

Technical Information Bulletin

"Neolon" Closed Cell Buoyancy Foam

In the aquatic environment, basic flotation of craft and occupants is a necessary requirement for safety and the preservation of life. This is defined as a means to keep a boat carrying its maximum load from sinking when swamped. The necessity thus exists to stow onboard, in a practical fashion, sufficient buoyant material that can demonstrate the characteristics of long life, solvent resistance, fire retardancy and low cost.

Because of the ability of plastic materials to be expanded many times their original volume, certain polymers exhibit unique properties ideally suitable for buoyancy. Polyethylene is one such compound.

"Neolon" closed cell buoyancy foam is a chemically cross-linked polyethylene that has been recycled and formulated to give the advantages of:

FEATURE		DESIRED RESULT	
A.	Resistance to attack from hydrocarbon and chemical solvents	A.	No effect from Diesel or Petrol / Oil mixes
B.	Semi Permanence	B.	Durable with extended life in the presence of ambient heat and U.V
C.	Resilience	C.	Virtually no effect from routine physical abuse
D.	Noise and vibration reduction	D.	Minimisation of unwanted frequencies
E.	Fire Retardancy	E.	Certified ignitability, flame propagation and heat evolution
F.	Toxicity	F.	Composed of hydrogen and carbon only with virtually no other dangerous elements
G.	Low Density	G.	Maximum floatation
H.	Resistance to marine growth	H.	Impervious to mildew, mould, rot and bacterial presence
I.	Water absorption	I.	Closed cell plastics foam with substantiated results.

In late 2009 Australian Standard AS1799.1-2009 was published to cover general requirements for the safe operation of power boats within Australia and included was the need to provide basic craft floatation when capsized. This is essentially that, "At least some portion of the hull shall remain above water when the boat is in a condition of maximum persons capacity when swamped". To give this resultant characteristic, "Resistant floatation materials shall not lose more than 10% of their buoyancy when tested for water absorption, resistance to heat and resistance to fuels".

Substantiation of the qualities of "Neolon" is covered by;

1. Vic Lab Pty Ltd Test Report No 091053 of 8/12/2009 – for Compressive Strength, Density, Water Uptake and Dimensional Stability
2. Australian Wool Testing Authority Test Report No 7-546043AQ for Ignitability, Spread of Flame, Heat Evolved and Smoke Developed.

All features are compliant and both laboratories are certified by the National Association of Testing Authorities, Australia.

In order to establish the correct volume of "Neolon" required a determination of the submerged weight of the craft is necessary. This can be calculated by totalling the dry mass of the hull, the dry mass of the deck, the dry mass of the superstructure and the dry mass of all equipment and accessories. To this is added the installed mass of the engine, fuel tanks and fuel. The total weight in kilograms is then combined with a safety factor for closed cell plastic flotation materials of 1.2.

This is divided by 1000 less the density of the floatation material in kilograms per cubic meter. A representation is as follows:

$$\begin{array}{l} \text{No of cubic meters of} \\ \text{Flotation material} \end{array} = \frac{1.2 \times \text{total weight (in kg)}}{1000 - \text{density of floatation material (In kg/cm)}}$$

Because "Neolon" is a recycled plastics product and composed predominately of the elements carbon and hydrogen it is environmentally friendly, and of low cost, when compared to other polymer resin materials such as polyurethane and straight run polyethylene.

The benefits are obvious so please contact:

THE FOAM AND RUBBER SHOP

3-410 STUART HIGHWAY
WINNELLIE. N.T 0820
PH: 08-8984 4775 FX: 08-8984 4725

foam_rub@tpg.com.au

