



## *Wood chips for pulp production*

# Dry matter content

## 0 Introduction

This SCAN-test Method replaces SCAN-CM 39:88, from which it differs in that way that mainly editorial changes have been made. In addition to that the Method has been provided with precision data.

## 1 Scope

This Method specifies a method for determining the dry matter content of wood chips intended for the production of chemical and mechanical pulps.

## 2 Reference

SCAN-CM 41 Wood chips for pulp production – Sampling.

## 3 Definition

For the purpose of this Method, the following definition applies:

3.1 *Dry matter content* – Ratio of the mass of a test sample after drying at a temperature of  $(105 \pm 2)^\circ\text{C}$ , to its mass at the time of sampling.

## 4 Principle

The chip sample is dried to constant mass at  $(105 \pm 2)^\circ\text{C}$ .

## 5 Apparatus

5.1 *Containers* of aluminium foil, capacity at least 1 litre.

5.2 *Drying oven*, capable of being controlled at  $(105 \pm 2)^\circ\text{C}$ , and suitably ventilated.

5.3 *Balance*, 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, in which also subdivision into test samples is described.

The test portion for each determination shall be about 200 g. If the sample has to be subdivided to obtain test portions of that size, this shall be done without fractionation of the material.

Keep the sample in a plastic bag until required for the determination.

**7 Procedure**

Carry out the following procedure in duplicate.

Weigh the dry and empty container (5.1). Fill it with about 200 g of the sample as taken and weigh it again immediately.

Place the container with the sample in the drying oven (5.2) 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 reading.

Throughout the drying period keep the oven closed and do not introduce new samples.

Replace the container in the drying oven and leave it there for at least 2 h. Weigh it in the same manner as before. The reading should agree with the previous one within 0,5 g. If this agreement is not obtained, repeat the 2 h drying step until agreement is reached. Use the last value obtained for the calculation.

*Note* – By weighing the container before it has reached room temperature a small weighing error is introduced. 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 disregarded and any prolonged waiting for the reading to stabilize shall be avoided.

**8 Calculation**

Calculate the dry matter content, separate for the two determinations, from the expression:

$$X = \frac{100(b - c)}{(a - c)} \quad [1]$$

where

- X* is the dry matter content of the sample, expressed as a percentage;
- a* is the mass of the container with sample before drying, in grams;
- b* is the mass of the container with sample after drying, in grams;
- c* is the mass of the empty and dry container, in grams.

Calculate the mean of the two results to the first decimal place.

**9 Report**

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 mean result of the two determinations;
- (d) any departure from the procedure specified in this Method or any other circumstances that may have affected the test results.

**10 Precision**

From a chip pile, 30 samples were taken. Three laboratories each analysed 10 of the samples. The accuracy of the method, calculated as the coefficient of variation, is given in the *Table*.

*Table. The accuracy of the method, calculated as the standard deviation within and between laboratories.*

Laboratory	within lab		between labs	
	$\bar{x}$	cv	$\bar{x}$	cv
1	58,8	0,03	58,3	0,03
2	58,9	0,02		
3	57,1	0,02		

- $\bar{x}$  is the arithmetic mean, as a percentage;
- cv is the coefficient of variation.

**11 Literature**

Björklund, L., Fryk, H.: *Drying of wood samples in drying ovens* (in Swedish, English summary). SLU – Dep. of For. Prod. R 211 (1989)

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