Test Report No. 7191339577-CHM24-TSL

Date: 22 AUG 2024 Email: Sihai.Li@tuvsud.com

Client's Ref:

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SUBJECT

Determination of Glove Resistance to Permeation by 1-Butanol

CLIENT

Anhui Intco Medical Products Co, Ltd
No.6, Haitang South Road,
Suixi Wuhu Modern Industrial Park, Suixi County,
Huaibei City, Anhui Province

Attn : Ms Wang

SAMPLE SUBMISSION DATE

02 Aug 2024

DESCRIPTION OF SAMPLE

One packet of glove sample labelled as follows was received.

No	Product Description
1	Blue Disposable Nitrile Gloves



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SAC-SINGLAS

LA-2007-0380-A LA-2007-0386-C
LA-2007-0381-F LA-2010-0464-D
LA-2007-0382-B LA-2018-0702-B
LA-2007-0383-G LA-2018-0703-G
LA-2007-0384-G LA-2020-0747-L
LA-2007-0385-E

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Singapore 609937

DATE OF ANALYSIS

12 Aug 2024 – 20 Aug 2024

METHOD OF TEST

By EN 16523-1:2015+A1:2018 : Determination of material resistance to permeation by chemicals – Part 1 : Permeation by potentially hazardous liquid chemicals under conditions of continuous contact.

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 1-Butanol on glove's normal outside surface and Ultrapure Water on the glove's normal inside surface. Testing were carried out at ambient temperature (23°C ± 1°C) using closed-loop system.

2. The collecting medium were sampled and analysed for 1-Butanol at 10 min (level 1), 30 min (level 2), 60 min (level 3), 120 min (level 4) ,240 min (level 5) and 480 min (level 6).

3. The extracts were then analysed by Gas Chromatography. The results were used to calculate the permeation rate of 1-Butanol through the glove material. Based on the result, the minimum rate of sampling was determined. Periodic measurements were conducted.

4. The tests were repeated at 10min and the sampling interval of 150 sec and collected until 30min.

5. The extracts were then analysed by Gas Chromatography for the Normalised Permeation Rate.

6. 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 (EN ISO 374-1:2016+A1:2018- Protective gloves against dangerous chemicals and micro-organisms-Part 1 : Terminology and performance requirements for chemical risks)

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

* The breakthrough time is deemed to have occurred when the analytical equipment detects a permeation rate of 1 μg/cm^2/min.

RESULTS

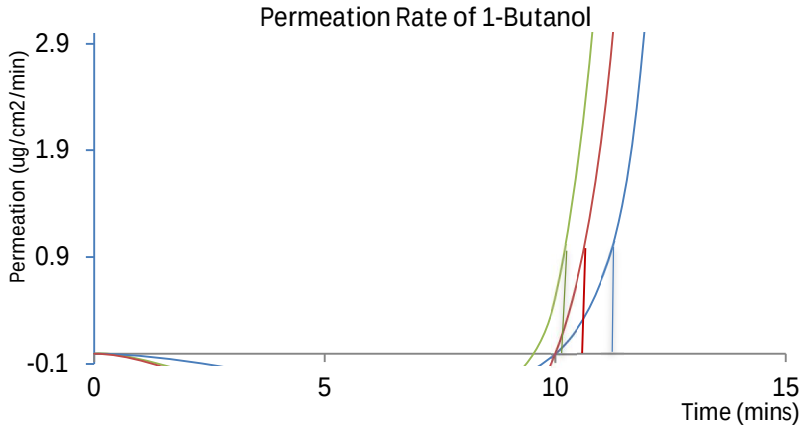
1. Determination of resistance to permeation by 1-Butanol

Table 2: Normalised Breakthrough Results for "Blue Disposable Nitrile Gloves" in 1-Butanol

1-Butanol (CAS No: 71-36-3)					
Sample	**Sample Location on Palm Area**	**Normalised Breakthrough Time (mins)**	**Mean Breakthrough Time (mins)**	**Lowest Value (mins)**	**Level**
Blue Disposable Nitrile Gloves	1	11	11	10	1
	2	11			
	3	10			

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 0.05mm.
3) Color change was observed on the glove test specimen after the test.

According to Table 2, the breakthrough time for "Blue Disposable Nitrile Gloves" occurred after 10 mins. It was concluded that the sample belonged to level 1.



MS TAN SER LING
TECHNICAL EXECUTIVE

DR LI SIHAI
AVP / SENIOR CHEMIST
CHEMICAL & MATERIALS

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Effective 27 March 2024