

Biodegradation

Product. Test. Label.

Biodegradable textile products should degrade completely in the soil and residues or degradation products from dyeing or finishing processes should have no negative impact on the environment. We therefore take a closer look at what happens to different fibre-based materials when they rot in the soil - how quickly or how slowly they degrade and what remains of them.



The test is suitable for

- Fibres / yarns
- Textile fabrics (woven / knitted fabrics and nonwovens)
- Textile products



Description

Testing for biodegradability is carried out according to the Hohenstein method based on EN ISO 11721-1 and EN ISO 846. The tests can be carried out either under defined laboratory conditions or under practical field conditions. Under laboratory conditions, incubation takes place in standardized test containers under constant climatic conditions. It is tested in standardized test soil under aerobic conditions, whereby the biological activity is monitored using a reference sample. Sampling and sample cleaning are carried out after three defined excavation dates (these can be set differently depending on the product).

The evaluation of the tests is carried out after a specified test period on the basis of the degradation rate of the test samples by means of a qualitative evaluation of the sample material by determining the mass loss. Furthermore, the environmental compatibility or pollution by the degradation products is checked by means of ecotoxicological tests and can optionally be extended by chemical analyses. Ecotoxicological analysis will be conducted at the last excavation date following OECD 207 and 208.

Customer benefit

- Objective measurement of biodegradability in soil
- Verification of marketing claims
- Advice on disposal/recycling of products
- Determination of environmental benefits and risks of products

Testing standards

The Hohenstein test setup was developed on the basis of the following standards:

- Textiles - Determination of resistance of cellulose-containing textiles to micro-organisms - Soil burial test - Part 1: Assessment of rot-retardant finishing (ISO 11721-1:2001); German version EN ISO 11721-1:2001
- Plastics - Evaluation of the action of microorganisms (ISO 846:2019); German version EN ISO 846:2019
- OECD 207 : Earthworm, Acute Toxicity Tests
- OECD 208 : Terrestrial Plant Test: Seedling Emergence and Seedling Growth Test

Test criteria

The mass reduction in % of the test sample is assessed according to a defined time period and the ecotoxicological safety

Test sample requirements

General

Indication of the exact product designation, article number and material composition of the test sample

Quantity of material

- Fabric: at least 0,5 m²
- Fibres/ yarn : approx. 50 g of the test sample/ 2 yarn coils
- Assembled products: at least 9 test samples

Duration of the test

Depending on the research question and the material, usually between 6 weeks and 12 months

Marketing instruments – labels and certificates

If the test is passed, the Hohenstein Quality Label and/or a certificate can be applied for. The label/certificate is valid for 2 years and has then to be recertified by means of a declaration of conformity. After 6 years, a new full test is carried out.

The following criteria apply in order to obtain a label or certificate:

- Only for 100% natural fibres and 100% materials of natural origin
- Confirmed degradation of at least 90% (mass loss) after 12 months
- Passing the ecotoxicity tests
- Only valid for the tested quality (construction/weight/colour)