

Teknisk specifikation

SIS-ISO/TS 20477:2019

Nanoteknologi – Termer respektive definitioner för nanocellulosa (ISO/TS 20477:2017, IDT)

Nanotechnologies – Standard terms and their definition for cellulose nanomaterial (ISO/TS 20477:2017, IDT)



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Standarden är framtagen av kommittén Nanoteknik, SIS/TK 516.

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Denna tekniska specifikation är inte en svensk standard. Detta dokument innehåller den engelska språkversionen av ISO/TS 20477:2017, utgåva 1.

This Technical Specification is not a Swedish Standard. This document contains the English language version of ISO/TS 20477:2017, edition 1.

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SIS-ISO/TS 20477:2019 (E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 229, *Nanotechnologies*.

Introduction

Cellulose is a polymer produced by nature. In plants, animals, algae and bacteria, cellulose is extruded from terminal enzyme complexes (TC). TCs are made up of many identical subunits, each containing at least one catalytic site from which a single cellulose chain is synthesized. Cellulose chains from a single TC combine to form an elementary fibril. As TCs in plants, animals, algae, and bacteria have different numbers and configurations of subunits, the elementary fibrils they produce have different geometries. [4] Whether cellulose nanomaterials are separated by industrial processes or produced directly by organisms, they all contain a common structural component, which is the elementary fibril. This common component, the elementary fibril, provides a way to describe cellulose nanomaterials from all manufacturing methods and cellulose sources.

In industrial productions, cellulose nanomaterials can be manufactured by conversion of wood pulp through chemical, biological or mechanical processes. In the case of bacterium-based cellulose nanomaterials, they are produced directly by bacteria and can be further acid-hydrolysed to smaller dimensions. Besides trees and bacteria, algae is another potential sources of cellulose nanomaterials for industrial applications. Due to their renewable nature and unique properties, cellulose nanomaterials have developed into platform materials that have application potential in a wide range of products including those that currently utilize petroleum-based ingredients.

In the current stage of development, several terms to describe cellulose nanomaterials coexist and have created confusion among users. Rather than delaying standards development until knowledge accumulated with market maturity is available, we have an opportunity to define a standard vocabulary for cellulose nanomaterials as they enter the market place. It is anticipated that as the market for cellulose nanomaterials matures, so too will the standard vocabulary. Beginning to define a standard vocabulary now will facilitate future communication, eliminate confusion, remove trade barriers and provide policy makers and regulators with a set of consensus-based terms.

