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Innovations I

Acrylate adhesive tapes change the construction industry More than 20 external test reports and certificates

Three years ago, the tesa Group introduced an innovative generation of especially high-performance adhesive tapes: tesa® ACX^{plus}. These products are based on a patented method used for solvent-free coating of double-sided acrylate adhesive tapes. The secret of these tapes, which have coating thicknesses of up to 4,000 micrometers, lies in a specialized term: viscoelasticity. This term is used to describe material behavior characterized equally by elastic and fluid, or viscous, properties. The positive effects are excellent adhesion, dissipation of stress and resistance to temperature and weather conditions. With the tesa® ACX^{plus} product range, tesa is progressively tapping into new and attractive market segments.

Façade elements, panels, and glass partitions

Alongside various applications in the automotive industry, the building supply sector is a particular area of focus for tesa® ACX^{plus}. Fields of application range from doors and windows to partitions, illuminated signs and elevators and even façade elements. Products from tesa are already in use on and in numerous buildings in the United States, Australia, South America, and Europe. There is also growing demand from contractors for safe and reliable, time-saving and visually appealing adhesive bonding of panels and glass partitions. tesa® ACX^{plus} technology is also being used in the reinforcement profiles of the façade cassettes as part of the construction of the new tesa headquarters with integrated research and technology center in the city of Norderstedt, which will accommodate more than 850 employees starting in late September 2015.

A long-term replacement for traditional joining techniques

“The building supply segment is a highly attractive business segment for the company. For one thing, their special properties make tesa® ACX^{plus} adhesive tapes suitable for a large number of indoor and outdoor applications all over the world. And for another, the possible uses of these tapes within the construction industry are far from having been exhausted,” explains Dr. Robert Gereke, the member of the tesa Executive Board responsible for tesa Industry. “Double-sided adhesive tapes have tremendous long-term potential to replace both glues and mechanical joining techniques, such as welding and screwing, which can damage surfaces,” he adds. The technology group just recently generated a positive response from the building supply industry during numerous appearances at international trade fairs, including The Big 5 (Dubai), the Japan Home &

Building Show (Tokyo), the American Institute of Architects Expo (Chicago), Bau 2015 (Munich), and SAIE (Bologna).

Earthquake simulation in Chile and cyclone test in Australia

The company has engaged in great efforts in recent years to prove the safety and reliability of tesa® ACX^{plus} adhesive tapes. In all, the products have passed more than 20 tests performed by independent institutions. These procedures include scientifically supervised cyclone testing at James Cook University, in Australia, and an earthquake simulation in Chile during which the adhesive tapes, installed in a façade system made of glass and aluminum, withstood shocks with peaks as much as 60 percent stronger than the largest earthquake ever recorded in Chile, which took place on February 27, 2010.

Background: What is behind ACX?

In the acrylate extrusion (ACX) technology patented by tesa for the production of especially high-performance double-sided adhesive tapes, solvents are used only during the polymerization process. Then the solvent is removed from the acrylate via a special curing process and recycled back into the manufacturing process. The further steps, such as mixing the acrylate adhesive mass and applying it as a coating on backing materials, are completely free of solvents.

Adhesion, stress dissipation, temperature/weather resistance

The products in the tesa® ACX^{plus} range are distinguished by strong adhesion on materials with different surface properties. The acrylate system adapts perfectly to the surface to be bonded and ensures optimum wetting of the substrate. Even rough and uneven surfaces can be leveled, depending on the thickness of the adhesive tape. The bond endures for decades. The viscoelastic properties of tesa® ACX^{plus} allow these products to optimally dissipate any stresses that arise in the component itself due to causes such as the different rates at which different materials expand when exposed to heat. The adhesive bond itself remains secure. tesa® ACX^{plus} technology is also extremely resistant to the effects of temperature and weather and resistant to exposure to UV radiation and chemicals.

This press release, along with image and photo materials, is available online at www.tesa.com/press.

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