

Test Report No. 5368132

Date : 16-Sep-2022

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**Client : Excel Packaging Co.,Ltd.  
135,135/1-2 Moo 9 Soi Kratoomlom 9 Puthamonthon Sai 4 Road  
Kratoomlom,Sampran Nakornpathom 73220 Thailand**

The following sample(s) was/were submitted and identified by client as:

Sample Name : PS (Sheet & Tray)  
Sample Description : PS  
Color : White

The following sample(s) was/were identified by SGS as:

SGS Sample No. : 5595129  
Sample Condition : Sample is contained in a plastic bag.  
Quantity Submitted : 1 pack  
Sample Receiving Date : 6-Sep-2022  
Testing Period : 6-Sep-2022 to 16-Sep-2022

Test Method &amp; Results : Please refer to next page(s).

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**Test Requested & Result Summary**

Test Requested : Please refer to the result summary (Test parameter(s) was/were selected by client).

**Result Summary:**

| Test Requested  | Conclusion |
|---|------------|
| Notification of the Ministry of Public Health (No.435) B.E. 2565 (2022)<br>(List no.2 table 1 and 2) : Qualities or standard for container made from plastic<br>a) Polystyrene (PS) | --         |
| 1. Lead content   | PASS       |
| 2. Cadmium content  | PASS       |
| 3. Heavy metal (as lead) in 4% concentrated acetic acid extraction  | PASS       |
| 4. Quantity of potassium Permanganate Consumed  | PASS       |
| 5. Residue after Evaporation Test   | PASS       |
| 6. Migration of color Extraction  | PASS       |
| 7. Volatile substances<br>(Styrene,Toluene,Ethylbenzene,Isopropylbenzene and n-Propylbenzene)   | PASS       |

**Remark:**

1. Test results in this report are applicable for the item tested and reflects the tested sample as received.
2. The decision rules based on simple acceptance which the probability of false accept may be as high as 50% in case the results is exactly on the tolerance limit.

**Signed for and on behalf of  
SGS (Thailand) Ltd.**



**Rutchuporn Mounksom  
Laboratory manager - Toy and Hard goods**

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**TEST RESULTS**

**Notification of the Ministry of Public Health (No.435) B.E. 2565 (2022) (List no.2 table 1 and 2) : Qualities or standard for container made from plastic;**

**a) Polystyrene (PS)**

**Qualities and standard of plastic**

Method : With reference to TIS 656: 2556. Analysis was performed by ICP-OES.

| Details            | Result (1)<br>(mg/kg) | Limit of Quantitative<br>(mg/kg) | Permissible Limit<br>(mg/kg) |
|--------------------|-----------------------|----------------------------------|------------------------------|
| Lead content***    | <2                    | 2.0                              | 100                          |
| Cadmium content*** | <2                    | 2.0                              | 100                          |

Sample Description :

1. White plastic sheet

Note :

1. mg/kg = milligram per kilogram
2. < = Less than
3. The test item(s) marked \*\*\* on test report is/are analyzed at SGS (Thailand) Limited, address: 10, 10/1 - 4 and 12 Soi Rama III S. 59, Chong Nonsi, Yan Nawa, Bangkok.

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**TEST RESULTS**

**Qualities and standard of dissemination**

Method : With reference to TIS 656: 2556.

| Details  | Test Condition <sup>^</sup>             | Result (1)<br>(mg/dm <sup>3</sup> ) | Limit of Quantitative<br>(mg/dm <sup>3</sup> ) | Permissible Limit<br>(mg/dm <sup>3</sup> ) |
|--|---|-------------------------------------|--|--|
| Heavy metal (calculated as lead) in 4% concentrated acetic acid extraction | 30 minute at 95 degree C                | <1                                  | --   | 1  |
| Potassium permanganate used for reaction in water extraction               | 30 minute at 95 degree C                | <1                                  | 1.0  | 10   |
| Residue substances which is evaporate in water                             | 30 minute at 95 degree C                | <3                                  | 3.0  | 30   |
| Residue substances which is evaporate in 4% concentrated acetic acid       | 30 minute at 95 degree C                | <3                                  | 3.0  | 30   |
| Residue substances which is evaporate in 20% concentrated alcohol          | 30 minute at 95 degree C                | <3                                  | 3.0  | 30   |
| Residue substances from volatile matters in normal heptane <sup>^^</sup>   | Room temperature (1 hr. at 25 degree C) | 27                                  | 3.0  | 240  |

**Sample Description :**

1. White plastic sheet

**Note :**

1. mg/dm<sup>3</sup> = milligram per cubic decimeter
2. Degree C = degree Celsius
3. < = Less than

**Remark :**

1. <sup>^</sup> = In case of the use at temperature higher than 100 degree Celsius
2. <sup>^^</sup> = The color plastic layer was removed after simulation of normal heptane

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**TEST RESULTS**

**Qualities and standard of dissemination**

Test Method : With reference to TIS 655 -1 : 2553

| Details   | Test Condition <sup>^</sup>                | Result (1)               | Permissible Limit |
|---|--|--------------------------|-------------------|
| Migration of color extract by water                         | 30 minute at 95 degree C                   | Negative<br>(See Note 2) | Negative          |
| Migration of color extract by 4% concentrated acetic acid   | 30 minute at 95 degree C                   | Negative<br>(See Note 2) | Negative          |
| Migration of color extract by 20% concentrated alcohol      | 30 minute at 60 degree C                   | Negative<br>(See Note 2) | Negative          |
| Migration of color extract by normal heptanes <sup>^^</sup> | Room temperature<br>(1 hr. at 25 degree C) | Negative<br>(See Note 2) | Negative          |

**Sample Description :**

1. White plastic sheet

**Note :**

1. Degree C = degree Celsius
2. "Negative" mean it's not presence of color migration/ "Positive" mean it's presence of color migration

**Remark :**

1. <sup>^</sup> = In case of the use at temperature higher than 100 degree Celsius
2. <sup>^^</sup> = The color plastic layer was removed after simulation of normal heptane

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**TEST RESULTS**

**Qualities and standard of plastic**

Method : With reference to TIS 656 - 2556. Analysis was performed by GC-FID.

Polystyrene - Volatile substances (Styrene, Toluene, Ethylbenzene, Isopropylbenzene and n-Propylbenzene)\*\*\*

| Volatile substances | Result (1) (mg/kg) | Limit of Quantitation (mg/kg) | Limit (mg/kg) |
|---------------------|--------------------|-------------------------------|---------------|
| Styrene             | 705                | 100                           | 1000          |
| Toluene             | <100               | 100                           | --            |
| Ethylbenzene        | <100               | 100                           | 1000          |
| Isopropylbenzene    | <100               | 100                           | --            |
| n-propylbenzene     | <100               | 100                           | --            |
| Total               | 705                | --                            | 2000          |
| Comment             | PASS               | --                            | --            |

Sample Description :  
1. White plastic sheet

Note :  
1. mg/kg = milligram per kilogram  
2. < = Less than

Remark: The test item(s) marked \*\*\* on test report is/are analyzed at SGS (Thailand) Limited, address: 4/16-20 and 4/23 Soi Rama III 59, Rama III road, Chongnonsee, Yannawa, Bangkok.

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**SAMPLE/ATTACHMENT PICTURE**



\*\*\*\*\* End of Report \*\*\*\*\*

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