
	Index No.: 017-004-00-3	Acute tox. 4; H302	
	REACH Reg. No.: 01-2119494917-18	Aquatic Chronic 2; H411	

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

Medical treatment	None other than the one listed above.
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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.
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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.
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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.
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6.2. Environmental precautions

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

Other instructions	See sections 8 and 13 for information about protection and waste management.
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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.
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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.
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7.3. Specific end use(s)

Specific use(s)	Man over board signal.
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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.
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Eye / face protection

Eye protection	Shatterproof goggles or visors.
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Hand protection

Hand protection	Leather gloves or the like.
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Skin protection

Skin protection (except hands)	Normal industrial hygiene.
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Respiratory protection

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

Personal protection equipment, comments	Contact your protective equipment supplier for more information.
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Specific hygiene measures	No smoking.
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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Yellow aluminium tube inserted in a yellow floating body made of plastic with an orange ribbon and two chimneys. Orange label. Black igniter.
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.
Relative density	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 smoke. Also contains a lithium battery.
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.
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SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	Stable product under recommended storage and handling conditions.
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10.2. Chemical stability

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

Possibility of hazardous reactions	Stable product under recommended storage and handling conditions. Risk of explosion in contact with sulfuric acid.
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10.4. Conditions to avoid

Conditions to avoid	Avoids temperatures above 75°C.
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10.5. Incompatible materials

Materials to avoid	Sulfuric acid.
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10.6. Hazardous decomposition products

Hazardous decomposition products	Pyrotechnic products, emit large amounts of smoke and gets hot (about 200 ° C).
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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: 7057 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
Aquatic toxicity, fish	Value: = 1,75 mg/l Test duration: 96h Species: Oncorhynchus mykiss

	Method: LC50
	Comments: Toxic to aquatic organisms.
Ecotoxicity	Product 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.
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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.
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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.
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SECTION 14: Transport information

14.1. UN number

ADR/RID/ADN	0197
IMDG	0197
ICAO/IATA	0197
Comments	Article Number: 345185

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
IMDG	1.4G
ICAO/IATA	1.4G

14.4. Packing group

14.5. Environmental hazards

IMDG Marine pollutant	Yes
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14.6. Special precautions for user

Special safety precautions for user	See P-statements in Section 2.2.
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14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Additional information

Additional information	<p>Article No. 345185: UN-number 0197 Smoke signals Packaging in cardboard 1.4G. Packaging instructions P135.</p> <p>Article No. 345105: UN-number 0507 Smoke signals Packaging in cardboard 1.4S (not USA). Packaging instructions P135.</p>
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IMDG Other information

IMDG Other information	Swedish Rescue Service Agency Cert. No.: 2015-3834 (16 och 18) EX-nr (DOT/USA): EX2005040230 (UN-nr 0197)
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.
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15.2. Chemical safety assessment

Chemical safety assessment performed	Yes
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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.
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CLP classification, comments	Classification and labelling are based on CLP (Regulation 1272/2008/EC and Regulation 830/2015/EC)
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Last update date	24.11.2017
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Version	5
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Mared Product Database

Product Information

Product name: **Ikaros MOB MK IV smoke signal, Art.N°345105**

Trade name: Lifebuoys self-activating smoke signals

Restriction of use:

APPLICANT/MANUFACTURER (PLACING THE PRODUCT ON THE MARKET)

Applicant: Nammo Sweden AB

MED Conformity Information

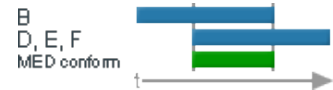
Applied directive: 2012/32/EU MED (8th Amendment)

Item category: 96/98/EC

Item number and designation: A.1/1.3 Lifebuoys self-activating smoke signals

Applied module(s): B+D

Status of MED certificates (Combined validity period): 2016-09-05 - 2019-05-30



Information on MED certificate(s)

Certificate number of type examination (B): 06891/D0 EC

Period of validity of type examination certificate: 2014-05-30 - 2019-05-30

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: 160.157/EC0062/06891-D0EC/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.

QS - CERTIFICATE OF ASSESSMENT - EC (MODULE D)

Certificate No:
MEDD00000DV
Revision No:
1

Application of: Council Directive 96/98/EC of 20 December 1996 on Marine Equipment as amended by directive (EU) 2015/559, issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Directorate. This Certificate is issued by DNV GL AS under the authority of the Government of the Kingdom 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

Nammo LIAB AB

is found to comply with the requirements applicable to it.

The quality has been assessed with respect to the procedure of conformity assessment described in Annex B, Module D in the directive.

This Certificate is valid until **2021-09-04**.

Issued at **Høvik** on **2016-09-05**

DNV GL local station:
Stockholm



for **DNV GL AS**

Approval Engineer:
Espen Kultorp

Notified Body
No.: **0575**

Vidar Dolonen
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/yy

0575: Notified Body number undertaking quality surveillance
yy: Last two digits of year in which the mark is affixed

The product liability rests with the manufacturer or his representative in accordance with Council Directive 96/98/EC, as amended.

This certificate authorizes the manufacturer in conjunction with the EC Type Examination (Module B) Certificate 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 and/or after lapse of time, withdrawal or revocation of the EC Type Examination (Module B) Certificate.

The Manufacturer has to apply for periodical audits to verify the maintenance and application for the quality system every 12 months.



NORWEGIAN
ACCREDITATION
PROD 019

Job Id: **344.1-005526-2**
Certificate No: **MEDD00000DV**
Revision No: **1**

APPENDIX

A.1/1.10 Buoyant smoke signals (pyrotechnics)

Type designation	EC Type-Examination Certificate No.	Expiry date	Notified Body No.	USCG approval number
IKAROS Buoyant Smoke, Orange, Art.N° 342 130 ¹	05786/D1 EC	2019-07-17	0062	160.122/EC0062 /05786-D1 EC /EC0575

A.1/1.11 Line-throwing appliances (pyrotechnics)

Type designation	EC Type-Examination Certificate No.	Expiry date	Notified Body No.	USCG approval number
Ikaros Linethrower (Art. N° 346 100) ¹	06890/D1 EC	2019-07-17	0062	160.040/EC0062 /06890-D1 EC /EC0575

A.1/1.3 Lifebuoys self-activating smoke signals

Type designation	EC Type-Examination Certificate No.	Expiry date	Notified Body No.	USCG approval number
Ikaros MOB MK IV smoke signal, Art.N°345105 ¹	06891/D0 EC	2019-05-30	0062	160.157/EC0062 /06891-D0 EC /EC0575
IKAROS MOB, smoke, Art.N°345205 ¹	20321/B2 EC	2018-07-09	0062	160.157/EC0062 /20321-B2 EC /EC0575

A.1/1.8 Rocket parachute flares (pyrotechnics)

Type designation	EC Type-Examination Certificate No.	Expiry date	Notified Body No.	USCG approval number
IKAROS Parachute Rocket, Red, Article N° 340 100 ¹	06553/D1 EC	2019-07-17	0062	160.136/EC0062 /06553-D1 EC /EC0575

A.1/1.9 Hand flares (pyrotechnics)

Type designation	EC Type-Examination Certificate No.	Expiry date	Notified Body No.	USCG approval number
Ikaros Hand Flare, Red, Art. N° 341 500 ¹	06148/D0 EC	2019-07-17	0062	160.121/EC0062 /06148-D0 EC /EC0575

Job Id: **344.1-005526-2**
Certificate No: **MEDD00000DV**
Revision No: **1**

A1/1.2b 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, Art. N° 345105 ¹	06892/E0 EC	2021-07-14	0062	N/A

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 Lifebuoys self-activating smoke signals

with type designation(s)
Ikaros MOB IV smoke signal

Issued to
Hansson PyroTech AB

is found to comply with the requirements in the following Regulations/Standards:
Regulation **(EU) 2018/773**,
item No. MED/1.3. SOLAS 74 as amended, Regulation III/4, III/7, III/34 & X/3, LSA Code and 2000 HSC Code 8

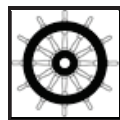
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2023-12-16**.

Issued at **Høvik** on **2018-12-17**

DNV GL local station:
Stockholm

Approval Engineer:
Nathaniel Frithiof



Notified Body
No.: **0575**



for **DNV GL AS**

Head of Notified Body

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.

Job Id: **344.1-008272-1**
Certificate No: **MEDB000046X**

Product description

"Ikaros MOB Mk IV Smoke signal"

lifebuoy self-activating smoke signal. The smoke signal is producing smoke for at least 15 minutes.

Tested with drop height 60 m.

Design weight: 4.5 kg

Body colour: Yellow

The smoke signal can be combined with the "Ikaros MOB Mk IV Light signal", the complete unit will then be called Ikaros "MOB Mk IV Light and Smoke signal".

Application/Limitation

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).

Production and installation testing shall be carried out according to IMO Res. MSC.81(70), Part 2, Ch.4.

Each lifebuoy is not to be stowed at a height above the waterline exceeding 60 m.

Expiration date not to exceed 4 years after date of manufacture.

Type Examination documentation

Technical documentation and reports:

Drawing No	Rev.	Title	Date
SBTC 15-0085R		Test record (Temp. cycling, salt & vibration)	2015-03-30
SBTC 15-0074		Test record (60 m drop and 30 cm wave test)	2015-04-13
		MOB smoke - Evaluation and test report (IMO MSC/Circ.980)	2015-08-19
DS 345205	1	Document structure (technical documentation)	2018-05-29
PP 15-04		Test program	2015-04-14

Tests carried out

Tests are documented in accordance with recommendation on testing of Lifesaving Appliances, IMO Res. MSC.81(70) Part 1, as amended by 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 body.

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MEDB000046Y
Revision No:
1

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 Position indicating lights for lifebuoys

with type designation(s)
Ikaros MOB Mk IV Light Signal

Issued to
Hansson PyroTech AB

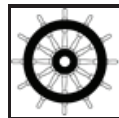
is found to comply with the requirements in the following Regulations/Standards:
Regulation **(EU) 2018/773**,
item No. MED/1.2b. SOLAS 74 as amended, Regulation III/4, III/7, III/22, III/32, III/34 & X/3, LSA Code, 2000 HSC Code 8

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

This Certificate is valid until **2023-12-16**.

Issued at **Høvik** on **2019-09-27**

DNV GL local station:
Sweden CMC



Notified Body
No.: **0575**



for **DNV GL AS**

Head of Notified Body

Approval Engineer:
Jasna Jovovic-Lainis

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.

Job Id: **344.1-008273-2**
Certificate No: **MEDB000046Y**
Revision No: **1**

Product description

"Ikaros MOB Mk IV Light signal"

lifebuoy position indicating light signal. Tested with drop height 60 m.

Design weight: 4.5 kg

Body colour: Yellow

The light signal can be combined with the "Ikaros MOB Mk IV Smoke signal", the complete unit will then be called Ikaros "MOB Mk IV Light and Smoke signal".

Application/Limitation

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).

Production and installation testing shall be carried out according to IMO Res. MSC.81(70), Part 2, Ch.4.

Each lifebuoy is not to be stowed at a height above the waterline exceeding 60 m.

Expiration date not to exceed 4 years after date of manufacture.

Type Examination documentation

Technical documentation and reports:

Drawing No	Rev.	Title	Date
SBTC 15-0085R		Test record (Temp. cycling, Salt & Vibration)	2015-03-30
SBTC 15-0074		Test record (60 m drop and 30 cm wave test)	2015-04-13
		MOB Lights - Evaluation and Test report (IMO MSC/Circ.980)	2015-03-30, 2015-04-02
DS 345105	1	Document structure (technical documentation)	2018-05-29
PP 15-04		Test program	2015-04-14
		LIFEBUOY SELF-IGNITING LIGHT, TEST REPORT	2015-04-13, 2015-05-19

Tests carried out

Tested in accordance with the requirements of IMO Res. MSC.81(70), as amended by IMO Res. MSC.200(80), IMO Res. MSC.226(82) & 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 body.

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.

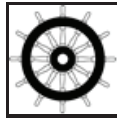
The quality system has been assessed with respect to the procedure of conformity assessment described in Annex II, Module D in the directive 2014/90/EU and regulation (EU) 2018/773.

This Certificate is valid until **2021-09-04**.

Issued at **Høvik** on **2019-09-27**

DNV GL local station:
Stockholm

Approval Engineer:
Jasna Jovovic-Lainis



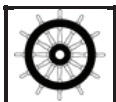
Notified Body
No.: **0575**



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

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 for 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

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Buoyant smoke signals (pyrotechnics)

with type designation(s)
Ikaros MOB Mk IV Light signal

Issued to
Hansson PyroTech AB

is found to comply with

Application :

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

This certificate is recognized by Transport Canada.

Issued at **Høvik** on **2019-05-22**

This Certificate is valid until **2024-05-21**.
DNV GL local station: **Gothenburg**

Approval Engineer: **Nathaniel Frithiof**



for **DNV GL**

Head of Section

Job Id: **262.1-030236-1**
Certificate No: **TALB000002N**

Product description

"Ikaros MOB Mk IV Light signal"

lifebuoy position indicating light signal. Tested with drop height 60 m.

Design weight: 4.5 kg

Body colour: Yellow

The light signal can be combined with the "Ikaros MOB Mk IV Smoke signal", the complete unit will then be called Ikaros "MOB Mk IV Light and Smoke signal".

Application/Limitation

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) and the Canadian Life Saving Appliance Standard – TP14475 E, Part I, Ch. III, item 3.1.4.

Production and installation testing shall be carried out according to IMO Res. MSC.81(70), Part 2, Ch.4.

Each lifebuoy is not to be stowed at a height above the waterline exceeding 60 m.

Expiration date not to exceed 4 years after date of manufacture.

Type Approval documentation

Checklists and reports:

Form no.	Rev.	Title	Date
TA 401		Type approval assessment report	2018-11-21
204GTB15		BV Test report	2015-05-19

Technical documentation:

Drawing no.	Rev.	Title	Date
SBTC 15-0085R		Test record (Temp. cycling, salt & vibration)	2015-03-30
SBTC 15-0074		Test record (60 m drop and 30 cm wave test)	2015-04-13
		MOB lights - Evaluation and test report (IMO MSC/Circ.980)	2015-03-30, 2015-04-02
DS 345105	1	Document structure (technical documentation)	2018-05-29
PP 15-04		Test program	2015-04-14
		Lifebuoy Self-Igniting Light, Test Report	2015-04-13, 2015-05-19

Tests carried out

Tested in accordance with the requirements of IMO Res. MSC.81(70), as amended by IMO Res. MSC.200(80), IMO Res. MSC.226(82), IMO Res.323(89) and the Canadian Life Saving Appliance Standard – TP14475 E, Part II, Ch. 4.

Marking of product

The product is to be marked with name and address of manufacturer, type designation, date of manufacture (month and year), date of expiry, lot number and operational restrictions.



Job Id: **262.1-030236-1**
Certificate No: **TALB000002N**

The instructions for operating the distress signal are to be permanently marked on the casing, or the signal is to carry a diagram clearly showing the manner of operating the signal.

All markings are to be provided in both English and French translations.

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 after 2 years and again after 3.5 years. The arrangement is to be in accordance with procedure described in DNVGL-CP-0338 Section 4.

DNV·GL

Certificate No:
TALB000002R

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Buoyant smoke signals (pyrotechnics)

with type designation(s)
Ikaros MOB Mk IV Smoke signal

Issued to

Hansson PyroTech AB

is found to comply with

Application :

The self-activating smoke signal approved by this certificate is accepted for installation on all vessels classed by DNV GL.

This certificate is recognized by Transport Canada.

Issued at **Høvik** on **2019-05-22**

This Certificate is valid until **2024-05-21**.

DNV GL local station: **Gothenburg**

Approval Engineer: **Nathaniel Frithiof**



for **DNV GL**

on behalf of

Mårten Schei-Nilsson
Head of Section

Job Id: **262.1-030237-1**
Certificate No: **TALB000002R**

Product description

"Ikaros MOB Mk IV Smoke signal"

lifebuoy self-activating smoke signal. The smoke signal is producing smoke for at least 15 minutes.

Tested with drop height 60 m.

Design weight: 4.5 kg

Body colour: Yellow

The smoke signal can be combined with the "Ikaros MOB Mk IV Light signal", the complete unit will then be called Ikaros "MOB Mk IV Light and Smoke signal".

Application/Limitation

The design assessment is based on IMO Res. MSC.48(66), as amended by IMO Res. MSC.207(81), IMO Res. MSC.218(82) and the Canadian Life Saving Appliance Standard – TP14475 E , Part I, Ch. III, item 3.1.4.

Production and installation testing shall be carried out according to IMO Res. MSC.81(70), Part 2, Ch.4.

Each lifebuoy is not to be stowed at a height above the waterline exceeding 60 m.

Expiration date not to exceed 4 years after date of manufacture.

Type Approval documentation

Checklists and reports:

Form no.	Rev.	Title	Date
TA 401		Type approval assessment report	2018-11-21

Technical documentation:

Drawing no.	Rev.	Title	Date
SBTC 15-0085R		Test record (Temp. cycling, salt & vibration)	2015-03-30
SBTC 15-0074		Test record (60 m drop and 30 cm wave test)	2015-04-13
		MOB smoke - Evaluation and test report (IMO MSC/Circ.980)	2015-08-19
DS 345205	1	Document structure (technical documentation)	2018-05-29
PP 15-04		Test program	2015-04-14

Tests carried out

Tests are documented in accordance with recommendation on testing of Lifesaving Appliances, IMO Res. MSC.81(70) Part 1, as amended by IMO Res. MSC.226(82), IMO Res. MSC.323(89) and the Canadian Life Saving Appliance Standard – TP14475 E , Part II, Ch. 4.

Marking of product

The product is to be marked with name and address of manufacturer, type designation, date of manufacture (month and year), date of expiry, lot number and operational restrictions.

The instructions for operating the pyrotechnic distress signal are to be permanently marked on the casing, or the signal is to carry a diagram clearly showing the manner of operating the signal.

All markings are to be provided in both English and French translations.



Job Id: **262.1-030237-1**
Certificate No: **TALB000002R**

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 after 2 years and again after 3.5 years. The arrangement is to be in accordance with procedure described in DNVGL-CP-0338 Section 4.



MARINE DIVISION

Certificate number: 06892/D0 EC

File number: LSA 2466/02 & PYR
2466/08

Annex A1 Item number: A.1/1.2b

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 2012/32/EU

This certificate is issued to

Nammo LIAB AB
Lindesberg - SWEDEN

for the type of product

POSITION-INDICATING LIGHTS FOR LIFEBUOYS

Ikaros MOB Mk IV Light Signal, Art. N° 345105

Requirements:

SOLAS 74 Convention as amended,

Reg. III/4,X/3,III/7,III/22,III/26,III/32 & III/34

IMO Res. MSC.48(66) amended by MSC.207(81),MSC.218(82),MSC.272(85),MSC.293(87) & MSC.320.(89)

IMO Res. MSC.36(63)-(1994 HSC Code)8, IMO Res. MSC.97(73)-(2000 HSC Code)8

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)

IMO MSC/Circ.980

This certificate is issued under the French Maritime Authority 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 is a renewal of certificate N° 06892/C2 EC, which expires on 14/04/2014


This certificate will expire on: 30 May 2019

For BUREAU VERITAS Notified Body 0062,

At BV GOTHENBURG, on 30 May 2014,

Magne MOLLER



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 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

Trademark	Nammo LIAB AB
Type	Ikaros MOB MK IV Light Signal
Reference	345105

The lifebuoy self-igniting light is combined with the "Ikaros MOB MK IV smoke signal": the complete unit is the "Ikaros Mob Mk IV Light & Smoke Signal – article No. 345105". The Ikaros MOB MK IV smoke signal" is approved as per EC Type Examination certificate No 06891/xx EC

Dimensions	Weight	Body colour	Light performance	Maximum stowage height
200x485 mm	4.8 Kg	Yellow	minimum 2cd - minimum 2 hours	60 m

2. DOCUMENTS AND DRAWINGS

- Manufacturer's specification and drawings:

Code	Title	Revision	Date
TR14-011	Technical report "List of drawings and changes to Ikaros MOB Mk: IV Light & Smoke & Ikaros MOB Mk: IV Smoke" Art: N°345105	01	2014-05-26

- Manuals for installation, use and maintenance.

No departure from the drawings shall be made without the prior consent of the Society.

3. TEST REPORTS

Date		Test report
03/03/1997	TB 703-3	Initial Type Test according to the Manufacturer's Technical specification's test protocol
27/03/1997	6005/6891/AO/O-H	Initial Type Test
11/02/1999	99F44823	Light further type tested for "Luminous Intensity Test" as per test report from SP, Swedish National Testing and Research Institute, Sweden
19/06/2001	Type Approval Tests of MOB Mk III	Additional type tested performed by the manufacturer after modifications as described in "Technical Specification Article No 345105 dated 10/10/2001"
13/03/2001	21/01	Additional Vibration test performed by "Forsvarets Materielverk ProvFFK"
18/06/2002	P202934	Further, type tested in accordance with IMO Resolution MSC. 81(70), Part 1, 10.2 & 10.4 and IMO MSC/Cic. 980 by SP Swedish National Testing and Research Institute, Boras, Sweden
01/10/2002	<i>Manufacturer's test report</i>	
14/09/2007	TR-017	Additional type test
30/10/2007	TR-020	Additional Drop test
17/12/2007	07-0983R	"Vibration test" and for the "Corrosion and Seawater resistance test" by Bofors Test Center AB
19/12/2007	TR-024	Additional type test
21/12/2007	Annual Tests 2007	Additional type test
16/10/2008	Annual Tests 2008	Additional type test
28/02/2013	--	Additional type test (LED) (T° Cycling test, Light Tests, Chromaticity test, Rain Test & Watertightness test, Dome Drop Test, Drop Test, Fiting Test, Vibration Test, Solar Radiation Test, Test for Oil Resistance and Fire Test)
27/05/2013	--	Additional type test (LED) (T° Cycling test and Light Tests)
02/10/2013	--	Additional Type Test (LED) (Including drop test)
02/04/2014	--	Additional type test (Visual Inspection, Case resistance test, Dome Drop Test, test for oil resistance)

4. APPLICATION / LIMITATION

- As per requirements of regulations stated on front page of this certificate.
- Is not to be stowed at a height above the waterline exceeding 60 meters.
- Each lifebuoy self-igniting light will be supplied with its instructions for use, inspections and on-board maintenance complying with the regulations stated on the front page of this certificate.
- Expiration date not to exceed 48 months after month of manufacture.

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 lifebuoy self-activating 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 lifebuoy self-activating smoke signal intended to be fitted onboard a ship registered to a National register adhering to the Directive shall be delivered with a Declaration of Conformity.

For information concerning the production phase modules, **Nammo LIAB AB** has declared that the product may be manufactured at the following manufacturing places :

Nammo LIAB AB

SWEDEN

6. MARKING OF PRODUCT

Brief instructions or diagrams clearly illustrating the use of the lifebuoy self-igniting light shall be printed on the casing.

The signal body shall bear the following marks:

- Trade name
- Date of manufacture and date of expiry
- Maximum stowage height
- SOLAS approved
- Lot number
- Markings as per MED 96/98/EC : ☒ YYYY/XX where YYYY is the number of the Notified Body undertaking surveillance module (when BV, 0062) and where XX are the last two digits of year mark affixed.

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 manufacturer will accept full responsibility for informing Shipowners of proper methods of use, storing and maintenance of the self-activating smoke signal and of the conditions of this approval.

This certificate supersedes EC Type Examination Certificate No 06892/C2 EC issued on 09/07/2013 by the Society.

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



**BUREAU
VERITAS**

*Marine & Offshore
Division*

Certificate number: 20321/B2 EC

File number: PYR 2466/9

Annex A1 Item number: A.1/1.3

USCG Module B number: 160.157 / 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

LIFEBUOYS SELF-ACTIVATING SMOKE SIGNALS

IKAROS MOB, smoke

Art.N°345205

Requirements:

SOLAS 74 Convention as amended

Reg. III/4, X/3, III/7 and III/34

IMO Res. MSC.48(66) amended by MSC.207(81), MSC.218(82), MSC.272(85), MSC.293(87), MSC.320(89) & MSC.368(93) I, II

IMO Res. MSC.36(63) 8 - IMO Res. MSC.97(73) 8

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: 09 Jul 2018

For BUREAU VERITAS Notified Body 0062,

At BV GOTHENBURG, on 15 Dec 2015,

Magne MOLLER



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

Trademark	Nammo LIAB AB
Type	IKAROS MOB, smoke
Reference	345205

Dimensions	Weight	Body colour	Smoke duration time	Maximum stowage height
203 mm x 485 mm	4.8 Kg	Yellow	minimum 15 minutes	60 m

2. DOCUMENTS AND DRAWINGS

- Manufacturer's specification and drawings:

Code	Title	Revision	Date
DS 345205	MOB Mk IV Smoke	0	01/06/2015

- Manuals for installation, use and maintenance.

No departure from the drawings shall be made without the prior consent of the Society.

3. TEST REPORTS

Date	Test report	
03/03/1997	TB 703-3	Initial Type Test according to the Manufacturer's Technical specification's test protocol
27/03/1997	6005/6891/AO/O-H	Initial Type Test
19/06/2001	Type Approval Tests of MOB Mk III	Additional type tested performed by the manufacturer after modifications as described in "Technical Specification Article No 345105 dated 10/10/2001"
13/03/2001	21/01	Additional Vibration test performed by "Forsvarets Materielverk ProvFFK"
14/09/2007	TR-017	Additional type test
30/10/2007	TR-020	Additional Drop test
17/12/2007	07-0983R	"Vibration test" and for the "Corrosion and Seawater resistance test" by Bofors Test Center AB
20/12/2007	TR-025	Additional smoke obscuration tests
21/12/2007	Annual Tests 2007	Additional type test
02/10/2013	Annual Tests 2013	Additional type test Including Drop Test 60m
02/04/2014	Annual Tests 2013	Additional type test
23/06/2015	204GTB15	Additional type test (Tests as per test program PP 15-04)

4. APPLICATION / LIMITATION

- As per requirements of regulations stated on front page of this certificate.
- Is not to be stowed at a height above the waterline exceeding 60 meters.
- Each lifebuoy self-activating smoke signal will be supplied with its instructions for use, inspections and on-board maintenance complying with the regulations stated on the front page of this certificate
- Expiration date not to exceed 48 months after month of manufacture.

5. PRODUCTION SURVEY REQUIREMENTS

The manufacturer shall institute a quality control procedure to ensure that the lifebuoy self-activating 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.

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.

Each lifebuoy self-activating smoke signal intended to be fitted onboard a ship registered to a National register adhering to the Directive shall be delivered with a Declaration of Conformity.

For information concerning the production phase modules, **Nammo LIAB AB** has declared the following manufacturing places:

Nammo LIAB AB

SWEDEN

6. MARKING OF PRODUCT

Brief instructions or diagrams clearly illustrating the use of the lifebuoy self-activating smoke signal shall be printed on the casing.

The signal body shall bear the following marks:

- Trade name
- Date of manufacture and date of expiry
- Maximum stowage height
- SOLAS approved
- Lot number
- Markings as per MED 96/98/EC : ☒ YYYY/XX where YYYY is the number of the Notified Body undertaking surveillance module (when BV, 0062) and where 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 manufacturer will accept full responsibility for informing Shipowners of proper methods of use, storing and maintenance of the self-activating smoke signal and of the conditions of this approval.

This certificate supersedes EC Type Examination Certificate No 20321/B1 EC issued on 28/07/2014 by the Society.

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



**BUREAU
VERITAS**

*Marine & Offshore
Division*

Certificate number: 06891/D1 EC

File number: LSA 2466/02 & PYR 2466/07

Annex A1 Item number: A.1/1.3

USCG Module B number: 160.157 / 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 (EU) 2015/559*

This certificate is issued to

Nammo LIAB AB

Lindesberg - SWEDEN

for the type of product

LIFEBUOYS SELF-ACTIVATING SMOKE SIGNALS

Ikaros MOB MK IV smoke signal, Art.N°345105

Requirements:

SOLAS 74 Convention as amended, Regulations III/4, X/3, III/7 and III/34

IMO Res. MSC.48(66) -(LSA Code)- amended by MSC.207(81), MSC.218(82), MSC.272(85), MSC.293(87), MSC.320(89) and MSC.368(93) I, II

IMO Res. MSC.36(63) -(1994 HSC Code)- as amended, 8

IMO Res. MSC.97(73) -(2000 HSC Code)- as amended, 8

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) and 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: 30 May 2019

Magne MOLLER



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

Trademark	Nammo LIAB AB
Type	Ikaros MOB Mk IV smoke signal
Reference	345105

The lifebuoy self-activating smoke signal is combined with the "Ikaros MOB MK IV Light Signal": the complete unit is the "Ikaros Mob Mk IV Light & Smoke Signal – article No. 345105". The Ikaros MOB MK IV Light Signal" is approved as per EC Type Examination certificate No 06892/xx EC

Dimensions	Weight	Body colour	Smoke duration time	Maximum stowage height
203 x 485 mm	4.8 Kg	Yellow	minimum 15 minutes	60 m

2. DOCUMENTS AND DRAWINGS

- Manufacturer's specification and drawings:

Code	Title	Revision	Date
DS 345105	MOB Mk IV Light and smoke	01	2015-06-01

- Manuals for installation, use and maintenance.

No departure from the drawings shall be made without the prior consent of the Society.

3. TEST REPORTS

Date	Test report	
03/03/1997	TB 703-3	Initial Type Test according to the Manufacturer's Technical specification's test protocol
27/03/1997	6005/6891/AO/O-H	Initial Type Test
19/06/2001	Type Approval Tests of MOB Mk III	Additional type tested performed by the manufacturer after modifications as described in "Technical Specification Article No 345105 dated 10/10/2001"
13/03/2001	21/01	Additional Vibration test performed by "Forsvarets Materielverk ProvFFK"
14/09/2007	TR-017	Additional type test
30/10/2007	TR-020	Additional Drop test
17/12/2007	07-0983R	"Vibration test" and for the "Corrosion and Seawater resistance test" by Bofors Test Center AB
20/12/2007	TR-025	Additional smoke obscuration tests
21/12/2007	Annual Tests 2007	Additional type test
16/10/2008	Annual Tests 2008	Additional type test
28/02/2013	--	Additional type test (LED) (T° Cycling test, Light Tests, Chromaticity test, Rain Test & Watertightness test, Dome Drop Test, Drop Test, Fiting Test, Vibration Test, Solar Radiation Test, Test for Oil Resistance and Fire Test
27/05/2013	--	Additional type test (LED) (T° Cycling test and Light Tests)
02/10/2013	--	Additional Type Test (LED) (Including drop test)
02/04/2014	--	Additional type test (Visual Inspection, Case resistance test, Dome Drop Test, test for oil resistance)
23/06/2015	204GTB15	Additional type test (Tests as per test program PP 15-04)

4. APPLICATION / LIMITATION

- As per requirements of Regulations stated on front page of this certificate.
- Is not to be stowed at a height above the waterline exceeding 60 meters.
- Each Lifebuoy self-activating smoke signals will be supplied with its instructions for use, inspections and on-board maintenance complying with the regulations stated on the front page of this certificate.
- Expiration date not to exceed 48 months after month of manufacture.

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 lifebuoy self-activating 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 lifebuoy self-activating smoke signal intended to be fitted onboard a ship registered to a National register adhering to the Directive shall be delivered with a Declaration of Conformity.

For information concerning the production phase modules, **Nammo LIAB AB** has declared the following manufacturing site(s):

Nammo LIAB AB

SWEDEN

6. MARKING OF PRODUCT

Brief instructions or diagrams clearly illustrating the use of the lifebuoy self-activating smoke signal shall be printed on the casing.

The signal body shall bear the following marks:

- Trade name
- Date of manufacture and date of expiry
- Maximum stowage height
- SOLAS approved
- Lot number
- Markings as per MED 96/98/EC :
- ☒ YYYY/XX where YYYY is the number of the Notified Body undertaking surveillance module (when BV, 0062) and where 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 product(s) marked as per MED 96/98/EC may be marked with the USCG conformity marking as authorized by the Notified 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 manufacturer will accept full responsibility for informing Shipowners of proper methods of use, storing and maintenance of the self-activating smoke signal and of the conditions of this approval.

This certificate supersedes EC Type Examination Certificate No 06891/D0 EC issued on 30/05/2014 by the Society.

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

RUSSIAN MARITIME REGISTER OF SHIPPING



TYPE APPROVAL CERTIFICATE

Manufacturer

Nammo LIAB AB

Product*

Self-activating smoke signal with Self-igniting lights
IKAROS MOB Mk IV, Light & Smoke (Article No. 345105)

Code of nomenclature

02050100MK, 02050200MK

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, 6.2.2, 6.2.3 of the part II of Rules for Equipment of Sea-going Ships, ed.2015. The product complies with the requirements of items 1.2, 2.1.2, 2.1.3 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 9 chapter I of IMO Resolution MSC.81(70) as amended.

This Type Approval Certificate is valid until

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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

№

15.10029.262

Russian Maritime Register of Shipping



(signature)

R.Litvinets

(name)

*

Additional information see overleaf.

Technical data

Smoke colour - orange.

Period of smoke emission - not less than 15 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.

It is not swamped in a sea way, the light can not be extinguished by water.

The light is of white colour capable of operating for at least 2 hours with luminous intensity.

Withstands a drop into the water from the height of 60 m.

Weight - 4800 g.

Height/Diameter - 485 mm / 200 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. 15.00168.262 of 10.02.2015

Application and limitations

It is intended 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.

15.10029.262