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Test Report

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For the attention of  
Ms. C. Ward

Our Ref.: 8623/VT/ABL

Date: 26.4.95

Date of Receipt  
of Goods: 22.3.95

**SAMPLES FOR TEST**

Various domestic kitchen worktops, edge jointed with  
"Kolorbond" sealant.

**TEST REQUIREMENTS:**

Assessment of "Kolorbond" sealant for jointing.

Introduction

Various domestic kitchen worktops, edge jointed with "Kolorbond" sealant, were submitted by Kolorbond UK Limited for assessment for suitability for this application.

Samples for Test

Joint Configuration

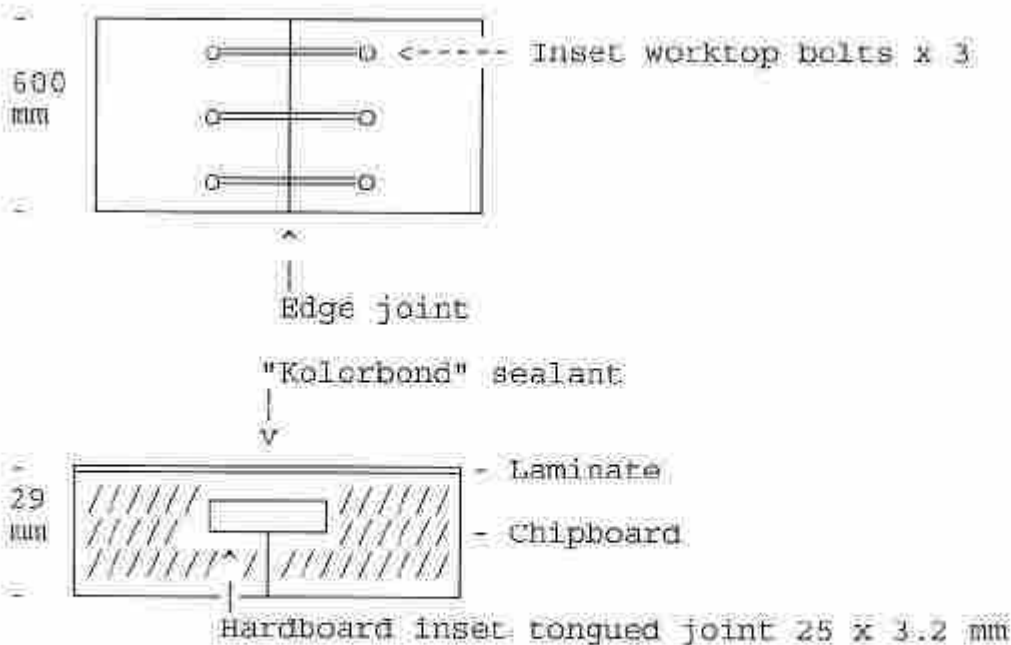


Figure 1

Worktops comprised plastics laminate surface postformed over front edge, chipboard core, paper backing sheet, overall thickness 29 mm.

The worktops were assembled with three inset connector bolts on the reverse face of the panels and jointed with an inset hardboard tongue along the length of the edge joints. "Kolorbond" sealant was used to provide the edge to edge seal along this joint.

Assessment

There are no British Standards or Trade Standards that have been developed for the assessment of worktop jointing compounds. The primary function of a sealant is to ensure good resistance to moisture ingress in a given joint assembly configuration.

The submitted samples were subjected to a range of conditioning treatments and water ingress tests as follows:

Part A

Adhesion Test - elevated temperature treatment at 40°C-70°C (Cream Abstract and Granite effect plastics laminate).

Part B

Environmental Test - treatment in environmental chambers at:

- i) 85% rh, 23°C (damp conditions) (Cream Abstract plastics laminate)
- ii) 35% rh, 23°C (dry conditions) (Granite effect plastics laminate).

Part C

Water Penetration Test - pool of water maintained over joint for a period of three days (Cream Abstract and Granite effect plastics laminate).

Part D

Moisture Vapour Test - warm water vapour test at 40°C. Worktops were tested:

- i) As received (Grey Abstract plastics laminate)
- ii) After Adhesion Test
- iii) After Environmental Test.

PART A

Adhesion Tests

The submitted samples were tested for adhesion according to the method described in BS 6222: Domestic Kitchen Equipment: Part 3: 1993: Specification for Performance Requirements for Durability of Surface Finish and Adhesion of Surfacing and Edging Materials: Clause:

7/7.3: Surfaces Other Than Worktops

8/8.3: Type 1 Worktops (square edged laminate)

9/9.3: Type 2 Worktops (postformed laminate)

10/10: Type 3 worktops (lipping - wood or other material).

Test Procedure Summary

The panels were placed in an oven at 40°C. After three days the bonds were examined and given a performance rating, the significance of which is described in Table 1. The temperature of the oven was raised in 10°C steps up to either 60°C or 70°C<sup>(1)</sup>, depending upon panel type, with the panels remaining at each temperature for three days.

Table 1

Rating	Significance
5	No spontaneous delamination, will not peel
4	No spontaneous delamination, peels with difficulty
3	No spontaneous delamination, peels with ease
2	Some spontaneous delamination
1	Complete spontaneous delamination

Requirements - BS 6222: Part 3: 1993: Table 4

	Minimum Performance
Rigid and semi-rigid surface materials, e.g. plastics laminate, wood veneer, paper foil and PVC rigid or semi-rigid foil	After 3 days at: 40°C - rating 4 50°C - rating 4 60°C - rating 4 70°C - rating 4 <sup>(1)</sup>
Lipping and continuous strip handles Edging	After 3 days at: 40°C - rating 4 50°C - rating 4 60°C - rating 3

(1) Only applies to the surfacing laminate on worktops.

Results

Part A

Adhesion - BS 6222: Part 3

Code	As Received	Three Days			
		40°C	50°C	60°C	70°C
Cream Abstract Edge Joint	5	5	5	5	5
Granite Effect Edge Joint	5	5	5	5	5

No obvious faults were noted in the worktop edge to edge joints as received. Some noticeable softening of the jointing compound was evident at temperatures above 50°C (observed in the "squeeze" out), but the joints appeared satisfactory after treatment and no cracking or opening at joints was noted.

Following the elevated temperature test the worktops were allowed to cool under normal conditions for at least 24 hours and then subjected to the warm water vapour treatment (see Part D).

PART B

Environmental Test

Two of the submitted worktops were examined as received for obvious defects in the edge jointing, and then conditioned as follows:

Worktop 1 - 28 days at 85% rh, 23°C (damp conditions)

Worktop 2 - 28 days at 35% rh, 23°C (dry conditions).

On completion of the treatment period, the worktops were examined for signs of degradation in the form of cracked joints and then subjected to the water vapour test at 40°C (Part D).

Results

Code	
Cream Abstract	As received - No obvious faults 28 days 85% rh - No apparent degradation
Granite Effect	As received - No obvious faults 28 days 35% rh - No apparent degradation

No obvious cracks were noted in the joints as received, and no apparent degradation occurred following environmental treatment at high and low relative humidity.

FART C

Water Penetration Test

Two of the submitted worktops were examined as received for obvious defects in the edge jointing, and then subjected to water penetration test as follows:

The worktops were placed on a nominally flat face and an area of the worktop edge joint isolated with sealant such that a pool of water could be placed over the joint - Figure 2.

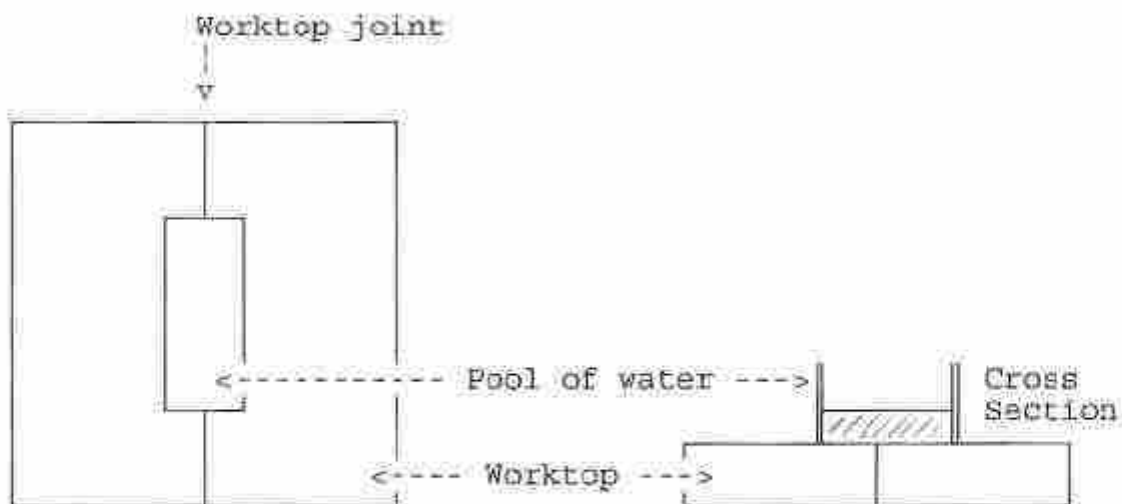


Figure 2

Cold water was placed in the cordoned area to a depth of approximately 2 mm and left standing over the joints for a period of three days.

On completion of the treatment period, the worktop edge joint was examined for signs of swelling.

Results

Cream Abstract	As received 3 days water treatment	No obvious faults No obvious swelling
Granite Effect	As received 3 days water treatment	No obvious faults No obvious swelling

No obvious defects were noted in the worktop joints as received, and no obvious swelling occurred at the joints after the three days standing cold water treatment.



PART D

Water Vapour Test at 40°C

Worktop samples in the "as received" condition, and also those samples subjected to elevated temperature and environmental treatments, were subjected to water vapour test following the test procedure described in BS 7331: 1990: Direct Surfaced Wood Chipboard Based on Thermosetting Resins: Appendix G.

Essentially the test apparatus comprises a water bath maintained at 40°C covered with a metal plate with a 100 mm diameter hole at its centre. The worktop is positioned on the plate and water vapour allowed to impinge on the worktop edge jointed surface via the open hole in the plate (Figure 3).

The standard exposure time in this test is 16 hours, but some of the worktop samples were exposed for a period of 72 hours. The samples were examined after treatment for signs of swelling at the joints.

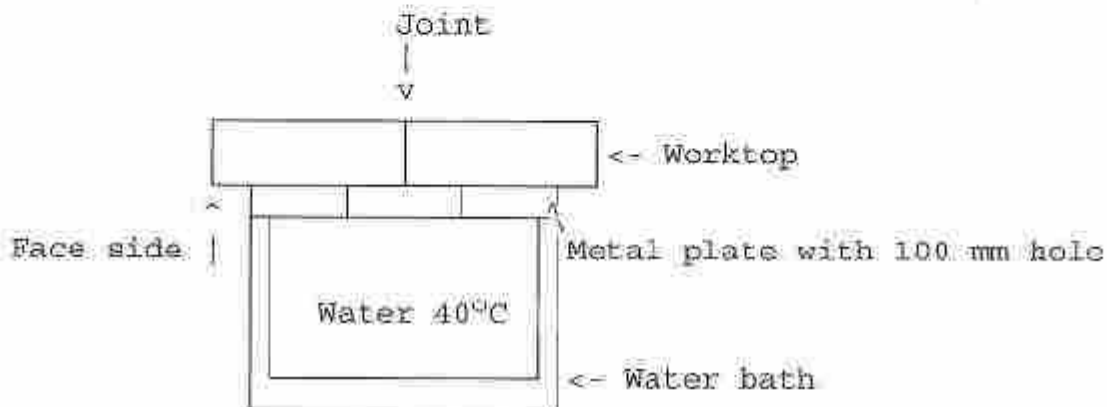


Figure 3

Results

Code	Exposure Time	Comments
1 As received sample (Grey Abstract)	16 hours	No obvious swelling
2 As received sample (Grey Abstract)	72 hours	No obvious swelling
3 Elevated temp. treated sample (Cream Abstract)	16 hours	No obvious swelling
4 Elevated temp. treated sample (Granite Effect)	72 hours	No obvious swelling
5 High humidity treated sample (Cream Abstract)	16 hours	No obvious swelling
6 Low humidity treated sample (Granite Effect)	16 hours	No obvious swelling

Conclusions

The elevated temperature and environmental response tests were carried out principally to induce shrinkage and expansion movement of the worktop materials, and hence stress the edge to edge sealed joints. No obvious deterioration, such as cracking along the joints, was observed in those worktops subjected to these treatments.

No obvious swelling was observed in the worktops subjected to the cold water penetration test, indicating sound, watertight joints.

No obvious swelling was observed in the various worktops subjected to the warm water vapour treatment, again indicating sound, watertight joints in each case.

The satisfactory performance of a worktop edge to edge joint relies upon a number of factors, which include accurate machining of worktop components, method of bonding/jointing and also the joint sealant system, in this case "Kolerbond" jointing sealant. The submitted worktop joints, as manufactured, exhibited good resistance to the elevated

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temperature, environmental and water ingress tests, and no obvious deterioration, such as cracking or swelling, was observed. It is therefore likely that worktop joints manufactured in this way would perform satisfactorily in normal domestic kitchen service environments.

Report by: Vaughan Taylor

*V. Taylor*