



DET NORSKE VERITAS

Certificate No.: 19659 - 1

Date of Issue: 25 September, 1998

IMO No.: 8813075

**INTERNATIONAL CERTIFICATE OF FITNESS
FOR THE CARRIAGE OF LIQUEFIED GASES IN BULK**



Issued under the provisions of the
**INTERNATIONAL CODE FOR THE CONSTRUCTION AND EQUIPMENT OF
SHIPS CARRYING LIQUEFIED GASES IN BULK**

(IMO Resolution MSC.5(48) as amended by Resolution MSC.17(58))

under the authority of the Government of

DENMARK

by Det Norske Veritas AS.

Name of Ship	Distinctive Number or Letters	Port of Registry	Cargo Capacity (m ³)	Ship Type (Code paragraph 2.1.2) ¹
		THYBORØN	15096	2G

Date on which keel was laid or ship was at a similar stage of construction, or (in the case of a converted ship) date on which conversion to a gas carrier was commenced: **24 May, 1989**

The ship also complies fully with the following amendments to the Code:

Not applicable

The ship is exempted from compliance with the following provisions of the Code:

Not applicable

"Issued in accordance with Assembly resolution A718(17) relating to the early implementation of the harmonized system of survey and certification."



THIS IS TO CERTIFY:

- 1.1 That the ship has been surveyed in accordance with the provisions of section 1.5 of the Code;
- 1.2 That the survey showed that the structure, equipment, fittings, arrangements and materials of the ship and the conditions thereof are in all respects satisfactory and that the ship complies with the relevant provisions of the Code.

INTERNATIONAL CERTIFICATE OF FITNESS FOR THE CARRIAGE OF
LIQUEFIED GASES IN BULK (continued)

Certificate No.: 19659 - 1

Date of Issue: 25 September, 1998

Name of Ship [REDACTED]

2. That the following design criteria have been used:

- .1 ambient air temperature +5 °C²
- .2 ambient water temperature 0 °C²
- .3

Tank number and type	Stress Factors ³				Materials ³	MARVS
	A	B	C	D		
Cargo tanks 1 - 3 (type C)	3 4	2 2			13 Mn Ni 63 DIN No. 1.6217	5.4 barg 3.6 barg
Deck Tank (type C)	3 4	2 2			13 Mn Ni 63 DIN No. 1.6217	26.5 barg 20.0 barg
Cargo piping	2.7	1.8			DIN No. 1.4571 (AISI 316 Ti)	25.0 barg

NB: Tank numbers referred to in this list are identified on attachment 2, signed and dated tank plan.

.4 Mechanical properties of the cargo tank material were determined at 20 °C

3. That the ship is suitable for the carriage in bulk of the following products, provided that all relevant operational provisions of the Code are observed:⁵

Products	Conditions of Carriage (tank numbers, minimum temperature, maximum pressure, maximum density, tank loading conditions)
Ammonia, anhydrous Butadiene Butane / Propane mixtures Butylenes Ethylene Oxide / Propylene Oxide mix. (max. 30% by weight E.O.) 1) 2) Pentanes (all isomers) 2) Pentenes (all isomers) 2) Isoprene 2) Propane	All cargo tanks: - Minimum temperature of cargo: - 48 degrees Celsius - Maximum cargo density: 970 kg/m3

Continued on attachment 1, additional signed and dated sheets.

Tank numbers referred to in this list are identified on attachment 2, signed and dated tank plan.



INTERNATIONAL CERTIFICATE OF FITNESS FOR THE CARRIAGE OF
LIQUEFIED GASES IN BULK (continued)

Certificate No.: 19659 - 1

Date of Issue: 25 September, 1998

Name of Ship

4. That in accordance with sections 1.4/2.8.2* the provisions of the Code are modified in respect of the ship in the following manner:
Not applicable

5. That the ship must be loaded:

*.1 in accordance with the loading conditions provided in the approved loading manual, stamped and dated
30 October, 1997

and signed by a responsible officer of the Administration, or of an organization recognized by the Administration.

~~*.2 in accordance with the loading limitations appended to this Certificate.~~

Where it is required to load the ship other than in accordance with the above instruction, then the necessary calculations to justify the proposed loading conditions should be communicated to the certifying Administration who may authorize in writing the adoption of the proposed loading condition.

This Certificate is valid until: 31 July, 2000 ⁶ subject to surveys in accordance with 1.5 of the Code.

Issued at Oslo on 25 September, 1998 (date)

for Det Norske Veritas AS

T. Tobiesen

for Senior Vice President



* Delete as appropriate.

Notes on completion of Certificate:

1. «Ship Type»: Any entry under this column must be related to all relevant recommendations, e.g. an entry «Type 2G» should mean Type 2G in all respects prescribed by the Code.
2. Paragraphs 2.1 and 2.2: The ambient temperatures accepted or required by the Administration for the purposes of 4.8.1. of the Code to be inserted.
3. Paragraph 2.3: Stress factors and materials as accepted or required by the Administration for the purposes of 4.5.1.4 and 4.5.1.6 of the Code to be inserted.
4. Paragraph 2.4: Temperature accepted by the Administration for the purposes of 4.5.1.7 to be inserted.
5. Paragraph 3: Only products listed in Chapter 19 of the Code, or which have been evaluated by the Administration in accordance with paragraph 1.1.6 of the Code, or their compatible mixtures having physical properties within the limitations of tank design, should be listed. In respect of the latter «new» products, any special requirements provisionally prescribed should be noted.
6. The date of expiry as specified by the Administration in accordance with 1.5.6.1 of the Code. The day and the month of this date correspond to the anniversary date as defined in 1.3.3.3 of the Code, unless amended in accordance with 1.5.6.8 of the Code.

INTERNATIONAL CERTIFICATE OF FITNESS FOR THE CARRIAGE OF
LIQUEFIED GASES IN BULK (continued)

Certificate No.: 19659 - 1

Date of Issue: 25 September, 1998

Name of Ship

ENDORSEMENT FOR ANNUAL AND INTERMEDIATE SURVEYS

THIS IS TO CERTIFY that, at a survey required by 1.5.2 of the Code the ship was found to comply with the relevant provisions of the Code:

1st annual survey:

Place	Date	Surveyor's signature	Stamp
-------	------	----------------------	-------

2nd annual survey* / intermediate survey*:

Place	Date	Surveyor's signature	Stamp
-------	------	----------------------	-------

3rd annual survey* / intermediate survey*:

Place	Date	Surveyor's signature	Stamp
-------	------	----------------------	-------

4th annual survey:

Place	Date	Surveyor's signature	Stamp
-------	------	----------------------	-------

ANNUAL/INTERMEDIATE SURVEY IN ACCORDANCE WITH 1.5.6.8.3

THIS IS TO CERTIFY that, at an annual survey*/intermediate survey* in accordance with 1.5.6.8.3 of the Code, the ship was found to comply with the relevant provisions of the Code.

Place	Date	Surveyor's signature	Stamp
-------	------	----------------------	-------

ENDORSEMENT WHERE THE RENEWAL SURVEY HAS BEEN COMPLETED AND 1.5.6.4 applies

The ship complies with the relevant provisions of the Code, and this Certificate should, in accordance with 1.5.6.4 of the Code, be accepted as valid until

Place	Date	Surveyor's signature	Stamp
-------	------	----------------------	-------

ENDORSEMENT TO EXTEND THE VALIDITY OF THE CERTIFICATE UNTIL REACHING THE PORT OF SURVEY OR FOR A PERIOD OF GRACE WHERE 1.5.6.5 OR 1.5.6.6 APPLIES

This Certificate should, in accordance with 1.5.6.5*/1.5.6.6* of the Code, be accepted as valid until

Place	Date	Surveyor's signature	Stamp
-------	------	----------------------	-------

ENDORSEMENT FOR ADVANCEMENT OF ANNIVERSARY DATE WHERE 1.5.6.8 APPLIES

In accordance with 1.5.6.8 of the Code, the new anniversary date is

Place	Date	Surveyor's signature	Stamp
-------	------	----------------------	-------

In accordance with 1.5.6.8 of the Code, the new anniversary date is

Place	Date	Surveyor's signature	Stamp
-------	------	----------------------	-------

*Delete as appropriate

INTERNATIONAL CERTIFICATE OF FITNESS FOR THE CARRIAGE OF
LIQUEFIED GASES IN BULK (continued)

Certificate No.: 19659 - 1

Date of Issue: 25 September, 1998

Attachment 1

Page 1 of 1

Name of Ship [REDACTED]

Products	Conditions of Carriage (tank numbers, minimum temperature, maximum pressure, maximum density, tank loading conditions)
Propylene Propylene Oxide 1) 2) Vinyl Chloride C4 - Fraction 3)	<p>The "Special requirements" given in the Code for individual products must be complied with.</p> <p>Note 1) Carriage of this product is only permissible in accordance with approved cargo handling plans according to letter from Germanischer Lloyd No. 59857/90 dated 18 June, 1990.</p> <p>Note 2) Formal carriage permission must (in relation to marine pollution) be given in the vessel's NLS Certificate.</p> <p>Note 3) If the butadiene content is 10% v/v or greater, this cargo should be carried under the same conditions as applied to butadiene.</p>



INTERNATIONAL CERTIFICATE OF FITNESS FOR THE CARRIAGE OF
LIQUEFIED GASES IN BULK (ctd.)

Certificate No.: 19659 - 1

Date of Issue: 25 September, 1998

Attachment 2

Name of Ship



TANK PLAN

