



GENERAL SPECIFICATION

DynaGard™

Wear Pad
Corrosion Protection
For
Pipe Supports and Sleepers
In
Dynamic Mode

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Rev.	Date	Notes
00	04/08	First Issue
01	04/08	Modifications
02	05/08	Temp Tolerance
03	05/08	Installation Proc
04	06/08	Modifications
05	06/09	DGB

1. Scope

1.1. Product

This document contains the specifications for **DynaGard**, a peel and stick wear pad with a proprietary adhesive that provides inherent corrosion protection for pipe or conduits at the interface with a pipe support or sleeper and is specifically designed for dynamic applications where the pipe can be expected to move through expansion or contraction.

1.2. Usage

At the point where a pipe comes into contact with a support, abrasion associated with pipe vibration or movement can wear away protective coatings over time. Without the benefit of a protective coating, the steel of the pipe is in direct contact with the steel of the support. A corrosion cell is created and the moisture or water that collects at the contact point, or crevice, accelerates corrosion. As a result, pitting or other loss of steel wall occurs, creating the potential for leaks and other hazards.

To avoid corrosion problems associated with pipe supports, companies often insert a “wear pad” to isolate the pipe from its support. Traditional wear pads require several steps to install, increasing the cost greatly. Likewise, traditional wear pads do not have the physical properties necessary to withstand the stress, both mechanical and environmental, that characterizes the interface between a pipe and its support. Consequently, wear pads have to be replaced frequently, driving up maintenance costs.

1.3. Advantages

DynaGard, with its peel and stick feature, takes less than a minute to install and requires no mixing, special tools or training. DynaGard also utilizes DGB, a very high bond strength adhesive that keeps the wear pad firmly secured to the pipe, overcoming friction associated with the support when the pipe moves as a result of expansion and contraction. (TOPCOR Offshore should be contacted in advance if the pipe to be protected is expected have a significant amount of movement.)

With these advantages, DynaGard reduces maintenance costs, both from an installation standpoint and on a longer term basis by avoiding replacement costs.

2. Reference Documents

Standards Hand Wire Brush Cleaning, SSPC SP-2

3. Characteristics of DynaGard

3.1. Components

- Fiberglass reinforced shell with radius to conform to pipe
- DGB adhesive (double sided) applied to the shell with an exterior release liner for easy handling

3.2. Physical Characteristics of Components

3.2.1. Fiberglass Reinforced Shell

- Filament wound, fiber reinforced thermo set pipe (FRP)
- Manufactured as ASTM S 2296 Classification, Type 1, Grade 2
- UV inhibitor incorporated into resin matrix
- Each FRP shell is manufactured using a mandrel representing the diameter of the pipe to be fitted, with a radius between 120° and 30°, depending on the diameter of the pipe to be protected and the potential for movement of the pipe due to expansion and contraction.
- Physical Data:

Minimum wall thickness	3/16" to 6/16"
Temperature resistance	Restricted by DGB adhesive
Hoop tensile yield	12,800 psi (ASTM D 2992)
Compression yield	7,000 psi (ASTM D 695)
Flexural yield	6,100 psi (ASTM D 790, ASTM D 2412)
Flammability	Will support oxidation when exposed to direct ignition, but will self extinguish when fire is removed

3.2.2. DGB Adhesive Liner

- Modified, acrylic adhesive on both sides of a conformable foam
- Factory-applied to interior of the FRP DynaGard shell
- Exterior surface protected by release liner, removed prior to installation
- Physical Data:

Toxicity	None when used properly
Shelf-life	Unlimited
Color	Black
Service Temperature	-30°C to +121°C
Thickness	1.5 mm (approximate)
Density	640 kg/m ³
90° Peel Adhesion (based upon ASTM D3330)	N/100mm
Normal Tensile (ASTM D-897)	620 kPa
Dynamic Overlap Shear (ASTM D-1002)	550 kPa
Static Shear @ 22°C (ASTM D3654)	1000—grams/weight that ½ square inch will hold 10,000 minutes
Static Shear @ 66°C (ASTM D3654)	500—grams/weight that ½ square inch will hold 10,000 minutes
Dielectric Constant @1 kHz (ASTM D150)	0.0065 Dissipation Factor
Dielectric Constant @ 1 MHz (ASTM D150)	0.0506 Dissipation Factor
Dielectric Breakdown Strength (ASTM D149)	455 (in volts/mil)
Resistivity (Surface Resistance) (ASTM D257)	>10 ¹⁶ (in ohms/square)
Resistivity (Volume Resistance) (ASTM D257)	>2.5 x 10 ¹⁴ Volume Resistance (in ohms/cm)
Solvent and Fuel Resistance (Water, Salt Water, Hydraulic Fluid, 10W30 Motor Oil)	100% Adhesion Retention

3.3 Physical Characteristics of DynaGard

- No interference with cathodic protection
- Not subject to cathodic disbondment
- Superior adhesion to pipe and almost any coating or synthetic wrap
- Not subject to degradation by UV light
- Excellent resistance to:
 - Condensation, moisture or water

- Most Chemical and Acids (Chemical Resistance chart can be provided)
- DGB corrosion barrier not subject to physical degradation

4. DynaGard Application Procedure

4.1. Preparation

It is important that the DynaGard fit well. When ordering DynaGard, the outside diameter of the pipe to be protected should be included along with the length of DynaGard required to fully isolate the pipe from the support, or sleeper, with approximately 2" of overlap at each end. The recommended radius of individual DynaGards ranges from 60° to 150° and is a function of the diameter of the pipe to be protected and the degree to which the pipe is expected to move once the DynaGard has been installed.

Prior to installation, the dimension of the DynaGard should be checked against the pipe and the support to confirm the fit.

4.2. DynaGard Application:

Please refer to the DynaGard Installation Procedure which is available through TOPCOR Offshore, LLC and its distributors.