



# Certification of d<sub>2</sub>w



*This is to certify the following verification of the technical specification and performance of d<sub>2</sub>w*

d<sub>2</sub>w is an additive formulation that renders conventional polyolefins oxo-biodegradable.

"Oxo-biodegradation" is "degradation identified as resulting from oxidative and cell-mediated phenomena, either simultaneously or successively" ("Terminology in the field of degradable and biodegradable Polymers and Plastics" CEN/TR 15351).

Polyolefin products made with d<sub>2</sub>w additive will abiotically degrade in the presence of oxygen. Degradation has been proved in accordance with the requirements of ASTM 6954-04 by passing ASTM 5510 (RAPRA Report 46095).

The ability of d<sub>2</sub>w products to comply with the biotic (biodegradation) tests of ASTM 6954-04 has been demonstrated by the loss of molecular mass achieved after abiotic thermal degradation, resulting in ultimate biodegradation of the material into CO<sub>2</sub>, water, mineral salts and biomass (RAPRA Report 46303, Pyxis report 30.7.05, and DPPA Chapt. 3, Eco-sigma Report Sept. 2008).

The eco-toxicity sections of EN 13432 and ASTM 6954-04 require that no harmful residues are left - this has been verified for d<sub>2</sub>w additive. (OWS Report MST-4/1- d2wb&d2wc, Eco-Sigma Report Sept. 2008).

d<sub>2</sub>w additive does not contain heavy metals (defined by 94/62/EC Art 11 as lead, mercury, cadmium, or hexavalent chromium).

d<sub>2</sub>w additive is safe for direct food-contact according to the European Union requirements for Direct Food Contact 1935/2004/EC and the US FFDC Act and regulations (RAPRA report 46137, and Keller & Heckman certificate 18.2.2009). It is the responsibility of the manufacturers of products intended for food-contact to ensure that all other materials incorporated by them comply with those requirements.

If polymer products are correctly made with d<sub>2</sub>w, the additive will have no effect upon the strength and other performance characteristics of the product during its programmed service-life. Polymer products correctly made with d<sub>2</sub>w comply with the Essential Requirements of the EU Packaging Waste Directive 94/62/EC Annex II paras. 1, 2 and 3(a) (b) and (d).

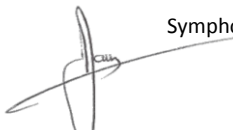
In addition to the above, d<sub>2</sub>w Additives and finished products have been extensively tested, according to the test methods prescribed in the UAE Standard 5009/2009, British Standard BS8472 and KSA Standard 2879/2016.

d<sub>2</sub>w products can meet AFNOR TC51-808 Accord.

d<sub>2</sub>w oxo-biodegradable plastics are not currently intended for composting.

If sent to landfill d<sub>2</sub>w oxo-biodegradable plastics will degrade in aerobic conditions. In anaerobic conditions they become inert and will not emit methane. d<sub>2</sub>w oxo-biodegradable plastics can be recycled together with ordinary oil-based plastics. For long-life products, stabilisers should be added if necessary.

Symphony's d<sub>2</sub>w<sup>®</sup> technology is the only oxo-biodegradable plastic additive certified by ABNT under the Environmental Quality – Eco-Label program Internationally accredited by INMETRO – Certificate no 365.001/14

  
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Oxo-biodegradable  
Plastics Association



Market of London  
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Society of Plastics  
Engineers (US)



Millennium Award



ASTM Standards  
Worldwide



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Industry (UK)