

STN P	Kompozity vyrobené z materiálov na báze celulózy a termoplastov (drevoplastové kompozity (WPC) alebo kompozity s prírodnými vláknami (NFC)) Stanovenie veľkosti častíc lignocelulózového materiálu	STN P CEN/TS 17158 64 5030
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Composites made from cellulose based materials and thermoplastics (usually called wood polymer composites (WPC) or natural fibre composites (NFC)) - Determination of particle size of lignocelulosic material

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 09/18

Táto predbežná STN je určená na overenie. Pripomienky zasielajte ÚNMS SR najneskôr do 31. 10. 2020.

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English Version

Composites made from cellulose based materials and thermoplastics (usually called wood polymer composites (WPC) or natural fibre composites (NFC)) - Determination of particle size of lignocelulosic material

Composites à base de matières cellulosiques et de thermoplastiques (communément appelés composites bois-polymères (WPC) ou composites fibres d'origine naturelle (NFC)) - Détermination des dimensions de particules de matières ligocellulosiques

Verbundwerkstoffe aus cellulosehaltigen Materialien und Thermoplasten (üblicherweise Holz-Polymer-Werkstoffe (WPC) oder Naturfaserverbundwerkstoffe (NFC) genannt) - Bestimmung der Partikelgröße von lignocellulosehaltigem Material

This Technical Specification (CEN/TS) was approved by CEN on 10 December 2017 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

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CEN/TS 17158:2018 (E)

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European foreword

This document (CEN/TS 17158:2018) has been prepared by Technical Committee CEN/TC 249 "Plastics", the secretariat of which is held by NBN.

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CEN/TS 17158:2018 (E)**Introduction**

Either optical systems or sieve analysis can be used for the determination of particle size of wood flour or flour based on alternative lignocellulosic materials for use in wood plastic composites. Microscopic analysis is also possible but requires a significant amount of time and effort to generate statistically viable results, hence, it is not suggested for this task. Particle size determination can be performed using raw material as well as processed and extracted material to observe the effects of processing on particle size. Optical systems and in addition, sieve analysis can be performed using a vibrating sieve or an air-jet sieve in order to match results from optical measurements with those from mechanical measurements and which are suitable to determine the mass of particles which are too fine or too coarse. Sieve analysis does not generate any information regarding the shape of the particles and leads only to a diameter-based, coarse size distribution. Therefore, size parameters supplied by optical measurements cannot directly be compared with those from sieve analysis. Methods using active air-jet dispersion are particularly suitable for material containing long natural fibres which tend to agglomerate. Optical methods derive very similar results regarding the type of distribution and its characteristic percentiles for the particle length and a shape factor (length/width ratio) if optical resolution and weighting method are comparable. For a comparison between these measurement principles see (Plinke et. al 2016 [2]).

This document is related to the determination of particle size of the lignocellulosic material used in the preparation of wood-polymer composites according to EN 15534-1 and prEN 15534-2 for compounds. Furthermore, the methods mentioned in this document can be used to determine the extent of particle degradation after processing, i.e. after compounding and/or extrusion and injection-moulding. Manufacturers of wood and other natural fibre producers and users of wood and natural fibres can use the methods described in this document to determine particle size of their lignocellulosic raw materials and to compare the particle size of their raw materials to alternative lignocellulosics. There are no requirements for particle size of the lignocellulosic fillers used in WPC, however, it is useful to know particle size for formulation development and to understand the relationship between particle size and WPC properties such as strength, water uptake and swelling.

1 Scope

This document specifies mechanical and optical test methods for the determination of particle size of lignocellulosic material for use in wood plastic composites (WPC) and natural fibre composites (NFC).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 4610, *Plastics - Vinyl chloride homopolymer and copolymer resins — Sieve analysis using air-jet sieve apparatus (ISO 4610)*

ISO 9276-6:2008, *Representation of results of particle size analysis — Part 6: Descriptive and quantitative representation of particle shape and morphology*

ISO 13322-2, *Particle size analysis — Image analysis methods — Part 2: Dynamic image analysis methods*

DIN 66165-1:2016, *Particle size analysis — Sieving analysis — Part 1: Fundamentals*

DIN 66165-2:2016, *Particle size analysis — Sieving analysis — Part 2: Procedure*

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