International Standard 4856

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Personal eye-protectors — Synoptic tables of requirements for oculars and eye-protectors

Protecteurs individuels de l'œil — Tableaux récapitulatifs des spécifications pour les oculaires et les protecteurs de l'œil

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 4856 was developed by Technical Committee ISO/TC 94, *Personal safety — Protective clothing and equipment*, and was circulated to the member bodies in September 1981.

It has been approved by the member bodies of the following countries :

Australia	Germany, F.R.	Romania
Austria	Hungary	South Africa, Rep. of
Belgium	India	Sweden
Canada	Israel	Switzerland
Czechoslovakia	Netherlands	Thailand
Egypt, Arab Rep. of	Norway	USSR
France	Poland	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Denmark
United Kingdom
USA

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Personal eye-protectors — Synoptic tables of requirements for oculars and eye-protectors

1 Scope and field of application

This International Standard provides a survey of the requirements which have to be met by the various types of oculars and eye-protectors as well as by the combination of both with the exception of filters and eye-protectors against laser radiation, specifications of which are given in ISO 6161.

2 References

General and particular requirements are stated in the following documents :

ISO 4007, *Personal eye-protectors — Vocabulary.*

ISO 4849, *Personal eye-protectors — Specifications.*

ISO 4850, *Personal eye-protectors for welding and related techniques — Filters — Utilisation and transmittance requirements.*

ISO 4851, *Personal eye-protectors — Ultra-violet filters — Utilisation and transmittance requirements.*

ISO 4852, *Personal eye-protectors — Infra-red filters — Utilisation and transmittance requirements.*

ISO 4853, *Personal eye-protectors — Daylight filters — Utilisation and transmittance requirements.* [1]

ISO 6161, *Personal eye-protectors — Filters and eye-protectors against laser radiation.*

The test methods corresponding to these specifications are described in the following two documents :

ISO 4854, *Personal eye-protectors — Optical test methods.*

ISO 4855, *Personal eye-protectors — Non-optical test methods.*

3 Synoptic tables

Requirements to be met by the different types of oculars are given in table 1.

Requirements for frames and mounted oculars are given in table 2.

Depending on the risk the different types of eye-protectors have to be fitted with the particular oculars according to table 3.

1) At present at the stage of draft.

Table 1 — Synoptic table of requirements for oculars

Requirements	According to		Type of oculars							Testing	
	ISO	clause or sub-clause	Welding filters	Ultra-violet filters	Infra-red filters	Daylight filters	Clear protective lenses against impacts	Clear protective visors against high-speed particles	Clear cover plates	According to ISO	According to clause or sub-clause
Dimensions	4849	7.1.1	+	+	+	+	+	+	+	by measuring	
Optical requirements	4849	7.1.2.1.1	+	+	+	+	+	+	+	4854	3 or annex A
Diffusion of light	4849	7.1.2.2	+	+	+	+	+	+	+	4854	4
Quality of material and surface	4849	7.1.3	+	+	+	+	+	+	+	4854	5
Oculars for protection against high mass, low-speed particles	4849	7.1.4 and 7.1.4.1	— [1]	— [1]	— [1]	— [1]	+	—	—	4855	3
Protection against high-speed particles	4849	7.2.2.2	— [1]	— [1]	— [1]	— [1]	—	+	—	4855	9
Stability at elevated temperature	4849	7.1.5	+	+	+	+	+	+	+	4855	4
Stability to ultra-violet radiation	4849	7.1.6	+	+	+	+	+	+	+	4855	5
Ignition	4849	7.2.2.1	+	+	+	+	+	+	+	4855	6
Suitability for disinfection	4849	7.1.8	+	+	+	+	+	+	+	4855	8
Transmittance variations	4849	7.2.1.1	+	+	+	+	—	—	—	4849 and 4854	7.2.1.1 and 6
Transmittance of clear protective lenses and cover plates	4849	7.2.1.1.1	—	—	—	—	+	+	+	4854	6
Transmittance of welding filters	4850	4	+	—	—	—	—	—	—	4854	6
Transmittance of UV filters	4851	4	—	+	—	—	—	—	—	4854	6
Transmittance of IR filters	4852	4	—	—	+	—	—	—	—	4854	6
Transmittance of daylight filters	4853	4	—	—	—	+	—	—	—	4853	4
Identification	4849	9	+	+	+	+	+	+	+	Visual inspection	

Symbols : + = required
— = not required

1) In the case where the ocular is worn in areas of mechanical hazards this requirement shall be applied.

Infra-red filters and welding filters made of toughened glass are forbidden in some countries and allowed in some others on condition that an appropriate complementary protection is provided.

Table 2 — Synoptic table of requirements for frames and mounted oculars

Requirements	according to clause or sub-clause of ISO 4849	Type of goggle or spectacle — Code number[1]							Type of face-shield — Code number[1]						Testing	
		2	3	4	5	6	7	8	2	2/Y[2]	3	6	7	8	ISO	according to clause or sub-clause
		Protective goggle against high intensity impacts	Protective goggle against liquids	Protective goggle against dust	Protective goggle against gas and fine dust	Protective goggle against optical radiation	Protective goggle against molten metal	Protective goggle against short circuit-arc	Protective face-shield against high intensity impact	Protective face-shield against high-speed particles	Protective face-shield against liquid droplets	Hand-shield, face-shield and hood against arc electric welding and similar work	Protective face-shield against molten metal	Protective face-shield against short circuit-arc		
General construction	6.1	+	+	+	+	+	+	+[3]	+	+	+	+	+	+[3]	by visual inspection	
Comfort for the wearer	6.2	+	+	+	+	+	+	+	+	+	+	+	+	+	by visual inspection	
Headband	6.3	+	+	+	+	+	+	+	+	+	+	+	+	+	by measuring	
Optical qualities	7.1.2.1.2	+	+	+	+	+	+	+	+	+	+	+	+	+	4854	3 or annexes B or C
Protection against high mass, low-speed particles	7.1.4.2	+	+	+	+	+[4]	+	+	+	—	+	+[4]	+	+	4855	3
Stability at elevated temperature	7.1.5	+	+	+	+	+	+	+	+	+	+	+	+	+	4855	4
Resistance to corrosion	7.1.7	+	+	+	+	+	+	+	+	+	+	+	+	+	4855	7
Suitability for disinfection	7.1.8	+	+	+	+	+	+	+	+	+	+	+	+	+	4855	8
Ignition	7.2.2.1.1	+	+	+	+	+	+	+	+	+	+	+	+	+	4855	6
Protection against high-speed particles	7.2.2.2	—	—	—	—	—	—	—	—	+	—	—	—	—	4855	9
Protection against molten metal and hot solids	7.2.2.3	—	—	—	—	—	+	—	—	—	—	—	+	—	4855	10 and 11
Protection against chemical droplets	7.2.2.4	—	+	—	—	—	—	—	—	—	+	—	—	—	4855	12
Protection against dust	7.2.2.5	—	—	+	—	—	—	—	—	—	—	—	—	—	4855	13
Protection against gas	7.2.2.6	—	—	—	+	—	—	—	—	—	—	—	—	—	4855	14
Identification	9	+	+	+	+	+	+	+	+	+	+	+	+	+	by visual inspection	

Symbols : + = required
— = not required

1) Eye-protectors designed for protection against several hazards may be marked with multiple code numbers.

2) Y in the code number 2/Y represents the speed of the steel ball (see sub-clause 7.2.2.2 of ISO 4849).

3) Eye protectors shall not be made with metal or metal layers except hinges, screws and rivets.

4) In the case where the eye protector is intended for protection against radiation only, the mounted filters are exempted from this requirement.

Table 3 — Intended use of oculars in eye-protectors

Type of ocular	According to ISO	Type of eye-protector[1] Code number 2 — Eye-protector against high intensity impacts	2/Y[2] — Protective face-shield against high-speed particles	3 — Eye-protector against liquids	4 — Eye-protector against coarse dust	5 — Eye-protector against gas and fine dust	6 — Eye-protector against optical radiation	7 — Eye-protector against molten metal	8 — Eye-protector against short circuit-arc
Welding filters	4850	—	—	—	—	—	+	—	—
Ultra-violet filters	4851	—	—	—	—	—	+	—	+ [3]
Infra-red filters	4852	—	—	—	—	—	+	+	—
Daylight filters	4853	—	—	—	—	—	+	—	—
Clear protective lenses	4849	+	—	+	+	+	—	—	—
Clear protective visor against high-speed particles	4849	—	+	—	—	—	—	—	—
Clear cover plates	4849	—	—	—	—	—	+ [4]	+ [4]	—

Symbols : + = intended use
— = not intended use

1) Multiple marked eye-protectors may be fitted with different ocular types according to their marking.

2) Y in the code number 2/Y represents the speed of the steel ball (see sub-clause 7.2.2.2 of ISO 4849).

3) Only for oculars scale number 3-1.2 with protection against high mass, low-speed particles.

4) Only in combination with the appropriate filter in order to protect it against splashes and sparks.