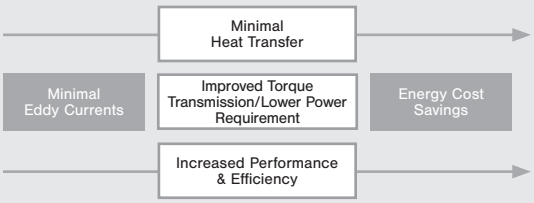
PRODUCT BROCHURE

# Xycomp® DLF™ Composite Containment Shell

## High-Performance Composite Design

*Xycomp® DLF™ composite containment shell*




For more than a decade, Greene Tweed has been producing Xycomp® Composite Containment Shells for the API market, rated up to 50 bar.

**To satisfy a larger fraction of the magnetically driven pump market (including the ANSI/ASMI market), Greene Tweed now offers Xycomp® DLF™ Composite Containment Shells.**

As a result of the higher volume demand at a lower pressure rating (up to 25 bar), our Xycomp® DLF™ allows for a more economical shell. Xycomp® DLF™ provides the same notable beneficial energy savings and performance capabilities as our Xycomp® composite material.

## Features and Benefits

**Minimize eddy current loss —** Eddy current loss with composite shells is more than 120 times lower than for Hastelloy® shells, leading to considerable energy savings with Xycomp®. Greene Tweed's Xycomp® containment shell means that bigger couplings and higher revolutions once limited due to the amount of energy loss are feasible.

**Higher torques —** Higher torques lead to minimized energy losses, thus increasing performance and efficiency of the magnetic coupling and significantly reducing power requirements.

**Reduced heat transfer —** The Xycomp® shell experiences minimal energy loss from eddy current, and the fluid temperature remains stable, unlike conventional pump shells, increasing safety in hydrocarbon applications where pumps are operating close to the boiling point.

**Easy installation —** The shell is attached to the pump housing based on customer requirements, allowing for easy installation.

**Excellent shock and impact resistance —** Xycomp® material provides excellent resistance to thermal shock and impact during utilization, installation, and maintenance, so the risk of damage is decreased in comparison to ceramic shells, which are brittle and delicate to handle. The Xycomp® shell adapts to all sizes and pressures and is ideal for small and large pumps.

## Energy Savings for Magnetic Couplings

Traditionally, in magnetically driven pumps and mixers, 5 to 20 percent of the energy is lost as heat due to eddy currents. When using Greene Tweed's composite shell, manufactured from our Xycomp® material, pumps require less energy than traditional shells, therefore reducing costs. The Xycomp® shell is used for magnetic couplings in pumps and mixers in hydrocarbon and chemical applications.

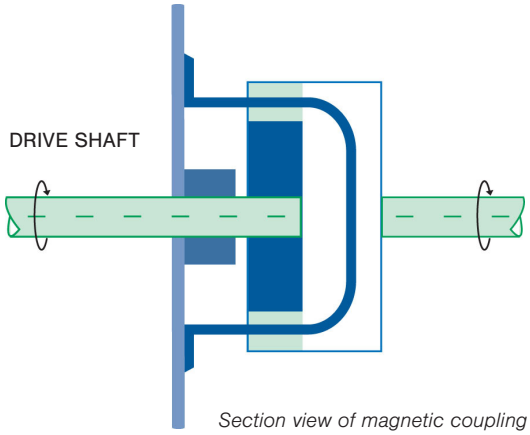
The Xycomp® shell acts as the sealing element of the magnet coupling. It seals the inner rotor (impeller side) from the outer rotor (motor side), allowing an eddy current-free transmission of the magnetic force. The lack of eddy current enhances torque transmission, increasing efficiency in refineries and protecting the environment.

Made from an advanced thermoplastic composite, reinforced with high-strength carbon fiber, and molded through our proprietary process, the containment shell is an ideal replacement for materials such as 316SS and Hastelloy®.

PRODUCT BROCHURE

| Working Pressure psi (bar) | Wall Thickness Comparison, in. (mm) | |
|---|---|---|
| | CFK w/ PTFE liner | Metallic Shell* |
| 348 (24) | 0.24 – 0.5 (6 – 10) | 0.05 (1.3) |

*Note: 316SS and Hastelloy® shells.*




*Section view of magnetic coupling*

## Applications

- For magnetic couplings used in magnetic pumps and mixers found in the manufacture and treatment of toxic, aggressive, or explosive media
- Refining and chemical applications

## Availability

- Ability to offer customized, finished parts
- For larger shells, the wall thickness is proportionate to the ID at constant working pressure

| Typical Properties | |
|---|---|
| **Physical Properties (ASTM Standard)** | **Typical** |
| Color | Black/Gray |
| Density Volumic Mass, g/cm$^3$ (D792) | 1.56 |
| Fiber Volume, % | 60 |
| Water absorption @ 48 Hours, 212°F (100°C), % (D570) | 0.05 |
| **Electrical (ASTM Standard)** | |
| Electrical Resistivity, Ohm x m (B193) | 1.10 x 10$^{-2}$ |
| **Mechanical (ASTM Standard)** | |
| Tensile Strength XY, psi (MPa) (D3039) | 30,100 (208) |
| Tensile Modulus XY, ksi (MPa) (D3039) | 5,620 (38,750) |
| **Thermal (ASTM Standard)** | |
| Coefficient of Thermal Expansion, x-y plane, in./in./°F (mm/mm/°C) (Ambient Temperature) (D696, E831) | Axial 4.5 x 10$^{-6}$ (8.1 x 10$^{-6}$) HOOP 3.5 x 10$^{-6}$ (6.3 x 10$^{-6}$) |
| Glass Transition Temperature, °F (°C) (DSC) | 290°F (143°C) |
| Thermal Conductivity Z, W/m *K (E1530) @ 200°F (93°C) @ 400°F (204°C) | 0.75 0.94 |
| Continuous Temperature Range, °F (°C) (DSC) | 355°F (180°C) |

** Note: Depending on application conditions. Contact GT engineering for further assistance.*

**Greene Tweed**

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