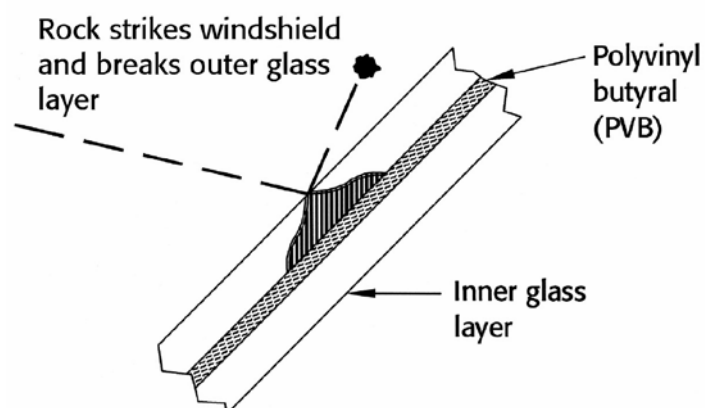


## Windscreen Repair – Technical

The NOVUS Windscreen Repair technology and materials were developed exclusively for repairing breaks and cracks in laminated safety glass, i.e. windscreens. We have a full time Research and Development Department that keeps abreast of the latest developments in auto glass technology and is continually developing stronger resins, new repair techniques and repair equipment.



When examining a typical break in laminated glass, visual distortion is created by a small air gap between the broken layers in the glass. With a typical bulls-eye-type break, a small cone of glass breaks free within the outside layer of laminated glass windscreen. The break is visible due to the difference in the optical characteristics ( optical refractive index) between the air that fills the gaps in the break and the windscreen glass. The entire break or parts of it might appear black/dark or silvery/shiny, depending on the angle of inspection and the angle of the light hitting the break.



Cracks can extend from the break, as is characteristic of a star break or a combination break. Those cracks are visible due to the difference in the refractive index between the air and the glass. In addition, there may be small, loose glass fragments at the impact point.

NOVUS Windscreen Repair works by injecting a structural acrylic adhesive commonly referred to as resin into the break under low pressure. The air within the break is removed, and with exposure to UV light, the resin is cured into a solid adhesive. The resin has two main functions:

- To bond the broken glass together into one solid mass, so it will not spread further.
- To have a refractive index that very closely matches the glass. The resulting repair will be permanent, non-weathering, optically clear and guaranteed against spreading for as long as the customer owns the vehicle.

### Test Results/Standards

In New Zealand there are two standards regarding Windscreen Repair. These standards are AS/NZS 2366.1:1999 and AS/NZS 2366.2:1999. Copies of these standards can be purchased at [www.standards.co.nz](http://www.standards.co.nz)

NOVUS commissioned The British Standards Institute to perform All Tests specified in AS/NZS 2366.2:1999 and have published the results as per below. It should be noted that Category C – Mechanical Strength is a Crack of 350mm – NOVUS knows of No other company that has passed this test.

## Test Report

Report No	262/4007017
Client	Novus 10425 Hampshire Avenue South Minneapolis Minnesota 55438 USA
Authority & date	Letter from the Client dated 28 June 1999
Items tested	Windscreen Repair System
Specifications	AS/NZS 2366.2:1999
Results	See Text
Prepared by	S Ginger
Authorized by	P Parkins
Issue Date	27 September 1999
Conditions of issue	<small>This Test Report is issued subject to the conditions stated in current issue of Test Leaflet 1 *General conditions relating to acceptance of testing. The results contained herein apply only to the particular sample/s tested and to the specific tests carried out, as detailed in this Test Report. The issuing of this Test Report does not indicate any measure of Approval, Certification, Supervision, Control or Surveillance by BSI of any product. No extract, abridgement or abstraction from a Test Report may be published or used to advertise a product without the written consent of the General Manager, BSI Product Services, who reserves the absolute right to agree or reject all or any of the details of any items or publicity for which consent may be sought.</small>

BSI Product Services Mayhew Avenue Hemel Hempstead Hertfordshire HP2 4SQ Telephone: (01442) 230442

Report No 262/4007017  
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### TEST AND EXAMINATION OF THE PERFORMANCE OF AUTOMOTIVE LAMINATED WINDSCREEN REPAIR SYSTEMS

**INTRODUCTION**

At the request of Novus, the resin repair system detailed below was tested and assessed to the requirements of AS/NZS 2366.2:1999, as indicated on the following pages of this Report. This request was made in a letter from the Client dated 28 June 1999. This Report only relates to the actual resin system which has been tested and assessed.

**TEST ITEMS**

1 off Windscreen Repair System Category A, B and C repairs (Resin used is Quantum WSR)

The following is a summary of tests performed in accordance with AS/NZS 2366.2:1999

ANNEX/CLAUSE	TEST PRESCRIBED	CATEGORY	ASSESSMENT
9.2	High Humidity Test	A and B	Pass
9.3	High Temperature Test	A and B	Pass
9.4	Radiation Test	A and B	Pass
9.5	Visual Appearance	A and B	Pass
9.6	Optical Distortion	A and B	Pass
9.7	Secondary Image	A and B	Pass
9.8	Impact resistance	A and B	Pass
9.9	Spectrophotometric	A, B and C	See page 7
9.10	Mechanical strength	A and C	Pass

LTSA publish the Vehicle Inspection Requirements Manual (V.I.R.M.) which is distributed to Authorised Vehicle Inspectors(A.V.I.) The VIRM is a brief interpretation of the standard but the standard forms part of the Land Transport Glazing Rule and is hence the Governing Document.

### Typical Damage

**Bullseye**



**Partial Bullseye**



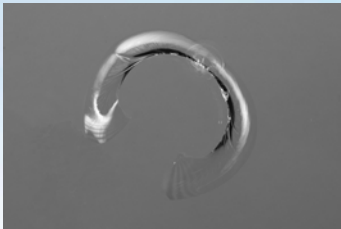
**Combination**



**Star Break**



**Horse Shoe**



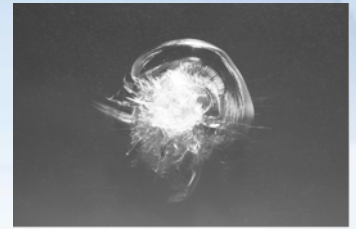
**Edge Crack**



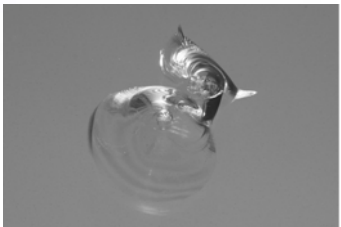
**Complex Crack**



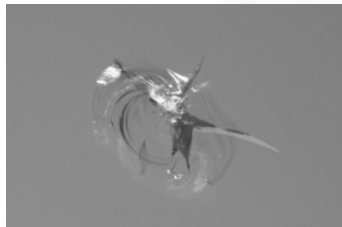
**Crushed Pit**



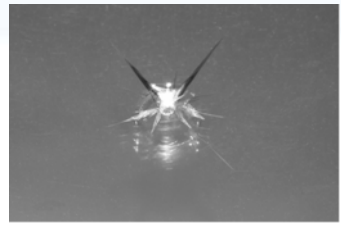
**Multiple Break/Double Strike**



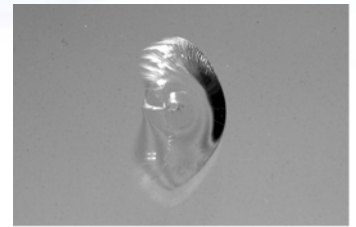
**Combination Break (Small)**



**Large Star Break**



**Partial Bullseye/Half Moon Break**



**Combination Break (Large)**

