

# TEST REPORT: 7191260871-CHM21-05-TSL

Date: 13 JUL 2021

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## SUBJECT

Evaluation of "Latex Powder Free Gloves, Chlorinated (Y000207999)" Sample for suitability to be used in contact with foods according to BfR Recommendation XXI

## CLIENT

SRI TRANG GLOVES (THAILAND) PUBLIC COMPANY LIMITED  
110 Kanchanawanit Rd, T.Patong, A. Hatyai  
Songkhla, Thailand 90230

Attn : Miss Natthatida Promsila

## SAMPLE SUBMISSION DATE

05 May 2021

## DESCRIPTION OF SAMPLE

One packet of glove sample labelled as follows was received.

No	Product Description
1	Latex Powder Free Gloves, Chlorinated (Y000207999)

## DATE OF ANALYSIS

25 May 2021 – 12 Jul 2021



TÜV SÜD PSB

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## METHOD OF TEST

The sample was analysed for the following tests according to BfR Recommendation XXI. *Commodities based on Natural and Synthetic Rubber – 2.3 Category 3.*

### 1. Preparation of Test Specimen

Only the exterior of the glove sample was performed for the test.

### 2. Global Migration Content with Aqueous Food Simulant (DI Water, 3% Acetic Acid & 10% Ethanol)

According to BfR Recommendation XXI with reference to EN 1186-9:2002 – Test Methods for overall migration into aqueous food simulants by article filling.

The residue from the above 3% Acetic Acid was further extracted with Hexane for the organic components.

### 3. Specific Migration Content using Aqueous Food Simulant (DI Water)

According to BfR Recommendation XXI with reference to EN 1186-9:2002 – Test Methods for overall migration into aqueous food simulants by article filling.

#### a) Specific Migration of Formaldehyde

The simulants extracts was analysed by UV Spectrophotometer after derivatisation with Acetylacetone.

#### b) Specific Migration of Primary Arylamines and Secondary Arylamines

The stimulant was extracted by organic solvent and analysed by Gas Chromatography Mass Spectrometry after proper treatment.

#### c) Specific Migration of Nitrosamines

The stimulant was extracted by organic solvent and analysed by Gas Chromatography combined with the Nitrogen Chemiluminescence Detector after proper treatment.

### 4. Lead and Zinc content

According to BfR Recommendation XXI, sample analysis was conducted by acid digestion, followed by ICP-Optical Emission Spectrometry (ICP-OES).

## RESULTS

**Table 1 : Global Migration Content with Food Simulant for the “Latex Powder Free Gloves, Chlorinated (Y000207999)” Sample**

Type of Simulant	Testing Condition	Surface Area (dm <sup>2</sup> )	Volume of Extractant (ml)	Global Migration (mg/dm <sup>2</sup> )	BfR XXI Category 3 Requirement for Global Migration (mg/dm <sup>2</sup> )
1. DI Water	40°C, 10mins	4.21	210	<1.0	10 max
2. 3% Acetic Acid	40°C, 10mins	4.25	210	17.2	50 max
3. 10% Ethanol	40°C, 10mins	4.24	210	<1.0	10 max

**TEST REPORT: 7191260871-CHM21-05-TSL**

13 JUL 2021



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**RESULTS (Cont'd)**

**Table 2 : Global Migration Content with Food Simulant for the “Latex Powder Free Gloves, Chlorinated (Y000207999)” Sample**

Type of Simulant	Testing Condition	Surface Area (dm <sup>2</sup> )	Volume of Extractant (ml)	Global Migration of Organic Components (mg/dm <sup>2</sup> )	BFR XXI, 2.3 Category 3 Requirement for Global Migration of Organic Components (mg/dm <sup>2</sup> )
1. 3% Acetic Acid	40°C, 10mins	4.25	50	<1.0	10 max

**Table 3: Specific Migration of Formaldehyde in Food Simulant for “Latex Powder Free Gloves, Chlorinated (Y000207999)” Sample**

Type of Simulant	Testing Condition	Volume of Extractant (ml)	Specific Migration Content of Formaldehyde (µg/ml)	BfR XXI Category 3 Requirement for Specific Migration Content (µg/ml)
Distilled Water	40 °C, 10 mins	210	Not Detected <sup>a</sup>	< 3

a) The method detection limit was 1 µg/ml.

**Table 4: Specific Migration of Primary Arylamines in Food Simulant for “Latex Powder Free Gloves, Chlorinated (Y000207999)” Sample**

Type of Simulant	Testing Condition	Volume of Extractant (ml)	Specific Migration Content of Primary Arylamines (µg/l)	BfR XXI Category 3 Requirement for Specific Migration Content (µg/l)
Distilled Water	40 °C, 10 mins	210	Not Detected <sup>b</sup>	< 20

b) The method detection limit was 10 µg/l.

**Table 5: Specific Migration of Secondary Arylamines in Food Simulant for “Latex Powder Free Gloves, Chlorinated (Y000207999)” Sample**

Type of Simulant	Testing Condition	Volume of Extractant (ml)	Specific Migration Content of Secondary Arylamines (mg/l)	BfR XXI Category 3 Requirement for Specific Migration Content (mg/l)
Distilled Water	40 °C, 10 mins	210	Not Detected <sup>c</sup>	< 1

c) The method detection limit was 0.01 mg/l.

TEST REPORT: 7191260871-CHM21-05-TSL  
13 JUL 2021



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**RESULTS** (Cont'd)

**Table 6: Specific Migration of Nitrosamines in Food Simulant for “Latex Powder Free Gloves, Chlorinated (Y000207999)” Sample**

Type of Simulant	Testing Condition	Volume of Extractant (ml)	Specific Migration Content of Nitrosamines ( $\mu\text{g}/\text{dm}^2$ )	BfR XXI Category 3 Requirement for Specific Migration Content ( $\mu\text{g}/\text{dm}^2$ )
Distilled Water	40 °C, 10 mins	210	0.03	< 1

d) The method detection limit was 0.02 mg/l.

**Table 7: Lead and Zinc Contents for “Latex Powder Free Gloves, Chlorinated (Y000207999)” Sample**

Test	Results (%)	BfR XXI Category 3 Requirement (%)
1. Lead, Pb	< 0.001	< 0.003
2. Zinc, Zn	0.5	< 3.0

Based on the above results, the “Latex Powder Free Gloves, Chlorinated (Y000207999)” sample met the requirement under BfR Recommendation XXI *Commodities based on Natural and Synthetic Rubber* – 2.3 Category 3.

**MS TAN SER LING**  
TECHNICAL EXECUTIVE

**DR XIAO ZHOU**  
PRODUCT MANAGER  
MICROCONTAMINATION DIAGNOSIS  
CHEMICAL & MATERIALS

# TEST REPORT: 7191260871-CHM21-05-TSL

13 JUL 2021



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Effective 26 January 2021

