

## Biodegradability of Biograde™ B-F

Clear definitions for Biodegradable “compostable” polymers, and the related terminology, are essential to avoid any confusion in reporting and interpreting data. The “BS EN 13432:2000 Standard, Packaging – Requirements for Packaging Recoverable Through Composting and Biodegradation – Test Scheme and Evaluation Criteria for the Final Acceptance of Packaging”, was developed to eliminate confusion caused by unsubstantiated compostability claims relating to many products available in the market. This standard is widely and officially used throughout the European Union. It is similar to the equivalent US and Japanese standards and is currently being used as the model for Australia’s biodegradability standards.

The requirements for compostable polymers as specified in BS EN 13432:2000 standard are;

**Biodegradability:** this is measured by aerobic biodegradation of the material under controlled testing conditions specified in standard composting test, ISO 14855:1999. At least 90% in total or 90% of the percentage biodegradation of the reference material is required for compostability claims.

**Heavy metals and volatile solids:** types of metals present and their concentration levels need to comply with the allowable limits specified in the standard BS EN 13432: 2000 along with requirement of minimum of 50% volatile solid content as specified in ISO 14855:1999.

**Disintegration:** composting in a controlled pilot scale or full scale composting facility by ISO 16929:2002 standard is used and not more than 10% of the original dry weight of test material should fail to pass through a 2mm fraction sieve at the end of the composting process.

**Eco-toxicity:** assessment of eco-toxicity is carried out by OECD 208, plant growth and germination test. The germination rate and the plant biomass of selected plant species grown in the sample compost should be more than 90% those of corresponding blank compost, in order to claim that there is no eco-toxic effect on plant growth and germination.

Test results:

Biograde™ B-F biodegradable material achieves over 90% biodegradability in aerobic composting test conducted according to ISO 14855:1999 and also meets the requirement of minimum of 50% volatile solid content specified in BS EN 13432:2000.

Testing of Biograde™ B-F material achieved 90% disintegration during composting when tested to ISO 16929:2002 and heavy metals are below the limits specified in BS EN 13432:2000.

The eco-toxic effect of compost obtained after disintegration of Biograde™ B-F biodegradable polymer was assessed according to the OECD 208-A guidelines with the modifications specified in Annex E of the BS EN 13432:2000. Testing has confirmed that there is no effect on the composting process, or the quality of the resulting compost due to presence of polymer in the initial composting blend. Tests according to the evaluation criteria specified in the BS EN 13432:2000 standard also revealed that Biograde™ B-F material has no eco-toxic effect on germination and plant growth.

Summary:

Complete analysis of Biograde™ B-F polymer material by test methods specified in BS EN 13432:2000 indicates that Biograde™ B-F material qualifies as a compostable and biodegradable product under the evaluation scheme outlined in BS EN 13432:2000.



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