Safety glasses

Protective equipment card

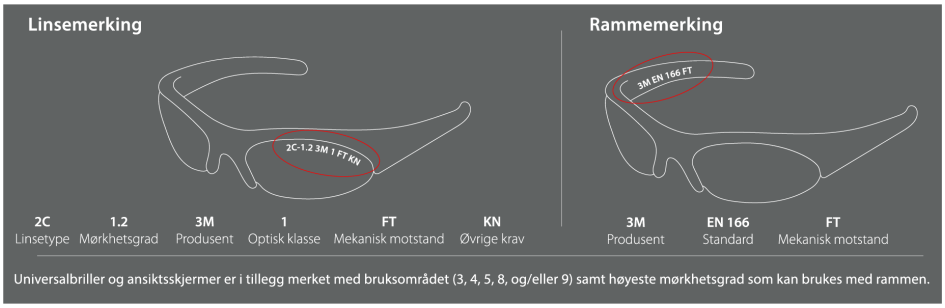
How to choose appropriate safety glasses

Safety glasses must be resilient and must protect us from various types of risk and exposure. They must also be comfortable to wear and must fit well. Safety glasses must also comply with relevant EU standards.

Properties and protection level of glasses

All safety glasses, goggles and face shields are marked using symbols illustrating which EN standard the glasses are classified in accordance with, and which properties and protection level the glasses have. Numbers and letters describe the different properties and levels of protection that the glasses provide.

The symbols can usually be found printed on the frame and lens of the glasses.



Glasses: 3M SF400

Lens markings: 2C-1.2 3M 1 FT KN

Frame markings: 3M EN 166 FT (area of application)

*The glasses in the illustration above comply with EN 166 with lens markings: **2C-1.2 3M 1 FT KN** and frame markings: **3M EN 166 FT***

Markings and areas of application that may be relevant to your safety glasses needs:

Lens type

Lens type	Filter
2	Ultraviolet (UV)
2C or 2	UV with good colour recognition
4	Infrared (IR)
5	Solar filter
6	Solar filter with IR specification

Darkness level

1.2	Clear or yellow
1.7	I/0 or Minimizer
2.5	Bronze, brown or smoky
3.1	Dark bronze or dark brown
3.1	Dark blue or dark grey
3.1	Blue reflection
3.1	Red reflection

Optical class tolerance

Optical class	Tolerance for use	
1	+0.06 dioptres	Continuous use
2	+0.12 dioptres	Periodic use
3	+0.25 dioptres	Used in exceptional cases

Mechanical resistance

Mechanical resistance	Impact level	Lens fracture strength (maximum speed)	Lens material	Glasses	Goggles	Face shields
A (T)	High-energy impact	Steel ball Ø 6 mm 190 m/s	Polycarbonate			x
B (T)	Moderate to high-energy impact	Steel ball Ø 6 mm 120 m/s	Polycarbonate		x	x
F (T)	Low-energy impact	Steel ball Ø 6 mm 45 m/s	Polycarbonate, acetate	x	x	x
S	Increased impact resistance	Steel ball Ø 22 mm 5.1 m/s	CR39, tempered glass	x	x	x

T: If the impact letter (F, B or A) is followed by the letter T, the frame provides protection against impact at extreme temperatures (-5/+55 °C)

Areas of application

Areas of application	Glasses	Goggles	Face shields
3 Liquid droplets		x	
3 Liquid splashes			x
4 Large dust particles (> 5µm)		x	
5 Gas and fine dust particles (< 5µm)		x	
8 Arc discharge caused by short circuit			x
9 Molten metal		x	x

Other requirements

Other requirements	
K	Scratch resistant
N	Steam resistant
T	Impact resistance at extreme temperatures (-5/+55°C)
R	Reinforced reflection of IR (>60%)
H	Frame suitable for small heads (PD=54mm)

For more information on proper use of eye protection: Contact the HSE manager in your unit or AF Gruppens HSE advisors. You may also contact the occupational health services.

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Work activities and the environment

At AF Gruppen we regularly perform risk assessments of the work activities that are carried out and the environment they are carried out in. Your supervisor is responsible for the implementation, but you are obliged to participate in and contribute to such assessments.

Work activities and the environment often represent various risks and glasses, goggles or face shields with the appropriate protection for various areas of applications must be worn. Example: moving objects in environments with exposure to liquids or dust. This combination requires tight-fitting safety glasses (goggles) that protect against both impact and liquid droplets or dust particles. **See "Mechanical resistance" and "Areas of application" on page 1.**

Risk assessment

Work activities that require tight-fitting safety glasses or face shields

For many activities, eye protection must be tightly fitted around the eyes and goggles must be worn, for example in connection with cutting, grinding, drilling work or when working with chemicals and fresh concrete. When there is a need for full face protection, for example when working with splashing liquids or electric arc discharge, face shields must be worn. There are many types of eye protection available and it is therefore important that the right type of eye protection is used for the work. Multiple eye injuries at AF have been caused by the incorrect choice of eye protection. **See "Areas of application" on page 1.**

Mechanical resistance (lens fracture strength)

AF requires a minimum mechanical resistance of F (low energy impact). Safety glasses can withstand being shot at with a 6 mm steel ball at 45 m/s. **See "Lens fracture strength" under "Mechanical resistance" on page 1.**

Helmet-mounted visors in accordance with EN 166 are approved as safety glasses. Even so, AF recommends the use of ordinary safety glasses (EN 166) because our experience shows that it is easier to use visors incorrectly and that such usage has historically resulted in eye injuries. Helmet-mounted visors cannot replace goggles or face shields.

UV protection

Most EN-approved safety glasses provide UV protection. These glasses have polycarbonate glass, which naturally blocks UV light. This also applies to safety glasses with clear glass. **See "Lens material" under "Mechanical resistance" on page 1.**

Adverse weather conditions

If weather conditions or other conditions result in poor visibility through the safety glasses, the glasses should be removed until visibility improves and it is once again safe and appropriate to wear safety glasses. However, this does not apply to work activities that require the use of safety glasses, goggles or face shields. If the weather conditions represent a hazard, the work activity should be postponed.

Ordinary glasses cannot replace safety glasses

Please get in touch with your immediate manager if you require optical strength safety glasses. Safety glasses that can be worn over your own glasses are a good option for short-term work, visits and simple inspections.

Other risks

See also AF's health card for information on exposure and risks that can influence the choice of eye protection.

For more information on proper use of eye protection: Contact the HSE manager in your unit or AF Gruppens HSE advisors. You may also contact the occupational health services.