REGULATORY

CE Information

In the EU, all products defined as PPE (Personal Protective Equipment) are covered by the PPE Regulation 2016/425. It is a mandatory requirement that the CE mark is affixed to all PPE provided all the appropriate elements of the Regulation are satisfied. Without the CE mark, the product cannot be sold in the EU as PPE. The package itself can be marked if product marking is not appropriate.

CATEGORIES OF PPE

CE

CATEGORY 1: SIMPLE DESIGN

Gloves of simple design, for minimal risks only. Example of gloves in this category are household gloves. Additional gloves in this category can include light-duty gardening gloves or gloves for other work where the risk for injury is minimal. Manufacturers have the option to test Category 1 gloves themselves.

CE Intermediate Design

CATEGORY 2: INTERMEDIATE DESIGN

Gloves that are neither simple nor complex in design. Gloves are placed in this category when the risk is not classified as minimal or could not cause irreversible harm to health. Gloves in this category are typically general purpose that require good abrasion, cut, tear or puncture resistance. The product is tested by an accredited laboratory and the results form part of a detailed Technical File for the product which is then submitted to a Notified Body. The Notified Body then issues the EU Type Examination Certificate that permits the use of the CE mark on the product.

CE Complex Design

CATEGORY 3: COMPLEX DESIGN

Gloves of complex design, intended to protect against mortal danger or danger that may seriously and irreversibly damage health.

Gloves in this category are designed to protect against the highest levels of risk; e.g., highly corrosive acids. Gloves in this category must also be independently tested and certified by a Notified Body (appointed by the government in each member state), and the unique number of the Notified Body responsible for Module D status is shown alongside the CE mark for the Category 3 product.

PPE ASSESSMENT AND MARKINGS

Category I (Simple Design) products can be identified and marked by the manufacturer, and a Technical File is retained by the manufacturer.

Category II and III (Intermediate and Complex Design) products are tested by external independent accredited laboratories and a test report is prepared. The test report forms part of a Technical File in which the details of product design, construction, specifications and information are included and how the appropriate Essential Health and Safety requirements of the Regulation have been fulfilled.

The Technical File is submitted to a single Notified Body within the EU and the Notified Body issues an EU Type Examination Certificate that allows the use of the CE mark for these categories.

For Category 3 products there is an important additional element which requires assurance that the product quality is reliably maintained. This is done by a regular Notified Body Audit of the Quality System (Module D of the Regulation) or by regular retesting of selected product by the Notified Body (Module C2 of the Regulation). Such checks are carried out at least once each year.

All Ninja® manufacturing units have ISO 9001 Systems in place and also conform to Module D (for Category 3 products).

Notified Bodies are appointed by the government and are audited by a government-appointed assessment authority.

The Notified Body Number as shown above applies only to Category 3 products and is the Notified Body number which carried out the Quality Assessment as per Module C2 or D.

The laboratory testing of glove products uses methods described in ENs (European Norms) which are detailed in the following pages. These standards are under constant review by expert groups within CEN (translated as European Committee For Standardization) and updated to expand the scope and take into account changes in method and materials. The issue date is indicated alongside the standard number; for example, EN 388:2016+A1:2018.

The EN standards are designed so that increasing levels of performance can be measured, and each EN has a unique pictogram beneath which the tested performance value in number or alphabet is displayed. The pictograms form part of the marking on the glove and are also used in publications, allowing easy access to product information and comparison. It should be noted that performance levels are determined by laboratory methods that cannot simulate actual end-use conditions. It is the responsibility of the user/employer to determine the risk in end use and the manufacturer to provide sufficient information as enclosed, plus any other relevant information to enable the correct choice of glove to be made for the end use.

The CE mark is not a quality mark, but combined with the requirements of the Regulation, external product testing and auditing of QA systems and certification it allows Ninja® customers to be assured that consistent and reliable product performance is maintained.

Although the CE mark and PPE Regulation only have legal status within the EU, all the products manufactured by Ninja® are made under the same systems, and resulting product performance and the way the data is presented is recognized and appreciated throughout all the industrialized countries outside of the EU.

NINJA® STANDARDS AND QUALITY SYSTEMS

All manufacturing facilities have recognized approval and/or accreditation for the following:

- EU 2016/425 Module D: All Complex Design (Category III) products are audited regularly by Notified Body SGS alongside the ISO 9001 QA system in accordance with Module D of the PPE Regulation.
- ISO 9001: 2015 for Quality Management Systems
- ISO 14001: 2015 for Environment Management Systems
- ISO 45001:2018 for Occupational Health & Safety
- ISO 50001:2018 Energy Management
- ISO 13485: 2016 Quality Management System for Medical Devices
- ISO 17025:2017 Laboratory Accreditation
- 5S: Japanese Management Concept
- CTPAT Compliant

ADDITIONAL SPECIAL CERTIFICATIONS FOR DISPOSABLE GLOVES

FDA 510(k)
Class 1 Medical Devices

Component materials comply with all relevant EU regulations for food contact.

Classified by Underwriter's Laboratory, National Fire Protection Association, 1999 Standard on Protective Clothing for Emergency Medical Operations, 2003 Edition.

STANDARD EN 420:2003+A1:2009 / EN ISO 21420:2020

PROTECTIVE GLOVES — GENERAL REQUIREMENTS AND TEST METHODS

Scope:

EN 420 / EN ISO 21420 is the underlying general standard to which all protective gloves must comply. It is designed to ensure that the gloves themselves do not cause harm to the wearer and are comfortable to wear. EN 420 / EN ISO 21420 defines general requirements including design and construction, comfort and efficiency and innocuousness, as well as general information, marking and sizing.

- The gloves themselves should not impose a risk or cause injury.
- The pH of the gloves should have a pH value between 3.5 and 9.5.
- The highest permitted value for chromium is 3 mg/ kg (chrome VI).
- Specific details of any substance used in the glove that are known to cause allergies must be named.

There is a requirement to provide information, traceability and general product description including size range, hazard category (i.e. Category 1, 2 or 3), tests performed and performance levels.

The information must show how the product should be stored and for how long, any known allergy substances contained in the product and any other useful information to enable a user to make the correct decision in the choice of PPE.

STANDARD EN 388:2016+A1:2018

GLOVES GIVING PROTECTION FROM MECHANICAL RISKS

Scope:
This standard measures the performance against physical and mechanical interference caused by abrasion, cutting, tear, puncture and impact.

TERM DEFINITIONS

Protection from mechanical hazards is expressed by a pictogram followed by numbers (performance levels) and letters, each representing a performance level using the appropriate test method as listed below:

EN 388: 2016 Mechanical Hazards
a. Abrasion Resistance (Cycles) (Rating 0-4)
b. Blade Cut Resistance (Index) (Rating 0-5 or X)
c. Tear Resistance (Newton) (Rating 0-4)
d. Puncture Resistance (Newton) (Rating 0-4)
e. Cut Resistance (ISO 13997) (Rating X or A-F)
f. Impact Test (Result "Pass" or "Fail")

1. **Resistance to Abrasion**
   Based on the number of rubs required to abrade through the sample glove (abrasion by Aluminum Oxide paper under a stipulated pressure of 9+/- 0.2 kPa). The protection factor is then indicated on a scale from 1 to 4 depending on how many abrasion rubs are required to make a hole in the material.

2. **Blade Cut Resistance (Coupe Test)**
   Based on the number of cycles required to cut through the sample at a constant speed. The protection factor is then indicated on a scale from 1 to 5. A new test (TDM-100) has been implemented as part of the 2016 revision.

3. **Tear Resistance**
   Based on the amount of force required to tear the sample. The protection factor is then indicated on a scale from 1 to 4.

4. **Puncture Resistance**
   Based on the amount of force required to pierce the sample with a standard sized point. The protection factor is then indicated on a scale from 1 to 4.

5. **Cut Resistance (ISO 13997)**
   Based on the amount of Newton force required to cut through the fabric using a moving straight blade, and is indicated on a scale from A to F, or X for non-cut gloves or gloves not tested.

6. **Impact Test (EN 13594)**
   A "Pass" or "Fail" result based on the mean transmitted force ≤ 7kN experienced on the inside of the glove. Non-impact gloves are typically not marked at all.

Performance Level according to EN 388:2016+A1:2018	X	Level 1	Level 2	Level 3	Level 4	Level 5
Abrasion Resistance (rubs)		100	500	2000	8000	N/A
Cut Resistance (index)	Not Tested	1.2	2.5	5.0	10.0	20.0
Tear Resistance (Newton)		10	25	50	75	N/A
Puncture Resistance (Newton)		20	60	100	150	N/A

Cut (ISO 13997)	X	A	B	C	D	E	F
Cut Resistance (Newton)	Not Tested	2	5	10	15	22	30

Weight needed to cut through material with 20 mm blade travel.

Impact (EN 13594)	P (for Pass)
Impact Force Experienced	≤ 7 Kilonewtons

STANDARD EN ISO 374:2016

GLOVES GIVING PROTECTION FROM CHEMICALS AND MICRO-ORGANISMS

Scope:
This standard specifies the requirements for gloves to protect the user against chemicals and micro-organisms and defines terms to be used.

TERM DEFINITIONS

Penetration

- Movement of a chemical or micro-organism through porous materials, seams, pinholes or other imperfections in a protective glove material on a non-molecular level.

Permeation

- Process by which a chemical (liquid, vapour or gas) moves through a protective glove material on a molecular level. Permeation involves the following:
- Absorption of molecules of chemicals on the contacted (outside) surface of a material
- Diffusion of the absorbed molecules in the material; and
- Desorption of the molecules from the opposite (inside) surface of the material.

Degradation

- Process by which a significant change to a material occurs upon contact with a chemical. Degradation can include flaking, swelling, a change in appearance and the hardening of the tested material.

Breakthrough Time

- The time elapsed between the initial application of the chemical to the outside of a protective glove material and its subsequent presence on the inside as measured in EN16523-1 and defined as the time when the permeation rate equates to 1 microgram per minute per square cm.

TEST EN374-2:2014

EN374-2 is a dual test that focuses on both leaks from water and air pressure.

AIR PENETRATION: In the air leak test, the test glove is fully submerged in water. Air is pumped into the interior and if any bubbles are detected, it is a fail.

WATER PENETRATION: The water leak test involves pumping water inside the test glove at a constant pressure. If any water droplets are detected on the outside of the glove, it is a fail.

TEST EN16523-1: Permeation

- In this test, the outside of the glove material is directly exposed to the test chemical. The breakthrough time is measured when the chemical is detected in the test sample.

TEST EN374-4: Degradation

This test measures the change in puncture resistance of the material after continuous contact between the test glove and the chemical. The force to pierce the material is measured both before and after exposure to the chemical.

REQUIREMENTS

Penetration

- Gloves must not leak when subjected to an air or water leak test.

Permeation

- Chemicals are tested and classified for breakthrough time on a scale of 0-6

Warning: Chemical information does not necessarily indicate workplace duration.

EN 374-2:2014 Determination of resistance to penetration

Performance Level	Acceptable Quality Level Unit	Inspection Levels
Level 3	<0.65	G1
Level 2	<1.5	G1
Level 1	<4.0	S4

Permeation Performance Level	Measured Breakthrough Time
level 1	>10 mins
level 2	>30 mins
level 3	>60 mins
level 4	>120 mins
level 5	>240 mins
level 6	>480 mins

STANDARD EN ISO 374:2016 (CONTINUED)

GLOVES GIVING PROTECTION FROM CHEMICALS AND MICRO-ORGANISMS

Adapted from the old EN 374:2003 standard, the EN ISO 374-1:2016 standard has introduced 6 new chemicals as well as updating testing methods. There are now three levels of chemical resistance: Type A, Type B and Type C.

To achieve any level of chemical resistance a glove must pass the air leak, water leak and permeation tests. Whether the glove is Type A, B or C is determined by the number of chemicals it can resist for set period of time.

Type A (high resistance) 6 chemicals for at least 30 minutes (level 2)	EN ISO 374-1: 2016/Type A JKLMNO
Type B (medium resistance) 3 chemicals for at least 30 minutes (level 2)	EN ISO 374-1: 2016/Type B JKL
Type C (lowest resistance) 1 chemical for at least 10 minutes (level 1)	EN ISO 374-1: 2016/Type C A

Micro-Organisms (EN ISO 374-5:2016)

EN ISO 374-5: 2016	**Protection Against Bacteria and Fungi:** Gloves must pass the penetration resistance test in accordance with standard EN374-2:2014.
EN ISO 374-5: 2016 VIRUS	**Protection Against Virus, Bacteria and Fungi:** Gloves must pass the penetration resistance test in accordance with standard EN374-2:2014 and ISO16604:2004.

Code Letter	Chemical	Cas #	Class
A	Methanol	67-56-1	Primary Alcohol
B	Acetone	67-54-1	Ketone
C	Acrylonitrile	75-05-8	Nitrile Compound
D	Dichloromethane	75-09-2	Chlorinated Paraffin
E	Carbon Disulphide	75-15-0	Sulphur containing Organic Compound
F	Toluene	108-88-3	Aromatic Hydrocarbon
G	Diethylamine	108-89-7	Amine
H	Tetrahydrofuran	109-99-9	Heterocyclic and Ether Compound
I	Ethyl Acetate	141-78-6	Ester
J	n-Heptane	142-82-5	Saturated Hydrocarbon
K	Sodium Hydroxide 40%	1310-73-2	Inorganic Base
L	Sulphuric Acid 96%	7664-93-9	Inorganic Mineral Acid
M	Nitric Acid 65%	7697-37-2	Inorganic Mineral Acid
N	Acetic Acid 99%	64-19-7	Organic acid
O	Ammonium Hydroxide 25%	1336-21-6	Organic base
P	Hydrogen Peroxide 30%	7722-84-1	Peroxide
S	Hydrofluoric Acid 40%	7664-39-3	Inorganic Mineral Acid
T	Formaldehyde 37%	50-00-0	Aldehyde

STANDARD EN 407:2020 / STANDARD EN 407:2004

GLOVES GIVING PROTECTION FROM THERMAL HAZARDS

Scope:
This standard indicates thermal performance of a given glove against heat or fire.

TERM DEFINITIONS

The type and quality of protection is shown by a pictogram followed by a six-digit series, A to F relating to performance levels (always on a scale of 0 to 4) against specific protective qualities.

A. Limited Flame Spread (2020)
The glove's material is mounted vertically and lit with a gas flame. The flame is held against the material for 15 seconds. After the flame is extinguished, the length of time the glove either glows or burns is measured.

Resistance to Flammability (2004)
The glove's material is stretched and lit with a gas flame. The flame is held against the material for 15 seconds. After the flame is extinguished, the length of time the glove either glows or burns is measured.

B. Resistance to Contact Heat
The glove's material is exposed to temperatures between 100°C and 500°C. The length of time it takes the material on the inside of the glove to increase by 10°C from the starting temperature (approx. 25°C) is measured, and 15 seconds is the minimum accepted length of time for approval. To be marked with Performance Level 2, the glove's inside material must manage 250°C heat for 15 seconds before the material exceeds by 10°C.

C. Resistance to Convective Heat
The amount of time for the heat from a gas flame (80Kw/m^2) to increase the temperature of the glove's inside material by 24°C is measured.

D. Resistance to Radiant Heat
The glove's material is stretched in front of a heat source with an effect of 20 kw/m^2. The average time is measured for heat penetration to rise the temperature by 24°C.

E. Resistance to Small Splashes of Molten Metal
The test is based on the number of small molten metal droplets dropped on the outside of a glove required to raise the temperature on the inside by 40°C.

F. Resistance to Large Splashes of Molten Metal
Simulated skin is attached to the inside of the glove material. Molten metal is then poured over the glove material. The total number of grams of molten metal required to damage the simulated skin is measured.

EN 407: Thermal Hazards
a. Limited Flame Spread (2020) (Rating 0-4)
Resistance to Flammability (2004) (Rating 0-4)
b. Contact Heat (Rating 0-4)
c. Convective Heat (Rating 0-4)
d. Radiant Heat (Rating 0-4)
e. Small splashes of molten metal (Rating 0-4)
f. Large splashes of molten metal (Rating 0-4)

NOTE: We are currently transitioning the testing of Heat Resistant gloves from 2004 to 2020 standards. During this transition, some gloves may still display the 2004 icon.

Note that the flame icons for 2020: Limited Flame Spread and for the general 2004 graphic are the same. As such, take special care to note the 2020 or 2004 date beside the EN407 standard.

Gloves tested to EN407:2020, when not claiming for Limited Flame Spread use this icon.

Gloves tested to EN407:2004, when claiming Limited Flame Spread will use this icon.

Gloves tested to EN407:2004, will use this icon.

Performance Level	Level 1	Level 2	Level 3	Level 4
A. Limited Flame Spread After Glowtime (2020)	≤15s No Rqmt	≤10s ≤120s	≤3s ≤25s	≤2s ≤5s
Resistance to Flammability (2004)	≤20s No Rqmt	≤10s ≤120s	≤3s ≤25s	≤2s ≤5s
B. Contact Heat (cont. temp. & threshold time.)	100°C ≥15s	250°C ≥15s	350°C ≥15s	500°C ≥15s
C. Convective Heat (heat transfer index)	≥4s	≥7s	≥10s	≥18s
D. Radiant Heat (heat transfer index)	≥7s	≥20s	≥50s	≥95s
E. Small Splashes Molten Metal (# drops)	≥10	≥15	≥25	≥35
F. Large Quantities of Molten Metal (mass)	30g	60g	120g	200g

All products submitted must achieve at least level 1 when tested for abrasion and tear in accord with methods in EN 388.

Contact Heat (B): Limited Flame Spread test must attain level 3 at least for contact heat values of 3 or 4 to be reported; otherwise, a maximum of level 2 must be reported irrespective of whether the actual result is higher.

Convective Heat (C), Radiant Heat (D), Small Metal Splash (E): no results can be reported unless at least level 3 or 4 is achieved in the Limited Flame Spread test.

STANDARD EN 511: 2006

GLOVES GIVING PROTECTION FROM COLD

Scope:
This standard evaluates performance in cold and extreme cold conditions.

TERM DEFINITIONS

Protection Against Cold is shown by a pictogram that is followed by three performance levels, each pertaining to specific protective qualities.

This pictogram is accompanied by three numbers representing

a. Resistance to Convective Cold (performance level 0-4)
b. Resistance to Contact Cold (performance level 0-4)
c. Permeability by Water (0 or 1)

All products, when tested to EN 388, must achieve at least level 2 for abrasion and tear. If less than level 2, then both the convective cold and contact cold level must be reported as a maximum of level 1.

In addition to the convective cold and contact cold tests, and waterproofness for coated product, there are two other tests:

- Any coated glove may optionally be tested for Flexibility Behavior as in EN 511, which is carried out at -30°C and flexed 10,000 times.
- Coated gloves expected to be used below -30°C should be tested for Extreme Cold Flexibility as in EN511 and test samples should not crack when folded.

Resistance to Convective Cold
Thermal insulation qualities of a glove that are determined by measuring cold transference via convection.

Performance Level	Thermal Insulation (TR) in $m^2°C/W$
level 1	0.10 ITR < 0.15
level 2	0.15 ITR < 0.22
level 3	0.22 ITR < 0.30
level 4	0.30 ITR

Resistance to Contact Cold
Thermal resistance of glove material when exposed to direct contact with a cold object.

Performance Level	Thermal Insulation (R) in $m^2°C/W$
level 1	0.025 R < 0.050
level 2	0.050 R < 0.100
level 3	0.100 R < 0.150
level 4	0.150 R

Permeability by Water
0 indicates water penetration after 30 minutes of exposure, 1 indicates no water penetration

STANDARD EN 421: 2010

PROTECTION AGAINST IONIZING RADIATION AND RADIOACTIVE CONTAMINATION

Scope:
This standard indicates that a glove provides protection from ionizing radiation and radioactive contamination.

TERM DEFINITIONS
The type of protection that a glove provides is indicated by a pictogram related to the specific protective qualities.

Protection from Radioactive Contamination
Requires that the glove be liquid-proof and able to pass the penetration test as laid out in EN 374.

Gloves used in containment enclosures must also pass a specific air pressure leak test.

Protection from Ionizing Radiation
Requires that the glove contains a certain quantity of lead (or lead equivalence) that is marked on each glove.

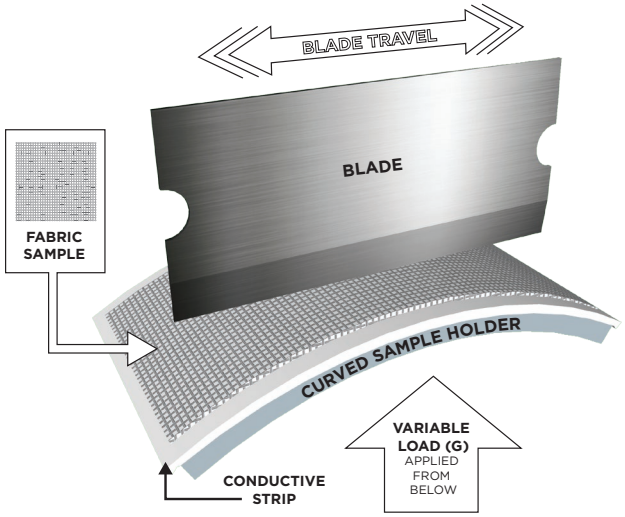
Any material exposed to ionizing radiation may be modeled by its behaviour to ozone cracking. This is an optional test that may be used as an aid in selecting gloves that require ionizing radiation resistance.

EN 388: RESISTANCE TO BLADE CUT

2003 Equipment: Cut Test Machine (Coupe Test)
Summary: A circular rotating blade is placed onto a sample cut from the palm of a protective glove. This data is used to determine the performance level of the test material.

This is still in use for baseline cut gloves, where the expectation of cut performance is 1-2. The test has been amended to take into account the dulling of the blade (EN 388:2016+A1:2018).

2016 Equipment: TDM 100 Machine
Summary: EN ISO 13997 cut testing for high cut-resistant gloves of cut uses the TDM 100 machine. A blade travels 20 mm with variable force applied. The force at which the blade cuts through the fabric indicates that fabric's cut level, from "A" at 2 Newtons or greater, to "F" at 30 Newtons or greater.



EN 388: RESISTANCE TO ABRASION

Equipment: Martindale Wear & Abrasion Test Machine Summary: This test determines ability of test samples to resist abrasion. Samples are allowed to rotate in contact with glass Aluminum Oxide paper in a complex pattern known as a Lissajous figure and are inspected at intervals corresponding to the performance levels.

Equipment: Taber Machine Test (ASTM D3389-10
Summary: Circular specimens are taken from the palms of the left and right gloves and attached to the mounting cards. Weight is applied to the abrading wheel – 500 g with 1000 abrasion cycles or better for levels 1 to 3, and 1000 g with up to 20,000 or more abrasion cycles for levels 4 to 6.

EN 388: RESISTANCE TO TEAR AND PUNCTURE

Equipment: Tensometer Machine
Summary: Tear resistance is determined by die cutting a test sample from the palm of a protective glove. The force needed to tear through the test sample is recorded and a performance score is assigned. The Tensometer is also used to determine puncture resistance. A test sample cut from the palm of a protective glove is placed in a small frame. A metal rod with a blunt point is slowly penetrated into the fabric until breakthrough occurs. The force needed to penetrate the glove samples is converted to a Performance Score.

EN 13594: RESISTANCE TO IMPACT

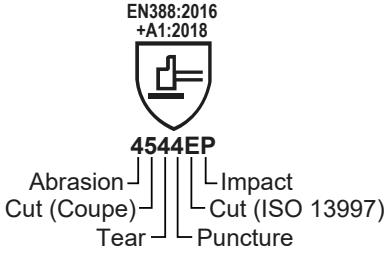
If gloves have impact protection on the back of the hand, they have the option to be tested against impacts to verify their protective properties. EN 388: 2016+A1:2018 contains a test for impact resistance where testing is carried out in accordance with clause 6.9 of EN 13594. Gloves must meet the requirement of level 1 of EN 13594:2015.

The impact test consists of placing the protective back-of-hand knuckle impact material from the glove over a domed anvil (basically a block of metal with a flattened circular top surface) and dropping a 2.5KG flat face surface striker from a sufficient height to provide an impact energy of 5 joules.

The peak force is detected and recorded by a sensor that's beneath the anvil. The test is done four times in each area of protection taken from four different gloves. This helps ensure the results are consistent across the board. To pass the test, the transmitted mean force needs to be less than or equal to 7 kilonewtons with no single results greater than 9 kilonewtons.

Testing methodology as per EN 13594

- Pass or Fail test
- If test passes, the indication "P" would apply next to the other 5 defined levels under the hammer pictogram



CHEMICAL RESISTANCE TEST EQUIPMENT

All our factories are fully equipped with the same test equipment used by accredited laboratories. This equipment is used in the routine testing of production to ensure that quality and performance are consistent. Listed below are descriptions of some of the many tests that are performed.

EN 374-2: RESISTANCE TO PENETRATION BY MICRO-ORGANISMS

Equipment: 1000 mL Water Integrity Test Machine
Summary: Statistical samples are taken from a production lot and tested for pinholes. Individual gloves are fitted onto special sleeves and filled with 1000 mL of water. Technicians check the gloves for leaks and determine performance levels or AQLs. Alternatively, gloves may be placed onto a cone, open at one end, and then inflated under water and inspected for leakage.

Degradation
Performance rating for degradation is not easy, and although there are test methods available involving puncture resistance comparison before and after exposure to chemicals, they are more meaningful for unsupported glove sections. The liner element of supported gloves can obstruct a meaningful interpretation of this type of test. The test used at Ninja® is quite simple and is meant to give an indication of the flexibility of a glove after chemical exposure and drying. It is therefore an empirical test and the results should be considered alongside all other data to assist in glove selection.

EN 374-3: RESISTANCE TO PERMEATION BY CHEMICALS

Equipment: Permeation Machine
Summary: This test determines the time needed for a chemical to permeate through a barrier. In this case, the barrier is a sample cut from the palm area of a protective glove. The sample is placed in a permeation cell and the outer surface of the glove sample is exposed to a chemical. The inside surface of the glove material is carefully monitored to detect the presence of the test chemical.

Equipment: Permeation Cell and Detection System
Summary: The test determines the time for a target chemical to permeate through a barrier. The barrier for glove testing is taken from the palm area of a protective glove. The permeation cell shown below is composed of two separate hemispheres that are clamped together for the test, the glove sample forming a barrier between them with the outer surface available to the target chemical. The target chemical is introduced into one compartment as shown and on the other side of the sample under test there will be a continuous flow of clean inert gas or deionized water, depending on the target chemical, which is continuously monitored by analytical equipment capable of detecting the very small concentration required for this method.