TECHNICAL INFORMATION ECOLOCK®

October 2014
Revision of October 2014

DESCRIPTION

Ecolock® consists of a vinyl ester resin base, reinforced with glass platelets.

Ecolock® products are the only homogenous coating providing hull protection and has mechanical antifouling properties. Ecolock® consists of large glass-platelets suspended in a reinforced but resilient vinyl ester resin with a higher concentration than plain Ecospeed®. Glass is a natural barrier to water and is often used for this purpose. In glass flake lining technology, this important property has been utilized by incorporating glass flakes into a matrix of tough carrier resins. These, when applied in the form of a liquid coating, cure to create tough, glass-like products which form a powerful bond with a host of diverse substrates. This proven industrial utilization has also been adapted for marine use. Icebreaker strength coatings are a typical example.

Ecolock® uses glass platelets specially designed to resist water ingress in the marine environment. After the curing process is complete and the vessel re-floated, it is conditioned to an exceptionally smooth finish. The hull roughness, unlike other coatings is brought down to a figure of less than 20 microns. Thus provides a more efficient hull and hence substantial fuel savings.

MULTI-LAYER

The barrier is formed by approximately 350 layers of glass platelets in Ecolock® lying parallel to the substrate within a resin matrix. Formulated in this way, Ecolock® becomes almost totally impervious and prevents the ingress or permeation of corrosive elements, liquid or gaseous. The positive bond Ecolock® forms with the substrate of the protected structure contributes to its unsurpassed performance, longevity and its outstanding success. If mechanically damaged Ecolock® will not undercut and peel off like some coatings.

Haven 29, Noorderlaan 9, 2030 Antwerp, Belgium
☏: +32 3 213 53 18 🖷: +32 3 213 53 21
info@ecospeed.be - www.ecospeed.be

ONE SYSTEM

Ecolock® is suitable for use on interior and exterior hulls, decks and ballast tanks.

DURABILITY

Corrosion caused by salt water can accelerate the erosion of even the most highly abrasion-resistant materials. Because of its stability, Ecolock® offers outstanding protection against corrosion, abrasion and other physical damage in the underwater environment. Its protective capabilities are far superior to those of conventional paints or other coatings with smaller platelets and not so resilient resins.

USE

Ecolock® is a heavy-duty coating, which can be applied on properly prepared steel and GRP surfaces. These surfaces must not be primed prior to application. The coating has excellent durability, even in the harsh conditions of seawater and is totally resistant to the destructive forces of barnacle growth.

GENERAL INFORMATION

Toxicity	Nil 100 % tin free 100 % copper free 100 % biocide free
VOC – 1998 compliant	1990 EPA-PG6/23(97) Clause 20(d) – industrial 1990 EPA-PG6/23(97) Clause 20(e) – marine
Flash point	Base: 32 °C Catalyst: > 55 °C
% Solids by volume	98 % at time of mixing
Application	Airless spray/brushing
Thickness in microns/coat	DFT 500 microns WFT 625 microns
Thinners	Styrene only (if required)
SG	1.23
Over coating interval	Minimum 3 hours at 20 °C Maximum indefinite (if clean)
Shelf life	6 months at 20 ºC
Pot life	30 minutes at 20 ºC.
Storage	20 ºC maximum
Salt spray test	ASTM B117-57T 20,000 hours: no effect

Barcol hardness	40 minimum
Direct tension adhesion	Cohesive failure before bond failure: >17.1 N/mm²
Elongation	ASTM D638-58T: 1%
Flexural strength	ASTM D790-49T: 62.74 N/mm stress 9.2 kN/mm modulus
Thermal coefficient of expansion	3.474×10^{-5} °C^{-1} (linear)
Thermal shock	Tenny cabinet test 300 hours at 82 °C 2 hours at temperature 1 hour transition
Moisture vapour	ASTM E96-80

Transmission rate

	Perm	Perm CM
Ecolock®	0.0160	1.358×10^{-11}
Chopped strand laminate	0.0900	1.532×10^{-10}
Clear resin	0.1195	2.988×10^{-10}

(same resin vehicle was used for all three tests)

ABRASION PROPERTIES

CS-10 Taber abrasive wheel (1 kg load)	Weight loss: 0.1150g (1,000 cycles) Thickness loss: 75 microns
Impact strength (120d)	Un-notched: 25 Notched: 16
Thermal conductivity	0.4 w/m/°C
Cathodic disbondment	British Gas GBE/CW6 Pass (0 - 1.5 mm) (DP/WMT/018)
Flexibility	Good up to the deformation point of steel. Able to withstand 100,000 cycles of 50 mm deflexion over 1 meter length.

TEMPERATURE LIMITS

Bond limit on steel (dry or gas conditions)
Maximum: + 170 °C
Minimum: - 40 °C*

Immersion conditions at 1000 microns thickness 70 °C
Immersion conditions at 2000 microns thickness 100 °C

*Minimum temperature limits probably much lower, but not tested

COVERAGE*

Catalyst**	0.04 kg required per m²
Practical Ecolock®	1.6 l/m² required per m² per 1000 microns DFT
Theoretical Ecolock®	1.23 l/m² per 1000 microns DFT

*Practical coverage figures, allowing all normal wastage
**Depending on environmental conditions

CURE Cure times will vary with ambient temperatures and percentage of catalyst used. Ecolock® may be over coated as soon as it has hardened sufficiently to accept the weight of the next coat without sagging (approximately 3 hours). Full cure will take 72 hours at 20 °C, but immersion in seawater can be allowed after 24 hours.

SPARK TESTING Test at 5000 Volt for each 1 mm thickness.

COLOURS Standard colours are black, off white and light grey. RAL colours are available to order.

NATO STOCK NO NCAGE – NATO Commercial and Governmental Entity Code for Subsea Industries: B5892 (manufacturer code)

NATO Stock Number (NSN) for ECOSPEED Light Grey:
NSN 6810-13-119-1845

ANTI-CORROSIVE Ecospeed is a pre-qualified coating system in accordance with NORSOK Standard M-501, Rev.5, June 2004 for System 7

ICE COATING Ecospeed is recognized as an abrasion resistant ice coating for ships intending to navigate in ice conditions.
