

TEST REPORT

No. : SHIN1509044389PS-03

Date : Feb 19, 2016

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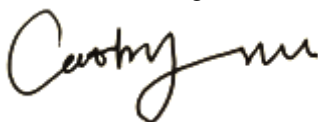
CUSTOMER NAME: TOLI CORPORATION
ADDRESS: 5-125 HIGASHI ARIOKA, ITAMI-SHI, HYOGO, JAPAN

This Report cancels and supersedes the Report No.: SHIN1509044389PS dated: Nov 30, 2015 issued by SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd, original report will be invalid from today.

The following sample(s) was/ were submitted and identified on behalf of the client as:

Sample Name : PVC SHEET
Product Specification : W1820mm×9m/roll
Product or Lot No. : 28SF3035
Manufacturer : TOLI CORPORATION
Material and Mark : SF FLOOR NW
Date of Receipt : Sep 26, 2015
Testing Start Date : Sep 26, 2015
Testing End Date : Nov 30, 2015
Test result(s) : For further details, please refer to the following page(s)

Signed for
SGS-CSTC Standards Technical
Services (Shanghai) Co., Ltd.



Cathy Wu
Authorized signatory



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Lab environmental condition: 23±2℃, 50±5%RH

1. Test Item: Overall Thickness

Test Method: EN ISO 24346:2012

Test Result: 2.84 mm

Note: Test specimens were cut from the sample.

2. Test Item: Thickness of Wear Layer

Test Method: EN ISO 24340:2012

Test Result: 0.34 mm

Note: Test specimens were cut from the sample.

3. Test Item: Mass Per Unit Area

Test Method: EN ISO 23997:2012

Test Result: 2369 g/m²

Note: Test specimens were cut from the sample.

4. Test Item: Length and Width

Test Method: EN ISO 24341:2012

Test Result: Length: 9600 mm

Width: 1843mm

5. Test Item: Residual Indentation

Test Method: EN ISO 24343-1:2012

Test Result: 0.15mm

Note: Test specimens were cut from the sample.



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6. Test Item: Staining and Resistance to Chemicals

Test Method: EN ISO 26987:2012

Test Result: Index ^{Note (2)} (tested by synthetic detergent): 0

Notes:

(1) Test specimens were cut from the sample.

(2) Interpretation and presentation of results:

Index	Effect of test after cleaning/abrasion
0	Not affected
1	Slight
2	Moderate
3	Severe

7. Test Item: Dimensional Stability and Curling after Exposure to Heat

Test Method: EN ISO 23999:2012

Test Result:

Dimensional change: Manufacturing direction: 0.04%

Across-manufacturing direction: 0.05%

Curling: 0mm

Note: Test specimens were cut from the sample.

8. Test Item: Color Fastness to Light

Test Method: ISO 105-B02:2014; use Xenon arc lamp, exposure cycle A1, no flip-flop mode was used

Test Result:

Comparison upto blue wool reference 6

Grade (Bluewool Std)

6(all)



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9. Test Item: Dynamic Coefficient of Friction

Test Method: EN 13893:2002

Test Condition:

Specimen thickness: 2.65mm

Total mass of slider assembly: 10kg

Testing speed: 0.26m/s

Test Result: 0.49

10. Test Item: Wear Resistance

Test Method: EN 660-2:1999+ A1:2003 and EN 649:2011

Test Condition: Weigh the specimens to an accuracy of $\pm 0.1\text{mg}$ after conditioning. Load each wheel with a weight of $(1 \pm 0.01)\text{ kg}$. The flow of abrasive is $(21 \pm 3)\text{g/min}$. Abrade one specimen during 5000 revolutions, with a break for weighing after each cycle of 1000 revolutions, and then test the two remaining specimens. If, however, the first specimen is abraded through before 5000 revolutions, discard it and test the two remaining specimen in cycles of 200 revolutions stopping the test after 2000 revolutions or when the specimen is abraded through.

Calculate the average mass loss. F_m , in milligrams per 100 revolutions for each specimen as follows:

$$F_m = \frac{F_{tot}}{n} \times 100$$

Calculate the loss of volume for each specimen for 100 revolutions as follows:

$$F_v = \frac{F_m}{\rho}$$

Requirement of EN 649:2011:

Characteristic	Requirements for wear group			
	T	P	M	F
Volume loss $F_v(\text{mm}^3)/100\text{revolutions}$	$F_v \leq 2.0$	$2.0 < F_v \leq 4.0$	$4.0 < F_v \leq 7.5$	$7.5 < F_v \leq 15.0$



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Test Result:

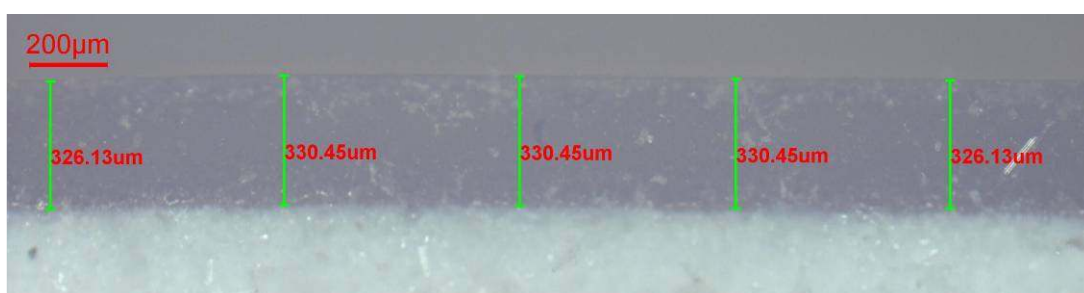
Test result	Wear grade
Fv=1.0mm ³ /100revolutions	T

Note: Test specimens were cut from the sample.

Sample Photo:



Sample



Wear layer Thickness Test

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11. Test Item: Test for Resistance to Bacteria

Test Method: ISO 846-1997 Plastics-Evaluation of the action of microorganisms

Method C: Resistance to bacteria

Test Organisms: *Pseudomonas aeruginosa* ATCC 19429

Test Condition: The dimensions of the specimens: 50×50mm

Incubation temperature: 28°C

Microbicidal solution: Do alcohol treatment on the surface of the sample and dry at 45 °C for 4 h. Disinfect Batch S sample by dipping into *o*-Phenylphenol solution.

Test Result:

1) Assessment of bacteria growth

Test organism	Concentration of bacteria cell suspension (cfu/mL)	Level of growth on the specimens (after 28 days)	
		Inoculated specimens for incubation (Batch I)	Sterile controls (Batch S)
<i>Pseudomonas aeruginosa</i> ATCC19429	3.7×10^8	5	0

2) Change in mass: $\Delta m = 0\%$



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Assessment of bacteria growth:

0: No growth apparent under the microscope.

1: No growth visible to the naked eye, but clearly visible under the microscope.

2: Growth visible to the naked eye, covering up to 25% of the test surface.

3: Growth visible to the naked eye, covering up to 50% of the test surface.

4: Considerable growth, covering more than 50% of the test surface.

5: Heavy growth, covering the entire test surface.

Sample Photo:



- The test item 9~10 were performed by SGS other internal laboratory.

***** End of report*****