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ASH IN TALL OIL

Definition

The ash content of tall oil is defined as the weight of the residue after complete combustion at a temperature of 625°C ± 25°C under specified conditions and is expressed as a percentage of the weight of the moisture-free sample.

Scope

This method applies to crude and distilled tall oil, tall oil fatty acids, tall oil rosin, tall light oil and tall oil pitch.

Apparatus

1. Platinum dishes, 50 ml—100 ml capacity (Note 1).
2. Electric muffle furnace, set to maintain a temperature of 625°C ± 25°C.

Procedure

Ignite a platinum dish for 15 min in the muffle furnace at 625°C ± 25°C. Allow the dish to cool for 30 s on an aluminum block, and then for 15 min in a desiccator. Weigh to the nearest 0.1 mg.

Mix the sample thoroughly and place approximately 20 g of tall oil or 5 g—20 g of tall oil pitch in the dish and weigh to the nearest 0.1 g. For ash contents lower than 0.02 % or over 0.2 %, use a larger or smaller sample and report this with the result.

Heat the dish gently with a gas burner (Note 2) until the oil can be ignited at the surface (Note 3). Remove the burner and allow the oil to burn completely. Burn off any free carbon adhering to the sides of the dish, place it in the muffle furnace and ignite the sample at 625°C ± 25°C for 2 h or until free from carbonaceous matter. To remove traces of carbon, moisten the residue with 30 % hydrogen peroxide and continue the heating. Allow to cool as described above and weigh to the nearest 0.1 mg. Repeat the heating for periods of 30 min until the difference between two consecutive weighings does not exceed 0.02 % of the original weight of the sample.

Calculation and report

Calculate as follows:

$$X = 100\ a/m$$

where

a = weight of ash, g.

m = weight of sample, calculated on a moisture-free basis, g.

X = ash content, %.

Report the result to the second decimal place.

Additional information

This method is based on ASTM Designation D 803—65 and should give equivalent results.

Note 1

A porcelain or silica dish may be used if the ash is not to be analysed.

Note 2

When the gas burner is used, take care so that the inner (reducing) cone of the flame does not come into contact with the platinum. Adjust the flame so that no carbon is deposited on the outside of the dish.

Note 3

To avoid foaming when ashing moist samples, add 1 to 2 ml of ethanol before heating.

Literature

1. American Society for Testing and Materials, 1966 Book of ASTM Standards, part 20, p. 359.

This method has been published in:

Norsk Skogindustri *20* (1966): 12, 517—518. (English and Norwegian.)
Paperi ja Puu — Papper och Trä *48* (1966): 12, 759—761. (English, Finnish, Swedish.)
Svensk Papperstidning *69* (1966): 23, 831—832. (Swedish and English.)

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