Australian Standard®

Degradability of plastics—Methods of test

Method 2: Determination of brittle point in plastic film using a tensile elongation test

PREFACE

This Standard was prepared by Standards Australia Committee EV-017, Degradability of Plastics.

This Standard forms a part of a series of test methods and performance standards to enable certification bodies to validate and if appropriate, support claims. Test methods in the series include:

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4828	Degradability of plastics—Methods of test
4828.1	Method 1: Determination of level of prodegradant ions
4828.2	Method 2: Determination of brittle point in plastic film using a tensile elongation test
4828.3	Method 3: Test method for ultraviolet laboratory exposure of degradable plastics
4828.4	Method 4: Test method for heat aging of degradable plastics
4828.5	Method 5: Outdoor exposure testing of degradable plastics

This Standard is based on but not equivalent to ASTM D3826, *Standard practice for determining degradation end point in degradable polyethylene and polypropylene using a tensile test*

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FOREWORD

Some plastics contain chemical additives that, when exposed to sufficient levels of ultraviolet radiation, or heat, accelerate the oxidation of the polymer and thus promote the degradation of the physical properties of the plastic, ultimately leading to disintegration.

The tensile elongation property determined by this test method is of value for the characterization of degradable plastics. The tensile elongation property may vary with specimen thickness, method of preparation, speed of testing, type of grips used, and manner of measuring test extension. Consequently, where precise comparative results are desired, these factors must be carefully controlled.

The tensile elongation property may be utilized to provide data for research and development and engineering design as well as quantity control specifications. However, data from such tests cannot be considered significant for application differing widely from the load-time scale of the test employed.

Materials that fail by tearing give anomalous data that cannot be compared with those from normal failure.

Before proceeding with this test method, reference should be made to the specifications of the material being tested. Any test specimen preparation, conditioning, dimensions, or testing parameters or a combination thereof, covered in the material specifications should take precedence over those mentioned in this test method. If there are no material specifications, then the default conditions apply.

METHOD

1 SCOPE

This Standard specifies a method for the determination of a brittle point for degradable plastic films and sheeting less than 1.0 mm thick. This practice is not intended for determination of the rate of degree of degradation of a plastic film or sheet, but rather, to assess when in the course of its degradation under some condition, a brittle point is reached.

This Standard employs a constant rate of separation of the grips holding the sample and a static load cell.

This Standard is based on the use of grip separation as a measure of extension; however, the desirability of using extension indicators accurate to ±1.0% or better as specified in ASTM D638 is recognized, and a provision for the use of such instrumentation is incorporated in the procedure.

The results of this test method may be used in conjunction with the results of other test methods in this series, in particular where the plastic specimens have been exposed to ultraviolet radiation, heat and outdoor exposures, prior to testing under this Standard.

The results of this test method are to be used for comparative ranking of test specimens and are not to be used as a performance standard.

