



**GEF INCORPORATED**

## **Advanced Composite Wrap**

- ◇ **CORROSION REPAIR**
- ◇ **STRUCTURAL REINFORCEMENT**
- ◇ **DENT/GOUGE REPAIR**
- ◇ **CONFORMS TO TEES, ELBOWS,  
MANIFOLDS AND WELDS**
- ◇ **AVAILABLE IN CARBON FIBER**



- ◇ **DOT QUALIFIED & NSF/61 APPROVED**
- ◇ **CAN BE APPLIED AT FULL PRESSURE**
- ◇ **NO MIXING OR FABRIC SATURATING**
- ◇ **FAST, FOOLPROOF INSTALLATION**
- ◇ **VALIDATED TO ASME PCC-2 STANDARD AND ISO 24817**

### **TECHNICAL SPECIFICATION**

- ◇ **ISO 9001:2008 CERTIFIED MANUFACTURER**
- ◇ **DET NORSKE VERITAS (DNV) CERTIFICATION**



Aquawrap® is a low cost composite system for use in repair and reinforcement of existing mechanical systems, structures and piping. Furnished factory-impregnated with our proprietary urethane resin systems, it is odorless and non-flammable. Aquawrap® is ready to apply right out of the bag and cures by way of a chemical reaction with field-applied water. When cured, it is a very durable, high strength material that is impervious to fuels, many chemicals and solvents. It permanently bonds to a wide variety of surfaces such as metals, composites, concrete, plastics, and wood.

Aquawrap® is available in multiple E-glass and carbon fiber fabrics to satisfy a wide variety of application situations. The unique urethane resin system has excellent long term strength characteristics and toughness. It has been tested to and is in compliance with the ASME PCC-2 composite piping reinforcement specification.

Furnished resin-wetted and uncured in rolls, (see photo below) Aquawrap® ships to the field inside hermetically sealed metalized pouches. To use the product, just tear open the pouch and start wrapping or laying up onto the surface to be repaired or encapsulated. Initial hardening happens in about an hour, with substantial strength increasing to fully cured properties within 24 hours.

## **FEATURES**

- **Low cost**
- **Uses a water-activated polyurethane resin**
- **Simple and easy to use – just “rip & wrap”**
- **Cures in wet conditions and underwater**
- **Many different widths and lengths**
- **Excellent toughness – resists cracking**
- **Heat resistant to 250° F**
- **Non-hazardous**
- **30-minute working time, perfect for long installations**
- **High strength**
- **Can be applied over a wide temperature range**





## General Characteristics

Tg.	- 288 F.
Working Time	- 30 minute package open time, depending on ambient humidity/temperature
Cure Time	- 60 minutes nominal, after water application
Chemical Resistance	- Resistant to acetone, mek, toluene, gasoline, ethyl alcohol and many others
Adhesion	- 1,360 psi (lap shear) to abraded carbon steel
Heat distortion Temp	- >325 F.

## Fabric Summary

**G-03:** Light weight custom woven glass fabric for general purpose use

**G-05:** Heavy weight custom woven glass fabric for larger diameter piping and structures

**G-22:** Highly conformable Bear™ knitted glass fabric is for use on complicated geometry systems such as tees, couplings and fittings

**C-2:** Custom sewn bi-axial carbon fabric for use where high strength and/or modulus is required

## Properties Summary

Product	G-03	G-05	G-22 Bear™	C-2
Reinforcement	Woven bi-axial glass	Woven bi-axial glass	Knitted glass	Bi-axial carbon
Cured wrap thickness mils	16	28.5	38	38
Tensile strength, warp direction psi	60,900	45,400	31,555	61,755
Tensile strength, fill direction psi	32,429	45,400	31,555	41,576
Tensile modulus, warp direction msi	3.02	2.28	1.98	4.56
Tensile modulus, fill direction msi	2.16	2.28	1.98	4.30
Tensile load per ply, warp direction, lbs/in.	502	1299	623	2,341

## Product Testing Summary

The FACS™ group has completed extensive testing of the Aquawrap® products. These tests include but are not limited to the following:

- Standard properties testing such as tensile and compressive strength and modulus, CTE, HDT, lap shear strength, etc.
- Long term creep/rupture strength
- Various long term exposure tests in salt water, acid and alkaline solutions
- Thermal cycling
- Tensile properties at elevated temperatures
- Tensile load cycling
- Impact resistance
- ASME PCC-2 pipe burst tests
- Repair of pipes with dent/gouge defects
- ISO 9001:2008 Certified Manufacturer
- Det Norske Veritas Certificaton

## **Industries Served**



- Power Generation
- Chemical Plants
- Mining
- Industrial
- Pulp and Paper
- Liquid and Gas Transportation
- Production Facilities
- Water and Wastewater Treatment

### **AVAILABLE MANUFACTURER PRODUCT SUPPORT SERVICES**

- Project assessment
- Engineering consultation
- Repair design, calculation and documentation
- Project supervision, domestic and international
- Full range of ASME PCC-2 and ISO 24817 compliant composite materials
- Supporting installation supplies

### **TECHNICAL SUPPORT ASSISTANCE CONTACT**



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