



# Press Release

3M's innovative materials are increasing scope for architects

Textile architecture for the stadium of Athletic Bilbao

**Architects worldwide are relying more and more on films and membranes for new conceptual designs in public buildings and world class stadia. Based on a design by César Azcárate from ACXT-IDOM, the largest architectural service provider in Spain, the San Mamés stadium with a 37,500 square metre foil shell out of NOWOFLON® ET is being created in Bilbao. Made from the resin 3M Dyneon ETFE the films are about 95 percent lighter than a comparable glass construction and create the conditions for filigree roofing and façade structures.**

The new home stadium of Athletic Bilbao meets the most stringent category 4 UEFA requirements and will offer space for up to 58,000 spectators. The façade and roof form an elliptical shell made of white and transparent films. The project is split into two parts – the roof is fitted by Vector Foiltec, the façade by IASO SA. The façade is made of a tensioned single ETFE layer inscribed in a twisted steel frame.

## **Sustainable and very resistant**

The roof constructed by Vector Foiltec forms several layers of film within an aluminum frame to create a cushion that retains its shape with compressed air. Sustainability of the system is certified by the Texlon® EPD, the first environmental product declaration for transparent building cladding systems.

NOWOFLON® ET films have a service life in excess of 30 years,

even when exposed to extreme climatic conditions. The films do not require any plasticisers and do not break even when exposed to direct sunlight. No cracks are therefore formed that could harbour bacteria or fungi. The material is so smooth that just a rain shower is sufficient to clean it.

The foils are extruded by Siegsdorf, Germany based specialists Nowofol Kunststoffprodukte GmbH & Co. KG. NOWOFLON® ET 6235Z films are produced in a thickness range from 12-300 micrometres. The company has the production capabilities to produce films that are either transparent or in almost any RAL colour. Dyneon ETFE is Nowofol's material of choice. This high-performance material from the fluoropolymers family affords virtually universal chemical resistance and meets the B1 fire class criteria (according to DIN 4102) or Bs1do EN 13501-1. Even fireworks that are set off illegally inside the stadium will not set the roof on fire.

### **Textile architecture on the advance worldwide**

In addition to transparent foils, architects worldwide for new roof constructions in numerous new stadia also rely on translucent glass-fibre membranes with a coating made from 3M Dyneon PTFE. In contrast, with the highly transparent foils made from Dyneon ETFE, membranes diffuse light and mitigate the impact of solar radiation.

The continuous further development of coating systems and substrate materials enables Dyneon still to expand the application spectrum of these membranes further. The brilliant sealing layer made from thermoplastic fluoropolymer materials therefore improves the visual appeal and weldability. The light surface weight between 500 and 2,000 g/m<sup>2</sup> and the high tensile strength make it possible for architects to achieve wide spans.

## **Multitalent “smart membranes”**

A polyester fabric coated with 3M Dyneon THV is a completely new combination of materials. The comparatively cost-effective PET offers extremely high tear strength and is ideal for mobile structures thanks to its buckling resistance. In addition to protection against wind and weather, further functions can be performed, such as heat regulation with the help of “smart membranes” developed by scientists at Dyneon. A modified fluoropolymer coating therefore prevents the spaces beneath the roof structure from heating up more than necessary in the event of high levels of solar radiation. These “low E” coatings are able to reduce the necessary cooling capacity of air conditioning units by up to 30% in tropical regions.

Neuss, 28<sup>th</sup> of August 2014

### **About 3M**

3M captures the spark of new ideas and transforms them into thousands of ingenious products. Our culture of creative collaboration inspires a never-ending stream of powerful technologies that make life better. 3M is the innovation company that never stops inventing. With USD 31 billion in sales, 3M employs about 89,000 people worldwide and has operations in more than 70 countries. For more information, visit [www.3M.com](http://www.3M.com)

### **About Dyneon GmbH**

Dyneon GmbH, a 3M Company and part of the Advanced Materials Division, is a major supplier of fluoropolymers and is focusing on development, production and sales at its headquarters in Burgkirchen, Germany. The product portfolio of fluoroelastomers, fluorothermoplastics, Polytetrafluoroethylene (PTFE) and specialty additives, is available through the 3M sales organisation or representations in more than 50 countries. For more information please visit [www.dyneon.eu](http://www.dyneon.eu)

*3M and Dyneon are trademarks of the 3M Company.  
Nowoflon is a trademark of Nowofol Kunststoffprodukte GmbH  
& Co. KG*

**Captions:**

**Image 1:** The new stadium “San Mames” in Bilbao is covered with a 37,500 square metre foil shell made from 3M Dyneon ETFE, copyright IASO

**Image 2:** The façade is composed of a tensioned single film layer extruded from 3M Dyneon PTFE, copyright IASO

|                             |   |
|-----------------------------|---|
| <b>3M Customer Contact:</b> | 0800-396 366 27<br>Dyneon.europe@mmm.com  |
| <b>3M Press Contact:</b>    | <b>Judith Seifert</b><br>Tel.: +49 (0)2131 14-2227<br>Fax: +49 (0)2131 14-3857<br>Email: jseifert@mmm.com |
| <b>Website:</b>             | <a href="http://www.dyneon.eu">www.dyneon.eu</a>  |