



## ULEF Capability

Daiken New Zealand Limited runs two MDF production lines; a continuous press line, dedicated to thin products (1.8 to 9 mm MDF panels) and a multiopening press line dedicated to thick products (9 to 30 mm MDF panels).

Daiken New Zealand Limited has vast experience in the manufacturing of low formaldehyde emission panels, initially driven by our presence in the Japanese market where we target the F★★★★ (F four stars) segment according to the JIS industry standard for fibreboards JIS A 5905.

Daiken New Zealand Limited uses **Ultra-Low-Emitting Formaldehyde (ULEF)** resins especially developed for our production lines and perfected over the years to produce the lowest possible formaldehyde emission panel while maintaining strong mechanical properties.

Daiken New Zealand Limited has consistently been able to produce MDF panels meeting the ULEF requirements for formaldehyde emissions since 2010.

	Thick MDF	Thin MDF
ULEF - target	0.06 ppm	0.08 ppm
ULEF - cap	0.09 ppm	0.11 ppm
CARB P2	0.11 ppm	0.13 ppm

The capability of achieving ULEF values is demonstrated by the following independent tests results:

MDF Thickness	Test result
25 mm	0.050 ppm
18 mm	0.039 ppm
12.7 mm	0.052 ppm
6.3 mm	0.023 ppm
3.7 mm	0.031 ppm

The test reports follow.

**Advanced  
Testing  
Services**

An Independent Testing Laboratory of  
Hexion Inc.

610 S 2<sup>nd</sup> Street  
Springfield, OR 97477  
541-741-6650



**TEST REPORT - Standard Face and Back Configuration**

Test ID #: C2016-0874  
Report Date: 8/19/2016  
Sample Submitted by:

Test Type: ASTM D6007-14  
Analytical Method: DNPH – D5197-09

AsureQuality  
131 Boundary Road, Blockhouse Bay  
Auckland 1140, New Zealand  
64 7 572 0522

**Test Result: 0.050 ppm  
0.116 mg/(m<sup>2</sup>h)**

**Customer Sample Identification:  
AQRNG315180-3**

		During Conditioning		Units
Date Received	8/4/2016	Temperature (range)	75.3 (75.7-75.0)	F
Date Conditioned	8/9/2016	% RH (range)	50.1 (50.9-49.2)	%
Date Tested	8/17/2016	Conditioning Background Formaldehyde	BLQ	ppm
Sample Type	MDF	Conditioning Time	168.1	hours
Sample Thickness	25mm	Test Chamber Background Formaldehyde	BLQ	ppm
Sample shipped/stored in	Vapor retarder			
Date of Manufacture	7/21/2016	During Testing		
Test Chamber Volume	0.067 m <sup>3</sup> ; 0.4x0.4x0.4m	Temperature (range)	76.5 (76.5-76.4)	F
Loading Ratio	0.520m <sup>2</sup> /m <sup>3</sup>	%RH (range)	51.0 (51.1-51.0)	%
# of Samples in test	3	Air Change Rate	1.000	AC/h
Sample size	13.0 x 5.0 cm	Sample Flow Rate	1.118	L/min
Total surfaces exposed	6	Sample Collection Time	60	Min.
Edges sealed	No			

Notes, including any deviation from ASTM procedure or sample defects.

Report Approved by: Curtis Shields  
Name: Curtis Shields  
Title: ATS Quality Manager

Advanced Testing Services ("ATS") is accredited to ISO/IEC 17025:2005. IAS Certificate Number TL-372. The above test results are representative solely for the sample submitted. ATS warrants that all testing services provided by ATS shall be performed in a manner consistent with the degree of professional care and skill as is customarily exercised by a professional laboratory under similar circumstances. ATS MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED. Client's exclusive remedy for breach of this warranty is limited to either, at Client's option, having the deficient testing services re-performed without charge, or receiving a refund of the amount paid by Client to ATS for such deficient testing services. ATS retains the right to utilize the above results in a generic format (no Client identification) for general scientific database purposes. This report shall not be reproduced except in full without the written approval of ATS.

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**TEST REPORT - Standard Face and Back Configuration**

Test ID #: C2016-0883  
Report Date: 8/19/2016  
Sample Submitted by:

Test Type: ASTM D6007-14  
Analytical Method: DNPH – D5197-09

AsureQuality  
131 Boundary Road, Blockhouse Bay  
Auckland 1140, New Zealand  
64 7 572 0522

**Test Result: 0.039 ppm  
0.091 mg/(m<sup>2</sup>h)**

**Customer Sample Identification:  
Pallet 16G08106, Run 216-5-2**

		During Conditioning		Units
Date Received	8/4/2016			
Date Conditioned	8/10/2016	Temperature (range)	75.3 (75.7-75.0)	F
Date Tested	8/18/2016	% RH (range)	50.0 (50.9-48.6)	%
Sample Type	MDF	Conditioning Background Formaldehyde	BLQ	ppm
Sample Thickness	18mm	Conditioning Time	168.2	hours
Sample shipped/stored in	Vapor retarder	Test Chamber Background Formaldehyde	BLQ	ppm
Date of Manufacture	7/25/2016			
Test Chamber Volume	0.067 m <sup>3</sup> ; 0.4x0.4x0.4m	During Testing		
Loading Ratio	0.520m <sup>2</sup> /m <sup>3</sup>	Temperature (range)	76.3 (76.4-76.2)	F
# of Samples in test	3	%RH (range)	51.1 (51.1-51.0)	%
Sample size	13.0 x 5.0 cm	Air Change Rate	1.000	AC/h
Total surfaces exposed	6	Sample Flow Rate	1.118	L/min
Edges sealed	Yes	Sample Collection Time	60	Min.

Notes, including any deviation from ASTM procedure or sample defects.

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Name: Curtis Shields  
Title: ATS Quality Manager

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**TEST REPORT - Standard Face and Back Configuration**

Test ID #: C2016-0886  
Report Date: 8/19/2016  
Sample Submitted by:

Test Type: ASTM D6007-14  
Analytical Method: DNPH – D5197-09

AsureQuality  
131 Boundary Road, Blockhouse Bay  
Auckland 1140, New Zealand  
64 7 572 0522

**Test Result: 0.052 ppm  
0.121 mg/(m<sup>2</sup>h)**

**Customer Sample Identification:  
AQRNG115039-2**

		During Conditioning		Units
Date Received	8/4/2016			
Date Conditioned	8/10/2016	Temperature (range)	75.3 (75.7-75.0)	F
Date Tested	8/18/2016	% RH (range)	50.0 (50.9-48.6)	%
Sample Type	MDF	Conditioning Background Formaldehyde	BLQ	ppm
Sample Thickness	12.7mm	Conditioning Time	168.2	hours
Sample shipped/stored in	Vapor retarder	Test Chamber Background Formaldehyde	BLQ	ppm
Date of Manufacture	7/25/2016			
Test Chamber Volume	0.067 m <sup>3</sup> ; 0.4x0.4x0.4m	During Testing		
Loading Ratio	0.520m <sup>2</sup> /m <sup>3</sup>	Temperature (range)	76.7 (76.8-76.6)	F
# of Samples in test	3	%RH (range)	50.2 (50.2-50.1)	%
Sample size	13.0 x 5.0 cm	Air Change Rate	1.001	AC/h
Total surfaces exposed	6	Sample Flow Rate	1.119	L/min
Edges sealed	Yes	Sample Collection Time	60	Min.

Notes, including any deviation from ASTM procedure or sample defects.

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Title: ATS Quality Manager

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**TEST REPORT - Standard Face and Back Configuration**

Test ID #: C2016-0870  
Report Date: 8/19/2016  
Sample Submitted by:

Test Type: ASTM D6007-14  
Analytical Method: DNPH – D5197-09

AsureQuality  
131 Boundary Road, Blockhouse Bay  
Auckland 1140, New Zealand  
64 7 572 0522

**Test Result: 0.023 ppm  
0.054 mg/(m<sup>2</sup>h)**

**Customer Sample Identification:  
AQRNG516033-2**

		During Conditioning		Units
Date Received	8/4/2016	Temperature (range)	75.3 (75.7-75.0)	F
Date Conditioned	8/9/2016	% RH (range)	50.1 (50.9-49.1)	%
Date Tested	8/17/2016	Conditioning Background Formaldehyde	BLQ	ppm
Sample Type	MDF	Conditioning Time	168.1	hours
Sample Thickness	6.3mm	Test Chamber Background Formaldehyde	BLQ	ppm
Sample shipped/stored in	Vapor retarder			
Date of Manufacture	7/17/2016	During Testing		
Test Chamber Volume	0.067 m <sup>3</sup> ; 0.4x0.4x0.4m	Temperature (range)	76.3 (76.3-76.2)	F
Loading Ratio	0.520m <sup>2</sup> /m <sup>3</sup>	%RH (range)	51.4 (51.4-51.3)	%
# of Samples in test	3	Air Change Rate	1.000	AC/h
Sample size	13.0 x 5.0 cm	Sample Flow Rate	1.119	L/min
Total surfaces exposed	6	Sample Collection Time	60	Min.
Edges sealed	No			

Notes, including any deviation from ASTM procedure or sample defects.

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**TEST REPORT - Standard Face and Back Configuration**

Test ID #: C2016-0658  
Report Date: 6/21/2016  
Sample Submitted by:

Test Type: ASTM D6007-14  
Analytical Method: DNPH – D5197-09

Catherine Lord  
AsureQuality  
131 Boundary Road, Blockhouse Bay  
Auckland 1140, New Zealand  
64 7 572 0522

**Test Result: 0.031 ppm  
0.073 mg/(m<sup>2</sup>h)**

**Customer Sample Identification:  
AQRNG516013-2**

		During Conditioning		Units
Date Received	6/10/2016			
Date Conditioned	6/13/2016	Temperature (range)	75.8 (76.0-75.6)	F
Date Tested	6/21/2016	% RH (range)	49.8 (50.7-48.5)	%
Sample Type	MDF	Conditioning Background Formaldehyde	BLQ	ppm
Sample Thickness	3.7 mm	Conditioning Time	167.9	hours
Sample shipped/stored in	Vapor retarder	Test Chamber Background Formaldehyde	BLQ	ppm
Date of Manufacture	5/24/2016			
Test Chamber Volume	0.067 m <sup>3</sup> ; 0.4x0.4x0.4m	During Testing		
Loading Ratio	0.520m <sup>2</sup> /m <sup>3</sup>	Temperature (range)	76.6 (76.7-76.5)	F
# of Samples in test	3	%RH (range)	51.0 (51.1-51.0)	%
Sample size	13.0 x 5.0 cm	Air Change Rate	1.000	AC/h
Total surfaces exposed	6	Sample Flow Rate	1.119	L/min
Edges sealed	Yes	Sample Collection Time	60	Min.

Notes, including any deviation from ASTM procedure or sample defects.

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