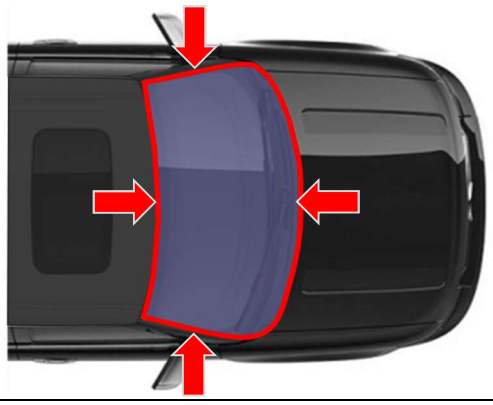
Best Practices
Bonded Automotive Glass

Today's vehicles use a variety of materials to create a strong, safe and long lasting structure. These include; steel, high strength steel, zinc coated steel, aluminum, titanium, magnesium and structural plastic composites among others. One structural material that many people neglect to consider is bonded glass that is used for windshields, side and back glass on many vehicles. In most cases this bonded glass actually provides strength to the overall construction. Therefore it is important to follow precise installation methods of glass to ensure it provides the engineered strength it was designed to deliver.

There are two important factors that influence the ability of automotive glass to produce the required structural strength; tensile and lap-shear strength. Tensile strength is measured by pounds per square inch of force to pull on two joined surfaces until a bond fails. If you bond a part to a horizontal structure, and pull straight up, the force needed to break that bond would be a measure of tensile strength. Lap-shear measurements are similar to tensile strength except that the force is applied diagonally. Urethane adhesives used for automotive glass have tensile strengths of 1000 pounds per square inch (PSI) and lap-shear of 500 psi or more. In the event of a collision where a vehicle rolls over, lap shear is particularly important because it is what creates the structural strength the glass was designed to provide in the vehicle body.

It is also important to recognize the influence refinish paint systems could have on this multi-faceted structural system. Collision repair materials and paints including body fillers, primer surfacers, primer sealers, color coat or clear coats may not meet the tensile and lap-shear strength required in the vehicle design. As such it is possible that the use or combination of these materials under the urethane glass adhesive becomes the weak link in the structure. For this reason, it is advised that they not be applied to areas where a bond will be made and that strict adherence to the glass adhesive manufacturers' instructions be followed.



Automotive refinish materials should not be applied to areas where bonding materials will be used to attach window glass to vehicle bodies. One example is illustrated in red to the right that depicts the flat flange area where urethane adhesive would be used to bond the windshield.

Areas where bonding will be carried out should only have coatings applied that are approved by the adhesive manufacturer or installer. Always follow the instructions for use provided by the adhesive provider.

Read complete TDS for detailed product information.

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