

Certificate No:

**K-6118**

File No:

**332.25**

Job Id:

**262.1-003891-3**

## TYPE APPROVAL CERTIFICATE

### This is to certify:

#### That the Adhesive

with type designation(s)

**Fixtech™ FIX190 and Fixtech™ FIX190FWT**

Issued to

**Fixtech Pty. Ltd. Superior Bonding Solutions**  
**SOUTHPORT, QUEENSLAND, Australia**

is found to comply with

**Det Norske Veritas' Type Approval Programme 1-501.12, 2012, Adhesives**

**Det Norske Veritas' Rules for Classification of High Speed, Light Craft and Naval Surface Craft**

### Application :

**Structural adhesive, direct glazing adhesive and sealing in marine vessels in accordance with stated Rules/Standards.**

This Certificate is valid until **2018-06-30**.

Issued at **Høvik** on **2014-10-30**

DNV GL local station: **Brisbane**

Approval Engineer: **Gisle Hersvik**

for **DNV GL**

.....  
**Martin Strande**  
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed. If any person suffers loss or damage which is proven to have been caused by any negligent act or omission of the Society, then the Society shall pay compensation to such person for his proven direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question. The maximum compensation shall never exceed USD 2 million. In this provision the "Society" shall mean DNV GL AS as well as all its direct and indirect owners, affiliates, subsidiaries, directors, officers, employees, agents and any other person or entity acting on behalf of DNV GL AS.

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## Product description

**Fixtech™ FIX190** and **Fixtech™ FIX190FWT** structural adhesive sealant; single component, multi-purpose adhesive, based on hybrid polymers.

## Responsibility

The Company (stated on the front page of this Certificate) takes the responsibility that both design and production are in compliance with Rules, Standards and/or Regulations listed on page 1 of this certificate.

## Application/Limitation

Surface preparation of substrates to be in accordance with Manufacturer's recommended procedures, including use of Manufacturer's specified primer where relevant.

Application method, application conditions, and joint dimensions to be as per Manufacturer's recommendations.

## Type Approval documentation Tests carried out

Type Testing carried out in accordance with **Type Approval documentation**.

In accordance with the DNV Type Approval Programme No. 1-501.12 Adhesives (versions 1999 and 2009), modified for flexible adhesive, the Manufacturer has specified the following values based on testing of **Fixtech™ FIX190**:

Type Testing of Fixtech™ FIX190				
Property	Test Method	Result	Unit	
Lap-Shear Strength, Control <sup>1)</sup>	ASTM D 1002	1,23	MPa	msmv
Lap-Shear Strength, 28 d - 30 °C <sup>2)</sup>	ASTM D 1002	1,46	MPa	msmv
Lap-Shear Strength, 56 d - 30 °C <sup>3)</sup>	ASTM D 1002	1,19	MPa	msmv
Lap-Shear Strength, Static <sup>4)</sup>	ASTM D 1002	0,16	MPa	msmv

Type Testing of Fixtech™ FIX190, continued				
Property	Test Method	Result	Unit	
Glass Transition Temperature, T <sub>g</sub>	ASTM E 1356	2,57	°C	mean
Tensile Strength	ISO 8339	1,3	MPa	msmv
Elongation at break	ISO 8339	> 200	%	msmv
Tensile Stress at 12,5 % elongation	ISO 8339	>0,42	MPa	msmv
pH	-	7,5	-	mean

*Legend:*

*mean: arithmetic mean of Type Test results*

*msmv: manufacturer's specified minimum value (verified to be below mean – 2 standard deviations from Type Test results)*

<sup>1)</sup> Control test: Ambient cure for 28 days and used in weathering tests.

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Further testing after specimen conditioning:

<sup>2)</sup> 28 days at -30 °C, loaded to 10 % of static load

<sup>3)</sup> 56 days at -30 °C, loaded to 10 % of static load

<sup>4)</sup> 10 % of mean static load chosen by the manufacturer and used in weathering tests <sup>2), 3)</sup>

Further Lap Shear Test conditions:

Substrate 1: Aluminium, epoxy coated and primed

Substrate 2: Glass, cleaned with Fixtech AC50 and primed with Fixtech PR30

Width of test specimen: 25 mm

Length of specimen: 12 mm

Thickness of adhesive: 1,5 – 1,6 mm

## Marking of product

Product/package to be marked with *name of manufacturer*; **Fixtech Pty. Ltd. Superior Bonding Solutions, Australia**, *place of manufacture* and *type designation/product name*; **Fixtech™ FIX190** and **Fixtech™ FIX190FWT**, and *storage conditions*.

The marking is to be carried out in such a way that it is visible, legible and indelible. The marking of product is to enable traceability to the DNV GL Type Approval Certificate.

## Periodical assessment

The scope of the Periodical Assessment is to verify that the conditions stipulated for the Type Approval is complied with and that no alterations are made to the product design or choice of materials. Periodical Assessment to be performed after two (2) years (Certificate Retention) and at renewal after four (4) years (Certificate Renewal).

The main elements of the Periodical Assessment are to:

- Ensure that **Type Approval documentation** is available.
- Review design, materials, production process, and performance with respect to possible changes, in order to ensure compliance with **Type Approval documentation** and/or referenced material specifications.
- Ensure traceability between manufacturer's product marking and the DNV GL Type Approval Certificate.

END OF CERTIFICATE