

Technical Report



ORIGINAL

Report No. 70.405.20.35707.01
Dated 2020-12-04

Company Name: Mask24 Trading GmbH
Address: Im Zollhafen 8, 50678 Köln, Germany
Contact Person: Onur Aribas

Sample Description: FFP2 NR Placide by Xinni-Textile
Colour: White
Fiber Content: Polypropylene
Weight: 5.2 gram
Order No.: HTA01108A
Style No.: RY508-P2
Lot No.: XN01111A
Size: 16.5X10.5CM
No. of Samples: 120

Buyer: Mask24 Trading GmbH
Supplier: Jiangyin Xinni Textile
Country of Origin: China

Country of Destination: Germany

End Use: Non-medical

Claimed Product Category: FFP2

Restricted Substance List (RSL) test conclusion(s) is/are based on: REACH Regulation (EC) No. 1907/2006 Annex XVII Restrictions On The Manufacture, Placing On The Market And Use Of Certain Dangerous Substances, Mixtures And Articles

SVHC Examination Purpose: REGULATION (EU) 2019/1021 on Persistent Organic Pollutants, Annex I Analysis of the 209 substances of very high concern (SVHC) on the Candidate List for authorization, concerning Regulation (EC) No. 1907/2006 as published on the European Chemicals Agency (ECHA) website in October 2008, January 2010, March 2010, June 2010, December 2010, June 2011, December 2011, June 2012, December 2012, June 2013, December 2013, June 2014, December 2014, June 2015, December 2015, June 2016, January 2017, July 2017, January 2018, June 2018, January 2019, July 2019, January 2020 and June 2020

Respiratory/Mask Function Judgment Standard: EN 149:2001+A1:2009 Respiratory protective devices - Filtering half masks to protect against particles – Requirements, Testing, Marking

Receipt Date of Sample: Received on 2020-11-17

Date of Testing, Location and Laboratory: For RSL and SVHC, from 2020-11-19 to 2020-11-26,

Test location: Shanghai, Test by TÜV SÜD China

For Respiratory/Mask Function, from 2020-11-19 to 2020-12-04,

Test location: Nanjing, Test by: Nanjing Customs District Industrial Products

Inspection Center, CNAS Certificate No.: CNAS L0422,

CMA Certificate No.: 170020128365

Sample Submitted: The Sample(s) Was (Were) Submitted by Applicant and Identified.

Result and Conclusion: Refer to following pages.

Note: (1) The TÜV SÜD Certification and Testing (China) Co., Ltd. "General Terms & Conditions" applied.

For full version, please visit: <http://www.tuv-sud.cn/cn-scn/terms-and-conditions>

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Description of The Test Subject

Sample	Description	Photo
001	Polypropylene FFP2 NR Placide by Xinni-Textile in white	

Description of The Test Component

Component	Component Description
1#	001-white nonwoven fabric with letters (face)
2#	001-white nonwoven fabric (back)
3#	001-white filtration film
4#	001-white hot air cotton
5#	001-white ear hook rope
6#	001- nasal splint -white plastic part
7#	001- nasal splint -metal part
8#	001-black plastic hook for ear loop

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
Testing Center
Prepared by:

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Andy Wang
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Conclusion

Items	Component	Conclusion	
Restricted Substance List Test (RSL)			
1.	Azo Dyes + Arylamine salts	1#	Pass
		2#+4#+5#	Pass
2.	Total Cadmium	1#+2#+4#	Pass
		3#+6#	Pass
		7#	Pass
		8#	Pass
3.	Total Lead	1#+2#+4#	Pass
		3#+6#	Pass
		7#	Pass
		8#	Pass
4.	Polycyclic Aromatic Hydrocarbons (PAHs)	1#+2#	Pass
		4#+5#	Pass
		3#+6#	Pass
		8#	Pass
5.	Phthalates	1#+2#+4#	Pass
		3#+6#	Pass
		8#	Pass
6.	Formaldehyde	1#+2#	Pass
		4#+5#	Pass
7.	Pentachlorophenol (PCP)	5#	Pass
8.	Dimethylfumarate (DMFu)	5#	Pass
9.	Nonylphenol Ethoxylate (NPEO)	1#+2#	Pass
		4#+5#	Pass
10.	Organotin Compounds (OTC)	1#+2#	Pass
		4#+5#	Pass
		3#+6#	Pass
		8#	Pass
11.	Short-chain Chlorinated paraffin (SCCP)	1#+2#+4#	Pass
		3#+6#	Pass
		8#	Pass
12.	Dyestuffs	5#	Pass
13.	Extractable heavy metals	1#	Pass
		2#	Pass
		4#	Pass
		5#	Pass
14.	Chlororganic Carriers	5#	Pass
15.	Solvents	1#+2#+4#	Pass
		3#+6#	Pass
		8#	Pass
16.	Quinoline	5#	Pass
17.	VOCs-Benzene	1#+2#	Pass
		4#+5#	Pass
		3#+6#	Pass
		8#	Pass

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Conclusion

Items	Component	Conclusion	
Restricted Substance List Test (RSL)			
Substances of Very High Concern (SVHC)			
18.	SVHC Test_209	1#+2#+3#+4#+5# +6#+8#	Pass
		7#	Pass
Respiratory/Mask Function			
19.	EN 149:2001+A1:2009 Respiratory protective devices - Filtering half masks to protect against particles – Requirements, Testing, Marking	001	Pass

Remarks: Pass = Meet General Requirement Fail = Below General Requirement
* = No Specified Requirement # = No Comments
N/A = Not Applicable - = Not Conducted

Disclaimer:

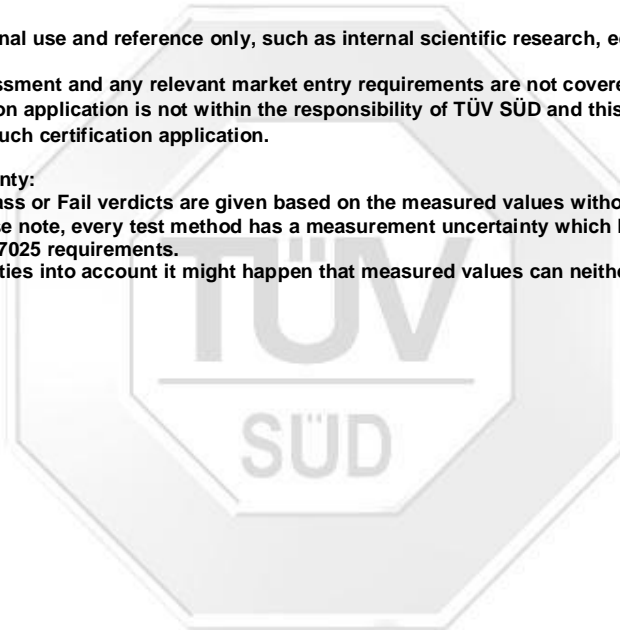
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Certification, CE conformity assessment and any relevant market entry requirements are not covered here. Under the agreed service scope, any subsequent certification application is not within the responsibility of TÜV SÜD and this report cannot be used as part of the technical documentation for such certification application.

Disclaimer Measurement Uncertainty:

Unless otherwise agreed upon, Pass or Fail verdicts are given based on the measured values without any considerations of measurement uncertainties. Please note, every test method has a measurement uncertainty which has been evaluated by the laboratory according to ISO/IEC 17025 requirements.

By taking measurement uncertainties into account it might happen that measured values can neither be assessed as Pass nor as Fail.



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Result and Evaluation

- 1 **Azo Dyes + Arylamine salts**
EN ISO 14362-1:2017- Textile materials
EN ISO 14362-3:2017- Textile materials (4-aminoazobenzene)
EN ISO 17234-1:2015 - For Leather
EN ISO 17234-2:2011 - For Leather (4-aminoazobenzene)

No	Forbidden Amine List	CAS No.	Result [mg/kg]
			1#
1	4-Aminobiphenyl	92-67-1	ND
2	4,4'-Benzidine	92-87-5	ND
3	4-Chloro-2-methylaniline	95-69-2	ND
4	2-Naphthylamine	91-59-8	ND
5	o-Aminoazotoluene	97-56-3	ND
6	5-Nitro-o-toluidine	99-55-8	ND
7	4-Chloroaniline	106-47-8	ND
8	4-Methoxy-1,3-phenylenediamine	615-05-4	ND
9	Bis-(4-aminophenyl) methane	101-77-9	ND
10	3,3'-Dichlorobenzidine	91-94-1	ND
11	3,3'-Dimethoxybenzidine	119-90-4	ND
12	o-Tolidine	119-93-7	ND
13	3,3'-Dimethyl-4,4'-diaminadiphenylmethane	838-88-0	ND
14	2-Methoxy-5-methylaniline	120-71-8	ND
15	4,4'-Methylene bis(o-chloroaniline)	101-14-4	ND
16	4,4'-Oxydianiline	101-80-4	ND
17	4,4'-Thiodianiline	139-65-1	ND
18	o-Toluidine	95-53-4	ND
19	2,4-Diaminotoluene	95-80-7	ND
20	2,4,5-Trimethylaniline	137-17-7	ND
21	o-Anisidine	90-04-0	ND
22	2,4-Dimethylaniline	95-68-1	ND
23	2,6-Dimethylaniline	87-62-7	ND
24	4-Amino-azobenzene	60-09-3	ND
25	4-chloro-o-toluidinium chloride	3165-93-3	ND
26	2-Naphthylammoniumacetate	553-00-4	ND
27	4-methoxy-m-phenylene diammonium sulphate; 2,4-diaminoanisole sulphate	39156-41-7	ND
28	2,4,5-trimethylaniline hydrochloride	21436-97-5	ND
Test Method			EN ISO 14362-1:2017
General Requirement (Not Applicable To Composite Testing)			30mg/kg
Conclusion			Pass

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- 1 **Azo Dyes + Arylamine salts**
EN ISO 14362-1:2017- Textile materials
EN ISO 14362-3:2017- Textile materials (4-aminoazobenzene)
EN ISO 17234-1:2015 - For Leather
EN ISO 17234-2:2011 - For Leather (4-aminoazobenzene)

No	Forbidden Amine List	CAS No.	Result [mg/kg]
			2#+4#+5#
1	4-Aminobiphenyl	92-67-1	ND
2	4,4'-Benzidine	92-87-5	ND
3	4-Chloro-2-methylaniline	95-69-2	ND
4	2-Naphthylamine	91-59-8	ND
5	o-Aminoazotoluene	97-56-3	ND
6	5-Nitro-o-toluidine	99-55-8	ND
7	4-Chloroaniline	106-47-8	ND
8	4-Methoxy-1,3-phenylenediamine	615-05-4	ND
9	Bis-(4-aminophenyl) methane	101-77-9	ND
10	3,3'-Dichlorobenzidine	91-94-1	ND
11	3,3'-Dimethoxybenzidine	119-90-4	ND
12	o-Tolidine	119-93-7	ND
13	3,3'-Dimethyl-4,4'-diaminadiphenylmethane	838-88-0	ND
14	2-Methoxy-5-methylaniline	120-71-8	ND
15	4,4'-Methylene bis(o-chloroaniline)	101-14-4	ND
16	4,4'-Oxydianiline	101-80-4	ND
17	4,4'-Thiodianiline	139-65-1	ND
18	o-Toluidine	95-53-4	ND
19	2,4-Diaminotoluene	95-80-7	ND
20	2,4,5-Trimethylaniline	137-17-7	ND
21	o-Anisidine	90-04-0	ND
22	2,4-Dimethylaniline	95-68-1	ND
23	2,6-Dimethylaniline	87-62-7	ND
24	4-Amino-azobenzene	60-09-3	ND
25	4-chloro-o-toluidinium chloride	3165-93-3	ND
26	2-Naphthylammoniumacetate	553-00-4	ND
27	4-methoxy-m-phenylene diammonium sulphate; 2,4-diaminoanisole sulphate	39156-41-7	ND
28	2,4,5-trimethylaniline hydrochloride	21436-97-5	ND
Test Method			EN ISO 14362-1:2017
General Requirement (Not Applicable To Composite Testing)			30mg/kg
Conclusion			Pass

Remarks: mg/kg = milligram per kilogram
ND = not detected (Less than reporting limit)
Reporting Limit =5mg/kg
Test was conducted on composite of random parts of the item as per client's request and the test result is the overall result.

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2 Total Cadmium
Microwave digestion and detection with ICP-OES/AAS

Test Sample	Result [mg/kg]	General Requirement
1#+2#+4#	ND	<100mg/kg
3#+6#	ND	<100mg/kg
7#	ND	<100mg/kg
8#	ND	<100mg/kg

Remarks: mg/kg = milligram per kilogram
ND = not detected (Less than reporting limit)
Reporting Limit =2mg/kg

3 Total Lead
Microwave digestion and detection with ICP-OES/AAS

Test Sample	Result [mg/kg]	General Requirement
1#+2#+4#	ND	<500mg/kg
3#+6#	ND	<500mg/kg
7#	ND	<500mg/kg
8#	ND	<500mg/kg

Remarks: mg/kg = milligram per kilogram
ND = not detected (Less than reporting limit)
Reporting Limit =5mg/kg

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4 Polycyclic Aromatic Hydrocarbons (PAHs)

With reference to AfPS GS 2014:01 PAK, solvent extraction and analysis was performed by GC/MS

No	Substances List	CAS No.	Result [mg/kg]		General Requirement
			1#+2#	4#+5#	
1	Chrysene	218-01-9	ND	ND	Others: Each<1mg/kg Children: Each<0.5mg/kg
2	Benzo[a]anthracene	56-55-3	ND	ND	
3	Benzo[b]fluoranthene	205-99-2	ND	ND	
4	Benzo[j]fluoranthene	205-82-3	ND	ND	
5	Benzo[k]fluoranthene	207-08-9	ND	ND	
6	Benzo[e]pyrene	192-97-2	ND	ND	
7	Benzo[a]pyrene	50-32-8	ND	ND	
8	Dibenzo[a,h]anthracene	53-70-3	ND	ND	

No	Substances List	CAS No.	Result [mg/kg]		General Requirement
			3#+6#	8#	
1	Chrysene	218-01-9	ND	ND	Others: Each<1mg/kg Children: Each<0.5mg/kg
2	Benzo[a]anthracene	56-55-3	ND	ND	
3	Benzo[b]fluoranthene	205-99-2	ND	ND	
4	Benzo[j]fluoranthene	205-82-3	ND	ND	
5	Benzo[k]fluoranthene	207-08-9	ND	ND	
6	Benzo[e]pyrene	192-97-2	ND	ND	
7	Benzo[a]pyrene	50-32-8	ND	ND	
8	Dibenzo[a,h]anthracene	53-70-3	ND	ND	

Remarks: mg/kg = milligram per kilogram
ND = not detected (Less than reporting limit)
Reporting Limit = 0.1 mg/kg

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5 Phthalates

With reference to ISO/TS16181:2011, solvent extraction and determination by GC/MS

No	Substances List	Abb.	CAS No.	Result [%]			General Requirement
				1#+2#+4#	3#+6#	8#	
1	Bis (2-ethylhexyl) phthalate	DEHP	117-81-7	ND	ND	ND	Sum<0.1%
2	Dibutyl phthalate	DBP	84-74-2	ND	ND	ND	
3	Benzyl butyl phthalate	BBP	85-68-7	ND	ND	ND	
4	Diisobutyl phthalate	DIBP	84-69-5	ND	ND	ND	
5	Di-isononyl phthalate	DINP	28553-12-0, 68515-48-0	ND	ND	ND	
6	Di-isodecyl phthalate	DIDP	26761-40-0, 68515-49-1	ND	ND	ND	
7	Di-n-octyl phthalate	DNOP	117-84-0	ND	ND	ND	
8	Bis(2-methoxyethyl) phthalate	DMEP	117-82-8	ND	ND	ND	
9	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	DNHUP	68515-42-4	ND	ND	ND	
10	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich	DIHP	71888-89-6	ND	ND	ND	
11	Di-n-hexyl phthalate	DnHP	84-75-3	ND	ND	ND	
12	1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	-	84777-06-0	ND	ND	ND	
13	Diisopentylphthalate	DIPP	605-50-5	ND	ND	ND	
14	N-pentyl-isopentylphthalate	-	776297-69-9	ND	ND	ND	
15	Dipentyl phthalate	DPP	131-18-0	ND	ND	ND	
16	1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear	-	68515-50-4	ND	ND	ND	
17	Dicyclohexyl phthalate	DCHP	84-61-7	ND	ND	ND	

Remarks: ND = not detected (Less than reporting limit)
Reporting Limit = 0.005%

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6 Formaldehyde
 EN ISO 14184-1:2011

Test Sample	Result [mg/kg]	General Requirement
1#+2#	ND	<75mg/kg
4#+5#	ND	<75mg/kg

Remarks: mg/kg = milligram per kilogram
 ND = not detected (Less than reporting limit)
 Reporting Limit = 16mg/kg

7 Pentachlorophenol (PCP)
 With reference to ISO 17070:2015, derivation and quantification by GC/MS (GC-MSD)

Test Sample	Result [mg/kg]	General Requirement
5#	ND	<5mg/kg

Remarks: mg/kg = milligram per kilogram
 ND = not detected (Less than reporting limit)
 Reporting Limit = 0.05mg/kg

8 Dimethylfumarate (DMFu)
 CEN ISO / TS 16186:2012, solvent extraction and determination by GC/MS

Test Sample	Result [mg/kg]	General Requirement
5#	ND	<0.1mg/kg

Remarks: mg/kg = milligram per kilogram
 ND = Not detected (Less than reporting limit)
 Reporting Limit = 0.1mg/kg

9 Nonylphenol Ethoxylate (NPEO)
 With reference to ISO 18254-1:2016 and determination by LC-MS

No	Substances List	Result [mg/kg]		General Requirement
		1#+2#	4#+5#	
1	Nonylphenol Ethoxylate (NPEO)	ND	ND	<100mg/kg

Remarks: mg/kg = milligram per kilogram
 ND = Not detected (Less than reporting limit)
 Reporting limit = 10 mg/kg
 APEO includes NPEO and OPEO.

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10 Organotin Compounds (OTC)

With reference to CEN ISO/TS 16179:2012, solvent extraction then derivatized with sodium tetraethylborate, and determination by GC/MS

No	Substances List	Result [mg/kg]				General Requirement
		1#+2#	4#+5#	3#+6#	8#	
1	Dibutyltin (DBT)	ND	ND	ND	ND	Each<1000mg/kg
2	Diocetyl tin (DOT)	ND	ND	ND	ND	
3	Tributyltin (TBT)	ND	ND	ND	ND	
4	Tricyclohexyltin (TCyHT)	ND	ND	ND	ND	
5	Triocetyl tin (TOT)	ND	ND	ND	ND	
6	Triphenyltin (TPhT)	ND	ND	ND	ND	

Remarks: mg/kg = milligram per kilogram
ND = not detected (Less than reporting limit)
Reporting limit = 0.025 mg/kg

11 Short Chain Chlorinated Paraffin (SCCP)

EN ISO 18219:2015, solvent extraction by ultrasonic bath and determination by GC/ECD and GC-MS/NCI

Test Sample	Result [mg/kg]	General Requirement
1#+2#+4#	ND	<1000mg/kg
3#+6#	ND	<1000mg/kg
8#	ND	<1000mg/kg

Remarks: mg/kg = milligram per kilogram
ND= Not detected (Less than reporting limit)
Reporting Limit= 100 mg/kg

12 Dyestuffs

With Reference to DIN 54231:2005, solvent extraction by ultrasonic bath, and determination by HPLC/PDA/MS

No	Substances List	CAS No.	Result [mg/kg]
			5#
1	1,4,5,8-tetraaminoanthraquinone; C.I. Disperse Blue 1	2475-45-8	ND
2	Benzenamine, 4,4'-(4-aminocyclohexa-2,5-dienylidene)methylene)dianiline hydrochloride; C.I. Basic Red 9	569-61-9	ND
3	[4-[4,4'-bis (dimethylamino)benzhydrylidene] cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride; C.I. Basic Violet 3 with ≥ 0,1 % of Michler's ketone (EC no. 202-027-5)	548-62-9	ND
General Requirement (Not Applicable To Composite Testing)			Each<50mg/kg

Remarks: mg/kg = milligram per kilogram
ND = not detected (Less than reporting limit)
Reporting Limit =15mg/kg

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13 Extractable Heavy Metals

EN 16711-2:2015

No	Substances List	Result [mg/kg]				MDL	General Requirement
		1#	2#	4#	5#		
1	Arsenic (As)	ND	ND	ND	ND	0.2mg/kg	<1.0mg/kg
2	Lead (Pb)	ND	ND	ND	ND	0.2mg/kg	<1.0mg/kg
3	Cadmium (Cd)	ND	ND	ND	ND	0.1mg/kg	<1.0mg/kg
4	Chromium VI (Cr VI)	ND	ND	ND	ND	0.5mg/kg	<1.0mg/kg

Remarks: mg/kg = milligram per kilogram
MDL = Method detection limit
ND = not detected (Less than MDL)

14 Chlororganic Carriers

With reference to DIN 54232:2010, solvent extraction and determination by GC/MS

No	Substances List	CAS No.	Result [mg/kg]	General Requirement
			5#	
1	α , α , α , 4-tetrachlorotoluene; p-chlorobenzotrichloride	5216-25-1	ND	Each<1mg/kg
2	α , α , α -trichlorotoluene; benzotrichloride	98-07-7	ND	
3	α -chlorotoluene; benzyl chloride	100-44-7	ND	

Remarks: mg/kg = milligram per kilogram
ND = not detected (Less than reporting limit)
Reporting Limit =0.1mg/kg

15 Solvents

ISO / TS 16189:2013, solvent extraction by ultrasonic bath and determination by GC/MS

No	Substances List	CAS No.	Result [mg/kg]			General Requirement
			1#+2#+4#	3#+6#	8#	
1	N-Methyl-2-pyrrolidone (NMP)	872-50-4	ND	ND	ND	Each<3000mg/kg
2	N,N-dimethylacetamide (DMAC)	127-19-5	ND	ND	ND	
3	Dimethylformamide (DMFA)	68-12-2	ND	ND	ND	

Remarks: mg/kg = milligram per kilogram
ND = not detected (Less than reporting limit)
Reporting Limit =10mg/kg

16 Quinoline

In house method, solvent extraction and determination by analysis by HPLC-DAD

No	Substances List	CAS No.	Result [mg/kg]	General Requirement
			5#	
1	Quinoline	91-22-5	ND	<50mg/kg

Remarks: mg/kg = milligram per kilogram
ND = not detected (Less than reporting limit)
Reporting Limit =10mg/kg

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17 VOCs - Benzene
 In house method

No	Substances List	CAS No.	Result [mg/kg]				General Requirement
			1#+2#	4#+5#	3#+6#	8#	
1	Benzene	71-43-2	ND	ND	ND	ND	<5mg/kg

Remarks: mg/kg = milligram per kilogram
 ND = not detected (Less than reporting limit)
 Reporting Limit =1mg/kg

18 REACH SVHC_209

Analysis of the 209 substances of very high concern (SVHC) on the Candidate List for authorization, concerning Regulation (EC) No. 1907/2006 as published on the European Chemicals Agency (ECHA) website in October 2008, January 2010, March 2010, June 2010, December 2010, June 2011, December 2011, June 2012, December 2012, June 2013, December 2013, June 2014, December 2014, June 2015, December 2015, June 2016, January 2017, July 2017 and January 2018, June 2018, January 2019, July 2019, January 2020 and June 2020

Analysis based on LCMS, GCMS, Headspace-GCMS, ICP-OES/AAS, UV-VIS and XRF

Parameters	Result [%]		General Requirement
	1#+2#+3#+4#+5#+6#+8#	7#	
209 substances of very high concern	ND	ND	<0.1%

Remarks: ND = not detected (Less than reporting limit)
 Detection limit =0.01%
 Appendix I for each substance list

Appendix I

No.	Substance Name	CAS No
1.	Benzyl butyl phthalate (BBP)	85-68-7
2.	Bis (2-ethylhexyl) phthalate (DEHP)	117-81-7
3.	Dibutyl phthalate (DBP)	84-74-2
4.	4,4'-Diaminodiphenylmethane (MDA)	101-77-9
5.	5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2
6.	Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8
7.	Cobalt Dichloride**	7646-79-9
8.	Hexabromocyclododecane (HBCDD)	25637-99-4/ 3194-55-6
9.	Sodium dichromate, dihydrate**	7789-12-0/ 10588-01-9
10.	Anthracene	120-12-7
11.	Lead hydrogen arsenate**	7784-40-9
12.	Bis(tributyltin)oxide (TBTO)	56-35-9
13.	Diarsenic pentaoxide**	1303-28-2
14.	Diarsenic trioxide**	1327-53-3
15.	Triethyl arsenate**	15606-95-8
16.	2,4-Dinitrotoluene	121-14-2
17.	Anthracene oil##	90640-80-5
18.	Anthracene oil, anthracene paste, distn, lights##	91995-17-4
19.	Anthracene oil, anthracene paste, anthracene fraction##	91995-15-2

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No.	Substance Name	CAS No
20.	Anthracene oil, anthracene-low##	90640-82-7
21.	Anthracene oil, anthracene paste##	90640-81-6
22.	Lead chromate**	7758-97-6
23.	Lead chromate molybdate sulphate red (C.I. Pigment Red 104)**	12656-85-8
24.	Lead sulfochromate yellow (C.I. Pigment Yellow 34)**	1344-37-2
25.	Diisobutyl phthalate (DIBP)	84-69-5
26.	Tris(2-chloroethyl)phosphate	115-96-8
27.	Pitch, coal tar, high temperature##	65996-93-2
28.	Acrylamide	79-06-1
29.	Trichloroethylene	79-01-6
30.	Boric acid**	10043-35-3/ 11113-50-1
31.	Disodium tetraborate, anhydrous**	1330-43-4/ 12179-04-3
32.	Tetraboron disodium heptaoxide, hydrate(calculated as decahydrate)**	12267-73-1
33.	Sodium chromate**	7775-11-3
34.	Potassium chromate**	7789-00-6
35.	Ammonium dichromate**	7789-09-5
36.	Potassium dichromate**	7778-50-9
37.	Cobalt(II) sulphate**	10124-43-3
38.	Cobalt(II) dinitrate**	10141-05-6
39.	Cobalt(II) carbonate**	513-79-1
40.	Cobalt(II) diacetate **	71-48-7
41.	2-Methoxyethanol	109-86-4
42.	2-Ethoxyethanol	110-80-5
43.	Chromium trioxide**	1333-82-0
44.	Acids generated from chromium trioxide and their oligomers: a. Chromic acid** b. Dichromic acid ** c. Oligomers of chromic acid and dichromic acid **	7738-94-5/ 13530-68-2 --
45.	2-Ethoxyethyl acetate (2-EEA)	111-15-9
46.	Strontium chromate**	7789-06-2
47.	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP)	68515-42-4
48.	Hydrazine	7803-57-8 302-01-2
49.	1-Methyl-2-pyrrolidone	872-50-4
50.	1,2,3-Trichloropropane	96-18-4
51.	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP)	71888-89-6
52.	1,2-Dichloroethane	107-06-2
53.	2,2'-Dichloro-4,4'-methylenedianiline (MOCA)	101-14-4
54.	2-Methoxyaniline, o-Anisidine	90-04-0
55.	4-tert-Octylphenol	140-66-9
56.	Aluminosilicate Refractory Ceramic Fibres**	--
57.	Arsenic acid **	7778-39-4
58.	Bis(2-methoxyethyl) ether	111-96-6
59.	Bis(2-methoxyethyl) phthalate	117-82-8
60.	Calcium arsenate**	7778-44-1

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No.	Substance Name	CAS No
61.	Dichromium tris(chromate) **	24613-89-6
62.	Formaldehyde, oligomeric reaction products with aniline (technical MDA)	25214-70-4
63.	Lead diazide**	13424-46-9
64.	Lead dipicrate**	6477-64-1
65.	Lead styphnate **	15245-44-0
66.	N,N-dimethylacetamide (DMAC)	127-19-5
67.	Pentazinc chromate octahydroxide**	49663-84-5
68.	Phenolphthalein	77-09-8
69.	Potassium hydroxyoctaoxodizincatedichromate**	11103-86-9
70.	Trilead diarsenate**	3687-31-8
71.	Zirconia Aluminosilicate, Refractory Ceramic Fibres**	--
72.	1,2-bis(2-methoxyethoxy)ethane (TEGDME; triglyme)	112-49-2
73.	1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME)	110-71-4
74.	4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol#	561-41-1
75.	4,4'-bis(dimethylamino)benzophenone (Michler's ketone)	90-94-8
76.	4-[4,4'-bis(dimethylamino)benzhydrylidene] cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride(C.I. Basic Violet 3)#	548-62-9
77.	[4-[[4-anilino-1-naphthyl][4-(dimethylamino) phenyl]methylene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride (C.I. Basic Blue 26)#	2580-56-5
78.	Diboron trioxide**	1303-86-2
79.	Lead(II)bis(methanesulfonate)**	17570-76-2
80.	Formamide	75-12-7
81.	N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base)	101-61-1
82.	TGIC(1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione)	2451-62-9
83.	α,α -Bis[4-(dimethylamino)phenyl]-4 (phenylamino)naphthalene-1-methanol (C.I. Solvent Blue 4)#	6786-83-0
84.	β -TGIC(1,3,5-tris[(2S and 2R)-2,3-epoxypropyl] 1,3,5-triazine-2,4,6-(1H,3H,5H)-trione)	59653-74-6
85.	Bis(pentabromophenyl) ether (DecaBDE)	1163-19-5
86.	Pentacosfluorotridecanoic acid	72629-94-8
87.	Tricosfluorododecanoic acid	307-55-1
88.	Henicosfluoroundecanoic acid	2058-94-8
89.	Heptacosfluorotetradecanoic acid	376-06-7
90.	4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated-covering well-defined substances and UVCB substances, polymers and homologue (OPEO)	--
91.	4-Nonylphenol, branched and linear -substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof (NP)	--
92.	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide))	123-77-3
93.	Cyclohexane-1,2-dicarboxylic anhydride (Hexahydrophthalic anhydride - HHPA)	85-42-7
94.	Hexahydromethylphthalic anhydride, Hexahydro-4-methylphthalic anhydride, Hexahydro-1-methylphthalic anhydride, Hexahydro-3-methylphthalic anhydride	25550-51-0 19438-60-9 48122-14-1 57110-29-9
95.	Methoxy acetic acid	625-45-6
96.	1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	84777-06-0

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No.	Substance Name	CAS No
97.	Diisopentylphthalate (DIPP)	605-50-5
98.	N-pentyl-isopentylphthalate	--
99.	1,2-Diethoxyethane	629-14-1
100.	N,N-dimethylformamide (DMFA)	68-12-2
101.	Dibutyltin dichloride (DBT)	683-18-1
102.	Acetic acid, lead salt, basic**	51404-69-4
103.	Basic lead carbonate (trilead bis(carbonate)dihydroxide)**	1319-46-6
104.	Lead oxide sulfate (basic lead sulfate)**	12036-76-9
105.	[Phthalato(2-)]dioxotrilead (dibasic lead phthalate)**	69011-06-9
106.	Dioxobis(stearato)trilead**	12578-12-0
107.	Fatty acids, C16-18, lead salts**	91031-62-8
108.	Lead bis(tetrafluoroborate)**	13814-96-5
109.	Lead cyanamate**	20837-86-9
110.	Lead dinitrate**	10099-74-8
111.	Lead oxide (lead monoxide)**	1317-36-8
112.	Lead tetroxide (orange lead)**	1314-41-6
113.	Lead titanium trioxide**	12060-00-3
114.	Lead Titanium Zirconium Oxide**	12626-81-2
115.	Pentalead tetraoxide sulphate**	12065-90-6
116.	Pyrochlore, antimony lead yellow**	8012-00-8
117.	Silicic acid, barium salt, lead-doped**	68784-75-8
118.	Silicic acid, lead salt**	11120-22-2
119.	Sulfurous acid, lead salt, dibasic**	62229-08-7
120.	Tetraethyllead**	78-00-2
121.	Tetralead trioxide sulphate**	12202-17-4
122.	Trilead dioxide phosphonate**	12141-20-7
123.	Furan	110-00-9
124.	Propylene oxide; 1,2-epoxypropane; methyloxirane	75-56-9
125.	Diethyl sulphate	64-67-5
126.	Dimethyl sulphate	77-78-1
127.	3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine	143860-04-2
128.	Dinoseb	88-85-7
129.	4,4'-methylenedi-o-toluidine	838-88-0
130.	4,4'-oxydianiline and its salts	101-80-4
131.	4-Aminoazobenzene	60-09-3
132.	4-methyl-m-phenylenediamine	95-80-7
133.	6-methoxy-m-toluidine	120-71-8
134.	Biphenyl-4-ylamine	92-67-1
135.	o-aminoazotoluene	97-56-3
136.	o-Toluidine	95-53-4
137.	N-methylacetamide	79-16-3
138.	1-bromopropane; n-propyl bromide	106-94-5
139.	Cadmium**	7440-43-9
140.	Cadmium oxide**	1306-19-0
141.	Dipentyl phthalate (DPP)	131-18-0
142.	4-Nonylphenol, branched and linear, ethoxylated (NPEO)	--
143.	Ammonium pentadecafluorooctanoate (APFO)	3825-26-1

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No.	Substance Name	CAS No
144.	Pentadecafluorooctanoic acid (PFOA)	335-67-1
145.	Cadmium sulphide**	1306-23-6
146.	Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate)(C.I. Direct Red 28)	573-58-0
147.	Disodium 4-amino-3-[[4'-[(2,4-diaminophenyl)azo][1,1'-biphenyl]-4-yl]azo]-5-hydroxy-6-(phenylazo)naphthalene-2,7-disulphonate (C.I. Direct Black 38)	1937-37-7
148.	Dihexyl phthalate	84-75-3
149.	Imidazolidine-2-thione (2-imidazoline-2-thiol)	96-45-7
150.	Lead di(acetate)**	301-04-2
151.	Trixylenyl phosphate	25155-23-1
152.	1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear	68515-50-4
153.	Cadmium chloride**	10108-64-2
154.	Sodium perborate; perboric acid, sodium salt**	--
155.	Sodium peroxometaborate**	7632-04-4
156.	Cadmium fluoride**	7790-79-6
157.	Cadmium sulphate**	10124-36-4/ 31119-53-6
158.	2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)	3846-71-7
159.	2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328)	25973-55-1
160.	2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)	15571-58-1
161.	reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate and 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (reaction mass of DOTE and MOTE)	-
162.	1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters; 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with ≥ 0.3% of dihexyl phthalate	68515-51-5 68648-93-1
163.	5-sec-butyl-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [1], 5-sec-butyl-2-(4,6-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [2]	117933-89-8
164.	1,3-propanesultone	1120-71-4
165.	2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327)	3864-99-1
166.	2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350)	36437-37-3
167.	Nitrobenzene	98-95-3
168.	Perfluorononan-1-oic acid (2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,9-hepta-decafluorononanoic acid) and its sodium and ammonium salts	375-95-1 21049-39-8 4149-60-4
169.	Benzo[def]chrysene (Benzo[a]pyrene)	50-32-8
170.	4,4'-isopropylidenediphenol	80-05-7
171.	Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts	335-76-2, 3830-45-3, 3108-42-7
172.	4-Heptylphenol, branched and linear	--
173.	p-(1,1-dimethylpropyl)phenol	80-46-6
174.	Perfluorohexane-1-sulphonic acid and its salts(PFHxS)	355-46-4
175.	1,6,7,8,9,14,15,16,17,17,18,18-Dodecachloropentacyclo [12.2.1.16,9.02,13.05,10]octadeca-7,15-diene ("Dechlorane Plus"™) [covering any of its individual anti- and syn-isomers or any combination thereof]	--

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No.	Substance Name	CAS No
176.	Benz[a]anthracene	56-55-3
177.	Cadmium nitrate	10325-94-7
178.	Cadmium carbonate	513-78-0
179.	Cadmium hydroxide	21041-95-2
180.	Chrysene	218-01-9
181.	Reaction products of 1,3,4-thiadiazolidine-2,5-dithione, formaldehyde and 4-heptylphenol, branched and linear (RP-HP) [with $\geq 0.1\%$ w/w 4-heptylphenol, branched and linear]	--
182.	Octamethylcyclotetrasiloxane (D4)	556-67-2
183.	Decamethylcyclopentasiloxane (D5)	541-02-6
184.	Dodecamethylcyclohexasiloxane (D6)	540-97-6
185.	Lead	7439-92-1
186.	Disodium octaborate	12008-41-2
187.	Benzo[ghi]perylene	191-24-2
188.	Terphenyl hydrogenated	61788-32-7
189.	Ethylenediamine (EDA)	107-15-3
190.	Benzene-1,2,4-tricarboxylic acid 1,2-anhydride (trimellitic anhydride) (TMA)	552-30-7
191.	Dicyclohexyl phthalate (DCHP)	84-61-7
192.	2,2-bis(4'-hydroxyphenyl)-4-methylpentane	6807-17-6
193.	Benzo[k]fluoranthene	207-08-9
194.	Fluoranthene	206-44-0
195.	Phenanthrene	85-01-8
196.	Pyrene	129-00-0
197.	1,7,7-trimethyl-3-(phenylmethylene)bicyclo[2.2.1]heptan-2-one	15087-24-8
198.	2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acid, its salts and its acyl halides (covering any of their individual isomers and combinations thereof)	-
199.	2-methoxyethyl acetate	110-49-6
200.	Tris(4-nonylphenyl, branched and linear) phosphite (TNPP) with $\geq 0.1\%$ w/w of 4-nonylphenol, branched and linear (4-NP)	-
201.	4-tert-butylphenol (PTBP)	98-54-4
202.	2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone	119313-12-1
203.	2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	71868-10-5
204.	Diisohexyl phthalate	71850-09-4
205.	Perfluorobutane sulfonic acid (PFBS) and its salts	-
206.	1-vinylimidazole	1072-63-5
207.	2-methylimidazole	693-98-1
208.	Dibutylbis(pentane-2,4-dionato-O,O')tin	22673-19-4
209.	Butyl 4-hydroxybenzoate (Butylparaben)	94-26-8

Remarks: ** The substances are tested in terms of its respective elements and the test result is based on the calculation of selected elements/ market(s) and to the worst-case scenario. Due to the limit of the analytical technology available, any further investigation is not feasible. The client is strongly advised to review the chemical formulation to ascertain.

The substances are UVCB (substance of unknown or variable composition, complex reaction products or biological materials), which are identified by its main constituents. Individual concentrations to the constituent of UVCB with an amount of $<0.01\%$ were not considered by the calculation of the sum. Calculation is based on the worst-case scenario. Due to the UVCB nature the reported values may be regarded as semi-quantitative.

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only applicable with $\geq 0.1\%$ of Michler's ketone (CAS No. 90-94-8) or Michler's base (CAS No. 101-61-1)

TGIC is a mixture and also contains β -TGIC. According to ECHA's technical dossier the ratio of β -TGIC to TGIC is around 1 to 10. Therefore β -TGIC is issued based on the above-mentioned ratio.



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19 Respiratory protective devices - Filtering half masks to protect against particles – Requirements, Testing, Marking
EN 149:2001+A1:2009

No (Cl.No.)	Testing Item	Unit	Requirement	Result	Conclusion
1 (7.3)	Visual inspection^				
	Marking/information	-	Marking and the information supplied by manufacturer, requirements refer to Cl.9 and Cl.10	Comply	C
2 (7.4)	Packaging^				
	Visual inspection	-	Particle filtering half masks shall be offered for sale packaged in such a way that they are protected against mechanical damage and contamination before use.	Particle filtering half masks packaged and protected against mechanical damage and contamination.	C



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19 Respiratory protective devices - Filtering half masks to protect against particles – Requirements, Testing, Marking
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No (Cl.No.)	Testing Item	Unit	Requirement	Result	Conclusion
3 (7.5)	Material^				
	Visual inspection	-	Materials used shall be suitable to withstand handling and wear over the period for which the particle filtering half mask is designed to be used.	Materials were suitable withstand handling and wear.	C
		-	After undergoing S.W., none of the particle filtering half mask shall have suffered mechanical failure of the facepiece or straps.	Sample 1: neither facepiece nor straps have mechanical failure. Sample 2: neither facepiece nor straps have mechanical failure.	
		-	After undergoing S.W. and T.C., none of the particle filtering half mask shall not collapse.	Sample 3: neither facepiece nor straps have mechanical failure. Sample 4: no collapse Sample 5: no collapse Sample 6: no collapse	
		-	Any material from the filter media released by the air flow through the filter shall not constitute a hazard or nuisance for the wearer.	Not constitute a hazard or nuisance for the wearer.	
		-			

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19 Respiratory protective devices - Filtering half masks to protect against particles – Requirements, Testing, Marking
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No (Cl.No.)	Testing Item	Unit	Requirement	Result	Conclusion
4 (7.6)	Cleaning and disinfecting [^]	-	Particle filtering half mask designed to be re-usable, the materials used shall withstand the cleaning and disinfecting agents and procedures to be specified by the manufacturer. Testing shall be done in accordance with 8.4 and 8.5.	The particle filtering half mask in NOT re-usable according to information supplied by manufacturer.	N.A.
		-	With reference to 7.9.2, after cleaning and disinfecting the re-usable particle filtering half mask shall satisfy the penetration requirement of the relevant class. Testing shall be done in accordance with 8.11.	The particle filtering half mask in NOT re-usable according to information supplied by manufacturer.	
5 (7.7)	Practical performance [^]				
	Head harness comfort	-	Head harness should be comfort	Sample 1: has the feeling of comfortable wearing.	C
				Sample 2: has the feeling of comfortable wearing.	
	Security of fastenings	-	Fastenings are safe and reliable	Sample 1: All fastenings are firm.	
				Sample 2: All fastenings are firm.	
Field of vision	-	Field of vision is acceptable	Sample 1: Having a wider visual filed.		
			Sample 2: Having a wider visual filed.		

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No (Cl.No.)	Testing Item	Unit	Requirement	Result	Conclusion												
6 (7.8)	Finish of parts^																
	Visual inspection	-	Parts of the device likely to come into contact with the wearer shall have no sharp edges or burrs.	Parts of the device have no sharp edges and burrs.	C												
7 (7.9.2)	Leakage-Penetration of filter material^																
	Sodium chloride	-	≤6%	<table border="1"> <tr> <td>A.R.¹⁾</td> <td>0.1</td> <td>0.1</td> <td>0.1</td> </tr> <tr> <td>S.W.¹⁾</td> <td>0.9</td> <td>0.8</td> <td>0.7</td> </tr> <tr> <td>M.S+ T.C.²⁾</td> <td>0.1</td> <td>0.1</td> <td>0.1</td> </tr> </table>	A.R. ¹⁾	0.1	0.1	0.1	S.W. ¹⁾	0.9	0.8	0.7	M.S+ T.C. ²⁾	0.1	0.1	0.1	C
A.R. ¹⁾	0.1	0.1	0.1														
S.W. ¹⁾	0.9	0.8	0.7														
M.S+ T.C. ²⁾	0.1	0.1	0.1														
	Paraffin oil	-	≤6%	<table border="1"> <tr> <td>A.R.¹⁾</td> <td>1.3</td> <td>1.4</td> <td>1.5</td> </tr> <tr> <td>S.W.¹⁾</td> <td>1.6</td> <td>1.7</td> <td>1.8</td> </tr> <tr> <td>M.S+ T.C.²⁾</td> <td>1.5</td> <td>1.4</td> <td>2.1</td> </tr> </table>	A.R. ¹⁾	1.3	1.4	1.5	S.W. ¹⁾	1.6	1.7	1.8	M.S+ T.C. ²⁾	1.5	1.4	2.1	
A.R. ¹⁾	1.3	1.4	1.5														
S.W. ¹⁾	1.6	1.7	1.8														
M.S+ T.C. ²⁾	1.5	1.4	2.1														
¹⁾ average penetration over a time of 30s, beginning 3 min after the start of the test reported ²⁾ max. penetration during exposure test reported; Note: The penetration of the filter of the particle filtering half mask shall meet the requirements below: Maximum penetration of sodium chloride aerosol test 95L/min max. FFP1:20%, FFP2:6%, FFP3: 1% Maximum penetration of paraffin oil aerosol test 95L/min max. FFP1:20%, FFP2:6%, FFP3: 1%																	

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19 Respiratory protective devices - Filtering half masks to protect against particles – Requirements, Testing, Marking
 EN 149:2001+A1:2009

No (Cl.No.)	Testing Item	Unit	Requirement	Result		Conclusion
8 (7.10)	Compatibility with skin^	-	Materials that may come into contact with the wearer's skin shall not be known to be likely to cause irritation or any other adverse effect to health.	A.R.	5 pcs all don't cause irritation	C
				T.C.	5 pcs all don't cause irritation	
9 (7.11)	Flammability^	-	When tested, the particle filtering half mask shall not burn or not to continue to burn for more than 5s after removal from the flame.	A.R.	There is no ignited	C
					There is no ignited	
				T.C.	There is no ignited	
					There is no ignited	
10 (7.12)	Carbon dioxide content of the inhalation air^	-	The carbon dioxide content of the inhalation air (dead space) shall not exceed an average of 1.0% (by volume). Remark: 3 half masks (S1, S2 and S3) A.R. tested.	Sample 1	0.0426%	C
				Sample 2	0.0389%	
				Sample 3	0.0415%	
				average	0.0410%	

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No (Cl.No.)	Testing Item	Unit	Requirement	Result	Conclusion	
11 (7.13)	Head harness^	-	The head harness shall be designed so that the particle filtering half mask can be donned and removed easily. The head harness shall be adjustable or self-adjusting and shall be sufficiently robust to hold the particle filtering half mask firmly in position and be capable of maintaining total inward leakage requirements for the device.	A.R.	All of 5 pieces particle filtering half mask meet the requirements	C
				T.C.	All of 5 pieces particle filtering half mask meet the requirements	
12 (7.14)	Field of vision^	-	The field of vision is acceptable if determined so in practical performance tests.	The two samples both have a wide visual field.		C

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No (Cl.No.)	Testing Item	Unit	Requirement	Result	Conclusion
13 (7.15)	Exhalation valve(s)^				
	Visual inspection	-	A particle filtering half mask may have one or more exhalation valve(s), which shall function correctly in all orientations.	No exhalation valve(s)	N.A.
		-	If an exhalation valve is provided it shall be protective against or be resistant to dirt and mechanical damage, and may be shrouded or may include any other device that may be necessary for the particle filtering half mask to comply with 7.9.	No exhalation valve(s)	
	Flow conditioning	-	Exhalation valve(s), if fitted, shall continue to operate correctly after a continuous exhalation flow of 300l/min over a period of 30s.	No exhalation valve(s)	
Strength of attachment of exhalation valve housing	-	When the exhalation valve housing is attached to the faceblank, it shall withstand axially a tensile force of 10N for 10s.	No exhalation valve(s)		

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No (Cl.No.)	Testing Item	Unit	Requirement	Result	Conclusion
14 (7.17)	Clogging-Breathing resistance & Penetration of filter material^	-	Optional for single shift use devices, mandatory for re-usable devices. Tested by Cl 7.17.1/2/3.	Tests not requested for single shift use face mask	N.A.
15 (7.18)	Demountable parts^	-	All demountable parts (if fitted) shall be readily connected and secured, where possible by hand.	No demountable parts	N.A.



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Table A-Leakage-Total Inward Leakage

No (Cl.No.)	Testing Item	Unit	Requirement ¹⁾	Result						Conclusion	
				Exercises	E1 (%)	E2 (%)	E3 (%)	E4 (%)	E5 (%)		TIL (%)
16 (7.9.1)	Leakage-Total inward leakage [^]	-	At least 46 out of the 50 individual exercise results shall be not greater than 11%; And in addition, at least 8 out of the 10 individual wearer arithmetic means for the total inward leakage shall be not greater than 8%.	A.R.	8.4	9.8	8.6	8.5	7.7	8.6	C
					5.8	5.9	6.0	6.5	6.4	6.1	
					2.5	2.4	2.3	2.2	2.3	2.3	
					4.6	4.8	5.1	5.0	5.5	5.0	
					7.0	7.5	6.8	6.9	5.9	6.8	
				T.C.	1.9	1.2	1.1	1.0	1.6	1.4	
					3.5	3.4	3.7	3.5	3.3	3.5	
					2.9	2.8	2.6	2.5	2.4	2.6	
					9.8	9.8	11.2	11.1	10.5	10.5	
					3.6	6.8	2.4	8.7	1.6	4.6	

Note 1:
 48 out of the 50 individual exercise results (i.e. 10 subjects x 5 exercises) for total inward leakage shall be not greater than 25% for FFP1, 11% for FFP2, 5% for FFP3
 In addition, at least 8 out of the 10 individual wearer arithmetic means for the total inward leakage shall be not greater than 22% for FFP1, 8% for FFP2, 2% for FFP3

Table A-1-Test subjects-Facial dimension

Test Subject No.	Length of face (mm)	Width of face (mm)	Depth of face (mm)	Width of mouth (mm)
1	176	165	109	54
2	180	146	100	52
3	191	128	102	51
4	202	171	114	60
5	205	185	125	61
6	207	179	116	59
7	220	175	120	62
8	216	165	116	63
9	195	166	112	53
10	180	166	110	55

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Table B-Breathing Resistance

No (Cl.No.)	Testing Item	Unit	Requirement ¹⁾	Result						Conclusion		
				Exercises	Facing directly ahead	Facing vertically upwards	Facing vertically downwards	Lying on the left side	Lying on the right side			
17 (7.16)	Breathing resistance [^]									C		
	Inhalation 30L/min	mbar	≤0.7	A.R.	0.31	0.30	0.31	0.30	0.29			
					0.31	0.30	0.31	0.30	0.28			
					0.31	0.30	0.30	0.31	0.30			
				S.W.	0.32	0.31	0.31	0.33	0.35			
					0.36	0.36	0.35	0.35	0.35			
					0.34	0.33	0.32	0.33	0.33			
				T.C.	0.36	0.35	0.35	0.34	0.34			
					0.34	0.34	0.33	0.32	0.32			
					0.35	0.35	0.35	0.35	0.34			
	Inhalation 95L/min	mbar	≤2.4	A.R.	1.30	1.29	1.29	1.29	1.30			
					1.31	1.28	1.29	1.29	1.30			
					1.31	1.30	1.30	1.29	1.29			
				S.W.	1.31	1.32	1.31	1.31	1.32			
					1.30	1.30	1.29	1.29	1.29			
					1.31	1.31	1.32	1.32	1.32			
				T.C.	1.34	1.34	1.33	1.33	1.33			
					1.32	1.32	1.32	1.32	1.31			
					1.31	1.31	1.32	1.32	1.32			
	Inhalation 160L/min	mbar	≤3.0	A.R.	1.88	1.90	1.91	1.90	1.90			
					1.91	1.91	1.92	1.92	1.92			
					1.90	1.90	1.90	1.90	1.91			
				S.W.	1.89	1.88	1.88	1.88	1.87			
					1.79	1.77	1.78	1.79	1.79			
					1.82	1.82	1.82	1.82	1.82			
				T.C.	1.75	1.75	1.76	1.76	1.76			
					1.79	1.79	1.79	1.80	1.80			
					1.76	1.76	1.77	1.78	1.77			
	Note 1: Limitation may need be changed according to classification, refer to Table 2-Breathing resistance of EN 149:2001+A1:2009 for the Technical requirements.											

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Table C-Clogging Test-Breathing resistance

No (Cl.No.)	Testing Item		Unit	Requirement ¹⁾²⁾	Result	Conclusion
18 (7.17)	Clogging test-breathing resistance^	Inhalation 95L/min	mbar	-	-	N.A.
		Exhalation 95L/min				
Note 1: Valved particle filtering half masks After clogging the inhalation resistance shall not exceed FFP1: 4 mbar, FFP2: 5 mbar, FFP3: 7 mbar at 95 L/min continuous flow; The exhalation resistance shall not exceed 3 mbar at 160 L/min continuous flow.						
Note 2: Valveless particle filtering half masks After clogging the inhalation and exhalation resistance shall not exceed FFP1: 3 mbar, FFP2: 4 mbar, FFP3: 5 mbar at 95 L/min continuous flow.						

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Table D-Clogging Test-Penetration of filter material

No (Cl.No.)	Testing Item		Unit	Requirement	Result	Conclusion
19 (7.17)	Clogging test- Penetration of filter material^	Paraffin oil	-	-	-	N.A.

Note :
 Maximum penetration of test aerosol test 95 L/min max. FFP1: 20%, FFP2: 6%, FFP3: 1%.

Abbreviations:		
A.R. As received	M.S. Mechanical strength	S.W. Simulated wearing treatment
T.C. Temperature conditioned	F.C. Flow conditioned	C.D. Cleaning and Disinfecting

Annex A: Estimates of the uncertainty of measurement

Test Item	Uncertainty
Total inward leakage	2.98%
Penetration of filter material	1.00%
Flammability	1.00%
Carbon dioxide content of the inhalation air	0.93%
Breathing resistance	1.90%

Remarks: ^: Respiratory/Mask function results are subcontracted to other accredited laboratory.
 C denotes Comply
 N.C. denotes Not Comply
 N.A. denotes Not Applicable
 NRq denotes Not Required

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