ULR -TC-617623000027319F **TEST REPORT**

Report No. : CH:TX:1442027361 **ISSUE DATE : 07/06/2023**

CEPHAS MEDICAL PRIVATE LIMITED
DP 33, 34, SIDCO INDUSTRIAL ESTATE (URBAN)
VIRUDHUNAGAR-626103
INDIA
CONTACT PERSON : C.R SARAVANAN

THE FOLLOWING SAMPLE(S) WAS/WERE SUBMITTED AND IDENTIFIED BY/ON BEHALF OF THE CUSTOMER AS :

SAMPLE DESCRIPTION	GLOVES 18 INCH NITRILE UNLINED GLOVES 22 MIL
COLOUR	GREEN
STYLE NO.	CNU-18 AND BNU-18
COUNTRY OF DESTINATION	INDIA
COUNTRY OF ORIGIN	INDIA
SAMPLE RECD ON	03/06/2023 **TESTING PERIOD :** 03/06/2023 - 07/06/2023

Summary of Test Results/Conclusion

Test Method / Standard	Test Name	Status / Performance Level
BS EN 388:2016 +A1:2018	**Protective Gloves against mechanical risks**	
	Abrasion Resistance	Level 4
	Blade Cut Resistance (Coupe test)	Level 0
	Tear Resistance	Level 0
	Puncture Resistance	Level 1
EN ISO 374-2:2019	**Protective gloves against dangerous chemicals and micro-organisms - Part 2: Determination of resistance to penetration**	
	Air leak test	Pass
	Water leak test	Pass
EN 16523-1:2015+A1.2018	**Determination of material resistance to permeation by chemicals - Part 1: Permeation by liquid chemical under conditions of continuous contact**	
	Methanol	Level – 3
	n-Heptane	Level – 6
	Sodium hydroxide 40%	Level – 6
	Sulphuric acid 96%	Level – 3
	Acetic acid 99%	Level – 3
EN ISO 374-4:2019	**Protective gloves against dangerous chemicals and micro-organisms - Part 4: Determination of resistance to degradation by chemicals**	
	Methanol	Refer results.
	n-Heptane	Refer results.
	Sodium hydroxide 40%	Refer results.
	Sulphuric acid 96%	Refer results.
	Acetic acid 99%	Refer results.
ISO 21420:2020	**Protective gloves - General requirements and test methods**	
	Sizing	Refer Results.
	Dexterity	Level 5
ISO 14362-1:2017	Azo dyes	Pass
ISO 3071: 2020	pH Value	Pass
ISO/TS 16190:2021	Polyaromatic hydrocarbons Content (PAH)	Pass

Test results are extracted from CH:TX: 1442013638 Dated 17/04/2023 and issued separate report.

Note: NABL symbol is published only on the page/s having accredited parameters.

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Per pro SGS India Private Ltd.

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Email your Test Report Related Enquiries at Feedback.SLT@sgs.com

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RESULTS

BS EN 388: 2016+A1:2018 Protective Gloves against mechanical risks

Clause	Test Name Equipment/Accessories	Result						Performance Level
6.1	**Abrasion resistance** **Protection part**: Palm **Equipment**: Martindale Abrasion Tester **Abradant**: Klingspor PL31B, Grit 180 **Adhesive tape**: Wonder Double sided adhesive tape	Sample # 1 2 3 4 **Observation:**	Break Through Between /(Rubs) >8000 >8000 >8000 >8000 Break through not occurred until 8000 rubs					4
6.2	**Blade cut resistance (Coupe test)** **Protection part**: Palm **Equipment**: Coupe Cut Tester **Blade**: OLFA RB 45 mm **Control Specimen**: Cotton Canvas	Sample # 1 2 	Blade cut Index /(Index) 1.15 1.15 1.15 1.15 1.15 Mean: 1.15 1.14 1.14 1.13 1.13 1.13 Mean: 1.13					0 (See Note)
6.4	**Tear resistance** **Protection part**: Palm **Equipment**: CRE	Sample # 1 2 3 4	Maximum Force/(N) < 5.0 5.1 8.0 < 5.0					0
6.5	**Puncture resistance** **Protection part**: Palm **Equipment**: CRE **Puncture Stylus**: Puncture Stylus-4, Steel 60 HRC Rockwell	Sample # 1 2 3 4	Maximum Force/(N) 50.6 56.2 50.0 43.3					1

Note: Sample not dulling the blade of coupe cut test (number of cycles on control specimen after first sequence of test specimen is not greater than 3 times of initial control fabric value).

Requirement as per BS EN 388:2016+A1.2018

Table - 1

Clause/Test Name	Level 1	Level 2	Level 3	Level 4	Level 5
6.1 Abrasion resistance (Number of rubs)	100	500	2000	8000	-
6.2 Coupe test: Blade cut resistance (index)	1.2	2.5	5.0	10.0	20.0
6.4 Tear resistance(N)	10	25	50	75	-
6.5 Puncture resistance(N)	20	60	100	150	-

***** End of Page*****

RESULTS

EN ISO 374-2 : 2019 Protective gloves against dangerous chemicals and micro-organisms - Part 2: Determination of resistance to penetration

Clause	Test Name	Test Results		Performance level
7.2	Air leak Test (Air Pressure Used : 5.0 kPa)	**Sample Size**	**Leakage**	Pass
		Size 7/S	No Leakage	
		Size 8/M	No Leakage	
		Size 9/L	No Leakage	
		Size 10/XL	No Leakage	
		Size 11/XXL	No Leakage	
7.3	Water leak test	**Sample Size**	**Leakage**	Pass
		Size 7/S	No Leakage	
		Size 8/M	No Leakage	
		Size 9/L	No Leakage	
		Size 10/XL	No Leakage	
		Size 11/XXL	No Leakage	

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RESULTS

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.

Chemical CAS NO	Loop system/collection medium/Flow rate	Analytical technique used	Mean thickness (mm)	NBT at NPR 1.0 µg cm^{-2} min^{-1} (minutes)	Performance level accordance to EN ISO 374-1: 2016+A1:2018 Table 1	Observation
Methanol 67-56-1 **Palm**	Open loop/ Nitrogen/ 0.015 liter per minute	Continuous measurement With GC-FID	0.70 0.68 0.70	69 72 70	Level – 3	Moderating swelling
Methanol 67-56-1 **Cuff**	Open loop/ Nitrogen/ 0.015 liter per minute	Continuous measurement With GC-FID	0.58 0.60 0.59	100 103 101	Level – 3	Moderating swelling
n-Heptane 142-82-5 **Palm**	Open loop/ Nitrogen/ 0.015 liter per minute	Continuous measurement With GC-FID	0.68 0.70 0.69	> 480 > 480 > 480	Level – 6	Slight swelling
n-Heptane 142-82-5 **Cuff**	Open loop/ Nitrogen/ 0.015 liter per minute	Continuous measurement With GC-FID	0.60 0.57 0.60	> 480 > 480 > 480	Level – 6	Slight swelling
Sodium hydroxide 40% 1310-73-2 **Palm**	Closed loop/ Grade 3 water/ 350 rpm	Continuous measurement With Conductivity electrode	0.69 0.70 0.68	> 480 > 480 > 480	Level - 6	No change
Sodium hydroxide 40% 1310-73-2 **Cuff**	Closed loop/ Grade 3 water/ 350 rpm	Continuous measurement With Conductivity electrode	0.61 0.58 0.60	> 480 > 480 > 480	Level - 6	No change
Sulphuric acid 96% 7664-93-9 **Palm**	Closed loop/ Grade 3 water/ 350 rpm	Continuous measurement With Conductivity electrode	0.70 0.69 0.70	64 61 69	Level – 3	Severe swelling and colour change
Sulphuric acid 96% 7664-93-9 **Cuff**	Closed loop/ Grade 3 water/ 350 rpm	Continuous measurement With Conductivity electrode	0.59 0.60 0.58	93 78 85	Level – 3	Severe swelling and colour change

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RESULTS

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.

Chemical CAS NO	Loop system/collection medium/Flow rate	Analytical technique used	Mean thickness (mm)	NBT at NPR 1.0 µg cm^{-2} min^{-1} (minutes)	Performance level accordance to EN ISO 374-1: 2016+A1:2018 Table 1	Observation
Acetic acid 99% 64-19-7 **Palm**	Closed loop/ Grade 3 water/ 350 rpm	Continuous measurement With Conductivity electrode	0.70 0.69 0.70	69 67 65	Level – 3	Severe swelling and colour change
Acetic acid 99% 64-19-7 **Cuff**	Closed loop/ Grade 3 water/ 350 rpm	Continuous measurement With Conductivity electrode	0.58 0.60 0.57	95 76 87	Level – 3	Severe swelling and colour change

EN ISO 374-1:2016+A1:2018 – Protective gloves against dangerous chemicals and micro-organisms.
Part 1: Terminology and performance requirements for chemical risks.
Table 1: Permeation performance levels.

Permeation performance level	Measured breakthrough time (minutes)
1	>10
2	>30
3	>60
4	>120
5	>240
6	>480

Performance levels are based on the lowest individual results achieved per chemical

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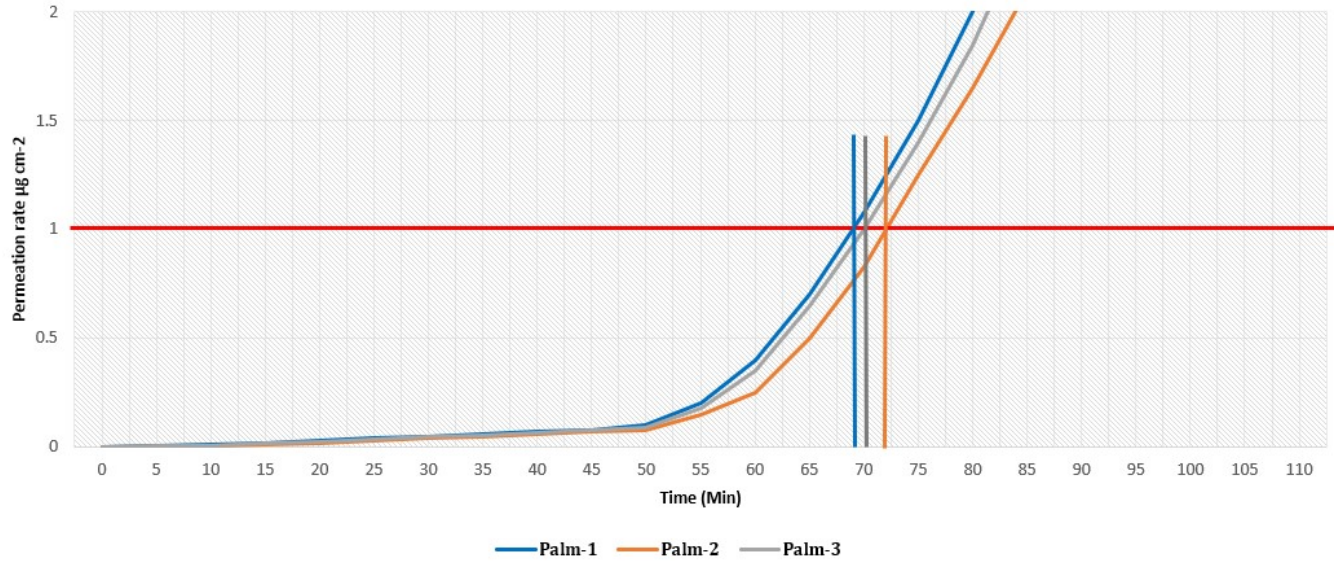
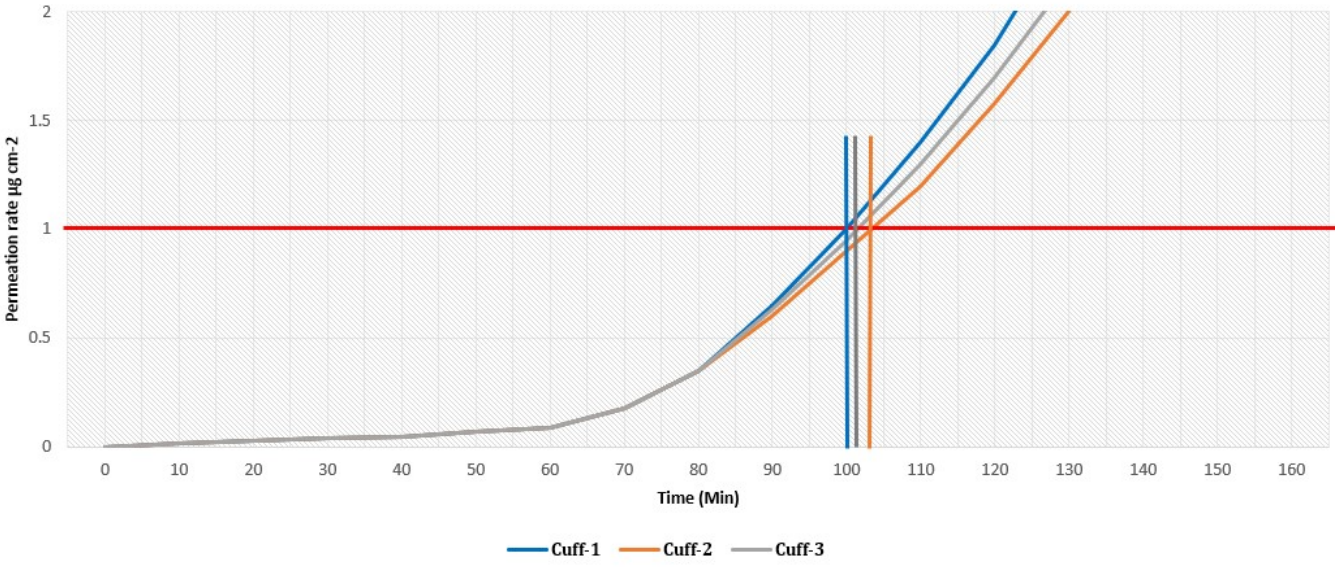
RESULTS

Methanol Permeation Graph



Methanol Permeation Graph



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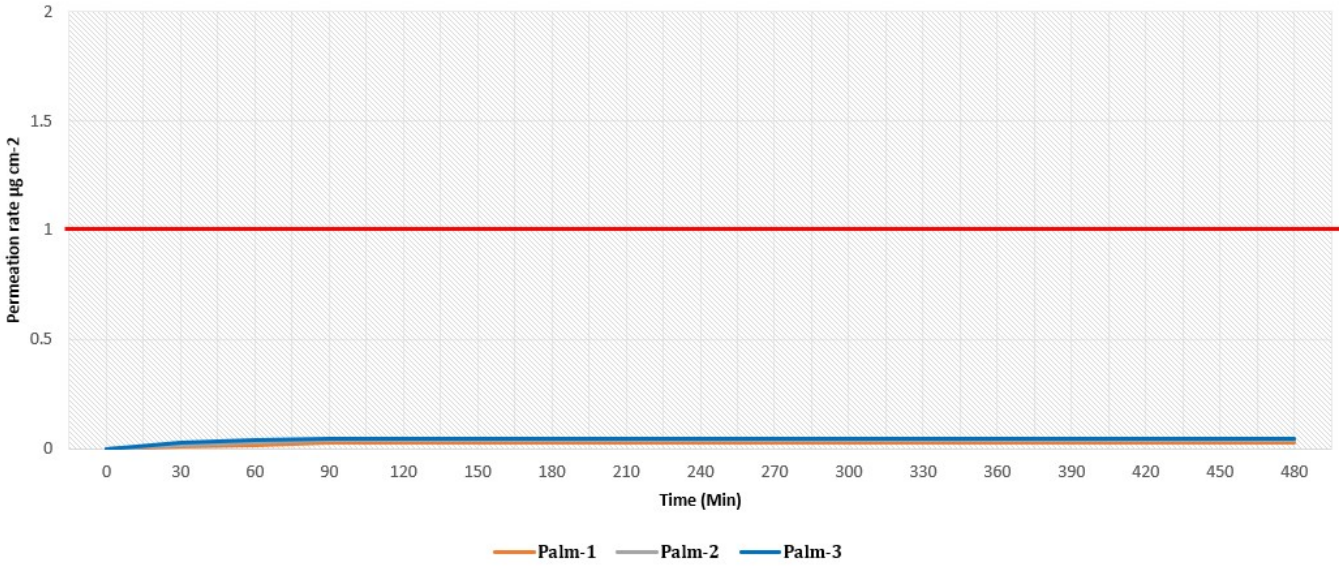
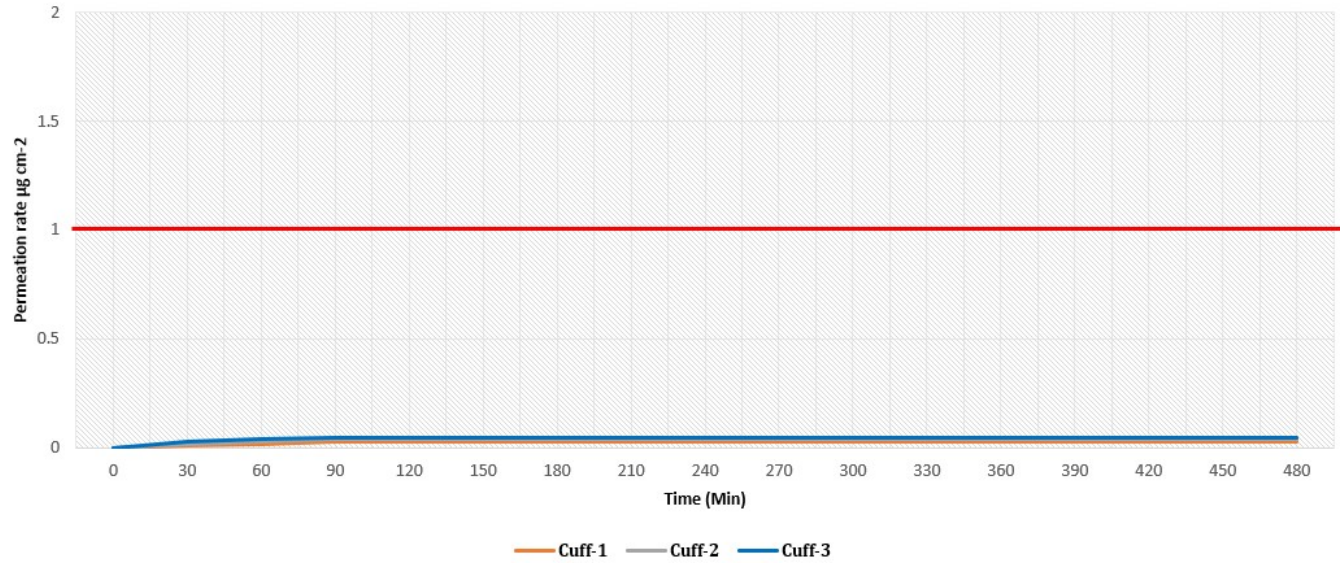
RESULTS

n-Heptane Permeation Graph



n-Heptane Permeation Graph



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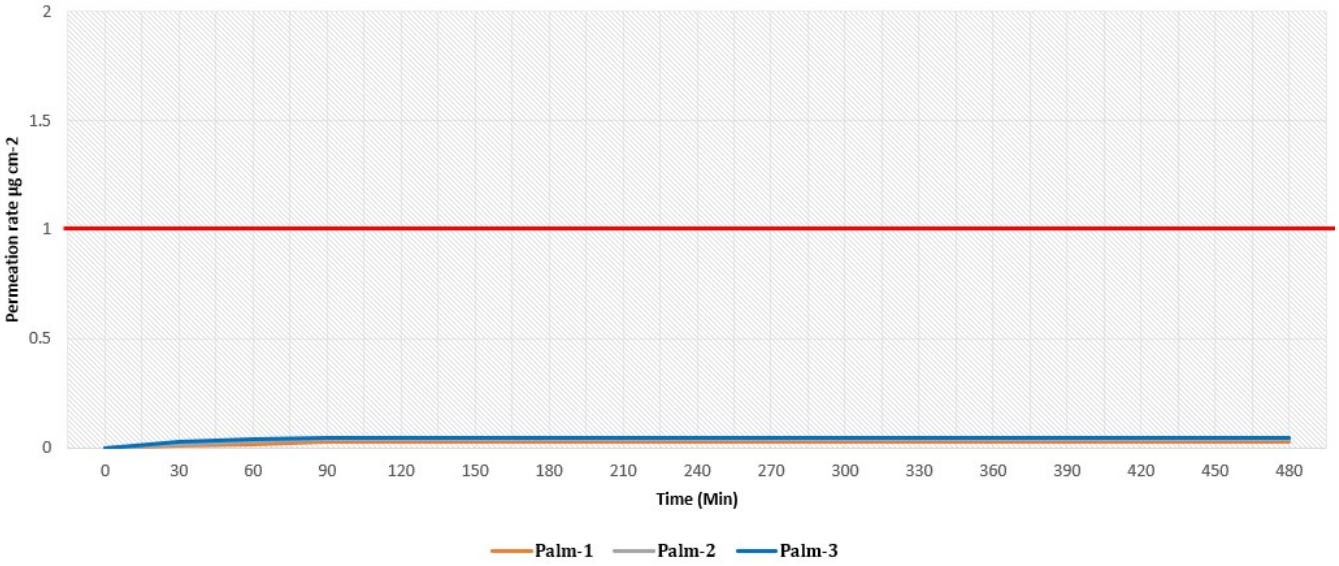
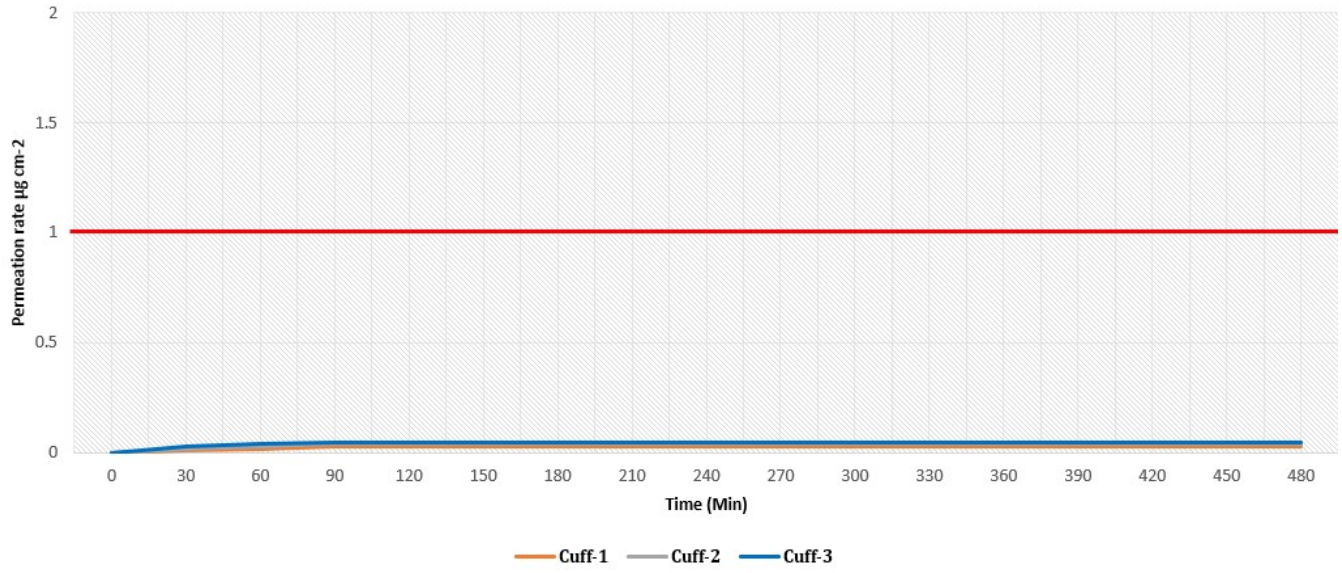
RESULTS

Sodium Hydroxide 40% Permeation Graph



Sodium Hydroxide 40% Permeation Graph



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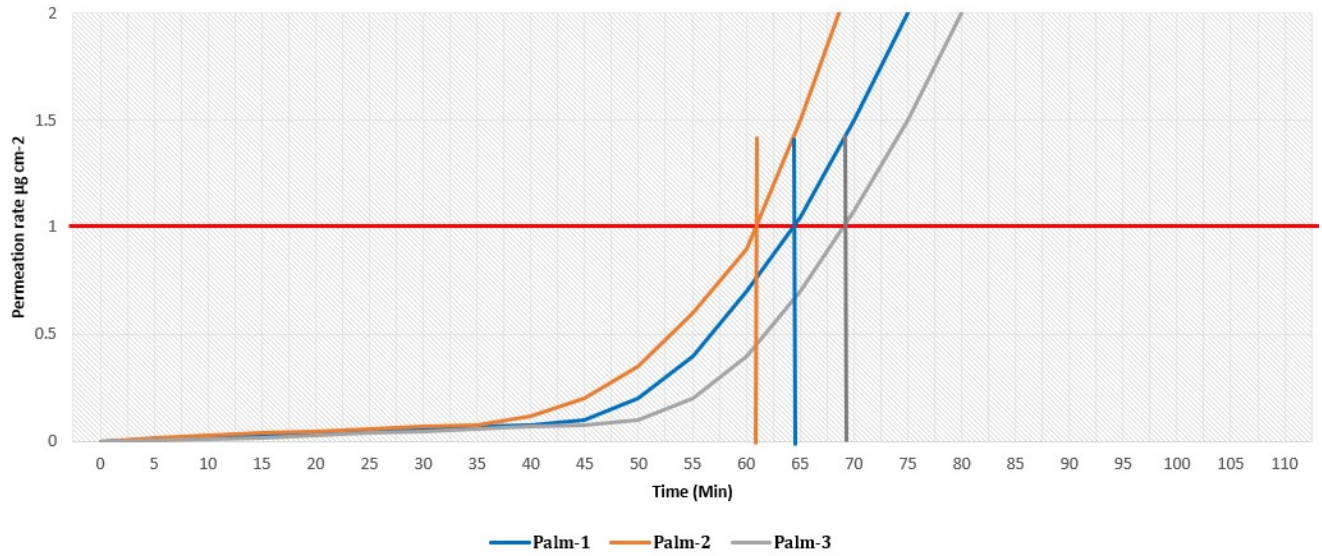
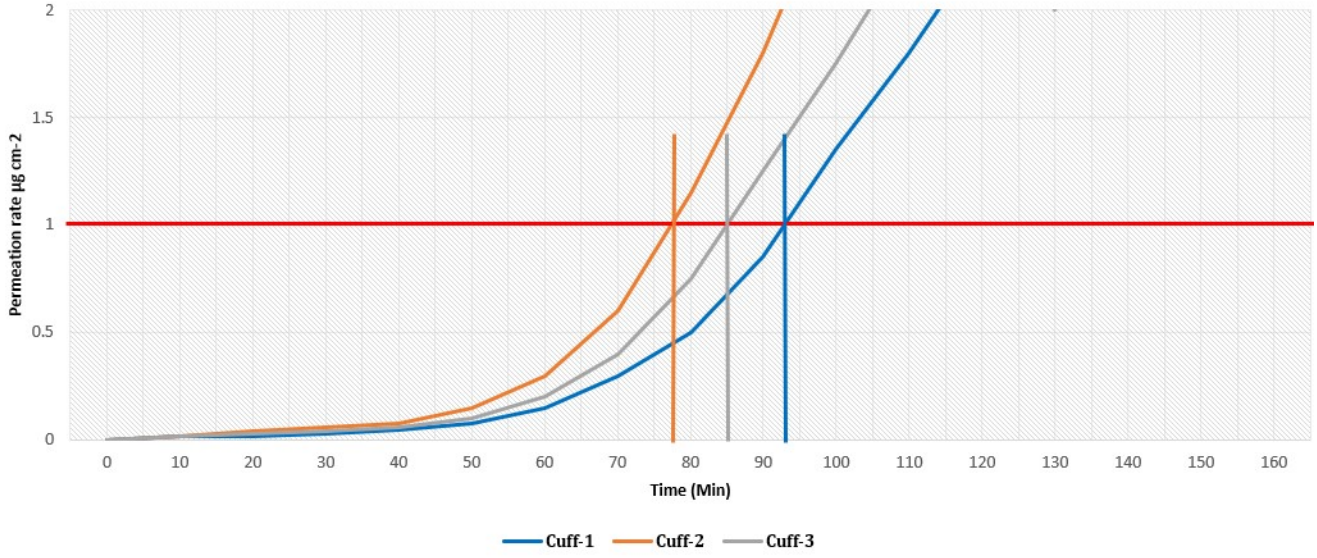
RESULTS

Sulphuric Acid 96% Permeation Graph



Sulphuric Acid 96% Permeation Graph



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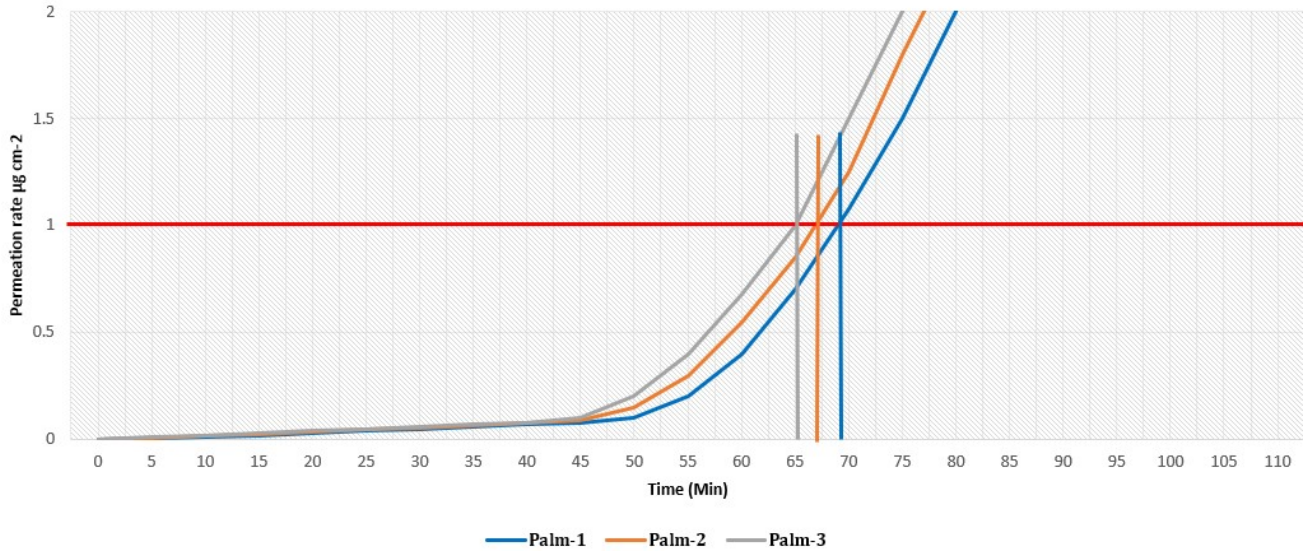
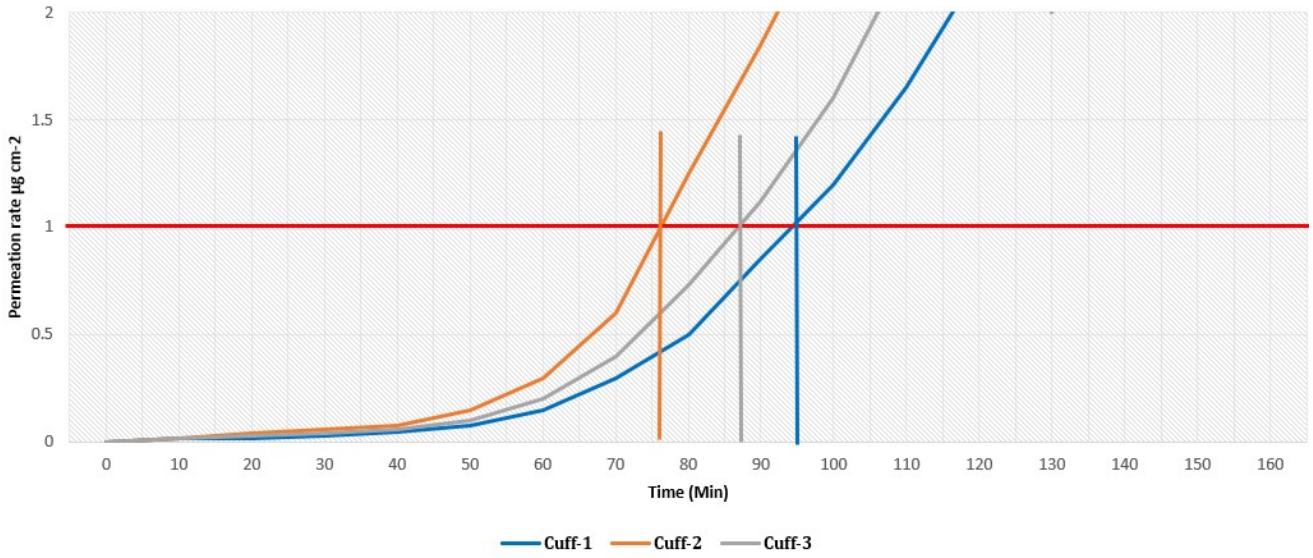
RESULTS

Acetic Acid 99% Permeation Graph



Acetic Acid 99% Permeation Graph



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RESULTS

EN ISO 374-4:2019 Protective gloves against dangerous chemicals and micro-organisms - Part 4: Determination of resistance to degradation by chemicals

Chemical / CAS NO	Exposure Duration	Test Results Percentage change in puncture resistance		Observation
Methanol 67-56-1 **Palm**	60±5 minutes	**Glove sample**	**Result (%)**	Moderate swelling
		1	48.1	
		2	48.5	
		3	47.9	
		Mean	48.2	
		Standard Deviation	0.300	
Methanol 67-56-1 **Cuff**	60±5 minutes	**Glove sample**	**Result (%)**	Moderate swelling
		1	54.0	
		2	54.4	
		3	54.3	
		Mean	54.2	
		Standard Deviation	0.203	
n-Heptane 142-82-5 **Palm**	60±5 minutes	**Glove sample**	**Result (%)**	Slight swelling
		1	17.3	
		2	18.4	
		3	18.1	
		Mean	17.9	
		Standard Deviation	0.539	
n-Heptane 142-82-5 **Cuff**	60±5 minutes	**Glove sample**	**Result (%)**	Slight swelling
		1	11.6	
		2	12.2	
		3	13.3	
		Mean	12.4	
		Standard Deviation	0.896	
Sodium hydroxide 40% 1310-73-2 **Palm**	60±5 minutes	**Glove sample**	**Result (%)**	No change
		1	3.4	
		2	3.0	
		3	3.0	
		Mean	3.2	
		Standard Deviation	0.243	
Sodium hydroxide 40% 1310-73-2 **Cuff**	60±5 minutes	**Glove sample**	**Result (%)**	No change
		1	4.1	
		2	3.4	
		3	3.0	
		Mean	3.5	
		Standard Deviation	0.556	

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RESULTS

EN ISO 374-4:2019 Protective gloves against dangerous chemicals and micro-organisms - Part 4: Determination of resistance to degradation by chemicals

Chemical / CAS NO	Exposure Duration	Test Results Percentage change in puncture resistance		Observation
Sulphuric acid 96% 7664-93-9 **Palm**	60±5 minutes	**Glove sample**	**Result (%)**	Severe swelling and colour change
		1	30.9	
		2	31.5	
		3	30.4	
		Mean	30.9	
		Standard Deviation	0.529	
Sulphuric acid 96% 7664-93-9 **Cuff**	60±5 minutes	**Glove sample**	**Result (%)**	Severe swelling and colour change
		1	37.9	
		2	37.5	
		3	37.3	
		Mean	37.6	
		Standard Deviation	0.280	
Acetic acid 99% 64-19-7 **Palm**	60±5 minutes	**Glove sample**	**Result (%)**	Severe swelling and colour change
		1	63.0	
		2	63.4	
		3	63.2	
		Mean	63.2	
		Standard Deviation	0.178	
Acetic acid 99% 64-19-7 **Cuff**	60±5 minutes	**Glove sample**	**Result (%)**	Severe swelling and colour change
		1	59.1	
		2	58.8	
		3	58.5	
		Mean	58.8	
		Standard Deviation	0.295	

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RESULTS

ISO 21420:2020 Protective gloves — General requirements and test methods.

Test Condition: Temperature: 23±2ºC, RH: 50±5%, Duration: 24 hours

Test Name & Clause	Test Method	Result				Average	Standard sizing/ Level
5.1 Size and measurement of gloves	ISO 21420:2020 (6.1 & Annex B)	Declared Size	7/S				9 ½
		Comments on Fit	Satisfactory				
		Circumference (mm)	242	243	242	242.3 mm	
		Length (mm)	462	462	465	463.0 mm	
		Declared Size	8/M				10
		Comments on Fit	Satisfactory				
		Circumference (mm)	258	260	259	259.0 mm	
		Length (mm)	447	450	448	448.3 mm	
		Declared Size	9/L				10 ½
		Comments on Fit	Satisfactory				
		Circumference (mm)	270	272	270	270.7 mm	
		Length (mm)	448	451	448	449.0 mm	
		Declared Size	10/XL				10 ½
		Comments on Fit	Satisfactory				
		Circumference (mm)	276	277	276	276.3 mm	
		Length (mm)	460	465	463	462.7 mm	
		Declared Size	11/XXL				11
		Comments on Fit	Satisfactory				
		Circumference (mm)	282	283	281	282.0 mm	
		Length (mm)	455	454	457	455.3 mm	
5.2 Dexterity	ISO 21420:2020 (6.2)	Smallest Pin Diameter (mm) Trial: 1 Trial: 2 Trial: 3 Trial: 4			5 5 5 5	5 mm	Level 5

***** End of Page*****

RESULTS

Req

pH VALUE

Test Method: According to ISO 3071:2020
(Extraction Solution : KCL)

GLOVES - GREEN

Value	7.1	3.5 - 9.5

Note : pH value of extraction medium : 5.0 – 7.5
Temperature of the extraction solution : 25±2°C

Note: Requirements given as per ISO 21420:2020 (Clause: 4.2).

Polyaromatic hydrocarbons Content

Test Method: **Test method : With reference to ISO 16190: 2021 / Analysis by GC-MS**

GLOVES - GREEN

	Result
Benzo(a)anthracene	n.d.
Chrysene	n.d.
Benzo(b)Fluoranthene	n.d.
Benzo(k) Fluoranthene	n.d.
Benzo(a)pyrene	n.d.
Dibenzo (a,h) anthracene	n.d.
Benzo(e)Pyrene	n.d.
Benzo(j) Fluoranthene	n.d.

Note: n.d. = Not detected

mg/kg = ppm
Reporting Limit = 0.2 mg/kg (for individual compound)
Req. : 1 mg/kg

Note: Requirements given as per ISO 21420:2020 (Clause: 4.2)

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RESULTS

Azo Dyes (Direct Reduction & Colorant Extraction)

Test Method: **Textile: With reference to ISO 14362-1:2017. Analysis was conducted with GC-MS/HPLC-DAD. Determination of 4-aminoazobenzene (CAS No.:60-09-3)-ISO 14362-3:2017; with the use of GC-MS/ HPLC-DAD.**

GLOVES - GREEN

	CAS-No.	Result	
		Direct reduction+	Colorant extraction+
4-Aminobiphenyl	92-67-1	n.d.	n.d.
Benzidine	92-87-5	n.d.	n.d.
4-Chlor-o-toluidine	95-69-2	n.d.	n.d.
2-Naphthylamine	91-59-8	n.d.	n.d.
o-Aminoazotoluene	97-56-3	n.d.	n.d.
5-nitro-o-toluidine / 2-Amino-4-nitrotoluene	99-55-8	n.d.	n.d.
4-Chloroaniline	106-47-8	n.d.	n.d.
4-methoxy-m-phenylenediamine / 2,4-Diaminoanisole	615-05-4	n.d.	n.d.
4,4'-Diaminodiphenylmethane	101-77-9	n.d.	n.d.
3,3'-Dichlorobenzidine	91-94-1	n.d.	n.d.
3,3'-Dimethoxybenzidine	119-90-4	n.d.	n.d.
3,3'-Dimethybenzidine	119-93-7	n.d.	n.d.
4,4'-methylenedi-o-toluidine / 3,3'-Dimethyl-4,4'-diaminodiphenylmethane	838-88-0	n.d.	n.d.
p-Cresidine	120-71-8	n.d.	n.d.
4,4'-Methylene-bis-(2-chloroaniline)	101-14-4	n.d.	n.d.
4,4'-Oxydianiline	101-80-4	n.d.	n.d.
4,4'-Thiodianiline	139-65-1	n.d.	n.d.
o-Toluidine	95-53-4	n.d.	n.d.
4-methyl-m-phenylenediamine / 2,4-Toluylendiamine	95-80-7	n.d.	n.d.
2,4,5-Trimethylaniline	137-17-7	n.d.	n.d.
4-aminoazobenzene	60-09-3	n.d.	n.d.
O-Anisidine	90-04-0	n.d.	n.d.
2,4 – Xylidine	95-68-1	n.d.	n.d.
2,6 – Xylidine	87-62-7	n.d.	n.d.
Conclusion	--	**PASS**	**PASS**

Note: n.d. = not detectable
mg/kg = ppm
Reporting Limit = 5 mg/kg

Requirement: **ND**

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Remark: + Direct reduction refers to the extraction and reduction according to EN ISO 14362-1:2017 clause 10.2 and relevant clauses.

Colorant extraction refers to the colourant extraction and subsequent reduction according to ISO 14362-1:2017 Clause 10.1 and relevant clauses.
4-Aminodiphenyl (CAS No. 92-67-1), 2-Naphthylamine (CAS No. 91-59-8) and 2,4-Diaminoanisole (CAS No. 615-05-4) can be indirectly generated from some colorants which do not contain these amines azo bound. The use of banned azo colorants cannot be reliably ascertained without additional information.

In case PU is used, e.g. PU Foams or coatings, it cannot be ruled out that MDA (CAS No. 101-77-9) and TDA (CAS No. 95-80-7) can be released from PU material, not from banned azo colorant. Similarly, for pigment prints, MDA will be released from a chemical fixing agent.

EN ISO 14362-1:2017 / EN ISO 17234-1:2015 will enable further cleavage of 4-AAB (CAS No. 60-09-3) to non-forbidden amines: aniline and p-phenylenediamine. If aniline and/or p-phenylenediamine is not found, 4-AAB is considered as “n.d.” (i.e. <5.0 mg/kg). Otherwise, EN ISO 14362-3:2017 / EN ISO 17234-2: 2011 will be employed to verify the presence of 4-AAB.

Note: Requirements given as per ISO 21420:2020 (Clause: 4.2).

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SAMPLE IMAGE

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

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