

The New Age Bonding Systems

Better Building Performance

The recent trend of smart construction incorporates new innovative systems to make it faster, stronger, flexible and economical with the advent of modern bonding technology and its multiple benefits. Advances in structural adhesives have permitted engineers to contemplate the use of bonded joints in areas that have long been dominated by mechanical fasteners and welds because of their improved strength, modulus, toughness, better load transfer, corrosion resistance coupled with durability, in addition to other features.

With this in mind, ADO Additives Mfg. Pvt. Ltd., recently tied up with the Poland-based Selena Group, one of the world leaders in sealants, adhesives and foams, to bring these innovative product systems to India for modern construction.

Adhesives can be categorized as rigid adhesive, elastic or flexible adhesive. Rigid adhesives are preferable in bonding similar substrates where there will be no stress in bonding layer due to same coefficient of expansion. Elastic adhesives are preferable where dissimilar substrates are bonded together to accommodate movement, thus avoiding bond failure. Adhesive may be of single component or two components, moisture curing or reactive type.

Furthermore, the rapidly-expanding role of composites in structures has increased the importance of adhesive bonding technology and it has begun to establish itself in various sectors of the industry because of its multiple benefits and various applications. Apart from these new age systems also provide bonding and sealing in a single operation, making it faster, easier and economical.

In spite of using modern construction technology, you can hardly find any building, new or old, without any crack(s). Development of cracks may be due to various reasons. The cracks may be dead cracks or active cracks, structural cracks, vulnerable or non-vulnerable type, inside or outside.

Ado's Quilosa

Lite Plast is the right product for remedial of dead cracks. It is a flexible, single component, ready to use paintable sealant. It can be sanded after



cure and gives an original look once it is painted. Because of the excellent bonding strength of Lite Plast and flexibility property, dead cracks are repaired easily.

Recent trends show different types of bricks - fly and insulated blocks - being used for constructing the outside and inside walls to make the structure lighter and insulated. Conventionally sand-cement mortar is used in the gaps between the concrete and brick at the top end of the walls. It has been observed that practically sand-cement mortar never can ensure proper filling of the junction gaps and shrinkage/crack occurs once cured. Further, sand-cement mortar is rigid and is used to bond two different substrates, i.e. concrete and brick. As a result, stress develops in the interface of the joint and cracks occur in the weaker section. This is one of the common reasons for development of cracks in walls, which can be prevented using the Ado Quilosa Multipurpose Polyurethane Foams. They bond the entire surface, distribute the stress and thus reduce stress to the walls.

Ado-Quilosa

Multipurpose PU Foam is single component expandable polyurethane foam and is self moisture curing. It has very good bond strength and it uniformly expands and fills the gap between concrete and bricks to make the joint watertight. It can be plastered thereafter and painted. It is flexible and distributes the stress all throughout the surface to prevent development of cracks in walls and is economical compared to the conventional system.



The usage of Ado's innovative foam technology has already been successfully used in URBANA Project, Anandapur, Kolkata, a G+45 storied building (7 Towers) by L & T and also in the AVINDA Project, Rajarhat, Kolkata (a G+29 storied, 6 towers) a TATA Project, also by L & T. This new generation technology is gaining immense popularity in the construction industry because of its multiple benefits.

Adhesives produce more efficient structures and are necessary where it is difficult to weld or where fasteners lead to

fatigue performance. Structural adhesives play an important role in joining of dissimilar materials such as aluminium (Al) to steel or magnesium (Mg) to other metals / non metals / composite materials. The adhesive acts both as a galvanic barrier and as a stress spreader on materials that are more brittle.

Ado-Quilosa MS 1000 is a single component ready to use MS polymer, which can be used for bonding any type of materials in dry and wet surface conditions. It is fast bonding adhesive and creates a permanent and strong bond with any substrate, except PP, PE & PTFE. This product is environment-friendly and solvent free.



The Ado-Quilosa MS 1000 has been successfully used in bonding mirrors of 3 ft X 6 ft height over ceramic tiles in TCS Project at Rajarhat, Kolkata. It is being preferred over traditional mechanical fastenings as it is flexible, strong, faster and economical.

The need to join different materials together is particularly associated with lightweight construction, which deliberately exploits the specific performance characteristics of the various materials used. Synthetic materials or plastics, either fibre-reinforced or made up into composites, are also being used in lightweight construction. This means that fastening techniques have to accommodate a wide spectrum of different material properties. Bonding technology lends itself, particularly well to these types of application. Materials of low intrinsic strength can be fastened together flexibly and without localized stress peaks, resulting in a strong, load bearing adhesive joint.

The ability of elastic adhesives to undergo deformation and recovery make them very forgiving when subjected to sudden stresses or brief periods of overload. Whether or not an adhesive bond can withstand overloading without damage depends on its strength and above all on the fracture energy. This is the energy required to deform the adhesive layer before failure occurs. It is proportional to the area of bonding of the substrate. The thin, rigid bond made with high strength epoxy adhesive exhibits very little deformation under high breaking loads. By comparison, the fracture energy required for the elastic adhesive bond is much greater. The result is a significant gain in safety.

The benefits of using elastic adhesives are manifold over mechanical fastening joints such as:

1. Insulation – acoustic, heat & electrical
2. Energy saving
3. Sealing of joints in a single operation
4. Riding comfort & more safety in vehicles
5. Increase in torsional rigidity
6. Flexibility to accommodate movement
7. Use of any composite materials
8. Design freedom
9. Effective
10. Economical

To summarize elastic bonding is a modern and highly effective joining technique with a number of innovative performance characteristics, which forms a welcome address to the standard repertoire of rigid fastening technologies. Through the selective use of these adhesives and careful attention to the specific application techniques associated with them, engineers and designers are now able to design technically sophisticated structures / products that can be manufactured economically.

Correct joint design is critical and need to take account of the specific mechanical properties of the substrates and the adhesives used. Simply substituting an elastic adhesive for a rigid fastening – such as riveted connection – will not achieve the desired result. The key to the successful use of adhesive lies in consultation between the product designer and the adhesive manufacturer, who can advise on the best way to configure assemblies and joints for elastic bonding.

ADO International's wide product range assures top performance for smart, strong and effective solution to the needs of architects, engineers, large and small developers, builders, contractors, and individuals. We are committed and focused to partner our customers generate value and success in business through our innovative products and superior customer servicing.



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