



# Eye Protection

EN 166

Safety Glasses are usually the most cost-effective option for protecting against mechanical and optical risks but have significant limitations. They are normally only suitable for protection against low energy impacts up to 45 m/s, marked with the symbol F. Higher impact levels may force the glasses back into the face or penetrate the lens. There is also a danger that particles may pass through the gap between the glasses and face in which case goggles may be a better option.

Goggles can generally withstand medium energy impacts up to 120 m/s and are usually marked with the symbol B. They come in different styles from simple direct vented to sealed units and protection can vary considerably with different hazards. They may also have other attachments to protect more of the face but can suffer more from misting unless anti-fog treated.

Visors offer protection against medium energy particles at up to 120 m/s and are usually marked with the symbol B. Available in a variety of materials such as polycarbonate, more chemically resistant acetate or metal mesh. They also lend themselves to direct mounting on safety helmets and offer good ventilation. To assist you in your understanding of markings on Eye Protection products covered by EN 166, you should note:

Optical	Standard	Frame	Lens
Class 1	For continuous work	-	1
Class 2	For intermittent work	-	2
Class 3	For occasional work, but must not be worn continuously	-	3

Areas of Use	Frame	Lens
Liquids (chemical)	3	-
Large Dust Particles	4	-
Gas and Fine Dust Particles	5	-
Short Circuit Electric Arc	8	-
Molten Metals and Hot Solids	9	9

Mechanical Properties	Frame	Lens
Increased Robustness (General Purpose)	-	S
High Energy Impact (190m/sec)	A	A
Medium Energy Impact (120m/sec) Grade 1	B	B
Low Energy Impact (45m/sec) Grade 2	F	F
Increased Robustness – General Purpose	T	T
Impact-Performance at Extremes of Temperature		

Optional	Frame	Lens
Resistance to Mechanical Damage (Anti-Scratch)	-	K
Resistance to Misting/Fogging	-	N

NB: The "A", "B", "F" and "S" markings on frame and lens represent tests carried out on each component and therefore may be different – in which case the lower level must be assigned to the complete unit when making an assessment.

## ANTI-MIST, ANTI-SCRATCH? DOES YOUR EYEWEAR REACH THE STANDARD?

"K" and "N" are coating treatments that reach the standard set by EN 166. Look for the "K" (anti-scratch) and "N" (anti-mist) on the lens of your safety glasses, goggles and face shields. By EN law all safety eyewear should have these marks, so any lenses lacking the "K" or "N" symbols do not reach the required standard.

- EN 169 – Welding Filters
- EN 170 – Ultra-Violet Filters
- EN 171 – Infra-red Filters
- EN 172 – Solar Protection Filters for Industrial Use
- EN 175 – Welding Work Equipment
- EN 207 – Laser Protection Eyewear
- EN 208 – Laser Adjustment Eyewear

Read more on Clad Safety's Safety Standards Guide [here](#).