



## TECHNICAL DATA

# PVC Foam | Divinycell HCP

### High performance buoyancy PVC foam

Divinycell HCP is a high-performance, low-density buoyancy foam designed specifically for subsea applications. With outstanding hydraulic compressive properties and a closed cell structure, it provides high uplift capacity, minimal buoyancy loss and water absorption even under long-term loading conditions. Widely used in submarines, buoyancy modules (or units) in ROV:s, AUV:s and other autonomous vehicles, diving bells, and impact protection structures, Divinycell HCP is the reliable choice for critical subsea operations.

The design of subsea buoyancy applications is complex and consideration has to be given to the required buoyancy loss and updrift requirements over the expected lifetime and service conditions, with respect to long and short term hydraulic compressive creep, water absorption and hydraulic fatigue. Certified for subsea, each block pressure tested and documented for traceability. Please contact Diab Technical Services for design proposal.

### Mechanical properties

Property	Test Procedure	Unit		HCP 30	HCP50	HCP70	HCP90	HCP100
Density	ISO 845	kg/m <sup>3</sup>	Nominal	200	250	310	380	410
Hydraulic Crush Point	ASTM D-2736 proc. A	Bar	Minimum	30	50	70	90	100
Compressive Strength <sup>1</sup>	ASTM D1621	MPa	Nominal	5.4	7.2	8.1	10.2	11.6
			Minimum	4.5	6.1	7.0	9.0	10.0
Compression Modulus <sup>1</sup>	ASTM D1621-B-73	MPa	Nominal	310	400	500	590	650
			Minimum	265	350	390	490	540
Tensile Strength <sup>1</sup>	ASTM D1623	MPa	Nominal	7.1	9.2	11.0	12.6	13.5
			Minimum	6.3	8.0	10.0	11.5	12.2
Shear Strength	ASTM C 273	MPa	Nominal	3.5	4.5	5.2	6.5	7.3
			Minimum	3.2	3.9	4.2	6.0	6.5
Shear Modulus	ASTM C 273	MPa	Nominal	73	97	115	147	170
			Minimum	65	81	90	126	146
Shear Strain	ASTM C 273	%	Nominal	45	45	35	35	35

All values measured at +23°C

1. Properties measured perpendicular to the plane.

Nominal value is an average value of a mechanical property at nominal density.

Minimum value is a minimum guaranteed mechanical property a material has independently of density.

### Product characteristics

- Excellent buoyancy performance
- High impact and damage resistance
- Low water absorption
- Good insulation properties
- Thermoformable
- Superior damage tolerance
- Fast and easy to machine
- Good chemical and thermal resistance

### Typical application areas



Subsea

## Technical characteristics

Type	Buoyancy <sup>1</sup> (kg/m <sup>3</sup> )	Operational depth <sup>2</sup> (m)	Crush depth (m)
HCP30	825	190	300
HCP50	775	300	500
HCP70	715	450	700
HCP90	645	550	900
HCP100	615	650	1000

1. Buoyancy above is calculated at surface level and with nominal density. Please contact Diab for detailed analyse before selecting material.
2. Operational depth above is calculated with a max 5% buoyancy loss over 10 years operational time.  
Depth shown are for guidance only and can be optimized for individual conditions. Always contact Diab for advice before selecting material.  
Buoyancy calculated in sea water (density 1025 kg/m<sup>3</sup>).

Characteristics <sup>1</sup>	Unit	HCP30	HCP50	HCP70	HCP90	HCP100	Test method
Density range	kg/m <sup>3</sup>	180-230	230-290	295-340	350-415	390-455	ISO 845
Closed cells	%	>99	>99	>99	>99	>99	-
Thermal conductivity <sup>2</sup>	W/(m·K)	0.049	0.051	0.057	0.058	0.060	EN 12667
Coeff, linear heat expansion	x10 <sup>-6</sup> /°C	37	37	37	37	37	ASTM D 696
Continuous temp range	°C	-200/+80	-200/+80	-200 to +80	-200/+80	-200/+80	-
Max process temp	°C	+90	+90	+90	+90	+90	-
Dissipation factor	-	0.0015	0.0020	0.0024	0.0030	0.0034	ASTM D 2520
Dielectric constant	-	1.25	1.32	1.39	1.47	1.53	ASTM D 2520

1. Typical values
2. Thermal conductivity at +10°C

Operating temperature is typically -200°C 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 process conditions. Therefore, users are advised to contact Diab Technical Services to confirm that Divinycell HCP is compatible with their particular processing parameters.

## Dimensions

Format		Unit	HCP30	HCP50	HCP70	HCP90	HCP100
Plain sheets	Length	mm	1730	1640	1410	1340	1310
	Width	mm	850	800	700	660	640
	Thickness	mm	62	54	31	27	23

Can be bonded to larger dimensions upon request.

## Storage of product

The shelf life of Divinycell is unlimited when it is stored in its original package on ambient indoor storage conditions and protected against UV exposure.

### Disclaimer:

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Datasheet Diab Divinycell HCP rev23 SI May 2026

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