

PROTECT YOUR HANDS

Gloves against cytostatic drugs



Due to the increase of cancer cases and the fact that one of the main therapies to fight it is the use of chemotherapeutic drugs, including cytostatic drugs, it is very necessary to address the hand protection of healthcare workers during the preparation, handling and administration of this type of substances with chemical protective gloves, certified according to the PPE Regulation⁽¹⁾. This leads to the need to be as demanding as possible, with regard to the permeation resistance tests against these agents to which protective gloves are subjected before being placed on the market.



Technical standards

The requirements to be met by chemical protective gloves are set out in EN ISO 374-1. These include resistance to permeation against a number of chemicals according to the test standard EN 16523-1. There is an American standard, ASTM D-6978-05, which sets stricter conditions for permeation resistance than those required by the European test standard EN 16523-1.



		EN 16523-1	ASTM D6978-05
Scope of the standard		Resistance to permeation by chemicals in general	Resistance to permeation by cytostatic drugs
Glove area for cutting test specimen		Always from the palm Also from the cuff in case of long gloves (≥ 40cm)	Thinnest area of the glove (palm or wrist)
Chemicals tested		At least 1 test chemical listed in EN ISO 374-1. (Cytostatic drugs are not included in the list). Additional tests may be carried out with other chemicals depending on the application	At least 9 cytostatic drugs: 7 from list in table 1 in ASTM D6978-05 + 2 chosen from the list in table 2 of the same standard
Test duration		480 min (8 h)	240 min (4 h)
Temperature conditions	Pre-conditioning of the specimen	23±2°C for a minimum of 16 h	No
	Test temperature	23±1°C	35±2°C
Normalized permeation rate set as a limit in the standard		1 µg/cm² min	0,01 µg/cm² min
Normalized Breakthrough Time (min), NBT		When permeation rate has reached 1 µg/cm² min	When permeation rate has reached 0,01 µg/cm² min

Permeation resistance test

THICKNESS OF TEST SPECIMEN		CHEMICALS TESTED		TEST TEMPERATURE		TEST DURATION	
EN 16523-1	ASTM D-6978-05	EN 16523-1	ASTM D-6978-05	EN 16523-1	ASTM D-6978-05	EN 16523-1	ASTM D-6978-05
The wrist area is usually the thinnest part of the glove and has the lowest resistance to permeation.		1 to 6 NON-cytostatic chemicals	9 chemotherapeutic drugs	The ASTM standard establishes body temperature as the test temperature. High temperatures increase the permeation rate.		BREAKTHROUGH TIME (NBT)	
		The chemicals tested according to ASTM standard are more specific for the intended purpose.					
						1,00 µg/cm² min	0,01 µg/cm² min
						The ASTM standard sets a 100 times lower threshold for determining NBT than the European standard.	

Recommendations for selection and use

Use disposable chemical protective gloves according to EN ISO 374-1 that additionally comply with ASTM D-6978-05 or, alternatively, with specific permeation data (EN 16523-1) against cytostatic drugs.
If there is not a better option, select disposable chemical protective gloves as thicker as possible or two pairs instead.

Avoid powdered gloves.
Use a dual-use glove if required.
It is recommended to change gloves frequently during use or immediately when there is a spillage.

(1) Regulation (EU) 2016/425 of the European Parliament and of the Council of 9 March 2016 on personal protective equipment.

