

Reverte™ Report

Observation of a sample's oxo-degradable characteristics

Report issue date: 14th January 2021

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Sample details:

Received supplied from: TIT Innovation

Project Reference No.: BD 2282

Sample(s) received: 10/11/20

Sample description:

Sample Number	Material Type	Sample Form	Base Colour	Print	Reverte™ Grade	Reverte™ Batch No.	Addition Level (wt%)
14901	PP	Fabric	White	No	BD93470	#23190	1%

Prepared by

Signature



Name

Julie Simmons

Position

Polymer Technologist

Date

14th January 2021

Authorised by



Dr Gary Ogden FIMMM CSci

Technical Manager

14th January 2021



The testing detailed in this report was performed wholly at:

Wells Plastics Ltd.,
Emerald Way,
Stone Business Park,
Stone,
Staffordshire.
ST15 0SR, UK
Tel : +44 (0)1785 817421
Fax : +44 (0)1785 816357
www.wellsplastics.com

This report is applicable to the unique sample supplied to Wells Plastics Ltd by TIT Innovation via our local distributor Unlu Teknik Rulman San Ve Tic. It should be noted that the report does not guarantee that subsequent production batches manufactured by TIT Innovation will contain Reverte™ oxo-biodegradable masterbatch manufactured by Wells Plastics Ltd at the correct dosage level.

Unless otherwise stated, the testing, analysis and reporting of the results of the evaluation reported here were performed in accordance with the referenced applicable methods (internal, national or international.)

Work Instructions used in this evaluation:
QWI85 Accepting a BD sample
QWI86 BD Sample preparation
QWI93 Conducting UV degradation testing

Observation of the oxo-degradable characteristics of a sample of white PP fabric

1. Method

TIT Innovation supplied one sample for evaluation of its oxo-biodegradable properties. The sample was a section of white fabric produced from PP fibres. It was submitted as containing 1% BD 93470. A test piece was cut out and labelled with a description/internal testing number for identification. The sample was subjected to testing of its oxo-degradable properties in Wells Plastics' laboratory at their plant in Stone, Staffordshire, UK.

The sample was aged using a modified ASTM D 5208-01 (Cycle C) test method. The ageing cabinet utilised contained UV lamps to simulate gentle outdoor sunlight. The temperature of the cabinet was maintained at 50°C according to the test method.

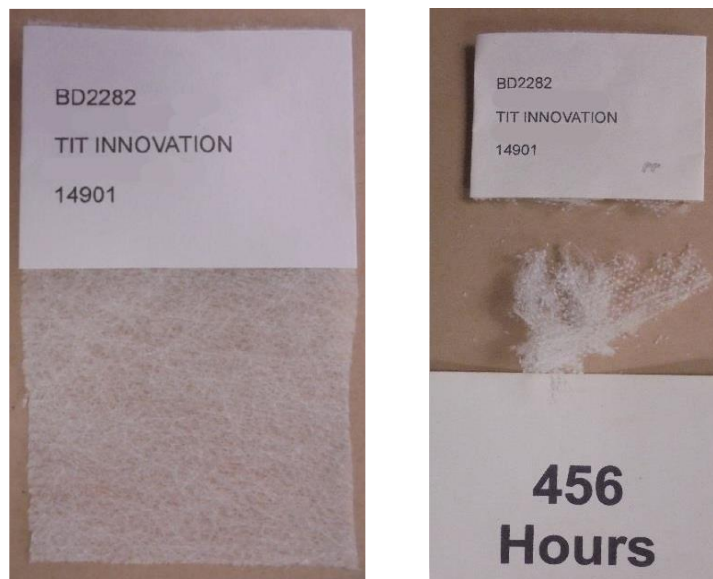
It should be noted that the level of UV exposure generated in the ageing cabinet is very low and should not be compared with the levels generated, for example, in QUV ageing experiments.

The test specimen was removed after fixed time periods and empirically assessed for friability and state of embrittlement. Once it had reached 100% embrittlement the time was noted and it was removed from the UV cabinet and photographed.

Arrhenius principles were applied to the results (time in hours) obtained at 50°C, transposing them into the real-time results that would be expected at 20°C.

2. Results

Samples before and after testing





Following the ageing process of 456 accelerated ageing hours (calculated to around 10 months at 20°C), the white PP fabric sample containing Reverte™ can be seen to have lost all of its significant physical properties, is exhibiting extreme friability and breaking up when handled.

It should be re-stated that these are idealised real-time projections based on accurate accelerated laboratory ageing, however natural climatic conditions of sunlight, soil temperature etc do vary. These extrapolated results have, therefore, been prepared in good faith, but any potential user would have to carry out his own empirical observations to ensure that the product was fit for his purpose in the precise ageing regime employed.

6. Conclusions

1. The sample supplied by TIT Innovation has been shown to display an oxo-degradable characteristic, giving a controlled progression to full embrittlement after 456 hours of artificial accelerated ageing testing (calculated to around 10 months at 20°C).

*******END OF REPORT*******

Wells Plastics Limited,
Emerald Way, Stone Business Park, Stone. Staffordshire. ST15 0SR. UK
Tel : +44 (0)1785 817421 Fax : +44 (0)1785 817771
e-mail technical@wellsplastics.com

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