

European Standards Personal Protective Equipment

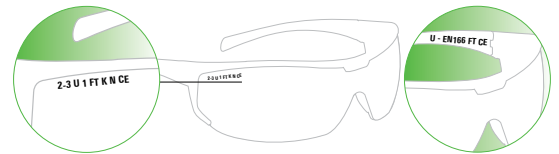
Personal Protective Equipment (PPE) shall mean any device or appliance designed to be worn or held by an individual for protection against one or more health and safety hazards, as well as any accessory or ensemble designed to protect an individual.

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



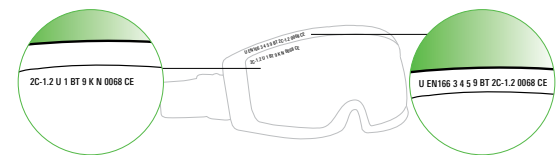
LENS MARKING IDENTIFICATION

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		•	•