

Biodegradable Plastics

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Biodegradable Plastics- Definition

ASTM

A degradable plastic in which the degradation results from the action of naturally occurring microorganisms such as bacteria, fungi, and algae.

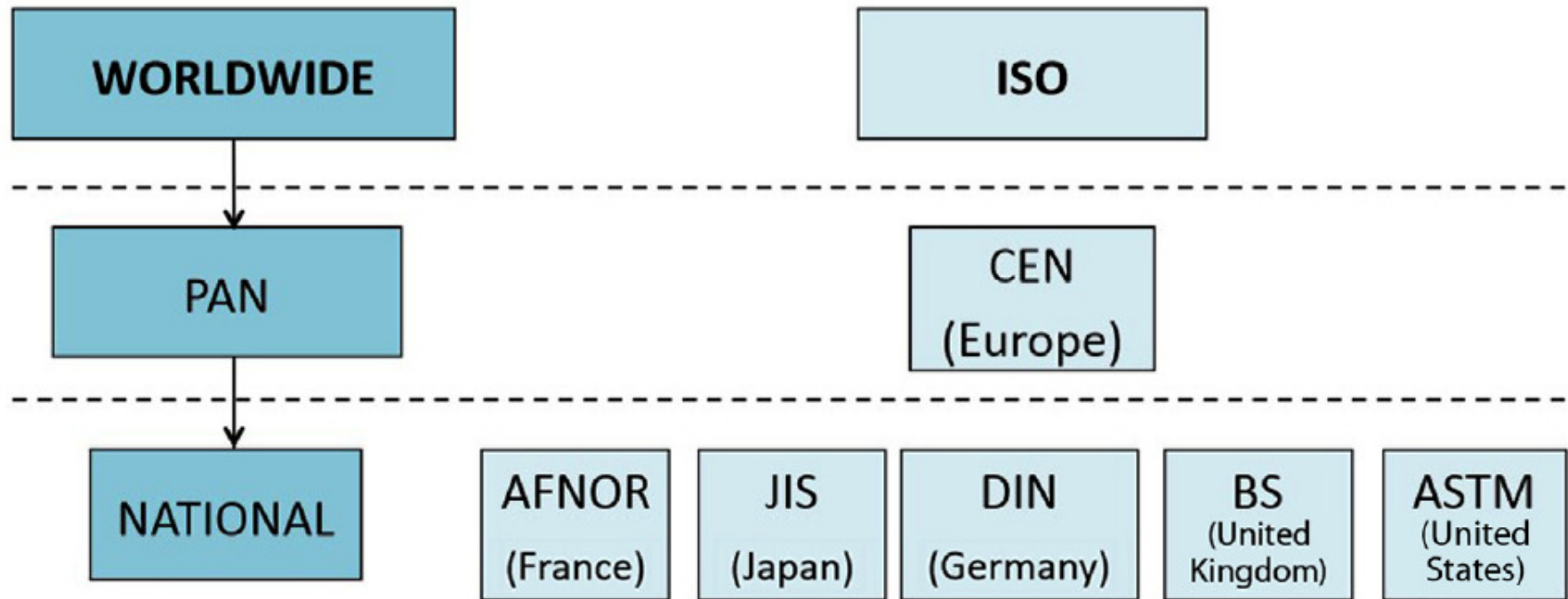
ISO

- A plastic designed to undergo a significant change in its chemical structure under specific environmental conditions resulting in a loss of some properties that may vary as measured by standard test methods appropriate to the plastic and the application in a period of time that determines its classification. The change in the chemical structure results from the action of naturally occurring microorganisms.

Compostability

- Compostability is the biodegradability of a material that uses compost medium.
- This biodegradation happens as a result of biotic degradation primarily, an enzymatic action of microorganism.
- This results in CO₂ new biomass, and water when the degradation happens under aerobic conditions or methane under anaerobic conditions

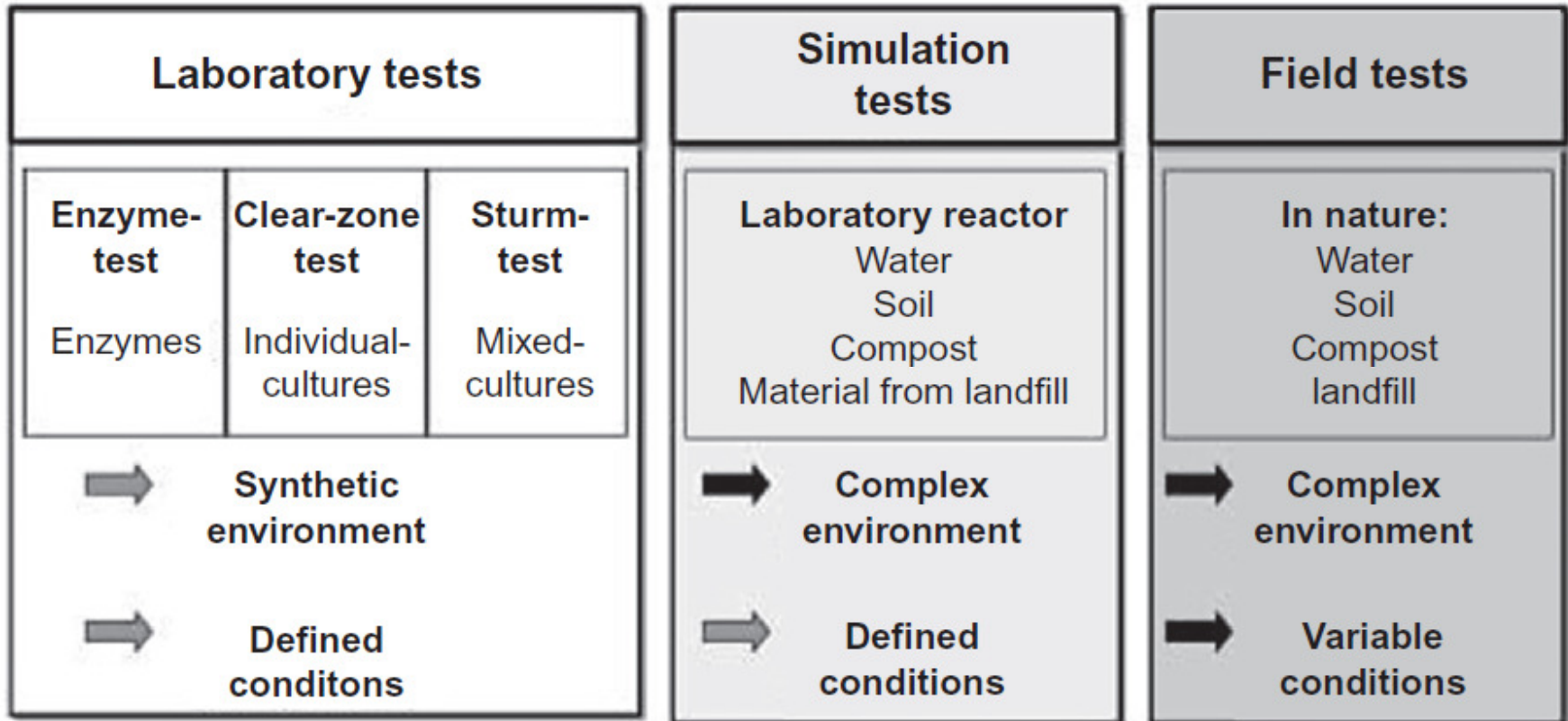
Biodegradability Standards



Biodegradability Standards

Standard	Description
ISO	International Organization for Standardization
CEN	European Committee for Standardization
AFNOR	Organization of the French Standardization System
JIS	Japanese Industrial Standards
DIN	Deutsches Institut für Normung e. V. (German Institute for Standardization)
BS	British Standards
ASTM	American Society for Testing and Materials

Biodegradability Testing



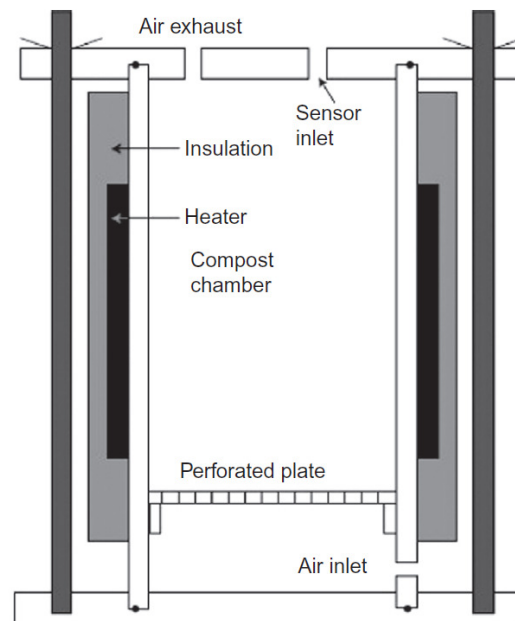
Biodegradability Testing...

Tests can be subdivided into three categories

1. Laboratory tests
2. Simulation tests
3. Field tests

Laboratory tests

A laboratory test is an analytical tool to evaluate biodegradability of a material in lab setting. They provide synthetic environment and tests are performed under defined conditions.



Simulation tests

There are three different types of tests

- Enzyme test
- Clear-zone test
- Sturm test

Simulation tests are performed by creating an artificial environment such as laboratory reactor to mimic a natural biodegradable environment.

In this test, water, soil, and compost material from the landfill is loaded in the reactor and mixed. The mix is let to sit in the reactor depending on the compost material for it to decompose if it was in its natural environment. This process works in a complex environment with defined conditions.