

Grading and Measuring Regulations
for Logs
Japanese Agriculture and Forestry Standards
(so-called JAS)

(Public Notice No.1841,
Ministry of Agriculture
and Forestry, December 8, 1967)

(Scope of Application)

Article 1. These standards shall apply to lumber used for building and other general purposes, except those specified under the following:

1. Logs otherwise specified in the Japanese Agriculture and Forestry Standards
2. Fancy logs
3. Waste wood
4. Logs of which more than 50% (in volume) is unuseable because of decay or other defects

(Definitions)

Article 2. In these Standards "fancy logs" means logs which fall under one of the following:

1. Logs of extremely rare quality or shape
2. Logs of extremely good quality
3. Logs of extremely high aesthetic value
4. Logs from which lumber falling under one of the preceding specifications can be obtained

5. In these Standards "waste wood" means logs with indeterminate shape and of extremely low practical value.
6. In these Standards, the "wood surface" of a pole means the longitudinal surface obtained by dividing it equally into four with longitudinal lines. The "wood surface" of a hewn square means its longitudinal surface.

(Classification of log categories)

Article 3. Log categories are classified by diameter as to poles and by width to hewn squares.

1. Small (less than 14cm)
2. Medium (not less than 14cm but less than 30cm)
3. Large (not less than 30cm)

(Classification of log dimensions)

Article 4. Log dimensions shall apply to stripped logs. Log dimensions shall be determined by diameter and length as to poles, but by width and length as to hewn squares.

(Pole diameter)

Article 5. The smallest diameter shall be taken as the pole diameter. If the difference between the smallest diameter and the diameter perpendicular to the smallest diameter is not less than 6cm with a pole having the smallest diameter of not less than 14cm (8cm with a pole having the smallest diameter not less than 40cm), 2cm shall be added for each 6cm of the difference.

(Thickness and width of hewn squares)

Article 6. The thickness of a hewn square shall be the shorter side of a corrected rectangle of its smallest section. The width of a hewn square shall be its longer side.

(Length of logs)

Article 7. The length of a log shall be the shortest line connecting its two cross-sections. When the shortest line partly intersects and passes through a narrowing part (a part with its smallest diameter less than 3cm), a round shaped end or a drag hole, such a part shall be excluded.

(Unit dimension for logs)

Article 8. The unit for measuring the diameter of a pole and the thickness and the width of a hewn square shall be 1cm for small logs and 2cm for other logs, fractions less than the unit dimension shall be discarded.

2. The unit for measuring the length of a pole and a hewn square shall be 20cm, fractions less than the unit dimension shall be discarded.

However, this shall not apply to lengths not less than 1.9m and less than 2.0m, lengths not less than 2.1m and less than 2.2m, lengths not less than 2.7m and less than 2.8m, lengths not less than 3.3m and less than 3.4m, lengths not less than 3.65m and less than 3.8m, lengths not less than 4.3m and less than 4.4m.

3. In the exceptional cases specified in the preceding paragraph, fractions (of 20cm) exceeding 1.9m but less than 2.0m, fractions exceeding 2.1m but less than 2.2m, fractions exceeding 2.7m but less than 2.8m, fractions exceeding 3.3m but less than 3.4m, fractions exceeding 3.65m

but less than 3.8m and fractions exceeding 4.3m but less than 4.4m shall be discarded.

(Unit of quantity of logs)

Article 9. The quantity of a log shall be given by the number of logs.

(Method and unit of volume calculations for logs)

Article 10. The volume of a log shall be obtained by means of the following equations.

1. Poles

a. Poles with a length less than 6m

$$D^2 \times L \times \frac{1}{10,000}$$

D is the pole diameter in cm.

L is the pole length in m.

b. Poles with a length not less than 6m

$$\left(D + \frac{L' - 4}{2}\right)^2 \times L \times \frac{1}{10,000}$$

D and L are as specified for the equation for a.

L' is the pole length in m with fractions less than 1 discarded.

2. Hewn squares

$$T \times W \times L \times \frac{1}{10,000}$$

T is the thickness of a hewn square in cm.

W is the width of a hewn square in cm.

L is the length of a hewn square in m.

2. The timber volume of a log shall be obtained in m³. If there are fractions less than three decimal places, the fourth digit shall be discarded if 4 or smaller and rounded out if 5 or larger. When no effective number is contained in the third place, the fifth digit shall be truncated if 4 or smaller but rounded out if 5 or larger.
3. The volume of a cavity (including a decayed section treated as a cavity. This applies throughout the rest of the article) shall be excluded from the timber volume of a log. However, this does not apply neither to a cavity whose diameter is less than 20% of the diameter of the cross-section with the cavity (as to poles) or less than 20% of the thickness of a hewn square nor to a cavity of a small log.
4. The diameter of a cavity shall be its mean diameter. (The mean value of the maximum diameter and the diameter perpendicular to it.)
If a cavity extends into a root swelling part, this portion shall be excluded from the measurement of the mean diameter.
5. As for the diameter of a cross-section of a pole, the diameter of the top end shall be the diameter of the pole, while the diameter of the bottom and (root swelling is excluded, if any. This applies throughout the rest of this item) shall be the smallest diameter of the bottom end. With the bottom end whose smallest diameter is more than 6cm smaller (8cm smaller with a pole having the smallest diameter not less than 40cm) than the diameter perpendicular to the smallest diameter, 2cm shall be added for every 6cm of difference to obtain the diameter of the cross-section.

6. The volume of a cavity shall be obtained by mean of the following equations.

1. When a cavity is at one end of a log alone

$$d^2 \times \frac{L}{2} \times \frac{1}{10,000}$$

d is the diameter of a cavity in cm obtained as specified in Item 4, with fractions less than 2 truncated.

L is the length of a log in m.

2. When a cavity exists at the two ends of a log

$$d'^2 \times L \times \frac{1}{10,000}$$

d' is the mean value (in cm) of the diameter of the cavities at the two ends of a log obtained as specified in Item 4, with fractions less than 2 discarded.

L is as specified for the equation in the preceding paragraph.

(Limitations as to the wane of hewn squares)

Article 11. A hewn square whose total missing sides exceed 80% of the total of the four sides of a corrected rectangle of its small cross-section shall be considered as a pole.