

Mulch Film Product Performance

Although our mulch film product (the “**Product**”) has been tested by independent laboratories as described below, Radical Plastics, Inc. (the “**Company**”) provides only those warranties expressly set forth the written Terms of Sale pursuant to which the Products are sold. Based upon the scientific testing detailed below, it is our belief that our Product will biodegrade into biomass and carbon dioxide in 2 years or less when placed in soil and exposed to typical North American farming environmental conditions; provided, however, Product biodegradability may vary due to different environmental and climatic conditions due to natural variations, human intervention, unexpected contaminants and/or accidents. The Company is not responsible for any damage or loss related to the usage and speed of degradation of the Product. It is the customer’s sole responsibility to make trials and tests prior to using our Product in order to validate the performance of the Product in the customer’s specific usage conditions.

The Company’s Products have passed the following published standards:

Standards under EN17033 umbrella:

Eco-toxicity tests:

Ecotoxicological test against different organisms of trophic level:

- 1, Vibrio fischeri light emission inhibition – test on luminescent bacteria per EN ISO 11348-3: 2019
- 2, Acute toxicity test with crustaceans – Daphnia magna – 48 hrs per OECD guideline n. 202: 2004
- 3, Fresh water green algae growth inhibition – 72 hrs per OECD Guideline n. 201: 2011
- 4, Acute toxicity test with earth worms – Eisenia fetida – 14 days per ISO11268:1:2012

Ecotoxicological tests against terrestrial plants:

Eluate effect on plant germination and growth (19 days) in-house test, similar to OECD208

- 1, Tall fescue (Festuca Arundinacea),
- 2, San Marzano tomato (Solanum lycopersicum),
- 3, Rio Grande tomato (Lycopersicum esculentum) and
- 4, Cress (Lepidium sativum)

Heavy metals tests:

ENISO 17294-2 (Cd, Cr, Cu, Ni, Pb, Zn), EN ISO 12846 (Hg)

Laboratory soil respirometry testing:

Modified ASTM D5988-18 and modified EN ISO 17556. Modifications:

1. Samples entering the respirometry testing were exposed to natural conditions or accelerated weathering conditions per ASTM D5071
2. Calculations of soil biodegradability were done based on oxygen uptake and oxidized polyethylene

Field testing:

The testing identified herein took place at several universities and farms and occurred over a period of approximately 2.5 years taking into account different climates and soil types.

Chemical modification by oxidation per ASTM D6954:

Our [independent] testing has demonstrated that our polymers reach the required carbonyl index (measured by infra-red spectroscopy) and molecular weight (measured per ASTM D6474) to achieve biodegradation in the soil.

Physical properties testing:

1. Tensile strength and elongation per ASTM D882
2. Tear strength per ASTM D1922
3. Dart impact per ASTM D1709