

## Product Specification Sheet



### MARINOH 111L

#### General Description

MARINOH is extensively used in the production of rigid polyol blends which reacts with isocyanate to produce PU foam. With excellent developed formulation, MARINOH has good thermal insulation property, light in weight, high compression strength and excellent dimensional stability.

The versatility of MARINOH gives superior features such as 100% water blown foam system, good flow ability properties, low moisture content and no toxic vapour. The foam system is widely used for chilled water piping, refrigeration, roofing insulation and sandwich panels.

#### SPECIFICATIONS

##### Typical Properties of MARINOH-111L

Parameter	Result
State at 25 ° C	Liquid
Colour	Marine Blue
Odour	Sweet
Density at 25 ° C /(g/cm <sup>3</sup> )	0.960 g/cm <sup>3</sup>
Solubility	Alcohol, Ketone, Ether, Alkane, Water
Cloud Point, °C	≈ 25° C
Ph	7 – 8

#### Laboratory Reaction Properties

Parameter	Reaction Time /s
Cream Time	25
Gelling / Fibre Time	70
Tack - Free Time	106
Free - Rise Time	158

## Typical Properties of MARINOH-111L Rigid Polyurethane Foam

Parameter	Method	Result
Apparent Molded Density ( kg /m <sup>3</sup> )	BS 4370: Part 1 : 1988 (Method 2)	45 – 50
Apparent Core Density (Kg/m <sup>3</sup> )	BS 4370: Part 1 : 1988 (Method 2)	38 – 42
Compressive Strength to Foam Rise at 10% deflection (kPa)	BS 4370: Part 1 : 1988 (Method 3)	544.5 ± 178.2
Dimensional Stability (%)	BS 4370: Part 1 : 1988 (Method 5B) at (- 15 °C for 24 hrs)	Length : -0.42 ± 0.19 Width : - 0.27 ± 0.09 Thickness : -1.70 ± 2.8
	BS 4370: Part 1 : 1988 (Method 5B) at ( 70 °C for 24 hrs)	Length : +0.02 ± 0.19 Width : +0.09 ± 0.28 Thickness : -1.25 ± 1.2
Thermal Conductivity (W/mK)	BS 4370: Part 2 : 1993	0.0270 ± 0.03

### Recommended Ratio

Composition	Part by weight (PBW)
MARINOH	100
MDI	110

### STORAGE & HANDLING

#### Shelf Life

Material	Shelf life
MARINOH	3 Months (If stored in sealed)
MDI	12 Months

## Storage

MARINOH should be stored indoor and the storage system must be designed to accomplish at least the following:

- Permit safe handling of the material
- Provide temperature control
- Prevent contaminations of the product
- Minimize the hazards of combustibility

MDI reacts with water liberating CO<sub>2</sub> which could cause violent rupture of the closed containers, and forming solid insoluble polymers, which can block pipes, valves, etc. Contact with copper or copper alloys and galvanized surfaces must also be avoided. Valves, etc. made of these materials must not be used in equipment for storing and handling of MDI.

Material	Condition
MARINOH-111L	Store in a cool, dry, well – ventilated area Room temperature ( 25°C)
MDI	Store at a temperature between 10°C - 30°C

## Handling Precautions of Materials

MARINOH should be handled with appropriate caution and good hygiene practices. **SKIN AND EYE CONTACT SHOULD BE AVOIDED.** Personal Protective Equipment should be provided to any personnel who involve in handling the MARINOH. Appropriate eye protection should be worn whenever MARINOH are handled or used. Use protective gloves when prolonged exposure or frequently exposure contact could occur with MARINOH. If MARINOH contact the skin, wash with soap and plenty of water. If skin irritation occurs, consult medical personnel. If eyes are contaminated with MARINOH, wash thoroughly with plenty of water for a prolonged period of 30 minutes. If eye irritation occurs, consult medical personnel.

MDI should always be handled and used in a well - ventilated area with appropriate local exhaust ventilation to maintain levels to below the TLVs. It is recommended that the MDI concentration in the air be checked at regular intervals. Keep equipment clean. Use disposable containers and tools where possible. Do not eat, drink or smoke in working area. A basic essential in sampling, handling and storage is the prevention of contact with moisture or water.