

Guide To Choosing Your Work Gloves

EN ISO 21420:2020 – Protective Gloves – General Requirements And Test Methods (Updated From EN 420:2003+A1:2009)

Under EN ISO 21420 this standard defines the general requirements for glove design and construction, sizing, dexterity, water vapour transmission and absorption, electrostatic properties (in accordance with EN16350:2014) and innocuousness.

Innocuousness test now includes, pH (between 3.5 and 9.5), Chromium VI for leather products (less than 3mg/kg), nickel release for metallic components (less than 0.5µg/cm2/week), azo colourants (less than 30mg/kg), dimethylformamide or DMFA in Polyurethane products (less than 1000mg/kg), Poly Aromatic Hydrocarbons or PAH (less than 1mg/kg). The innocuousness testing covers where applicable elements of regulations such as REACH (Regulation (EC) No 1907/2006) Annex XVII.

Protective Gloves Against Mechanical Risks – EN388:2016+A1:2018 (AS/NZS 2161.3)

Over recent years, changes in the manufacturing process of protective gloves has meant that the well established method of hand protection testing (EN388:2003), and in particular the test to assess protection against cuts has now been deemed no longer fit for purpose. Whilst the old system in EN388:2003 and its 1-5 numbering system was easy to understand, the development of newer cut resistant materials combined with a drive from industry to provide the highest level of cut protection possible meant that the method for testing hand protection needed to be revised.



EN388:2016 seeks to update the standard and by doing this, 2 tests have been revised (abrasion and cut) and 2 new tests have been included (straight blade cut resistance and impact resistance).

1 3 4 1 E P

EN388:2003 Standards specifies physical and mechanical aggression caused by abrasion, blade cut, tearing and puncture. EN388:2016 updates the existing standard with this new test method for abrasion, blade cut & impact resistance. EN ISO 13997:1999 (TDM test) records cut results as a Newton value - the force of the blade on the glove material needed to cut through the material 20mm. The results are represented on a scale A-F.

REQUIREMENTS

**Performance level P
Impact Resistance**
Impact-resistant properties to 5J.

**PERFORMANCE LEVELS A – F
STRAIGHT BLADE CUT RESISTANCE:**
(TDM cut test) Measures the average load to achieve the moment of cut-through

**PERFORMANCE LEVELS 1-4
d: PUNCTURE RESISTANCE:**
Force required to pierce the sample with a standardised punch.

**PERFORMANCE LEVELS 1-4
c: TEAR RESISTANCE:**
Maximum force required to tear the sample.

**PERFORMANCE LEVELS 1-5
b: BLADE CUT RESISTANCE: (Coup cut test)**
Number of cycles required to cut the sample at constant speed.

**PERFORMANCE LEVELS 1-4
a: ABRASION RESISTANCE:**
Number of cycles required to damage the sample at constant speed.

EN 388:2016+A1:2018	Level 1	Level 2	Level 3	Level 4	Level 5
Abrasion resistance (number of cycles)	100	500	2,000	8,000	-
Blade cut resistance (index) Coup test method	1.2	2.5	5	10	20
Tear resistance (N)	10	25	50	75	-
Puncture resistance (N)	20	60	100	150	-

EN ISO 13997:1999 TDM	Level A	Level B	Level C	Level D	Level E	Level F
Cut resistant test levels (N)	2	5	10	15	22	30

KNITTING GAUGE



HEAVY

FINE

Knitted gauge denotes the thickness of a glove to understand whether the glove is heavier or very fine. Higher gauges offer a thinner, more flexible fit for better dexterity. Lower gauges provide a thicker material for added durability and protection.



Protective Gloves Against Thermal Risks (Heat and/or Fire) EN 407: 2020 (AS/NZS 2161.4)

This standard specifies thermal performance for protective gloves against heat and/or fire. The heat and flame pictogram is accompanied by a 6 digit number.



REQUIREMENTS

**PERFORMANCE LEVELS 1-4
f: RESISTANCE TO LARGE QUANTITIES OF MOLTEN METAL**
Amount required to damage the glove and through to the wearer.

**PERFORMANCE LEVELS 1-4
e: RESISTANCE TO SMALL SPLASHES OF MOLTEN METAL**
Amount of droplets required to raise the glove to a certain temperature.

**PERFORMANCE LEVELS 1-4
d: RESISTANCE TO RADIANT HEAT:**
Time required to raise a given temperature level.

**PERFORMANCE LEVELS 1-4
c: RESISTANCE TO CONVECTIVE HEAT:**
Time during which the glove is able to delay the transfer of heat of a flame.

**PERFORMANCE LEVELS 1-4
b: RESISTANCE TO CONTACT HEAT:**
Temperature (within the range of 100°C to 500°C) at which the person wearing the gloves will not feel any pain (for a period of at least 15 seconds).

**PERFORMANCE LEVELS 1-4
a: RESISTANCE TO LIMITED FLAME SPREAD:**
Time during which the material remains lit and continues to be consumed after the ignition source has been eliminated.

B: RESISTANCE TO CONTACT HEAT:

PERFORMANCE LEVEL	CONTACT TEMPERATURE (°C)	THRESHOLD TIME (Second)
1	100°C	≥15s
2	250°C	≥15s
3	350°C	≥15s
4	500°C	≥15s

EN374



Protective Gloves : Against Chemicals And Micro-Organisms EN ISO 374-1:2016+A1:2018 (AS/NZS 2161.10.1)

Terminology and performance requirements for chemical risks. Chemical protective gloves are classified into three types: A, B and C, which are related to performance levels and the number of chemicals they are protective against. Glove with a length longer than 400mm will have to be additionally testing in the cuff area.

ISO 374-1/Type C



ISO 374-1/Type B



ISO 374-1/Type A



XYZ

UVWXYZ

Code	Chemical	Class
A	Methanol	Primary alcohol
B	Acetone	Ketone
C	Acetonitrile	Nitrile compound
D	Dichloromethane	Chlorinated hydrocarbon
E	Carbon disulphide	Sulphur containing organic compound
F	Toluene	Aromatic hydrocarbon
G	Diethylamine	Amine
H	Tetrahydrofurane	Hetero-cyclic and ether compound
I	Ethyl acetate	Ester
J	n-Heptane	Saturated hydrocarbon
K	40% Sodium hydroxide	Inorganic base
L	96% Sulphuric acid	Inorganic mineral acid, oxidising
M	65% Nitric Acid	Inorganic mineral acid, oxidising
N	99% Acetic Acid	Organic acid
O	25% Ammonium hydroxide	Organic base
P	30% Hydrogen peroxide	Peroxide
S	40% Hydrofluoric acid	Inorganic mineral acid
T	37% Formaldehyde	Aldehyde

EN ISO 374-2:2019 Determination of resistance to penetration

ISO 374-5:2016



Marking of gloves protecting against bacteria and fungi

EN ISO 374-4:2019 Determination of resistance to degradation by chemicals (DR) Tests puncture resistance before and after exposure to a challenge chemical. The average of the performance will be recorded in the usersheet as a percentage (%).

EN ISO 374-5:2016 Terminology and performance requirements for micro-organisms risks Microorganisms are classed as bacteria, viruses or fungi. Gloves protecting against viruses must also pass ISO16604:2004.

ISO 374-5:2016



VIRUS

Additional marking for Virus

EN12477



Protective Gloves For Welders

EN 12477:2001+A1:2005

This European Standard specifies requirements and test methods for protective gloves for use in manual metal welding, cutting and allied processes. According to their performance, protective gloves for welders are classified into two types.



EN 16350:2014

Protective Gloves: Electrostatic Properties

This European standard specifies a test method for the electrostatic properties of gloves. The test improves on EN1149 as it requires a lower vertical resistance of less than 10 ohms. Gloves tested to EN16350:2014 can be used in areas where there may be an increased risk of explosion, such as in a refinery.

IEC 61340-5-1:2016

Protection of Electronic Devices from Electrostatic Phenomena: General Requirements

This standard specifies a test method for PPE products used in high sensitive areas where an electrostatic charge can potentially cause damage to delicate components such as electrical circuit boards and microchips.

All gloves in the Portwest ESD Glove collection have been tested to both standards.

EN ISO 10819



Protective Gloves: Mechanical Vibration And Shock

EN ISO 10819:2013+A1:2019 (AS/NZS 2161.9)

This European Standard specifies a method for the laboratory measurement, the data analysis and reporting of the vibration transmissibility of gloves in terms of vibration transmission from a handle to the palm of the hand in the frequency range from 25 Hz to 1250 Hz. The standard is intended to define a screening test for the vibration transmission through gloves.



EN 455:2000

Medical gloves for single use

Part 1: Requirements and testing for freedom from holes
Part 2: Requirements and testing for physical properties
Part 3: Requirements and testing for biological evaluation
Part 4: Requirements and testing for shelf life determination



CE foodsafe

European legislation with respect to Food Contact Materials (Directive EC1935/2004) requires that food contact materials shall not transfer their ingredients to food and must not modify the organoleptic properties (ie. colour, smell, texture and taste) of the food. Products intended for food contact shall be labelled as such.

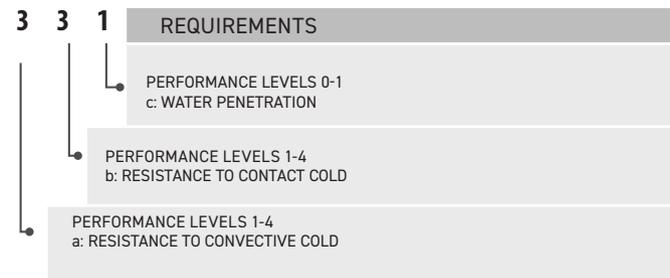
EN511



Protective Gloves Against Cold

EN 511:2006 (AS/NZS 2161.5)

The European Standard EN 511 specifies the requirements and test methods for gloves which protect against conductive cold down to -50 degrees Celsius. This cold can be linked to the climate conditions or an industrial activity.



EN407



EN 407:2020 – Glove Protective Against Thermal Risks

This standard was superseded the 2004 version in April 2020. Limited Flame Spread had been updated from Burning Behaviour and now includes oven gloves to be classed as PPE. If a glove does not claim any protection against limited flame spread then an alternative symbol is used to indicate protection without flame. Gloves certified to the 2004 version of the standard do not need to change until the existing certificate expires.



EN 1082 Parts 1 to 3: 1997 to 2000

Parts 1 to 3: Protective clothing.

Gloves and arm guards protecting against cuts and stabs by hand knives.