DIN EN 13565-2:2020-03 (E)

Fixed firefighting systems - Foam systems - Part 2: Design, construction and maintenance (includes Amendment :2019)

Contents

Page

European foreword 5

Introduction 6

1 Scope 7

2 Normative references 7

3 Terms and definitions 8
3.1 Definitions 8
3.2 Abbreviations 12

4 Foam extinguishing systems 12
4.1 General 12
4.1.1 General requirements 12
4.1.2 Application rates 13
4.1.3 Environmental considerations 14
4.1.4 Planning 14
4.1.5 Documentation 15
4.1.6 Supplementary manual foam fire fighting provisions 15
4.1.7 Equipment 15
4.2 Water supply 16
4.2.1 Water demand 16
4.2.2 Operating time 16
4.2.3 Quality of water 16
4.2.4 Power supply for water pumps 17
4.3 Foam concentrate 17
4.3.1 General 17
4.3.2 Foam concentrate supply - low and medium expansion foams 17
4.3.3 Foam concentrate pumps 18
4.3.4 Supplementary external connections 18
4.4 Foam proportioners 18
4.5 Pipework 18
4.5.1 Water and foam solution pipework 18
4.5.2 Foam concentrate piping 19
4.5.3 Non Newtonian foam concentrate 19
4.5.4 Piping of aspirated foam (including that for subsurface foam applications) 19
4.5.5 Marking 19
4.6 Foam discharge outlets and generators 20
4.7 Operation and control systems 20
4.7.1 Detection of fires 20
4.7.2 Release of fixed foam extinguishing systems 20
4.7.3 Alarms 21

5 Flammable liquid storage tanks, bunds and process areas 21
5.1 General 21
5.2 Fixed cone roof tanks 23
5.2.1 General 23
5.2.2 Sub surface 24
5.2.3 Restrictions for semi-subsurface-mode 25
5.2.4 Restrictions for subsurface mode 25

5.3 Floating roof tanks 26
5.3.1 General 26
5.3.2 Number of foam discharge outlets for floating roof tanks 26
5.3.3 Rimseal protection 26
5.4 Bunded/diked areas and process areas 28

6 Foam sprinkler and deluge systems 30
6.1 Deluge systems 30
6.1.1 Deluge applications 30
6.1.2 Deluge limitations 30
6.1.3 Deluge design 30
6.2 Foam enhanced sprinkler systems 30
6.2.1 Foam enhanced sprinkler applications 30
6.2.2 Foam enhanced sprinkler limitations 30
6.2.3 Foam enhanced sprinkler design 30
6.3 Foam concentrate 31
6.3.1 Aspirated foams 31
6.3.2 Non aspirated foams 31
6.4 Foam proportioning 31
6.5 Drain and flushing connections 31
6.6 Supplementary hose streams 33

7 High expansion foam systems 33
7.1 General 33
7.2 Foam concentrate 34
7.3 Equipment 34
7.4 System design 34
7.5 Equipment location considerations 34
7.6 Personnel safety 34
7.7 Discharge rate 35
7.8 Discharge time 35

8 Marine loading and unloading docks 35
8.1 Water supplies 35
8.2 Foam concentrate 36
8.3 Foam water monitors 36
8.4 Below dock foam systems 36

9 Aircraft hangars 36
9.1 General 36
9.2 Fire detection 36
9.3 System design philosophy 37
9.4 System duration 39
9.5 Foam and water pumps 39
9.6 Acceptable application methods 39
9.7 Foam types 39
9.8 Monitors 39
9.9 Foam-water deluge systems 39
9.10 Medium expansion systems (Type 3 hangars only) 40
9.11 High expansion systems 40
9.12 Handlines 40
9.13 Commissioning tests 40

10 Liquefied flammable gases (LNG/LPG) 41
10.1 General 41
10.1.1 Liquefied Natural Gas (LNG) 41
10.1.2 Liquefied Petroleum Gas (LPG) 41
10.2 Controlled burn-off 41
10.3 Un-ignited spills 41
10.4 Fire detection 42
10.5 Foam properties 42
10.6 Foam proportioning system 42

10.7 Application techniques 42

11 Commissioning, testing, and periodic inspections 43
11.1 Instruction of operating personnel 43
11.2 Commissioning 43
11.2.1 General 43
11.2.2 Visual inspection 43
11.2.3 Pressure tests 43
11.2.4 Tests 43
11.2.5 Completion certificate 43
11.3 The periodic inspection and testing of foam systems 44
11.3.1 General 44
11.3.2 Inspections 44
11.4 Shut-down 46
11.5 Maintenance 46
11.6 Alterations 46

Bibliography 47