

# Expandol

Expandol is a superior quality high expansion fire fighting foam concentrate for extinguishing and securing flammable hydrocarbon liquid fires.



Its unique formulation is a blend of high activity synthetic foaming agents and foam stabilisers specially formulated to produce an extremely stable long-lasting foam. Expandol has been formulated primarily for use at medium and high expansion, and it is effective on a wide variety of Class A and Class B fire risks. The finished foam has drainage characteristics far superior to those of standard detergents which increase its ability to carry water to the fire, acting as a positive aid to effective fire extinguishment.

Expandol used at medium and high expansion combats fires in three ways:

- Initial contact with fire generates a large volume of steam reducing the available oxygen to create an inert atmosphere.
- The high water content of medium expansion foam produces a valuable cooling effect.
- The large volume of foam generated engulfs the area and totally seals off and extinguishes any remaining fires.

Expandol is extremely economical. For example, when used with the Hi-Combat Turbex Mk2 high expansion foam generator  $200 \text{ m}^3 \text{ min}^{-1}$  ( $7000 \text{ ft}^3 \text{ min}^{-1}$ ) of finished foam can be produced at an expansion of 1200:1 for a consumption rate of nominally  $5 \text{ l min}^{-1}$ .

## Environment

Expandol is biodegradable and is non-toxic to aquatic organisms at normal use strength.

## Applications

Expandol is the ideal foam to use at medium expansion at minor incidents such as small hydrocarbon liquid spill fires where close approach to the fire allows hand-held apparatus to be used. It can also be used in conjunction with fixed installations to provide bund protection, where it can achieve extinction of fires or suppression of toxic vapour release after chemical spillage.

At medium and high expansion, Expandol is used for the total flooding of fire areas involving Class A and Class B fires: medium expansion for small areas such as cellars and basements of buildings, and high expansion for large areas such as ships' holds, machinery spaces, and LNG storage tank bunds. Medium and high expansion foams are most effective when dealing with outbreaks of fire in inaccessible locations, where direct application of conventional agents such as water is difficult or impossible due to smoke or restricted access.

## Performance

The fire performance of Expandol is measured primarily against Lloyds Register and NFPA 11A.

## Approvals

Independently Tested and Certified to EN1568:2008 Parts 1 & 2.

## Equipment

Expandol is intended for use at 1 - 3% (high expansion) to 3 - 6% (medium expansion).

Expandol gives best results when used with the Angus Fire range of high and medium expansion foam-making equipment. It may also be used satisfactorily with other manufacturers' equipment.

## Compatibility

Expandol is suitable for use in combination with:

- Soft or hard, fresh, brackish or seawater.
- Expanded protein-based or synthetic foams for application to a fire in sequence or simultaneously.

### Dry Powder

Expandol is not normally considered compatible with dry powders but on LNG applications (high expansion) only surface foam layers are attacked, leaving a good vapour controlling blanket in place while the foam is topped up.

### Storage

Expandol is exceptionally stable in long-term storage. A shelf-life of at least ten years can be expected if it is stored properly.

### Disposal

Expandol can be successfully treated in biological waste water treatment systems.

### Reliability

Expandol is produced to rigorous quality control standards to ensure consistent fire performance and excellent product reliability. Angus Fire operates a quality management system which complies with the requirements of BS EN ISO 9001:2008.

#### Typical Physico-Chemical Properties

Appearance		Amber liquid
Specific gravity @ 20°C (68°F)		1.00 - 1.02
pH @ 20°C (68°F)		6.0- 8.0
Viscosity @ 20°C (68°F)	mm <sup>2</sup> sec <sup>-1</sup>	7.0
Viscosity @ 0°C (32°F)	mm <sup>2</sup> sec <sup>-1</sup>	15.0
Maximum continuous storage temperature	°C (°F)	40 (104)
Maximum intermittent storage temperature	°C (°F)	60 (140)
Effect of freeze/thaw		No performance loss
Lowest use temperature	°C (°F)	-3 (27)
Sediment as shipped	% v/v	≤ 0.1
Sediment after ageing	% v/v	≤ 0.5

#### Typical Foam Properties:

These vary depending on the performance characteristics of the foam. When tested with Angus Fire Equipment it gives the following properties

	Hi-Combat MEX 225 & 450	Hi-Combat Turbex Mk2
Induction rate %	3 - 6	1 - 2
Expansion ratio	65:1	500:1 - 1250:1

Packing Specification	Plastic Square		Plastic Cylindrical		Ecobulk MX
Capacity	25 litres	5 US gallons	200 litres	55 US gallons	1000 litres
Empty weight (kg)	1.2	0.8	9.0	9.0	70
Filled weight (kg)	26	20	211	220	1080
Dimensions (mm)	448 x 286 x 286	402 x 293 x 240	580 D x 922 H	580 D x 922 H	1200 L x 1000 W x 1160 H

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