

INDUSTRY

The core of future innovation

Sandwich core solutions for lightweight,
flexible and durable design

Diab



The ultimate engineering solution

The volume and number of applications of composite materials is growing steadily, continuously penetrating and conquering new markets. Sandwich composites are probably the most weight-saving and sustainable design method available, enabling you to conserve both energy and important natural resources.

Composites can be bent, curved and joined together in an almost limitless range of geometric configurations with integrated multiple functions. Further, their durability and weather resistance mean less maintenance over time.

The many benefits of sandwich composites

The unique properties of sandwich composite materials open endless opportunities for a variety of applications and make sandwich composites and core materials vital elements in pushing your products to a higher level of competitiveness.

Composites offer:

Full design freedom

Composites can be molded into an infinite number of complex shapes, not possible with traditional materials. With composites, there are no limitations to the design.

Considerable weight reduction

Sandwich composites provide great weight reductions compared to many conventional steel or aluminium designs.

High strength-to-weight ratio

For applications where the combination of low weight and high structural strength is required, nothing can compete with sandwich composites.

Full corrosion resistance

Composites have a high resistance to water, chemicals and the environment, which makes them a perfect material choice for outdoor exposure.

Low maintenance/long life

Composite structures have an exceedingly long life span and require minimal maintenance due to their durability and resistance to corrosion. The combination of low maintenance and long life gives composite materials excellent life-cycle costs.

Decreased environmental impact

Using lightweight materials with proven track record means reduced usage of natural resources, reduced energy consumption and less pollution.



Choosing the optimal solution

Diab provides a comprehensive portfolio of core materials for use in sandwich composites. Each material provides specific characteristics suitable in various conditions. In addition, we provide a wide range of finishing, kits and engineering services, plus our extensive experience of composite manufacturing to assist you in application development with sandwich composites.

MATERIAL		CHARACTERISTICS
Divinycell H	IPN	Excellent mechanical, insulating and machining properties vs. weight
Divinycell HP	IPN	Meets the demands in higher temperature processing
Divinycell CY	IPN	Excellent mechanical and insulating properties in cryogenic environment
Divinycell Matrix	IPN	Superior mechanical properties vs. weight
Divinycell P	PET	Good mechanical, insulating and FST properties
Divinycell PX	PET	Good insulating and FST properties
Divinycell PN	PET	Good mechanical and insulating properties
ProBalsa	Balsa	High mechanical properties



A multitude of applications

With several high-performing product lines, numerous finishing options and kit operations in combination with engineering services and expertise, Diab's sandwich cores and technology are used by leading companies in a wide variety of markets to achieve the most competitive low-weight, high-performance structures possible.



Radomes & Antennas

A sandwich radome or antenna made with Divinycell core is a strong, lightweight solution with good impact behavior and excellent resistance to harsh weather conditions. Combined with the additional benefits of low dielectric constant and loss tangent, these characteristics make Divinycell suitable for sea, air and land-based equipment.

Examples of applications:

- Radomes for superior electrical performance and rigidity
- Reflectors - for excellent electromagnetic properties, high durability and low thermal sensitivity
- Antenna covers - for high strength and stiffness at minimum weight and good resistance to weather and UV

Core materials recommended for radomes and antenna applications: Divinycell F, Divinycell H, Divinycell HP, Divinycell PN and Divinycell P



Liquid Natural Gas (LNG)

The excellent insulation behavior of Diab's core materials in cold and cryogenic temperatures makes them an ideal solution for LNG carriers as well as land-based LNG storage tanks. A special grade, Divinycell CY, with exceptional properties, is approved for the GTT (Gas Transport & Technigaz) N096 design both as insulating and supporting material.

Examples of applications:

- Bottom insulation in land-based LNG storage tanks
- Insulation in LNG carriers

Core materials recommended for insulating applications: Divinycell CY and Divinycell H

Sports & Leisure

The superior strength-to-weight ratio of Diab's core materials makes them the perfect choice for a wide variety of sporting goods. Diab's Divinycell cores also provide higher stiffness, high durability and better impact vibration damping, delivering additional performance edge.

Examples of applications:

- Cross-country, alpine and water skis - for reduced weight and excellent strength
- Hockey sticks - for added impact resistance and good compression properties
- Surfboards and longboards - for maximum flexural strength at minimum weight

Core materials recommended for sports & leisure applications: Divinycell H, Divinycell HP, Divinycell Matrix

Free form

Diab's solutions offer design freedom that is unmatched with traditional building materials. Our high-performance core materials can be molded into an infinite number of complex shapes, and being lightweight, they also reduce the need for supporting systems and enable fast and cost-efficient onsite installation. Using digital fabrication techniques and CNC routing equipment when working with composites makes it possible to create unique and stunning works.

Examples of applications:

- Sculptures
- Décor sets for theatre
- Furniture

Core materials recommended for free form applications: Divinycell H, Divinycell HP, Divinycell PN and Divinycell P



Construction

Sandwich technology and high performance core materials provide excellent solutions to create innovative façades and constructions in a cost-effective manner. Low weight, high strength, thermal and sound insulating properties together with non-corrosive features, make sandwich composites a sustainable and economic solution. The lightweight components also reduce the need for supporting points, and enable fast and cost-efficient onsite installation.

Examples of applications:

- Domes
- Bridges
- Roofs and canopies
- Claddings
- Wall panels
- Interiors

Core materials recommended for construction applications: Divinycell H, Divinycell PN, Divinycell Matrix, Divinycell P, Divinycell PX

Diab – a strategic partner

Competence gained through experience

Decades of experience serving numerous industries have given us invaluable insight into our customers' unique products and processes, enabling us to develop solutions adapted to their specific needs.

Most valuable offering in the industry

Diab serves a wide range of markets with diverse needs and challenges. Combining our high performance products with our top-level engineering services, we present a very wide and valuable offering. Diab Technical Services is an excellent speaking partner in terms of core, kits and finishing selection, making sure you get the most out of your chosen composite solution.

Completing the design on paper or in the computer is only one step in the process of getting products to market. Efficient manufacturing must be utilized to maintain a competitive edge. If you need specialty composite technology services, you can turn to the Composites Consulting Group (CCG), an independent Diab company. CCG utilizes process specialists throughout the world to manage projects and resources, developing manufacturing strategies, material requirements, work instructions and factory setups for our customers' specific needs. Mechanical and process engineers, material scientists, naval architects and composite technicians, with vast experience from various industries, assist you in rapidly developing high-performance and innovative products with a complete set of consulting services including: design, engineering, testing, process consulting, training, tooling, materials and equipment. In addition, CCG takes on customer-specific consulting requests.

To learn more about the possibilities of our high-performance core materials, please visit ccg-composites.com

Service and supply close to you

Diab is a global company with local offices and distribution sites throughout the world. We provide on-time support, on-site technical knowledge and fast supply.

Innovation and quality

At Diab, we are continuously expanding our portfolio of core materials and value-added services. Our dedicated R&D offices and strict adherence to ISO 14001 quality requirements ensure we keep you on the leading edge of your industry.

History you can trust

Diab has offered the best core materials for sandwich composite solutions for more than 60 years. We are proud to be a committed, organized, stable and innovative company. We honor our commitment by focusing on what is needed to make our customers' products stronger, lighter and smarter – now and in the future.



