SEALPA

SOUTH EAST ASIA

LUMBER PRODUCERS'

ASSOCIATION

LOG GRADING RULES

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INTRODUCTION

The SEALPA Standardized Grading Rules were formulated by the SEALPA Technical and Marketing Committees, over some 5 years, culminating in the 9th Technical Committee session in Manila, 14 - 16 September 1978 and ammended in the 16th Technical Committee Meeting in Manila, 1 - 2 December, 1980.

The Rules has incorporated suggestions from buying countries and amendments from the four SEALPA member countries, i.e. Indonesia, Philippines, Malaysia and Papua New Guinea.

The Rules were formally adopted by the SEALPA Councils 9th Meeting in Saur Bali-Indonesia, October 12 1978, and the amendments have been approved by the SEALPA Council's 13th Meeting in Port Moresby April, 14th 1981.

NAME OF THE RULES AND THEIR APPLICATION

These Rules are intended for use in grading logs other than TEAK, produced by SEALPA Member countries i.e. MALAYSIA, INDONESIA, PAPUA NEW GUINEA and THE PHILIPPINES.

The full name of these rules shall be

"THE SOUTH EAST ASIA
LUMBER PRODUCERS'
ASSOCIATION LOG
GRADING RULES"
(SLGR)

THE SEALPA LOG GRADING RULES

3.0 GENERAL INSTRUCTIONS

3.1 Log export preparation

3.1.1 Logs shall be completely debarked except Apitong/ Keruing (Dipterocarpus spp.) and Agathis spp.

3.1.2 Logs shall have properly bucked ends. (Not less than 80^{o} perpendicular to the central axis).

3.2 Mode and System of Measurement

3.2.1 Logs shall be measured in the Brereton Style Metric System based on the formula:

$$V = \frac{0.7854 x D2 x L}{10{,}000}$$

(0.7854 = .25 of pi)

V = Volume in cubic metres

D = Diameter in centimetres

L = Length in metres.

3.2.2 Two diameter measurements shall be taken under bark at each log end perpendicular to each other (at both ends) and the final recorded diameter shall be the average of the averages and shall be calculated to the nearest lower full odd or even centimeter.

The formula shall be:-

$$D\log\frac{.5(D1+D2)+.5(D3+D4)}{2}$$

$$D\log\frac{D1+D2+D3+D4}{4}$$

3.2.3 Lengths shall be measured-along a straight line parallel to the central axis of the log and shall be recorded to the nearest lower full odd or even decimetre.

3.2.4 The trimming allowance shall be considered as an exponent of the recorded length with a minimum of 0.1 decimetre and a maximum of 1.0 decimetre.

3.3 Identification and Classification

3.3.1 Logs shall be identified and classified according to their established/ accepted trade names in the respective country of originin accordance with agreed classification/ equivalent by color, species and form of bole or grouping.

3.4 Volume determination

3.4.1 The volume of individual logs shall be determined from the SEALPA Log Scaling and log volume tables computed based on the formula of the Brereton Style Metric System (see Rule 3.2.1).

3.4.2 The volume of logs of 10.0 centimetres up to 25 centimetres in diametre and 0.1 metre up to 20.0 metres in length shall be calculated to the nearest four decimal digits by rounding up the fifth decimal number if the latter amounts to 6 and above.

3.4.3 The volume of logs of above 25.0 centimetres up to 40 centimetres in diameter and 0.1 metre up to 20 metres in length shall be calculated to the nearest three decimal digits by rounding up the fourth decimal number if the latter amounts to 6 and above.

3.4.4 The volume of logs of 40 centimetres and up in diameter and 0.1 metre up to 20 metres in length shall be calculated to the nearest two decimal digits by rounding up the third decimal number if the latter amounts to 6 and above.

3.4.5 The volume of trimming allowance shall be excluded.

3.4.6 No deduction for defects of any kind on a log of any grade shall be made.

3.4.7 The volume of defects as determined and expressed in percent shall be used solely for establishing soundness and grade of the log.

3.5 Marking

3.5.1 Each log shall bear at one end the imprint of the officially registered Log Inspectors Marking Hatch or Hammermark.

3.5.2 Each log shall bear at the exposed surface a corresponding serial number, grade mark, species and shippers mark in bold letters with paint the sizes of which shall not be less than 6 centimetres high and 3 centimetres wide. See Note (i) on page 18.

3.6 Permissable Errors - A scaling discrepancy not exceeding (plus or minus).l.5% of the gross volume or not exceeding (plus or minus) 1.5% of the grade based on the number of pieces inspected for a given shipment shall be allowed, whichever be the less.

3.7 Definition

3.7.1 The term "fresh cut" as used in the rules shall mean logs with sound sapwood, free from teredo, large and deep grub or wormholes (Lobang Pusing included), marine shells (barnacles), and fruiting bodies (fungi).

3.7.2 The terms "Cylindrical" and "Nearly cylindrical" as used in these rules shall mean respectively, the 80% and the 70% ratio of the shortest and the longest top end diameter of each log.

3.8 Prohibition

3.8.1 There shall be no prohibition on the shipper to improve the quality of any log shipped at the time of or during the inspection/grading insofar as the individual log is concerned. This may be in the form of improved trimming, surface scrubbing and the attachment of gang nail plates, S-iron cleats or other methods to prevent degrade due to splits.

3.9 Substitution/Replacement

3.9.1 No substitution of pieces shall be allowed aft'er grading.

3.9.2 Replacement may, however, be made in the case of sunken or wash-out logs with equivalent grade and volume.

3.10 Grading/Inspection

3.10.1 The grading/inspection conducted by an Authorised SEALPA Log Inspector shall be final.

3.10.2 Authorised SEALPA Log Inspector shall be appointed by the respective governments of SEALPA member - countries.

4.0 STANDARD DEFECTS AND EQUIVALENT UNITS

4.1 Standard Knot

4.1.1 One sound knot over 2 centimetres up to 6 centimetres in diameter for every 2 metre log length with interval between knots not less than 2 metres; or equivalent, are equal to - 1 unit.

4.1.2 One sound knot over 2 centimetres upto 6 centimetres in diameter for every 2 metre log length with interval between knots not less than 1.5 metres; or equivalent, are equal to - 2 units.

4.1.3 Two sound knots each over 2 centimetres up to 6 centimetres in diameter for every 2 metre log length with interval between knots not less than 1 metre; or equivalent, are equal to - 3 units.

4.1.4 Sound knots upto 2 centimetres in diameter will be ignored.

4.2 Standard Borer, Shot and Pin Holes

4.2.1 Any concentration of pinholes of more than 15 up to 30 in a square of 125 mm x 125 mm for each such square - 1/4 unit.

4.2.2 For each additional 15 holes in a square of 125 x 125 mm is equal to 1/4 unit.

4.2.3 Over 3 and upto 10 shotholes in each 3 metre log length scattered on the surface of the log but not extending beyond the sapwood - 1 unit.

4.2.4 For each additional 10 short holes in each 3 metre log length is equal to 1 unit.

4.2.5 Small borerholes scattered on the surface of the log but nowhere in a square of 125 mm x 125 mm will be ignored.

4.2.6 Upto 3 medium borerholes scattered on the surface of the log but not extending beyond the depth of the sapwood for each 3 metre log length will be ignored.

4.3 Standard Split

4.3.1 One or two splits with a total length of up to 10% of the length of the log, are equal to - 1 unit.

4.3.2 Splits at both ends with a total length over 10%upto 20% of the length of the log, are equal to - 2 units.

4.3.3 Splits at both ends with a total length of the two longest splits over 20% up to 40% of the length of the log, are equal to - 3 units.

4.4 Standard Send

4.4.1 One bend with a deviation of 10% shortest log end diameter is equal to - 1 unit.

4.4.2 One bend with a deviation over 19$ up to 20% shortest log end diameter is equal to - 2 units.

4.4.3 One or two bends with a total deviation over 20% up to 30% shortest log end diameter are equal to - 3 units.

5.0 PEELERLOG GRADES

5.1 Special Peeler Grade (SSP)

5.1.1 Diameter 60 centimetres or larger, length 8 metres or longer;

5.1.2 Shall be fresh cut, cylindrical, straight-grained with properly bucked ends;

5.1.3 Heart may be off centre but shall be within 1/5 of the average log diameter;

5.1.4 May admit one unit of Standard Knot;

5.1.5 May admit one unit of Standard Borer, Shot and Pinholes;

5.1.6 May admit one unit of Standard Split; and

5.1.7 May admit one unit of Standard Bend;

5.1.8 Not more than two kinds of Standard Defects, each of maximum one unit will be allowed in any log;

5.1.9 This grade may admit logs with discolored but sound sapwood.

5.2 Prime Peeler Grade SP. 1)

5.2.1 Diameter 50 centimetres or larger, length 2.5 metres or longer.

5.2.2 Shall be fresh cut, cylindrical, reasonably straight grained with properly bucked ends;

5.2.3 Heart may be off centre but shall be within 1/4 of the average log diameter;

5.2.4 May admit one unit of standard knot;

5.2.5 May admit one unit of Standard Borer, Shot and Pinholes;

5.2.6 May admit one unit of Standard Split; and

5.2.7 May admit one unit of Standard Bend.

5.2.8 Not more than3 kinds of Standard Defects each of maximum 1 unit will be allowed in any log.

5.2.9 This grade may admit logs with discolored but sound sapwood.

5.3 Standard Peeler Grade (SP. 2)

5.3.1 Diameter 50 centimetres or larger, length 2.5 metres or longer.

5.3.2 Shall be fresh cut, cylindrical, reasonably straight grained with properly bucked ends.

5.3.3 Heart may be off centre, but shall be within 1/3 of the average log diameter. Logs may admit piped heart or small centre hole with clean and firm edges; cup or ;ing shake, brash/brittle heart or heart checks, provided confined within a circle centered on the pith not exceeding 15 centimetres in diametre and the log shall be sound enough to provide secure anchorage for lathe spindle and chuck.

5.3.4 May admit 2 units of Standard Knot;

5.3.5 May admit 2 units of Standard Borer, Shot and Pin holes;

5.3.6 May admit 2 units of Standard Split;

5.3.7 May admit 2 units of Standard Bend.

5.3.8 Not more than 3 kinds of Standard Defects each of maximum 2 units, will be allowed in any log.

5.3.9 This grade may admit logs with discolored but sound sapwood;

5.3.10 May admit logs with few surface checks confined within two quarters of the lateral surface of the piece not exceeding 5 centimetres in depth.

6.0 SAWLOG GRADES

6.1 Prime Sawlog Grade (SS. 1)

6.1.1 Diameter 50 centimetres or larger, length 2.5 metres or longer.

6.1.2 Shall be freshly cut, nearly cylindrical, and reasonably straight grained with properly bucked ends;

6.1.3 Heart may be off center;

6.1.4 May admit 3 units of Standard Knot;

6.1.5 May admit 3 units of Standard Borer, Shot and Pin holes;

6.1.6 May admit 3 units of Standard Splits; and

6.1.7 May admit 3 units ofStandard Bend.

6.1.8 Not more than 3 kinds of Standard Defects each of maximum 3 units will be allowed in any log.

6.1.9 This grade may admit logs with discolored but sound sapwood.

6.1.10 Any log in this grade must scale at least 75% sound.

6.2 Standard Sawlog Grade (SS. 2)

6.2.1 Diameter 40 centimetres or larger; length 2.0 metres or longer and must scale at least 60% sound;

6.2.2 This grade shall admit any log which does not meet the specifications of at least Prime Sawlog Grade.

6.3 Low Sawlog Grade (SS. 3)

6.3.1 Diameter 30 centimetres or larger; length 2.0 metres or longer and must scale at least 50% sound;

6.3.2 This grade shall admit any log which does not meet the specifications of at least Standard Sawlog Grade.

6.4 Sawable Low Grade (SS. 4)

6.4.1 Length 2.0 metres or longer; must scale at least 40% sound;

6.4.2 This grade shall admit any log which does not meet the specifications of at least Low Sawlog Grade.

6.5 Short Logs (SS. 5)

6.5.1 This grade shall admit any log shorter than 2.0 metres long end is considered sewable.

7.0 CHIPWOOD

7.1 Chipwood (SC)

7.1.1 This grade shall admit any log not covered by any of the foregoing grades.

8.0 DEFINITION OF DEFECTS AND TERMS USED IN THE RULES

8.1 Bend - A deviation from straightness

8.2 Bore Holes - Holes in wood caused by insects or their larvae or by marine borers/marine shells or barnacles. For the purpose of these rules, borer holes are recognised according to kind as follows:-

- Pin or needle holes - Small borer holes not more than 1.5 millimetres in diameter.
- Shot Holes - medium borer holes over 1.5 millimetres to 3.0 millimetres in diameter.
- Grub or Worm Holes - Larger borer holesr over 3.0 millimetres in diameter.

8.3 Brittle - A defective sapwood or heartwood of log, characterised by abnormal brittleness, which occurs in certain kinds of tropical hardwood. The limits of the defect are not sharply defined and the affected wood shows no visible sign of decay.

8.4 Brittle Heart - A brittle core of a log including the pith or the heart. Also known as spongy heart, soft heart, brash heart (See Brittle 8.3)

8.5 8.5 Burt - The figure resulting from cutting through a contorted or gnarled growth; unless containing an unsound centre, it is no defect. Also called Burr.

8.6 Butt - The lower portion of a tree.

8.7 Centre Hole - hole located within a circle centred on the pith of a log.

8.8 Cup Shake - A separation of the fibres along the annual growth ring of the wood which does not encircle the heart.

8.9 Cylinderical - To be accepted as cylinderical a log shall have 80% ratio of the shortest and the longest top end diameters.

8.10 Degrade - Applied to a log that has developed through any cause more defects than were permitted in the original grade of the log.

8.11 Discolouration - A stain or variation from the natural colour of the wood, usually caused by sap-stain fungi or by oxidisation.

8.12 Fresh Cut - To be accepted as fresh cut a log shall have sound sapwood, free from teredo, large and deep grub or worm holes (Lobang Pusing included), marine shells (barnacles) and fruiting bodies (fungi).

8.13 Heart - The central portion of a log including the pith and the adjacent wood which may be defective.

8.14 Heart Checks - Are small separations of the wood fibre near the heart in a longitudinal and radial direction.

8.15 Knot - A portion of a branch which has become embedded in the wood by the natural grow(th of the tree. The cross section of a knot is usually circular or oval in shape and is measured by taking the mean of the longest and shortest diameter.

8.16 Nearly Cylinderical - To be accepted as nearly cylinderical a log shall have 70% ratio of the shortest and the longest top end diameter.

8.17 Piped Heart - Heart with hollow pith.

8.18 Properly Bucked Ends - The ends of the logs shall be cut flat at an angle of not less than 80^{0} perpendicular to the axis of the log.

8.19 Rift Cracks - Are fractures across the grain in which the fibres are broken transversely or are crushed by compression. Various causes are suggested, such as felling across obstructions, and failure inside the growth tree caused by high winds, growth stress etc. Also known as Felling Shakes. Thunder, Rupture, Lightning and Transverse Shakes, Upsets, Cross Breaks, Cross Fractures or Compression Failure.

8.20 Ring Shake - A separation of the fibres along the annual growth of thewood which almost or completely encircles the pith/ heart. Also known as Round Shake.

8.21 Sapwood - Outermost layers of wood in a log which in the growing tree contain living cells, which are engaged in sap conduction and food storage.

8.22 Sound Knot - A tight knot free from decay, solid across its face and at least as hard as the surrounding wood.

8.23 Split - A wider separation of the wood fibres along the grain developing on the surface.

8.24 Straight Grain - The principal wood cells or fibres running fairly parallel to the axis of the log.

8.25 Top - The higher portion of a log which usually has a smaller cross-section.

The South East Asia Lumber Producers' Association Log Grading Rules are published by the South East Asia Producers' Association.

NOTE:

(i) In Papua New Guinea marks used shall be registered with the Forest Industries Council of Papua New Guinea under Section 23 of the Forest Industries Council Act 1979.

TABULATED SEALPA LOG GRADING RULES

GRADING REQUIREMENTS	SEALPA SPECIAL PEELER SSP	SEALPA PRIME PEELER SS. 1	SEALPA STAN-ARD PEELER SP. 2	SEALPA PRIME SAWLOG SS.1	SEALPA STAN-ARD SAWLOG SS.2	SEALPA LOW SAWLOG SS.3	SEALPA SAW-ABLE SAWLOG SS.1
	GRADE MARKS						
DIAMETER	60 cm and up	50 cm and up	50 cm and up	50 cm and up	40 cm and up	30 cm and up	No required
LENGTH	8 mand up	2.5 m and up	2.5 m and up	2.5 m and up	2 m and up	2 m and up	2 m and up
FORM DEFECTS							
- CUTTING	Fresh cut	Fresh cut	Fresh cut	Fresh cut	----------	----------	----------
- SHAPE	Cylindrical	Cylindrical	Cylindrical	Cylindrical	----------	----------	----------
- GRAIN	Straight	Reasonably Straight	Reasonably Straight	Reasonably Straight	----------	----------	----------
- ENDS	Prop. bucked	Prop bucked	Prop bucked	Prop bucked	----------	----------	----------
- BEND	1 unit	1 unit	2 unit	2 unit	----------	----------	----------
END DEFECT							
- HEART LOCATION	Within 1/5 L.d.	Within 1/4 L.d.	Within 1/3 L.d.	----------	----------	----------	----------
- SOUND CENTRE DEFECTS	----------	----------	Piped hrt, Cnt.hls cup/ Ring,brtl/ Chk within 15 cm diam	----------	----------	----------	----------
SURFACE DEFECTS							
- KNOT	1 unit	1 unit	2 unit	3 unit	----------	----------	----------
- BORER HOLES	1 unit	1 unit	2 unit	3 unit	----------	----------	----------
- SPLIT	1 unit	1 unit	2 unit	3 unit	----------	----------	----------
- CHECKS	----------	----------	2 quarters of srf. 5 cm in depth	----------	----------	----------	----------
SAPWOOD	Discolored/ sound	Discolored/ sound	Discolored/ sound	Discolored/ sound	----------	----------	----------
TOTAL STANDARD DEFECTS	2 kinds of 1 unit	3 kinds of 1 unit	3 kinds of 2 unit	3 kinds of 3 unit	----------	----------	----------
SOUND VOLUME	----------	----------	----------	75%	60%	50%	40%

SS. 5: Any log shorter than 2 m long and is considered sawable.
SC : Below SS. 5 - SEALPA Chipwood
L. d. : Log Diameter
Srf : Surface

1 unit = 10%
2 unit = 20%
3 unit = 30%

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