Joint Stock Company “Ust-Ilimsk Sawmill”

APPROVED:
Chief Executive Officer
JSC “Ust-Ilimsk Sawmill”

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PROCEDURE

Quality Management System

SAWN TIMBER MOISTURE CONTENT MEASUREMENT

Introduced in lieu of
Procedure dated
22 November 2013

Introduced by: Order No. 080

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1 Background Information

1.1 The present Procedure establishes uniform requirements to the measurement of sawn timber moisture content (MC) in order to determine bundle average MC.
1.2 The present Procedure establishes:
- uniform requirements to the sawn timber subject to MC measurement;
- a type of a MC measuring device;
- required quantity of measurements;
- methods of average MC calculation.

2 Sawn Timber MC Measurement

2.1 The following kinds of boards shall not be measured for the purpose of sawn timber MC determination:
- boards got wet during transportation or storage;
- boards of upper and bottom layers;
- dirty and pitched boards.

2.2 A needle moisture meter shall be used for determination of bundle average MC. The needles shall be forced into the wood up to the sample's middle so that the line joining their ends is perpendicular or parallel to the wood fibers (up to the moisture meter operation manual).
2.3 MC of separate sawn timber sections shall be measured along the board face central line not closer than 0.5 m to the board ends. The sections shall be selected along the board length randomly. Not less than 3 sections shall be measured if a board length is 2.5-4 m. Not less than 4 sections shall be measured if a board is longer than 4 m.
2.4 A test point shall not have any visible defects.
2.5 While determination bundle average MC the number of boards to be measured depends on the total number of boards in a bundle.

up to 280 pcs. in a bundle – 32 pcs. to be measured
281-500 pcs.in a bundle – 50 pcs. to be measured
over 500 pcs. - 80 pcs. to be measured

2.6 The following formula shall be used for average MC percentage ($\overline{W_j}$) calculation of one sawn timber unit:

$$\overline{W_j} = \frac{1}{k}\sum_{i=1}^{k} W_i \qquad (1)$$

where *Wi – MC of the measured section, %;*
k – number of measured sections.

2.7 Average MC percentage of a sawn timber bundle shall be calculated according to the formula:

$$\overline{W_1} = \frac{1}{n}\sum_{j=1}^{n} \overline{W_j} \qquad (2)$$

where *($\overline{W_j}$) – average MC content under the formula (1), %;*
n – amount of selected sawn timber, pcs.

2.8 The results of calculation shall be rounded off to the whole number and recorded in Measurement Report 1 Form (Appendix 1). This Measurement Report shall be sent to the sawn timber producer together with the claim by the customer.

3 The Drying-Weighing Method of Bundle Average MC Determination

3.1 The drying-weighing method of MC determination shall be used when more accurate bundle average MC determination is needed.
3.2 Immediately prior to the measurements one sample shall be cut out across the grain from each selected board not closer than 0.5 m to the board ends. The sample thickness along the grains shall be 10-20 mm. The samples shall be cleared from burrs and shall not have any visible wood defects. The number of samples shall correspond to cl. 2.5 above.
3.3 All the samples shall be weighed to a precision of 0.1 g maximum.
3.4 In case it is impossible to weigh the samples immediately after they have been cut out, they shall be put into tightly closed plastic bags until weighing.
3.5 After weighing the samples shall be placed in a drying chamber under the temperature of (103±2)°C. The samples shall be weighed for the first time not earlier than in 6 hours after the drying process has started, and so on in every 2 hours. The samples shall not be dried for more than 20 hours. The samples are considered to be dried if the difference between two consequential weighings (excluding the first one) is less than 1%. The result of the last weighing is considered as the dried sample weight.
3.6 After drying the sample shall be cooled down to room temperature and weighed to a precision of 0.1 g maximum.
3.7 A sampe MC percentage (W) shall be calculated according to the formula:

$$W = \frac{m_1 - m_2}{m_2} \cdot 100, \qquad (3)$$

where m_1 – the sample weight before drying, g;
m_2 – the sample weight after drying, g.

3.8 Bundle average MC percentage ($\overline{W}_2$) is calculated according to the formula:

$$\overline{W}_2 = \frac{1}{n}\sum_{i=1}^{n} W, \qquad (4)$$

where W - a sample MC under the formula (3), %;
n – amount of samples, pcs.

3.9 The results of calculation shall be rounded off to the whole number and recorded in Measurement Report 2 Form. This Measurement Report shall be sent to the sawn timber producer together with the claim by the customer.

Worked out by
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Appendix 1

MEASUREMENT REPORT 1 (moisture meter)

1. Wood species_____ 3. Volume_____

2. Board end dimensions_____ 4. The bundle number_____

5. Moisture meter brand name_____

Sample number	**MC at measured section, *Wi***			
	W_1	W_2	...	W_n

Unit average MC $\overline{W}_1$ _____

"___"_____20__ Signature_____

Appendix 2

MEASUREMENT REPORT 2 (drying-weighing method)

1. Wood species_____ 3. Volume_____

2. Board end dimensions_____ 4. The bundle number_____

Sample number	Sample weigh, g		Sample moisture content W
	before drying m_1	after drying m_2	

Unit average MC $\overline{W}_2$ _____

"___"_____20__ Signature_____