

Ultra-low density high performance syntactic foams

With industry demands to reduce the volume of buoyancy and increase payload on remotely operated and autonomous vehicles (ROV/AUV) Balmoral's Discovery Unit recently completed an extensive R&D programme to develop a new range of ultra-low density syntactic foams.

The resulting new material is designed to operate at various service depths, optimised for low density and high safety factors with minimal buoyancy loss over a 25-year design life. All of this was achieved without compromising any of the key goals.

Finished foam densities, spanning 2000-7000msw operating depths, have been significantly lowered as a result of resolute R&D work and testing.

The new grades boast ultra-low density, extremely low manufacturing tolerance, excellent water ingress resistance, negligible long-term buoyancy loss, impressive mechanical properties – including high bulk modulus and high hydrostatic collapse pressure safety factors.

They are also suitable for other deepwater applications including manned submarines, suspended oceanographic instrumentation and pipe support buoyancy. For ROV/AUV purposes the new materials can be supplied either as slab-stock or fully designed and customised buoyancy blocks.

Max depth rating (msw)	Grade	Finished foam density (Kg/m ³)	Hydrostatic collapse pressure safety factor: Max operational pressure
2000	LDF2000	385 ± 15	>1.50:1.00
3000	LDF3000	415 ± 15	>1.50:1.00
4000	LDF4000	435 ± 15	>1.50:1.00
5000	LDF5000	479 ± 15	>1.50:1.00
7000	LDF7000	530 ± 15	>1.21:1.00

