DNV·GL

Certificate No:
TAK000004F

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Plastic Pipes, Fibre Reinforced Thermosetting

with type designation(s)
CSPM16C GRE Adhesive Bonding System

Issued to
DACC-CSP Co., Ltd.
Sacheon-si Gyeongsangnamdo, Republic of Korea

is found to comply with
Det Norske Veritas' Type Approval Programme 1-501.1, 2011, Fibre Reinforced Thermosetting Plastic Pipes
Det Norske Veritas' Rules for Classification of Ships
IMO Resolution A.753(18). Guidelines for the Application of Plastic Pipes on Ships

Application :

For installation according to DNV GL Rules and Manufacturer's Specification. The piping system is conductive, for installations in gas hazardous areas. The piping system is approved to Fire Endurance L3 according to IMO Resolution A.753(18), and Low Flame Spread according to ASTM D635-97.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2019-12-31**.

Issued at **Høvik** on **2015-11-24**

for **DNV GL**

DNV GL local station: **Gimhae MC & FIS**

Approval Engineer: **Gisle Hersvik**

Martin Strande
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

Job Id: **262.1-007989-4**
Certificate No: **TAK000004F**

Product description

CSPM16C GRE Adhesive Bonding System; PN16 bar Filament Wound Glassfibre Reinforced Epoxy (GRE) Pipes and Fittings.

Nominal internal pressure: 16 bar
Nominal external pressure: max. 5 bar (see table below)

Pipes:
Internal Pressure:

		CSPM16C				Minimum reinforced wall thickness in mm						
	Ø:	**125**	**150**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**
Int. PN [bar]	**16**	4.6	4.8	5.5	7.0	8.5	9.0	10.3	11.5	12.8	14.5	16.0

External Pressure:

	Ø:	**125**	**150**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**
Ext. EP [bar]		5	5	5	5	5	3	3	3	3	3	3

Remark:
Testing of external pressure capacity has been carried out in accordance with ASTM D2924 (hoop and axial loads).

Fittings:
Elbows, Tees, Saddles, Reducers, Flanges
- other fittings to be tested prior to installation in classed vessels.

Joining Methods:
Adhesive bonding or Flanged

Application/Limitation

For installation in accordance with DNV GL Rules and Manufacturer's Specification.

Maximum service temperature: 93ºC.

Piping system is approved as conductive, for installations in gas hazardous areas.

Piping system is approved to Fire Endurance L3 according to IMO Resolution A.753(18).

Piping system is approved to Low Flame Spread, according to ASTM D635-97 (accepted as an alternative to IMO Resolution A.653(16)).

Test of conductivity is to be carried out after installation of piping system.

Approved mounting/joining specification to be followed.

Type Approval documentation
Tests carried out

Type Testing carried out in accordance with **Type Approval documentation**.

Marking of product

The pipes and fittings are to be marked. The marking shall at least include the following information:
- *Product name*
- *Manufacturers name*
- *Pressure rating*
- *Temperature rating*
- *Lot no.*

The marking is to be carried out in such a way that it is visible, legible and indelible. The marking of product is to enable traceability to the DNV GL Type Approval Certificate.

Periodical assessment

The scope of the Periodical Assessment is to verify that the conditions stipulated for the Type Approval is complied with and that no alterations are made to the product design or choice of materials.

Periodical Assessment to be performed after two (2) years (Certificate Retention) and at renewal after four (4) years (Certificate Renewal).

The main elements of the Periodical Assessment are to:
- Ensure that **Type Approval documentation** is available.
- Review design, materials, production process, and performance with respect to possible changes, in order to ensure compliance with **Type Approval documentation** and/or referenced material specifications.
- Ensure traceability between manufacturer's product marking and the DNV GL Type Approval Certificate.

END OF CERTIFICATE