SCANDINAVIAN PULP, PAPER AND BOARD

TESTING COMMITTEE

Wood chips for pulp production

Bark content

0 Introduction

This SCAN-test Method replaces SCAN-CM 42:95, from which it differs in that, after the revision of SCAN-CM 40 in 2001, five fractions remains after discarding the fines fraction in accordance with SCAN-CM 40 *Wood chips for pulp production − Size distribution*, and not four fractions as stated in SCAN-CM 42:95.

1 Scope

The Method describes a procedure for the determination of the bark content in wood chips for the production of chemical and mechanical pulps. The method is applicable to the determination of the quality of wood chips, preferably in connection with the method for chip size distribution described in SCAN-CM 40.

2 References

SCAN-CM 39 Wood chips for pulp production − Dry matter content
SCAN-CM 40 Wood chips for pulp production − Size distribution
SCAN-CM 41 Wood chips for pulp production − Sampling

3 Definitions

For the purpose of this Method the following definitions apply:

3.1   *Bark* − The outer, insulating and protective layers distinct from the wood in roots, stems and branches of wood plants. Bark may be of a dark colour (outer bark) or almost white (inner bark).

3.2   *Bark content* − The ratio of the oven-dry mass of the bark to the oven-dry mass of the chip sample with the bark included.

4 Principle

From a sample of chips, the fines are removed by screening on a screen with 3 mm holes. The bark particles are collected manually and their total mass is determined by weighing. The bark content is reported as the percentage of oven-dry bark based on the oven-dry mass of the chips, including bark.

5 Apparatus

5.1   *Container*, of aluminium foil, for weighing the bark.

5.2   *Chip classifier* as described in SCAN-CM 40.

5.3   *Drying oven,* capable of being controlled at (105 ± 2) °C, and suitably ventilated.

5.4   *Balance,* with a capacity of about 4 kg, accurate and readable to 0,1 g.

6 Sampling and preparation of sample

The sampling procedure is not covered by this Method. A suitable sampling procedure is described in SCAN-CM 41.

For each determination, the test portion is 8 litres to 10 litres. If the sample has to be subdivided to obtain test portions of that size, take precautions to avoid any fractionation of the material. A suitable procedure for subdividing a sample is described in SCAN-CM 41.

Prepare the sample as follows:
Screen each test portion as described in SCAN-CM 40. Discard the fines fraction and use the other five fractions for the determination of bark content.

> *Note* − The fact that the fines are left unconsidered in this test introduces an error in the result if the bark content of the fines fraction deviates from the overall bark content. Normally the bark content of the fines is slightly higher than that of the total sample and the result of the test will be somewhat lower than the true value. For the purpose of this Method, this error is disregarded.

7 Procedure

Weigh the dry aluminium container (5.1).

Spread the chips in a thin layer over the top of a large table. Remove all bark particles, including those of inner bark, and collect them in the aluminium container. With the aid of a sharp knife, split chips in which bark is combined with wood so that the bark can be removed.

Weigh the bark-free chips and determine their dry matter content as described in SCAN-CM 39.

Place the aluminium container with the bark in the drying oven (5.3) and dry the bark at $(105 \pm 2)°C$. After a period of not less than 16 h and not more than 24 h, remove the container and weigh it immediately.

> *Note* − The weighing of the container before it has reached room temperature causes a small weighing error. Another error may arise because the sample is in contact with the surrounding air, and it may therefore gain or lose moisture during the weighing. For the purpose of this Method, these errors are neglected, and prolonged waiting for the reading to stabilize shall be avoided.

8 Calculation and report

Calculate the bark content from the expression:

$$X = \frac{100\,a}{a + 0,01\,c\,b}$$

where
X is the bark content of the sample, as a percentage;

a is the mass of the dried bark, in grams;
b is the mass of the bark-free chips, in grams;
c is the dry matter content of the bark-free chips, as a percentage.

Report the result to one decimal place.

The test report shall include reference to this SCAN-test Method and the following particulars:

(a)   date and place of testing;
(b)   identification mark of the sample tested and an indication as to whether or not sampling has taken place in accordance with SCAN-CM 41;
(c)   the result;
(d)   any departure from the procedure described in this Method and any other circumstances that may have affected the results.

9 Precision

A sample of chips from softwood, 120 litres in volume, was thoroughly mixed and divided into twelve samples. Four laboratories each determined the bark content of three of the samples. The results are given in the *Table*.

Table. Bark content in twelve samples determined by four laboratories.

Laboratory	Bark content, %		
	Sample 1	Sample 2	Sample 3
Lab A	2,0	1,6	1,5
Lab B	2,1	1,6	1,8
Lab C	2,1	1,4	1,7
Lab D	2,3	1,6	1,5
$\overline{x}$	2,1	1,6	1,6
s	0,13	0,10	0,15

The variance (s^2) between laboratories was 1,2 and between samples 11,2.