

ISO 6183:2022-03 (E)

Fire protection equipment - Carbon dioxide extinguishing systems for use on premises - Design and installation

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Use and limitations	4
4.1	General	4
4.2	Uses for carbon dioxide systems	4
4.3	Limitations for carbon dioxide systems	5
4.4	Temperature limitations	5
5	Safety	5
5.1	Hazard to personnel	5
5.2	Safety precautions	6
5.2.1	Normally occupied and normally unoccupied areas	6
5.2.2	Warning notices for occupiable areas	6
5.2.3	Warning notices for unoccupiable areas	9
5.3	Electrical hazards	10
5.4	Electrical earthing	11
5.5	Electrostatic discharge	11
6	System design	11
6.1	General	11
6.1.1	Introduction	11
6.1.2	Specifications	11
6.1.3	Working documents	12
6.2	Carbon dioxide supply	12
6.2.1	Quality	12
6.2.2	Quantity	12
6.2.3	Container arrangement	13
6.2.4	Storage containers	14
6.3	Distribution	16
6.3.1	General	16
6.3.2	Piping	17
6.3.3	Fittings	17
6.3.4	Pipe and valve support	17
6.3.5	Valves	18
6.3.6	Nozzles	18
6.4	Enclosures (total flooding)	19
6.4.1	Structural strength	19
6.4.2	Loss through openings	20
6.4.3	Ventilation systems	20
6.5	Detection, actuation and control systems	20
6.5.1	General	20
6.5.2	Shut-down of plant and equipment	20
6.5.3	Automatic detection	21
6.5.4	Operating devices	21
6.5.5	Control equipment	22
6.5.6	Audible alarms and visual indicators	23
6.6	Local control (LC) and local control stations (LCS)	24

7	Carbon dioxide flow and concentration calculations	24
7.1	General	24
7.2	System flow calculations	25
7.2.1	General	25
7.2.2	Friction losses	25
7.2.3	Pressure drop	25
7.2.4	Valves and fittings	26
7.2.5	As-installed calculations	26
7.2.6	Specific requirements	26
7.3	Carbon dioxide concentration requirements	26
7.3.1	Flame extinguishment	26
7.3.2	Inerting	27
7.4	Total flooding quantity	27
7.4.1	General	27
7.4.2	Design quantity	27
7.4.3	K_B factor	28
7.5	Design of local application systems	31
7.5.1	General	31
7.5.2	Carbon dioxide requirements	31
7.5.3	Rate by area method	31
7.5.4	Rate by volume method	33
7.6	Duration of protection — total flooding systems	34
7.7	System performance	35
7.7.1	Discharge time	35
7.7.2	Extended discharge	35
8	Commissioning and acceptance	35
8.1	General	35
8.2	Tests	35
8.2.1	General	35
8.2.2	Enclosure check	36
8.2.3	Review of mechanical components	36
8.2.4	Review of enclosure integrity	37
8.2.5	Review of electrical components	37
8.2.6	Preliminary functional tests	38
8.2.7	System functional operational test	39
8.2.8	Remote monitoring operations (if applicable)	39
8.2.9	Control panel primary power source	39
8.2.10	Completion of functional tests	39
8.3	Completion certificate and documentation	39
9	Inspection, maintenance, testing and training	40
9.1	General	40
9.2	Inspection	40
9.2.1	General	40
9.2.2	Container	40
9.2.3	Hose	40
9.2.4	Enclosures	40
9.3	Maintenance	41
9.3.1	General	41
9.3.2	User's programme of inspection	41
9.3.3	Service schedule	41
9.4	Training	41
	Annex A (normative) Working documents	42
	Annex B (normative) Carbon dioxide system pipe and orifice size determination	49
	Annex C (informative) System performance verification	57
	Annex D (informative) General information on carbon dioxide	58
	Annex E (informative) Examples of calculations	63
	Bibliography	68