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# TUV SUD PSB Singapore

Choose certainty.

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#### **SUBJECT:**

**Chemical Spot Test** 

### **TESTED FOR:**

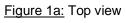
Greenlam Asia Pacific Pte. Ltd. 11 Sungei Kadut Crescent Singapore 728683

Attn: Ms Huiping Lin

#### **SAMPLES DESCRIPTION:**

Ten pieces of laminate test specimen (shown in Figure 1) were submitted by Greenlam Asia Pacific Pte. Ltd. on 9 November 2012 for testing.





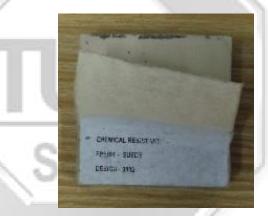


Figure 1b: Bottom View

### **TEST METHODS (AS SPECIFIED AND AGREED BY THE CLIENT):**

<u>SEFA - 1999 Laboratory Funiture Casework, Shelving and Tables Recommended Practices</u> Clause 8.1 - Chemical Spot Test

Nominal specimen dimensions: as received

Reagents : Acids, Solvents, Bases, General Reagents, Stains and Indicators

Test condition :  $23 \pm 2$  °C for 24 h Observation : By visual method



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TÜV SÜD Asia Pacific Pte. Ltd.
3 Science Park Drive, #04-01/05
The Franklin, Singapore 118223

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## **TESR RESULTS:**

Reagents	Observation	Level			
A. Acids					
1. 20% Nitric Acid	No detectable change	0			
2. 30% Nitric Acid	No detectable change	0			
3. 65% Nitric Acid	No detectable change	0			
4. 99% Glacial Acteic Acid	No detectable change	0			
5. 33% Sulphuric Acid	No detectable change	0			
6. 77% Sulphuric Acid	No detectable change	0			
7. 85% Sulphuric Acid	No detectable change	0			
8. 96% Sulphuric Acid	No detectable change	0			
9. 85% Phosphoric Acid	No detectable change	0			
10. 90% Formic Acid	Severe staining	2			
11. 48% Hydrofluoric Acid	Obvious and significant	3			
11. 40% Hydrondone Acid	deterioration				
12. Aqua Regia, 77% Sulphuric Acid &	No detectable change	0			
65% Nitric Acid equal parts	140 detectable change				
13. 60% Chromic Trioxide (Chromic Acid	No detectable change	0			
Cleaning Solution)	No detectable change				
14. 60% Perchloric Acid	Slight change in color/gloss	1			
	Slight change in colorgioss				
B. Solvents  1. Carbon Tetrachloride	No detectable change	0			
2. Acetone	No detectable change	0			
3. 37% Formaldehyde	Slight change in color/gloss	1			
4. Methanol	No detectable change	0			
5. Ethyl Acetate	No detectable change	0			
6. Toluene	No detectable change	0			
7. N-Hexane	No detectable change	0			
8. Ethyl Alcohol	No detectable change	0			
9. Chloroform	Slight change in color/gloss	1			
10. 80% Phenol Solution	No detectable change	0			
11. Xylene	No detectable change	0			
12. Amyl acetate	No detectable change	0			
13. Dimethylformamide	No detectable change	0			
14. Methylene Chloride	No detectable change	0			
15. Methyl Ethyl Ketone	No detectable change	0			
16. Tetrahydrofuran	No detectable change	0			
C. Bases					
1. 10% Sodium Hydroxide	No detectable change	0			
2. 20% Sodium Hydroxide	No detectable change	0			
3. 40% Sodium Hydroxide	No detectable change	0			
4. Sodium Hydroxide Flakes	No detectable change	0			
5. 25% Ammonium Hydroxide	No detectable change	0			





## **TEST RESULTS (CONT'D):**

Reagents	Observation	Level			
D. General Reagents					
1. 5% Sodium Hypochloride	No detectable change	0			
2. 3% Hydrogen Peroxide	No detectable change	0			
3. 30% Trisodium Phosphate	No detectable change	0			
4. Zinc Chloride (saturated solution)	No detectable change	0			
5. Gasoline	No detectable change	0			
6. Kerosene	No detectable change	0			
7. Mineral Oil	No detectable change	0			
8. Vegetable Oil (Olive)	No detectable change	0			
9. Water	No detectable change	0			
10. 0.1% Potassium Permanganate	No detectable change	0			
11. 5% Silver Nitrite	No detectable change	0			
12. 5% Copper Sulphate	No detectable change	0			
13. Ethylene Glycol	No detectable change	0			
14. Karl Fischer Reagent	No detectable change	0			
15. 5% Urea	No detectable change	0			
16. 5% Ferric Sulphate	No detectable change	0			
E. Stains and Indicators					
1. 0.1 % Phenolphthalein	No detectable change	0			
2. 0.1% Methyl Red	Severe staining	2			
3. 1% Gentian Violet	No detectable change	0			
4. 0.1% Methylene Blue	Severe staining	2			
5. 0.1% Crystal Violet	No detectable change	0			
6. 0.1% Malachite Green	No detectable change	0			
7. 0.1 Thymol Blue	No detectable change	0			

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## **TEST RESULTS (CONT'D):**

	Reagents	Observation	Level
1.	65% Nitric Acid	No detectable change	0
2.	65% Nitric Acid: 37% Hydrochloric Acid (1:3)	No detectable change	0
3.	85% Sulphuric Acid	No detectable change	0
4.	77% Sulfuric Acid: 65% Nitric Acid (1:1)	No detectable change	0
5.	85% Sulfuric Acid: 70% Nitric Acid (1:1)	No detectable change	0
6.	10% Potassium Iodite	No detectable change	0
7.	10% Sodium Chloride	No detectable change	0
8.	13% Sodium Hypochlorite	No detectable change	0
9.	Iodine (Crystals)	Severe staining	2
10.	Iodine Solution (0.1N)	Slight change in color/gloss	1
11.	Dimethylformamide	No detectable change	0
12.	90% Phenol	No detectable change	0
13.	Acetonitrile	No detectable change	0
14.	Benzene	No detectable change	0
15.	Butyl Alcohol	No detectable change	0
16.	Dichloromethane	No detectable change	0
17.	Dioxane	No detectable change	0
18.	Diethyl Ether	No detectable change	0
19.	Ethylene Glycol	No detectable change	0
20.	Napthelene	No detectable change	0
21.	Trichloroethylene	No detectable change	0
22.	Aniline Blue, water soluble 1%	No detectable change	0
23.	Congo Red 1%	No detectable change	0

## **NOTES**

- Level 0 No detectable change.
- Level 1 Slight change in color or gloss. Level 2 Slight surface etching or severe staining.
- Level 3 Pitting, Cratering, swelling, or erosion of coating, obvious and significant deterioration.

Ting Yeow Wah

Higher Associate Engineer

Kong Siew Yong Senior Associate Engineer **Polymer Products** Mechanical Centre



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