

DuPont Corian acrylic solid surface

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DuPont Corian acrylic solid surface has been a well established material for over 40 years in the interior design world, with well over 100 colours and finishes and many different applications. It's combination of easy maintenance, superior resistance to damage and aesthetic properties have made it a versatile material choice. Due to new markets developing and new fashions in architecture a need was identified to develop Corian for use as a cladding material for ventilated building facades. The environmental performance of the material, both in terms of its resistance to UV degradation and its environmental sustainability, were key.

The UK representatives of Corian, McD Marketing, approached Buckinghamshire New University with a view to developing mechanical fixings and associated testing procedures in order to meet the performance and testing requirements, and environmental performance, for use as a building material.

A KTP (Knowledge Transfer Partnership) was initiated in 2009 in order to develop Corian into a material that could be specified by architects for ventilated facade use in the UK and beyond. Visits were made to an existing UK building with 25 year old Corian work to the exterior (Masonic Benevolent Institution, Exeter UK 1987), and also to a new hotel in Bordeaux (Hotel Seeko, Bordeaux France 2007) for climatic and environmental testing. DuPont technical and material experts throughout Europe were involved in many aspects of the work.

Tests were carried out at the university to establish mechanical performance properties of the material as well as judging its environmental performance.

The KTP acted as a catalyst for internal communication within DuPont and also as an external marketing tool through subsequent CPD events developed as a result of the KTP. Lessons learnt went way beyond the performance of the material. The study established new working practises which have informed the use of thermoformed Corian panels on facades (Abidjan, Ivory Coast, 2009) and CNC profiling. Also the re-use of expired Corian panels and the use of post industrial waste were trialled and the performance of this re-engineered material assessed.

The first new Corian cladding building in the UK for many years was initiated in Islington, London during the course of the work and this is due to be completed during 2011, with many lessons learnt through it's construction. A new system of mechanical fixings and related testing procedures was designed to ensure fast and accurate placement of the material, and also aid later removal for recycling. There were many higher level outcomes which opened up new channels of communication within the organisations and encouraged cross and inter-disciplinary communications at many levels.

Transfer of knowledge and working practices between industry and education as a result of the KTP were hugely beneficial not only in terms of subject updating but also in working methods and design methods such as co-design, TRIZ and DFMA. New thinking on environmental performance and measures of material sustainability were raised. Questions from both sides arose around sustainable and environmental design techniques and definitions and their application to live projects, especially onsite and outside of Europe.

Working practices especially those surrounding concurrent team work across engineering, architectural and technical design teams were explored and issues identified that are applicable to many other live and theoretical design situations. The issue of longevity and energy input over product life versus installation and removal and replacement cost caused much discussion and thought on ideal product life spans.

The project and its successful outcomes has established the possibility within Corian UK of technology transfer through design input, and added value through environmental life cycle thinking, and the importance of design in the current market led environment.