

ETFE

Case: Canary Wharf Station, (Under Construction)

Architects: Foster + Partners

Location: Canary Wharf North Dock

Material/Element: ETFE Cushion Cladding

ETFE is most well known for its use in the large geodesic domes that form the Eden Project in LALA LAND. In September 2014 Open House allowed a walk through the building of the new Canary Wharf station, the roof needed to provide the perfect climate for the garden which runs along its length, providing good insulation, shelter, and distribution of light.

ETFE provides a strong alternative to heavy glass panels, when layered it has better insulation values than triple glazing, with resistance to UV light, atmospheric pollution and weathering.

It is able to be inflated with a constant flow of air with minimal energy consumption as the fans, which run one at a time, only serve to maintain the pressure.

Test	Unit	Value	Test Method
Tensile strength	M Pa	50	DIN EN ISO 527-1
Tensile stress at 10% strain	M Pa	21	DIN EN ISO 527-1
Tensile strain at break	%	600	DIN EN ISO 527-1
Tear resistance	N/mm	500	DIN 53 363
Opacity	%	7.5	DIN 53 363

Table of stats. found at <http://www.architen.com/articles/etfe-foil-a-guide-to-design/>
 Alongside this ETFE weighs a mere 2-3.5Kg/m and can be increased in thickness dependant on the needs for more/less, light, heat and humidity.

ETFE is sandwiched between an aluminium perimeter extrusion and attached to the before being inflated with air carried through a tube network. The tube network is embedded in structural elements reaching each of the ETFE cushions. The air is often dehumidified to prevent the build up of moisture inside the cushions. In addition to its insulating properties the cushions may be pumped with argon which heavily increases the buildings ability to retain heat, when the heat is to be released the argon is sucked out and replaced with air.

Due to its high tear resistance, ETFE reacts well to movement from the members of the structure, it is able to stretch and compress when necessary. This is important as the building begins to settle and structural elements move due to adverse weather conditions, changes in temperature etc.

(From Top Left anticlockwise)

Graphic showing the air feed to the cushions, showing the layering of ETFE, showing the flow of heat with (L) and without (R) the use of Argon, showing the flexibility of the cushion and frame.

Graphics created in Adobe Illustrator,

View of panel being placed,

<http://www.dezeen.com/2014/07/14/fosters-canary-wharf-crossrail-train-station-nears-completion/>

View from side exit of finished roof, Flickr

View of interior under construction, taken at Open House Tour

Render of expected interior, <http://www.dezeen.com/2014/07/14/fosters-canary-wharf-crossrail-train-station-nears-completion/>

