

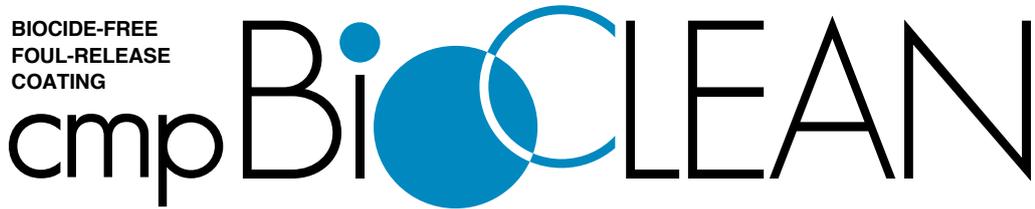
BIOCIDE-FREE
FOUL-RELEASE
COATING

cmp BiOCLEAN

Environmentally Friendly

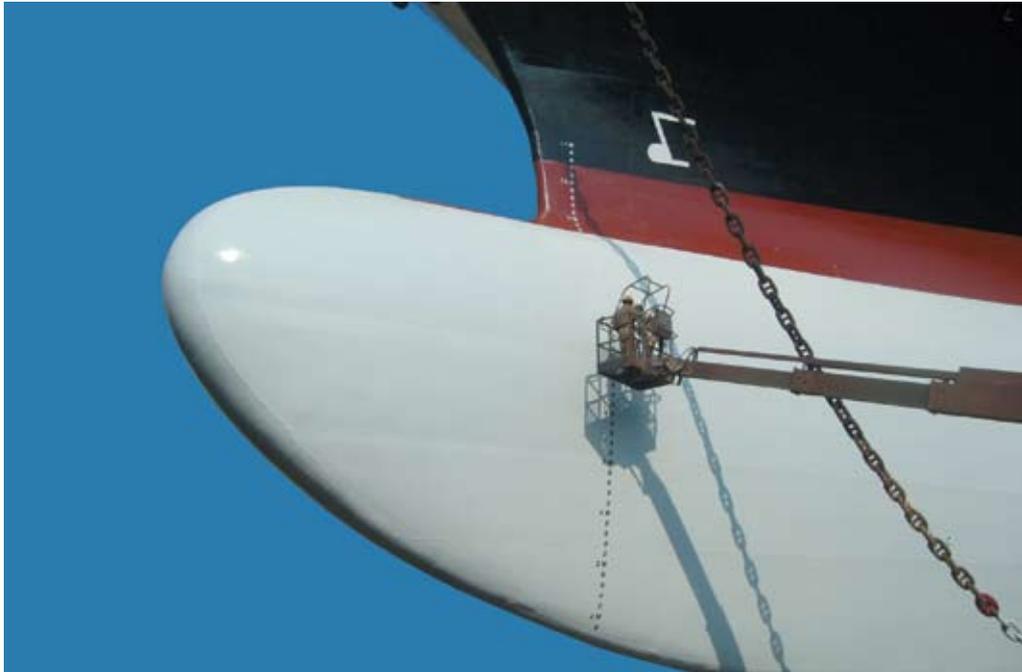


High-Performance Foul Release Coating Developed for Environment Protection

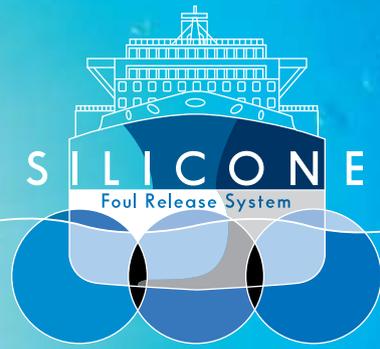


Foul Release Coating

CMP's commitment to invest in the development of coating systems providing high environmental and economic benefit continues with the introduction of CMP BIOCLEAR HB. Using a unique silicone technology CMP created their second generation foul release coating for use on the underwater hulls of vessels.



CMP has more than 20 years of experience with silicone technologies in the industrial market, having coated more than 500,000m². Consequently, the CMP BIOCLEAR foul release coating for the marine market was developed building upon extensive experience and has been used to coat many vessels in the 10-year period since introduction to the marketplace. CMP BIOCLEAR HB the second generation silicone coating for the marine market further improves vessel performance due to it being ultra smooth (25% smoother than that achieved with our existing silicone coatings). In addition, CMP BIOCLEAR HB reduces the time required for application. CMP have also developed CMP BIOCLEAR R for the rudder and propeller.



Bi●CiDE-free

Low V●C.

Ultra SM●OTH 25%↑

CMP BIOCLEAN HB is 25% smoother than existing silicone coatings resulting in further reductions of fouling, fuel consumption and CO₂ emissions.



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Features

- 1 Environmentally Friendly**
Biocide free, low V.O.C. and reduces CO₂ emissions from lower fuel consumption.
- 2 Improving Fuel Efficiency**
25% smoother than existing silicone coatings results in a reduction of drag resistance.
- 3 Time saving**
Fewer coats at docking and extended docking periods.
- 4 Long Term Durability**
High chemical stability minimizes environmental degradation hence prolonging performance.

Applications



Ultra SMOOTH

Low V.O.C.

BIOCIDE-free

SILICONE

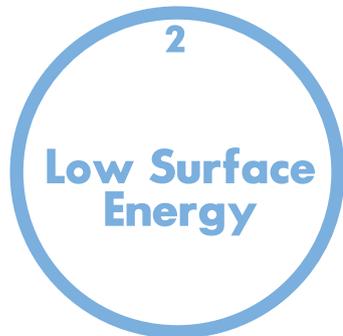
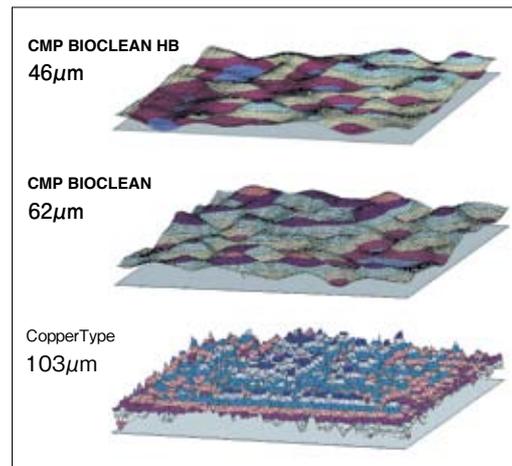
Foul Release System

Coating that are Friendly to the Marine Environment

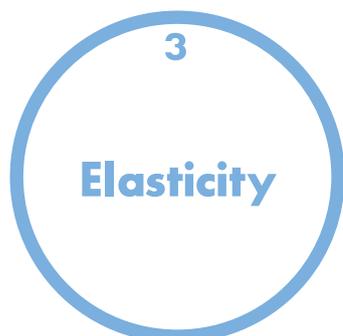
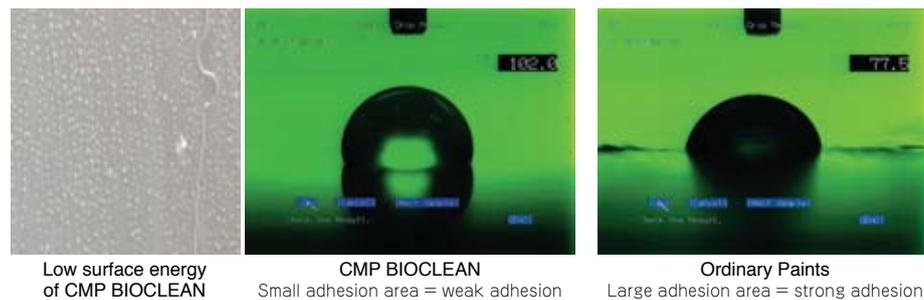
CMP BIOCLEAN combines ultra smoothness, low surface energy and elasticity to provide an underwater coating system which makes it difficult for marine organisms to settle and adhere to it.



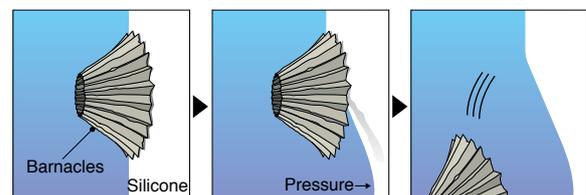
CMP research have maximised the advantages from the characteristics of silicone by creating an ultra smooth surface from a more open and even structure which reduces the drag resistance as the vessel moves through the water. The result is reduction in fuel consumption and CO₂ emissions from the vessel.



Silicone based coating have a low surface free energy which repels water, hence making it difficult for marine organisms to establish a base on which to secrete their adhesives for attachment.



Another feature of silicone based coating is their elasticity which results in the surface responding like rubber and therefore creating a resistance to barnacles and other marine organisms establishing a foothold. On occasion barnacles can sit on the surface until the forces of gravity or the pressure from seawater flow as the vessel sails removes them.



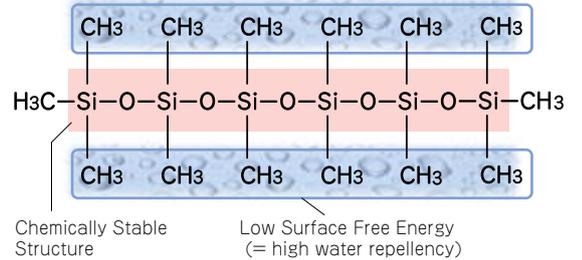
Even if barnacles adhere to the ship bottom, they will be easily removed by the gravity and the resistance force of the seawater generated by the travel of the ship because the elastic paint film surface does not provide firm footholds for them.

Scientific Characteristics of Silicone

There are two characteristic structures : core and surrounding.

Core = The silicone bond which is strong and stable

Surrounding = The methylated groups which are similar to that of oil hence low surface free energy resulting in water repellence.



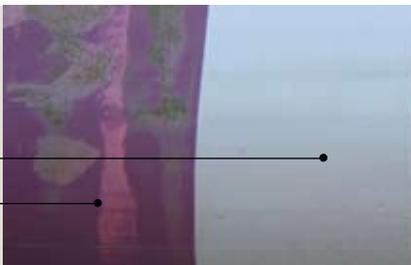
Antifouling Performance comparison

After 36 Months of Service

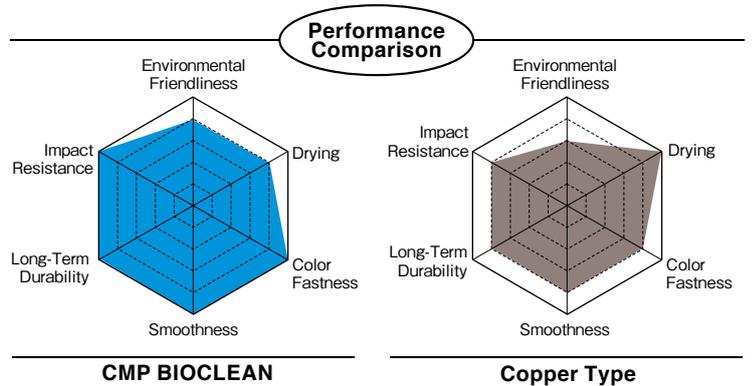


Both trials and In service performance of the silicone coatings demonstrate their ability to keep the surface clean and smooth.

After 36 Months of Service (patch test)



CMP BIOCLEAN
Copper Free Type Ship Bottom Paint



Standard Paint Specifications

Painted Section		Hull	Rudders	Propellers	
Product name		CMP BIOCLEAN HB	CMP BIOCLEAN R	CMP BIOCLEAN R	
Packing Type		3-component	1-component	1-component	
Paint Specifications	1st Coat	EPZR B2 ^(*1) 25μm	EPZR B-2 ^(*1) 25μm	EPICON B-100 PRIMER 70μm	
	2nd Coat	BANNOH 500 150μm	BANNOH 500 150μm	CMP BIOCLEAN SG-R 100μm	
	Full-Blast Specifications	3rd Coat	CMP BIOCLEAN SG 100μm	CMP BIOCLEAN SG-R 100μm	CMP BIOCLEAN R 200μm
		4th Coat	CMP BIOCLEAN HB 200μm	CMP BIOCLEAN R 200μm	
Paint Specifications	1st Coat	BANNOH 500R ^(*2) 175μm			
	2nd Coat	CMP BIOCLEAN SG 100μm	—	—	
	Painting over Existing (approved) AF Paint Film	3rd Coat	CMP BIOCLEAN HB 200μm		
Remark		Creates a very smooth surface.	Allows a high level of durability to be achieved due to the high strength of the coating.		

(*1) EPICON ZINC RICH PRIMER B-2 (*2) Damaged / Corroded Areas only

BIOCIDE-FREE FOUL-RELEASE COATING

cmp BiOCLEAN

CMP CHUGOKU MARINE PAINTS, LTD.

HEADQUARTERS

Tokyo Club Building, 2-6, Kasumigaseki 3-chome, Chiyoda-ku, Tokyo, 100-0013, Japan TEL : 81-(3)3506-5844 FAX : 81-(3)5511-8022

China

CHUGOKU MARINE PAINTS (SHANGHAI), LTD.
Room 2001, 20th Floor, Ludi Hechuang Building,
No.450 Caoyang Road, Putuo District, Shanghai, China
TEL : 86-(21)52357799 FAX : 86-(21)52360952
E-Mail : cmpshanghai@cmp.com.cn

Guangzhou Sales Office

Rm.1801, Tower B, Victory Plaza, No. 103-1, TiYu Road West,
Guangzhou City, Guangdong, China
TEL : 86-20-8523-6309 FAX : 86-20-8516-0806
E-Mail : cmpgdsales@cmp.com.cn

CHUGOKU MARINE PAINTS (GUANGDONG), LTD.

Industrial Development Area, Lunjiao, Shunde, Foshan, Guangdong, China
TEL : 86-757-27733451 FAX : 86-757-27733452

Hong Kong

CHUGOKU MARINE PAINTS (HONG KONG), LTD.
Room 01, 22nd Floor, Island Place Tower, 510 King's Road,
North Point, Hong Kong
TEL : 852-2576 6376 FAX : 852-2576 3607
E-Mail : marine@cmp-hk.com.hk

Taiwan

CHUGOKU MARINE PAINTS (TAIWAN), LTD.
5F-2, Shen Hsiang Tang Building, No.146, Sung Chiang Road, Taipei, Taiwan
TEL : 886-(2) 2511-0106 FAX : 886-(2) 2571-0618
E-Mail : cmppte@ms19.hinet.net

Indonesia

P.T. CHUGOKU PAINTS INDONESIA
8F, Midplaza 1 Bldg., Jalan Jendral Sudirman
Kav 10-11, Jakarta, Indonesia
TEL : 62-(21)5700515 FAX : 62-(21)5733787
E-Mail : info@chugoku.co.id

India

CHUGOKU PAINTS (INDIA) PRIVATE LIMITED
405, Raheja Chambers Free Press Journal Marg,
Nariman Point Mumbai, India. India
TEL : 91-22-43550600 FAX : 91-22-43550625
E-Mail : sales@cmpindia.net

Korea

CHUGOKU SAMHWA PAINTS, LTD.
2F, Bosaeng Bldg., 257, Hakham-Daero, Sasang-Gu, Busan, Korea
TEL : 82-51-329-3377 FAX : 82-51-329-3388
E-Mail : cspaint@csp.co.kr

Malaysia

CHUGOKU PAINTS (MALAYSIA) SDN. BHD.
902, Menara P.J, AMCORP Trade Center, No.18, Persiaran Barat,
Petaling Jaya, Selangor Darul Ehsan, Malaysia
TEL : 60-(3)79564373 FAX : 60-(3)79560219
E-Mail : cpmj@cmp.com.my

Singapore

CHUGOKU MARINE PAINTS (SINGAPORE) PTE. LTD.
22 Tuas Street, Singapore
TEL : 65-6861-6500 FAX : 65-6861-3002
E-Mail : salesmarine@cmpsin.com.sg

Thailand

TOA-CHUGOKU PAINTS CO.,LTD.
159 Sermmit Tower, 19th floor, Soi Sukhumvit 21, Sukhumvit Road,
Klongtoey Nua, Bangkok, Thailand
TEL : 66-(2)2602701 FAX : 66-(2)2602700
E-Mail : mktm@toa-chugoku.com

U. A. E.

**CHUGOKU MARINE PAINTS (SINGAPORE) PTE. LTD.
Dubai Branch**
Shipping Tower 1st Floor, Al Mina Road, Al Rifa'a, P.O.Box 464,
Dubai, United Arab Emirates
TEL : 971-4-393-8236 FAX : 971-4-393-4268
E-Mail : salesmarine@cmpsin.com.sg

Netherlands

CHUGOKU PAINTS B.V.
Sluisweg 12, Heijningen, Netherlands
TEL : 31-(167)526100 FAX : 31-(167)522059
E-Mail : sales@cmpeurope.eu

U.K.

CHUGOKU PAINTS (UK) LIMITED
Godliman House, 21 Godliman Street, London, U. K.
TEL : 44-(0)20-7778-0021 FAX : 44-(0)20-7489-7302
E-Mail : mailbox-uk@cmpeurope.eu

Germany

CHUGOKU PAINTS (GERMANY) G.m.b.H.
Johannisbollwerk 19, Hamburg, Germany
TEL : 49-40-317-964-80 FAX : 49-40-317-964-76
E-Mail : mailbox-de@cmpeurope.eu

Greece

CHUGOKU MARINE PAINTS (HELLAS), S.A.
8 Kanari Street, Piraeus, Greece
TEL : 30-(210)4522489 FAX : 30-(210)4180868
E-Mail : cmp-hellas@cmpeurope.eu

Italy

BOAT S.p.A.
Via Macaggi, 19, Genova, Italy
TEL : 39-010-55005 FAX : 39-010-5500288/298
E-Mail : boat@boero.it

Norway

CHUGOKU PAINTS B.V. Norway Office
Klostergata 30, 3732 Skien, Norway
TEL : 47-3552-5291 FAX : 47-3552-6591
E-Mail : norway@cmpeurope.eu

U.S.A.

CMP COATINGS, INC.
1610 Engineers Road, Belle Chasse, Louisiana, U.S.A.
TEL : 1-(504) 392-4817 FAX : 1- (504) 392-2979
E-Mail : cmpcoatings@worldnet.att.net

Website: <http://www.cmp.co.jp>

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