



NRF srl

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Partita IVA 02226271209

Finestre e Accessori per Caravan, Autocaravan e Camper

ATTACHMENT “A”

INFORMATION ON STRESS COROSION

Stress corrosion is the chemical and / or electrochemical corrosion of a material due to the combined action of a **corrosive agent** and the application of a static tensile stress.

It also refers to material-induced stress cracking. The effects are cracks on the acrylic glass that are initially very light but in the end irreparably damage the component.

The chains of molecules under tension are attacked by the corrosive medium and irreparably damaged. The first signs that reveal the formation of cracks in a first phase are certain cracks, initially visible only when viewed from a certain angle, such as point-like silver flashes on acrylic glass. Cracks due to a chemical effect in the advanced stage appear above all as branches that are impossible to orient exactly. Mechanical cracks, on the other hand, propagate mainly in one direction and show no branching.

The acrylic glass surface appears perfectly intact as the formation of cracks in the initial phase leaves no perceptible traces on the surface despite a process of deterioration.

The windows are made of organic material (acrylic glass) and leave our production controlled automatically with a very low tension level. During installation and use of the windows, additional stresses are applied which, if used correctly, do not lead to the formation of cracks.

During the period of use, so-called main stresses are created on the surfaces due to temperature and the transition from wet to dry. These effects are totally harmless and do not cause damage even over many years of use, provided that the treatment is carried out with suitable materials. If unsuitable cleaning agents and care products (corrosive media) are used for acrylic glass, these products attack the window material.

For example, the agents that are considered corrosive are alcohol, certain surfactants, organic solvents, plasticizers, just to name a few. These products may also be present in products for synthetic materials such as polishing pastes and in products suitable for rubber. The formation of cracks occurs first in the points where the greatest tension is exerted, for example for windows in the area of the glass strip or near the elements of the restraint mechanisms. The formation of cracks is influenced by localized actions, processing time, aggressiveness of the corrosive agents and by temperature. In certain cases it is possible to find localized cracks even only on the surface or on the edges. In the case of corrosive products suitable for rubber, the formation of cracks occurs in the area of the contact surface of the rubber seal.

Attention: If the formation of cracks is found in the area of contact with the rubber and the glass is replaced, it is recommended to also replace the treated rubber gasket. If the rubber gasket is not replaced there is a risk that the new glass could break.

Even a dilution of aggressive detergents in this situation doesn't help much.



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In most cases there is a concentration due to evaporation of the percentage of water after use. In this way, the chemicals that produce the cracks are present in **concentrated** form.

If treated correctly, acrylic glass maintains a porous surface over the years, does not yellow or weaken. For the cleaning and care of acrylic glass windows we recommend adding lukewarm water to the commonly used detergent.

The important thing is that you work with a lot of water. Never clean the windows when they are dry. For the care with rubber products we recommend using talc or white vaseline.

Hopefully, the previous indications may have helped to clarify the causes of cracks in acrylic glass components.