HOHENSTEIN

Biodegradation

Determination of the biodegradability and ecotoxicity of products under natural, realistic conditions

Biodegradable materials can help to reduce environmental pollution. To this end, they should dissolve completely in various media, such as wastewater and soil, under natural, realistic conditions and have no negative impact on organisms. We therefore take a very close look at what happens to various materials during degradation in soil and wastewater - how quickly they break down and what remains of them.

The tests are particularly suitable for

- Textile products
- Products made from natural and synthetic raw materials
- Chemicals

Description

Hohenstein offers various tests for examining biodegradability under natural, realistic conditions. Biodegradability can be tested in waste water for solids according to DIN EN ISO 14851, for chemicals according to OECD 301 F or in soil according to the Hohenstein in-house method. The evaluation of the tests takes place after a specified test period via the degradation rate of the test samples by determining the mass loss or the biochemical oxygen demand of microorganisms in the corresponding medium.

Furthermore, the environmental compatibility or pollution caused by the degradation products is checked using ecotoxicological tests after the biological degradation process. Ecotoxicological testing in waste water is carried out in accordance with DIN EN ISO 20079, a growth inhibition test with duckweed (*Lemna minor*). Ecotoxicological testing in soil is carried out according to OECD 207 (*Eisenia fetida*) and OECD 208 (Lepidium sativum), the earthworm and cress test.

Your benefit as a client

- Objective measurement of biodegradability in soil or wastewater
- Proof of marketing claims (“biodegradable” and “ecotoxicologically harmless”)
- Determination of the risks of your products for the environment
- Evaluation, comparison and improvement of your product portfolio

Test standards

The test methods were developed on the following basis:

- DIN EN ISO 14851: Determination of the complete aerobic biodegradability of plastic materials in an aqueous medium - Method using measurement of oxygen demand in a closed respirometer
- OECD 301 F: OECD guideline for chemicals - ready biodegradability
- DIN EN ISO 20079:2006-12: Water quality - Determination of the toxic effect of water constituents and waste water on duckweed (*Lemna minor*) - Duckweed growth inhibition test
- OECD 207 : Earthworm, Acute toxicity test
- OECD 208 : Terrestrial plant test: Seedling growth test

Test criteria

General

Specification of the exact product name, article number and material composition of the test sample, if known also construction and finishes (color, dye used, coatings, etc.).

	DIN EN ISO 14851	OECD 301 F	Hohenstein-Hausmethode
Focal points of the tests	Biodegradation in waste water at 25 °C	Biodegradation in waste water at 20 °C	Biodegradation in soil at 25 °C
Evaluation	Biochemical oxygen demand	biochemical oxygen demand	Gravimetric loss of mass
Ecotoxicological assessment	Duckweed test		Cresse and earthworm test
Material quantity	ca. 20-50 g	ca. 20-50 g	Ready-made goods: at least 9 samples or 0,5 m²
Test duration (depending on question and material)	ca. 12 weeks	ca. 7-8 weeks	Between 6 weeks and 12 months

Marketing tool – Labels and certificate

If the ecotoxicological test is passed, the Hohenstein Quality Label and/or a certificate can be applied for.