

# Divinycell® HCP Technical Data

Divinycell HCP grade has been developed to meet the demand for a high-performance, lightweight buoyance material with excellent characteristics. It is widely used in floatation units, ROVs, diving bells and impact protection structures. As a result of its excellent hydraulic compressive properties and closed cell structure, it has very low buoyancy loss and water absorption under long-term loading conditions. The insulation properties of HCP are excellent.

HCP stands for Hydraulic Crush Point indicating the most important feature of this class of materials. HCP is defined as the point of pressure in Bar, where the material when subjected to an increasing pressure of 1–2 Bar/sec has lost 5% of its initial volume. The design of subsea buoyancy applications is complex and consideration has to be given to the required buoyancy loss and updrift over the expected lifetime and service conditions, with respect to long and short term hydraulic compressive creep, water absorption and hydraulic fatigue. Please contact DIAB Technical Services for design proposal.

## Technical Data for Divinycell HCP Grade

Property	Test procedure	Unit	HCP 30	HCP 50	HCP 70	HCP 90	HCP 100
Hydraulic Crush Point		Bar	30-39	50-59	70-79	90-99	100-109
Compressive Strength <sup>2)</sup>	ASTM D 1621	MPa	5.4	7.2	8.1	10.2	11.6
E-modulus (extensometer) <sup>2)</sup>	ASTM D 1621	MPa	310	400	500	590	650
Tensile Strength <sup>2)</sup>	ASTM D 1623	MPa	7.1	9.2	11.0	12.6	13.5
Shear Strength	ASTM C 273	MPa	3.5	4.5	5.2	6.5	7.3
Shear Modulus	ASTM C 273	MPa	73	97	115	147	170
Shear Strain	ASTM C 273	%	45	45	35	35	35
Density, nominal <sup>1)</sup>	ISO 845	kg/m <sup>3</sup>	200	250	300	360	400
Thermal Conductivity	EN 12667	W/m.K	0.049	0.051	0.057	0.058	0.060
Buoyancy	Contact DIAB Technical Services for design case calculation						
1) Typical density variation ± 10%.							
2) Perpendicular to the plane. All values measured at +23°C.							

Operating temperature is –200 to +80°C. Normally Divinycell HCP can be processed up to 90°C without dimensional changes. Maximum processing temperature is dependent on time, pressure and processing conditions. Therefore users are advised to contact DIAB Technical Services to confirm that Divinycell HCP is compatible with their particular processing parameters.

Coefficient of linear expansion: Approx.  $37 \times 10^{-6}/^{\circ}\text{C}$

