ISO 11933-4:2001-05 (E)

Components for containment enclosures - Part 4: Ventilation and gas-cleaning systems such as filters, traps , safety and regulation valves, control and protection devices

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Terms, definitions and symbols 2

4 Functions of ventilation and gas-cleaning systems 5
4.1 Purpose 5
4.2 Containment 5
4.3 Gas cleaning and dilution 5
4.4 Filtration and trapping 5
4.5 System limitations 6

5 Safety and protection principles and requirements 6
5.1 General 6
5.2 Safety 6
5.3 Protection of material and handled products 6
5.4 Fire protection 6

6 Basic data relevant to ventilation and gas cleaning 8
6.1 General 8
6.2 Enclosure network 8
6.3 General extraction network 9

7 Design 9
7.1 Types of enclosure network 9
7.2 Permanency during filter exchange 11
7.3 Location of extraction filters on shielded enclosures 18
7.4 Reservation for flow rate measurement 19
7.5 Dimensioning of purification stations 19

8 Dimensioning of ventilation and gas-cleaning systems 19
8.1 Principle 19
8.2 Filters 19
8.3 Activated carbon (iodine) traps 20
8.4 Linking (connection) devices 21
8.5 Control devices 22
8.6 Fans 22

9 Regulation devices 22
9.1 General 22
9.2 Actuating fluids 23
9.3 Positioning 23
9.4 Regulation devices -- Examples 23

10 Safety-flow-rate systems 33
10.1 General 33
10.2 Safety valves -- Examples 33

11 Protection devices 41
11.1 General 41
11.2 Positioning 42
11.3 Hydraulic valves -- Examples 42
11.4 Mechanical valves 45

12 Air-cleaning systems 45
12.1 Filters 45
12.2 Trapping devices 56
12.3 Filter housings 59

13 Pressure measurement devices (manometers, pressure controllers) 64
13.1 General 64
13.2 Manometers 65
13.3 Pressure controller 67

14 Operation, control and maintenance of ventilation and air-cleaning systems 67
14.1 Checking ventilation flow rates 67
14.2 Checking protection valve liquid levels 68
14.3 Gas-cleaning-device maintenance (checking filter clogging) 68
14.4 Filter replacement 69

Annex A (normative) Containment enclosures 73

Annex B (informative) Ventilation filter standardization 76

Bibliography 80