

European Standards Personal Protective Equipment

Personal Protective Equipment (PPE) shall mean any device or appliance designed to be worn or held by an individual for protection against one or more health and safety hazards, as well as any accessory or ensemble designed to protect an individual.

The Personal Protective Equipment (PPE) are divided into three categories:



The standard EN166 recalls some of the other regulations that help define the requirements that the PPE must meet:

SPECTACLE



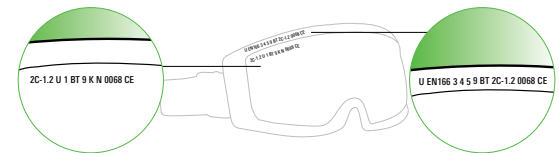
LENS MARKING IDENTIFICATION

| | | | | | |
|--|--------------|---------------|-----------------------|----------------------|-----------|
| 2-3 | U | 1 | FT | KN | CE |
| Scale number (code number + shade number) | Manufacturer | Optical Class | Mechanical resistance | Optional requirement | |

FRAME MARKING IDENTIFICATION

| | | | |
|--------------|--------------|-----------------------|-----------|
| U | EN166 | FT | CE |
| Manufacturer | Standard | Mechanical resistance | |

GOGGLE



LENS MARKING IDENTIFICATION

| | | | | | | | |
|--|--------------|---------------|-----------------------|--------------|----------------------|---------------|-----------|
| 2C-1.2 | U | 1 | BT | 9 | KN | 0068 | CE |
| Scale number (code number + shade number) | Manufacturer | Optical Class | Mechanical resistance | Field of use | Optional requirement | Notified body | |

FRAME MARKING IDENTIFICATION

| | | | | | | |
|--------------|--------------|----------------|-----------------------|------------------------------|---------------|-----------|
| U | EN166 | 3 4 5 9 | BT | 2C-1.2 | 0068 | CE |
| Manufacturer | Standard | Field of use | Mechanical resistance | Highest scale number allowed | Notified body | |

Meanings of the EN marking

PPE of II° and III° categories shall be tested and certified by an official Notified Body.

The product certification which confirms the compliance to the requirements included in the PPE directive 89/686/EEC is based on the following European standards:

EN166 – Personal eye-protection specifications

EN175 – Equipment for eye and face protection during welding and allied processes

EN166 recalls additional standards which specifies the requirements as a function of PPE typology and field of use:

EN165 – Vocabulary

EN167 – Optical test methods

EN168 – Non-optical test methods

EN169 – Filter for welding and related techniques

EN170 – Ultra-violet (UV) ray filters

EN171 – Infra-red (IR) ray filters

EN172 – Sunglare filters for industrial use

EN1731 – Mesh eye and face protectors

EN 379 – Specification for automatic welding filters

| SCALE NUMBER | | Shade number and typical lens colours | | VLT range |
|---------------|---|---------------------------------------|-------------------------------------|---------------|
| none | Welding | 1.2 | Clear | 100% - 74.4% |
| 2 | Ultraviolet (UV) | 1.7 | In/Out, yellow, clear mirrored, UVR | 58.1% - 43.2% |
| 2C o 3 | UV with good colour recognition | 2.5 | Brown, smoke | 29.1% - 17.8% |
| 4 | Infra-red (IR) | 3.1 | G15, smoke mirrored | 17.8% - 8.0% |
| 5 | Sunglare filter without infra-red specification | 3,4,5,...11 | Welding | - |
| 6 | Sunglare filter with infra-red specification | | | |

| OPTICAL CLASS | | | | | |
|---------------|---|--|--|-----------------------|----------|
| Optical Class | Spherical refractive power m ⁻¹ | Astigmatic refractive power m ⁻¹ | Difference in prismatic refractive power | | |
| | | | horizontal base out | horizontal base in | vertical |
| 1 | ± 0.06 | 0.06 | 0.75 | 0.25 | 0.25 |
| 2 | ± 0.12 | 0.12 | 1 | 0.25 | 0.25 |
| 3 | +0.12 / -0.25 | 0.25 | 1 | 0.25 | 0.25 |

| PROTECTION AGAINST HIGH SPEED PARTICLES | | | | | | | | |
|---|----------------------|-----------------------|----------|---------|------------------------|---------|---------|--------------|
| Mechanical resistance | Impact level | Maximum speed | Diameter | Grams | Lens material | Eyewear | Goggles | Face shields |
| A (T) | High energy impact | 190 m/s 684 km/h | ø 6 mm | 0,86 gr | Polycarbonate | | | • |
| B (T) | Medium energy impact | 120 m/s 432 km/h | | | Polycarbonate | | • | • |
| F (T) | Low energy impact | 45 m/s 162 km/h | | | Polycarbonate, acetate | • | • | • |
| S | Increased robustness | 5,1 m/s 18,36 km/h | ø 22 mm | 43 gr | CR39, Toughened glass | • | • | • |

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

| OPTIONAL REQUIREMENTS | |
|-----------------------|---|
| K | Resistance to surface damage by fine particles |
| N | Resistance to fogging of oculars |
| T | Protection against high speed particles at extreme temperatures |
| H | Frame suitable for small head |
| R | Enhanced reflectance |

| FIELD OF USE | | | | | |
|------------------|------------------------------|---|---------|---------|-------------|
| SYMBOL | DESIGNATION | DESCRIPTION OF THE FIELD OF USE | EYEWEAR | GOGGLES | FACE SHIELD |
| No symbol | Basic use | Unspecified mechanical hazards and hazards arising from ultraviolet, visible, infra-red and solar 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 metal and penetration of hot solids | | • | • |