

Contents

Page

European foreword.....	7
Introduction	8
1 Scope	9
2 Normative references	10
3 Terms, definitions, symbols and abbreviated terms.....	15
3.1 Terms and definitions	15
3.1.1 General.....	15
3.1.2 Components	17
3.1.3 Pipeline.....	21
3.1.4 Control and safety devices for feed pumps.....	22
3.1.5 Supply systems.....	24
3.1.6 Pressure related terms	25
3.1.7 Temperature related terms.....	27
3.1.8 Flow related terms.....	27
3.1.9 Other terms	28
3.2 Symbols and abbreviated terms	30
4 Characteristics	31
4.1 General.....	31
4.2 Reaction to fire.....	31
4.3 Tightness in case of fire	31
4.4 Crushing strength.....	31
4.5 Internal pressure strength	32
4.5.1 Characteristics for pressurised systems.....	32
4.5.2 Characteristics for negative pressurised systems.....	33
4.6 External pressure strength.....	33
4.7 Longitudinal bending strength.....	33
4.8 Maximum load for admissible deformation	33
4.9 Dimensional Tolerance.....	34
4.10 Impact resistance.....	34
4.11 Electrostatic behaviour.....	34
4.12 Tightness.....	34
4.12.1 External tightness	34
4.12.2 Internal tightness.....	35
4.13 Permeability	35
4.14 Effectiveness of safety devices.....	36
4.14.1 Control and safety devices for feed pumps.....	36
4.14.2 Pressure compensating device.....	37
4.14.3 Anti-siphon safety device	38
4.14.4 Remote acting fire safety valve	41
4.14.5 Safety shut-off device.....	41
4.15 Release of dangerous substances.....	41
4.16 Noise level.....	41
4.17 Durability	42
4.17.1 Durability against chemical attack	42
4.17.2 Durability against external corrosion	44

4.17.3	Durability in case of extended temperatures.....	44
4.17.4	Durability against ultraviolet light.....	45
4.17.5	Durability against nominal lifetime operation.....	45
4.17.6	Resistance to humidity	49
5	Testing, assessment and sampling methods.....	49
5.1	General tests.....	49
5.1.1	General	49
5.1.2	Visual inspection.....	49
5.1.3	Dimensional test	49
5.2	Reaction to fire	49
5.3	Tightness in case of fire	50
5.4	Crushing strength	50
5.4.1	Purpose of crushing strength test for pipeline connections	50
5.4.2	Test method.....	50
5.5	Internal pressure strength.....	50
5.5.1	Pressure test.....	50
5.5.2	Vacuum test	53
5.6	Testing of external pressure strength (Flood resistance)	54
5.6.1	Test purpose.....	54
5.6.2	Test procedure	54
5.6.3	Test pressure.....	54
5.6.4	Test duration.....	54
5.7	Longitudinal bending strength	54
5.8	Maximum load for admissible deformation	54
5.9	Dimensional Tolerance	54
5.10	Impact resistance	54
5.11	Electrostatic behaviour	54
5.12	Tightness.....	54
5.12.1	General	54
5.12.2	External tightness test	55
5.12.3	Internal tightness test.....	57
5.13	Permeability test	58
5.14	Effectiveness of safety devices.....	58
5.14.1	Control and safety devices for feed pumps	58
5.14.2	Pressure compensating device	60
5.14.3	Anti-siphon safety device.....	61
5.14.4	Remote acting fire safety valve.....	65
5.14.5	Safety shut-off device	67
5.15	Release of dangerous substances	67
5.16	Noise level	67
5.16.1	Test purpose.....	67
5.16.2	Test procedure	67
5.17	Durability	68
5.17.1	Durability against chemical attack.....	68
5.17.2	Durability against external corrosion.....	71
5.17.3	Durability in case of extended temperatures.....	71
5.17.4	Durability against ultraviolet light.....	71
5.17.5	Durability against nominal lifetime operation.....	71
5.17.6	Resistance to humidity	77
5.18	Additional requirements	77
5.18.1	Construction requirements	77
5.18.2	Maximum/minimum allowable temperature	78

5.18.3	Flow resistance	78
5.18.4	Environmental considerations.....	81
5.18.5	Electrical safety.....	81
5.18.6	Instruction for installation, operation and maintenance.....	81
5.19	Functional requirements.....	81
5.19.1	Feed pump	81
5.19.2	Service tank.....	81
5.19.3	Service vessel.....	82
5.19.4	Isolating valve	82
5.19.5	Quick-acting valve.....	82
5.19.6	Switch-over valve	82
5.19.7	Forced switch-over valve	82
5.19.8	Check valve.....	82
5.19.9	Discharge valve	82
5.19.10	Pressure reducer	84
5.19.11	Filter	86
5.19.12	Meter	87
5.19.13	De-aerator	87
5.19.14	Insulating device	89
5.19.15	Pressure gauge.....	89
5.19.16	Vapour/air separator	89
5.19.17	Pressure control path.....	89
5.19.18	Pressure retaining device.....	90
5.19.19	Pipe	91
5.19.20	Type testing for pipeline connections.....	91
5.19.21	Combined component	93
5.19.22	Withdrawal device	93
6	Assessment and verification of constancy of performance (AVCP)	93
6.1	General.....	93
6.2	Type testing.....	93
6.2.1	General.....	93
6.2.2	Test samples, testing and compliance criteria.....	94
6.2.3	Test reports.....	128
6.2.4	Shared other party results.....	128
6.2.5	Cascading determination of the product type results	129
6.3	Factory production control (FPC)	130
6.3.1	General.....	130
6.3.2	Requirements.....	130
6.3.3	Product specific requirements.....	133
6.3.4	Initial inspection of factory and of FPC	133
6.3.5	Procedure for modifications	134
6.3.6	One-off products, pre-production products (e.g. prototypes) and products produced in very low quantity	134
7	Marking, labelling and packaging	135
7.1	General.....	135
7.2	Marking.....	135
7.3	Packaging.....	137
8	Additional and functional requirements.....	137
8.1	Additional requirements.....	137
8.1.1	Construction requirements.....	137
8.1.2	Maximum/minimum allowable temperature.....	137
8.1.3	Flow resistance	138

8.1.4	Environmental considerations	140
8.1.5	Electrical safety	141
8.1.6	Instruction for installation, operation and maintenance	141
8.2	Functional requirements	141
8.2.1	Feed pump.....	141
8.2.2	Service tank	143
8.2.3	Service vessel	144
8.2.4	Isolating valve	144
8.2.5	Quick-acting valve	144
8.2.6	Switch-over valve.....	144
8.2.7	Forced switch-over valve	144
8.2.8	Check valve	144
8.2.9	Discharge valve	145
8.2.10	Pressure reducer	146
8.2.11	Filter	148
8.2.12	Meter	150
8.2.13	De-aerator	150
8.2.14	Insulating device.....	151
8.2.15	Pressure gauge	151
8.2.16	Vapour/air separator.....	151
8.2.17	Pressure control path	152
8.2.18	Pressure retaining device.....	152
8.2.19	Pipe	152
8.2.20	Pipeline connections	153
8.2.21	Combined component.....	157
8.2.22	Withdrawal device	157
Annex A (informative)	National technical documents for liquid fuels.....	159
A.1	General	159
A.2	Category A: Liquid fuels derived from petroleum refining processes	159
A.3	Category B: Liquid fuels from renewable resources.....	160
A.4	Category C: Combinations of category A and B	160
Annex B (normative)	Metallic materials for components and parts.....	161
Annex C (normative)	Instructions for installation, operation and maintenance	178
C.1	General	178
C.2	Contents	178
Annex D (informative)	Examples for the installation of the components in supply systems	181
Annex E (informative)	Environmental aspects	190
Annex F (informative)	Environmental checklist	191
Annex G (informative)	Vocabulary	193
Annex H (normative)	Machine safety requirements and/or protective measures	197
H.1	General	197
H.2	List of significant hazards.....	197
H.3	Safety requirements and /or protective measures	198
H.3.1	General	198

H.3.2	Mechanical safety, stability and control devices	198
Annex I (normative)	Rigid metallic pipes within the scope of EN 12514.....	200
I.1	Rigid metallic pipes for above ground installations.....	200
I.1.1	General.....	200
I.1.2	Rigid metallic pipes from non-alloy and alloy steels	200
I.1.3	Pipes from stainless austenitic steels.....	200
I.1.4	Copper and copper alloy pipes.....	200
I.1.5	Aluminium pipes	200
I.2	Rigid metallic pipes for underground installations	200
Annex J (informative)	Union nut G 3/8 with 60° internal cone as pipeline connection	201
Annex K (informative)	Stud connectors with sealing ring	202
K.1	General.....	202
K.2	Stud end of stud connector	202
K.3	Sealing ring.....	203
K.3.1	Dimensions and designation.....	203
K.3.2	Materials.....	204
Annex L (informative)	Compression fittings for components with G 3/8 internal thread.....	205
L.1	General.....	205
L.2	Materials.....	205
L.3	Design types	205
L.3.1	Design type G	205
L.3.2	Design type A	207
L.3.3	Design type O	209
Annex M (informative)	Stud connectors with o-ring.....	211
M.1	General.....	211
M.2	Port.....	211
M.3	O-Ring.....	213
M.4	Material.....	213

European foreword

This document (EN 12514:2020) has been prepared by Technical Committee CEN/TC 47 “Atomizing oil burners and their components - Function - Safety - Testing”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2021, and conflicting national standards shall be withdrawn at the latest by April 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12514-1:2000 and EN 12514-2:2000.

This document has been prepared under a standardization request given to CEN by the European Commission and the European Free Trade Association, and supports essential characteristics of EU Directives.

In comparison to EN 12514-1:2000 and EN 12514-2:2000, the following fundamental changes are given:

- standard new structured;
- new components for supply systems included;
- technical characteristics and requirements revised;
- updating of the terms and definitions;
- merging of components to type series;
- fuels categorized and new fuels added;
- nominal lifetime defined;
- essential characteristic for flood proof components included;
- selections of materials;
- marking, packing and instructions revised;
- inclusion of Annex ZA giving the correspondance to the Measuring Instruments Directive (MID) 2014/32/EU.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

Pressure values given in this standard are given as gauge pressure (pressure exceeding atmospheric pressure) unless noted otherwise. Vacuum (negative pressure) is therefore designated by a negative value.

QUESTO DOCUMENTO È UNA PREVIEW. RIPRODUZIONE VIETATA

1 Scope

This document specifies the safety and performance essential characteristics and tests methods for the components for supply systems. Their intended use is the supply with liquid fuel for one or more consuming units from one or more tanks.

This document applies to components for pressurised, negative pressurised, (vacuum), non-pressurised, underground, above ground, inside and/or outside systems to supply liquid fuels.

The components for supply systems covered by this document are piping kits/systems with the following components:

- a) feed pump;
- b) control and safety device for feed pumps;
- c) service tank;
- d) service vessel;
- e) safety shut-off device;
- f) isolating valve;
- g) quick acting valve;
- h) switch-over valve;
- i) forced switch-over valve;
- j) check valve;
- k) pressure compensating device;
- l) discharge valve;
- m) pressure reducer;
- n) filter;
- o) meter;
- p) de-aerator;
- q) anti-siphon safety device;
- r) insulating device;
- s) pressure gauge;
- t) vapour/air separator;
- u) pressure control path;
- v) pressure retaining device;
- w) remote acting fire safety valve;
- x) pipe;
- y) pipeline connections;
- z) component within pipes;
- aa) combined component;
- bb) withdrawal device.

Not covered by this document are items belonging to the consuming unit (e.g.: heating/cooling appliances in buildings) and items used for the mounting and support of components.

Not covered by this document are items with the intended use of gas for building heating/cooling systems and any items of heating networks.

Not covered are items used for drainage (including highways) and disposal of other liquids and gaseous waste, supply of oil and other liquids, supply of gases, pressure and vacuum systems, communications, sanitary and cleaning fixtures and storage fixtures.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 573-3:2019, Aluminium and aluminium alloys - Chemical composition and form of wrought products - Part 3: Chemical composition and form of products

EN 682:2002+A1:2005, *Elastomeric Seals - Materials requirements for seals used in pipes and fittings carrying gas and hydrocarbon fluids*

EN 754:2016 (All parts), *Aluminium and aluminium alloys - Cold drawn rod/bar and tube*

EN 755:2016 (All Parts), *Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 1: Technical conditions for inspection and delivery*

EN 806-4:2010, *Specifications for installations inside buildings conveying water for human consumption — Part 4: Installation*

EN 809:1998+A1:2009 + AC:2010, *Pumps and pump units for liquids - Common safety requirements*

EN 837-1:1996, *Pressure gauges - Part 1: Bourdon tube pressure gauges - Dimensions, metrology, requirements and testing*

EN 837-2:1997, *Pressure gauges - Part 2: Selection and installation recommendations for pressure gauges*

EN 837-3:1996, *Pressure gauges - Part 3: Diaphragm and capsule pressure gauges - Dimensions, metrology, requirements and testing*

EN 1057:2006+A1:2010, *Copper and copper alloys - Seamless, round copper tubes for water and gas in sanitary and heating applications*

EN 1092 (All parts), *Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated*

EN 1127-1:2019, *Explosive atmospheres - Explosion prevention and protection - Part 1: Basic concepts and methodology*

EN 1254 (All parts except part 6), *Copper and copper alloys - Plumbing fittings*

EN 1267:2012, *Industrial valves - Test of flow resistance using water as test fluid*

EN 1363-1:2018, *Fire resistance tests - Part 1: General requirements*

EN 10151:2002, *Stainless steel strip for springs - Technical delivery conditions*