



OO/UC3M/19 - USE OF STRUCTURAL ADHESIVE JOINTS IN CONSTRUCTION APPLICATIONS

The Research Group of Materials Performance works in the development of structural adhesive joints and their performance in service in collaboration with some adhesive manufacturer companies. It is sought to increase the number of adhesive manufacturer companies to work with, as well as to find construction companies interested in the application of this technology.

Description of technology

Adhesives that support high loads, as well as show good fracture resistance, high impact and vibration absorption are being developed in the last years. The lack of knowledge of the adhesive technology does not promote the use of these joints, due to apparent lack of reliability and the ignorance of their performance in service.

The lack of reliability is removed when using suitable joint techniques, as well as optimal adhesives for each application. The material performance in service is studied by accelerated tests which predict their behaviour through the structure life. In both cases, our Research Group can collaborate with companies interested in this area, through specific training courses, as well as working in the solution of problems or developing projects in the medium term to implement the adhesive technology in the construction processes.

The adhesive technology provides new solutions to the problem of joining materials with different characteristics, such as clamping panels in transventilated facades, removing screws, sticking prefabricated elements, reinforcement of natural stones by adhesive injection, simultaneously sticking and sealing of slate roofs, or the thermal bridge breakdown in aluminium windows.

The use of compound materials and plastics is being currently increased due to their low cost and lightness, although they show severe problems when clamping to the rest of structures. The optimal application of the adhesive technology consists on solving this problem.

In order to optimize the use of adhesives, a detailed study of the surface problems, their suitable preparation and the optimization of the adhesive dosage and curing processes are required. Our Research Group has available the suitable test means to ensure the joint reliability. In addition, we are interested in the behaviour of these joints through time, in aggressive environments, under fatigue stresses, impact, etc., having also available the means to carry out these studies.

Innovative aspects

Despite of employing the adhesive joints in other applications currently, such as transport, mechanical construction, etc., the structural applications of adhesives in construction are not significant, only for sealing or decorative applications. The employment of structural adhesives in joints allows more imaginative solutions, use of different materials and, many times, decreases costs.

Competitive advantages

The accurate employment of the adhesive technology allows the company the use of more imaginative solutions, the application of new materials and sometimes the decrease of construction costs.

Current state of intellectual property: Know how property of the developed processes and products will be studied in the agreements with partners.

Keywords

Adhesive technology; Structural adhesives; In service performance of adhesive joints.

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