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VIII - TECHNICAL SPECIFICATIONS

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TECHNICAL SPECIFICATION FOR THE SUPPLY OF ROUGH AND MACHINED PLANKS FOR WAGONS AND VANS

SECTION I

SCOPE

Article 1

PURPOSE

This Specification concerns the supply of planks delivered either rough and unseasoned, or rough or machined in a seasoned condition, intended for the construction of the wooden roofs and sides of wagons and vans.

When the Administration obtains timber supplies in advance and keeps them in store for various purposes, the wagon planks made from this timber must, in all cases, comply with the conditions of this specification.

Article 2

GRADING

The planks to which this specification refers are of two main categories :

- planks made from hardwood deciduous species, for wagon sides, of one grade only,
- planks made from resinous species, comprising three different grades, in accordance with the uses recommended below :
  - Grade I : small external side planks (mechanically-refrigerated, refrigerator and insulated wagons).
  - Grade II : roof planks, UIC 125 x 25 and various planks with a width of not less than 125 mm (covered wagons).
  - Grade III : side planks for open high-sided wagons.

In addition, each of these grades can of course be utilised for the purposes corresponding to the grades following.

SECTION II

REQUIRED CHARACTERISTICS

Article 3

CHARACTERISTICS OF THE LOGS

When the purchasing Administration does not stipulate a certain species on the order, the supplier shall be left free to choose, from the species listed below, in respect of each group, the logs from which the planks are to be cut :

1. Deciduous species :

Common oak (Quercus pedunculata)
Robur (Quercus sessiflora)

In exceptional cases, after prior agreement with the purchasing Administration, American oaks (Quercus borealis and Quercus alba) and

the following tropical species may be used :

Douka (Mimusops Africana)
Doussié (Afzélia spp)
Iroko (Chlorophora excelsa)
Makoré (Mimusops Heckelii)
Mukulungu (Mimusops Congolensis)
Movingui (Disthemonanthus Benthamianus)
Padouk (Pterocarpus Soyauxii)
Yang, Keruing, Apitong, Gurjun, Dau (Dipterocarpus spp).

2. Resinous species :

Spruce (Picea sitchensis)
Epicea (Picea excelsa)
Pine (Abies pectinata or Abies alba)
Larch (Larix Europaea)
Norway pine (Pinus sylvestris)
Laricio pine (Pinus Laricio Corsicana and Pinus Laricio Calabrica),
Hemlock (Tsuga spp)
Douglas fir (Pseudotsuga taxifolia or Douglasii).

In exceptional cases, after prior agreement with the purchasing Administration, one of the following species of pine may be used :

Sea-pine (Pinus pinaster)
Black Austrian pine (Pinus Laricio Austriaca)

Article 4

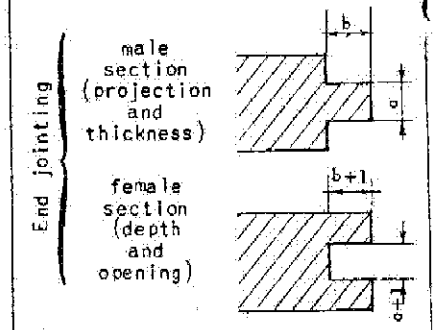
CHARACTERISTICS OF THE PLANKS

a) Geometrical characteristics

The dimensions of the planks must be in accordance with those stated in the working instructions.

The tolerances applicable to these dimensions must also be as shewn in the above documents; where no indication is given, the tolerances to be applied are as shewn below :

Tolerances on	UNSEASONED	SEASONED	
	Rough planks	Rough planks	Machined planks
Length (when stated on the order)	+ 200 mm 0	+ 200 mm 0	+ 10 mm 0
Width	+ 3 mm 0	+ 2 mm 0	+ 1 mm 0
Thickness	+ 3 mm 0	+ 2 mm 0	+ 1 mm 0
End jointing — male section (projection and thickness)			0 − 0.2 mm
End jointing — female section (depth and opening)			+ 0.2 mm 0
Sag	⩽ 0.15 %	⩽ 0.30 % of the length	⩽ 0.15 %



- Machined planks

In the case of all species, machined planks must have clean-cut edges along their entire length, and their ends must be cut perpendicularly to the longitudinal edges.

- Rough planks made from oak and tropical species

Planks made from the above species must have clean-cut edges along their entire length, and one end must be cut perpendicularly to the longitudinal edges; the other end need not be cut perpendicular to these edges if the plank comes within the tolerances specified above along its whole length.

- *Rough planks made from resinous species*

Planks in Grade I must have clean-cut edges. In the case of other grades of plank, flaws no larger than 1/10th of the width may be permitted on one edge only, the measurement being taken on the flaw itself.

In addition, the ends must be cut in accordance with the indications shewn for rough planks made of oak and tropical species.

b) Physical characteristics

The planks must be absolutely sound; they must be especially free from, or have been rid of, the following faults: twisted fibres, slanting cracks, curls, inner bark, heart shakes, circular edge defects, frost cracks, cup-shakes, knots, decay, blistering, rot, pitting,-worm holes and foreign matter.

In addition, in the case of resinous species, with the exception of sea-pine, the annual rate of growth must be less than 5 mm, at either end of the plank.

The planks must not contain the following faults in excess of the limits laid down below :

1. Planks made from oak or tropical species :

- Sapwood : this is not allowed except in the case of dipterocarpus spp.

- Enclosed heart : this is not allowed except in the case of oak at least 40 mm thick, subject to it being in sound condition.

- Exposed heart : this is allowed in exceptional cases.

- Knots : one or more sound attached knots, of which the total dimensions on one surface and both edges amount to no more than 1/4 of the width of the plank, may be allowed in any section of plank up to 150 mm long. In addition, the dimension of the knot on the edge must not exceed 2/3rds of the thickness. Knots of 10 mm or less may be ignored (the dimensions of the knots are given in Appendix 1).

- Superficial seasoning cracks : these are allowed in small numbers ; their length must be less than the width of the plank. Hair-line cracks may be ignored.

- Traversing cracks : these are not allowed.

- Stains or coloured streaks : these are allowed.

2. Planks made from resinous species :

See Appendices Nos. II and III to this leaflet.

c) Direction of the grain

The slope of the general direction of the grain must not exceed 5 % on the edges.

d) Humidity

Unless otherwise laid down, rough planks in seasoned condition and machined planks must not have a water content exceeding :

- 20% in the case of all deciduous species and Grades II and III (resinous) ;

- 18% for Grade I (resinous),

of their anhydrous mass.

Article 5

MARKS

At the request of the purchasing Administration, each plank must be inscribed with the manufacturing marks laid down in the working instructions, especially the supplier's mark.

SECTION III

MANUFACTURE

Article 6

FELLING - CUTTING UP OF LOGS

Except in the case of tropical species and timber growing at high altitudes, felling after the sap has risen must only be carried out in exceptional cases; in this event, the logs of resinous species must be stripped of bark as soon as they are felled. Conveyance to the railhead must take place with the least possible delay, to enable the logs to reach the sawmills within a month of felling.

Article 7

MANUFACTURE OF THE PLANKS

Machined side planks must be planed on all surfaces.

Article 8

RETOUCHING

Any repair carried out without the agreement of the purchasing Administration or for the purpose of concealing a fault is strictly forbidden, and can lead to the rejection of the entire supply.

Filling or plugging, in particular, must not take place unless the purchasing Administration's prior express agreement has been obtained.

SECTION IV

ACCEPTANCE CONDITIONS

Article 9

SUBMISSION FOR ACCEPTANCE

The planks (1) shall be submitted in batches made up of items of the same category of species and of the same quality, arranged in stacks of uniform section and length.

Article 10

NATURE OF CHECKS

At the producing factory (2)	Dimensional checks : approximately 10% of the planks. Appearance check : all surfaces of each item.
At the producing factory or at the laboratory of the purchasing Administration, according to the wishes of the latter.	Moisture check (on planks delivered in a seasoned condition only : 1 per 5 cubic metres of planks).

Article 11

INTERPRETATION OF CHECKS - ADDITIONAL TESTS

Any characteristic which is found in the course of the checks not to comply with the required conditions, may lead to the rejection of the batch in question.

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(1) Machined planks ordered in a seasoned condition need only be submitted for acceptance once, i.e. at the time of delivery.

(2) If it so desires, the purchasing Administration can carry out the acceptance procedure on its own premises, provided this is specially stipulated on the order.

In cases where the purchasing Administration is able to agree to additional tests, the number of the latter must be fixed by special agreement between the supplier and the Administration.

Article 12

METHOD OF SAMPLING

The planks intended for the dimensional and moisture checks shall be selected at random by the receiving inspector from each batch submitted.

Planks from which samples have been taken must retain the marks of the receiving inspector.

Article 13

CHECKS

1. Dimensional check

a) In the case of machined planks, checking is carried out by means of minimum and maximum gauges acceptable to the purchasing Administration.

b) Results to be obtained : see Article 4, § a).

2. Moisture check

a) Method of testing : the following may be used to determine the moisture content :

- a hygrometer approved by the purchasing Administration, provided the calibration is checked at frequent intervals ;
- or the gravimetric method shewn in the appendix. This method is more reliable and must be used in cases of dispute.

b) Results to be obtained : see Article 4, § d).

Article 14

MARKING

When the inspection takes place on the supplier's premises, each plank accepted by the receiving inspector must be endorsed in a permanent manner with the latter's inspection mark.

APPENDIX

GRAVIMETRIC METHOD

Sampling

Preparation of the test piece

Procedure

A sample of similar section to that of the plank and between 100 mm and 200 mm in length must be sawn from each side plank intended for the moisture check, at a point approximately 500 mm from one of the ends.

Immediately prior to the test, a test piece of similar section to the plank is sawn from the centre of the length of the sample selected. This test piece is weighed immediately : let M be the mass recorded.

After drying to a water-free condition, i.e. until a constant weight is obtained, in an oven at a temperature of 103°C±2°C, the test piece is weighed again : let Mo be the mass recorded.

The humidity rate will be $H\% = \frac{M - Mo}{Mo} \times 100$

Weighing shall be carried out with an accuracy of at least one part in a thousand.

APPENDIX I

KNOTS

DEFINITIONS

1. DIMENSION OF THE FLAT SECTION OF A KNOT

The dimension of a knot in a section is conventionally the distance between the tangents to the knot drawn parallel to the longitudinal edges of the piece of timber (1).

2 - SOUNDNESS

2.1. *Sound section :*

Section with no trace of deterioration or rot and, in the case of resinous species, an unglazed appearance.

2.2. *Unsound section :*

Section shewing deterioration over 1/3 of its surface area or less.

2.3. *Knot considered as sound :*

The following knots are considered as sound :

- any knot with 2 visible sections, one of which is sound and the other sound or unsound ;
- any knot with only one sound or unsound section visible.

Any knot not coming within the categories defined above shall not be considered as sound.

3 - ADHERENCE

3.1. *Adhering section*

A section of a knot shall be considered as adhering if :

(1) Where a knot appears in both the adjacent surfaces at the edge of the plank, the dimensions of the knot in each face shall be determined as the distance between the tangent to the boundary of the knot parallel to the axis of the plank and the edge of the plank, measured separately on each face. The total dimension of the knot is then taken as the sum of these two dimensions.

APPENDIX (cont'd)

3.1.1. in the case of freshly sawn timber, the annual growth layers in the section adhere to those of the timber surrounding the whole of its perimeter ;

3.1.2. in the case of seasoned timber, the annual growth layers in the section adhere to those of the surrounding timber over at least 3/4 of its perimeter.

3.2. *Partially adherent section :*

A section where the annual growth layers adhere to those of the surrounding timber over at least half of its perimeter.

3.3. *Knots considered as adherent :*

A knot shall be considered as adherent when one of its sections is adherent (even if its other sections, where these exist, are partially or non-adherent).

In the case of seasoned timber, knots where all the sections are partially adherent are also considered as adherent.

Any knot not coming within the categories defined above shall be considered as non-adherent.

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APPENDIX II

PHYSICAL CHARACTERISTICS OF PLANKS MADE OF RESINOUS SPECIES

The following regulations concern seasoned timber dimensioned ready for assembly

FAULTS	QUALITIES		
	I	II	III
ENCLOSED HEART	Not allowed	Not allowed for thicknesses of less than 40 mm Per delivery, allowed on 25 % of the planks at least 40 mm thick, whether it exists over whole or part of the length allowed	
EXPOSED HEART	Not allowed	- Allowed -	
TRAVERSING CRACKS	Not allowed	Not allowed	
SUPERFICIAL SEASONING CRACKS	Allowed if their length does not exceed 100 mm (1)	- Allowed -	
SOUND SAPWOOD	Allowed without restriction, but : a) in the case of larch, restrictions may be stipulated by the purchasing Administration b) slight blueing is allowed in the case of Grades II and III and on 10 % of items in Grade I		
POCKETS OF RESIN	Not allowed	Allowed in small numbers provided they are non-traversing and no longer than 50 mm	

(1) Hair-line cracks are to be ignored

APPENDIX III

TOLERANCES ON KNOTS IN PLANKS MADE OF RESINOUS SPECIES

GRADES		INDIVIDUAL DIMENSIONS			GROUPS
		SOUND ADHERENT	NON-ADHERENT		$\sum$(df + dc)
I	df dc	1/10 l 1/2 e	Not allowed		⩽ 1/4 l
			FILLING ALLOWED (1) any knot on the surfaces, more than 12 mm from the edges	FILLING AND PLUGGING NOT ALLOWED TRAVERSING Knot / NON TRAVERSING Knot	
II	df dc	1/5 l 1/2 e	20 mm e/2 if the knot does not affect the surfaces not allowed otherwise	Not allowed / 20 mm	⩽ 1/3 l
III	df dc	1/4 l e - 10 mm	25 mm 2/3 e if the knot does not affect the surfaces 1/3 e if the knot affects one surface - not allowed if the knot affects both surfaces	Not allowed if df > 10mm / 25 mm	⩽ 0,4 l

(1) When plugging is allowed : df ⩽ 15 mm (qualities II and III)

NOTE : 1. Knots affecting both surfaces and one edge at the same time are not allowed

2. The above tolerances are applicable to any plank with a length :
   - equivalent to the width of the plank, if this width is not more than 150 mm
   - equivalent to 150 mm otherwise

3. The following may be ignored :
   - any sound adherent knots of not more than 6 mm, irrespective of the Grade
   - in Grades II and III, superficial knots (flat knots) if they do not appear on the edges in the case of thicknesses of 25 mm or less, or, if their dimensions on the edges are less than 5 mm, for thicknesses of more than 25 mm.

KEY

e : thickness of the plank
l : width of the plank
df : dimension of the knot on the surface
dc : dimension of the knot on the edge (see definitions)

$\sum$ (df + dc) : sum of the dimensions of the knots on one surface and both edges for any length of plank (see NOTE 2)

In making this addition, the dimensions of the filling (or plugs) must be taken instead of those of the knots.

APPLICATION

With effect from 1st January, 1970.

All Administrations in the Union. A derogation from applying this leaflet is, however, granted :

- to the DB, as regards the dimensions of knots in deciduous and resinous timber;
- to the DSB, NSB, SJ, VR, for regulations concerning flaws and knots in resinous timber ;
- to the OBB, as a temporary measure.

RECORD REFERENCES

Headings under which the question has been dealt with :

- Preparation of standards for side planks and floorboards of wagons.
(5th Committee -J.Q.- : Paris, May 1961).

- Preparation of specifications for side planks and floorboards of wagons.
(5th Committee -J.Q.- : Paris, May 1963).

- Preparation of specifications for side planks and floorboards of wagons.
(5th Committee -J.Q.- : Leipzig, May 1965).

- Preparation of specifications for side planks and floorboards of wagons ; in particular, revision of Leaflet No. 844-2.
(5th Committee -J.Q.- : Lisbon, May 1966).

- Preparation of specifications for side planks and floorboards of wagons : final revision of Leaflets Nos. 844-1 and 844-2.
(Rolling Stock and Motive Power Committee : Nuremburg, June 1969).