

DIN EN 12259-13:2023-02 (E)

Fixed firefighting systems - Components for sprinkler and water spray systems - Part 13: ESFR sprinklers

Contents		Page
European foreword		5
Introduction		6
1	Scope	7
2	Normative references	7
3	Terms and definitions	7
4	Assessment methods and criteria	10
4.1	Connections	10
4.1.1	Assessment method	10
4.1.2	Criteria	10
4.2	Leak resistance	11
4.2.1	Assessment method	11
4.2.2	Criteria	11
4.3	Pneumatic leak resistance	11
4.3.1	Assessment method	11
4.3.2	Criteria	11
4.4	Leakage resistance	11
4.4.1	Assessment method	11
4.4.2	Criteria	11
4.5	Function	11
4.5.1	Assessment method	11
4.5.2	Criteria	11
4.6	Operating temperatures	11
4.6.1	Assessment method	11
4.6.2	Criteria	11
4.7	Complete operation	12
4.7.1	Assessment method	12
4.7.2	Criteria	12
4.8	Size of water passageways	12
4.8.1	Assessment method	12
4.8.2	Criteria	12
4.9	Nominal operating temperature	12
4.9.1	Assessment method	12
4.9.2	Criteria	13
4.10	Distribution of extinguishing media	13
4.10.1	Assessment method	13
4.10.2	Criteria	14
4.11	Actual delivered density	14
4.11.1	Assessment method	14
4.11.2	Criteria	15
4.12	Extinguishing performance	15
4.12.1	Assessment method	15
4.12.2	Criteria	15
4.13	Discharge coefficient	16
4.13.1	Assessment method	16
4.13.2	Criteria	18
4.14	Thrust measurement	18

4.14.1	Assessment method	18
4.14.2	Criteria	18
4.15	Response delay (response time)	18
4.15.1	Assessment method	18
4.15.2	Criteria	19
4.16	Strength of sprinkler body and deflector	19
4.16.1	Assessment method	19
4.16.2	Criteria	19
4.17	Strength of release element	19
4.17.1	Assessment method	19
4.17.2	Criteria	19
4.18	Water hammer	19
4.18.1	Assessment method	19
4.18.2	Criteria	19
4.19	Strength of deflector	19
4.19.1	Assessment method	19
4.19.2	Criteria	20
4.20	Resistance to vibration	20
4.20.1	Assessment method	20
4.20.2	Criteria	20
4.21	Resistance to impact	21
4.21.1	Assessment method	21
4.21.2	Criteria	21
4.22	Resistance to low temperature	21
4.22.1	Assessment method	21
4.22.2	Criteria	21
4.23	Vacuum	21
4.23.1	Assessment method	21
4.23.2	Criteria	21
4.24	Heat exposure	21
4.24.1	Assessment method	21
4.24.2	Criteria	21
4.25	Thermal shock of glass bulb sprinklers	21
4.25.1	Assessment method	21
4.25.2	Criteria	22
4.26	Moist air	22
4.26.1	Assessment method	22
4.26.2	Criteria	22
4.27	Corrosion	22
4.27.1	Assessment method	22
4.27.2	Criteria	22
4.28	Product assembly	22
4.29	Durability, resistance to thermal shock	22
4.29.1	Assessment method	22
4.29.2	Criteria	22
5	Marking	22
6	Manufacturer's installation instructions	23
Annex A (informative)	Typical test setup for release under temperature test (liquid bath) 25 Annex	
B (normative)	Pipe manifold configuration for lodgement	26
Annex C (normative)	Pendent sprinkler water distribution	27
C.1	General	27
C.2	Values for pendent sprinkler water distribution	27
C.3	Test set-up	29
Annex D (normative)	Actual delivered density apparatus	34
D.1	General	34

D.2	Values for actual delivered density	34
D.3	Test set-up	36
D.4	Heptane burner settings	38
Annex E (normative) Extinguishing performance		39
E.1	General	39
E.2	Values for performance under fire	39
E.3	Fire test scenarios	40
E.4	Test set-ups	44
Annex F (normative) Thrust measurement		59
F.1	General	59
F.2	Values for thrust measurement	59
F.3	Test set-up	60
Annex G (normative) Sensitivity (response time index)		61
G.1	General	61
G.2	Test conditions	61
G.3	Test set-up	62
Annex H (normative) Tolerances		63
Bibliography		64