SEALING AND BONDING OF MINERAL GLASS

The direct mineral glazing into frames or directly into the hull or decks requires a full understanding of all the important principles involved. It is essential that the glass meets all the demands and criteria required for the intended application, such as IMO regulations or other regulations.

For insulated glass, total bonding consistency must be ensured using Sikaflex® adhesives and sealants for the entire installation. The adhesive bond line must be protected against UV-radiation.

APPLICATION GUIDELINES

Bonding of insulated glass windows shall be carried out as described in the Sika Marine Application Guide. The backfilling sealant has to be defined based on window dimensions. There are different products used for secondary sealing of insulated glass systems. Adhesion and compatibility between secondary sealing and backfilling materials shall be ensured to avoid problems because of adhesive loss. Water tightness is essential to avoid standing water and corrosion. UV protection of the bond line shall fulfill Sika requirements and shall be positioned so that adhesive will be protected properly.

For detailed application guidelines and instructions please contact our local Technical Service Department or refer to the Sika Marine Application Guide.

Sikasil® WS-605 S
Insulating Mineral Glass
Laminated Mineral Glass
Sikaflex®-296
Sikaflex®-295 uV
Sika® Aktivator-100
Sika® Primer-206 G+P

For more marine information:

www.sika.com/marine

GLOBAL BUT LOCAL PARTNERSHIP

WHO WE ARE

Sika AG, Switzerland, is a globally active specialty chemicals company. Sika supplies the building and construction industry as well as manufacturing industries (automotive, bus, truck, rail, solar and wind power plants, facades). Sika is a leader in processing materials used in sealing, bonding, damping, reinforcing and protecting loadbearing structures.

Sika’s product lines feature high-quality concrete admixtures, specialty mortars, sealants and adhesives, damping and reinforcing materials, structural strengthening systems, industrial flooring as well as roofing and waterproofing systems.

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GLASS BONDING SYSTEMS FOR MARINE

Traditional glazing methods are not common anymore as they have high limitations such as glass size, risk of glass breakage and structural integrity. Modern glazing can be done with different types of glass like laminated mineral glass, organic glass, insulating glass and special glasses (bullet proof etc.). The latest manufacturing technique allows windows of superlative performance to be produced in almost any shape, size and curvature. The traditional role of glazing as protection against the elements whilst allowing light and vision to pass through has been extended to include the extra benefit of structural part. Direct glazing systems from Sika have become the primary method of installing windows due to the extensive list of benefits.

The global Marine industry is a dynamic and challenging environment. Ship owners demand very individual designs combined with reliability, durability and safety. Glazing elements are the different shapes and sizes of the individual windows used for the hull up to the flybridge or wheelhouse. Traditionally mineral glass is used where big size windows are required, while it is the case for cruise ships, ferries and other commercial vessels. The use of organic glass (polycarbonate (PC) and polymethylmetacrylate (PMMA)) is more common in the yachts and luxurious focal points of the design requires special attention towards stress cracking and protection of the bond lines.

ORGANIC GLASS
Organic glass is mostly used for smaller ships such as sailing and motor yachts but as well on commercial vessels such as cruise ships, ferries and river boats. Organic or composite glass is in common for flybridges, holdway windows and portlights. When using organic glass special attention towards stress cracking and protection of the bond lines is mandatory.

MINERAL GLASS
The use of mineral glass is mostly common on large vessels such as cruise ships and gaps are required due to heavy wind loads and structural movements of the ship body.

Most of the organic glazing materials used in ship building are either clear acrylic sheet (PMMA) or polycarbonate (PC). Generally, incorrectly installed plastic glazing panels are prone to environmental stress cracking (ESC). To minimize the risk of stress cracking the material should be installed stress free. Stress cracking can be aggravated by the use of the wrong adhesive or pretreatment system. As many varieties of organic window exist, it is recommended to ensure that the specific grade selected is suitable for use with Sikaflex®-295 uV.

APPLICATION GUIDELINES
When installing organic glass windows, thermal expansion and stress cracking characteristics must be taken into account. The thermal expansion ratio of PMMA is higher than other typical materials used in yacht building. Therefore, the adhesive and backfilling system has to allow displacements caused by temperature changes. The interference gap between frame and window is always positive. The minimum gap is defined according to Sika guidelines. Stress cracking occurs when PMMA is C2C, assembled under stress or material is under permanent stress because of thermal expansion. Current windows shall be moulded in production phase so that the geometry fits with the frame without additional bending. The use of enough flexible adhesive and backfilling ensures free thermal expansion. The UV protection of the bond line has to be carried out as well in accordance to the Sika guidelines (UV Shielding tape).