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TEST REPORT

REPORT NO : 2016PC0814	PAGE NO : 1 OF 5

Applicant	:	LOCKWELL SYSTEMS SDN. BHD. 16, Jalan TP 3/2 Taman Perindustrian UEP 47630 Subang Jaya Selangor Darul Ehsan
Manufacturer	:	LOCKWELL SYSTEMS CO LTD 199/5 Moo 21, Soi Chongsiri Parkland T. Bangpleeyai, A. Bangplee Samutprakarn, 10540 Thailand
Product	:	LOCKWELL, Trademark: LOCKWELL
Reference Standards	:	Please refer to Page 2.
Description of Sample	:	Please refer to Pages 2 and 3.
Date Received of Complete Application	:	13 October 2016
Job No.	:	J20161460482
Description of Test Results	:	The test results of the submitted test sample are described in Pages 4 and 5 of this test report.
Issued Date	:	8 November 2016

Approved Signatory:

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(Nazariah Mosman)
Testing Executive

SIRIM QAS International Sdn. Bhd.
Plastics & Composite Materials Section

.....
(Rahmad Abd Shukor)
Head
Plastics and Composite Materials Section
Testing Services Department

Reference Standards:

1. ASTM D412:2013 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomer – Tension[1]
2. ASTM D624:2012 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers[1]
3. ASTM D4060:2010 - Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser[1]
4. ASTM D570:2010$^{\varepsilon 1}$ - Standard Test Method for Water Absorption of Plastics[1]
5. ASTM D2240:2015 – Standard Test Method for Rubber Property – Durometer Hardness[1]

Description of sample:

Five (5) pieces of test specimens with dimensions of approximately 300 mm x 300 mm x 3 mm, ten (10) pieces test specimens with dimensions of approximately 100 mm x 100 mm x 3 mm and thirteen (13) test specimens with dimensions of approximately 50 mm x 50 mm x 3 mm indicated as 'LOCKWELL P515 (PURE POLYUREA)' were received on 5 October 2016 (see Figures 1 to 3).

Figure 1. Photograph of 'LOCKWELL P515 (PURE POLYUREA)' Sample (Dimensions: 300 mm x 300 mm x 3 mm)

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Description of sample (Continued):

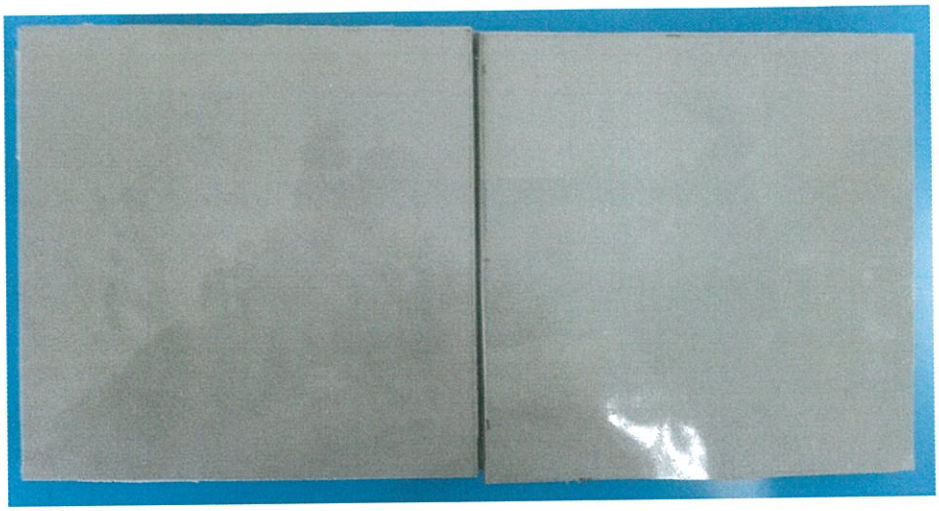

Figure 2. Photograph of 'LOCKWELL P515 (PURE POLYUREA)' Sample (Dimensions: 100 mm x 100 mm x 3 mm)

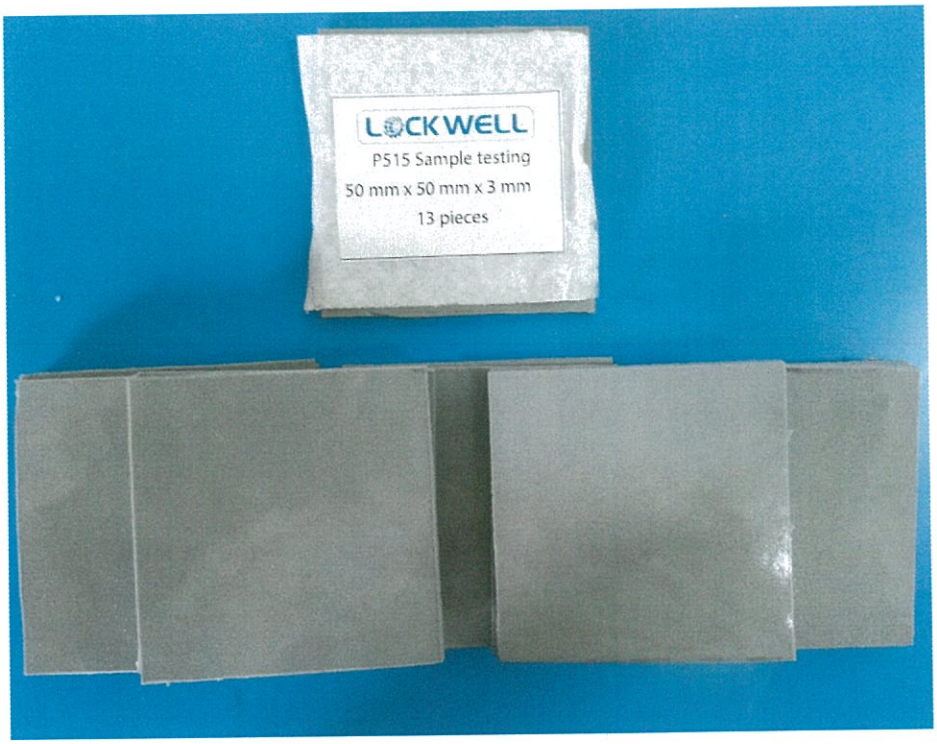

Figure 3. Photograph of 'LOCKWELL P515 (PURE POLYUREA)' Sample (Dimensions: 50 mm x 50 mm x 3 mm)

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Results:

LOCKWELL P515 (PURE POLYUREA)

NO.	PROPERTY	RESULT	TEST METHOD/REQUIREMENT
1	Tensile Properties		ASTM D412
	- Tensile Strength, MPa	16.4	Test speed: 50 mm/minute Number of test specimens tested: 5 Date of test: 3 November 2016
	- Tensile Modulus at 100%, psi	1,020	
	- Tensile Modulus at 200%, psi	625	
	- Tensile Modulus at 300%, psi	508	
	- Elongation at Break, %	580	
2	Tear Strength, kN/m	70.9	ASTM D624 Test speed: 500 mm/minute Type of test piece: Type C Number of test specimens tested: 5 Date of test: 3 November 2016
3	Abrasion Resistance – Weight Loss, mg		ASTM D4060
	- Abrasive wheel type: No. CS-17	0.03	Load applied: 1 kg Number of cycles: 1,000 Date of test: 27 October 2016
	- Abrasive wheel type: No. H-18	0.46	

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Results (Continued):

LOCKWELL P515 (PURE POLYUREA)

NO.	PROPERTY	RESULT	TEST METHOD/REQUIREMENT
4	Water absorption at room temperature, wt %	0.87	ASTM D570 Duration of immersion: 24 hours Number of test specimens tested: 3 Date of test: 27 October 2016
5	Water absorption at 95°C, wt %	0.63	ASTM D570 Duration of immersion: 2 hours Number of test specimens tested: 3 Date of test: 27 October 2016
6	Hardness, Shore D	45	ASTM D2240 Specimen Thickness: 8.00 mm Time Interval: 1 second Method of Calculation: Arithmetic mean Temperature: 23.3°C Humidity: 53% RH Date of Test: 27 October 2016