

# PROTECTIVE GLOVES FOR SAFETY AT WORK



DAILY PROTECTION



## PROTECTIVE GLOVES FOR SAFETY AT WORK

Protective gloves are now essential in many areas of business. Different fields of application make different demands on the gloves. Whether for hygienic reasons or as protection against injury or skin irritation due to aggressive substances such as chemicals, dirt, grease, oils, paints etc. – Semperguard® gloves provide optimum skin protection. To provide optimum protection for the health and safety of users, in the EU, Directive 89/686 specifies the basic requirements for PPE (personal protective equipment).

Depending on the risk against which they are intended to provide protection, PPE is divided into **three categories**:

**Category I:** Protection against slight risks (simple PPE)

For this category, the manufacturer assumes that the user is able to evaluate the potential protection against slight risks and will notice if the barrier effect has reduced in good time.

Category I includes PPE for protection against:

Mildly aggressive cleaning agents (protective gloves for diluted cleaning solutions).

However, they are not intended to provide protection against (aggressive) chemicals.

**Category II:** Protection against moderate risks

This includes all PPE which is not included in Category I or Category III.

**Category III:** Protection against lethal hazards or serious and irreversible damage to health (complex PPE)

In this case, the manufacturer assumes that the user cannot recognise the immediate effect in good time, e.g. in the case of penetration of hazardous chemicals.

Complex PPE with regard to protective gloves includes PPE, which only provides protection against the effects of chemicals for a limited period. Semperguard® protective gloves are tested for handling a wide range of chemicals\* and most are certified as Category III PPE products.



# COMPARISON OF MATERIALS

Due to the various protection requirements for the particular work, it is especially important to know about the properties of the materials in order to select the right product. Sempermed recommends the use of nitrile gloves, as these have good mechanical properties and are resistant to chemicals, so they are especially suitable for use in a large number of industrial protection applications.

	NITRILE	LATEX	VINYL
+	Robust and comfortable to wear Protection against grease, oils and other skin irritants	Excellent elasticity Very comfortable to wear Good resistance to common chemicals* (acids, alkalis, salt solutions)	Suitable for minor hygienic applications with no particular mechanical stress
-	Less flexible	Can cause allergies with sensitive skin Less resistant to fats and oils	Low mechanical resistance



\*See chemical resistance list on [www.sempermed.com/en/sempermed-informs/chemical-resistance](http://www.sempermed.com/en/sempermed-informs/chemical-resistance)



## STANDARDS AND PICTOGRAMS

In the EU, there are a large number of standards for gloves which are labelled as PPE (Personal Protective Equipment). The basis is EN 420, which defines the general requirements for protective gloves, e.g. the contents of the information for users, the safety of the glove material, as well as the characteristics of the product (e.g.: length, size, etc.). In combination with EN 420, standard EN 374 also applies.



### PERMEATION:

The pictogram with a beaker stands for waterproof gloves and slight protection against chemical hazards. It confirms that the glove has been tested for the penetration of certain chemicals.



### PENETRATION:

The pictogram for protection against bacteriological contamination states whether the glove is free of holes and therefore is proof against micro-organisms according to the definition in the standard. It is tested at AQL level during production.



### MECHANICAL RESISTANCE:

Standard EN 388 is primarily relevant for reusable protective gloves. It specifies the resistance of the glove for various hazards (mechanical risks) and for better indication it categorises 4 different features in performance levels (wear, cutting, tearing and stab protection).



### CE MARK:

Products with the CE mark comply with the currently valid EU safety regulations, which in this case means compliance with the PPE Directive, which in turn is mandatory for this labelling.



Category I:	Protection against minimal risks
Category II:	Protection against moderate risks
Category III:	Protection against complex risks

PPE Cat. I-III – The requirements for personal protective equipment are regulated by EU Directive 89/686/EEC, in order to guarantee the health and safety of the user.

The following table shows an overview of the most commonly used Semperguard® disposable gloves and the most frequently required chemical resistances.

CHEMICAL RESISTANCE LIST**							
CHEMICAL (SYNONYMS)	Break-through time according to EN 374-3						
	Sapphire Blue	Xtra Lite	Style	Xtension	Xpert	Latex IC powder-free	Latex Comfort
Acetic acid (10%)	Level 3	Level 6	Level 6	Level 4		Level 2	Level 2
Acetone (2- propanone, methyl ketone)	X	X	X	X	X	X	X
Acetonitrile (cyanomethane, ethyl nitrile)	X	X	X	X	X	X	X
Acryl amide (40%)	Level 6	Level 6	Level 6	Level 6	Level 6		Level 6
Ammonia (Ammoniumhydroxid (25%))	A			Level 1		A	A
Chlorhexidindigluconat (0.5%)						Level 6	
Chloroform (trichloromethane)	X	X	X	X	X	X	X
Cyclohexanol (Hexalin / at 23 °C)	Level 1			Level 3	Level 4	Level 1	
Dichloromethane (meth. chlor., Freon 30)	X	X	X	X	X	X	X
Diethylamine (DEA)	X	X	X	X	X	X	X
Diethylether (diethyloxid, ethoxyethane)	X	X	X	X	X	X	X
Dimethylsulfoxide DMSO (deltan, demasorb)	X	X	X	X	X	X	X
Ethanol (20%) (ethyl alcohol)	Level 1	Level 1	Level 1	Level 1	Level 6	A	A
Ethanol (40%) (ethyl alcohol)		A	A	A	Level 1		
Ethanol (70%) (ethyl alcohol)		A	A	A	Level 1	X	X
Ethanol (80%) (ethyl alcohol)		A	A	A	Level 1		
Ethanol p.a. (ethyl alcohol)		A	A	A		X	X
Ethidium bromide (1%) (hom. bromide)	Level 6	Level 6	Level 6	Level 6	Level 6	X	X
Ethyl acetate (Aceto acid ether)		X	X	X	A	X	X
Formaldehyde (37 %) with Methanol (10%) (formalin, methyl aldehyde)	Level 3	Level 1	Level 1	Level 5	Level 6		Level 1
Gasoline (heavy, bp 150 – 190 °C)	X	X	X	X	X	X	X
Glutaraldehyde (5%) (1,3- diformylpropane; Glutaral)	Level 6	Level 6	Level 6	Level 6	Level 6		Level 6
Heptane – n+3434:40		X	X	X	A	X	X
Hexane – n		X	X	X	A	X	X
Hydrofluoric acid (10%) (muriatic acid, chlorohydric acid)	Level 6	Level 6	Level 6				
Hydrofluoric acid (36%) (muriatic acid, chlorohydric acid)		A	A		Level 3		
Hydrofluoric acid (40%) (2-propanol, IPA)				X	Level 1		
Isopropyl alcohol (40%) (2- propanol, IPA)		Level 1	Level 1	Level 1	Level 1	A	A
Isopropyl alcohol (70%) (2- propanol, IPA)		Level 1	Level 1	Level 1	Level 1	A	X
Isopropyl alcohol p.a.	A	A	A	Level 1	Level 1		
Methanol (5%) (methyl alcohol)				Level 6			
Methanol p.a. (methyl alcohol)	X	X	X	A	A	X	X
Ninhydrin (0.2%)		Level 6			Level 6		
Nitric acid (10%)	Level 6	Level 6	Level 6	Level 6	Level 6	Level 6	Level 6
Nitric acid (36%)		Level 6	A	Level 3	Level 4		Level 6
Nitric acid (50%)		A	A		Level 4		
Phenol (10%)	X	X	X	X	Level 2		
Phenol (80%)	X	X	X	X	Level 2		
Phosphoric acid (10%) (orthophos. acid)		Level 6		Level 6	Level 6		
Phosphoric acid (30%) (orthophos. acid)	Level 6	Level 6	Level 6	Level 6			Level 6
Phosphoric acid (85%) (orthophos. acid)		Level 6					
Potassium hydroxide (30%) (caustic potash, lye)	Level 5	Level 6	Level 6	Level 6	Level 6		Level 1
Sodium hydroxide (30%) (caustic soda, lye, white caustic)	Level 6	Level 6	Level 6	Level 6	Level 6	Level 6	Level 4
Sodium hydroxide (40%) (caustic soda, lye, white caustic)	Level 6	Level 6	Level 6	Level 6	Level 6	Level 5	Level 4
Sulphuric acid (96%) (vitriol)				Level 1	Level 1	Level 1	
Toluene (methylbenz., phenylmeth., toluol)	X	X	X	X	X	X	X
Trichlorethane (methyltrichloromethane)	X	X	X	X	X	X	X
Xylene (xylol, dimethylbenzene)	X	X	X	X	X	X	X

- Not recommended
- A: only recommended for splash protection – change gloves immediately after contact
- Level 1: recommended for short contact (up to 10 min)
- Level 2: for applications up to 30 min
- Level 3: for applications up to 60 min
- Level 4: for applications up to 120 min
- Level 5: for applications up to 240 min
- Level 6: for applications up to 480 min\*
- Not tested

\* Higher measurement values not available

\*\* Should you require information on gloves and chemical substances which are not listed here, please see the complete list on [www.sempermed.com/en/sempermed-informs/chemical-resistance/](http://www.sempermed.com/en/sempermed-informs/chemical-resistance/)








**IMPORTANT NOTE:** The latest chemical resistance lists can be found at [www.sempermed.com/sempermed-informiert/chemikalienschutz/](http://www.sempermed.com/sempermed-informiert/chemikalienschutz/)

When working with materials that are harmful to the skin, please always inspect the glove for any holes or tears prior to use. In principle, tests and certificates may only be regarded as general indications and do not exempt the user from the responsibility of making sure that the glove affords the protection requirements for the intended purpose prior to use. The resistance recommendations do not form part of the specifications. **CAUTION:** Failure to observe this information, in particular with regard to (chemical) resistance, frequency of use and tolerability of the gloves, can result in personal injury and/or material damage. Semperit does not accept any liability for incorrect use of the gloves. In case of doubt, obtain expert advice before use.



## DISPOSABLE GLOVES

	NITRILE						
Product Name	Semperguard® Sapphire blue	Semperguard® Xtra Lite	Semperguard® Xenon	Semperguard® Style	Semperguard® Comfort	Semperguard® Xtension	Semperguard® Xpert
							
Key Benefits	<b>THE EXTRA SENSITIVE NITRILE</b> <ul style="list-style-type: none"> <li>• Appealing colour</li> <li>• Extremely soft and comfortable to wear</li> <li>• Splendid tactility</li> </ul>	<b>THE LIGHT NITRILE</b> <ul style="list-style-type: none"> <li>• Lavender blue, offering compliance with HACCP standards</li> <li>• Excellent elasticity</li> <li>• Skinfriendly</li> </ul>	<b>THE HYGIENE GLOVE</b> <ul style="list-style-type: none"> <li>• White colour</li> <li>• Excellent wearing comfort</li> <li>• Great sense of touch</li> </ul>	<b>THE BLACK NITRILE</b> <ul style="list-style-type: none"> <li>• Black colour</li> <li>• Excellent elasticity</li> <li>• Especially suitable for applications which are visible to the public</li> </ul>	<b>THE COMFORT NITRILE</b> <ul style="list-style-type: none"> <li>• Signal colour blue (HACCP standard)</li> <li>• High wearing comfort</li> <li>• Especially suitable for applications which are visible to the public</li> </ul>	<b>THE EXTRA-LONG NITRILE</b> <ul style="list-style-type: none"> <li>• Length of 300 mm for additional drip protection</li> <li>• Signal colour blue</li> <li>• Good chemical resistance*</li> </ul>	<b>THE STRONG NITRILE</b> <ul style="list-style-type: none"> <li>• Extra wall-thickness</li> <li>• More resilience</li> <li>• Good chemical protection*</li> <li>• No silicone added</li> </ul>
Material	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile	Nitrile
Interior	Online chlorinated	Powder-free	Online chlorinated	Powder-free	Powder-free	Powder-free	Powder-free
Exterior/Surface	Finger textured	Finger textured	Finger textured	Finger textured	Finger textured	Finger textured	Fully textured
Length	Median 240mm	Median 240mm	Median 240mm	Median 240mm	Median 240mm	Median 300mm	Median 240mm
Thickness at palm (double measured/typical production values)	0.11 mm	0.14mm	0.14mm	0.16mm	0.20mm	0.20mm	0.26mm
MD Directive (medical device directive 93/42/EEC)	 CE Class I	CE Class I	CE Class I	CE Class I	CE Class I	CE Class I	
PPE Directive (personal protective equipment directive 89/686/EEC)	 CE Category III Complex risk	PPE category III Complex risks	CE Category III Complex risk	PPE category III Complex risks	PPE category III Complex risks	PPE Category III Complex risks	PPE category III Complex risks

	LATEX			VINYL	
Product Name	Semperguard® Latex IC powder-free	Semperguard® Latex Comfort	Semperguard® Latex powdered	Semperguard® Vinyl powder-free	Semperguard® Vinyl powdered/blue
					
Key Benefits	<b>THE ALL-ROUNDER</b> <ul style="list-style-type: none"> <li>• Innercoating</li> <li>• High Tear resistance/excellent elasticity</li> <li>• Great sense of touch &amp; wearing comfort</li> </ul>	<b>THE COMFORTABLE LATEX</b> <ul style="list-style-type: none"> <li>• Natural colour</li> <li>• Chlorinated</li> <li>• Excellent elasticity</li> <li>• Good tactility/very comfortable to wear</li> </ul>	<b>THE POWDERED SOLUTION</b> <ul style="list-style-type: none"> <li>• Pre-powdered</li> <li>• Great donability – even in humid environment</li> <li>• Good price – quality ratio</li> </ul>	<b>THE SKIN FRIENDLY GLOVE</b> <ul style="list-style-type: none"> <li>• Free from latex proteins and accelerants</li> <li>• Free from DOP</li> <li>• Value-for-money quality</li> </ul>	<b>THE SKIN FRIENDLY TWO</b> <ul style="list-style-type: none"> <li>• Pre-powdered</li> <li>• Free from latex proteins and accelerants</li> <li>• Free from DOP</li> </ul>
Material	Natural latex	Natural latex	Natural latex	Vinyl	Vinyl
Interior	Inner coated	Powder free	Powdered	Inner coated	Powdered
Exterior/Surface	Fully textured	Finger textured	Finger textured	Smooth	Smooth
Length	Median 240mm	Median 240mm	Median 240mm	Median 240mm	Median 240mm
Thickness at palm (double measured/typical production values)	0.24 mm	0.20mm	0.20mm	0.15mm	0.15mm
MD Directive (medical device directive 93/42/EEC)	 CE Class I	CE Class I	CE Class I		
PPE Directive (personal protective equipment directive 89/686/EEC)	 CE Category III complex risk	CE Category III complex risk	CE Category III complex risk	CE Category I minimal risk	CE Category I minimal risk

\*See chemical resistance list on [www.sempermed.com/en/sempermed-informs/chemical-resistance](http://www.sempermed.com/en/sempermed-informs/chemical-resistance)



**IMPORTANT NOTE:** Current product information is available under [www.sempermed.com](http://www.sempermed.com). Failure to observe this information, in particular with regard to (chemical) resistance, frequency of use and tolerability of the gloves, can result in personal injury and/or material damage. Semperit does not accept any liability for incorrect use of the gloves. In case of doubt, obtain expert advice before use. The information and classification correspond to the latest status prior to printing. Technical details are average values from production and may vary in individual cases. Subject to mistakes, printing errors and amendments. **CAUTION: Natural latex can cause allergic reactions, including anaphylactic shock.**

### CONTACT US!

Semperit Investments Asia Pte Ltd  
8 Jurong Town Hall Road,  
#29-03 to 06 JTC Summit, Singapore 609434  
e-mail: [sempermed@semperitgroup.com](mailto:sempermed@semperitgroup.com)  
[www.sempermed.com](http://www.sempermed.com)

Semperit Technische Produkte Gesellschaft m. b. H.  
Division Sempermed  
Austria · 1030 Vienna · Modecenterstrasse 22  
Tel.: +43 1 79 777-0 · Fax: +43 1 79 777-630  
e-mail: [sempermed@semperitgroup.com](mailto:sempermed@semperitgroup.com) · [www.sempermed.com](http://www.sempermed.com)