

# Foam Liquid

The principal use of foam is to extinguish burning flammable or combustible liquid spills. A foam blanket covering a liquid surface is capable of preventing vapour transmission for some time. Foam is used to diminish or halt the generation of flammable vapours from non-burning liquids or solids, and to cut off access to air for combustion.

## FOAM LIQUID DATA

DESCRIPTION	PROTEIN	SYNTHETIC
Concentration	3%	3%
Density [20°C]	1.16 ± 0.02 [g/ml]	1.02 ± 0.02 [g/ml]
pH [20°C]	7.0 ± 0.5	7.5 ± 0.5
Viscosity [20°C]	8.0±2.0 [mm <sup>2</sup> /s]	3.0 ± 2.0 [mm <sup>2</sup> /s]
Expansion ratio	≥ 7.0	≥ 8.0
Drain time 25%	≥ 5:00 [min]	≥ 2:30 [min]
Pour point	≤ -12 [°C]	≤ -10 [°C]
Recommended storage usage temperature	-10 to +60 [°C]	-7 to +60 [°C]

\* The ICAO certificate for heli deck foam liquid is required as to CAP437 regulation.

## Design Figures

**Oil Tanker :** Covering the entire cargo tank deck with 0.6L/m<sup>2</sup>/min, or the largest cargo tank with 6L/m<sup>2</sup>/min, whichever is larger, in 20 min.

**Chemical Tanker :** Covering the entire cargo tank deck with 2L/m<sup>2</sup>/min, or the largest cargo tank with 20L/m<sup>2</sup>/min, whichever is larger, in 30 min.

**Heli Deck Foam :** AREA × 6L/min/m<sup>2</sup> × 3% × 5min × 1.15



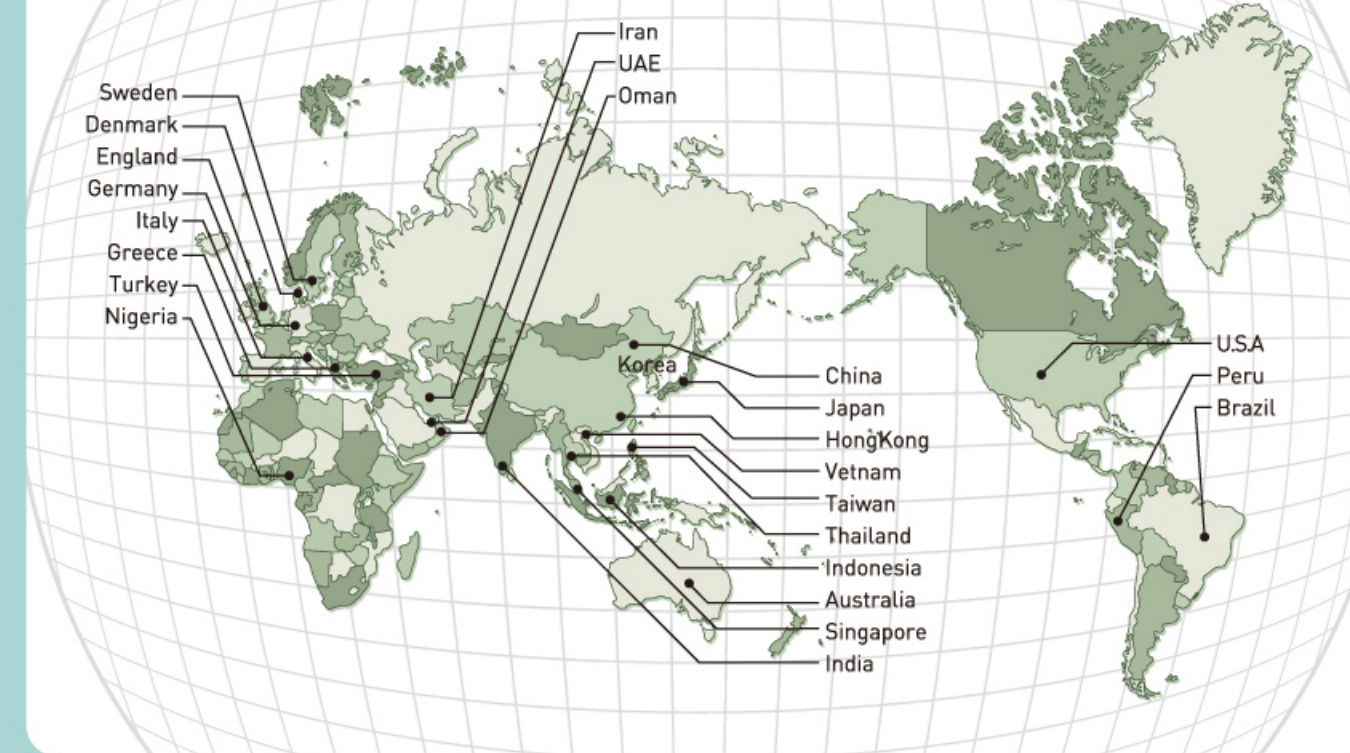
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## NK Global Network



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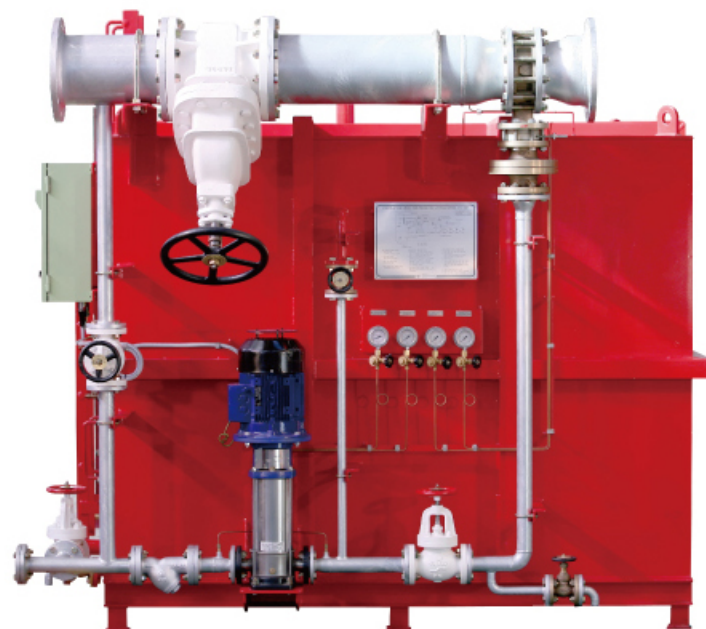
OPTIMAL

**LOW EXPANSION FOAM**  
 Fire Extinguishing System

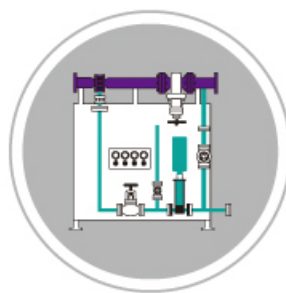
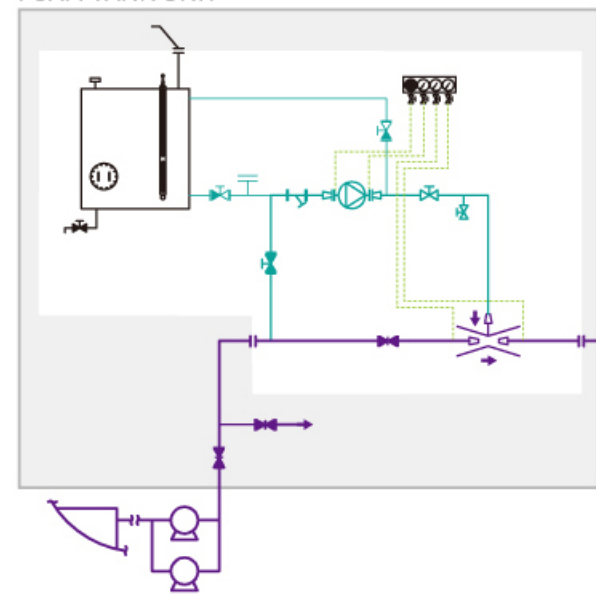
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## LOW EXPANSION FOAM

A foam system consists of water supply, foam liquid storage, a proportioning device and a distribution. The foam liquid is stored in a tank, the material of which can be mild steel with painting, stainless steel or GRP. The tank must be completed with a vent, gauge and access manhole. The foam is delivered by a centrifugal foam pump to a foam proportioner that mixes 3%, 6% of foam liquid and 97-94% sea water. Foam solution is supplied to the deck monitors, foam nozzle and portable foam branch pipe.



FOAM TANK UNIT



### Features

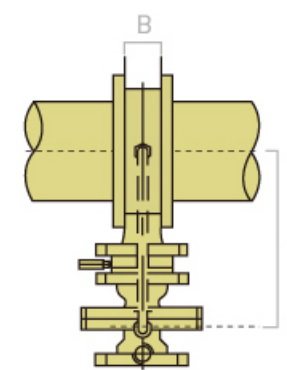
- Extensive independent testing according to IMO MSC/Circ.582 & 799 & 1312.
- Compliance with SOLAS requirements and approval by major class societies.

## FOAM PROPORTIONER

NK's balanced foam proportioner is designed to introduce foam concentrate into the firewater at a pre-determined rate. Foam insertion is adjusted in the range of 3-6% using an adjustable nozzle. There are three basic models, with 100A, 150A and 200A water connection and wafer type, installed between pipe connection.

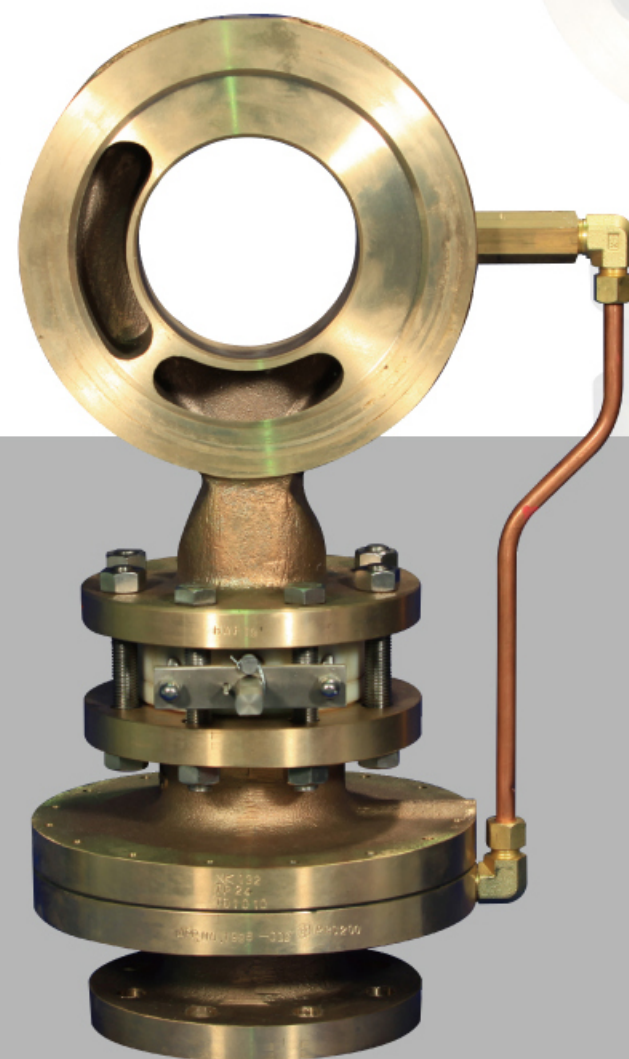
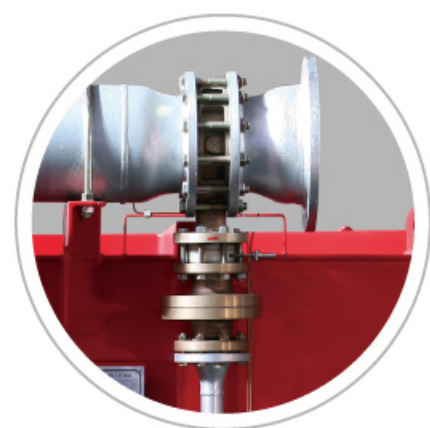
### Balanced Pressure Proportioner Data

TYPE	CONNECTION		CAPACITY [LPM]		WEIGHT (kg)	MATERIAL	PROPORTIONING (%)	SIZE (mm)	
	FOAM	WATER	MIN	MAX				A	B
PRS 50/100	JIS 10K-50A	JIS 10K-100A	0	3,000	25	BRONZE	3, 6	310	70
PRS 50/150	JIS 10K-50A	JIS 10K-150A	3,000	6,000	32	BRONZE	3, 6	335	70
PRS 80/200	JIS 10K-80A	JIS 10K-200A	6,000	13,000	48	BRONZE	3, 6	470	82



### Product Features

- Easy adjustable integrated foam regulation
- Accurate proportioning over the range
- Maintenance free construction
- Compact size
- Wafer-type water connection
- Flanged-type foam connection
- Made of high-grade corrosion resistant bronze



## FOAM MONITOR

The foam monitor is designed with a fog/jet discharge with blow benefits.

### Fixed Foam Monitor and Nozzle Data

SIZE	DESIGN PRESSURE (kg/cm <sup>2</sup> )	CAPACITY (LPM)	ROTATION (degree)	ELEVATION (degree)	SHOOTIN RANGE	CONNECTION FLANGE	WEIGHT (kg)	MATERIAL		
								BODY	NOZZLE	FLANGE
100A	16	3,000 - 6,000	360	-45 ~ +85	5bar at 63m	JIS 10K-100A	52	GCD 450	BRONZE	BRONZE
150A	16	6,000 - 13,000	360	-45 ~ +85	5bar at 71m	JIS 10K-150A	77	GCD 450	BRONZE	BRONZE



### Advantages

- Wide flow range
- Adjustable flow
- Compact balanced design
- Low weight
- Easily manoeuvred due to low friction bearings
- Long throw length
- Adjustable stream pattern
- Corrosion resistant construction of stainless steel and bronze

### Type

- Fixed Foam Monitor
- Oscillating Monitor
- Remote Operated Monitor

NK's Low Expansion Foam System can be discharged manually or remotely (Hydraulic or electric) or by an oscillating monitor, depending on the circumstances. The bow loading area is protected by foam nozzle.

