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DOW SILICONES CORPORATION
TEST REPORT

SCOPE OF WORK
ASTM C1523 AND D412 EVALUATION FOR COMPLIANCE WITH SWRI

REPORT NUMBER
H4145.01-106-31 R3

TEST DATE(S)
08/17/17 - 01/03/19

ISSUE DATE **REVISED DATE**
10/12/18 06/17/19

RECORD RETENTION END DATE
01/03/24

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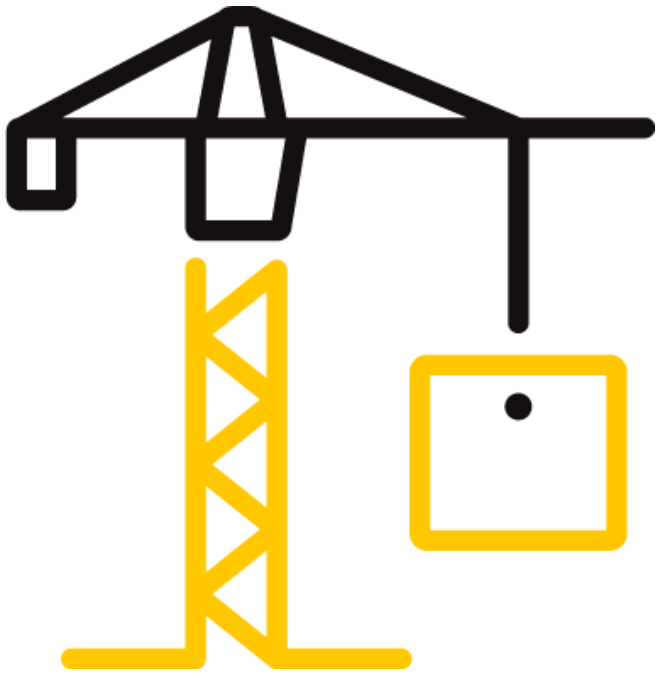

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TEST REPORT FOR DOW SILICONES CORPORATION

Report No.: H4145.01-106-31 R3
Date: 10/12/18

REPORT ISSUED TO

DOW SILICONES CORPORATION
2200 West Salzburg Road
PO Box 994
Auburn, Michigan 48611

SECTION 1

SCOPE

Products: DOWSIL™ Silicone Transition Strip

Intertek Building & Construction (B&C) was contracted by Dow Silicones Corporation, to evaluate DOWSIL™ Silicone Transition Strip with DOWSIL™ 791 Silicone Waterproofing Sealant in accordance with ASTM C1523 and ASTM D412 for SWRI submittal. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at the Intertek B&C test facility in York, Pennsylvania.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

For INTERTEK B&C:

COMPLETED BY:	J. Rich Hammons	**REVIEWED BY:**	Dawn M. Chaney
TITLE:	Technician I Materials Laboratory	**TITLE:**	Technician Team Lead Materials Laboratory
SIGNATURE:	Digitally Signed by: James Hammons	**SIGNATURE:**	Digitally Signed by: Dawn M. Chaney
DATE:	06/17/19	**DATE:**	06/17/19

JRH:dmc/jlp/als

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SECTION 2
SUMMARY OF TEST RESULTS

ASTM C1523 - Movement, Cohesion, and Adhesion at 200%
DOWSIL™ Silicone Transition Strip

TEST CONDITION	AVERAGE ADHESION/ COHESION LOSS (mm)	TEAR PROPAGATION
Dry/Room Temperature	2.0	PT - Partial Tear
Water Immersed	1.4	NT - No Tear
Frozen (0°F)	0.0	PT - Partial Tear
Heated (158°F)	0.9	PT - Partial Tear
UV Weathered	1.2	T - Tear

ASTM D412 - DOWSIL™ Silicone Transition Strip

TEST CONDITION	PARAMETER	RESULT
Room Temperature	Ultimate Elongation	525%
	Tensile Strength	911 psi

SECTION 3
TEST METHODS

The specimens were evaluated in accordance with the following:

ASTM D412-16, *Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension*

ASTM C1523-17, *Standard Test Method for Determining Modulus, Tear, and Adhesion Properties of Pre-Cured Elastomeric Joint Sealants*

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SECTION 4
MATERIAL SOURCE

The materials were purchased by Intertek B&C personnel. One unopened roll of the DOWSIL™ Contractors Silicone Strip (Lot #ET018274T) was purchased. The case of DOWSIL™ 791 Silicone Waterproofing Sealant contained twelve 305 ml cartridges (Lot#H05014K028; Expiration date April 14, 2019). All materials were used prior to their expiration dates. Refer to the product description photos in Section 10. Representative materials/test specimen(s) will be retained by Intertek B&C for a minimum of five years from the test completion date.

SECTION 5
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Dawn M. Chaney	Intertek B&C
J. Rich Hammons	Intertek B&C

SECTION 6
TEST PROCEDURES

All conditioning of test specimens and test conditions were at standard laboratory conditions unless otherwise reported. Refer to the test related photos in Section 10.

ASTM D412 - Tensile Strength and Elongation
Tension and Elongation properties were determined utilizing an Instron Model 3345 Universal Test Machine (ICN: 005740) with a 2kN load cell (ICN:005742) operating at a crosshead speed of 20 in/min. All specimens had an initial gage length of 1.000 in. and elongation was and measured to the capacity of a 12" digital caliper (ICN: 65102).

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ASTM C1523, Modulus, Tear, and Adhesion Properties
This method utilizes five sets of six specimens. The construction of each specimen consists of 1" x 1" x 3" mortar substrates and a connecting seal of the DOWSIL™ Silicone Transition Strip pre-cured sealant that covers a 12 mm gap and is 50 mm in length. The DOWSIL™ 791 Silicone was used for the adhesive sealant. See Figure 1 below.

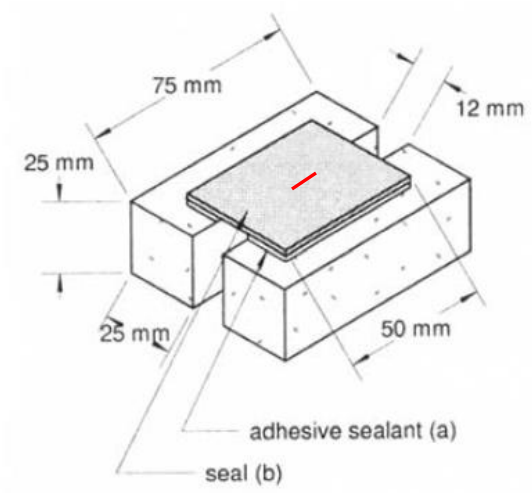

Figure 1

Each set of six specimens is comprised of two types: three unmodified throughout the duration of testing and three have a slit cut parallel to and at the center of the gap. The slit is 5 mm in length and is signified as the added red line in Figure 1.

All specimens cured for 21 days at standard lab conditions of 70°F and 50% relative humidity. One set was maintained at standard conditions, one set was submerged for 24 hours in room temperature water, one set was conditioned for 24 hours at 0°F, one set was conditioned for 24 hours at 158°F, and the final set was artificially weathered in a Fluorescent UV chamber (ICN: Y000174) for 2,500 hours. At the completion of each period of exposure, each specimen was secured into tensile grips on an Instron Model 3369 Universal Test Machine (ICN: 005740) utilizing a 2kN load cell (ICN: 005742) and extended at a rate of 2 inches per minute until an elongation of 200% was attained. The maximum initial load or tear propagation load was recorded and the position held for one hour. The load at the end of the hour was also recorded. The specimens were inspected for adhesive/cohesive bond loss and any observations noted. For the slit specimens, additional observations of No Tear (NT), Partial Tear (PT) and Tear (T) were recorded.

The three unmodified specimens were then tested to failure (break) at the same rate of 2 inches per minute. The maximum load, extension at maximum load and any observations were recorded.

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SECTION 7
TEST SPECIMEN DESCRIPTIONS

TEST PROCEDURE	NUMBER OF SPECIMENS	NOMINAL SPECIMEN DIMENSIONS	VISUAL CHARACTERISTICS
ASTM D412	5	1" x 4-1/2" (Die "C" Cut)	Silicone Transition Strip
ASTM C1523	30	1" x 2-1/2" x 3"	Silicone Transition Strip and DOWSIL™ 791 Silicone Waterproofing Sealant constructed specimens

SECTION 8
TEST RESULTS

ASTM D412 - Tensile Strength and Elongation

SPECIMEN IDENTIFICATION	THICKNESS (in)	WIDTH (in)	BREAK LOAD (lb_f)	TENSILE STRENGTH (psi)	ELONGATION (%)
1	0.045	0.250	10.0	885	520
2	0.045	0.250	10.3	919	512
3	0.045	0.250	10.2	904	525
4	0.045	0.250	10.6	941	535
5	0.045	0.250	10.2	908	535
Average			**10.3**	**911**	**525**

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Dry/Room Temperature - DOWSIL™ STS

HOLD LOAD PORTION OF TEST (200%)				
SPECIMEN	**MAXIMUM INITIAL LOAD (lb_f)**	**ONE-HOLD LOAD (lb_f)**	**TEAR PROPAGATION**	**MEASURED BOND LOSS (mm)**
1 Unmodified	26.9	17.4	None	1.6
2 Unmodified	30.4	20.0	None	0.0
3 Unmodified	25.0	17.0	None	2.8
Average	**27.5**	**18.1**	--	**1.5**
SPECIMEN	**TEAR PROPAGATION LOAD (lb_f)**	**ONE-HOLD LOAD (lb_f)**	**TEAR PROPAGATION**	**MEASURED BOND LOSS (mm)**
1 Slit	27.4	15.5	PT	3.2
2 Slit	26.9	15.5	PT	1.0
3 Slit	25.6	16.2	PT	1.8
Average	**26.6**	**15.8**	--	**2.0**
TEST TO FAILURE (BREAK)				
SPECIMEN	**MAXIMUM LOAD (lb_f)**	**EXTENSION AT MAXIMUM LOAD (in)**	**TEAR PROPAGATION**	**MEASURED BOND LOSS (mm)**
1 Unmodified	53.5	2.52	None	2.1
2 Unmodified	53.2	3.88	None	5.7
3 Unmodified	53.3	5.00	None	8.1
Average	**53.3**	**3.80**	--	**5.3**

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Water Immersed - DOWSIL™ STS

HOLD LOAD PORTION OF TEST (200%)				
SPECIMEN	**MAXIMUM INITIAL LOAD (lb_f)**	**ONE-HOLD LOAD (lb_f)**	**TEAR PROPAGATION**	**MEASURED BOND LOSS (mm)**
1 Unmodified	26.7	18.4	None	1.3
2 Unmodified	28.4	19.9	None	0.0
3 Unmodified	26.2	18.6	None	1.8
Average	**27.1**	**19.0**	--	**1.0**

SPECIMEN	**TEAR PROPAGATION LOAD (lb_f)**	**ONE-HOLD LOAD (lb_f)**	**TEAR PROPAGATION**	**MEASURED BOND LOSS (mm)**
1 Slit	25.0	17.7	NT	0.5
2 Slit	27.1	19.0	NT	1.3
3 Slit	25.4	17.4	NT	2.4
Average	**25.8**	**18.0**	--	**1.4**

TEST TO FAILURE (BREAK)				
SPECIMEN	**MAXIMUM LOAD (lb_f)**	**EXTENSION AT MAXIMUM LOAD (in)**	**TEAR PROPAGATION**	**MEASURED BOND LOSS (mm)**
1 Unmodified	52.9	4.07	None	3.4
2 Unmodified	55.7	2.90	None	3.3
3 Unmodified	56.6	5.13	None	10.5
Average	**55.1**	**4.03**	--	**5.7**

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Frozen (0°F) - DOWSIL™ STS

HOLD LOAD PORTION OF TEST (200%)				
SPECIMEN	**MAXIMUM INITIAL LOAD (lb_f)**	**ONE-HOLD LOAD (lb_f)**	**TEAR PROPAGATION**	**MEASURED BOND LOSS (mm)**
1 Unmodified	31.6	20.8	None	0.0
2 Unmodified	34.9	23.0	None	0.0
3 Unmodified	33.4	21.7	None	0.0
Average	**33.3**	**21.8**	--	**0.0**

SPECIMEN	**TEAR PROPAGATION LOAD (lb_f)**	**ONE-HOLD LOAD (lb_f)**	**TEAR PROPAGATION**	**MEASURED BOND LOSS (mm)**
1 Slit	31.4	20.8	NT	0.0
2 Slit	32.4	14.6	PT	0.0
3 Slit	32.4	21.6	NT	0.0
Average	**32.1**	**19.0**	--	**0.0**

TEST TO FAILURE (BREAK)				
SPECIMEN	**MAXIMUM LOAD (lb_f)**	**EXTENSION AT MAXIMUM LOAD (in)**	**TEAR PROPAGATION**	**MEASURED BOND LOSS (mm)**
1 Unmodified	49.4	2.87	None	1.2
2 Unmodified	53.1	3.45	None	1.2
3 Unmodified	52.7	3.39	None	10.7
Average	**51.7**	**3.24**	--	**4.4**

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Heated (158°F) - DOWSIL™ STS

HOLD LOAD PORTION OF TEST (200%)				
SPECIMEN	**MAXIMUM INITIAL LOAD (lb_f)**	**ONE-HOLD LOAD (lb_f)**	**TEAR PROPAGATION**	**MEASURED BOND LOSS (mm)**
1 Unmodified	34.3	21.4	None	0.0
2 Unmodified	31.9	20.4	None	1.6
3 Unmodified	33.7	20.4	None	3.9
Average	**33.3**	**20.7**	--	**1.8**

SPECIMEN	**TEAR PROPAGATION LOAD (lb_f)**	**ONE-HOLD LOAD (lb_f)**	**TEAR PROPAGATION**	**MEASURED BOND LOSS (mm)**
1 Slit	32.8	20.7	NT	0.0
2 Slit	31.8	18.9	PT	2.8
3 Slit	32.7	20.3	NT	0.0
Average	**32.4**	**20.0**	--	**0.9**

TEST TO FAILURE (BREAK)				
SPECIMEN	**MAXIMUM LOAD (lb_f)**	**EXTENSION AT MAXIMUM LOAD (in)**	**TEAR PROPAGATION**	**MEASURED BOND LOSS (mm)**
1 Unmodified	56.0	2.64	None	2.5
2 Unmodified	54.4	3.13	None	8.9
3 Unmodified	52.0	3.61	None	1.2
Average	**54.1**	**3.13**	--	**4.2**

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UV Weathered - DOWSIL™ STS

HOLD LOAD PORTION OF TEST (200%)				
SPECIMEN	**MAXIMUM INITIAL LOAD (lb_f)**	**ONE-HOLD LOAD (lb_f)**	**TEAR PROPAGATION**	**MEASURED BOND LOSS (mm)**
1 Unmodified	33.5	21.0	None	0.0
2 Unmodified	35.0	22.1	None	2.0
3 Unmodified	33.0	20.4	None	1.6
Average	**33.8**	**21.2**	**--**	**1.2**
SPECIMEN	**TEAR PROPAGATION LOAD (lb_f)**	**ONE-HOLD LOAD (lb_f)**	**TEAR PROPAGATION**	**MEASURED BOND LOSS (mm)**
1 Slit	25.44	7.2	PT	1.3
2 Slit*	31.58	N/A	T	1.2
3 Slit*	29.46	N/A	T	0.0
Average	**28.8**	**N/A**	**--**	**0.8**
TEST TO FAILURE (BREAK)				
SPECIMEN	**MAXIMUM LOAD (lb_f)**	**EXTENSION AT MAXIMUM LOAD (in)**	**TEAR PROPAGATION**	**MEASURED BOND LOSS (mm)**
1 Unmodified	55.5	2.54	None	4.9
2 Unmodified	53.3	2.28	None	7.3
3 Unmodified	50.0	2.60	None	4.8
Average	**52.9**	**2.47**	**--**	**5.7**

*Note: The specimens with the slit did not reach the full extension due to a complete separation occurring.

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SECTION 9
CONCLUSION

The DOWSIL™ Silicone Transition Strip met the specified performance requirements set forth by SWRI for ASTM D412 Ultimate Elongation and Tensile Strength.

The DOWSIL™ Silicone Transition Strip met the specified performance requirements set forth by SWRI for ASTM C1523 for Movement, Cohesion, and Adhesion at 200%.

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SECTION 10
PHOTOGRAPHS

Photo No. 1
DOWSIL™ Silicone Transition Strip As-Received

Photo No. 2
DOWSIL™ 791 Silicone Waterproofing Sealant As-Received

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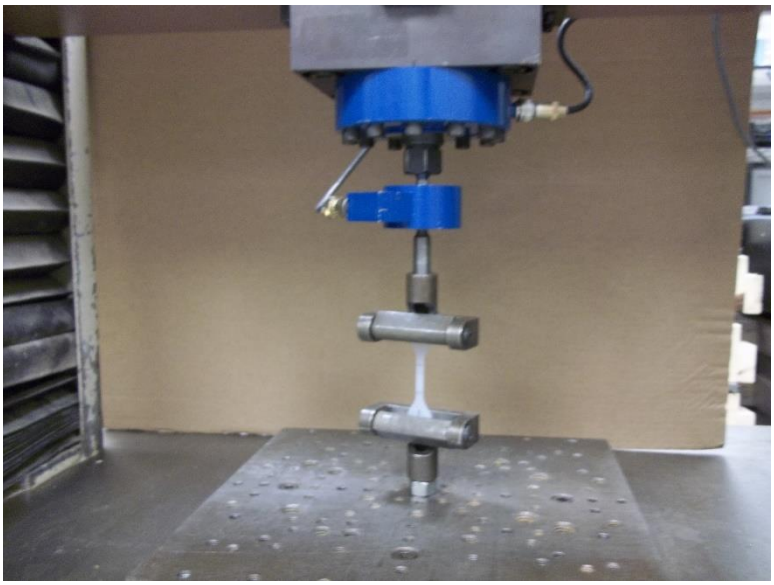

Photo No. 3
ASTM D412 - Test Setup Detail (Typical)

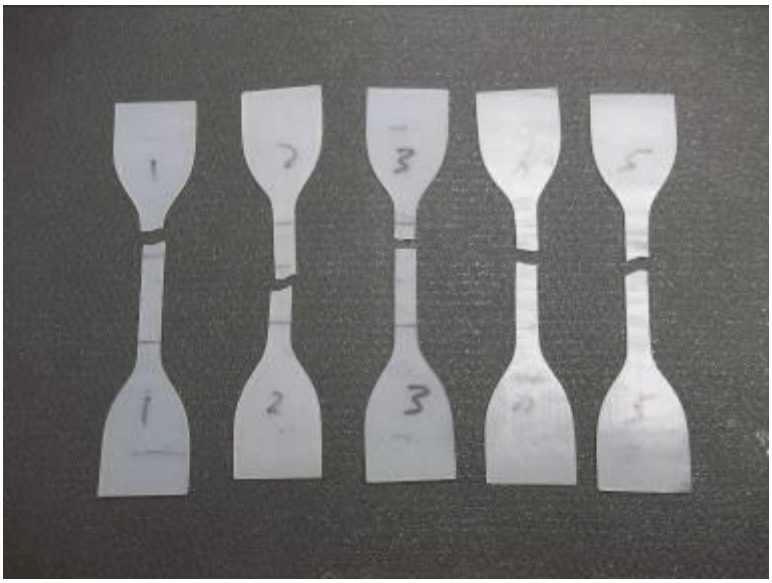

Photo No. 4
ASTM D412 Specimens Failure Detail (Typical)

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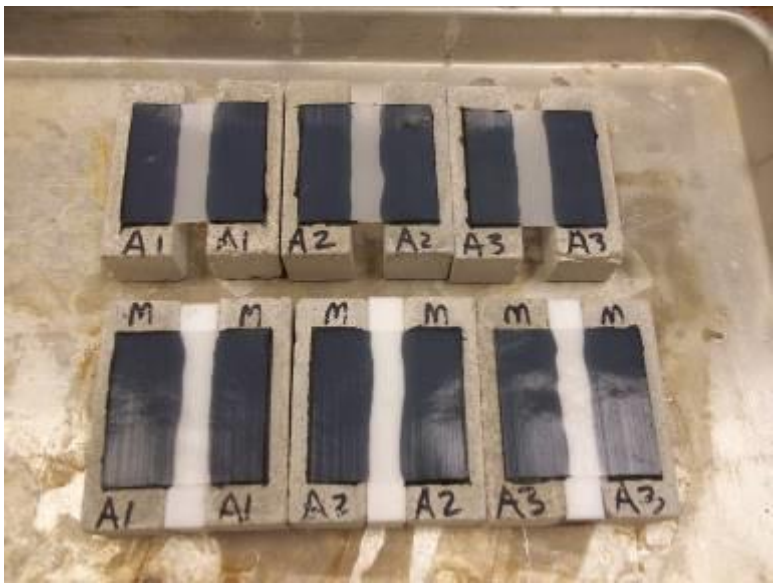

Photo No.5
Ambient Specimens Prior to Testing

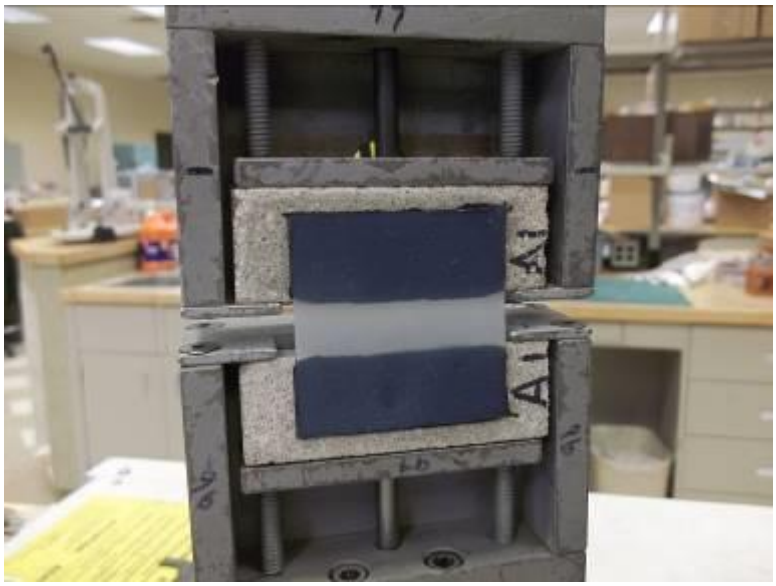

Photo No. 6
Test Setup Detail (Typical)

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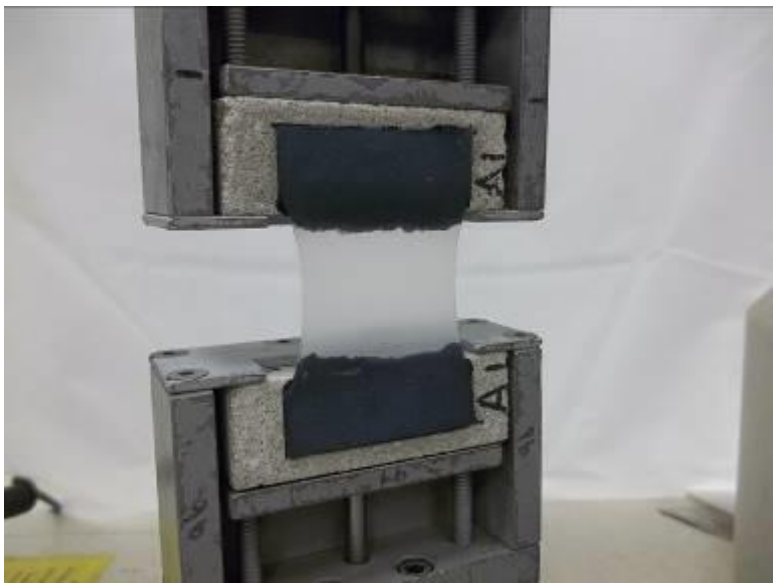

Photo No. 7
ASTM C1523 Dry/ Room Temperature Unmodified Specimen During 1-Hour Hold Cycle Detail (Typical)

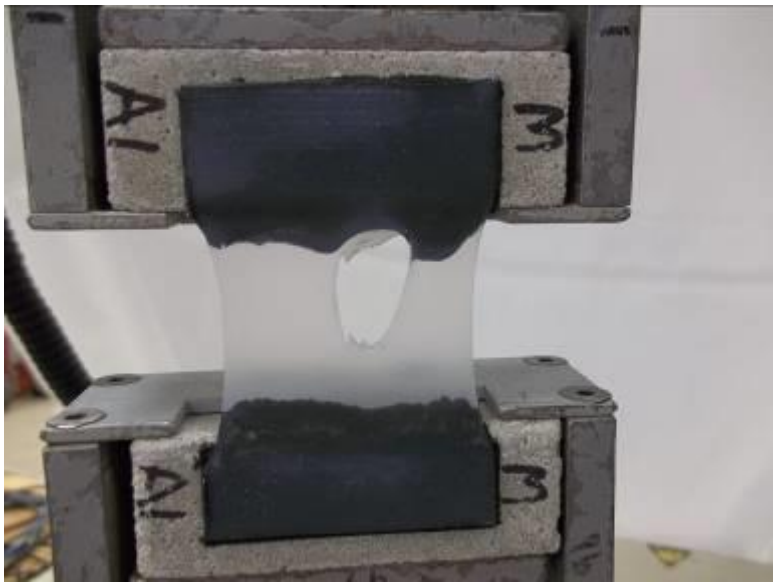

Photo No. 8
ASTM C1523 Dry/Room Temperature Modified Specimen During 1-Hour Hold Cycle Detail (Typical)

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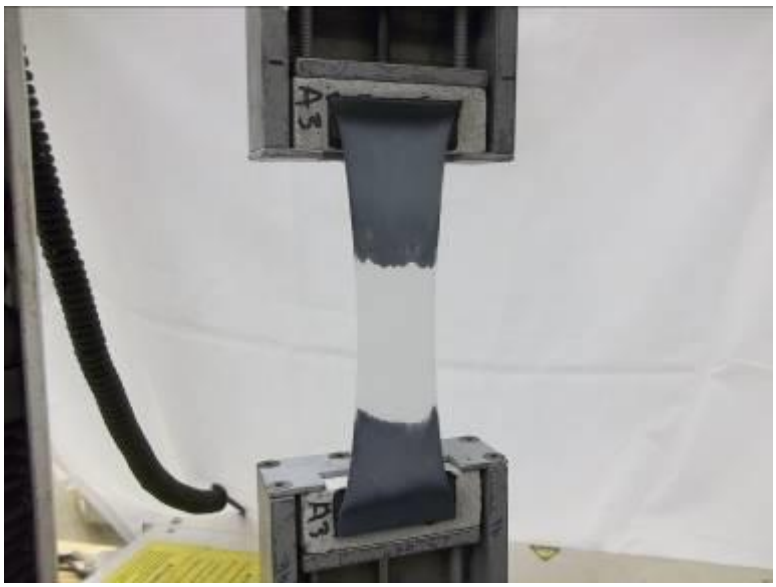

Photo No. 9
ASTM C1523 Dry/Room Temperature Unmodified Specimen During Breaking Load

Photo No. 10
ASTM C1523 Dry/Room Temperature Unmodified Specimen During Breaking Load Failure Detail (Typical)

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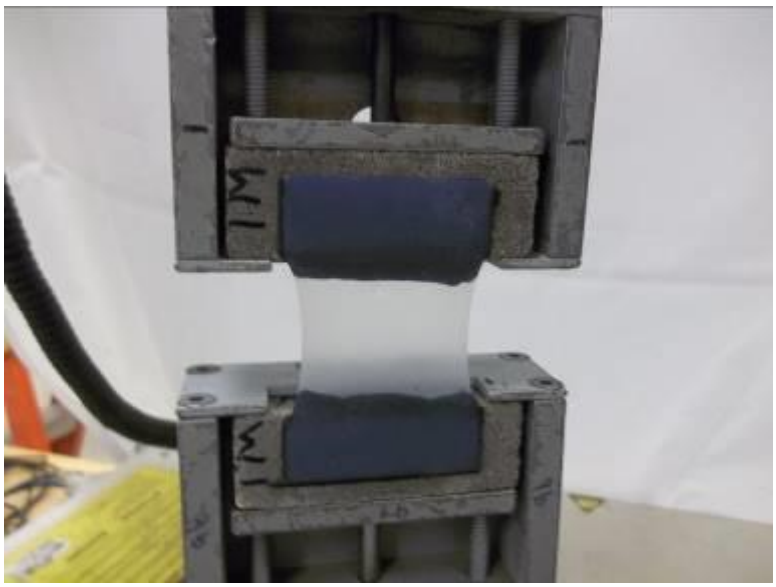

Photo No. 11
ASTM C1523 Water Immersed Unmodified Specimen
During 1-Hour Hold Cycle Detail (Typical)

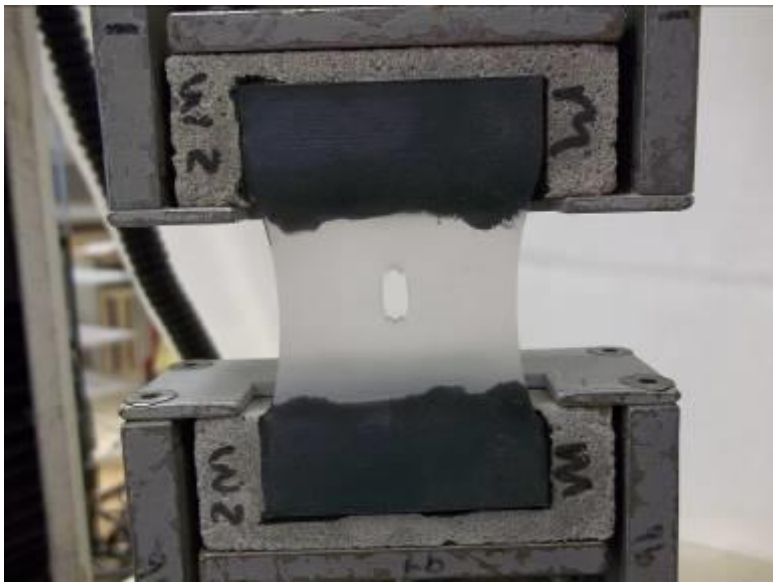

Photo No. 12
ASTM C1523 Water Immersed Modified Specimen
During 1-Hour Hold Cycle Detail (Typical)

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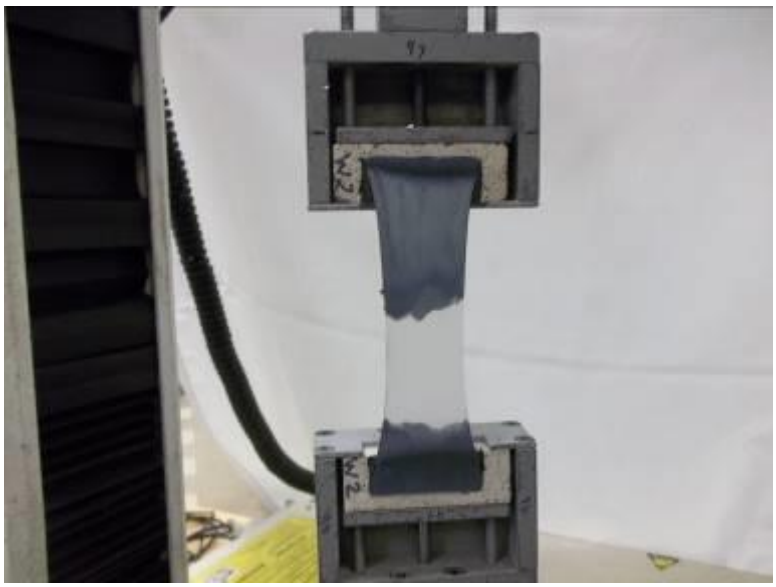

Photo No. 13
ASTM C1523 Water Immersed Unmodified Specimen
During Breaking Load

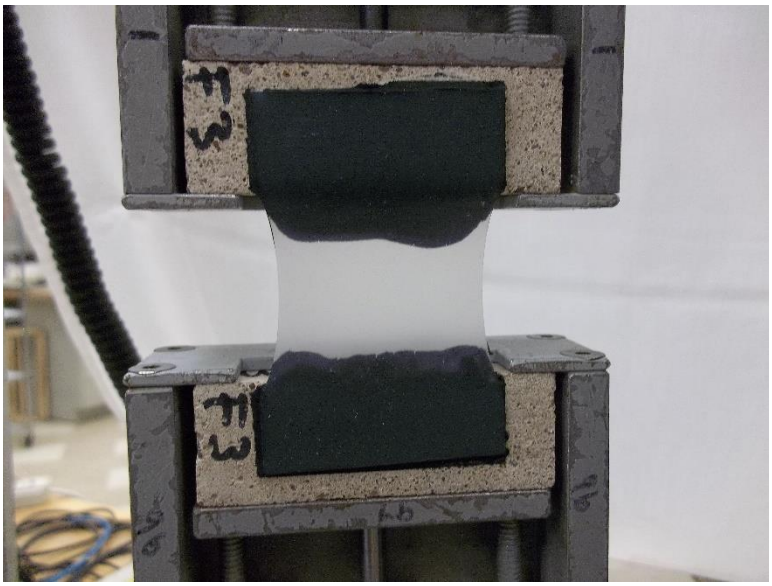

Photo No. 14
ASTM C1523 Frozen (0˚F) Unmodified Specimen
During 1-Hour Hold Cycle Detail (Typical)

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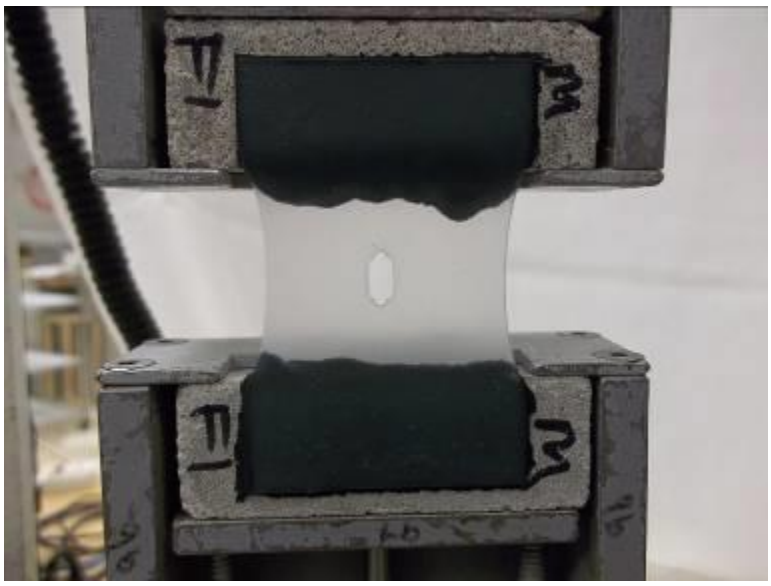

Photo No. 15
ASTM C1523 Frozen (0˚F) Modified Specimen
During 1-Hour Hold Cycle Detail (Typical)

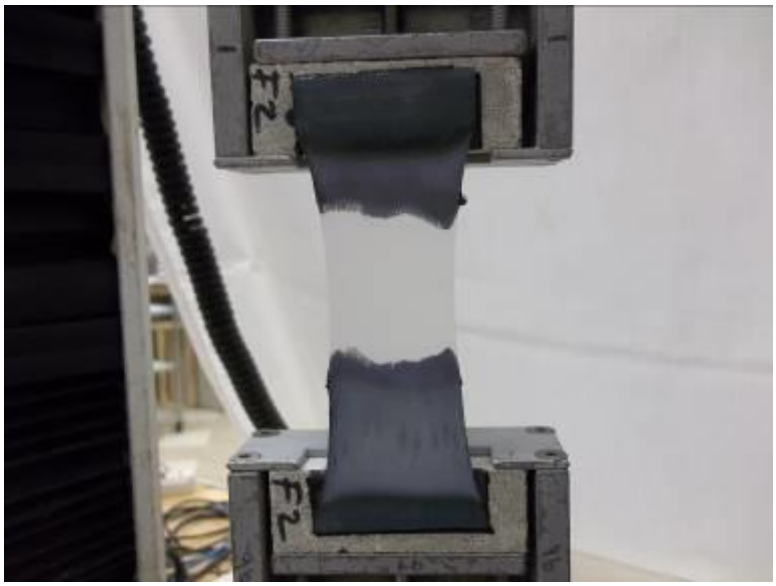

Photo No. 16
ASTM C1523 Frozen (0˚F) Unmodified Specimen
During Breaking Load

130 Derry Court
York, Pennsylvania 17406

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TEST REPORT FOR DOW SILICONES CORPORATION
Report No.: H4145.01-106-31 R3
Date: 10/12/18

Photo No. 17
ASTM C1523 Frozen (0˚F) Unmodified Specimen
During Breaking Load Failure Detail (Typical)

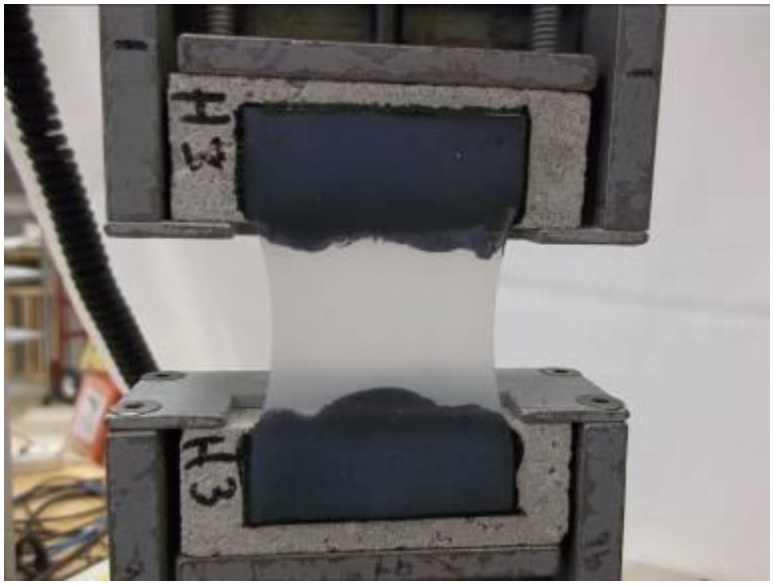

Photo No. 18
ASTM C1523 Heated (158˚F) Unmodified Specimen
During 1-Hour Hold Cycle Detail (Typical)

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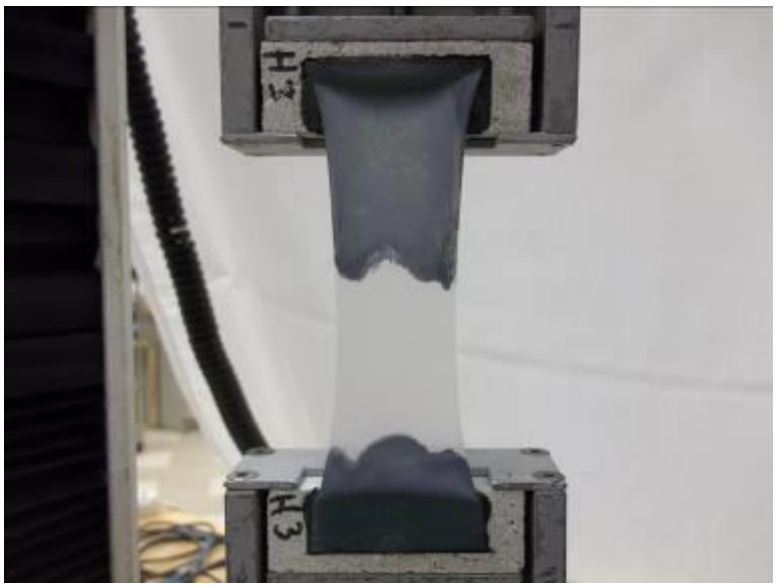

Photo No. 19
ASTM C1523 Heated (158˚F) Unmodified Specimen
During Breaking Strength (Typical)

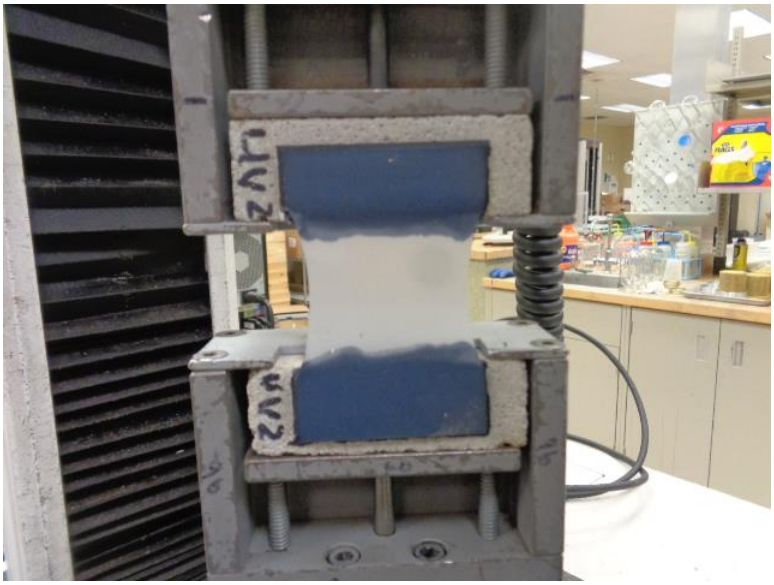

Photo No. 20
ASTM C1523 UV Weathered Unmodified Specimen
During 1-Hour Hold Cycle Detail (Typical)

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Date: 10/12/18

Photo No. 21
ASTM C1523 UV Weathered Modified Specimen
During 1-Hour Hold Cycle Detail (Typical)

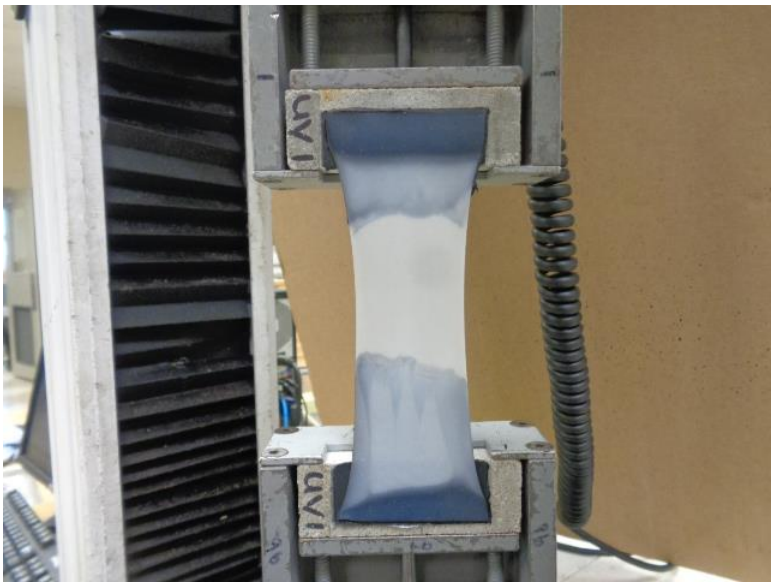

Photo No. 22
ASTM C1523 UV Weathered Unmodified Specimen
During Breaking Strength (Typical)

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SECTION 11
REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	10/12/18	N/A	Original Report Issue
1	01/10/19	3, 8, 9, 10, 11, 12, 22, 23	Corrections for failure modes of modified specimens, conclusion statement, photos, and results for UV Weathered Specimens were added.
2	01/10/19	1	Revision of test completed dates and record retention end date.
3	06/17/19	1	Updated retention date to 5 years, per SWRI.
		2-13	Revision of product name from DowSil™ to DOWSIL™.