



Press Release

Dyneon Fluoropolymer material for architectural applications remains durable even under extreme conditions

Foil constructions fit for the highest mountains

Neuss, 7th February 2013 – **Strong gale-force winds, deep snow, temperature variations of up to 60 degree Celsius and intense UV radiation: Constructions high up in mountains face extreme requirements that could only be fulfilled by solid structures until now. Environmentally-friendly lightweight constructions are now conquering this climatic zone. The elegantly sculpted foil constructions of the Gaislachkogel cable car at the valley, middle and mountain stations blend harmoniously into the mountains in the Ötztal Alps. The mountain station is 3,040m above sea-level, making it the highest foil construction in the world. The foils are extruded from 3M™ Dyneon™ ETFE high-performance plastic and are extremely tear-proof, UV-resistant and highly transparent.**

The Gaislachkogel cable car opened in 2010 and serves one of the most popular winter sports areas in the Austrian region of Sölden. The first section carries up to 3,600 passengers an hour from the valley station, 1,363 metres above sea level, to the middle station, located at 2,174 metres above sea level. This section is the highest-capacity single cable gondola in the world. The highest three-cable gondola in the world climbs onwards and upwards from the middle station to an altitude of 3,040 metres. The cars roll on two cables and the third cable pulls the large cars in a more energy-efficient manner than other designs.

First time to use foil architecture high up in the mountains

The stations were designed by Johann Obermoser Architects, an Innsbruck-based architecture firm. They are sculpted and deliver maximum transparency. In addition, foil architecture has been used high up in mountains for the first time. Texlon, a Swiss specialist in hangar, foil and membrane construction, implemented the design. The company operates in Europe and Central Asia and has already built numerous foil roofs. "We designed the cover of the mountain station for wind loads of up to 300 kilometres per hour," says Adrian Imfeld, Marketing Director at Texlon. Using glass was not feasible for technical reasons.

Material with high requirements

The prerequisite is the extremely high tear-resistance of the Nowoflon[®] ET 6235Z foils extruded by Nowofol Kunststoffprodukte GmbH & Co. KG, based in Siegsdorf, Germany. Depending on the application, the foils reach thicknesses between 12 – 250 µm. A human hair is 70 µm thick by comparison. Nowofol manufactures both transparent and coloured foils.

The company also uses ETFE from Dyneon GmbH as a raw material. This high-performance material is non-flammable, resistant to UV exposure and provides near-universal chemical resistance. The latter is particularly important as direct UV radiation is up to 60 per cent higher in the mountains than in lowlands. In addition, snow and ice reflect 90 per cent of the UV rays. Such high levels of UV radiation age traditional plastics quickly. 3M[™] Dyneon[™] ETFE belongs to the fluoropolymer group meaning it is not affected in this way. And there are more advantages. Thanks to the specific properties of the 3M Dyneon ETFE high-performance polymer, the Nowoflon[®] ET 6235Z foils have a low-energy surface that does not allow snow to gather and a normal rain shower cleans the foils. This significantly lowers maintenance costs.

More and more architects all over the world are turning to light foil constructions to develop their own designs and environmentally efficient building practices. Texlon made the foils at the Gaislachkogel cable car with just a single layer as the stations will not be heated. In contrast, multi-layer foil cushions are normally used for closed buildings as they have very good heat insulation properties.

About 3M

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About Dyneon

Dyneon, a 3M Company and part of the Advanced Materials Division, is one of the world's leading fluoropolymer producers. Dyneon is focusing on development, production and sales of fluoroelastomers, fluorothermoplastics, Polytetrafluoroethylene (PTFE) and specialty additives, with operations or representation in more than 50 countries through the sales organization of its parent company 3M. For more information visit www.dyneon.eu

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Captions:

Picture 1: Lighted valley station of the Gaislachkogel cable car with a roof construction made of foils from 3M Dyneon ETFE.

Picture 2: Mountain station of the Gaislachkogel cable car with a foil construction of extruded 3M Dyneon ETFE

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