

TEST REPORT: 7191042765-CHM12-02-TSL

Date: 08 OCT 2012

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SUBJECT

Determination of Glove Resistance to Permeation by 5% Hydrochloric Acid

CLIENT

PDS International Pte Ltd
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UE Tech Park
Singapore 128466

Attn : Mr Tai Cze Wooi

SAMPLE SUBMISSION DATE

18 Sep 2012

DESCRIPTION OF SAMPLE

Fifteen pieces of sample labeled as follows was received. The rougher surface was confirmed to be the outer side on 20 Sep 2012.

1. Vinyl Apron, Sleeves
Brand / Model/ Serial No. : WORKSafe

DATE OF ANALYSIS

26 Sep 2012 – 08 Oct 2012



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METHOD OF TEST

Determination of resistance to permeation by chemicals : By BS EN 374-3 : 2003

1. The palm area of the glove sample was mounted between two halves of a test cell. The test cell consisted of a two-compartment cell with 5% Hydrochloric Acid on glove's normal outside surface and ultra-pure water on the glove's normal inside surface. Testing were carried out at ambient temperature (23°C ± 2°C).
2. The collecting medium were sampled and analysed for 5% Hydrochloric Acid at 10min (class 1), 30min (class2), 60min (class 3), 120min (class 4) , 240min (class 5) and 480min (class 6).
3. The extracts were then analysed by Ion Chromatography. The results were used to calculate the permeation rate of 5% Hydrochloric Acid through the glove material.
4. A blank test was carried out exactly with the same procedure except ultrapure water was used.

Table 1 : Classification of Glove Levels According to Breakthrough Time

Breakthrough Time (mins) *	Types of Level
>10	Class 1
>30	Class 2
>60	Class 3
>120	Class 4
>240	Class 5
>480	Class 6

* The breakthrough time is deemed to have occurred when the analytical equipment detects a permeation rate of 1µg/cm²/min.

RESULTS

1. Determination of resistance to permeation by chemicals

Table 2 : Permeation Test Results for "Vinyl Apron Sleeves, WORKSafe" in 5% Hydrochloric Acid

5% Hydrochloric Acid				
Sample	Sample Location	Sampling Time (mins)	Permeation Rate for Hydrochloric Acid ($\mu\text{g}/\text{cm}^2/\text{min}$)	Hydrochloric Acid Chemical Transfer ($\mu\text{g}/\text{cm}^2$)
Vinyl Apron Sleeves "WORKSAFE"	Palm	10mins (Level 1)	<1.0	<18.0
		30mins (Level 2)	<1.0	
		60mins (Level 3)	<1.0	
		120mins (Level 4)	<1.0	
		240mins (Level 5)	<1.0	
		480mins (Level 6)	<1.0	

¹⁾ Chemical transfer referred to the quantity of chemical which had passed through per cm^2 of glove sample at the termination of the test .

²⁾ The thickness of the glove was 0.17mm.

³⁾ No color change was observed on the glove test specimen after the test.

2. According to Table 2, the breakthrough time for "Vinyl Apron Sleeves, WORKSafe" occurred after 480mins. It was concluded that the sample belonged to class 6 .



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TECHNICAL EXECUTIVE



for DR LI SIHAI
AVP / SENIOR CHEMIST
MICROCONTAMINATION DIAGNOSIS
CHEMICAL & MATERIALS

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July 2011

