

ISO 6183:2009-06 (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	5
5.2.1	Normally occupied and normally unoccupied areas	5
5.2.2	Warning notices for occupiable areas	6
5.2.3	Warning notices for unoccupiable areas	9
5.3	Electrical hazards	9
5.4	Electrical earthing	10
5.5	Electrostatic discharge	10
6	System design	10
6.1	General	10
6.1.1	Specifications	11
6.1.2	Working documents	11
6.2	Carbon dioxide supply	11
6.2.1	Quality	11
6.2.2	Quantity	11
6.2.3	Container arrangement	12
6.2.4	Storage containers	12
6.3	Distribution	14
6.3.1	General	14
6.3.2	Piping	14
6.3.3	Fittings	15
6.3.4	Pipe and valve supports	15
6.3.5	Valves	16
6.3.6	Nozzles	16
6.4	Enclosures (total flooding)	17
6.4.1	Structural strength	17
6.4.2	Loss through openings	17
6.4.3	Ventilation systems	18
6.5	Detection, actuation and control systems	18
6.5.1	General	18
6.5.2	Shut-down of plant and equipment	18
6.5.3	Automatic detection	18
6.5.4	Operating devices	18

6.5.5	Control equipment	19
6.5.6	Operating alarms and indicators	20
7	Carbon dioxide flow and concentration calculations	20
7.1	General	20
7.2	System flow calculations	20
7.2.1	General	20
7.2.2	Friction losses	20
7.2.3	Pressure drop	20
7.2.4	Valves and fittings	21
7.2.5	As-installed calculations	21
7.2.6	Specific requirements	21
7.3	Carbon dioxide concentration requirements	22
7.3.1	Flame extinguishment	22
7.3.2	Determination of the design concentration	22
7.3.3	Inerting	22
7.4	Total flooding quantity	23
7.4.1	General	23
7.4.2	Design quantity	23
7.4.3	KB factor	23
7.5	Design of local application systems	25
7.5.1	General	25
7.5.2	Carbon dioxide requirements	25
7.5.3	Rate by area method	26
7.5.4	Rate by volume method	27
7.6	Duration of protection	29
7.7	System performance	29
7.7.1	Discharge time	29
7.7.2	Extended discharge	29
8	Commissioning and acceptance	30
8.1	General	30
8.2	Tests	30
8.2.1	General	30
8.2.2	Enclosure check	30
8.2.3	Review of mechanical components	30
8.2.4	Review of enclosure integrity	31
8.2.5	Review of electrical components	31
8.2.6	Preliminary functional tests	32
8.2.7	System functional operational test	32
8.2.8	Remote monitoring operations (if applicable)	33
8.2.9	Control panel primary power source	33
8.2.10	Completion of functional tests	33
8.3	Completion certificate and documentation	33
9	Inspection, maintenance, testing and training	33
9.1	General	33
9.2	Inspection	33
9.2.1	General	33
9.2.2	Container	34
9.2.3	Hose	34
9.2.4	Enclosures	34
9.3	Maintenance	34
9.3.1	General	34
9.3.2	User's programme of inspection	34
9.3.3	Service schedule	35
9.4	Training	35
Annex A (normative)	Working documents	36
Annex B (normative)	Carbon dioxide system pipe and orifice size determination	38

Annex C (informative) System performance verification46
Annex D (informative) General information on carbon dioxide47
Annex E (informative) Examples of calculations52