







EC DECLARATION OF CONFORMITY

Manufacturer's Name and Address	:	MY TİCARET VE MEDİKAL A.Ş. Ömerli Mah. General Şükrü Koralı Cad. No :33 Arnavutköy-İstanbul/TURKEY
Name Of Device	:	Latex Examination Gloves Nitrile Examination Gloves
Type and Registration/Catalog No	:	Powdered Latex Examination Gloves - MLP02 Powder Free Latex Examination Gloves - MLPF02 Powder Free Nitrile Examination Gloves - MN01
Brand	:	Mumu – Mumu Plus
Classification	:	Class I
Conformity Assessment Procedure	:	Annex VII
Conformity Route	:	Self Declaration

We herewith declare with our own responsibility that above mentioned product(s) with CE mark is fully compliance with Essential Requirement of the EC Council Directive 93/42/EEC 14th June 1993 concerned medical devices, amended by Council Directive 2007/47/EC.

Verification Certificates	:	Quality Management System EN ISO13485:2016 Certificate No: ISO 02 836 1179 Quality Management System EN ISO9001:2015 Certificate No: ISO 01 940 117
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Standards

: EN 374-2 Protective gloves against dangerous chemicals and microorganisms-Part 2: Determination of resistance to penetration.

EN 16523-1+A1 Determination of material resistance to permeation by chemicals-Part 1: Permeation by potentially hazardous liquid chemicals under conditions of continuous contact. (EN 374-3 standard has been revised as EN 16523-1+A1)

EN 374-4 Protective gloves against dangerous chemicals and microorganisms-Part 4: Determination of resistance to degradation by chemicals.

EN 374-5 Protective gloves against dangerous chemicals and microorganisms-Part 2: Terms and performance rules for microorganism risks.

EN 455-1 Medical gloves for single use Part 1: Requirements and testing for freedom from holes.

EN 455-2 Medical gloves for single use Part 2: Requirements and testing for physical properties.

EN 455-3 Medical gloves for single use Part 3: Requirements and testing for biological evaluation.

EN 455-4 Medical gloves for single use Part 4: Requirements and testing for shelf life determination.

EN ISO 10993-1 Biological evaluation of medical devices-Part-1: Evaluation and testing within a risk management process.

Authorised Signatory

Name-Surname

: MURAT YILDIZ

Position

: CEO

Signed

: 
**MY TİCARET VE
MEDİKAL ANONİM ŞİRKETİ**
İkitelli Organize San. Bölge, Eskoop San. Sit.
A3 Blok No:102 Başakşehir/İSTANBUL
Tel:0212 438 20 64 Fax:0212 438 20 65
İKTİSADİ V.D. 626 040 4605
www.mymedikal.com.tr

Date

: 22.03.2020





Certificate of Registration

This is to certify that
Quality Management System
of

MY TİCARET VE MEDİKAL ANONİM ŞİRKETİ

**ÖMERLİ MAHALLESİ GENERAL ŞÜKRÜ KORALTI CAD. NO: 33
ARNAVUTKÖY - İSTANBUL / TÜRKİYE**

complies with requirements of

ISO 9001:2015

This certificate is valid concerning all activities related to;

PRODUCTION AND SALE OF LATEX POWDERED / POWDER FREE EXAMINATION GLOVES, NITRILE
POWDER FREE EXAMINATION GLOVES, STERIL / NON-STERILE SURGICAL GLOVES, STERIL / NON-STERILE
SPONGE GAUZE COMPRESS, STERIL / NON-STERIL COMPRESSE ABDOMINALE, STERIL / NON-STERILE
COTTON PAD, GAUZE, STERILE / NON-STERILE SURGICAL MASK

LATEKS PUDRALI / PUDRASIZ MUAYENE ELĐİVENİ, NİTRİL PUDRASIZ MUAYENE ELĐİVENİ, STERİL / NON-
STERİL CERRAHİ ELĐİVEN, STERİL / NON-STERİL SPANÇ GAZ KOMPRES, STERİL / NON-STERİL BATIN
KOMPRES, STERİL / NON-STERİL PAMUKLU PED, GAZLI BEZ,
STERİL / NON-STERİL CERRAHİ MASKE ÜRETİMİ VE SATIŞI

ISO 01 940 1179
Certificate No.

Jun. 5, 2020
Date of this Certificate

Jun. 4, 2021
Certification Expiry Date

May. 28, 2020
Date of Audit

Jun. 5, 2020
Date of Registration


Managing Director / Director



Medicert Uluslararası Ürün Ve Sistem Belgelendirme Ltd. Şti.
Tersane Mah. Cemal Gürsel Cad. No:11/3 Halide Hnm. Apt. Karşıyaka / İzmir
Tel: 0232 327 33 44 www.medicert.com.tr info@medicert.com.tr

* You can query the validity of this certificate by sending an e-mail to info@medicert.com.tr.



Certificate of Registration

This is to certify that

Quality Management System
for Medical Devices

of

MY TİCARET VE MEDİKAL ANONİM ŞİRKETİ

ÖMERLİ MAHALLESİ GENERAL ŞÜKRÜ KORALTI CAD. NO: 33
ARNAVUTKÖY - İSTANBUL / TÜRKİYE

complies with requirements of

ISO 13485:2016

This certificate is valid concerning all activities related to;

SALES OF LATEX POWDERED / POWDER-FREE EXAMINATION GLOVES- NITRILE POWDER-FREE EXAMINATION GLOVES- POWDERED / POWDER-FREE STERILE SURGICAL GLOVES-VINYL POWDERED / POWDER-FREE EXAMINATION GLOVES. PRODUCTION AND SALE OF DISPOSABLE NON-STERILE MASKS.

LATEKS PUDRALI/PUDRASIZ MUAYENE ELDİVENİ- NİTRİL PUDRASIZ MUAYENE ELDİVENİ- PUDRALI/PUDRASIZ STERİL CERRAHİ ELDİVEN-VİNİL PUDRALI/PUDRASIZ MUAYENE ELDİVENİ SATIŞI. TEK KULLANIMLIK NON-STERİL MASKE ÜRETİMİ VE SATIŞI.

ISO 02 836 1179
Certificate No.

Feb. 26, 2020
Date of this Certificate

Feb. 25, 2021
Certification Expiry Date

Feb. 21, 2020
Date of Audit

Feb. 26, 2020
Date of Registration


Managing Director / Director



Medicert Uluslararası Ürün Ve Sistem Belgelendirme Ltd. Şti.
Tersane Mah. Cemal Gürsel Cad. No:11/3 Halide Hnm. Apt. Karşıyaka / İzmir
Tel: 0232 327 33 44 www.medicert.com.tr info@medicert.com.tr

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Report No: 2020240701 – R1
Applicant: MY TİCARET VE MEDİKAL A.Ş.
Ömerli Mah. General Şükrü Karaltı Caddesi No:33 Arnavutköy/İSTANBUL
Contact Person: Z.Melek ÖZ BOLAT
Contact Telephone: +90 212 438 20 64
Contact e-mail: kalite@mymedikal.com.tr
Sample Accepted on: 03.07.2020
Report Date: 24.07.2020
Total number of pages: 6(Pg)

Sample ID: NITRILE EXAMINATION GLOVE / LATEX EXAMINATION GLOVE

	TEST	METHOD	Specimen	RESULT
*	Medical Gloves For Single Use Part 1: Requirments And Testing For Freedom From Holes	EN 455-1	Nitrile Examination Glove	PASS
			Latex Examination Glove	PASS
*	Medical Gloves For Single Use Part 2: Requirements And Testing For Physical Properties	EN 455-2	Nitrile Examination Glove	PASS
			Latex Examination Glove	PASS



Seal

Customer Representative
Hasan KUTLULaboratory Manager
Hava SARIAYDIN

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Environment

The requirements and standards apply to equipment intended for use in

X	Residential (domestic) environment
X	Commercial and light-industrial environment
X	Industrial environment
X	Medical environment

EN 455-1**Medical Gloves For Single Use Part 1: Requirements And Testing For Freedom From Holes****Scope:**

This part of this standard specifies requirements and gives the test method for medical gloves for single use in order to determine freedom from holes.

Test Method:

Fill vertically so that the glove fits in size and the pipe can hold any of the 1000 ml of water that can exceed the glove's natural filling volume.

Attach the glove to the filling tube, overlapping the cuff by a maximum of 40 mm over the end of the tube and secure it by suitable means to obtain a watertight seal without damaging the glove.

Add 1 000 ml \pm 50 ml of water at a temperature of (15 to 35) °C into the open end of the filling tube, allowing the water to pass freely into the glove.

NOTE Some of the water may remain in the filling tube depending on the glove being tested.

Immediately inspect the glove visually for water leakage. Allow the glove to hang and visually inspect the glove for water leakage again after a period of 2 min to 3 min.

If, because of distension of the glove, the water does not rise to within 40 mm of the cuff end, raise the glove after the second inspection by a suitable means until the water level reaches 40 mm from the cuff end. Inspect visually the previously untested portion of the glove after a further period of 2 min to 3 min. Disregard leakages within 40 mm of the cuff.

Product**Medical Glove****Brand****Mumu – Mumu Plus****Type/Models****Nitrile Examination Glove Catalog Number: MN01****Latex Examination Glove Catalog Number: MLP/MLPF-02****Color****Blue, White**

TEST RESULTS

	Test	Result	Overall Rating
Dimensions	15-35°C 1000 ml, 50ml Water	No Leakage	PASS
Test 2	15-35°C 1000 ml, 50ml Water	No Leakage	
Test 3	15-35°C 1000 ml, 50ml Water	No Leakage	

Conclusion: There is no water leakage in the Glove, the test is successful.

EN 455-2

Medical Gloves For Single Use Part 2: Requirements And Testing For Physical Properties

Scope;

This standard specifies requirements and gives test methods for physical properties for single use medical (is surgical gloves and examination/procedure gloves) in order to ensure that they provide and maintain in use an adequate level of protection from cross contamination for both patient and user.

Product	Medical Glove
Brand	Mumu - Mumu Plus
Type/Models	Nitrile Examination Glove Catalog Number: MN01 Latex Examination Glove Catalog Number: MLP/MLPF-02
Color	Blue, White

TEST RESULTS

	Result	Overall Rating
Dimensions	≥ 240 mm (and 295 ± 5 mm for long) Extra-Small: 75 5 mm - Small: 80 10 mm - Medium: 95 10 mm Large: 110 10 mm - Extra-Large: ≥ 110	PASS
Tensile Strength	$\geq 6,0$ Newton	
Breaking force after the tensile strength test	$\geq 6,0$ Newton	

Conclusion: Meet EN 455-2 requirements Glove, the test is successful.

EN 455-4**Medical gloves for single use Part 4: Requirements and testing for shelf life determination**

This part of EN 455 specifies requirements for shelf life for medical gloves for single use. It also specifies therequirements for labelling and the disclosure of information relevant to the test methods used

Product	Medical Glove
Brand	Mumu – Mumu Plus
Type/Models	Nitrile Examination Glove Catalog Number: MN01 Latex Examination Glove Catalog Number: MLP/MLPF-02
Color	Blue, White

Image



*****END OF REPORT*****



Report No: 2020190828-R1
Applicant: MY TİCARET VE MEDİKAL A.Ş.
Ömerli Mah. General Şükrü Koraltı Cd. No:33 Arnavutköy/İstanbul
Contact Person: Z. Melek Öz Bolat
Contact Telephone: 0 212 438 20 64
Contact e-mail: kalite@mymedikal.com.tr
Sample Accepted on: 03.07.2020
Report Date: 19.08.2020
Total number of pages: 10 (Pg)

Sample ID: Nitrile Examination Glove – Latex Examination Glove

Nitril Muayene Eldiveni - Lateks Muayene Eldiveni

	TEST	METHOD	Specimen	RESULT
*	Protective gloves against dangerous chemicals and micro-organisms Part 4: Determination of resistance to degradation by chemicals	EN 374-4	Nitrile Examination Glove	PASS
			Latex Examination Glove	PASS
*	TS EN ISO 374-5 Protective gloves against dangerous chemicals and microorganisms - Part 5: Terms and performance rules for microorganism risks.	EN 374-5	Nitrile Examination Glove	PASS
			Latex Examination Glove	PASS



Seal

Customer Representative
Hasan KUTLU



Laboratory Manager
Hava SARIAYDIN

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Environment

The requirements and standards apply to equipment intended for use in

X	Residential (domestic) environment
X	Commercial and light-industrial environment
X	Industrial environment
X	Medical environment

EN 374-4 Protective gloves against dangerous chemicals and microorganisms - Part 4: Determination of resistance to degradation by chemicals

SCOPE

This European Standard specifies the test method for determining the resistance of materials for protective gloves to the degradation of chemicals in the event of constant contact. Other tests used to assess chemical resistance, such as resistance to permeation and resistance to penetration, may not provide sufficient information about the changes in physical properties that a glove experiences during exposure to a chemical. Usually the outside of the glove needs to be exposed to the chemical.

Principle

The resistance of a protective glove material to degradation by a liquid chemical is determined by measuring the change in puncture resistance of the glove material after continuous contact of the external surface with the challenge test chemical. The test is applicable to gloves made of natural or synthetic polymer.

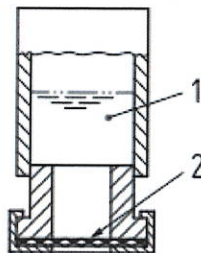
Procedure

The test shall be conducted at $(23 \pm 2) ^\circ\text{C}$ (preparation, chemical, exposure to chemical, and puncture test).

Place a glove specimen on top of the septum with its normal external surface facing towards the interior of the vial. Place the aluminium cap with the specimen on top of the vial. Seal the vial using the hand crimper and invert it so that the challenge chemical is in contact with the specimen (see Figure 1). Record the time. Place the vial in the punched-out sample holder.

The punched-out sample holder has a twofold purpose:

- It allows air to circulate under the sample film, and
- if the pressure from the challenge chemical forces the sample into a convex shape, the flask will still stand



Key

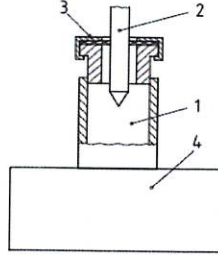
1 challenge chemical

2 outer surface of the glove specimen which is in contact with the challenge chemical, it is a circular area of $(12,5 \pm 0,5)$ mm diameter

Figure 1 — Position of the vial during contact time between the specimen and the challenge chemical

Puncture testing

Install the puncture stylus on the dynamometer load cell. Set the carriage speed to 100 mm/min and screw the vial support onto the table. Place a vial into the support. Puncture the specimen and record the peak force required (see Figure 2). Repeat for each of the specimens; test each of the exposed specimens one hour after the exposure on that specimen was started.



Key
 1 20 ml crimp vial
 2 puncture stylus 3 specimen 4 sample vial support (to be maintained by the dynamometer jaw)

Figure 2 — Position of the vial during puncture test

Product	Medical Glove
Brand	Mumu – Mumu Plus
Type/Models	Nitrile Examination Glove Catalog Number: MN01 Latex Examination Glove Catalog Number: MLP/MLPF-02
Color	Blue/White

Result

The following degradation data (see Table A.1) have been obtained in laboratory.

Table A.1 — Results in % of correlation trial with other gloves materials

Laboratory	Acetone		Sulfuric Acid	
	Mean value for Nitrile glove	Mean value Latex glove	Mean value for Nitrile glove	Mean value Latex glove
1	62	35	86	52
2	60	32	88	56
3	64	36	92	58
4	63	33	94	49
5	61	39	89	54
6	65	34	90	55

Weight Charge Test

Test Conditions

The glove should be conditioned at $(23 \pm 2) ^\circ\text{C}$ for at least 24 h. The specimens should be taken from three gloves. Put the glove flat on a surface and measure (60 ± 2) mm from fingertip. The specimens should consist of a cut-off of the same finger of each glove.

Procedure

Start the timer and immerse the finger specimen in a beaker containing the test chemical. The weighed test tube will hold the specimen upright in the beaker. The beaker should be filled to a depth of (42 ± 2) mm with the test chemical (see Figure B.1). The quantity of the test chemical should be adapted during the test to keep the beaker filled to the marking. Multiple finger specimens can be started at approximately 1 minute timed intervals to allow for weighing of the specimens.

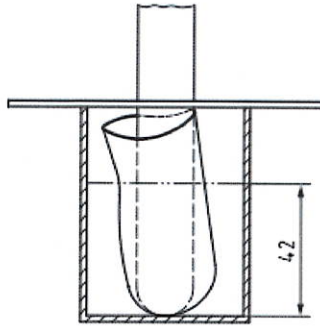


Figure B.1 — Typical arrangement of weight change test apparatus

The weighing of the finger specimen should be carried out as quickly as possible after the 60 min chemical exposure.

Result

After the Weight Charge Test, there was not observed any changes such as swelling, shrinking, brittleness, hardening, softening, flaking, disintegration, colour change/bleeding on the sample.

**TS EN ISO 374-2:2014 Protective gloves against dangerous chemicals and microorganisms -
Part 5: Terms and performance rules for microorganism risks****SCOPE**

This standard describes the criteria that protective gloves should have, especially in terms of contact risks with microorganisms such as bacteria, fungi and viruses.

Air Leak Test Method

- The glove is fastened to the circular mandrel and is inflated after immersion at ambient temperature, with air, to a gauge pressure of X kPa (see Table 1) plus an overpressure of 1 kPa per 100 mm of immersion measured at the fingertips closest to the bottom of the water tank.
- The inflation pressure shall be reached with a ± 10 % limit deviation within 2 min and the control of possible air bubbles shall take an additional (30 ± 5) s.

Table 1

Nominal glove thickness (e) mm As provided by the manufacturer	Air pressure (X) kPa
$e \leq 0,3$	0,4
$0,3 < e \leq 0,5$	2,0
$0,5 < e \leq 1,0$	5,0
$e > 1,0$	5,0

Product**Medical Glove****Brand****Mumu – Mumu Plus****Type/Models****Nitrile Examination Glove Catalog Number: MN01****Latex Examination Glove Catalog Number: MLP/MLPF-02****Color****Blue, White**

Test Result

Specimen	Total Air Pressure (kPa)	Observation	Result
Nitrile Examination Glove	2,8	No leaks detected	PASS
Latex Examination Glove	2,0	No leaks detected	PASS

Water Leak Test Method

- The glove is attached to an open-ended plastic tube by bringing the edge of the cuff to the 40 mm mark and fastening it with the elastic strap to make a watertight seal.
- A minimum of 1 000 ml of water is added through the tube to fill the glove completely and to reach at least the 40 mm mark level of the liquid proof area of the glove. The water shall be at ambient temperature
- The gloves are examined immediately for water leaks. The glove should not be squeezed. Only minimal handling is required to detect leaks. Water droplets may be blotted to confirm leakage, or talcum powder may be used to enhance droplet visibility.

Test Results

Specimen	Observation	Result
Nitrile Examination Glove	No leaks detected	PASS
Latex Examination Glove	No leaks detected	PASS

EN 16523-1 Determination Of Material Resistance To Permeation By Chemicals - Part 1: Permeation By Potentially Hazardous Liquid Chemicals Under Conditions Of Continuous Contact**Test Method**

The resistance of a protective glove material to permeation by a solid or liquid chemical is determined by measuring the breakthrough time of the chemical through the glove material

The sample shall be conditioned for 24 h at a temperature of (23±2) °C and The standard test temperature shall be (23±1) °C.

Gloves Type	Requirement
TYPE A	Breakthrough time ≥ 30 min against at least 6 chemicals of the new list
TYPE B	Breakthrough time ≥ 30 min against at least 3 chemicals of the new list
TYPE C	Breakthrough time ≥ 30 min against at least 3 chemicals of the new list

EN ISO 374-1 glove permeation test list

Code Letter	Chemical	Cas Number	Class
A	Methanol	67-56-1	Primary Alcohol
B	Acetone	67-64-1	Ketone
C	Acetonitrile	75-05-8	Nitrile Compound
D	Dichloromethane	75-09-2	Chlorinated Paraffin
E	Carbon disulphide	75-15-0	Sulphur Containing Organic
F	Toluene	108-88-3	Aromatic Hydrocarbon
G	Diethylamine	109-89-7	Amine
H	THF	109-99-9	Heterocyclic and Ether
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 Acid , oxidizing
N	Acetic Acid %99	64-19-7	Organic acid
O	Ammonia %25	1336-21-6	Organic Base
P	Hydrogen peroxide %30	7722-84-1	Peroxide
S	Hydrogen fluoride %4,	7664-39-3	Inorganic Mineral Acid
T	Formaldehyde %37	50-00-0	Aldehyde

Test Results

Specimen	Chemical	Observation	Gloves Type
Nitrile Examination Glove	Methanol	Not permeable	TYPE B
Nitrile Examination Glove	Acetonitrile	Not permeable	
Nitrile Examination Glove	Acetic acid	Not permeable	
Nitrile Examination Glove	Sulphuric acid	There is permeability	

Test Results

Specimen	Chemical	Observation	Gloves Type
Latex Examination Glove	Methanol	Not permeable	TYPE A
Latex Examination Glove	Acetonitrile	Not permeable	
Latex Examination Glove	Acetic acid %99	Not permeable	
Latex Examination Glove	Sulphuric acid %96	Not permeable	
Latex Examination Glove	Sodium Hydroxide %40	Not permeable	
Latex Examination Glove	Formaldehyde %37	Not permeable	

Image



***** End Of Report*****

5190243IB02**2020190876**

Report No: 2020190876
Applicant: MY TİCARET VE MEDİKAL A.Ş.
Ömerli Mah. General Şükrü Karaltı Caddesi No:33 Arnavutköy/İSTANBUL
Contact Person: Z.Melek ÖZ BOLAT
Contact Telephone: +90 212 438 20 64
Contact e-mail: kalite@mymedikal.com.tr
Sample Accepted on: 03.07.2020
Report Date: 19.08.2020
Total number of pages: 24 (Pg)

Sample ID: NITRILE EXAMINATION GLOVE/ LATEX EXAMINATION GLOVE

	TEST	METHOD	Specimen	RESULT
*	Medical gloves for single use - Part 3: Requirements and testing for biological evaluation	EN 455-3	Nitrile Examination Glove	PASS
			Latex Examination Glove	PASS
*	Medical gloves for single use - Part 4: Requirements and testing for shelf life determination	EN 455-4	Nitrile Examination Glove	PASS
			Latex Examination Glove	PASS
*	Biological evaluation of medical devices - Part 1: Evaluation and testing within a risk management process	EN ISO 10993-1	Nitrile Examination Glove	PASS
			Latex Examination Glove	PASS



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Customer Representative
Hasan KUTLULaboratory Manager
Hava SARIAYDIN

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Environment

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X	Commercial and light-industrial environment
X	Industrial environment
X	Medical environment

EN 455-3 Medical Gloves For Single Use - Part 3: Requirements And Testing For Biological Evaluation

Scope:

This part of EN 455 specifies requirements for the evaluation of biological safety for medical gloves for single use. It gives requirements for labelling and the disclosure of information relevant to the test methods used.

TEST METHODS

Endotoxins

The outside surface of a pair of gloves is extracted with 40 ml of endotoxin-free water (Water LAL, European Pharmacopoeia, for not less than 40 min and not more than 60 min at a temperature between 37 °C and 40 °C in a way to ensure that all surfaces come into contact with the extraction medium. The extract is centrifuged, if necessary, for 15 min at 2000 g to remove particles after which the liquid component is decanted and tested for endotoxin immediately afterwards.

Powder

This International Standard specifies methods for the determination of readily removable powder on the surface of gloves for medical use. Three methods are specified: method A for powdered gloves and methods B and C for powder-free gloves.

Procedure:

The surfaces of a glove are washed with water to remove the water-insoluble powder which is then determined by filtration followed by weighing.

Proteins, Leachable

This method is for the determination of the amount of aqueous extractable proteins in gloves for medical use made from natural rubber (NR). It has been validated during inter-laboratory round-robin tests. The lower quantification limit is approximately 10 µg protein per g of glove (i.e. 2 µg protein per ml of extract) depending on the glove weight.

Procedure:

Water soluble proteins are extracted into a buffer solution and then precipitated with acids in the presence of sodium deoxycholate to concentrate them and to separate them from water soluble substances which may interfere with the determination. The precipitated proteins are redissolved in alkali and quantified colorimetrically by a modified Lowry method. The assay is based on the reaction of proteins with copper and Folin reagent in an alkaline medium to give a characteristic blue colour. Spectrophotometric measurements are performed at a fixed wavelength in the range 600 nm to 750 nm.

Product	Medical Glove
Brand	Mumu – Mumu Plus
Type/Models	Nitrile Examination Glove Catalog Number: MN01 Latex Examination Glove Catalog Number: MLP/MLPF-02
Color	Blue / White

TEST RESULTS**Endotoxins**

Specimen	Endotoxin Requirement (EU)	Result
Nitrile Examination Glove	<20	PASS
Latex Examination Glove	<20	PASS

Powder

Specimen	Powder Value (mg)	Result
Nitrile Examination Glove	<2 mg	PASS
Latex Examination Glove	<2 mg	PASS

Proteins, Leachable

Specimen	Protein value (µg)	Result
Nitrile Examination Glove	<30 µg	PASS
Latex Examination Glove	<30 µg	PASS

EN 455-4 Medical Gloves For Single Use - Part 4: Requirements And Testing For Shelf Life Determination**Scope:**

This part of EN 455 specifies requirements for shelf life for medical gloves for single use. It also specifies the requirements for labelling and the disclosure of information relevant to the test methods used.

Real time shelf life determination

Gloves in consumer packages are conditioned at the temperature as defined by the manufacturer (e.g. 25 °C) for the intended shelf life period and then tested for compliance

Upon completion of the procedure, the shelf-life claim will be up to this time, not exceeding five years that the gloves are in compliance with the requirements of this European Standard.

Accelerated shelf life determination

Because of the errors and uncertainties inherent in the determination of shelf lives using accelerated ageing methods shelf life claims should be limited to a maximum of 3 years.

Product	Medical Glove
Brand	Mumu – Mumu Plus
Type/Models	Nitrile Examination Glove Catalog Number: MN01 Latex Examination Glove Catalog Number: MLP/MLPF-02
Color	Blue / White

TEST RESULTS**Real time shelf life determination**

Test Item: Rapid Aging Test-Xenon-ark

Exposure Sample Description: Nitrile Examination Glove , Latex Examination Glove

Test Condition:

Exposure cycle

Irradiation: $(0,50 \pm 0,2)$ W / (m²-nm)@340nm 1080 h

Filter: Daylight - UV-B / UV-A / UV-C - KSENON ARK

Exposure time: 1080 hours

Test	UVA Exposure Time	Gray Scale	Customer Requirement	Result
1	1080 h	5-5	-	PASS

Observation ;

Nitrile Examination Glove is resistant to Latex Examination Glove 1080 hours UV aging.

UV AGING

The molecular structure of the samples was examined by FTIR (Mattson) before and after this test.

UV AGING

The molecular structure of the samples was examined by FTIR (Mattson) before and after this test.

Conclusion: When adequate protection is not provided, radical formation, chain breakage and carbonyl formation did not occur in the structure of raw materials with the effect of UV, with the contribution of air oxygen.

During the test, normal daily conditions targeted at 25 ° C for 1080 hours were simulated and no color change and deterioration were observed.

Measurement Device	Rates	Date of Calibration
EUROLAB EL / UV IR VL Xenon	UVA-UVB (290 to 315 nm)	03.11.2019

In the test environment, the relative Humidity is 50% in the environment.

In the test environment, the air temperature is about 25 degrees centigrade.

Accelerated shelf life determination

Test Item: Rapid Aging Test-Xenon-ark

Exposure Sample Description: Nitrile Examination Glove , Latex Examination Glove

Test Condition:

Exposure cycle

Irradiation: (0,50 ± 0,2) W /(m²-nm)@340nm 720 h

Filter: Daylight - UV-B / UV-A / UV-C - KSENON ARK

Exposure time: 720 hours

Test	UVA Exposure Time	Gray Scale	Customer Requirement	Result
1	720 h	5-5	-	PASS

Observation ;

Nitrile Examination Glove is resistant to Latex Examination Glove 720 hours UV aging.

UV AGING

The molecular structure of the samples was examined by FTIR (Mattson) before and after this test.

Conclusion: When adequate protection is not provided, radical formation, chain breakage and carbonyl formation did not occur in the structure of raw materials with the effect of UV, with the contribution of air oxygen.

During the test, normal daily conditions targeted at 25 ° C for 720 hours were simulated and no color change and deterioration were observed.

Measurement Device	Rates	Date of Calibration
EUROLAB EL / UV IR VL Xenon	UVA-UVB (290 to 315 nm)	03.11.2019

In the test environment, the relative Humidity is 50% in the environment.

In the test environment, the air temperature is about 25 degrees centigrade.

TS EN ISO 10993-1**Biological evaluation of medical devices - Part 1: Evaluation and testing within a risk management process (ISO 10993-1:2009)**

This part of ISO 10993 describes: the general principles governing the biological evaluation of medical devices within a risk management process; the general categorization of devices based on the nature and duration of their contact with the body; the evaluation of existing relevant data from all sources; the identification of gaps in the available data set on the basis of a risk analysis; the identification of additional data sets necessary to analyse the biological safety of the medical device; the assessment of the biological safety of the medical device.

Cytotoxicity

Cytotoxicity tests employing cell culture techniques shall be used to determine the lysis of cells (cell death), the inhibition of cell growth, colony formation, and other effects on cells caused by medical devices, materials and/or their extracts (see ISO 10993-5).

Delayed-type hypersensitivity

Hypersensitivity tests shall be used to estimate the potential for contact sensitization by medical devices, materials and/or their extracts, using an appropriate animal model (see ISO 10993-10).

These tests are important because exposure or contact to even minute amounts of potential leachables can result in allergic or sensitization reactions.

Irritation (including intracutaneous reactivity)

Irritation tests shall be used to estimate the irritation potential of medical devices, materials and/or their extracts, using an appropriate site for application such as skin, eye and mucous membrane in a suitable model. The test(s) performed shall

be appropriate for the route (skin, eye, mucosa) and duration of exposure or contact (see ISO 10993-10).

The intracutaneous reactivity test shall be used to assess the localized reaction of tissue to medical device extracts. This test is applicable where the determination of irritation by dermal or mucosal tests is inappropriate (e.g. where medical devices are implanted or have blood contact).

This test might also be useful where extractables are hydrophobic (see ISO 10993-10).

Systemic toxicity (acute)

Acute systemic toxicity tests shall be used where contact allows potential absorption of toxic leachables and degradation products, to estimate the potential harmful effects of either single or multiple exposures, during a period of less than 24 h, to medical devices, materials and/or their extracts in an animal model (see ISO 10993-11).

Pyrogenicity tests are included to detect material-mediated pyrogenic reactions of extracts of medical devices or materials. No single test can differentiate pyrogenic reactions that are material-mediated from those due to endotoxin contamination.

If feasible, acute systemic toxicity tests may be combined with subacute and subchronic toxicity and implantation test protocols.

Subacute and subchronic toxicity

Subacute and subchronic toxicity tests shall be carried out to determine the effects of either single or multiple exposures or contact to medical devices, materials and/or their extracts for a period not less than 24 h to a period not greater than 10 % of the total life-span of the test animal (e.g. up to 13 weeks in rats).

These tests shall be waived if available data for the chronic toxicity of the relevant materials are sufficient to allow the subacute and subchronic toxicity to be evaluated. The reason for waiving of the tests shall be included in the overall biological evaluation report. These tests shall be appropriate for the route and duration of contact.

Subacute and subchronic toxicity tests are given in ISO 10993-11.

If feasible, subacute and subchronic systemic toxicity test protocols may be expanded to include implantation test protocols to evaluate subacute and subchronic systemic and local effects.

Genotoxicity

A battery of *in vitro* genotoxicity tests employing mammalian or non-mammalian cell culture or other techniques shall be used to determine gene mutations, changes in chromosome structure and number, and other DNA or gene toxicities caused by medical devices, materials and/or their extracts.

If any of the *in vitro* tests are positive, either *in vivo* mutagenicity tests shall be performed or the presumption shall be made that the material is mutagenic (see ISO 10993-3).

Implantation

Implantation tests shall be used to assess the local pathological effects on living tissue, at both the gross level and microscopic level, of a sample of a material or final product that is surgically implanted or placed in an implant site or tissue appropriate to the intended application (e.g. special dental usage tests). These tests shall be appropriate for the route and duration of contact.

If feasible, implantation test protocols may be expanded to evaluate both local and systemic effects to meet acute, subacute, subchronic, and chronic toxicity testing requirements (see ISO 10993-6).

Haemocompatibility

Haemocompatibility tests shall be used to evaluate, using an appropriate model or system, the effects of blood-contacting

medical devices or materials on blood or blood components.

One haemocompatibility test, haemolysis, determines the degree of red cell lysis and the release of haemoglobin caused by medical devices, materials, and/or their extracts *in vitro*.

Other specific haemocompatibility tests may also be designed to simulate the geometry, contact conditions and flow dynamics of the device or material during clinical applications and determine blood/material/device interactions (see ISO 10993-4).

Chronic toxicity

Chronic toxicity tests shall be used to determine the effects of either single or multiple exposures to medical devices, materials and/or their extracts during a major period of the life-span of the test animal (e.g. usually 6 months in rats). These tests shall be appropriate for the route and duration of exposure or contact (see ISO 10993-11).

If feasible, chronic systemic toxicity test protocol may be expanded to include an implantation test protocol to evaluate both chronic systemic and local effects.

Carcinogenicity

If there is no information from other sources, testing the potential carcinogenicity of the material/device shall be considered. However, it is rare for carcinogenicity tests to be considered appropriate for medical devices (see ISO 10993-3). Carcinogenicity tests shall be used to determine the tumorigenic potential of medical devices, materials and/or their extracts from either single or multiple exposures or contacts over a period of the major portion of life-span of the test animal. Carcinogenicity tests should be appropriate for the route and duration of exposure or contact; lifetime studies or transgenic models may be appropriate. These tests may be designed to examine both chronic toxicity and tumorigenicity in a single experimental study.

Reproductive and developmental toxicity

Reproductive and developmental toxicity tests shall be used to evaluate the potential effects of medical devices, materials and/or their extracts on reproductive function, embryonic development (teratogenicity), and prenatal and early postnatal development. Reproductive/developmental toxicity tests or bio-assays shall only be conducted when the device has potential impact on the reproductive potential of the subject. In addition, such tests should be considered for devices/materials used during pregnancy. The application site of the device is the primary criterion when considering carrying out the tests. Reproductive and developmental toxicity tests are described in ISO 10993-3.

Biodegradation

Biodegradation tests shall be considered if

- a) the device is designed to be biodegradable
- or
- b) the device is intended to be implanted for longer than 30 d
- or
- c) an informed consideration of the material(s) system indicates that toxic substances might be released during body contact.

Parameters that affect the rate of degradation shall be described and documented.

The mechanisms of biodegradation should be described. These mechanisms should be simulated *in vitro* to determine the rates of degradation and release of potentially toxic chemicals to estimate the exposure. *In vivo* tests may be required to assess biodegradation of a material.

Biodegradation tests might not be necessary if the probable products of degradation are in the predicted quantities, and produced at a rate similar to those that have a history of safe clinical use; and/or if particulate, they are present in a physical state, i.e. size distribution and shape, similar to those with a history of safe clinical use or sufficient degradation data relevant to the substances and degradation products in the intended use already exists.

A general framework for biodegradation tests is given in ISO 10993-9.

Specific *in vitro* biodegradation tests for polymers, ceramics and metals are described in ISO 10993-13, ISO 10993-14 and ISO 10993-15 respectively.

Toxicokinetic studies

The purpose of conducting toxicokinetic studies is to evaluate the absorption, distribution, metabolism and excretion (ADME) of a chemical that is known to be toxic or whose toxicity is unknown. These studies will also serve to determine the delivered dose to the target organ(s) in order to assess any health hazards using the physiologically based pharmacokinetic (PBPK) modelling. The extrapolation of test results across gender, age, species and doses/exposure may be possible, but requires critical expert judgement to be exercised and explained.

The need for *in vivo* toxicokinetic studies, to determine the processes of absorption, distribution, metabolism and elimination of leachables and degradation products of medical devices, materials and/or their extracts (see 6.2.2.13 and ISO 10993-16), shall be considered in the light of results from the *in vitro* biodegradation studies.

When deciding whether or not to conduct toxicokinetic studies as part of the biological evaluation of a medical device, the final product and its chemical constituents, including potential and designed degradation products and leachables in combination with the intended use of the device, shall all be taken into account (see 6.2.2.13).

Where appropriate, theoretical degradation processes shall be investigated prior to toxicokinetic studies by means of *in vitro* experiments (e.g. tissue, homogenates or cells), not only for animal welfare reasons as given in ISO 10993-2, but also to determine probable rather than possible degradation products.

Toxicokinetic studies shall be considered if

- a) the device is designed to be bioresorbable
- or
- b) the device is a permanent contact implant, and biodegradation or significant corrosion is known or likely, and/or migration of leachables from the device occurs
- or
- c) substantial quantities of potentially toxic or reactive degradation products and leachables are likely or known to be released from a medical device into the body during clinical use.

Toxicokinetic studies are not required if the achieved or expected rates of release of degradation products and leachables from a particular device or material have been judged to provide safe levels of clinical exposure following reference to significant historical experience, or if sufficient toxicological data or toxicokinetic data relevant to the degradation products and leachables already exist.

The release of leachables and degradation products from metals, alloys and ceramics is usually too low to justify toxicokinetic studies, unless the material is designed to biodegrade.

Toxicokinetic study design for degradation products and leachables is given in ISO 10993-16.

Immunotoxicology

ISO/TS 10993-20 provides an overview of immunotoxicology with particular reference to the potential immunotoxicity of medical devices. Immunotoxicity testing shall be considered based on the chemical nature of the materials of manufacture and data from sources that are suggestive of immunotoxicological effects or if the immunogenic potential of any of the chemicals is unknown.

Evaluation tests for consideration

Medical device categorization by			Biological effect							
nature of body contact										
Category	Contact	contact duration (see 5.3) A - limited (u 24 h) B - prolonged (> 24 h to 30 d) C - permanent (> 30 d)	Cytotoxicity	Sensitization	Irritation or intracutaneous reactivity	Systemic toxicity (acute)	Subchronic toxicity (subacute toxicity)	Genotoxicity	Implantation	Haemocompatibility
Surface device	Skin	A	X ^a	X	X					
		B	X	X	X					
		C	X	X	X					
	Mucosal membrane	A	X	X	X					
		B	X	X	X					
		C	X	X	X		X	X		
	Breached or compromised surface	A	X	X	X					
		B	X	X	X					
		C	X	X	X		X	X		
External communicating device	Blood path, indirect	A	X	X	X	X				X
		B	X	X	X	X				X
		C	X	X		X	X	X		X
	Tissue/bone/dentin	A	X	X	X					
		B	X	X	X	X	X	X	X	
		C	X	X	X	X	X	X	X	
	Circulating blood	A	X	X	X	X				X
		B	X	X	X	X	X	X	X	X
		C	X	X	X	X	X	X	X	X
Implant device	Tissue/bone	A	X	X	X					
		B	X	X	X	X	X	X	X	
		C	X	X	X	X	X	X	X	
	Blood	A	X	X	X	X	X		X	X
		B	X	X	X	X	X	X	X	X
		C	X	X	X	X	X	X	X	X

^a The crosses indicate data endpoints that can be necessary for a biological safety evaluation, based on a risk analysis. Where existing data are adequate, additional testing is not required.

EN ISO 10993-1			
Clause	Requirement - Test	Result - Remark	Verdict
3	General principles applying to biological evaluation of medical devices		P
3.1	The selection and evaluation of any material or device intended for use in humans requires a structured programme of assessment.		P
3.2	In the selection of materials to be used in device manufacture, the first consideration should be fitness for purpose with regard to characteristics and properties of the material, which include chemical, toxicological, physical, electrical, morphological and mechanical properties.		P
3.3	The following should be considered for their relevance to the overall biological evaluation of the device:		--
	a) the material(s) of manufacture;		P
	b) intended additives, process contaminants and residues;		N
	c) leachable substances;		N
	d) degradation products;		P
	e) other components and their interactions in the final product;		P
	f) the properties and characteristics of the final product.		P
3.4	Tests to be used in biological evaluation, and the interpretation of the results of such tests, should take into account the chemical composition of the materials, including the conditions of exposure and the nature, degree, frequency and duration of exposure of the device or its constituents to the body. By following these principles, devices can be categorized to facilitate the selection of appropriate tests (see Clause 4). This part of ISO 10993 is concerned with the tests to be carried out on materials and/or the final product.		P
3.5	All potential biological hazards should be considered for every material and final product, but this does not imply that testing for all potential hazards will be necessary or practical (see Clause 6).		P
3.6	Any in vitro or in vivo tests shall be based on end-use applications and appropriate good laboratory practice followed by evaluation by competent informed persons.		P

EN ISO 10993-1			
Clause	Requirement - Test	Result - Remark	Verdict
3.7	The materials or final product shall be considered for biological re-evaluation if change occurs:		P
3.8	The biological evaluation performed in accordance with this part of ISO 10993 should be considered in conjunction with the nature and mobility of the ingredients in the materials used to manufacture the device and other information, other non-clinical tests, clinical studies and post-market experience for an overall assessment.		P
4	Categorization of medical devices		P
4.1	General		P
4.2	Categorization by nature of body contact		P
4.2.1	Non-contact devices		P
	Medical devices that do not contact the patient's body directly or indirectly are not included in the scope of ISO 10993.		P
4.2.2	Surface-contacting devices		P
	These include medical devices in contact with the following surfaces:		--
	a) skin: devices that contact intact skin surfaces only; examples include electrodes, external prostheses, fixation tapes, compression bandages and monitors of various types;		P
	b) mucosal membranes: devices that contact intact mucosal membranes; examples include contact lenses, urinary catheters, intravaginal and intrainstestinal devices (stomach tubes, sigmoidoscopes, colonoscopes, gastroscopes), endotracheal tubes, bronchoscopes, dental prostheses, orthodontic devices and intrauterine devices;		N
	c) breached or compromised surfaces: devices that contact breached or otherwise compromised body surfaces; examples include dressings, healing devices and occlusive patches for ulcers, burns and granulation tissue.		N
4.2.3	External communicating devices		N
	These include medical devices in contact with the following application sites:		N

EN ISO 10993-1

Clause	Requirement - Test	Result - Remark	Verdict
	a) blood path, indirect: devices that contact the blood path at one point and serve as a conduit for entry into the vascular system; examples include solution administration sets, extension sets, transfer sets and blood administration sets;		N
	b) tissue/bone/dentin: devices that contact tissue, bone or pulp/dentin systems; examples include laparoscopes, arthroscopes, draining systems, dental cements, dental filling materials and skin staples;		N
	c) circulating blood: devices that contact circulating blood; examples include intravascular catheters, temporary pacemaker electrodes, oxygenators, extracorporeal oxygenator tubing and accessories, dialysers, dialysis tubing and accessories, haemoadsorbents and immunoadsorbents.		N
4.2.4	Implant devices		N
	These include medical devices in contact with the following application sites:		N
	a) tissue/bone: 1) devices principally contacting bone; examples include orthopaedic pins, plates, replacement joints, bone prostheses, bone cements and intraosseous devices; 2) devices principally contacting tissue and tissue fluid; examples include pacemakers, drug supply devices, neuromuscular sensors and stimulators, replacement tendons, breast implants, artificial larynxes, subperiosteal		N
	b) blood: devices principally contacting blood; examples include pacemaker electrodes, artificial arteriovenous fistulae, heart valves, vascular grafts, internal drug-delivery catheters and ventricular assist devices.		N
4.3	Categorization by duration of contact		N
	Medical devices shall be categorized according to the duration of contact as follows:		--
	a) Limited exposure (A): devices whose single or multiple use or contact is likely to be up to 24 h;		N
	b) Prolonged exposure (B): devices whose single, multiple or long-term use or contact is likely to exceed 24 h but not 30 days;		N

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Clause	Requirement - Test	Result - Remark	Verdict
	c) Permanent contact (C): devices whose single, multiple or long-term use or contact exceeds 30 days.		N
5	Testing		P
5.1	General		P
5.2	Initial evaluation tests		P
5.2.1	General		P
5.2.2	Cytotoxicity		P
	With the use of cell culture techniques, these tests determine the lysis of cells (cell death), the inhibition of cell growth, and other effects on cells caused by medical devices, materials and/or their extracts. Cytotoxicity tests are described in ISO 10993-5.		P
5.2.3	Sensitization		P
	These tests estimate, using an appropriate model, the potential of medical devices, materials and/or their extracts for contact sensitization. These tests are appropriate because exposure or contact to even minute amounts of potential leachables can result in allergic or sensitization reactions. Sensitization tests are described in ISO 10993-10.		P
5.2.4	Irritation		P
	These tests estimate the irritation potential of medical devices, materials and/or their extracts, using appropriate sites for implant tissue such as skin, eye and mucous membrane in a suitable model. The test(s) performed should be appropriate for the route (skin, eye, mucosa) and duration of exposure or contact to determine irritant effects of devices, materials and potential leachables. Irritation tests are described in ISO 10993-10.		P
5.2.5	Intracutaneous reactivity		N
	These tests assess the localized reaction of tissue to medical device extracts. These tests are applicable where determination of irritation by dermal or mucosal tests are inappropriate (e.g. medical devices having access to the blood path). These tests may also be useful where extractables are hydrophobic. Intracutaneous reactivity tests are described in ISO 10993-10.		N

EN ISO 10993-1			
Clause	Requirement - Test	Result - Remark	Verdict
5.2.6	Systemic toxicity (acute toxicity)		N
	These tests estimate the potential harmful effects of either single or multiple exposures, during a period of less than 24 h, to medical devices, materials and/or their extracts in an animal model. These tests are appropriate where contact allows potential absorption of toxic leachables and degradation products.		N
	Pyrogenicity tests are included to detect material-mediated pyrogenic reactions of extracts of medical devices or materials. No single test can differentiate pyrogenic reactions that are material-mediated from those due to endotoxin contamination. Systemic toxicity tests are described in ISO 10993-11.		N
	Immunotoxicity tests should be considered only for devices where data from other sources is suggestive of immunotoxicological effects.		N
	Systemic toxicity tests may be included in subacute and subchronic toxicity test protocols and implantation test protocols.		N
5.2.7	Subacute and subchronic toxicity		N
	These tests determine the effects of either single or multiple exposures or contact to medical devices, materials and/or their extracts for a period not less than 24 h but not greater than 10 % of the total life-span of the test animal (e.g. up to 90 days in rats). These tests may be waived for materials with chronic toxicity data. The reason for waiving of the tests should be included in the final report. These tests should be appropriate for the route and duration of contact. Subchronic toxicity tests are described in ISO 10993-11.		N
5.2.8	Genotoxicity		N
	These tests use mammalian or non-mammalian cell culture or other techniques to determine gene mutations, changes in chromosome structure and number, and other DNA or gene toxicities caused by medical devices, materials and/or their extracts. Genotoxicity tests are described in ISO 10993-3.		N
5.2.9	Implantation		N

EN ISO 10993-1

Clause	Requirement - Test	Result - Remark	Verdict
	These tests assess the local pathological effects on living tissue, at both the gross level and microscopic level, of a sample of a material or final product that is surgically implanted or placed in an implant site or in a tissue appropriate to the intended application (e.g. special dental usage tests). These tests should be appropriate for the route and duration of contact. For a material, these tests are equivalent to subchronic toxicity tests if systemic effects are also investigated. Implantation tests are described in ISO 10993-6.		N
	Implantation test protocols may be expanded to include systemic toxicity tests, subacute and subchronic toxicity tests, and chronic toxicity tests.		N
5.2.10	Haemocompatibility		N
	These tests evaluate, using an appropriate model or system, the effects of blood-contacting medical devices or materials on blood or blood components. Specific haemocompatibility tests may also be designed to simulate the geometry, contact conditions and flow dynamics of the device or material during clinical applications.		N
	Haemolysis tests determine the degree of red blood cell lysis and the release of haemoglobin caused by medical devices, materials and/or their extracts in vitro. Haemocompatibility tests are described in ISO 10993-4.		N
5.3	Supplementary evaluation tests		N
5.3.1	General		N
5.3.2	Chronic toxicity		N
	These tests determine the effects of either single or multiple exposures to medical devices, materials and/or their extracts during at least 10 % of the life-span of the test animal (e.g. more than 90 days in rats). These tests should be appropriate for the route and duration of exposure or contact. Chronic toxicity tests are described in ISO 10993-11.		N
	Chronic toxicity tests may be included in subacute and subchronic toxicity test protocols and implantation test protocols.		N
5.3.3	Carcinogenicity		N

EN ISO 10993-1			
Clause	Requirement - Test	Result - Remark	Verdict
	These tests determine the tumorigenic potential of medical devices, materials and/or their extracts from either single or multiple exposures or contacts during the major portion of the life-span of the test animal. These tests may be designed in order to examine both chronic toxicity and tumorigenicity in a single experimental study. Carcinogenicity tests should be conducted only if there are suggestive data from other sources. These tests should be appropriate for the route and duration of exposure or contact. Carcinogenicity tests are described in ISO 10993-9.		N
5.3.4	Reproductive and developmental toxicity		N
	These tests evaluate the potential effects of medical devices, materials and/or their extracts on reproductive function, embryonic development (teratogenicity), and prenatal and early postnatal development. Reproductive/developmental toxicity tests or bioassays should only be conducted when the device has potential impact on the reproductive potential of the subject. The application site of the device should be considered. Reproductive and developmental toxicity tests are described in ISO 10993-9.		N
5.3.5	Biodegradation		N
	Where the potential for resorption and/or degradation exists, corresponding tests may determine the processes of absorption, distribution, biotransformation and elimination of leachables and degradation products of medical devices, materials and/or their extracts. Biodegradation tests are described in ISO 10993-9.		N
6	Selection of biological evaluation tests		P
	Selection of biological evaluation tests		P
	Evaluation may include both a study of relevant experience and actual testing. Such an evaluation may result in the conclusion that no testing is needed if the material has a demonstrable history of use in a specified role that is equivalent to that of the device under design.		P
	Table 1 identifies the initial evaluation tests that shall be considered for each device and duration category. Table 2 identifies the supplementary evaluation tests that shall be considered for each device and duration category.		P

EN ISO 10993-1			
Clause	Requirement - Test	Result - Remark	Verdict
	Due to the diversity of medical devices, it is recognized that not all tests identified in a category will be necessary or practical for any given device. It is indispensable for testing that each device be considered on its own merits: additional tests not indicated in the table may be necessary.		P
	The tests considered and the rationale for selection and/or waiving of tests shall be recorded.		P
7	Assurance of test methods		P
7.1	Test method assurance		P
	The test methods used in the biological evaluation shall be sensitive, precise and accurate. The test results should be reproducible (interlaboratory) as well as repeatable (intralaboratory).		P
7.2	Continued assurance		P
	The assurance that a material is initially acceptable for its intended use in a medical device, and its continued acceptability in the long term, is an aspect of a quality management system.		P

EN ISO 10993-1			
Clause	Requirement - Test	Result - Remark	Verdict

Table 1 — Initial evaluation tests for consideration									
Medical device categorization by			Biological effect						
Nature of body contact (see 5.2)		Contact duration (see 4.3) A— Limited (< 24 h) B— prolonged (24 h to 30 days) C— permanent (> 30 days)							
Category	Contact		Cytotoxicity	Sensitization	Irritation or intracutaneous reactivity	Systemic toxicity (acute)	Subacute and subchronic toxicity	Genotoxicity	Implantation
Surface device	Skin	A	x	x	x				
		B	x	x	x				
		C	x	x	x				
	Mucosal membrane	A	x	x	x				
		B	x	x	x				
		C	x	x	x		x	x	
	Breached or Compromised surface	A	x	x	x				
		B	x	x	x				
		C	x	x	x		x	x	
External communicating device	Blood path, indirect	A	x	x	x	x			x
		B	x	x	x	x			x
		C	x	x		x	x	x	x

EN ISO 10993-1										
Clause	Requirement - Test	Result - Remark						Verdict		
	Tissue/bone/dentin	A	x	x	x					
		B	x	x	x	x	x	x	x	
		C	x	x	x	x	x	x	x	
	Circulating blood	A	x	x	x	x				x
		B	x	x	x	x	x	x	x	x
		C	x	x	x	x	x	x	x	x
Implant device	Tissue/bone	A	x	x	x					
		B	x	x	x	x	x	x	x	
		C	x	x	x	x	x	x	x	
	Blood	A	x	x	x	x	x		x	x
		B	x	x	x	x	x	x	x	x
		C	x	x	x	x	x	x	x	x

Table 2 — Supplementary evaluation tests for consideration

Medical device categorization by			Biological effect			
Nature of body contact (see 5.2)	Contact	Contact duration (see 4.3)	Chronic toxicity	Carcinogenicity	Reproductive/development	Biodegradation
Category		A — Limited (< 24 h) B — prolonged (24 h to 30 days) C — permanent (> 30 days)				
Surface device	Skin	A				
		B				
		C				
	Mucosal membrane	A				
		B				
		C				
	Breached or compromised surface	A				
		B				
		C				
External communicating device	Blood path, indirect	A				
		B				
		C	x	x		
	Tissue/bone/dentin	A				
		B				
		C	x	x		
	Circulating blood	A				
		B				
		C	x	x		
Implant device	Tissue/bone	A				
		B				

EN ISO 10993-1

Clause	Requirement - Test	Result - Remark	Verdict
	C	x	x
Blood	A		
	B		
	C	x	x

Result:

NITRILE EXAMINATION GLOVE/ LATEX EXAMINATION GLOVE, didn't cause a skin irritating effect.

IMAGE



*****END OF REPORT*****

5190243IB02**2020270760**

Report No: 2020270760-R1
Applicant: MY TİCARET VE MEDİKAL A.Ş.
Ömerli Mah. General Şükrü Karaltı Caddesi No:33 Arnavutköy/İSTANBUL
Contact Person: Z.Melek ÖZ BOLAT
Contact Telephone: 0212 438 20 64
Contact e-mail: kalite@mymedikal.com.tr
Sample Accepted on: 03.07.2020
Report Date: 27.07.2020
Total number of pages: 7 (pg)

Sample ID: NİTRİLE EXAMINATION GLOVE / LATEX EXAMINATION GLOVE

TEST	METHOD	Specimen	RESULT
AIR LEAK TEST	EN 374-Part:2 Protective gloves against dangerous chemicals and micro-organisms - Part 2: Determination of resistance to penetration	NİTRİLE EXAMINATION GLOVE	PASS
WATER LEAK TEST		LATEX EXAMINATION GLOVE	PASS
CHEMICAL PERMEABILITY TEST	EN 16523-1 Determination Of Material Resistance To Permeation By Chemicals - Part 1: Permeation By Potentially Hazardous Liquid Chemicals Under Conditions Of Continuous Contact	NİTRİLE EXAMINATION GLOVE	TYPE B
		LATEX EXAMINATION GLOVE	TYPE A



Seal

Customer Representative
Hasan KUTLULaboratory Manager
Hava SARIAYDIN

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Environment

The requirements and standards apply to equipment intended for use in

X	Residential (domestic) environment
X	Commercial and light-industrial environment
X	Industrial environment
X	Medical environment

**EN 374-2 Protective Gloves Against Dangerous Chemicals And Micro-Organisms - Part 2:
Determination Of Resistance To Penetration****Scope**

This European Standard specifies a test method for the penetration resistance of gloves that protect against dangerous chemicals and/or micro-organisms.

Air Leak Test Method

- The glove is fastened to the circular mandrel and is inflated after immersion at ambient temperature, with air, to a gauge pressure of X kPa (see Table 1) plus an overpressure of 1 kPa per 100 mm of immersion measured at the fingertips closest to the bottom of the water tank.
- The inflation pressure shall be reached with a ± 10 % limit deviation within 2 min and the control of possible air bubbles shall take an additional (30 ± 5) s.

Table 1

Nominal glove thickness (e) mm As provided by the manufacturer	Air pressure (X) kPa
$e \leq 0,3$	0,5
$0,3 < e \leq 0,5$	2,0
$0,5 < e \leq 1,0$	5,0
$e > 1,0$	6,0

Product**Medical Glove****Brand****Mumu – Mumu Plus****Type/Models****Nitrile Examination Glove Catalog Number: MN01****Latex Examination Glove Catalog Number: MLP/MLPF-02****Color****Blue, White**

Test Results

Specimen	Total Air Pressure (kPa)	Observation	Result
Nitrile Examination Glove	2,8	No leaks detected	PASS
Latex Examination Glove	2,0	No leaks detected	PASS

Water Leak Test Method

- The glove is attached to an open-ended plastic tube by bringing the edge of the cuff to the 40 mm mark and fastening it with the elastic strap to make a watertight seal.
- A minimum of 1 000 ml of water is added through the tube to fill the glove completely and to reach at least the 40 mm mark level of the liquid proof area of the glove. The water shall be at ambient temperature
- The gloves are examined immediately for water leaks. The glove should not be squeezed. Only minimal handling is required to detect leaks. Water droplets may be blotted to confirm leakage, or talcum powder may be used to enhance droplet visibility.

Test Results

Specimen	Observation	Result
Nitrile Examination Glove	No leaks detected	PASS
Latex Examination Glove	No leaks detected	PASS

EN 16523-1 Determination Of Material Resistance To Permeation By Chemicals - Part 1: Permeation By Potentially Hazardous Liquid Chemicals Under Conditions Of Continuous Contact**Scope**

This European Standard specifies a test method for the determination of the resistance of protective clothing, gloves and footwear materials to permeation by potential hazardous liquid chemicals under the condition of continuous contact. This test method is applicable to the assessment of protection against liquid chemicals that can be collected only by liquid or gaseous collecting media.

Test Method

The resistance of a protective glove material to permeation by a solid or liquid chemical is determined by measuring the breakthrough time of the chemical through the glove material

The sample shall be conditioned for 24 h at a temperature of $(23 \pm 2) ^\circ\text{C}$ and The standard test temperature shall be $(23 \pm 1) ^\circ\text{C}$.

Gloves Type	Requirement
TYPE A	Breakthrough time ≥ 30 min against at least 6 chemicals of the new list
TYPE B	Breakthrough time ≥ 30 min against at least 3 chemicals of the new list
TYPE C	Breakthrough time ≥ 30 min against at least 3 chemicals of the new list

Product**Medical Glove****Brand****Mumu – Mumu Plus****Type/Models****Nitrile Examination Glove Catalog Number: MN01****Latex Examination Glove Catalog Number: MLP/MLPF-02****Color****Blue, White**

Table 2 EN ISO 374-1 glove permeation test list

Code Letter	Chemical	Cas Number	Class
A	Methanol	67-56-1	Primary Alcohol
B	Acetone	67-64-1	Ketone
C	Acetonitrile	75-05-8	Nitrile Compound
D	Dichloromethane	75-09-2	Chlorinated Paraffin
E	Carbon disulphide	75-15-0	Sulphur Containing Organic
F	Toluene	108-88-3	Aromatic Hydrocarbon
G	Diethylamine	109-89-7	Amine
H	THF	109-99-9	Heterocyclic and Ether
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 Acid , oxidizing
N	Acetic Acid %99	64-19-7	Organic acid
O	Ammonia %25	1336-21-6	Organic Base
P	Hydrogen peroxide %30	7722-84-1	Peroxide
S	Hydrogen fluoride %4,	7664-39-3	Inorganic Mineral Acid
T	Formaldehyde %37	50-00-0	Aldehyde

Test Results

Specimen	Chemical	Observation	Gloves Type
Nitrile Examination Glove	Methanol	Not permeable	TYBE B
Nitrile Examination Glove	Acetonitrile	Not permeable	
Nitrile Examination Glove	Acetic acid	Not permeable	
Nitrile Examination Glove	Sulphuric acid	There is permeability	

Specimen	Chemical	Observation	Gloves Type
Latex Examination Glove	Methanol	Not permeable	TYPE A
Latex Examination Glove	Acetonitrile	Not permeable	
Latex Examination Glove	Acetic acide %99	Not permeable	
Latex Examination Glove	Sulphuric acide %96	Not permeable	
Latex Examination Glove	Sodium Hydroxyde %40	Not permeable	
Latex Examination Glove	Formaldehyde %37	Not permeable	

Image

END OF REPORT