

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 801

PULPS

DETERMINATION OF SALEABLE MASS , IN LOTS,
OF PULP BALED IN SHEET FORM

1st EDITION

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BRIEF HISTORY

The ISO Recommendation R 801, *Pulps – Determination of saleable mass, in lots, of pulped in sheet form*, was drawn up by Technical Committee ISO/TC 6, *Paper, board and pulps*, the Secretariat of which is held by the Association Française de Normalisation (AFNOR).

Work on this question by the Technical Committee began in 1963 and led, in 1965, to the adoption of a Draft ISO Recommendation.

In March 1966, this Draft ISO Recommendation (No. 894) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Argentina	Iran	Spain
Australia	Israel	Sweden
Bulgaria	Italy	Switzerland
Chile	Japan	Turkey
Cuba	Korea, Rep. of	U.A.R.
Czechoslovakia	Netherlands	United Kingdom
Denmark	New Zealand	U.S.S.R.
Finland	Norway	Yugoslavia
France	Poland	
Hungary	Romania	
India	South Africa, Rep. of	

Six Member Bodies opposed the approval of the Draft.

Belgium	Mexico
Canada	Portugal
Germany	U.S.A.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in August 1968, to accept it as an ISO RECOMMENDATION.

PULPS

DETERMINATION OF SALEABLE MASS, IN LOTS, OF PULP BALED IN SHEET FORM

1. SCOPE

This ISO Recommendation describes a method for determining the dryness of a lot of pulp baled in sheet form and for calculating its saleable mass.

This method applies to all kinds of pulp baled in sheet form.

2. TERMINOLOGY

For the purposes of this ISO Recommendation, the following definitions apply:

- 2.1 *Lot*. The total number of bales of the same sort of pulp of specific characteristics.
The number of bales comprising a lot is indicated by the invoice or by agreement between the contracting parties.
A lot of bales of pulp is said to be "with specification" if it is accompanied by a certificate of origin stating for each bale either
- its gross mass and its absolute dryness,
- or
- its saleable mass.
- 2.2 *Gross mass*. The total mass of a bale, a part of a lot or a lot comprising
- contents,
 - wrappers (pulp — paper),
 - packaging wires or strappings.
- 2.3 *Oven-dry mass*. The mass obtained on drying pulp at a temperature of 103 ± 2 °C, until constant mass is reached.
- 2.4 *Absolute dryness*. The ratio of oven-dry mass of pulp to its initial mass; it is expressed as a percentage.
- 2.5 *Air-dry mass*. The mass of the pulp when its moisture content is in equilibrium with the ambient atmosphere.
- 2.6 *Commercial dryness*. Commercially a conventional equilibrium value has been accepted which is the commercial dryness.
It is 88 % or 90 % according to the country and/or commercial agreements.*

* If the air dryness is 90 %, the pulp contains ninety parts of absolutely dry fibres and ten parts of water. For an air dryness of 88 %, the corresponding figures are eighty-eight and twelve. All parts are by mass.

- 2.7 *Saleable mass*. The gross mass multiplied by the absolute dryness, divided by the commercial dryness. Usually it approximates to air-dry mass.
- 2.8 *Invoiced mass*. The saleable mass indicated by the vendor on the invoice.

3. PRINCIPLE OF THE METHOD

From the lot, a number of sample bales is taken in accordance with a sliding scale, which is a function of the total number of bales in the complete lot. These sample bales are weighed* and collected in groups of six bales.

Five specimen sheets are selected from each sample bale under defined conditions.

From each specimen sheet a test piece is cut in the form of a triangle, as indicated in section 6.

The test pieces are weighed and dried to constant mass to determine their oven-dry mass.

The saleable mass of the lot is then deduced.

4. APPARATUS

- 4.1 *Scale*, suitable for weighing the bales, the accuracy of which is at least 1/1000.
- 4.2 *Balance*, of suitable sensitivity, such that it will weigh the test pieces accurately to at least 1/5000.
- 4.3 *Equipment* for marking the position of the specimen sheets to be selected (see Annex B) and the test pieces in these sheets, as well as cutting them.
- 4.4 *Equipment*, for storing at least thirty test pieces to prevent them from gaining or losing mass before weighing.
- 4.5 *Drying oven*, with good ventilation and capable of being controlled at a temperature of 103 ± 2 °C.

5. SAMPLE BALES

All the sample bales should be representative of the lot and for this purpose, so far as possible, these bales should be selected at random from all parts of the lot. In the absence of any other agreement between the parties, the available part of the lot to be examined should not be less than half the complete lot at the time of examination.

If the bales have identification numbers relating to several series, the sample bales should be selected as far as possible in proportion to the size of these series.

The sample bales should be intact and as little damaged as possible.

Rejections should consist of :

- bales showing signs of definite drying or wetting, as may happen with bales situated on the external faces of a stack;
- bales or wrappings of bales having deteriorated, or showing clear signs of accidental localised wetting or loss;
- bales carrying traces of previous sampling;
- bales whose number is illegible or is not contained in the specification, if this is a lot specified bale by bale.

* The mean of the gross mass of the sample bales is considered as being the mean of the gross mass of all the bales in the lot.

The number of sample bales should be governed by the following Table :

TABLE 1 – Number of sample bales to be taken

Total number of bales in lot	Number of sample bales	
	minimum	maximum
Up to 100	12	24
101 to 200	18	36
201 to 300	24	48
301 to 400	24	48
401 to 500	24	48
501 to 600	30	60
601 to 700	30	60
701 to 800	36	72
801 to 900	36	72
901 to 1000	42	84
1001 to 2000	48	96
2001 to 3000	60	120
3001 to 4000	72	144
4001 to 5000	96	192

Above 5000 the minimum number to be taken is $100 + 1\%$ of the bales in excess of 5000, the maximum number being $200 + 1\%$ of the bales in excess of 5000. In all cases, the total number of sample bales should be a multiple of 6.

When the lot is relatively uniform, and the number of bales rejected (exclusive of bales from the outer faces of the stack) does not exceed 10% of the minimum number of bales to be selected (see Table 1), then the minimum number will be taken. Otherwise, the analyst will decide, within the limits set in the Table 1, the number of bales to be selected.

For frozen pulp, the sampling should be postponed until the bales have thawed, so that satisfactory test pieces can be cut from the sheets.

6. PROCEDURE

6.1 Weighing of sample bales

Determine the gross mass of each sample bale separately and report the results with a degree of accuracy between $1/500$ and $1/1000$; report, if possible, their marks and references in the order of their weighing. The scale should be checked before the weighings and during the course of the operation (see clause 4.1).

If the moisture content of the sheets of pulp serving as wrappers differs obviously from that of the rest of the bale, or if the wrappers are invoiced separately, they should be tested separately in the manner described in clause 9.1.

6.2 Selection of specimen sheets

Five specimen sheets should be selected from each sample bale, as described below, as soon as possible after weighing.

Five sheets are drawn from each sample bale, the distance between the sheets being constant and equal to $1/5$ of the total thickness of the bale (see clause 9.2). The sheets should not be taken from the same positions in each bale, but should be selected according to the procedure described below and illustrated in Figure 1. In sample bale No. 1 the first sheet to be taken is that at the extreme top, and the last sheet (the fifth) will be $1/5$ of the thickness of the bale from the bottom. In sample bales Nos. II, III, IV, V and VI, each sheet is taken from a slightly lower position (actually $1/50$ of the thickness of the bale) than the corresponding sheet of the preceding bale; thus in sample bale No. VI the first sheet will be taken $1/10$ of the height of the bale from the top, and the last sheet will be $1/10$ of the height of the bale from the bottom. The sample bale No. VII will recommence the cycle and be treated in the same way as the sample bale No. I, etc. In this way one outside sheet is taken from every six sample bales, the proportion thus being one outside sheet in every thirty specimen sheets taken.