

Divinycell H

Technical Data

The high performance sandwich core

Divinycell H provides excellent mechanical properties to low weight. The unique IPN chemical structure, yields impressive mechanical performance to a low weight. Divinycell H has been widely used and has a proven track record in virtually every application area where sandwich composites are employed including the marine (leisure, military and commercial), land transportation, wind energy, civil engineering/infrastructure and general industrial markets.

Divinycell H is ideal for applications subject to fatigue, slamming or impact loads. Other key features of Divinycell H include consistent high quality, excellent adhesion/peel strength, excellent chemical resistance, low water absorption and good thermal/acoustic insulation. Divinycell H is compatible with virtually all commonly used resin and manufacturing systems.

Product Characteristics

- Low water absorption
- Superior damage tolerance
- Fast and easy to process
- Good chemical resistance
- Excellent fatigue properties
- Low resin uptake
- Wide range of properties
- Provides excellent mechanical properties to a low weight

Mechanical properties Divinycell® H

| Property | Test Procedure | Unit | | H35 | H45 | H60 | H80 | H100 | H130 | H200 | H250 |
|-----------------------------------|-----------------|-------------------|---------|-----|------|------|------|------|------|------|------|
| Compressive Strength ¹ | ASTM D 1621 | MPa | Nominal | 0.5 | 0.6 | 0.9 | 1.4 | 2.0 | 3.0 | 5.4 | 7.2 |
| | | | Minimum | 0.3 | 0.5 | 0.7 | 1.15 | 1.65 | 2.4 | 4.5 | 6.1 |
| Compressive Modulus ¹ | ASTM D1621-B-73 | MPa | Nominal | 40 | 50 | 70 | 90 | 135 | 170 | 310 | 400 |
| | | | Minimum | 29 | 45 | 60 | 80 | 115 | 145 | 265 | 350 |
| Tensile Strength ¹ | ASTM D 1623 | MPa | Nominal | 1.0 | 1.4 | 1.8 | 2.5 | 3.5 | 4.8 | 7.1 | 9.2 |
| | | | Minimum | 0.8 | 1.1 | 1.5 | 2.2 | 2.5 | 3.5 | 6.3 | 8.0 |
| Tensile Modulus ¹ | ASTM D 1623 | MPa | Nominal | 49 | 55 | 75 | 95 | 130 | 175 | 250 | 320 |
| | | | Minimum | 37 | 45 | 57 | 85 | 105 | 135 | 210 | 260 |
| Shear Strength | ASTM C 273 | MPa | Nominal | 0.4 | 0.56 | 0.76 | 1.15 | 1.6 | 2.2 | 3.5 | 4.5 |
| | | | Minimum | 0.3 | 0.46 | 0.63 | 0.95 | 1.4 | 1.9 | 3.2 | 3.9 |
| Shear Modulus | ASTM C 273 | MPa | Nominal | 12 | 15 | 20 | 27 | 35 | 50 | 73 | 97 |
| | | | Minimum | 9 | 12 | 16 | 23 | 28 | 40 | 65 | 81 |
| Shear Strain | ASTM C 273 | % | Nominal | 9 | 12 | 20 | 30 | 40 | 40 | 45 | 45 |
| Density | ISO 845 | kg/m ³ | Nominal | 38 | 48 | 60 | 80 | 100 | 130 | 200 | 250 |

All values measured at +23°C

1. Properties measured perpendicular to the plane

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

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

Divinycell H is type approved by:



Technical Characteristics

Technical Characteristics Divynycell® H

| Characteristics ¹ | Unit | H35 | H45 | H60 | H80 | H100 | H130 | H200 | H250 | Test method |
|-----------------------------------|-----------------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Density variation | % | -10% to +20% | ± 10 | ± 10 | ± 10 | ± 10 | ± 10 | ± 10 | ± 10 | - |
| Thermal conductivity ² | W/(m-K) | 0.028 | 0.028 | 0.029 | 0.031 | 0.033 | 0.036 | 0.044 | 0.049 | EN 12667 |
| Coeff, linear heat expansion | x10 ⁻⁶ /°C | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | ISO 4897 |
| Heat Distortion Temperature | °C | +125 | +125 | +125 | +125 | +125 | +125 | +125 | +125 | DIN 53424 |
| Continuous temp range | °C | -200 to +70 | -200 to +70 | -200 to +70 | -200 to +70 | -200 to +70 | -200 to +70 | -200 to +70 | -200 to +70 | - |
| Max process temp | °C | +90 | +90 | +90 | +90 | +110 | +110 | +110 | +110 | - |
| Dissipation factor | - | 0.0001 | 0.0002 | 0.0003 | 0.0005 | 0.0006 | 0.0009 | 0.0015 | 0.0019 | ASTM D 2520 |
| Dielectric constant | - | 1.04 | 1.05 | 1.06 | 1.09 | 1.11 | 1.15 | 1.23 | 1.29 | ASTM D 2520 |
| Poissons ratio ³ | - | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | D638-08 |

1. Typical values
2. Thermal conductivity at +20°C
3. Standard deviation is 0.045

Continuous operating temperature is typically -200°C to +70°C. The foam can be used in sandwich structures, for outdoor exposure, with external skin temperatures up to +85°C. For optimal design of applications used in high operating temperatures in combination with continuous load, please contact Diab Technical Services for detailed design instructions.

Maximum processing temperature is dependent on time, pressure and process conditions. Therefore users are advised to contact Diab Technical Services to confirm that Divynycell H is compatible with their particular processing parameters.

Physical characteristics

| Format | | Unit | H35 | H45 | H60 | H80 | H100 | H130 | H200 | H250 |
|--------------|--------|------|------|------|------|------|------|------|------|------|
| Plain sheets | Length | mm | 2650 | 2440 | 2440 | 2440 | 2160 | 1960 | 1730 | 1640 |
| | Width | mm | 1250 | 1220 | 1220 | 1220 | 1070 | 970 | 850 | 800 |
| GS sheet | Length | mm | 1250 | 1220 | 1220 | 1220 | 1080 | 980 | 865 | - |
| | Width | mm | 883 | 813 | 813 | 813 | 1070 | 970 | 850 | - |
| GS sheet | Length | mm | 1250 | 1220 | 1220 | 1220 | - | - | - | - |
| | Width | mm | 1250 | 1220 | 1220 | 1220 | - | - | - | - |

Disclaimer:

This data sheet may be subject to revision and changes due to development and changes of the material. The data is derived from tests and experience. If not stated as minimum values, the data is average data and should be treated as such. Calculations should be verified by actual tests. The data is furnished without liability for the company and does not constitute a warranty or representation in respect of the material or its use. The company reserves the right to release new data sheets in replacement.

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