

TÜRK LOYDU



RULES FOR TESTING AND CERTIFICATION OF MATERIALS AND EQUIPMENT TO BE USED IN SHIPS CLASSED BY TÜRK LOYDU JANUARY 2020

This latest edition incorporates all rule changes. The latest revisions are shown with a vertical line. The section title is framed if the section is revised completely. Changes after the publication of the rule are written in red colour.

Unless otherwise specified, these Rules apply to ships for which the date of contract for construction as defined in TL- PR No.29 is on or after 1st of January 2020. New rules or amendments entering into force after the date of contract for construction are to be applied if required by those rules. See Rule Change Notices on TL website for details.

"General Terms and Conditions" of the respective latest edition will be applicable (see Rules for Classification and Surveys).

If there is a difference between the rules in English and in Turkish, the rule in English is to be considered as valid. This publication is available in print and electronic pdf version. Once downloaded, this document will become UNCONTROLLED. Please check the website below for the valid version.

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1. PURPOSE

The aim of these rules is to define which materials and products to be used in ships classed by Türk Loydu is to be subjected to certification and which certification procedures is to be applied to these materials and products..

2. DEFINITIONS AND ABBREVIATIONS

TL : Türk Loydu

Customer: Legal entities or persons who apply to receive service from TL on its behalf or by authorization.

Certificate: The written document on which the competent body indicates that a product, process or service is sufficiently conformant to a specific Standard or the related document.

Certification: The act of documentation by a competent body that a product, process or service is sufficiently conformant to a specific Standard or the related document.

Certification Method : The systems that have rules relating to the process and the method created to carry out the conformity certification.

Type Approval: The certification of conformity of a product to predefined standards, rules or specifications by issuing a certificate upon determination of such conformity as a result of tests and controls carried out on one or on a group of products representing that product.

List of Type Approved Products : The publications where the products approved by TL are listed.

Product: The materials and equipment that are subject to certificate.

QMS (Quality Management System): The organizational structure, procedures, responsibilities, instructions, processes and the sources required for the quality management.

Recognized Organization by Türk Loydu: IACS Member Societies, Organizations with whom Türk Loydu has signed a Recognition Agreement.

Requirements: Requirements within the scope of certification in relation to the product. These can be the TL Rules relating to design, structure and operation and other standards, codes, rules, specifications, the engineering criteria and user requirements..

3. GENERAL APPLICATION (RULES)

These Rules are general guideline for the application of valid TL Classification Rules, procedures and instructions relating to the certification of materials and products to be used in ships under TL class. For the issues not included in or conflicted with these rules, applicable TL Classification Rules, procedures and instructions apply.

These rules are applicable to the ships classed by Türk Loydu having + notation. In case where different class notation are affixed, applicable parts of these rules is to be decided upon agreement between customer and TL.

In the scope of these rules, in cases where it is specified that the certificates of Recognized Class Societies by TL are to be accepted, than an agreement between customer and TL must be reached.

4. MATERIALS and EQUIPMENT REQUIRED TO BE TESTED AND CERTIFIED

4.1 Materials and Equipment Required to be Tested and certified for all ships (see Annex 1)

1. Ship Construction Materials
2. Hull Outfitting
3. Steering Gears, Lateral Thrusters, Anchor Windlasses, Hydraulic Systems
4. Internal Combustion Engines (Main and Auxiliary)
5. Auxiliary Engines and Accessories
6. Steam Turbines
7. Gas Turbines
8. Pumps, Air Compressors
9. Propeller, Shafting System
10. Reduction Gears, Couplings
11. Steam Boilers
12. Thermal Oil Systems
13. Pressure Vessels and Apparatus
14. Electric System Components
15. Refrigerating Installations
16. Piping Components, Oily Water Separators
17. Fire Protection Equipment
18. **Life-Saving Appliances**

5. CERTIFICATION SCHEMES

5.1 Certification according to Türk Loydu Rules

If a material or product is stated to be certified according to Türk Loydu Rules, than this material or product is to be certified according to applicable procedures described in "Rules for Testing and Certification of Materials and Equipment to be Used in Ships Classed by Türk Loydu". Inspections and test for certification stated in respective rule is to be carried out according to "Rules for Testing and Certification of Materials and Equipment to be Used in Ships Classed by Türk Loydu".

5.2 Certification according to international rules such as IMO, ILO, etc.

If a material or product is requested to be certified according to specification of IMO, ILO or other international rules, than TL inspects and tests this material or product according to the requirements of IMO, ILO or other international rules/standards and issues certificate.

5.3 Certification according to MED, CE, etc. EU Directives

If a material or product is requested to be certified according to MED, CE, etc. EU Directives, in cases where TL is designated as notified body for these Directives, this material or product is to be inspected, examined and tested by TL according to procedures and requirements included in MED, CE, etc. EU Directives. If the result of such inspections, examinations and tests are found to be satisfactory, TL issues a certificate specified in respective Directives.

5.4 Certification according to EN ISO 10204

Certification according to EN ISO 10204 standard is to apply to all products produced both by metallic materials such as plates, bars, forgings, castings and non-metallic products in conformity with requirements determined in the order.

TL issues a certificate according to EN ISO 10204, after recording that the results of tests are seen and in conformity with requirements identified in the order, together with inspector of manufacturer independent from production department and TL surveyor

6. CERTIFICATION OF MATERIALS

6.1 Certification of Materials – General

The raw and processed materials to be used in ships built under TL class or in products to be certified, are to be inspected and tested according to the requirements of TL Material Rules or national/international standards and certified.

Inspection and taking of test samples is to be carried out by TL Surveyors. Test samples taken is to be marked according to TL Stamping Procedure.

Tests are to be performed in;

- Independent accredited test laboratories in which samples and test results can be traceable,
- University laboratories having calibrated instruments,
- Non-accredited laboratories on the condition that they are found to be satisfactory according to Work Instruction “ST-E14 Guidelines for the Approval of Firms Supplying Laboratory Services” attended by TL Surveyors or by subcontractor authorised by TL for related test,
- Manufacturer’s laboratory on the condition that it is found to be satisfactory according to Work Instruction “ST-E14 Guidelines for the Approval of Firms Supplying Laboratory Services” attended by TL Surveyors or by subcontractor authorised by TL for related test,

The contents and validity periods of calibration certificates except those stated in 1st item above, should be controlled. If found to be satisfactory, one copy of calibration certificate is to be taken, otherwise information about number, validity period, issuing body of calibration certificate should be introduced to survey report.

The test reports of tests carried out in laboratories of TL approved raw material producers or those producing type approved products is to be evaluated by TL Surveyor and approved if found satisfactory and than a certificate according to EN ISO 10204-3.2 issued.

6.2 Certification of raw materials

Certification materials as ingots or casted in shaped moulds from natural ores or pure blocks is to be performed according to raw materials certification rules. Raw materials or semi-finished materials to be utilized as a part of products to be used in ships built under TL class, are to be inspected and tested in accordance with the requirements of TL Rules or national/international standards and certified. Unless otherwise requested, raw materials or semi-finished materials for which product certificate issued by TL, can be used in products installed on ships built under TL class or ships classed by TL or directly to ships without subject to acceptance test. For performing of tests and certification, requirements stated in item 6.1 are to be observed.

6.3 Certification of processed materials

Processed materials to be utilized as a part of products to be used in ships built under TL class, are to be inspected and tested in accordance with the requirements of TL Rules or national/international standards and certified. During inspection, the values included in the TL approved drawings relevant to material in question, if any, are to be taken into account. Unless otherwise requested, processed materials for which product certificate issued by TL, can be used in products installed on ships built under TL class or ships classed by TL or directly to ships without subject to acceptance test. For performing of tests and certification, requirements stated in item 6.1 are to be observed.

7. PRODUCT CERTIFICATION

Products to be used in ships built under TL class are to be inspected and tested according to the requirements of TL Rules or national/international standards and certified.

Unless otherwise requested, products for which product certificate issued by TL, can be installed on ships built under TL class or ships classed by TL without subject to acceptance test. The tests carried out during dock and sea trials are exempted.

Product certification can be made for individual product or for lots of products. If certification is carried out for lots of products, whether all products or number of samples taken randomly be tested is to be decided according to product related TL Rules or national/international standards.

Product certification is to be carried out according to the requirements of TL Rules or national/international standards with the application of the following processes.

7.1 Review and approval of required plans, calculations and documents

The plans, calculations and documents of products to be certified by TL required in Türk Rules or national/international standards is to be submitted to TL. Submitted plans, calculations and documents is to make it possible to clearly understand the design, manufacture and operation of the product and is to include the following:

- A general description of the product,
- The conceptual design, the manufacturing drawings, the schemes of components and sub-assemblies,
- Description and explanations necessary for the understanding of product,

- Calculations related with the design,
- Preliminary test reports, if any,
- Manuals for maintenance and operation,
- Control and test procedures.

The conditions (if any) of TL in submitted plans and documents are to be dealt with. If the plans and documents are approved as amended, amendments is to be fulfilled. Where the documentation submitted is found to be satisfactory, accuracy of the information concerning with material and product included in these documentation is to be checked.

7.2 Approval of Materials

Materials to be used in the products to be certified by TL are to be certified according to item 6. In cases where the quantity of material to be certified is limited and TL surveyor transportation expences for certification is extremely high, TL may authorise a recognized class society to carry out material certification or accept EN ISO 10204 type 3.2 certified materials.

7.3 Control and test of components

If components which are integral part of a product have to be certified according to TL Rules, the certificate stated in the rules is required. This component is evaluated for the compatibility with the main product. This component is to be examined by TL Surveyor, if necessary is to be tested witnessed by TL Surveyor before being assembled into main product.

7.4 Control and tests of product

Upon completion of production, the product is to be subjected to control and test according to the following Rules and standards defined for the certification:

- TL Rules,
- IMO, ILO, etc. International Rules / standards,
- MED,CE, etc. EU Directives.

8. TYPE APPROVAL

8.1 General

For commencement of Type Approval Certificate process of a product by TL, official application should be made to TL by the manufacturer or his authorized representative and the necessary stages should be completed according to TL procedure no. TL 1100. These stages are:

- Application, TL's offer, following the confirmation of offer determination of the rules and standards to be applied for Type Approval and signing of the contract,
- Submission of documents requested by TL,
- Submission of necessary technical documents (drawings, calculations, etc.) to be requested by TL,
- Auditing of QMS and production processes of manufacturer,

- Certification of materials and components to be used in type product or product group,
- Performing of type tests of product in accordance with applicable rules and standards,
- Issuance of Type Approval Certificate after fulfilling the requirements of above mentioned items,
- Publishing of product and manufacturer in TL Type Approved Products List.

TL Type Approved products can be used in ships being built under TL class directly or with subject to necessary inspections and tests as stated in the annexes of item 11 of this rule.

Unless otherwise requested, TL Type Approved products, can be installed on ships being built under TL class or ships classed by TL without subject to acceptance test. The tests carried out during dock and sea trials are exempted.

Product certification can be made for individual product or for lots of products. If certification is carried out for lots of products, whether all products or number of samples taken randomly be tested is to be decided according to product related TL Rules or national/international standards.

Product certification is to be carried out according to the requirements of TL Rules or national/international standards with the application of the following processes.

8.2 Acceptance of raw materials

It should be proved by certificates submitted by manufacturer that the raw materials to be used in TL type approved products fulfill the requirements of TL Rules for this product. The raw material certificate required by TL rules for this product, if any, should be declared by the manufacturer as a acceptance criterion. If there is no requirement in TL Rules for the certificates of raw materials to be used in product, than the agreement between the manufacturer and TL must be reached how to prove the fulfillment of the requirements of TL Rules.

TL may request to perform material tests for raw materials used for sample product or EN ISO 10204 type 3.2 certified materials can be accepted after examination of traceability in the quality records.

8.3 Acceptance of processed materials

It should be proved by certificates submitted by manufacturer that the processed materials to be used in TL type approved products fulfill the requirements of TL Rules for this product. The processed material certificate required by TL rules for this product, if any, should be declared by the manufacturer as a acceptance criterion. If there is no requirement in TL Rules for the certificates of processed materials to be used in product, than the agreement between the manufacturer and TL must be reached how to prove the fulfillment of the requirements of TL Rules.

TL may request to perform material tests and inspections for processed materials used for sample product or EN ISO 10204 type 3.2 certified materials can be accepted after examination of traceability in the quality records.

8.4 Acceptance of components

If a product to be type approved contains one or more components, the latter should have an acceptable certificate by TL. The manufacturer should declare this certificate as a acceptance criterion of component.

TL may request the functional tests of component used in the sample product to prove that the component is fit for its envisaged purpose

9. CERTIFICATION of TYPE APPROVED PRODUCTS

In order to use of type approved products in ships classed by TL or in products certified by TL, certification is to be performed on the product basis, if required by TL Rules. Type of certification required in accordance with the type of material or product is mentioned in Annex 1 of this rule. Selected type of certification is to be carried out by applying for this rule and other relevant procedure, instruction and rules.

10. PRODUCTION QUALITY ASSURANCE CERTIFICATION

10.1 Certification of raw material manufacturer

If the results of tests and checks of a produced representative sample or group of samples are found in compliance with TL Rules, standards or identified specifications agreed with the processed material manufacturer and upon satisfactory completion of the audit for quality assurance system providing continuity of such compliance, a certificate is to be issued.

Production Quality Assurance Certificate issued by TL, proves that the manufacturer has ability to produce the material in compliance with standards, rules and identified specifications, the inspections and tests are performed in compliance with TL Rules, recorded and certified, on the condition that the quality assurance system applied by the manufacturer and production conditions remain unchanged.

Production Quality Assurance Certificate does not come to mean that tests and checks stipulated in standards, rules and identified specifications are performed under the supervision of TL Surveyor for each of the materials produced by the manufacturer and launched to the market. The manufacturer having Production Quality Assurance Certificate is sole responsible for the product that is produced by him.

10.2 Certification of processed material manufacturer

If the results of tests and checks of a produced representative sample or group of samples are found in compliance with TL Rules, standards or identified specifications agreed with the processed material manufacturer and upon satisfactory completion of the audit for quality assurance system providing continuity of such compliance, a certificate is to be issued.

Type Approval Certificate is to be issued for the processed material manufacturer if the material is correlated with the definition of "Type". Processes and conditions for Type Approval Certification is stated in "1100/D Type Approval Procedure". If there is no definable "Type" for the processed material, than Production Quality Assurance Certificate is to be issued.

Production Quality Assurance Certificate issued by TL, proves that the manufacturer has ability to produce the material in compliance with standards, rules and identified specifications, the inspections and tests are performed in compliance with TL Rules, recorded and certified, on the condition that the quality assurance system applied by the manufacturer and production conditions remain unchanged.

Production Quality Assurance Certificate does not come to mean that tests and checks stipulated in standards, rules and identified specifications are performed under the supervision of TL Surveyor for each of the materials produced by the manufacturer and launched to the market. The manufacturer having Production Quality Assurance Certificate is sole responsible for the product that is produced by it.

10.3 Certification of product manufacturer having type approval certificate

Issuance of Type Approval Certificate for a product after performing necessary inspections, surveys and tests by TL proves that the manufacturer has ability to produce the certified product in compliance with standards, rules and identified specifications, on the condition that the quality assurance system applied by the manufacturer and production conditions remain unchanged, but the manufacturer is responsible for the conformity of the product with the conditions and standards stated in Type Approval Certificate.

For installation of products having Type Approval Certificate on board ships or utilizing as a component of a product, TL may request product based certification according to TL Rules. For such certification of TL Type Approved product, inspection and FAT (Factory Acceptance Tests) in accordance with TL Rules should be carried out. For the Type Approved product manufacturer having Production Quality Assurance Certificate issued by TL, FAT and final inspection can be carried out by the manufacturer without attendance of TL Surveyor. In this case, TL may issue Product Certificate or Test Certificate based on the reports of FAT and final inspections carried out by the manufacturer. The scope of reports basis for these certificates is to be agreed between TL and manufacturer having Production Quality Assurance Certificate and recorded as quality document.

11. ALTERNATIVE CERTIFICATION SCHEME

For Alternative Certification Scheme, TL Rules, Classification and Surveys, Section 2,F apply.

12. ANNEXES

12.1 ANNEX 1 – The List of Materials and Equipment Required to be Tested and Certified for All Ships

12.1.1 Purpose and application of list

The following list is prepared to identify the type of certificate required for the materials and equipment before being installed in ships together with the controls and tests of materials and equipment having such certificate required to be performed before coming into service. Tests and controls that may be requested in the dock and sea trials procedures does not included into this list. But, upon agreement with TL, a test or control may be performed during dock or sea trial.

Rules and processes included in this document are intended to summarise the requirements concerning with certification and acceptance of materials and equipment located in TL Rules. In the event of discrepancy between the requirements in this document and TL Rules in relation with certification of materials and equipment, the latter are to be considered valid.

If it is necessary to certify and install a material or equipment not considered in the following list into the ship, an agreement should be reached for the applicable procedure.

12.1.2 Form and contents of the list

The list in Annex 1 is grouped under the headlines in accordance with sub-items included in the para 4.1 of this document. The list in Annex 1 is to be updated independently from the text of document and published with

revision number and date. Indices located in the individual list are only related with the materials and equipment grouped into the headline in question.

Column 1 indicates an identification number for the materials and equipment,

Column 2 indicates a description of the materials and equipment. There may be more than one line at the right side of the column 2. In such cases, one of the lines can be selected for the materials and equipment in question.

Column 3 indicates TL Rules, national or international rules and standards basis for the certification of the materials and equipment and having the requirements to be met by them.

Column 4 indicates which type of certificate is required for the materials and equipment to be used in ships classed by TL.

12.1.3 Abbreviations and symbols used in the Annex

KK	: Requirements of Türk Loydu Classification Rules
BK	: Flag State Rules
TO	: Türk Loydu Type Approval Certificate
ÜB	: Türk Loydu Product Certificate
TS	: Türk Loydu Test Certificate
MR	: Inspection Report
ÜRS	: Manufacturer Certificate
BB	: Flag State Certificate
MED	: Certificate as per Directive 96/98/EC
YTS	: Authorised test stand
OÜR	: Approved manufacturer
TK TO	: Type Approval of Organisation recognized by Türk Loydu
TKS	: Certificate of Organisation recognized by Türk Loydu

Not: If the information in this document conflicts with the rules, the rules shall be followed.

Annex 1 – List of Materials and Equipment Required to be Tested and Certified for All Ships

4.1.1 Hull Construction Materials

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
01	Steel plates, profiles, structural tubes	KK	TS		X	X	X	X	X	
			TO+TS		X	X	X	X	X	
			TKS+TS		X	X	X	X	X	
02	Aluminium alloy plates, profiles, tubes	KK	TS		X	X	X	X	X	
			TO+TS		X	X	X	X	X	
			TKS+TS		X	X	X	X	X	
03	Cast or forged steel stem or stern frame, rudder horn, hawse pipes, propeller shaft brackets	KK	ÜB	X	X	X		X		
04	Welding consumables	KK	TS		X	X			X (1)	
			TKS + TS		X	X			X (1)	
			TO							
(1) Test on sample.										

4.1.2 Hull Outfitting

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
01	Anchors, HHP anchors	KK	ÜB	X	X	X		X	X(2)(3)	
			TO+TS		X	X		X	X(2)	
02	Anchor chain cables	KK	ÜB		X	X	X	X	X(2)	
			TO+TS		X				X(2)	
03	Anchor chain cable accessories	KK	ÜB		X	X	X	X	X(2)	
			TO+TS						X(2)	
			TKS+TS					X	X(2)	
04	Rudder parts (rudder stock, rudder bearings, etc.)	KK	ÜB	X	X	X		X		

(1) Test on sample.
(2) Load test.
(3) Anchor holding power test for HHP and SHHP type anchor

4.1.3 Steering Gears, Lateral Thrusters, Anchor Windlasses, Hydraulic Systems

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES							
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD	
01	Electric motors for steering gears or anchor windlasses (rated power \geq 50 kW), electric motors for lateral thrusters (rated power \geq 100 kW)	KK	ÜB	X					X	X	X
			TO+TS						X	X	X
02	Hydraulic pumps of steering gears and anchor windlasses with driving power > 50 kW	KK	ÜB	X					X	X	X
			TO+TS						X	X	X
03	Steering gear (complete)	KK	ÜB	X	X	X			X	X	X
			TO+TS						X	X	X
04	Anchor windlass (complete)	KK	ÜB	X	X	X			X	X	X
			TO+TS						X	X	X
06	Rudder blade	KK	ÜB	X	X	X	X		X	X	
07	Thruster tunnel	KK	TKS	X					X(2)		
			ÜB	X	X	X	X		X	X	
08	Hydraulic Power Unit	KK	ÜB	x					X	X	X (1)
			TKS	X						X(2)	X (1)
			TO							X	

(1) Performance test.

(2) Document review (TKS approved ndt reports, material reports, production reports report will be reviewed by TL)

4.1.4 Internal Combustion Engines

For Internal Combustion Engines and their components certification please see: "SP 03/17 Alternative Survey Arrangement guidelines under Alternative Certification Scheme for Trunk Engines manufactured in Mass or in Series."

4.1.5 Auxiliary Machinery and Accessories

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
01	Air, water and oil coolers	KK	See table 4.1.13							
02	Clutches	KK	ÜB	X	X			X	X(1)	
			TO+TS					X	X	
03	Control, monitoring and alarm systems	KK	ÜB	X				X	X	X
			TO+TS						X	X
			TK TO +TS	X					X	X
04	Cooling water, lubricating oil, fuel oil injection and fuel oil transfer pumps	KK	TS						X	
05	Fuel oil ejectors		TS						X(1)	
06	Elastic couplings	KK	ÜB	X	X			X		
			TO+TS					X		
07	Electric panels and apparatus	KK	ÜRS							
08	Fuel oil and lubricating oil tanks	KK	ÜRS							
09	Fuel oil and lubricating oil purifiers	KK	TS					X	X(1)	
			TO					X	X(1)	
			TK TO					X	X(1)	

(1) Hydrostatic test

4.1.5 Auxiliary machinery and accessories - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
10	Injectors, buster pumps and injection pipes	KK	TS						X	
11	Oil mist detector	KK	ÜB	X				X	X	
			TO					X	X	
			TK TO	X				X	X	
12	Piping systems	KK	TS		X			X		
13	Pressure filters	KK	TS						X	
14	Rotors and shafts for scavenge blowers and turbochargers for engines having a power of 1000 kW and above	KK	ÜB	X	X	X		X	X	
			TO+TS						X	
15	Rotors and shafts for scavenge blowers and turbochargers for engines having a power less than 1000 kW	KK	ÜRS							
16	Scavenge air main	KK	ÜRS							
17	Safety valves (crankcase)	KK	ÜRS							
18	Scavenging pumps	KK	TS						X	
19	Starting air compressor	KK	ÜB	X	X			X	X	
			TO+TS					X	X	

4.1.5 Auxiliary machinery and accessories - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES							
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD	
20	Starting motors (electrical)	KK									
			TO								
			TK TO								
			TS					X	X		
21	Starting motors (hydraulic or pneumatic)	KK									
			TS						X		
			TO								
			TK TO								
22	Turbocharger (Complete) (less than 1000 kW)	KK									
			ÜRS								
23	Turbocharger (Complete) (1000 kW and above)	KK	ÜB	X					X	X	
			TO						X	X	

4.1.6 Steam Turbines

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES							
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD	
01	Rotor	KK	ÜB	X					X	X	
			TO						X	X	
02	Blades	KK									
			TS		X	X		X			
03	Casing	KK									
			TS		X	X				X(1)	
04	Circulation pump	KK									
			TS						X	X	
05	Clutch		ÜB	X	X				X	X(1)	
			TO+TS						X	X	
06	Control, monitoring and alarm system	KK									
			ÜB	X			X	X	X	X	X
			TK TO+TS	X				X	X	X	X
			TO+TS						X	X	
07	Bolts-nuts (coupling)	KK									
			ÜRS								
08	Coupling	KK									
			ÜB	X	X				X		
			TO+TS						X		
09	Disk	KK									
			ÜB	X	X	X		X			
			TO+TS					X			
			TK TO+TS					X			
10	Dump condenser	KK									
			TK TO					X	X		
			TO							X	
11	Ejektör	KK									
			ÜRS								
12	Electric apparatus	KK									
			ÜRS								
13	Extraction pump	KK									
			ÜB								
			TO						X		
			TK TO					X			

(1) Hydrostatic test

4.1.6 Steam Turbines - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
14	Main condenser	KK								
			See Table 4.1.13 Pressure Vessels							
15	Piping systems	KK								
			See Table 4.1.16 Piping System							
16	Safety valves	KK								
			See Table 4.1.13 Pressure Vessels							
17	Nozzles and diaphragms	KK	ÜS		X	X		X		
			TO + TS					X		
			TK TO+TS		X	X		X		
18	Shafts		ÜB		X	X		X		
			TO +TS					X		
			TK TO+TS		X	X		X		
19	Internal piping (turbine)	KK	ÜRS					X		
20	Turbine (complete)	KK	ÜB	X			X	X	X(1)	X
			TO					X	X(1)	X
21	Welded structures	KK	TS		X	X	X	X		

(1) Hydrostatic test

4.1.7 Gas Turbines

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
01	Rotor	KK	ÜB					X	X	
			TO					X		
			TK TO					X	X	
02	Blades	KK	ÜS		X	X		X		
			TO +TS					X		
03	Casing	KK	TS		X	X			X(1)	
04	Clutch	KK								
			See Table 4.1.9 Propeller,shafting							
05	Combustion chamber		ÜRS							
06	Control, monitoring and alarm system	KK								
			See Table 4.1.14 Electric System Component							
07	Bolts-nuts	KK	ÜRS					X		
08	Coupling	KK								
			See Table 4.1.9 Propeller,shafting							
09	Disk	KK	ÜS		X	X		X		
			TO					X		
			TK TO		X	X		X		
10	Electric panels and apparatus	KK								
			See Table 4.1.14 Electric System Component							

(1) Hydrostatic test

4.1.7 Gas Turbines - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
11	Piping systems	KK								
			See Table 4.1.16 Piping System							
12	Safety valves	KK								
			See Table 4.1.13 Pressure Vessels							
13	Nozzles and diaphragms	KK	ÜS		X	X		X		
			TO + TS					X		
			TK TO+TS		X	X		X		
14	Shafts	KK	ÜB		X	X		X		
			TO +TS					X		
			TK TO+TS		X	X		X		
15	Starting motors (electrical)									
			See Table 4.1.14 Electric System Components							
16	Starting motors (hydraulic or pneumatic)	KK	ÜB							
			See Table 4.1.5 Auxiliary Machinery and Accessories							
17	Internal piping (turbine)	KK	ÜRS		X					
18	Turbine (Complete)	KK	ÜB	X			X	X	X(1)	X
			TO+TS					X	X(1)	X
(1) Hydrostatic test										

4.1.8 Pumps, Air Compressors

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
01	Bilge pump	KK	TS						X	X
02	Ballast pump	KK	TS						X	X
03	Sea water cooling pump	KK	TS						X	X
04	Fresh water cooling pump	KK	TS						X	X
05	Fire pump		TS						X	X
06	Emergency fire pump	KK	TS						X	X
07	Condensate water pump	KK	TS						X	X
08	Boiler feed water pump	KK	TS						X	X
09	Boiler water circulation pump	KK	TS						X	X
10	Lubricating oil pump	KK	TS						X	X

4.1.8 Pumps, Air Compressors – continued –

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
11	Fuel delivery pump	KK	TS						X	X
12	Fuel transfer pump	KK	TS						X	X
13	Fuel injection valve cooling pump	KK	TS						X	X
14	Thermo oil system circulation pump	KK	TS						X	X
15	Sea water cooling pump (for coolers)		TS						X	X
16	Refrigerant circulation pump	KK	TS						X	X
17	Cargo pump	KK	ÜB	X	X			X	X	X
			TO+ TS						X	X
18	Hydraulic pumps and motors of anchor windlasses, rudder propeller systems and steering gears with driving power > 50 kW	KK	TS						X	X
19	Hydraulic pumps and motors of lateral thrusters with driving power >100 kW	KK	TS						X	X
20	Air compressors	KK	ÜB					X	X	X
			TO+TS						X	X

4.1.9 Propeller, Shafting System

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES							
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD	
01	Bearing bushes	KK	ÜB		X				X		
			TO+TS					X			
02	Cardan shafts (flanges, crosses, shafts, yokes)	KK	ÜB	X	X	X		X			
			TO+TS								
03	Clutches	See 4.1.10.									
04	Control, monitoring and alarm systems	See 4.1.14.									
05	Controllable pitch propeller and built-up propeller blades	KK	ÜB	X	X	X		X	X(1)		
			TO+TS					X	X(1)		
06	Controllable pitch propeller and built-up propeller connecting bolts/studs	KK	ÜB	X		X		X			
			TO+TS					X			
07	Controllable pitch propeller and built-up propeller hubs	KK	ÜB	X	X	X		X	X(2)		
			TO+TS					X	X(2)		
08	Controllable pitch propeller hydraulic control system	See 4.1.3.									
09	Controllable pitch propeller mechanism (mechanical parts)	KK	ÜB		X			X		X	
			TO+TS					X		X	
10	Coupling bolts or studs for couplings	KK	ÜB	X	X						
			TO+TS					X			
<p>(1) <i>Balancing Test</i></p> <p>(2) <i>Hydrostatic Test</i></p>											

4.1.9 Propeller, Shafting System - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
11	Coupling keys	KK	ÜB	X	X			X		
			TO+TS					X		
12	Elastic couplings	KK	ÜB	X(3)	X			X		
			TO+TS					X		
13	Forgings for tailshafts	KK	ÜB		X	X(4)			X	
			TO+TS						X	
14	Hydraulic couplings	KK	ÜB	X	X			X	X(2)	
			TO+TS					X	X(2)	
15	Intermediate shafts	KK	ÜB	X	X	X(5)		X		
			TO+TS					X		
16	Propeller nuts	KK	ÜB	X	X			X	X	
			TO+TS					X	X	
17	Fixed pitch propellers	KK	ÜB	X	X	X		X	X	
			TO+TS					X	X	
18	Quiller shaft	KK	ÜB	X	X	X		X		
			TO+TS					X		
19	Sterntube bushes	KK	ÜB	X	X	X		X		
			TO+TS					X		
20	Sterntube sealing	KK	ÜB	X				X		
			TO+TS					X		

4.1.9 Propeller, Shafting System - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
21	Sterntube	KK	ÜB	X	X	X		X	X(2)	
			TO+TS					X	X(2)	
22	Propeller shaft liners	KK	ÜB	X	X	X		X		
			TO+TS					X		
23	Propeller shafts	KK	ÜB	X	X	X(5)		X		
			TO+TS					X		
24	Teeth coupling	KK	ÜB	X	X	X		X		
			TO+TS					X		
25	Thrust shafts	KK	ÜB	X	X	X(5)		X(5)		
			TO+TS					X		
26	Thrust sliding-pads	KK	ÜB		X					
			TO							
27	Thrusters	KK	ÜB	X	X	X		X	X	X
			TO+TS					X	X	X
<p>(3) Only for propulsion couplings</p> <p>(4) Not required for shafts with diameter less than 100 mm</p> <p>(5) Not required for shafts with diameter less than 250 mm</p>										

4.1.10 Reduction and Reverse Gears, Couplings

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
01	Casings of reduction and reverse gears for propulsion transmitting 220 kW power and above and for essential auxiliaries transmitting 110 kW power and above	KK	ÜB	X	X	X		X		
			TO+TS					X		
02	Clutches	KK	ÜB	X	X			X	X(1)	
			TO+TS					X	X(1)	
03	Control, monitoring and alarm systems	See 4.1.14.								
04	Couplings of reduction and reverse gears for propulsion transmitting 220 kW power and above and for essential auxiliaries transmitting 110 kW power and above	KK	ÜB	X	X	X		X		
			TO+TS					X		
05	Pinions and wheels of reduction and reverse gears for propulsion transmitting 220 kW power and above and for essential auxiliaries transmitting 110 kW power and above	KK	ÜB	X	X	X		X	X	
			TO+TS					X	X	
06	Plates and profiles for steel welded cases of reduction and reverse gears for propulsion transmitting 220 kW power and above and for essential auxiliaries transmitting 110 kW power and above	KK	TS		X					
			TO+TS		X					
07	Reduction and/or reverse gears for propulsion transmitting 220 kW and above power and for essential auxiliaries transmitting 110 kW power and above	KK	ÜB	X				X		X
			TO+TS					X		X
08	Reduction and/or reverse gears others than those indicated in item 7	KK	ÜRS					X		
09	Shafts of reduction and reverse gears for propulsion transmitting 220 kW power and above and for essential auxiliaries transmitting 110 kW power and above	KK	ÜB	X	X	X		X		
			TO					X		
10	Valves, pipes, pump coolers	See 4.1.16 See 4.1.11 See 4.1.13								

(1) Hydrostatic Test

4.1.11 Steam Boilers

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
01	Steam boilers	KK	ÜB	X	X	X	X	X	X(1)	X
			TO+TS					X	X	X
02	Cast or forged parts for boilers, steam generators, oil fired thermal oil heaters, exhaust gas thermal oil heaters and class 1 pressure vessels (B), (P), (HE)	KK	ÜB		X	X		X		
			TO+TS					X		
03	Condensers	See 4.1.13								
04	Control, monitoring and alarm systems	See 4.1.14								
05	Cylinders for hydraulic plants	See 4.1.3								
06	Drums for watertube boilers	KK	ÜB	X	X	X		X	X(1)	
			TO+TS					X	X(1)	
07	Flanges and nozzles for boilers, steam generators, oil fired thermal oil heaters, exhaust gas thermal oil heaters and class 1 pressure vessels	KK	ÜB		X	X		X		
			TO+TS					X		
08	Water level indicators	KK	ÜB	X	X	X		X	X(1)	
			TO+TS					X	X(1)	
09	Pipes and valves	4.1.16'ya bakınız								
10	Plates, profiles and tubesheets for boilers, steam generators, oil fired thermal oil heaters, exhaust gas thermal oil heaters and class 1 pressure vessels	KK	ÜB		X	X		X		
			TO+TS					X		
(1) Hydrostatic Test										

4.1.11 Steam Boilers - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
11	Safety valves	See 4.1.16								
12	Seamless bottles	KK	ÜB	X	X	X		X	X(2)	
			TO+TS					X	X(1)	
13	Steam heated generators or steam generators heated by another fluid	KK	ÜB	X	X	X	X	X	X(1)	
			TO+TS					X	X(1)	
14	Steel bars for stays of boilers	KK	ÜB		X			X		
			TO+TS					X		
15	Control mechanism actuators	See 4.1.3.								
16	Tubes for boilers, steam generators, oil fired thermal oil heaters, exhaust gas thermal oil heaters and class 1 pressure vessels	KK	ÜB		X	X			X(1)	
			TO+TS						X(1)	
<p>(1) Hydrostatic Test</p> <p>(2) Burst test on prototypes and hydrostatic tests on production as required by the Rules</p>										

4.1.12 Thermal Oil Systems

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
01	Cast or forged parts for boilers, steam generators, oil fired thermal oil heaters, exhaust gas thermal oil heaters and class 1 pressure vessels	KK	ÜB		X	X		X		
			TO+TS					X		
02	Class 1 pressure vessels and heat exchangers	KK	ÜB	X	X	X	X	X	X(1)	
			TO+TS					X	X(1)	
03	Class 2 pressure vessels and heat exchangers	KK	ÜB	X	X	X	X	X	X(1)	
			TO+TS					X	X(1)	
04	Class 3 pressure vessels and heat exchangers	KK	ÜB	X	X			X		
			TO+TS					X		
05	Control, monitoring and alarm systems	See 4.1.14.								
06	Cylinders for hydraulic plants	See 4.1.3.								
07	Flanges and nozzles for boilers, steam generators, oil fired thermal oil heaters, exhaust gas thermal oil heaters and class 1 pressure vessels	KK	ÜB		X	X		X		
			TO+TS					X		
08	Oil fired thermal oil heaters, exhaust gas thermal oil heaters	KK	ÜB	X	X	X	X	X	X(1)	
			TO+TS					X	X(1)	
09	Pipes and valves	See 4.1.16.								
10	Plates, profiles and tubesheets for boilers, steam generators, oil fired thermal oil heaters, exhaust gas thermal oil heaters and class 1 pressure vessels	KK	ÜB		X	X		X		
			TO+TS					X		
(1) Hydrostatic Test										

4.1.12 Thermal Oil Systems - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
11	Safety valves			See 4.1.16.						
12	Seamless bottles	KK	ÜB	X	X	X		X	X(2)	
			TO+TS					X	X(1)	
13	Control mechanism actuators			See 4.1.3						
14	Tubes for class 3 heat exchangers	KK	ÜRS							
15	Tubes for boilers, steam generators, oil fired thermal oil heaters, exhaust gas thermal oil heaters and class 1 pressure vessels	KK	ÜB		X	X		X	X(1)	
			TO+TS						X(1)	
16	Tubes for class 2 heat exchangers	KK	ÜB		X	X		X	X(1)	
			TO+TS						X(1)	
<p>(1) <i>Hydrostatic Test</i></p> <p>(2) <i>Burst test on prototypes and hydrostatic tests on production as required by the Rule</i></p>										

4.1.13 Pressure Vessels and Apparatus

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES							
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD	
01	Cast or forged parts for boilers, steam generators, oil fired thermal oil heaters, exhaust gas thermal oil heaters and class 1 pressure vessels	KK	ÜB		X	X			X		
			TO+TS					X			
02	Cast or forged parts for class 2 pressure vessels	KK	ÜB		X	X			X		
			TO+TS					X			
03	Cast or forged parts for class 3 pressure vessels	KK	ÜRS								
04	Class 1 corrosion resistant pressure vessels	KK	ÜB	X	X	X	X	X	X(1)		
			TO+TS					X	X(1)		
05	Class 2 pressure vessels and heat exchangers	KK	ÜB	X	X	X	X	X	X(1)		
			TO+TS					X	X(1)		
06	Class 2 corrosion resistant pressure vessels	KK	ÜB	X	X	X	X	X	X(1)		
			TO+TS					X	X(1)		
07	Class 3 pressure vessels and heat exchangers	KK	ÜB	X	X			X			
			TO+TS					X			
08	Control, monitoring and alarm systems	See 4.1.14									
09	Cylinders for hydraulic plants	See 4.1.3									
10	Flanges and nozzles for boilers, steam generators, oil fired thermal oil heaters, exhaust gas thermal oil heaters and class 1 pressure vessels	KK	ÜB		X	X			X		
			TO+TS					X			

(1) Hydrostatic Test

4.1.13 Pressure Vessels and Apparatus - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
11	Flanges and nozzles for class 2 pressure vessels	KK	ÜB		X	X		X		
			TO+TS					X		
12	Flanges and nozzles for class 3 pressure vessels	KK	ÜRS							
13	Pipes and valves	See 4.1.16								
14	Plates, profiles and tubesheets for boilers, steam generators, oil fired thermal oil heaters, exhaust gas thermal oil heaters and class 1 pressure vessels	KK	ÜB		X	X		X		
			TO+TS					X		
15	Plate and profiles for class 2 pressure vessels	KK	ÜB		X	X		X		
			TO+TS					X		
16	Plate and profiles for class 3 pressure vessels	KK	ÜRS							
17	Pressure vessels with toxic agents	KK	ÜB	X	X	X	X	X	X(1)	
			TO+TS					X	X(1)	
18	Safety valves	See 4.1.16								
19	Welded bottles	KK	ÜB	X	X	X		X	X(2)	
			TO+TS					X	X(1)	

(1) Hydrostatic Test
(2) Burst test on prototypes and hydrostatic tests on production as required by the Rule

4.1.14 Electric System Components

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
01	Batteries – for essential and/or emergency services	KK	ÜB (9)	X				X	X	X
			TO+TS (9)						X	X
			TK TO +TS(9)					X	X	X
			ÜRS							X
02	Battery chargers – rated power ≤ 2 kW	KK	ÜRS							X
03	Battery chargers – rated power ≥ 2 kW	KK	ÜB	X				X	X	X
			TO+TS						X	X
04	Main switchboard	KK	ÜB	X				X	X	X
			TO+TS						X	X
05	Item deleted.									
06	Item deleted.									
07	Emergency switchboard	KK	ÜB	X				X	X	X
			TO+TS						X	X
08	Item deleted.									
09	Item deleted.									
10	Item deleted.									

(9) For "Li" notation

4.1.14 Electric System Components - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
11	Distribution panels ≥ 500 kW	KK	ÜB	X				X	X	X
			TO+TS						X	X
12	Motor starters ≤ 50 kW	KK	ÜRS							X
13	Motor starters > 50 Kw (Just for primary essential equipment)	KK	ÜB	X				X	X	X
			TO+TS						X	X
14	Item deleted.									
15	Main propulsion system switchboards	KK	ÜB	X				X	X	X
			TO+TS						X	X
16	Switchboards, panels and motor starters ≥ 1000 V	KK	ÜB	X			X	X	X	X
			TO+TS					X	X	X
17	Shore connection terminal box	KK	ÜB	X				X	X	X
			TO+TS						X	X
18	Navigation lights switchboard	KK	ÜRS							X
19	Control, alarm and monitoring systems panels	KK	ÜB	X				X	X	X
			TO+TS						X	X
20	Item deleted.		TK TO+TS	X					X	X

4.1.14 Electric System Components - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
21	Switchboards for watertight door, side door and fire door control, monitoring and alarm	KK	ÜB	X				X	X	X
			TO+TS						X	X
22	Actuators (All type)	KK	ÜB	X				X	X	X
			TO	X						X
			TK TO+TS	X				X	X	X
23	Sensors, detectors - Level measuring devices - Level indicators - Temperature sensors - Pressure sensors - Water level sensors - Gas detectors	KK	TO							X
			TK TO							X
24	Item deleted.									
25	Alarm, control and monitoring sub- component equipment	KK	TO							
			TK TO							
26	Circuit breakers, load switches, fuses	KK	TO							
			TK TO							
27	Electrical protection equipment and generator protection equipment	KK	TO							
			TK TO							
28	Motor protection equipment	KK	TO							
			TK TO							

4.1.14 Electric System Components - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
29	Signalling and measuring appliances	KK	TO							X
			TK TO							X
30	Insulation resistance meter	KK	TO							X
			TK TO							X
31	Measuring instruments and instrument transformers	KK	ÜRS							X
			TO							X
			TK TO							X
32	Busbar carriers, insulated wires (for switchboards)	KK	TO							X
			TK TO							X
33	Electric cables and busbar (trunking) systems	KK	ÜB						X(5)	X
			TO+TS						X(6)	X
34	Electrical appliances for hazardous areas	KK	TK TO (1)							X
			TKS					X (1)		X
35	Complete power generation sets ≤ 100 kW	KK	ÜRS							X

4.1.14 Electric System Components - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES							
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD	
36	Complete power generation sets ≥ 100 kW	KK									
			ÜB	X	X(7)	X(7)		X	X	X	
			TO+TS						X	X	
37	Elektrical machinery (motors, alternators) ≤ 100 kW	KK	ÜRS								X
<p>(5) According to relevant standarts all type test shall be carried out</p> <p>(6) According to relevant standarts all routin shall be carried out</p> <p>(7) Just for gen set's foundation</p>											

4.1.14 Electric System Components - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
38	Elektrical machinery (motors, alternators) ≥ 100 kW Electric motors intended for propulsion	KK	ÜB	X	X(8)			X	X	X
			TO+TS					X	X	
39	Transformers and reactors ≤ 100 kW	KK	ÜRS							
40	Transformers and reactors ≥ 100 kW	KK	ÜB	X				X	X	X
			TO+TS					X	X	
41	Item Deleted									
42	Static converter, inverters and KGS ≤ 50 kVA	KK	ÜRS							X
43	Static converter, inverters and KGS ≥ 50 kVA	KK	ÜB	X					X	X
			TO+TS						X	X
44	Sound signal appliances	KK+ BK	TO							X
			TK TO(1) MED							X X X
45	Navigation and signalling lights	KK + BK	TO							X
			TK TO(1) MED							X X X
46	Computers and related electronic systems	KK	ÜB	X					X	
			TO TK TO					X	X	

(8) Just for propulsion motor's shaft

4.1.14 Electric System Components - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
47	Software	KK	ÜB	X					X	X
			TO					X	X	
48	Searchlight	KK+ BK	TO							X
			TK TO							X
			MED							X
49	Lighting fixtures and socket-outlets	KK	TO							X
			TK TO							X
50	Fire fighting equipment - Low-locating lighting system - Electrical cable penetrations - Cold weather starting of generator sets - Electric safety lamp - Oxygen analysis and gas detection equipment - Fire detection and fire alarm system components (flame detectors, heat detectors, manual call points, smoke detectors) - Sample extraction smoke detection system components	BK	ÜB(4)	X				X	X	X
			TO (4)							X
			TK TO (4)							X
			MED (1), (3)							X
51	Life saving appliances (1 st group) - Lights for life jacket - Lights for life buoys - Position indicating lights for life-saving appliances - Radar reflector for lifeboats and rescue boats - Searchlights for use in lifeboats and rescue boats	BK	TO (4)							X
			TK TO (4)							X
			MED (1), (3)							X
52	Life saving appliances (2 nd group) - Morse code signal light - Public address and general alarm system - Radar reflector for liferafts	BK	ÜB	X				X	X	X
			TO (4)							X
			TK TO (4)							X

4.1.14 Electric System Components - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES								
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD		
53	Navigating equipment (1 st group) - 9 Hz SAR transponder (SART) - Chayka - Compass for lifeboats and rescue boats - Echo-sounding equipment - Electronic chart display and information system (ECDIS), raster chart display system (RCDS) - GLONASS equipment - GPS - Gyrocompass - Heading control system (HSC) - Integrated bridge system - Loran-C equipment - Magnetic compass - Propeller pitch indicator - Propeller revolution indicator - ARPA - ATA - EPA - Radar reflector - Rate-of-turn indicator - Rudder angle indicator - SDME equipment - Track control system - Magnetic heading device (magnetic compass) - AIS equipment - VDR equipment	BK										
			TO (4)								X	
			TK TO (4)									X
			MED (1), (3)									X
			54	Navigating equipment (2 nd group) - Chart facilities for shipborne radars - Combined GPS/GLONASS equipment - Daylight signalling lamp - DGPS, DGGLONASS equipment - Integrated navigation system - Thrust, pitch and speed indicator - Night vision equipment for HSC - Radar target enhancer - Searchlight for HSC - Sound reception system - Thrust indicator - THD (GNSS method) - THD (gyroscopic method) - THD (magnetic method)	BK							
TO (4)											X	
TK TO (4)												X
MED (1), (3)												X

4.1.14 Electric System Components - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES							
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD	
55	Radio communication equipment	BK									
	- 406 MHz EPIRB (COSPAS-SARSAT)										
	- Two-way radiotelephone										
	- DSC MF receiver										
	- EGC receiver										
	- Fixed survival craft two-way VHF radiotelephone										
	- Portable survival craft two-way VHF radiotelephone										X
	- HF marine safety information (MSI) equipment (HF NBPD receiver)		TO (4)								X
	- Inmarsat-B SES		TK TO (4)								X
	- L-band EPIRB (INMARSAT)		MED (1), (3)								X
	- MF radio installation capable of transmitting and receiving DSC and radiotelephony										
	- MF/HF radio installation capable of transmitting and receiving DSC, NBPD and radiotelephony										
	- MF/HF, DSC watchkeeping receiver										
- NAVTEX receiver											
- VHF DCS watchkeeping receiver											
- VHF radio installation capable of transmitting and receiving DSC and radiotelephony											
<p>(1) Examination of certificate issued by notified bodies. (2) For ships flying European Community Member and Candidate Administration flags (3) TL, is not yet authorised to issue MED certificate. (4) For ships flying non-European Community Administration flags. (5) According to relevant standarts all type test shall be carried out (6) According to relevant standarts all routin shall be carried out (7) Just for gen set's foundation (8) Just for propulsion motor's shaft</p>											

4.1.15 Refrigerating Installations

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
01	Cast iron or steel evaporator and condenser casings (3)			See 4.1.11, 4.1.13.						
02	Coils (3)			See 4.1.16.						
03	Complete refrigerating unit	KK (1)	ÜB	X				X	X(2)	X
			TO+TS						X	X(2)
04	Compressor coupling, connecting ve piston rod	KK (1)	ÜB		X (4)	X		X		
			TO+TS					X		
05	Compressor liner, cylinder head and other parts	KK (1)	ÜB	X				X	X(2)	
			TO+TS						X	X(2)
06	Compressor	KK (1)	ÜB					X	X(2)	
			TO+TS						X	X(2)
07	Compressor crankshaft	KK (1)	ÜB			X		X		
			TO+TS					X		
08	Condenser and evaporator (3)			See 4.1.11, 4.1.13.						
09	Control, monitoring and alarm systems			See 4.1.14.						
10	Electrical apparatus			See 4.1.14.						

4.1.15 Refrigerating Installations - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
11	Refrigerated chamber insulation material	KK (1)	ÜRS							
12	Oil separator, air receivers and pressure vessels (3)	See 4.1.11. , 4.1.13.								
13	Piping for refrigerating system (3)	See 4.1.16.								
14	Refrigerant	KK (1)	ÜRS							
15	Regulating valve (3)	See 4.1.16.								
16	Thermometers	KK	ÜRS							
<p>(1) Only for ships with class notation "QUICK FREEZING".</p> <p>(2) Hydrostatic test and keak test is to be carried out.</p> <p>(3) For ships with class notation "QUICK FREEZING", in addition to the tests required in Tables 4.1.11 and 4.1.16, the leak test is also to be carried out.</p> <p>(4) 110 kW'den büyük kompresörler için.</p>										

4.1.16 Piping Systems, Oily Water Separators

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
01	Centrifugal separators	KK	ÜB					X	X(1)	X
			TO+TS						X(1)	X
02	Class I and II prefabricated pipe lines	KK	ÜB			X		X	X(1)	
			TO+TS						X(1)	
03	Item deleted									
04	Class III prefabricated pipe lines	KK	ÜRS							
05	Compressors (complete), except associated containers and pressure vessels	KK	ÜB					X	X(1)	
			TO+TS						X(1)	
06	Control, monitoring and alarm systems	See 4.1.14.								
07	Expansion joints and metallic compensators	KK	ÜB	X	X	X		X	X(1)	X
			TO+TS					X	X(1)	X
08	Filters	See 4.1.11, 4.1.12, 4.1.13.								
09	Fittings for class I piping systems having internal diameter equal to or greater than 32 mm and for class II piping having internal diameter equal to or greater than 100 mm	KK	ÜB		X	X		X	X(1)	
			TO + TS						X(1)	
10	Fittings for class I piping systems having internal diameter less than 32 mm and for class II piping having internal diameter less than 100 mm	KK	ÜB		X	X		X	X(1)	
			TO + TS						X(1)	
(1) Hydrostatic Test										

4.1.16 Piping Systems, Oily Water Separators - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES							
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD	
11	Fittings for class III piping systems	KK	ÜRS								
12	Fittings for plastic pipes	KK	ÜB	X	X			X	X(1)		
			TO						X(1)		
			TK TO	X	X			X	X(1)		
13	Flexible hoses – metallic	KK	ÜB								
			TO					X	X		
			TK TO					X	X		
14	Flexible hoses – non metallic	KK									
			ÜB								
			TO					X	X		
			TK TO					X	X		
15	Flexible hoses conveying oil and fuel oil	See 4.1.17.									
16	Level indicators for flammable fluids	KK	ÜB								
17	Materials other than steel for pipes conveying oil or fuel oil	See 4.1.17.									
18	Pipes, Pipe elbows, Fittings : Materials: Steel Copper, Copper alloys Aluminium Aluminium alloys Plastics - Class I - DN>50	KK	ÜB		X	X(1)		X			
			TO+TS		X	(1)		X			
19	Other Pipes, Pipe elbows, Fittings which not mentioned above item 18	KK	ÜB		X				X		
20	Plastic pipes		TO								
(1) As required by the applicable Rules											

4.1.16 Piping Systems, Oily Water Separators - continued -

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES							
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD	
21	Item deleted.										
22	Prime movers for compressors	See 4.1.4, 4.1.5 ve 4.1.6.									
23	Prime movers for pumps	See 4.1.4, 4.1.5 ve 4.1.6.									
24	Pumps (complete)	KK	ÜB					X	X	X	
			TO						X	X	
25	Safety valves	KK	ÜB	X	X		X	X	X	X	
			TO+TS					X	X	X	
26	Valves and flanges: Material Steel, Cast steel, Nodular cast iron - Design temprature > 300 °C - Class I or II - DN> 100 Or Material : Copper and copper alloy - Design temprature > 225 °C - Class I or II - DN> 100 Or Material Steel, Cast steel, Nodular cast iron - Design temprature ≤ 300 °C - Class I or II - PBx DN ≥ 2500 or DN > 250 Or Material : Copper and copper alloy - Design temprature ≤ 225 °C	KK									
			ÜB	X	X		X	X	X	X	
			TO					X	X	X	

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES						
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD
	- Class I or II - PBxDN > 1500									
27	Other valves which not mentioned above item 26	KK	ÜRS							
28	Plastic Valves (Only use class III systems)		TO							
29	Valves for sea inlet and overboard discharge	KK	ÜB	X	X		X	X	X	X
			TO				X	X	X	

4.1.17 Fire Protection Equipment

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES							
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD	
01	Portable and mobile foam fire fighting systems	KK, BK	MED (1)								X
			TO (2)								X
02	Automatic or manual fire detection systems	KK, BK	MED (1)								X
			TO (2)								X
03	Fixed fire extinguishing systems	KK, - BK	ÜB								X
			MED (1)								X
			TO (2)								X
04	Materials having low flame-spread characteristics	KK, BK	MED (1)								X
			TO (2)								X
05	Materials equivalent to 100 % wool	KK, BK	TO (2)								X
			TK TO (2)								X
06	Non-combustible materials	KK, BK	MED (1)								X
			TO (2)								X
07	Non-readily igniting materials for primary deck coverings	KK, BK	MED (1)								X
			TO (2)								X
08	Sprinkler heads	KK, BK	MED (1)								X
			TO (2)								X
09	Fire doors	KK, BK	MED (1)								X
			TO (2)								X
10	Nozzles	KK, BK	MED (1)								X
			TO (2)								X

4.1.17 Fire Protection Equipment- continued –

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES							
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD	
11	"A" and "B" class divisions, fire integrity	KK, BK	MED (1)								X
			TO (2)								X
12	Fire dampers	KK, BK	MED (1)								X
			TO (2)								X
13	Fire doors	KK, BK	ÜB	X	X		X	X	X	X	X
			MED (1)								X
			TO (2)								X
14	Materials other than steel for pipes conveying oil or fuel oil: Pipes and fittings Valves Flexible pipe assemblies	KK, BK	MED (1)								X
			TO (2)								X
15	Penetrations through "A" and "B" and "C" class divisions Electrical cable transits Pipe, duct, trunk, etc. penetration	KK, BK	MED (1)								X
			TO (2)								X
16	Primary deck covering	KK, BK	MED (1)								X
			TO (2)								X
17	Compressed air line breathing apparatus	KK, BK	MED (1)								X
			TO (2)								X
18	Fire hoses	KK, BK	MED								X
19	Fireman's outfit: - protective clothing (close proximity clothing) - boots - gloves - helmet - lifelines	KK, BK	MED (1)								X
			TO (2)								X
20	Dedectors	KK, BK	MED (1)								X
			TO (2)								X

4.1.17 Fire Protection Equipment- continued –

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES							
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD	
21	Manual call point	KK, BK	MED (1)								X
			TO (2)								X
22	Non-portable and transportable extinguisher	KK, BK	MED (1)								X
			TO (2)								X
23	Flexible hoses and expansion joints for all types of fluid	KK, BK	MED (1)								X
			TO (2)								X
24	Oxygen analysis and gas detection equipments	KK, BK	MED (1)								X
			TO (2)								X
25	Protective clothing resistant to chemical attack	KK, BK	TO								X
			TK TO								X
26	Self-contained compressed-air-operated breathing apparatus	KK, BK	MED (1)								X
			TO (2)								X
27	Sprinkler systems and components	KK, BK	MED (1)								X
			TO (2)								X

(1) For ships flying European Community Administration flags
(2) For ships flying non-European Community Administration flags, whose Administrations recognise the certificates issued by TL or authorise TL to issue certificates on their behalf

4.1.18 Life-Saving Appliances

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES							
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD	
01	Automatically self-righting liferafts	BK	MED (1)								X
			TO (2)								X
02	Buoyant smoke signals (pyrotechnics)	BK	MED (1)								X
			TO (2)								X
03	Canopied reversible liferafts	BK	MED (1)								X
			TO (2)								X
04	Daylight signal mirrors	BK	MED (1)								X
			TO (2)								X
05	Electric torches for Morse signals	BK	TO (2)								X
			TK TO (2)								X
06	Embarkation ladders	BK	MED (1)								X
			TO (2)								X
07	Fast rescue boat launching appliances	BK	MED (1)								X
			TO (2)								X
08	Fast rescue boats	BK	MED (1)								X
			TO (2)								X
09	Float-free arrangements for liferafts (hydrostatic release units)	BK	MED (1)								X
			TO (2)								X
10	Hand flares (pyrotechnics)	BK	MED (1)								X
			TO (2)								X

4.1.18 Life-Saving Appliances- continued

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES							
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD	
11	Immersion suit materials	BK	MED (1)								X
			TO (2)								X
12	Inflatable liferafts	BK	MED (1)								X
			TO (2)								X
13	Inflated rescue boats	BK	MED (1)								X
			TO (2)								X
14	Insulated immersion suits and anti-exposure suits	BK	MED (1)								X
			TO (2)								X
15	Launching appliances for free-fall lifeboats	BK	TO (2)								X
			TK TO (2)								X
16	Life jackets	BK	MED (1)								X
			TO (2)								X
17	Lifeboat and rescue boat propulsion engine	BK	MED (1)								X
			TO (2)								X
18	Lifeboats	BK	MED (1)								X
			TO (2)								X
19	Lifebuoys	BK	MED (1)								X
			TO (2)								X
20	Lifebuoys' self-activating smoke signals	BK	MED (1)								X
			TO (2)								X

4.1.18 Life-Saving Appliances- continued

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES							
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD	
21	Liferaft launching appliances	BK	MED (1)								X
			TO (2)								X
22	Light material for - buoyancy reserve - life jacket - lifebuoys	BK	MED (1)								X
			TO (2)								X
23	Line-throwing appliances (pyrotechnics)	BK	MED (1)								X
			TO (2)								X
24	Marine evacuation systems	BK	MED (1)								X
			TO (2)								X
25	Means of rescue	BK	TO (2)								X
			TK TO (2)								X
26	Open reversible liferafts	BK	MED (1)								X
			TO (2)								X
27	Pilot ladder	BK	MED (1)								X
			TO (2)								X
28	Public address and general alarm system	BK	MED (1)								X
			TO (2)								X
29	Radar reflector for lifeboats and rescue boats	BK	MED (1)								X
			TO (2)								X
30	Radar reflector for liferafts	BK	MED (1)								X
			TO (2)								X

4.1.18 Life-Saving Appliances- continued

NO	PRODUCT	CERTIFICATION REQUIREMENT	TYPE OF ACCEPTABLE CERTIFICATE	APPLICABLE PROCESSES							
				DOCUMENT APPROVAL	MATERIAL APPROVAL	NDT	INSPECTION DURING PRODUCTION	FINAL INSPECTION, VERIFICATION	FINAL TESTS (FAT)	TEST ON BOARD	
31	Release mechanism for lifeboats, rescue boats and liferafts launched by a fall or falls	BK	MED (1)								X
			TO (2)								X
32	Rescue boat propulsion engine – Outboard engines	BK	MED (1)								X
			TO (2)								X
33	Retro-reflective materials	BK	MED (1)								X
			TO (2)								X
34	Rigid liferafts	BK	MED (1)								X
			TO (2)								X
35	Rigid rescue boats	BK	TO (2)								X
			TK TO (2)								X
36	Rocket parachute (pyrotechnics)	BK	MED (1)								X
			TO (2)								X
37	Searchlight for use in lifeboats and rescue boats	BK	MED (1)								X
			TO (2)								X
38	Thermal protective aids	BK	MED (1)								X
			TO (2)								X
39	Winches for survival crafts and rescue boats	BK	MED (1)								X
			TO (2)								X