

NatureFlex™

Sustainable Biodegradable films for Packaging



packaging from nature, packaging for nature...



Thinking of the future



Where does our packaging come from and where does it go after use?

Consumers and Industry alike are increasingly asking these questions.

The modern plastics industry employs highly efficient materials that are potentially easy to recycle.

Modern legislation is increasingly encouraging recycling through a variety of methods such as direct material recycling, energy recovery through combustion and more recently through Organic Recycling, known to most of us as 'Composting'.

New compostable packaging materials are becoming available every year, and those that have been around for a while are improving in functionality and properties. Whilst there is not a biodegradable solution for every packaging need, many products and applications today may actually be more suited to biodegradable packaging than to conventional packaging.

Towards a more sustainable solution...

Another key factor driving the interest in biodegradable packaging is the fact that most 'biopolymers' are based strongly on renewable, sustainable resources. Whilst there are also a number of synthetic biopolymers, these are often used to add greater functionality to renewable materials and therefore encourage their further use in a range of practical applications.

To be certified as fully biodegradable and compostable, the packaging materials need to undergo stringent testing by accredited test laboratories, and then be independently certified by the relevant official bodies.

Transparent performance

Innovia Films' NatureFlex™ films are a recent introduction to our product range. These films are based strongly on renewable resources (wood-pulp sourced only from managed plantations).

All NatureFlex films are inherently static-free. NatureFlex NP and NPU films are essentially transparent papers, suitable for twistwrapping and bagging non-hygroscopic foods, and for adhesive tape manufacture respectively. NatureFlex NE films employ a novel heatseal resin on each side, providing superb heatseal properties and allowing the formulation of different moisture barrier properties. NE30 films are designed as general purpose packaging films, whilst the recently introduced NVS films have increased permeability to moisture which provides natural anti-mist properties. All NatureFlex films have been fully tested and are certified to both the European (EN13432) and American (ASTM D6400) norms for compostable packaging.



'Windrow' type, Industrial Composting Site

Photo: Composting Association.

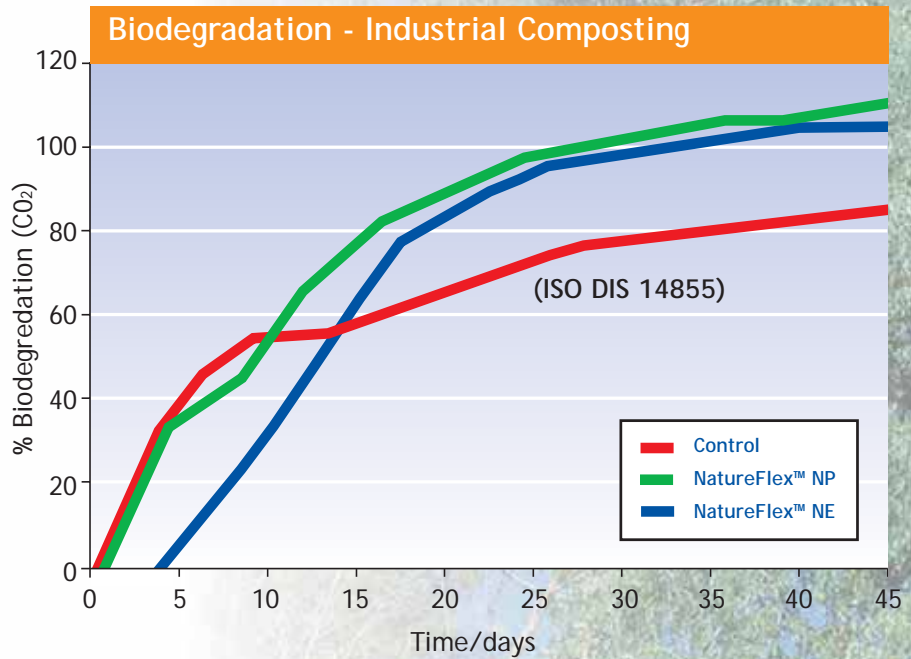
NATUREFLEX™ AT A GLANCE

- Manufactured from renewable wood-pulp sourced from managed plantations.
- Certified to both EU (EN13432) & American (ASTM D6400) composting norms.
- Suitable for both 'Industrial' and 'Home' composting situations.
- Proven to biodegrade in aqueous environments.
- Good gloss and transparency.
- Naturally high gas barrier.
- Moisture permeability can be tailored to the needs of a variety of different packaged products.
- Ultra wide heatseal range (NE & NVS) for enhanced packaging speed and flexibility.
- Naturally good deadfold properties for twist or fold end-uses.
- Suitable for microwave and conventional oven 'reheat' applications.
- Static-free for high machine performance.
- Resistant to greases, oils & fats.
- Compatible with other biodegradable packaging materials in a variety of applications

Bioplastics - Composting Certification

In order to prove a packaging material is compostable it must undergo a rigorous test programme by independent accredited laboratories. This programme measures the material's biodegradation capability and ensures that on a practical industrial scale the resulting compost quality would not be harmed or hindered in any way by the inclusion of the material. The key elements of this test programme include:

- **Biodegradation**
Minimum 90% versus the control sample in max. 6 months.
- **Disintegration**
Pilot composting test to ensure physical breakdown of the material.
- **Heavy metal testing**
- **Plant growing and compost quality checks**



Composting Certification

Following successful completion of the relevant test programmes, material producers can apply for formal 'material certification' from the official agencies. Similarly customers who use these materials can arrange for 'product certification' so that products wrapped in certified packaging can carry the relevant composting logo.

This logo not only confirms that the material is truly compostable, but also allows the end consumer and/or local authorities to recognise compostable packaging and dispose of it accordingly.

All NatureFlex™ films are certified to both EN13432 and ASTM D6400 and can carry the following logos:



Compostable



NATUREFLEX™ - Ambient composting performance

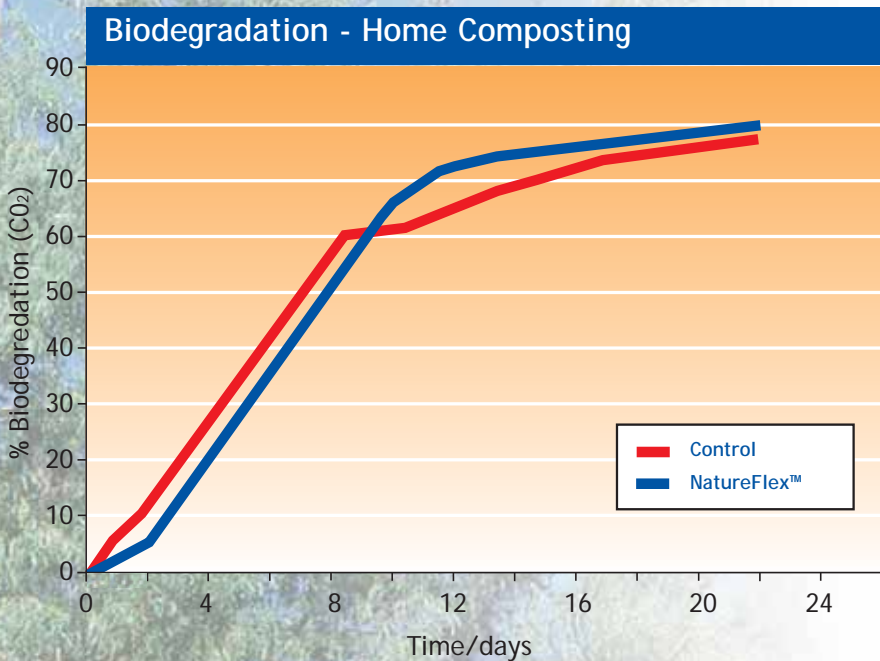
The test programmes detailed earlier refer to composting in an industrial situation, where conditions can be optimised (heat, mix, moisture levels etc) for rapid breakdown of the materials into a high quality compost.

However there are a number of situations where it is desirable for materials to be able to biodegrade in less optimal, ambient, conditions. Such situations include:

- Home composting (e.g. in bins or compost heaps)
- Waste water environments
- Littering (to be discouraged of course, but sadly it's a fact of life in many situations)

NatureFlex films have been submitted to an additional independent test protocol (Miti Test, ISO14851) in order to confirm the materials' suitability for biodegradation under aqueous and ambient conditions.

These tests confirm the excellent biodegradation of the material in such conditions:



Miti Test (ISO 14851) confirms:

- Biodegradation at ambient temperatures
- Biodegradation in an aqueous environment

Relevant for:

- Home Composting
- Breakdown in water courses and sewage environments
- Litter

Materials such as Natureflex™ that are proven to compost in a home composting environment can carry the OK Compost Home logo.



Natureflex™ NE used as a liner in kitchen waste bags.



'Cut-away' view of a typical compost bin found in many consumers' gardens these days. Photo courtesy of the Composting Association.

NATURE FLEX™ APPLICATION CHECKLIST

APPLICATION	EXAMPLE	FILM TYPE	KEY PERFORMANCE BENEFITS
FRESH FRUIT & VEGETABLES		NVS	<p>Wide heat-seal range for high speed packing line performance.</p> <p>Naturally free from static.</p> <p>Enhanced gloss transparency.</p> <p>Controlled moisture permeability provides natural anti-mist properties and reduces condensation.</p>
BAGMAKING		NP	<p>High moisture absorption to facilitate fast drying of water-based glues employed in bagmaking.</p> <p>Designed for bagging pre-wrapped or non moisture sensitive products.</p> <p>Also suitable for sheet-making.</p>
CONFECTIONERY		NE30 NM	<p>Formulated to provide the required moisture barrier for sugar and chocolate confectionery.</p> <p>Controlled slip, and naturally anti-static for problem-free machinability.</p> <p>Excellent deadfold for twistwrap usage.</p>
HYGIENE		NE30	<p>Formulated to provide the necessary barriers to moisture and external contamination.</p> <p>Static-free, easy-seal and deadfold properties for optimum machinability.</p> <p>Proven biodegradability in waste-water environments.</p>
BAKERY		NE30 NVS	<p>Bakery products can require a range of barrier properties.</p> <p>Choice of moisture barrier to fit product requirements.</p> <p>NVS for high moisture permeability.</p> <p>NE30 for increased moisture barrier properties.</p>
LIDDING		Refer to Innovia Films	<p>UNDER DEVELOPMENT</p> <p>Choice of moisture barrier to fit product requirements.</p> <p>Provides peelable seals to aPET, cPET, PVC, PLA and Starch polymers.</p>
FOOD ON THE MOVE REHEATABLE		NE30 NVS	<p>High heat resistance.</p> <p>Choice of moisture barrier to fit product requirements.</p> <p>Suitable for 'in-pack' reheating use in microwave and conventional ovens.</p> <p>Recommended Max 200°C, 30 mins.</p>
ADHESIVE TAPES		NPU	<p>Specifically formulated as base film for the manufacture of self adhesive tapes.</p> <p>Allows static-free unwinding of the tape.</p> <p>Easy tear for user-friendly tape performance.</p> <p>Compatible with industry standard adhesives and release coatings.</p>

About Us

Innovia Films is a major producer of speciality Biaxially Oriented Polypropylene (BOPP) and Cellulose films with production sites in the UK, USA, Belgium and Australia.

We hold a leading global position in the markets for labels and security films, high performance coated packaging, tobacco overwrap and biodegradable and compostable films.

Our technical expertise and market-driven development process is the key to our position at the leading edge of advances in these markets.

Research and Development is at the heart of our business and we work closely with customers, suppliers, academics and commercial partners to ensure speed of delivery of new ideas and products.

We prioritise quality of service and support alongside product quality and have teams in place across the world to maintain the highest possible level of responsiveness to the needs of our customers.



www.innoviafilms.com
email: natureflex@innoviafilms.com
™Trademark of Innovia Films Group

Innovia Films Ltd
Wigton
CUMBRIA
CA7 9BG
UNITED KINGDOM
Tel +44 16973 42281
Fax +44 16973 41452

Innovia Films Inc
290 Interstate North Cir SE
Suite 100, Atlanta
GEORGIA 30339-2401
USA
Tel +1 877 822 3456
Fax +1 770 818 3001

Innovia Films (Asia Pacific) Pty Ltd
PO Box 341, 19 Potter Street
Craigieburn, Melbourne
VICTORIA 3064
AUSTRALIA
Tel +61 3 9303 0600
Fax +61 3 9303 0670

Disclaimer: Innovia Films or any of its affiliated companies (hereinafter 'Innovia Films') declines any liability with respect to the use made by any third party of the information contained herein. The information contained herein represents Innovia Film's best knowledge thereon without constituting any express or implied guarantee or warranty of any kind (including, but not limited to, the accuracy, the completeness or relevance of the data set out herein). Innovia Films is the sole owner or authorised user of the intellectual property rights relating to the information communicated.

The information relating to the use of the products is given for information purposes only. No guarantee or warranty is provided that the product is adapted to the client's specific use. The client should perform his own tests to determine the suitability for a particular purpose. The final choice of use of a product remains the sole responsibility of the client.