

technical data and regulations

INTRODUCTION



What is PPE?

Personal Protective Equipment (PPE) refers to any equipment worn by individuals to minimize exposure to hazards that can cause serious workplace injuries and illnesses. These include gloves, shoes, earplugs and of course **safety glasses**.

PURPOSE OF REGULATIONS AND STANDARDS

Regulations and standards ensure that PPE provides adequate protection against specific hazards, is reliable, and fits properly. These regulations and standards are set by various national and international organizations.

As Univet, we provide PPE certified following the **European** and in conformity with ANSI **American** standard:

- **CE** (Conformité Européenne): Indicates conformity with health, safety, and environmental protection standards for products sold within the European Economic Area (EEA).
- **ANSI** (American National Standards Institute): Develops and publishes consensus standards for a wide range of PPE in the US, such as safety glasses and footwear.
- **ISO** (International Organization for Standardization): An international standard-setting body that develops and publishes standards for various types of PPE.

When a PPE is certified accordingly to a standard, it undergoes to specific tests carried out by certification notified bodies, and the result is a **specific marking** that indicates the properties of the product.

When it comes to eyewear, the marking can be found on the lenses or on the frame: in the following pages there is a concise guide to help reading it.

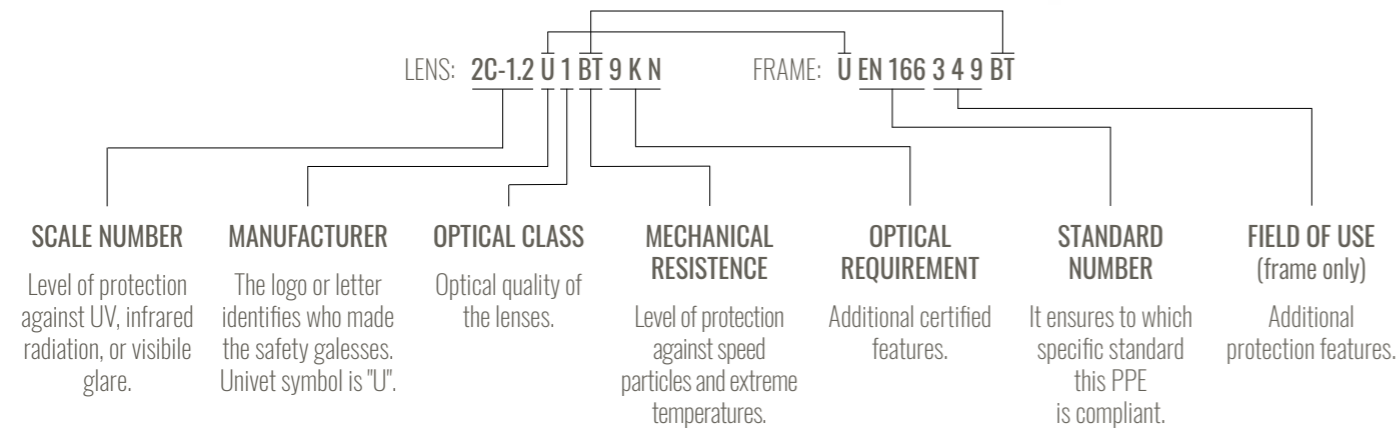
EUROPEAN STANDARD



READING THE MARKING

CE MARK

Means that the eyewear complies with the essential health and safety requirements of the European Union (EU) Regulation (EU) 2016/425



PPE CATEGORIES

PPEs are categorized based on the level of risk protection they provide. The European Union, under Regulation (EU) 2016/425, classifies PPE into three categories:

| CATEGORY I | CATEGORY II | CATEGORY III |
|--|---|--|
| | | |
| Designed to protect against minimal risks. No need of a certification. | PPE that is not covered under Categories I and III. It provides certified protection against intermediate risks. EG: most of our products | This category covers PPE designed to protect against very serious risks, such as death or irreversible health damage. EG. Code 607A70000 |

Category II and III must be certified by a recognized notified body. Category III PPEs undergo a special control protocol.

SCALE NUMBER

A scale number is formed by a code number and a shade number divided by a hyphen. Welding products do not require a code number.

| CODE NUMBER | SHADE NUMBER AND TYPICAL LENS COLOURS | VLT RANGE |
|--|--|---------------|
| 2 Ultraviolet (UV) | 1.2 Clear, yellow | 100% - 74.4% |
| | 1.7 In/Out, yellow, clear mirrored, UVR | 58.1% - 43.2% |
| 2C UV with good colour recognition | 2.5 Brown, smoke | 29.1% - 17.8% |
| | 3.1 G15, smoke mirrored | 17.8% - 8.0% |
| 4 Infra-red (IR) | 3,4,5,...11 Welding | - |
| 5 Sunglare filter without infra-red specification | | |
| 6 Sunglare filter with infra-red specification | | |

EUROPEAN STANDARD

OPTICAL CLASS

| MARKING | SPHERICAL REFRACTIVE POWER [m ⁻¹] | ASTIGMATIC REFRACTIVE POWER [m ⁻¹] | DIFFERENCE IN PRISMATIC REFRACTIVE POWER [cm/m] | | |
|----------|---|--|---|--------------------|----------|
| | | | HORIZONTAL BASE OUT | HORIZONTAL BASE IN | VERTICAL |
| 1 | ± 0.06 | 0.06 | 0.75 | 0.25 | 0.25 |
| 2 | ± 0.12 | 0.12 | 1.00 | 0.25 | 0.25 |
| 3 | + 0.12 / - 0.25 | 0.25 | 1.00 | 0.25 | 0.25 |

1 : Highest optical quality, suitable for continuous use. All of our products are marked "1".

2 : Suitable for intermittent use.

3 : Suitable for occasional use only.

MECHANICAL RESISTANCE

The mechanical resistance is proved shooting a steel ball on the eyewear at a determined speed.

| SYMBOL | IMPACT LEVEL | IMPACT SPEED | BALL ø | BALL WEIGHT | SPECTACLES | GOGGLES | FACE SHIELDS |
|--------------|----------------------|--------------|---------|-------------|------------|---------|--------------|
| A (T) | High energy impact | 190 m/s | ø 6 mm | 0,86 g | | | • |
| B (T) | Medium energy impact | 120 m/s | ø 6 mm | 0,86 g | | • | • |
| F (T) | Low energy impact | 45 m/s | ø 6 mm | 0,86 g | • | • | • |
| S | Increased robustness | 5,1 m/s | ø 22 mm | 43 g | • | • | • |

(T) If the impact letter (F, B or A) is followed by the letter T, then the eyewear protects against impact at extreme temperatures (-5°/+55°C)

OPTIONAL REQUIREMENTS

| | |
|----------|--|
| 8 | Symbol for protection against short circuit electric arc |
| 9 | Symbol for protection against molten metals and hot solids |
| K | Resistance to surface damage by fine particles |
| N | Resistance to fogging of oculars |
| T | Protection against high speed particles at extreme temperatures (-5°/+55° C) |
| H | Frame suitable for small size head |
| R | Enhanced reflectance in the infra-red |
| ∇ | Symbol for replacement ocular |

STANDARD NUMBER

EN 166

Personal Eye Protection: this is the primary standard for all types of personal eye protection. It specifies the general requirements for eye protection, including optical quality, mechanical strength, and protection against various hazards (e.g., dust, liquids, molten metals).

EN 175

Equipment for Eye and Face Protection during Welding and Allied Processes: this standard covers the requirements for eye and face protection equipment used in welding. It includes specifications for the design, performance, and testing of welding masks and shields to ensure they provide adequate protection.

FIELD OF USE (ADDITIONAL MARKINGS WHICH CAN BE FOUND ON FRAME)

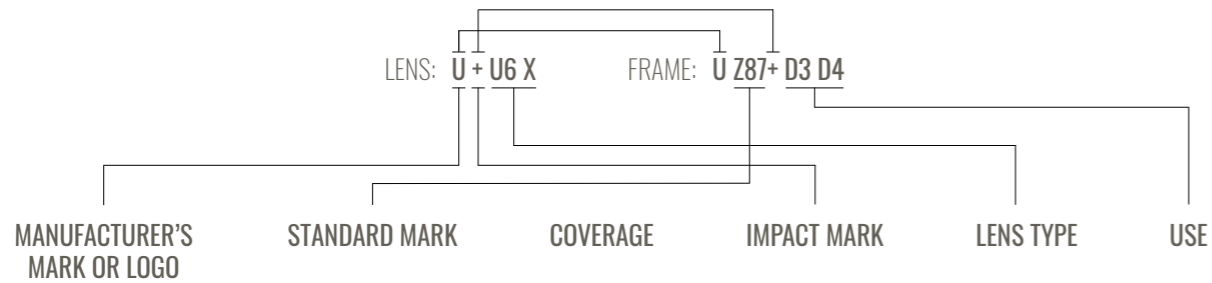
| SYMBOL | DESIGNATION | PROTECTION FROM | SPECTACLES | GOGGLES | FACE SHIELDS |
|------------------|------------------------------|---|------------|---------|--------------|
| No symbol | Basic use | Unspecified mechanical hazards and hazards arising from ultraviolet, visible, infra-red and sun radiation | • | • | • |
| 3 | Liquids | Liquids (droplets or splashes) | | • | • |
| 4 | Large dust particles | Dust with a particle size > 5 µm | | • | |
| 5 | Gas and fine dust particles | Gases, vapours, sprays, smoke and dust with a particle size < 5 µm | | • | |
| 8 | Short circuit electric arc | Electrical arc due to a short circuit in electrical equipment | | | • |
| 9 | Molten metals and hot solids | Splashes of molten metals and penetration of hot solids | | • | • |

ANSI STANDARD

READING THE MARKING

Z87 MARK

Means that the eyewear complies with all the health and safety requirements of the American ANSI/ISEA Z87.1- 2020 .



MANUFACTURER'S MARK OR LOGO

This is usually a unique identifier or logo of the manufacturer to trace back the glasses to their maker. In our case we use "U" as Univet.

STANDARD MARK

Z87

Used on plano spectacles, goggles, faceshields.

Z87-2

Used on RX spectacles

COVERAGE

When a PPE is tested using the small headform, it's marked on the frame with the letter "H". This means it's suitable for users with a small head.

IMPACT MARK

When a PPE is tested for impact protection, it obtains the "+" marking.

ANSI STANDARD



LENS TYPE

To define the lens type, a special letter is added to the marking. Some letters are followed by a number or a range of numbers (EG W7 or W9-12) that expresses the granted level of protection from optical radiations. If the lens is non-filtering and clear (with a luminous transmittance of not less than 85%), there is no need to specify the lens type.

| | |
|-----------------------|------------------------|
| W shade | Welding filter |
| U scale number | UV filter |
| R scale number | IR filter |
| L scale number | Visible light filter |
| V | Variable tint |
| S | Special purpose lenses |
| X | Anti-fog |

USE

This marking defines the protection level granted by the PPE against fluids and dust. Every symbol specifies the different level of protection.

| | |
|-----------|------------------|
| D3 | Splash / Droplet |
| D4 | Dust |
| D5 | Fine dust |

ISO STANDARD

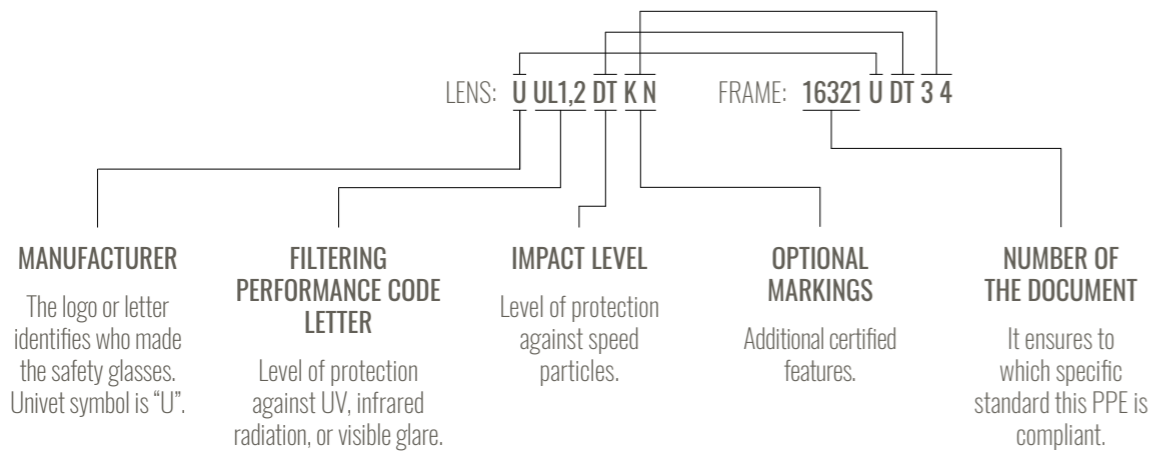


READING THE MARKING



16321 MARK

Means that the eyewear complies with the essential international health and safety requirements.



FILTERING PERFORMANCE

| FILTERS | CODE LETTER | MEET REQUIREMENTS FOR COLOUR DETECTION OF SIGNAL LIGHTS | INFRARED ABSORPTION | ENHANCED IR REFLECTANCE | SHADE NUMBER |
|--|-------------|---|---------------------|-------------------------|--------------|
| UV filter | U | L (optional) | Not applicable | Not applicable | 1,2 to 5 |
| IR filter | R | L (optional) | Not needed | R | 1,1 to 10 |
| Sunglare filters for occupational use | G | L | R | Not applicable | 0 to 3 |
| | | L (optional) | | | 4 |

IMPACT LEVEL

| CODE LETTER | MEANING |
|---------------|------------------------------------|
| C (T) | Impact level resistance: 45 m/s |
| D (T) | Impact level resistance: 80 m/s |
| E (T) | Impact level resistance: 120 m/s |
| HM (T) | Impact level resistance: High Mass |

If the impact letter (C, D, E or HM) is followed by the letter T, then the eyewear protects against the relative impact even at extreme temperatures (-5 ± 2 / +55 ± 2 °C).

ISO STANDARD

OPTIONAL MARKINGS

| CODE LETTER | MEANING | CAN BE FOUND ON | |
|-------------|---|-----------------|-------|
| | | LENS / FILTER | FRAME |
| 1 | Enhanced optical performance (marking optional) | . | . |
| 3 | Resistance to droplets | . | . |
| 4 | Resistance to large dust particles | . | . |
| 5 | Resistance to gas and fine dust particles | . | . |
| 6 | Resistance to streams of liquids | . | . |
| 7 | Protection from radiant heat | . | . |
| 9 | Resistance to molten metals and hot solids | . | . |
| CH | Resistance to chemicals | . | . |
| K | Resistance to surface damage by fine particles | . | . |
| N | Resistance to fogging | . | . |
| T | Extremes of temperature for mechanical tests | . | . |

NUMBER OF THE DOCUMENT

It is mandatory to add the reference number of the document, in this case, «16321» on frames and on welding filters.