

DIN EN 207:2010-04 (E)

Personal eye-protection equipment - Filters and eye-protectors against laser radiation (laser eye-protectors)

Contents	Page
Foreword	4
1 Scope	5
2 Normative references	5
3 Requirements	5
3.1 Spectral transmittance of filters and frames	5
3.2 Luminous transmittance of filters	5
3.3 Resistance of filters and frames to laser radiation	5
3.4 Refractive values of filters and eye-protectors	6
3.5 Quality of material and surface of filters	7
3.5.1 Material and surface defects	7
3.5.2 Diffusion of light	7
3.6 Stability of filters and eye-protectors to ultraviolet radiation and elevated temperature	7
3.6.1 Stability to ultraviolet radiation	7
3.6.2 Stability at elevated temperature	7
3.7 Resistance of filters and frames to ignition by contact with hot surfaces	7
3.8 Field of vision of eye-protectors	7
3.9 Construction of filters and frames	8
3.10 Mechanical strength of eye-protectors	8
3.10.1 Basic requirement	8
3.10.2 Optional requirements	8
4 Testing	8
4.1 General	8
4.2 Spectral transmittance of filters and frames	10
4.3 Luminous transmittance of filters	10
4.4 Resistance of filters and frames to laser radiation	10
4.5 Refractive value of filters and eye-protectors	11
4.6 Quality of material and surface of filters	11
4.6.1 Material and surface defects	11
4.6.2 Diffusion of light	11
4.7 Stability to UV radiation and stability to elevated temperature	11
4.7.1 Stability to UV radiation	11
4.7.2 Stability to elevated temperature	11
4.8 Resistance of filters and frames to ignition by contact with hot surfaces	11
4.9 Field of vision of eye-protectors	12
4.10 Determination of the protected range	12
4.11 Frames	13
4.12 Mechanical strength	13
5 Information supplied by the manufacturer	13
6 Marking	14
6.1 Eye-protectors	14
6.2 Filters	16
Annex A (informative) Principle	17
A.1 Limit values and time base	17

A.2	Beam areas	18
A.3	Angle dependence	19
A.4	Example test report	19
Annex B (informative) Recommendations for the use of laser radiation eye-protectors		22
B.1	General	22
B.2	Types of lasers	22
B.3	Determination of the scale numbers	23
B.3.1	General	23
B.3.2	Continuous wave laser (D)	23
B.3.3	Pulsed lasers (I, R), pulse duration 10^{-9} s	23
B.3.4	Mode coupled lasers (M), pulse duration $< 10^{-9}$ s	25
B.4	Time base	25
B.5	Filters in appliances	26
Annex C (informative) Significant technical changes between this European Standard and the previous edition		27
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 89/686/EEC		28
Bibliography		29