TECHNICAL CIRCULAR No. 175 of 15th February 2014

To:	All Surveyors/Auditors
Applicable to flag:	All Flags
Subject:	**Carnivorous plant inspires protective coatings**
Reference	Anti-fouling hull coating

Carnivorous plant inspires protective coatings

Plant has provided the inspiration for the next generation of anti-fouling hull coatings
A tropical carnivorous plant – the pitcher plant – which traps its prey inside its body with a virtually frictionless surface is inspiring a new generation of coatings capable of repelling liquids including blood, oil, honey and even ice.
Nature is well-known for its ability to repel liquids with lotus leaves, rice leaves, butterfly wings, mosquito compound eyes, cicada wings, red rose petals, gecko feet, desert beetles, and spider silk all having the ability to remain dry.
However, the pitcher plant or *Nepenthes*, which is found in countries including Australia, Malaysia and Madagascar, has a special adaptation which creates a near frictionless surface with unique self-healing properties.
The ability to repel liquids and contaminants has important applications to industry and everyday life. Coatings are needed to help stop the formation of life-threatening bacteria on medical instruments, ice build-up on air planes, fouling on ship hulls, anti-corrosion and the efficient transportation of products like crude oil by pipeline.
The pitcher plant is different to some other nature-inspired adaptations by 'locking-in' a lubricant layer onto the surface of its skin which cannot be penetrated by another liquid and is more damage tolerant. The result is also fatal to the plant's prey - insects and small frogs - which are unable to climb out of its smooth, deep, tubular-shaped body.

Customer Service Center
5201 Blue Lagoon Drive, 9TH. Floor,
Miami, Fl., 33126
Tel: 1 (305) 716 4116,
Fax: 1 (305) 716 4117,
E-Mail:
joel@conarinagroup.com

Technical Head Office
7111 Dekadine Ct.
Spring, Tx., 77379
Tel: 1 (281) 370 9363,
1 (713) 204 6380
E-Mail: tho@conarinagroup.com,
houston@conarinagroup.com

A team at Harvard University has now been able to mimic the pitcher plant's inner skin design to produce a transparent coating capable of being economically applied to almost any object - large or small.
The multi-stage coating process involves attaching a thin, but rough layer of porous silica particles which are used to lock-in a lubricating layer onto the surface to be protected. Its diverse applications could include acting as an anti-graffiti coating on walls or on medical implants to aid blood flow.

REFERENCES:

- Anti-fouling Convention

ATTACHMENTS: No.

Kindest Regards,

Cosmin Bozenovici
Naval Architect – Conarina Technical Head Office

Customer Service Center
5201 Blue Lagoon Drive, 9TH. Floor,
Miami, Fl., 33126
Tel: 1 (305) 716 4116,
Fax: 1 (305) 716 4117,
E-Mail:
joel@conarinagroup.com

Technical Head Office
7111 Dekadine Ct.
Spring, Tx., 77379
Tel: 1 (281) 370 9363,
1 (713) 204 6380
E-Mail: tho@conarinagroup.com,
houston@conarinagroup.com