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Equipment and Materials Certification Requirements for the Classification of Inland Navigation Vessels/Units

April 2015

**Rule Note
NR 544 DNI R02 E**



EN ISO/IEC 17020
Cert N°440-INSF

The accreditation certificate
is available on NR217, Part A

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MARINE & OFFSHORE DIVISION

GENERAL CONDITIONS

ARTICLE 1

1.1. - BUREAU VERITAS is a Society the purpose of whose Marine & Offshore Division (the "Society") is the classification ("Classification") of any ship or vessel or offshore unit or structure of any type or part of it or system therein collectively hereinafter referred to as a "Unit" whether linked to shore, river bed or sea bed or not, whether operated or located at sea or in inland waters or partly on land, including submarines, hovercrafts, drilling rigs, offshore installations of any type and of any purpose, their related and ancillary equipment, subsea or not, such as well head and pipelines, mooring legs and mooring points or otherwise as decided by the Society.

The Society:

- "prepares and publishes Rules for classification, Guidance Notes and other documents ("Rules");
- "issues Certificates, Attestations and Reports following its interventions ("Certificates");
- "publishes Registers.

1.2. - The Society also participates in the application of National and International Regulations or Standards, in particular by delegation from different Governments. Those activities are hereafter collectively referred to as "Certification".

1.3. - The Society can also provide services related to Classification and Certification such as ship and company safety management certification; ship and port security certification, training activities; all activities and duties incidental thereto such as documentation on any supporting means, software, instrumentation, measurements, tests and trials on board.

1.4. - The interventions mentioned in 1.1., 1.2. and 1.3. are referred to as "Services". The party and/or its representative requesting the services is hereinafter referred to as the "Client". The Services are prepared and carried out on the assumption that the Clients are aware of the International Maritime and/or Offshore Industry (the "Industry") practices.

1.5. - The Society is neither and may not be considered as an Underwriter, Broker in ship's sale or chartering, Expert in Unit's valuation, Consulting Engineer, Controller, Naval Architect, Manufacturer, Ship-builder, Repair yard, Charterer or Shipowner who are not relieved of any of their expressed or implied obligations by the interventions of the Society.

ARTICLE 2

2.1. - Classification is the appraisalment given by the Society for its Client, at a certain date, following surveys by its Surveyors along the lines specified in Articles 3 and 4 hereafter on the level of compliance of a Unit to its Rules or part of them. This appraisalment is represented by a class entered on the Certificates and periodically transcribed in the Society's Register.

2.2. - Certification is carried out by the Society along the same lines as set out in Articles 3 and 4 hereafter and with reference to the applicable National and International Regulations or Standards.

2.3. - It is incumbent upon the Client to maintain the condition of the Unit after surveys, to present the Unit for surveys and to inform the Society without delay of circumstances which may affect the given appraisalment or cause to modify its scope.

2.4. - The Client is to give to the Society all access and information necessary for the safe and efficient performance of the requested Services. The Client is the sole responsible for the conditions of presentation of the Unit for tests, trials and surveys and the conditions under which tests and trials are carried out.

ARTICLE 3

3.1. - The Rules, procedures and instructions of the Society take into account at the date of their preparation the state of currently available and proven technical knowledge of the Industry. They are a collection of minimum requirements but not a standard or a code of construction neither a guide for maintenance, a safety handbook or a guide of professional practices, all of which are assumed to be known in detail and carefully followed at all times by the Client.

Committees consisting of personalities from the Industry contribute to the development of those documents.

3.2. - The Society only is qualified to apply its Rules and to interpret them. Any reference to them has no effect unless it involves the Society's intervention.

3.3. - The Services of the Society are carried out by professional Surveyors according to the applicable Rules and to the Code of Ethics of the Society. Surveyors have authority to decide locally on matters related to classification and certification of the Units, unless the Rules provide otherwise.

3.4. - The operations of the Society in providing its Services are exclusively conducted by way of random inspections and do not in any circumstances involve monitoring or exhaustive verification.

ARTICLE 4

4.1. - The Society, acting by reference to its Rules:

- "reviews the construction arrangements of the Units as shown on the documents presented by the Client;
- "conducts surveys at the place of their construction;
- "classes Units and enters their class in its Register;
- "surveys periodically the Units in service to note that the requirements for the maintenance of class are met.

The Client is to inform the Society without delay of circumstances which may cause the date or the extent of the surveys to be changed.

ARTICLE 5

5.1. - The Society acts as a provider of services. This cannot be construed as an obligation bearing on the Society to obtain a result or as a warranty.

5.2. - The certificates issued by the Society pursuant to 5.1. here above are a statement on the level of compliance of the Unit to its Rules or to the documents of reference for the Services provided for. In particular, the Society does not engage in any work relating to the design, building, production or repair checks, neither in the operation of the Units or in their trade, neither in any advisory services, and cannot be held liable on those accounts. Its certificates cannot be construed as an implied or express warranty of safety, fitness for the purpose, seaworthiness of the Unit or of its value for sale, insurance or chartering.

5.3. - The Society does not declare the acceptance or commissioning of a Unit, nor of its construction in conformity with its design, that being the exclusive responsibility of its owner or builder.

5.4. - The Services of the Society cannot create any obligation bearing on the Society or constitute any warranty of proper operation, beyond any representation set forth in the Rules, of any Unit, equipment or machinery, computer software of any sort or other comparable concepts that has been subject to any survey by the Society.

ARTICLE 6

6.1. - The Society accepts no responsibility for the use of information related to its Services which was not provided for the purpose by the Society or with its assistance.

6.2. - If the Services of the Society or their omission cause to the Client a damage which is proved to be the direct and reasonably foreseeable consequence of an error or omission of the Society, its liability towards the Client is limited to ten times the amount of fee paid for the Service having caused the damage, provided however that this limit shall be subject to a minimum of eight thousand (8,000) Euro, and to a maximum which is the greater of eight hundred thousand (800,000) Euro and one and a half times the above mentioned fee. These limits apply regardless of fault including breach of contract, breach of warranty, tort, strict liability, breach of statute, etc.

The Society bears no liability for indirect or consequential loss whether arising naturally or not as a consequence of the Services or their omission such as loss of revenue, loss of profit, loss of production, loss relative to other contracts and indemnities for termination of other agreements.

6.3. - All claims are to be presented to the Society in writing within three months of the date when the Services were supplied or (if later) the date when the events which are relied on were first known to the Client, and any claim which is not so presented shall be deemed waived and absolutely barred. Time is to be interrupted thereafter with the same periodicity.

ARTICLE 7

7.1. - Requests for Services are to be in writing.

7.2. - Either the Client or the Society can terminate as of right the requested Services after giving the other party thirty days' written notice, for convenience, and without prejudice to the provisions in Article 8 hereunder.

7.3. - The class granted to the concerned Units and the previously issued certificates remain valid until the date of effect of the notice issued according to 7.2. here above subject to compliance with 2.3. here above and Article 8 hereunder.

7.4. - The contract for classification and/or certification of a Unit cannot be transferred neither assigned.

ARTICLE 8

8.1. - The Services of the Society, whether completed or not, involve, for the part carried out, the payment of fee upon receipt of the invoice and the reimbursement of the expenses incurred.

8.2. - Overdue amounts are increased as of right by interest in accordance with the applicable legislation.

8.3. - The class of a Unit may be suspended in the event of non-payment of fee after a first unfruitful notification to pay.

ARTICLE 9

9.1. - The documents and data provided to or prepared by the Society for its Services, and the information available to the Society, are treated as confidential. However:

- "Clients have access to the data they have provided to the Society and, during the period of classification of the Unit for them, to the classification file consisting of survey reports and certificates which have been prepared at any time by the Society for the classification of the Unit ;
- "copy of the documents made available for the classification of the Unit and of available survey reports can be handed over to another Classification Society, where appropriate, in case of the Unit's transfer of class;
- "the data relative to the evolution of the Register, to the class suspension and to the survey status of the Units, as well as general technical information related to hull and equipment damages, may be passed on to IACS (International Association of Classification Societies) according to the association working rules;
- "the certificates, documents and information relative to the Units classed with the Society may be reviewed during certifying bodies audits and are disclosed upon order of the concerned governmental or inter-governmental authorities or of a Court having jurisdiction.

The documents and data are subject to a file management plan.

ARTICLE 10

10.1. - Any delay or shortcoming in the performance of its Services by the Society arising from an event not reasonably foreseeable by or beyond the control of the Society shall be deemed not to be a breach of contract.

ARTICLE 11

11.1. - In case of diverging opinions during surveys between the Client and the Society's surveyor, the Society may designate another of its surveyors at the request of the Client.

11.2. - Disagreements of a technical nature between the Client and the Society can be submitted by the Society to the advice of its Marine Advisory Committee.

ARTICLE 12

12.1. - Disputes over the Services carried out by delegation of Governments are assessed within the framework of the applicable agreements with the States, international Conventions and national rules.

12.2. - Disputes arising out of the payment of the Society's invoices by the Client are submitted to the Court of Nanterre, France, or to another Court as deemed fit by the Society.

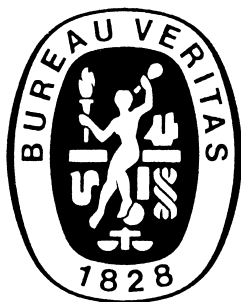
12.3. - Other disputes over the present General Conditions or over the Services of the Society are exclusively submitted to arbitration, by three arbitrators, in London according to the Arbitration Act 1996 or any statutory modification or re-enactment thereof. The contract between the Society and the Client shall be governed by English law.

ARTICLE 13

13.1. - These General Conditions constitute the sole contractual obligations binding together the Society and the Client, to the exclusion of all other representation, statements, terms, conditions whether express or implied. They may be varied in writing by mutual agreement. They are not varied by any purchase order or other document of the Client serving similar purpose.

13.2. - The invalidity of one or more stipulations of the present General Conditions does not affect the validity of the remaining provisions.

13.3. - The definitions herein take precedence over any definitions serving the same purpose which may appear in other documents issued by the Society.



RULE NOTE NR 544

NR 544

Equipment and Materials Certification

Requirements for the Classification of Inland Navigation Vessels/Units

SECTION 1	GENERAL
SECTION 2	ALL VESSELS/UNITS (CARRIAGE OF DANGEROUS GOODS EXCEPTED) WITH ASSIGNMENT OF CHARACTER OF CONSTRUCTION ☒
SECTION 3	ALL VESSELS/UNITS (CARRIAGE OF DANGEROUS GOODS EXCEPTED) WITH ASSIGNMENT OF CHARACTER OF CONSTRUCTION •
SECTION 4	VESSELS INTENDED FOR THE CARRIAGE OF DANGEROUS GOODS WITH ASSIGNMENT OF CHARACTER OF CONSTRUCTION ☒
SECTION 5	VESSELS INTENDED FOR THE CARRIAGE OF DANGEROUS GOODS WITH ASSIGNMENT OF CHARACTER OF CONSTRUCTION •
APPENDIX 1	GENERAL INDEX

Section 1 General

1	Scope of application	3
1.1	Purpose	
2	Application	3
2.1	General	
2.2	Character ⌘	
2.3	Character •	
2.4	Explanatory notes, symbols and abbreviations	
2.5	Notice regarding column 5 (Survey during fabrication)	
2.6	Notice regarding item K (Electrical equipment)	

Section 2 All Vessels/Units (Carriage of Dangerous Goods Excepted) with Assignment of Character of Construction ⌘

1	Summary	5
1.1	Vessels/units with assignment of character of construction ⌘	

Section 3 All Vessels/Units (Carriage of Dangerous Goods Excepted) with Assignment of Character of Construction •

1	Summary	24
1.1	Vessels/units with assignment of character of construction •	

Section 4 Vessels Intended for the Carriage of Dangerous Goods with Assignment of Character of Construction ⌘

1	Summary	43
1.1	Vessels with assignment of character of construction ⌘	

Section 5 Vessels Intended for the Carriage of Dangerous Goods with Assignment of Character of Construction •

1	Summary	66
1.1	Vessels with assignment of character of construction •	

Appendix 1 General Index

1	Key-words and labels (from A to Z)	87
1.1	Index	

SECTION 1

GENERAL

1 Scope of application

1.1 Purpose

1.1.1 This Rule Note summarizes the certification requirements for materials and equipment covered by the class and used or fitted on-board inland navigation vessels/units.

2 Application

2.1 General

2.1.1 The requirements of the Rules for the Classification of Inland Navigation Vessels prevail over the provisions of this Rule Note.

As a rule, the type approval by the Society for materials and equipment in compliance with Bureau Veritas Rules for the Classification of Steel Ships is considered acceptable within the scope of the Rules for the Classification of Inland Navigation Vessels.

In the case of discrepancy, the Rules for the Classification of Inland Navigation Vessels prevail over the provisions of the Rules for the Classification of Steel Ships.

2.2 Character ✕

2.2.1 Vessel/unit hull and equipment are subject to work inspections and tests which are detailed in the relevant Sections of the Rules and are, as a rule, to be presented to the Surveyor.

2.2.2 Provisions related to survey at works for assignment of character of construction ✕ are summarized in Section 2, for all vessels/units, excepted the vessels intended to carry dangerous goods.

2.2.3 Provisions of Section 4 cover, as applicable, survey of materials and equipment at works for vessels intended for the carriage of dangerous goods.

2.3 Character •

2.3.1 Vessel/unit hull or equipment built in accordance with the Rules, but without survey by the Society of materials and equipment, will be assigned the character of construction •.

Adequate workshop certificates for materials and equipment are to be submitted to ascertain that they meet satisfactorily the Rule requirements.

2.3.2 Provisions related to survey at works for assignment of character of construction • are summarized in Section 3 for all vessels/units, excepted the vessels intended to carry dangerous goods.

2.3.3 Provisions of Section 5 cover, as applicable, survey of materials and equipment at works for vessels intended for the carriage of dangerous goods.

2.4 Explanatory notes, symbols and abbreviations

2.4.1 The following gives explanatory notes concerning the tables implemented in Section 2 to Section 5.

2.4.2 Column 1 (Item code)

Column 1 contains an alpha-numeric code for ease of reference.

2.4.3 Column 2 (Item name)

Column 2 contains the name of the equipment or component with, eventually, its sub-systems.

2.4.4 Column 3 (Material certification)

Column 3 indicates the nature of the document that is to be submitted by the manufacturer or supplier of the concerned material.

Document type of certification is elaborated in [2.4.9].

2.4.5 Column 4 (Design assessment index)

Column 4 contains the design index. The meaning of letters TA and DA is the following:

- TA : Type Approval is required
- DA : Design Assessment of the product is required; this may be carried out, at choice:
 - either for a specific unit, or
 - using the Type Approval procedure.

Note 1: Where nothing is mentioned in column 4, design assessment of the specific unit is not required. However, further inspection may be necessary according to the Surveyor's satisfaction.

2.4.6 Columns 5, 6 and 7 (Examinations and tests)

Column 5, column 6 and column 7 indicate the type of examinations and tests required and to be carried out by the manufacturer, respectively:

- a) During fabrication: for welded construction or, as a general rule, depending on the type of equipment concerned
- b) After completion: consistently with the relevant activities mentioned in a), this includes the final test after completion of the fabrication
- c) Running test: this includes function tests at works or on board, where applicable.

The index, if any, indicates the different types of specific test as mentioned in [2.4.8].

2.4.7 Column 8 (Product certification)

Column 8 indicates the nature of the document that is to be submitted by the manufacturer or supplier of the concerned product.

The document type for certification is defined in [2.4.9].

2.4.8 Examinations and tests

Symbols for examinations and tests used in the tables implemented in Section 2 to Section 5 have the following meaning:

“X” indicates that examinations and tests are required.

The index, if any, indicates a specific type of test:

- h : Pressure test
- ht : Tightness test
- hose : Hose testing
- s : Non-destructive test
- bt : Test bed trials.

2.4.9 Certifications

The document type is agreed according to the applicable certification frame and/or production survey scheme implemented.

The symbols used in the tables regarding item certification have the following meaning:

- “C” indicates that a Bureau Veritas certificate is required with invitation of the Society’s Surveyor to attend the tests unless otherwise agreed, in addition to the manufacturer’s document stating the results of the tests performed and/or compliance with the approved type, as applicable
- “W” indicates that a manufacturer’s certificate is required, stating the results of the tests performed and/or compliance with the approved type, as applicable
- “D” indicates that a manufacturer’s evidence of compliance with the approved type is required.

2.5 Notice regarding column 5 (Survey during fabrication)

2.5.1 As a general rule, even if a cell under column 5 is not filled with a cross “X”, survey during fabrication (examinations and tests) may be required with invitation/attendance of the Society’s Surveyor.

2.6 Notice regarding item K (Electrical equipment)

2.6.1 Due to the great variety of electrical equipment (item K), it has not been possible to give herewith the details of the surveys to which these electrical equipment are to be submitted. For certain given types of equipment, special test leading to their approval are required; the programmes for such type tests are set up for each category of equipment,

together with the requirements for their carrying out, and the conditions of validity of the Type approval certificate are given in the relevant Sections of the Rules for the Classification of Inland Navigation Vessels (NR217).

As defined in NR217, Pt C, Ch 2, Sec 1, the auxiliaries considered as essential are typically as follows:

- a) Equipment for primary essential services (services which need to be maintained in continuous operation):
 - steering gear
 - actuating systems for controllable pitch propellers
 - scavenging air blowers, fuel oil supply pumps, lubricating oil pumps and cooling water pumps for main and auxiliary engines and turbines necessary for the propulsion.
 - azimuth thrusters which are the sole means for propulsion/steering with lubricating oil pumps, cooling water pumps
 - electrical equipment for electric propulsion plant with lubricating oil pumps and cooling water pumps
 - hydraulic pumps supplying the above equipment
 - control, monitoring and safety devices/systems for the equipment for primary essential services.
 - speed regulators dependent on electrical energy for main or auxiliary engines necessary for propulsion
- b) Equipment for secondary essential services (services which need not necessarily be in continuous operation):
 - thrusters
 - starting air and control air compressors
 - bilge pumps
 - fire pumps and other fire-extinguishing medium pumps
 - ventilation fans for engine rooms
 - services considered necessary to maintain dangerous cargo in safe condition
 - navigation lights, aids and signals
 - internal safety communication equipment
 - fire detection and alarm system
 - electrical equipment for watertight closing system
 - electrical generators and associated power supplying the above equipment
 - hydraulic pumps supplying the above equipment
 - control, monitoring and safety for cargo containment systems
 - control, monitoring and safety devices/systems for equipment for secondary essential services.
 - windlasses.

The Society reserves the right to add other auxiliaries to this list, whenever deemed necessary and more especially for installations of peculiar types.

SECTION 2

ALL VESSELS/UNITS (CARRIAGE OF DANGEROUS GOODS EXCEPTED) WITH ASSIGNMENT OF CHARACTER OF CONSTRUCTION ⚡

1 Summary

1.1 Vessels/units with assignment of character of construction ⚡

1.1.1 Provisions related to survey at works for assignment of character of construction ⚡ for all vessels/units, excepted those intended to carry dangerous goods, are summarized in the Table below.

ALL VESSELS/UNITS (CARRIAGE OF DANGEROUS GOODS EXCEPTED) with assignment of character of construction ⚡		
Item	Title	Reference
Item A	Raw materials for hull	Tab 1
Item B	Hull outfitting	Tab 2
Item C	Fire protection, detection and extinguishing	Tab 3
Item E	Main diesel engine engines & their auxiliaries	Tab 4
Item G	Auxiliary machinery	Tab 5
Item K	Electrical installations	Tab 6
Item S	Pollution prevention installation covered by additional class notation Cleanvessel	Tab 7

Table 1: Raw materials for hull - item A - 𐄂

All vessels/units (carriage of dangerous goods excepted)

RAW MATERIALS FOR HULL - ITEM A - 𐄂									
N°	Item	Material certification	Product certification				Certification	Remarks	
			Design assessment index	Examinations and tests					
				During fabrica- tion	After comple- tion	Running tests			
A1	Steel plates and profiles							(1) As per NR216, Ch 2, Sec 1	
	1 - Plates, sections and bars (1)	C						(2) As per NR216, Ch 2 Sec 2	
	2 - Tubes (2)	C							
A2	Steel forgings (1)	C						(1) As per NR216, Ch 2, Sec 3	
A3	Steel castings (1)	C						(1) As per NR216, Ch 2, Sec 3	
A4	Iron castings (1)	C						(1) As per NR216, Ch 2, Sec 3	
A5	Aluminium alloy plates, profiles, bars and tubes (1)	C						(1) As per NR216, Ch 3, Sec 2	
A6	Transition joints steel / aluminium alloy (1)	C	TA				C	(1) As per NR216, Ch 3, Sec 2	
A7	Welding consumables (1)		TA				D	(1) As per NR216, Ch 5, Sec 2	
A8	Composite materials		DA (1)	X (2)	X (2)		C	(1) DA for structure assembly	
	1 - Resin systems	W	TA (3)				W	(2) Representative sample of the structural assembly is to be carried out by a testing laboratory accepted by the Society	
	2 - Reinforcement fibers	W	TA (3)				W		
	3 - Core material for sandwiches	W	TA (3)				W	(3) TA as per NR546, Sec 8	
	4 - Adhesives	W	DA (1)				W		
A9	Cast steel shaft brackets (1)	C	DA		X _s (2)		C	(1) As per NR216 (2) Vibration analysis is recommended for single arm pro- peller shaft	

Table 2: Hull outfitting - item B - ✕
All vessels/units (carriage of dangerous goods excepted)

HULL OUTFITTING - ITEM B - ⚓									
N°	Item	Material certification	Product certification				Certification	Remarks	
			Design assessment index	Examinations and tests					
				During fabrication	After completion	Running tests			
B1	Rudders / nozzles (1)							(1) As per NR217, Pt B, Ch 7, Sec 1	
	1 - Rudder stock, shaft, pintles, coupling	C	DA	X	X		C	(2) Leak test is to be carried out for double plate rudder as per NR217, Pt B, Ch 8, Sec 3	
	2 - Rudder blade / nozzle shell	C	DA	X	X _h (2)		C		
B2	Anchors (1)	C	TA	X	X _s		C	(1) As per NR217, Pt B, Ch 7, Sec 4	
B3	Anchor chain cables (1)	C	TA		X _s (2)		C	(1) As per NR217, Pt B, Ch 7, Sec 4	
								(2) Additional approval for manufacturing process is required for rolled bars of grade K2 and K3 (or Q2 and Q3)	
B4	Anchor chain cable accessories (1) (shackles, swivels and other attachment pieces)	C	TA		X _s (2)		C	(1) As per NR217, Pt B, Ch 7, Sec 4	
B5	Ropes (Steel wire ropes and fibre ropes) (1)	C			X (2)		C	(1) As per NR217, Pt B, Ch 7, Sec 4	
								(2) Tests as per NR216, Ch 4, Sec 1	
B6	Sidescuttles and windows (1)	C	DA		X (2)		C	(1) As per NR217, Pt B, Ch 6, Sec 7	
								(2) Tests as per NR216, Ch 4, Sec 3	
B7	Shell doors	C	DA	X	X _{hose} (1)	X	C	(1) Hose test as per NR217, Pt B, Ch 8, Sec 3	
B8	Hatchcovers (1)	C	DA	X	X _{hose}		C	(1) As per NR217, Pt B, Ch 6, Sec 5	
B9	Watertight doors	C	DA	X	X _h (1)		C	(1) Structural test is to be carried out for watertight doors below freeboard or bulkhead deck either before or after the door is fitted on board	
B10	External ramp (1)	C	DA		X _s		C	(1) As per NR217, Pt B, Ch 6, Sec 6	
B11	Movable deck and inner ramp (1)	C	DA		X	X	C	(1) As per NR217, Pt B, Ch 6, Sec 6	
B12	Independent tanks	C	DA	X	X _s (1)		C	(1) Structural test is to be carried out for independent tanks not used as cargo tanks	
B13	Elastic bedding	W		X			W		

Table 3: Fire protection, detection and extinguishing - item C - ✕
All vessels/units (carriage of dangerous goods excepted)

FIRE PROTECTION, DETECTION AND EXTINGUISHING - ITEM C - ✖							
N°	Item	Material certification	Product certification				Remarks
			Design assessment index	Examinations and tests			
				During fabrication	After completion	Running tests	
C1	Fire bulkheading, fire doors (1)	W	TA		X		(1) As per NR217, Pt C, Ch 3, Sec 1, [2]
C2	Fire dampers (1)	W	TA		X		(1) As per NR217, Pt C, Ch 3, Sec 1, [1]
C3	Water supply system (1)						(1) As per NR217, Pt C, Ch 3, Sec 4, [1]
	1 - Fire pumps				X _h	X	C
	2 - Pump prime movers				X	X	C
	3 - Hoses	W	TA				W
	4 - Water spray nozzles	W	TA				W
C4	Automatic pressure water spraying system (1)						(1) As per NR217, Pt C, Ch 3, Sec 4, [3]
	1 - Pressure pumps				X _h	X	C
	2 - Pump prime movers				X	X	C
	3 - Water spray piping system	W					W
	4 - Pressure water tank	W	DA		X _h		W
	5 - Water spray nozzles	W	TA				W
C5	Fixed gas fire extinguishing system (1)						(1) As per NR217, Pt C, Ch 3, Sec 4, [4]
	1 - Piping system	W			X _h		W
	2 - Pressure tank	W	DA		X _h		W
	3 - Discharge nozzles	W	TA				W
	4 - Extinguishing agents		TA				W
C6	Portable fire extinguishers (1)		TA		X		(1) As per NR217, Pt C, Ch 3, Sec 4, [2]
C7	Detection and alarm system (1)		TA		X	X	(1) As per NR217, Pt C, Ch 3, Sec 3

Table 4: Main diesel engines & their auxiliaries - item E - ✕

All vessels/units (carriage of dangerous goods excepted)

MAIN DIESEL ENGINES & THEIR AUXILIARIES - ITEM E - ✖							
N°	Item	Material certification	Product certification				Remarks
			Design assessment index	Examinations and tests			
				During fabrication	After completion	Running tests	
E1	Main diesel engines with diameter of cylinder bore, D > 300 mm (1)		TA	X	X	X _{ht} (2)	(1) As per NR217, Pt C, Ch 1, Sec 2
	1 - Crankshaft	C	DA	X _s (3)	X		(2) Type tests to be in accordance with stage A, B and C as per NR217, in the presence of Surveyor
	2 - Crankshaft coupling flange (non-integral) for main power transmissions	C (4)					(3) NDT of magnetic particle and ultrasonic
	3 - Coupling bolts for crankshaft	C (4)					(4) Material test is required if bore > 400 mm
	4 - Steel piston crowns	C (4) (5)		X _s (6)	X		(5) Material tests are also required for parts made of material other than steel
	5 - Pistons rods	C (4)		X _s (7)	X _h		(6) NDT of magnetic particle or liquid penetrant (if bore > 400 mm) and ultrasonic (all)
	6 - Connecting rods, together with connecting rod bearing caps	C		X _s (8)	X _h		(7) NDT of magnetic particle or liquid penetrant and ultrasonic are required if bore > 400 mm
	7 - Crossheads	C (4)			X		(8) NDT of magnetic particle or liquid penetrant (all) and ultrasonic (if bore > 400 mm)
	8 - Cylinder liners	C (9)			X _h		(9) Material test is required if bore > 300 mm
	9 - Steel cylinder covers	C (5) (9)		X _s (6)	X _h		(10) Material tests are required even these parts are not welded and for any material except grey cast iron
	10 - Bedplates of welded construction; plates and transverse bearing girders made of forged or cast steel	C (5) (10)		X _s	X		(11) NDT of magnetic particle or liquid penetrant if bore > 400 mm
	11 - Frames and crankcases of welded construction	C			X		(12) Material certification and test as per NR217, Pt C, Ch 1, Sec 14
	12 - Entablatures of welded construction	C			X		(13) For forged steel, test methods other than hydrostatic testing may be accepted e.g. suitable NDT and documented dimensional test
	13 - Tie rods	C		X _s (11)	X _h		(14) Where the cooling space is sealed by the piston rod, or by the piston rod and the shell, the pressure test is to be carried out after the assembly
	14 - Shaft and rotors, including blades for turbochargers	C (12)			X		(15) See item Turbochargers
	15 - Bolts and studs for cylinder covers, crossheads, main bearings and connecting rod bearings; nuts for tie rods	C (9)		X _s (11)	X		(16) Turbocharger air cooler are tested on the water side only
16 - Steer gear wheels for camshaft drives	C (4)		X _s (11)	X			
17 - Cylinder liner, over the whole length of cooling space				X _h			
18 - Cylinder cover, cooling space				X _h (13)			
19 - Cylinder jacket, cooling space				X _h			



MAIN DIESEL ENGINES & THEIR AUXILIARIES - ITEM E - ✖							
N°	Item	Material certification	Product certification			Remarks	
			Design assessment index	Examinations and tests			
				During fabrication	After completion	Running tests	Certification
E1	20 - Exhaust valve, cooling space				X _h		C
	21 - Piston crown, cooling space				X _h (13)	(14)	C
	22 - Turbocharger, cooling space	(15)			X _h		C
	23 - Exhaust pipe, cooling space				X _h		C
	24 - Coolers, each side				X _h (16)		C
	25 - Fuel injection system (injection pump body pressure side, injection valve, injection pipes)				X _h		C
	26 - Hydraulic system (piping pumps, actuators, etc for hydraulic drive of valves)				X _h		C
	27 - Scavenge pump cylinder				X _h		C
	28 - Engine driven air compressor if any (cylinders, covers, intercoolers and aftercoolers); air side, water side				X _h		C
	29 - Engine driven pumps (oil, water, fuel, bilge)				X _h		C
E2	Heat exchangers (1)	C	TA		X _{h, s}	X	(1) As per NR217, Pt C, Ch 1, Sec 3
E3	Turning gears of main diesel engines (1)				X	X (2)	(1) As per NR217, Pt C, Ch 1, Sec 2 (2) Test to be done on board
E4	Scavenging and supercharging compressors or blowers (1)	C (2)	TA	X	X _h	X _{ht} (3)	(1) As per NR217, Pt C, Ch 1, Sec 2 (2) Shaft and rotor where D > 300 mm (3) Test to be carried out during bench trials of the engine of which these equipment are mounted
E5	Control and safety devices (1)		DA		X (2)	X	(1) As per NR217, Pt C, Ch 1, Sec 2 (2) During load test
E6	Mass produced diesel engines with diameter of cylinder bore, D < 300 mm (1)	C	TA	X _s (2)	X (2)	X (2)	(1) As per NR217, Pt C, Ch 1, Sec 2 (2) Type tests to be performed in accordance with NR217, Pt C, Ch 1, Sec 2, [4.3]

MAIN DIESEL ENGINES & THEIR AUXILIARIES - ITEM E - ✖								
N°	Item	Material certification	Product certification				Remarks	
			Design assessment index	Examinations and tests				Certification
				During fabrication	After completion	Running tests		
E7	Turbochargers (1)							
	1 - Turbochargers having a power of 1000 kW and above and fitted on diesel engines as listed below: • main propulsion engines • engines driving electric generators, including emergency generators • engines driving other auxiliaries essential for safety and navigation and cargo pumps in tankers	C (2)	TA	X _{h, s}	X	C	(1) As per NR217, Pt C, Ch 1, Sec 14 (2) Material test are required for shafts and rotors, including blades (3) Turbochargers are to be designed and constructed according to sound marine practice and delivered with certificate relevant to the bench running test and the hydrostatic test as per Rules	
	2 - Turbochargers not included as above		(3)			X	C	
E8	Starting air receiver (1)	C	DA or TA	X _h	X		(1) As per NR217, Pt C, Ch 1, Sec 2	

Table 5: Auxiliary machinery - item G - ⚙️
All vessels/units (carriage of dangerous goods excepted)

AUXILIARY MACHINERY - ITEM G - ⚙️								
N°	Item	Material certification	Product certification				Remarks	
			Design assessment index	Examinations and tests				Certification
				During fabrication	After completion	Running tests		
G1	Auxiliary diesel engines (1)		TA	X	X	X _{br}	C	(1) As per NR217, Pt C, Ch 1, Sec 2
	Gears and couplings (1)	(2)	TA	X _s (3)	X (4)			(1) As per NR217, Pt C, Ch 1, Sec 6 (2) Material tests as per NR216, Ch 2, Sec 3 for the following items: • pinions and wheel bodies • rims • plates and other elements intended for propulsion gear casings of welded construction
G2	1 - Reduction and/or reverse gears intended for propulsion:							(3) Mechanical test and NDT are to be carried out for pinions and wheel forgings in accordance with NR216, Ch 2, Sec 3
	• with transmitted power P ≥ 220 kW	C		X _s (5)	X _{h,s} (6)	X	C	(4) Survey of shafts and their connections (flange couplings, hubs, bolt pins) as per item G3 Main propulsion shafting
	• with transmitted power P < 220 kW	W				X	W	(5) Static balancing test of rotating components in particular gear wheel and pinion shaft assemblies with the coupling part attached. Where n²·d ≥ 1,5·10⁹, gear wheel and pinion shaft assemblies are also to undergo a dynamic balancing test
	2 - Other reduction and step-up gears:							(6) Verification of cutting accuracy, meshing test and hydrostatic tests as per NR217
	• with transmitted power P ≥ 110 kW	C		X _s (5)	X _{h,s} (6)	X	C	
	• with transmitted power P < 110 kW	W				X	W	
G3	Main propulsion shafting (1)	(2)	DA		X _h (3)	X	C	(1) As per NR217, Pt C, Ch 1, Sec 7
	1 - Coupling	C	DA		X		C	(2) Material tests are required for all shaft components
	2 - Propeller shafts	C	DA		X _h		C	(3) Parts of hydraulic couplings, clutches of hydraulic reverse gears and control units, hubs and hydraulic cylinders of controllable pitch propellers, including piping systems and associated fittings, are to be hydrostatically tested to 1,5 times the maximum working pressure
	3 - Intermediate shafts	C	DA		X		C	(4) Sterntubes, when machine-finished, and propeller shaft liners, when machine-finished on the inside and with an overthickness not exceeding 3 mm on the outside, are to be hydrostatically tested to 0,2 N/mm²
	4 - Thrust shafts	C	DA		X		C	
	5 - Cardan shafts	C	DA		X _h		C	
	6 - Sterntubes	W	DA		X _h (4)		W	
	7 - Sterntubes bushes and other shaft bearings	W	DA		X _h	X	W	

AUXILIARY MACHINERY - ITEM G - ⚙️							
N°	Item	Material certification	Product certification				Remarks
			Design assessment index	Examinations and tests			
During fabrication	After completion	Running tests					
 G3	8 - Propeller shaft liners	W	DA	X _h (4)			W
	9 - Coupling bolt or studs	W	DA	X			W
	10 - Flexible couplings	C	DA	X _h			C
	11 - Thrust sliding-blocks	W	DA	X	X		W
G4	Propellers (1)	(2)	DA or TA (3)	X	X _s (4)	X	C
	1 - Solid propeller	C	DA	X	X _h		C
	2 - Built-up and controllable pitch propeller (CPP)	C	DA	X	X _{h, ht} (5)	X (6)	C
G5	Steering gears (1)	(2)	DA	X _s (3)			(1) As per NR217, Pt C, Ch 1, Sec 11
	• power ≥ 50 kW		DA		X	X _{ht}	(2) Material tests, including examinations for internal defects, to be performed to components subject to pressure or transmitting mechanical forces as per NR216. Works' certificate may be accepted for low stressed parts, provided all characteristics for which verification is required are guaranteed
	• power < 50 kW		DA		X	X _{ht}	(3) NDT are to be carried out for mechanical components subjected to pressure or transmitting mechanical forces
	1 - Power unit				X _h	X	(4) Tests for pipes, valves and fittings are to comply with NR217, Pt C, Ch 1, Sec 10, [20]
	2 - Pressure components	C		X _s	X _{h, ht}		
	3 - Load transmitting components	C		X _s			
	4 - Pipes, valves and fittings (4)	C		X	X _{h, ht}		

AUXILIARY MACHINERY - ITEM G - ⚙								
N°	Item	Material certification	Product certification				Remarks	
			Design assessment index	Examinations and tests				Certification
				During fabrication	After completion	Running tests		
G6	Windlasses (1)	W (2)	TA		X (3) (4)	X (5) (6)	C	(1) As per NR217, Pt C, Ch 1, Sec 5 (2) The material of component which are stressed by the pull of the chain when the cable lifter is disengaged (main shaft, cable lifter, brake bands, brake spindles, brake bolts, tension strap) must possess mechanical characteristics in conformity with NR216
	1 - Power transmitting components				X			(3) Pressure test to be done to pressure components at 1,5 p, p being the working pressure. For working pressure over 200 bar, test pressure need not exceed p + 100
	2 - Power unit				X	X		(4) Tightness tests are to be performed on components to which this is appropriate
								(5) Operational test at twice the nominal pull. Where manufacturing works do not have adequate facilities, the tests including the adjustment of the overload protection may be carried out on board the vessel. In these cases, functional testing in the manufacturer's works is to be performed under load conditions
	3 - Systems				X _{h, ht}			(6) Working test to be carried out in the presence of the Surveyor
G7	Thrusters and their prime movers (1) (2) (3)		DA or TA (4)	X	X	X	C	(1) As per NR217, Pt C, Ch 1, Sec 12 (2) Thrusters developing power less than 110 kW are to be built in accordance with sound marine practice and tested as required to the satisfaction of the Surveyor
	1 - Transverse thrusters intended for manoeuvring	W (5)		X	X _{h, ht}		C	(3) Prime movers are to be tested in accordance with the requirements applicable to the type of mover used (4) Mass produced thrusters may be accepted with the frame work of type approval program of the Society
	2 - Thrusters intended for propulsion and steering	C		X	X _{h, ht}		C	(5) Material testing for parts of athwartship thrusters does not need to be witnessed by a Surveyor, provided full test reports are made available to him

AUXILIARY MACHINERY - ITEM G - 8						
N°	Item	Material certification	Product certification			Remarks
			Design assessment index	Examinations and tests	Certification	
G8	Pressure equipment (1) (2)	(3) (4)		(5)	(4)	(1) As per NR217, Pt C, Ch 1, Sec 5
	1 - Steam generators or boilers					(2) Definitions: p : Design pressure, in MPa V : Volume, in liters T : Design temperature, in °C t _A : Actual thickness of the vessel, in mm
	Class 1: (p > 3,2 and V > 2) or (p·V > 20 and V > 2)	C	DA	X _{h,s}	C	In addition to the general requirement, material test for the construction of pressure parts of boilers, other steam generators, oil fired thermal oil heaters and exhaust gas thermal oil heaters to be witnessed by the Surveyor
	Class 2: if not class 1 or class 3	W (6)	DA	X _{h,s}	C	Material test to be witnessed by the Surveyor for class 1 pressure vessels and heat exchangers. This may be waived for mass produced small pressure vessels e.g. accumulators for valve controls, gas bottles, etc.
	Class 3: p·V ≤ 5 or V ≤ 2	W (6)		X _{h,s}	C	Hydrostatic test of all class 1, class 2 and class 3 pressure vessels are to be witnessed by the Surveyor with the exception of mass produced pressure vessels which are built under the conditions stated in (6)
	2 - Pressure vessels for toxic substances					Product certificate W may be accepted for mass produced small pressure vessels of class 1, class 2 and class 3 which are type approved by the Society
	Class 1: all in class 1	C	DA	X _{h,s}	C	As per NR217, Pt C, Ch 1, Sec 10, [20]
	3 - Pressure vessels for corrosive substances					The proof of the quality of materials for pipe Class II is to be in the form of an inspection certificate according to EN 10.204. 3.1 or equivalent
	Class 1: p > 20 or p·V > 20 or T > 350	C	DA	X _{h,s}	C	
	Class 2: if not in class 1	W	DA	X _{h,s}	C	
	4 - Pressure vessels for gaseous substances					
	Class 1: p > 100 or p·V > 300	C	DA	X _{h,s}	C	
	Class 2: V > 1 and p·V > 100 and not in class 1	W	DA	X _{h,s}	C	
	Class 3: all pressure vessels which are not class 1 or class 2	W		X _{h,s}	C	
	5 - Pressure vessels for liquid substances					
	Class 1: V > 10 and p·V > 1000 and p > 50	C	DA	X _{h,s}	C	
	Class 2: (V ≤ 10 and p > 100) or (1 < p ≤ 50 and p·V > 1000)	W	DA	X _{h,s}	C	
	Class 3: all pressure vessels and heat exchangers which are not class 1 or class 2	W		X _{h,s}	C	
	6 - Pressure vessels for thermal oil					
	Class 1: p > 1,6 or T > 300	C	DA	X _{h,s}	C	
	Class 2: if not class 1 or class 3	W (4)	DA	X _{h,s}	C	
	Class 3: p ≤ 0,7 and T ≤ 150	W (4)		X _{h,s}	C	

AUXILIARY MACHINERY - ITEM G - ✕							
N°	Item	Material certification	Product certification				Remarks
			Design assessment	During fabrication	After completion	Running tests	
G8	7 - Pressure vessels for fuel oil, lubricating oil or flammable hydraulic oil						
	Class 1: $p > 1,6$ or $T > 150$	C	DA		$X_{h,s}$		C
	Class 2: if not class 1 or class 3	W	DA		$X_{h,s}$		C
	Class 3: $p \leq 0,7$ and $T \leq 60$	W			$X_{h,s}$		C
	8 - Whatever type of equipment						
	Class 1: $t_a > 40$	C	DA		$X_{h,s}$		C
G9	Class 2: $15 \leq t_a \leq 40$	W	DA		$X_{h,s}$		C
	9 - Oil firing equipment (7)						
	Class II piping system	W (8)			X_h		W
	Class III piping system if design pressure exceeds 3,5 bar	W			X_h		W
G9	Domestic gas installations (1)		DA		X (6)		(1) As per NR217, Pt C, Ch 1, Sec 13 (2) Pressure test is carried out with air, an inert gas or liquid at a pressure of 20 bar above atmospheric pressure (3) Gastightness test is carried out with air or an inert gas at a pressure of 3,5 bar above atmospheric pressure (4) Tightness test, for concerning pipes, is to be carried out with air or an inert gas at a pressure of 1 bar above atmospheric pressure (5) Leak test, for concerning pipes, is to be carried out at a pressure of 0,15 bar above atmospheric pressure (6) Gastightness, tightness and leak tests for the pipes are deemed gastight if, after sufficient time to allow for normal balancing, no fall in the test pressure is observed during the following 10 minutes (7) Tightness test is carried out with a foaming substance at the operating pressure (8) All gas-consuming appliances shall be brought into service and tested at the nominal pressure to ensure that combustion is satisfactory with the regulating knobs in the different positions. Flame failure devices shall be checked to ensure that they operate satisfactorily
	1 - Medium-pressure pipes				$X_{h,ht}$ (2) (3)		
	2 - Other pipes				X_{ht} (4) (5)		
	3 - Receptacle fittings subjected to pressure				X_{ht} (7)		
	4 - Gas-consuming appliances					X (8)	

AUXILIARY MACHINERY - ITEM G - ⚙️							
N°	Item	Material certification	Product certification			Certification	Remarks
			Design assessment index	Examinations and tests	Running tests		
G10	Pumps and compressors (1)	(7)				(7)	(1) As per NR217, Pt C, Ch 1, Sec 10, [20] (2) The proof of the quality of materials for pipe Class II is to be in the form of an inspection certificate according to EN 10.204. 3.1 or equivalent
	1 - Class II piping system	W (2)		X _h (3)		C	(3) Cylinders, covers and casings of pumps and compressors are to be subjected to an hydrostatic test. Tightness tests are to be performed on components to which this is appropriate
	2 - Class III piping system if design pressure exceeds 3,5 bar (4)	W		X _h		C	(4) Pumps within this category: • boiler feed water or forced circulating • fuel oil or other flammable oil • compressed air
	3 - Class III piping system other than above					W	(5) If of welded construction, welding steel pipes are to comply with the applicable requirements of NR467, Pt C, Ch 1, Sec 10. Welded joints in pipelines of Class II are to be tested in accordance with NR216
	4 - Bilge and fire pumps	W		X _h	X	C	(6) For main parts before assembling
	5 - Feed pumps for main boilers	C	DA	X (5) (6)		C	(7) For product certificate C, alternative type of certificate may be accepted depending on the Survey Scheme. See NR217, Part A
	6 - Forced circulation pumps for main boilers	C	DA			C	
G11	Starting air receiver (1)	C	DA or TA		X _h	X	(1) As per NR217, Pt C, Ch 1, Sec 2
G12	Hydraulic system (1)	W	DA			C	(1) As per NR217, Pt C, Ch 1, Sec 10, [20]
	1 - Pressure casings and oil lines			X _h			
	2 - Power unit			X _h	X		
	3 - Systems			X _{ht}			

AUXILIARY MACHINERY - ITEM G - ✕									
N°	Item	Material certification	Product certification				Certification	Remarks	
			Design assessment index	Examinations and tests					
				During fabrication	After completion	Running tests			
G13	Pipes, Piping (1)							(1) As per NR217, Pt C, Ch 1, Sec 10, [20] (2) The proof of the quality of materials is to be in the form of an inspection certificate according to EN 10.204. 3.1 or equivalent	
	1 - Class II	C (2)		X (3)	X _h (4) (5)		C	(3) If of welded construction, welding steel pipes are to comply with the applicable requirements of NR467, Pt C, Ch 1, Sec 10. Welded joints in pipelines of Class II are to be tested in accordance with NR216	
	2 - Class III	W		X (3)	X _h (4)		W	(4) All pipe systems are to be tested for leakage under operational conditions. If necessary, special techniques other than hydraulic pressure tests are to be applied: • heating coils in tanks and fuel lines must be tested to not less than 1,5 PB but in no case less than 4 bar • liquefied gas process piping systems are to be leak tested (by air, halides, etc.) to a pressure depending on the leak detection method applied	
	3 - Hose assemblies and compensators	C			X _h (7)	TA (6)	C	(5) All Class II pipes (and other concerning items) having a design pressure PR greater than 3,5 bar shall be subjected to an hydraulic pressure test in the presence of the Surveyor	
	4 - Plastic piping	C		X	X _h		C	(6) Relevant tests are to be carried out on each type and each size as per NR467, Pt C, Ch 1, Sec 10, [2.1.3] (7) Hydrostatic tests under supervision of the Society	
G14	Pipe fittings (1)							(1) As per NR217, Pt C, Ch 1, Sec 10, [20]	
	1 - Valves for pipe Class II	C	DA	X (2)	X _h (3)		C	(2) If of welded construction, welding steel pipes are to comply with the applicable requirements of NR467, Pt C, Ch 1, Sec 10. Welded joints in pipelines of Class II are to be tested in accordance with NR216	
	2 - Valves for pipe Class III			X (2)				(3) The following valves are to be subjected in the manufacture's work to an hydraulic pressure test in the presence of the Surveyor and are also subjected to undergo a tightness test at 1,0 times the nominal pressure: • valves of pipe Class II to 1,5 PR • valves mounted on the vessel's side not less than 5 bar	
	• diameter ≤ 100 mm	W			X _h (3)		W		
	• diameter > 100 mm	C	DA		X _h (3)		C		
	3 - For plastic pipes	C	DA		X		C		
	4 - Remote controlled valves						X		

Table 6: Electrical installations - item K - ⚡
All vessels/units (carriage of dangerous goods excepted)

ELECTRICAL INSTALLATIONS - ITEM K - ⚡									
N°	Item	Material certification	Product certifications and tests				Certification	Remarks	
			Design assessment index	During fabrication	After completion	Running tests			
K1	Generators (1)							(1) As per NR217, Pt C, Ch 2, Sec 3 (2) Tests to be performed: • temperature rise test • overload test • short-circuit test • high voltage test • overspeed test • measurement of insulation resistance All electrical machines are to be tested at manufacturer's work. When the test is not specified, the requirements of IEC 60034 apply	
	• power ≥ 50 kW/kVA	C	TA		X (2) (3)	X	C		
	• power < 50 kW/kVA	W			X (2) (3)	X	W		
K2	Electrical machines (1)							(1) As per NR217, Pt C, Ch 2, Sec 3 (2) Tests to be performed: • temperature rise test • overload test • short-circuit test • high voltage test • overspeed test • measurement of insulation resistance All electrical machines are to be tested at manufacturer's work. When the test is not specified, the requirements of IEC 60034 apply	
	• power ≥ 50 kW/kVA	C	TA		X (2) (3)	X	C		
	• power < 50 kW/kVA	W			X (2) (3)	X	W		
K3	Transformers (1)							(1) As per NR217, Pt C, Ch 2, Sec 4 (2) Power transformers are to be tested according to IEC 60076	
	• power ≥ 50 kW/kVA		TA		X (2)	X	C		
	• power < 50 kW/kVA				X (2)	X	W		

ELECTRICAL INSTALLATIONS - ITEM K - ⚡								
N°	Item	Material certification	Product certification				Remarks	
			Design assessment index	Examinations and tests				Certification
K4	Storage batteries (1)		TA			X (2)	W	(1) As per NR217, Pt C, Ch 2, Sec 5 (2) The following shall be tested: • installation of storage batteries • ventilation of battery rooms, cupboards/containers; and cross-section of ventilation ducts • storage battery charging equipment • required caution labels and information plates
	Storage battery chargers (1)							(1) As per NR217, Pt C, Ch 2, Sec 5
K5	• power ≥ 2 kW/kVA		TA		X	X	C	
	• power < 2 kW/kVA				X	X	W	
K6	Switchboards (1)							(1) As per NR217, Pt C, Ch 2, Sec 7
	• power ≥ 100 kW/kVA (2)		DA or TA		X (3)	X	C	(2) Including switchboards for emergency generator sets
	• power < 100 kW/kVA		DA or TA		X	X	W	(3) Tests to be performed: • operational test • high voltage test • insulation resistance measurement
K7	Switchgear (1)		TA (2)		X	X	W	(1) As per NR217, Pt C, Ch 2, Sec 7. (2) As a general principle, switchgear shall be type approved, designed and constructed in accordance with standard IEC, EN or other standards recognized by the Society
	Cables and insulated wires (1)		TA (2)		X		W	(1) As per NR217, Pt C, Ch 2, Sec 12 (2) As a general principle, the use of the types of cables and wired according to IEC 60092 is permitted
K9	Control, monitoring, alarm and safety systems (1)		TA			X (2)	C	(1) As per NR217, Pt C, Ch 2, Sec 13 (2) Operational test to be performed

ELECTRICAL INSTALLATIONS - ITEM K - ⚡									
N°	Item	Material certification	Product certification				Certification	Remarks	
			Design assessment index	Examinations and tests					
				During fabrication	After completion	Running tests			
K10	Power electronics (1)							(1) As per NR217, Pt C, Ch 2, Sec 14	
	• power ≥ 50 kW/kVA		TA		X (2)	X (3)	C	(2) Routine tests to be performed: • voltage test • insulation resistance test	
	• power < 50 kW/kVA				X (2)	X (3)	W	(3) Operational test to be performed on the subsequent machines	
K11	Electrical propulsion plants (1)							(1) As per NR217, Pt C, Ch 2, Sec 15	
								(2) Material certificate for shafts. Shafts are to be made of material complying with NR216, Ch 2, Sec 3 or, where rolled products are allowed in place of forgings, with NR216, Ch 2, Sec 1	
								(3) Shaft material for electric propulsion motors and for main engine driven generators where the shaft is part of the propulsion shafting is to be certified by the Society	
	• power ≥ 50 kW/kVA	C (2) (3)	DA or TA	X (4)	X (5)	X (6) (7)	C	If appropriate, where welded parts are foreseen on shafts and rotors, the provisions of NR216, Chapter 5 apply	
								(5) Type test are to be carried out on a prototype machine or on the first of a batch of machines, and routine tests carried out on the subsequent machines	
	• power < 50 kW/kVA	W (2) (3)	DA or TA	X (4)	X (5)	X (6) (7)	W	(6) Functioning of the propulsion plant shall be proved by dock trial before river trials	
								(7) Testing during trial voyages as per NR217, Pt C, Ch 2, Sec 17	
K12	Computer systems (1)							(1) As per NR217, Pt C, Ch 2, Sec 16	
	1 - Class 1 and class 2				X (2)	X	W	(2) Following test shall be carried out in the manufacturer's works: • function test • operating conditions simulation	
	2 - Class 3, class 4 and class 5		TA		X (2)	X	C	• fault simulation • simulation of the application environment	

Table 7: Pollution prevention installation covered by additional class notation Cleanvessel - item S - 𐄂

All vessels/units (carriage of dangerous goods excepted)

POLLUTION PREVENTION INSTALLATION COVERED BY ADDITIONAL CLASS NOTATION CLEANVESSEL - ITEM S - ⚡							
N°	Item	Material certification	Product certification				Remarks
			Design assessment index	Examinations and tests		Certification	
				During fabrication	After completion		
S	Pollution prevention installation covered by additional class notation Cleanvessel as per NR217, Pt D, Ch 2, Sec 11						
S1	Sewage treatment plant (1)		TA		X _h	X	(1) In accordance with IMO Resolution MEPC. 159 (55)
S2	Incinerator (1)		TA		X	X	(1) In accordance with IMO Resolution MEPC. 76 (40) as amended by Resolution MAPC.93 (45) and Annex VI of MARPOL 73/78, Appendix IV
S3	Anti-fouling system (1)		TA (2)		X	C	(1) In accordance with International Convention on the Control of Harmful and Anti-fouling Systems, 2001, Annex 4, Appendices 1 and 2
							(2) Anti-fouling paint are to be a type approved by the Society, on the basis of the following criteria: - TBT-free - small quantities of organotin compounds acting as a chemical catalyst are allowed provided their concentration does not exceed 2500 mg total tin per kg of dry paint
S4	Advanced water treatment plants (1)		TA		X	X	(1) In accordance with IMO Resolution MEPC. 159 (55)
S5	Grey water treatment plants (1)		TA		X	X	(1) In accordance with IMO Resolution MEPC. 159 (55)
S6	Onboard NOx monitoring systems (1)		TA		X	X	(1) Where NOx reduction methods (such as water injection, fuel oil emulsification, charge air humidification, exhaust gas after-treatment) are used, they are to be approved by the Society and taken into account in type approval certification of the engine
S7	Oily water separator (OWS) systems (1)		TA		X _h	X	(1) In accordance with IMO Resolution MEPC. 107 (49)

POLLUTION PREVENTION INSTALLATION COVERED BY ADDITIONAL CLASS NOTATION CLEANVESSEL - ITEM S - ✕								
N°	Item	Material certification	Product certification				Remarks	
			Design assessment index	Examinations and tests				Certification
				During fabrication	After completion	Running tests		
S8	Exhaust gas cleaning (EGC) systems (1)		TA		X	X	C	(1) In accordance with IMO Resolution MEPC.184 (59); 2009 Guidelines for exhaust gas cleaning systems
S9	Oil content meter		TA		X	X	C	
S10	Oil sealing glands		TA		X	X	C	
S11	Leak detector for refrigeration systems		TA		X	X	C	

SECTION 3

ALL VESSELS/UNITS (CARRIAGE OF DANGEROUS GOODS EXCEPTED) WITH ASSIGNMENT OF CHARACTER OF CONSTRUCTION •

1 Summary

1.1 Vessels/units with assignment of character of construction •

1.1.1 Provisions related to survey at works for assignment of character of construction • for all vessels/units, excepted those intended to carry dangerous goods, are summarized in the Table below.

ALL VESSELS/UNITS (CARRIAGE OF DANGEROUS GOODS EXCEPTED) with assignment of character of construction •		
Item	Title	Reference
Item A	Raw materials for hull	Tab 8
Item B	Hull outfitting	Tab 9
Item C	Fire protection, detection and extinguishing	Tab 10
Item E	Main diesel engine engines & their auxiliaries	Tab 11
Item G	Auxiliary machinery	Tab 12
Item K	Electrical installations	Tab 13
Item S	Pollution prevention installation covered by additional class notation Cleanvessel	Tab 14

Table 8: Raw materials for hull - item A - •

All vessels/units (carriage of dangerous goods excepted)

RAW MATERIALS FOR HULL - ITEM A - •									
N°	Item	Material certification	Product certifications and tests				Certification	Remarks	
			Design assessment index	During fabrication	After completion	Running tests			
A1	Steel plates and profiles							(1) As per NR216, Ch 2, Sec 1	
	1 - Plates, sections & bars (1)	W						(2) As per NR216, Ch 2, Sec 2	
	2 - Tubes (2)	W							
A2	Steel forgings (1)	W						(1) As per NR216, Ch 2, Sec 3	
A3	Steel castings (1)	W						(1) As per NR216, Ch 2, Sec 3	
A4	Iron castings (1)	W						(1) As per NR216, Ch 2, Sec 3	
A5	Aluminium alloy plates, profiles, bars and tubes. (1)	W						(1) As per NR216, Ch 3, Sec 2	
A6	Transition joints steel / aluminium alloy (1)	W	TA				W	(1) As per NR216, Ch 3, Sec 2	
A7	Welding consumables (1)		TA				D	(1) As per NR216, Ch 5, Sec 2	
A8	Composite materials		DA (1)	X (2)	X (2)		D	(1) DA for structure assembly	
	1 - Resin systems	W	TA (3)				W	(2) Representative sample of the structural assembly is to be carried out by a testing laboratory accepted by the Society	
	2 - Reinforcement fibers	W	TA (3)				W	(3) TA as per NR546, Sec 8	
	3 - Core material for sandwiches	W	TA (3)				W		
	4 - Adhesives	W	DA (1)				W		
A9	Cast steel shaft brackets (1)	W	DA		X _s (2)		W	(1) As per NR217, Pt B, Ch 7, Sec 3	
								(2) Vibration analysis is recommended for single arm propeller shaft	

Table 9: Hull outfitting - item B - •
All vessels/units (carriage of dangerous goods excepted)

HULL OUTFITTING - ITEM B - •								
N°	Item	Material certification	Product certification				Remarks	
			Design assessment index	Examinations and tests				Certification
				During fabrication	After completion	Running tests		
B1	Rudders / nozzles (1)						(1) As per NR217, Pt B, Ch 7, Sec 1	
	1 - Rudder stock, shaft, pintles, coupling	W	DA	X	X	W	(2) Leak test is to be carried out for double plate rudder as per NR217, Pt B, Ch 8, Sec 3	
	2 - Rudder blade / nozzle shell	W	DA	X	X _n (2)	W		
B2	Anchors (1)	W	TA	X	X _s	W	(1) As per NR217, Pt B, Ch 7, Sec 4	
B3	Anchor chain cables (1)	W	TA		X _s (2)	W	(1) As per NR217, Pt B, Ch 7, Sec 4	
							(2) Additional approval for manufacturing process is required for rolled bars of grade K2 and K3 (or Q2 and Q3)	
B4	Anchor chain cable accessories (1) (shackles, swivels and other attachment pieces)	W	TA		X _s (2)	W	(1) As per NR217, Pt B, Ch 7, Sec 4	
							(2) Tests as per NR216, Ch 4, Sec 1	
B5	Ropes (Steel wire ropes and fibre ropes) (1)	W			X (2)	W	(1) As per NR217, Pt B, Ch 7, Sec 4	
							(2) Tests as per NR216, Ch 4, Sec 1	
B6	Sidescuttles and windows (1)	W	DA		X (2)	W	(1) As per NR217, Pt B, Ch 7, Sec 4	
							(2) Tests as per NR216, Ch 4, Sec 3	
B7	Shell doors	W	DA	X	X _{hose} (1)	W	Hose test as per NR217, Pt B, Ch 8, Sec 3	
B8	Hatchcovers (1)	W	DA	X	X _{hose}	W	(1) As per NR217, Pt B, Ch 6, Sec 5	
B9	Watertight doors	W	DA	X	X _n (1)	W	(1) Structural test is to be carried out for watertight doors below freeboard or bulkhead deck either before or after the door is fitted on board	
B10	External ramp (1)	W	DA		X _s	W	(1) As per NR217, Pt B, Ch 6, Sec 6	
B11	Movable deck and inner ramp (1)	W	DA		X	W	(1) As per NR217, Pt B, Ch 6, Sec 6	
B12	Independent tanks	W	DA	X	X _n (1)	W	(1) Structural test is to be carried out for independent tanks not used as cargo tanks	
B13	Elastic bedding	W		X		W		