

TECHNICAL REPORT



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For the attention of Mr Gary Townley

Our Ref: TMCMF51279

Your Ref:

Date: 13th March 2014

Delivery Date: 7th March 2014

Test Dates: 13th March 2014

SAMPLE FOR TEST

Plastic bonded joints.

Reference: Kydex 1 mm sheet, bonded with SATTO 2021 GRN 10000716 white, bonded 2 bar pressure, no heat applied, 30 minute cure.

Joint type: butt & lap with 20th doubler – gap between sheets 3mm, doubler 13mm bonded non decorative side

TEST REQUIREMENTS

Tensile shear strength.

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INTRODUCTION

Specialist Aviation Ltd has commissioned FIRA International to carry out tests on plastic bonded samples in order to determine the shear strength of fabricated 'joints'.

Note: The testing commissioned was ad-hoc and as agreed with the customer. Test results do not imply fitness for a particular application and are provided on an advisory basis only.

TEST SAMPLES AND PREPARATION

Plastic bonded joints.

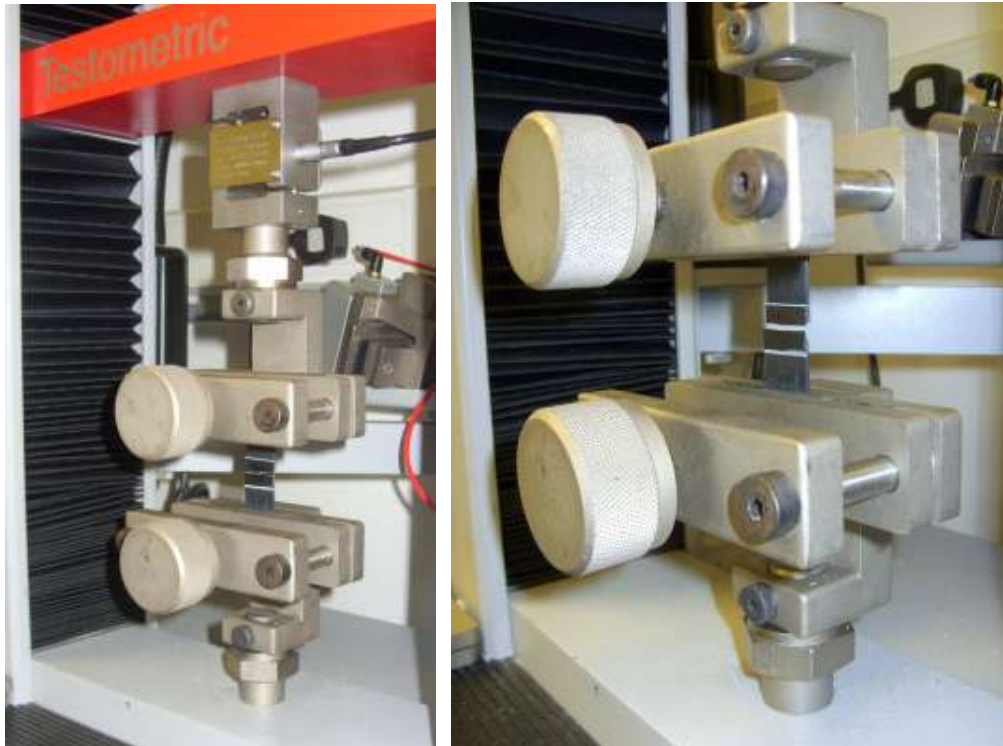
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Joint type: butt & lap with 20th doubler – gap between sheets 3mm, doubler 13mm bonded non decorative side

Lap and butt shear test specimens of overall nominal size 76mm length x 20mm width were supplied fully prepared and with an overlap bond area of approximately 20 mm width x 13 mm (260mm²) Test specimens varied slightly in size and exhibited slight squeeze out.

The prepared test specimens were secured between the rubber faced jaws of a grip vice attached to a Testometric tensile test machine. An increasing force was applied to the test specimens, at a machine test speed rate of 10 mm / minute, until failure occurred. See photograph 1&2. Test samples were tested at a room temperature of 20°C.

The peak failing force in Newtons was recorded and used to calculate the tensile shear strength in N/mm². (Results: Table 1).



PHOTOGRAPHS 1 & 2: TENSILE TEST ARRANGEMENT

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RESULTS

TABLE 1

SAMPLE: Plastic bonded joints.

Reference: Kydex 1 mm sheet, bonded with SATTO 2021 GRN 10000716 white, bonded 2 bar pressure, no heat applied, 30 minute cure.

Joint type: butt & lap with 20th doubler – gap between sheets 3mm, doubler 13mm bonded non decorative side

Sample	Failure Force N	Tensile strength N/mm ² Based on 20 x 13 mm (260 mm ²) overlap	Failure mode
1	768	2.95	Within weld line- centre
2	731	2.81	Within weld line – upper/plastic
3	694	2.67	Within weld line – upper/plastic
4	767	2.95	Within plastic
5	725	2.79	Within weld line – upper/plastic
6	731	2.81	Within plastic
7	730	2.81	Within weld line – upper/plastic
8	731	2.81	Within weld line – upper / plastic
9	702	2.70	Within weld line- upper
10	736	2.83	Within plastic
Mean (N/mm ²)	732	2.81	

PHOTOGRAPH 3:- TEST PIECES – FAILURE MODE



REPORT BY: V TAYLOR

APPROVED BY: V TAYLOR (SECTION HEAD- MATERIALS TECHNOLOGY)

(END OF REPORT)

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