

DIN EN 15551:2022-10 (E)

Railway applications - Railway rolling stock - Buffers

Contents		Page
European foreword		6
Introduction		8
1	Scope	9
2	Normative references	9
3	Terms and definitions	11
4	Classification and designation	14
4.1	General	14
4.2	Buffers with buffer stroke 105 mm (Categories A, B and C)	14
4.3	Buffers with buffer stroke 110 mm	14
4.4	Long stroke buffer 150 mm	14
4.5	Crashworthy Buffers	14
5	Requirements	15
5.1	General	15
5.2	Fixing on vehicle and interchangeability	15
5.3	Buffer dimensions	17
5.4	Mechanical characteristics of buffers	17
5.5	Elastic systems	20
5.5.1	Types of elastic systems	20
5.5.2	Static characteristics	20
5.5.3	Dynamic characteristics	22
5.6	Marking	22
6	Housing	24
6.1	Plunger and base	24
6.2	Buffer head	24
6.2.1	Materials	24
6.2.2	Standard dimensions of buffer head	24
6.3	Type and series tests	25
7	Crashworthy buffers	26
7.1	On wagons	26
7.2	On other vehicles	26
Annex A (normative) Maximum space envelope of buffer		27
A.1	Requirements for space envelope of buffer	27
A.1.1	Buffers for freight wagons	27
A.1.2	Buffers for coaches	30
A.2	Notes on the definition envelopes for overall dimensions of Buffers for freight wagons ...	31
A.2.1	General	31
A.2.2	Study relating to definition of the envelope	32
Annex B (normative) Mechanical characteristics of buffers - Test methods		34
B.1	General	34
B.2	Test methodology	34

B.2.1	General	34
B.2.2	Force F1	35
B.2.3	Force F2	35
B.2.4	Force F3	35
B.2.5	Force F4	35
B.2.6	Force F5	35
B.2.7	Force F6	36
B.3	Test documentation	36
Annex C (normative) Requirements for elastic systems		38
C.1	Rubber elastomer or other elastomer elastic systems	38
C.1.1	General	38
C.1.2	Metal inserts	38
C.1.3	Constituents of rubber elastomer and/ or elastomer systems	38
C.1.4	Static characteristics of the spring sets	40
C.1.5	Dynamic characteristics of the spring sets	40
C.1.6	Bonding	40
C.1.7	Marking	40
C.1.8	Inspection and tests	40
C.2	Friction spring/ ring spring	42
C.2.1	Manufacturer's marks	42
C.2.2	Flexibility test	42
C.2.3	Endurance test	43
C.2.4	Static characteristics for friction spring/ ring spring	43
C.2.5	Dynamic characteristics for friction spring/ ring spring	43
C.3	Hydrodynamic or hydrostatic systems	43
C.3.1	General	43
C.3.2	Absorbing energy medium	44
C.3.3	Static test of capsules	44
C.4	Combined elastic systems	45
Annex D (normative) Testing of static characteristics of buffers		46
D.1	Test principle	46
D.2	Test procedure	46
D.3	Measurements	46
Annex E (normative) Dynamic testing		47
E.1	Dynamic testing of buffer	47
E.1.1	General	47
E.1.2	Temperature effects	49
E.2	Dynamic characteristics of 105 mm stroke buffer	49
E.2.1	Test programme	49
E.2.2	Tests for Category A to C	51
E.2.3	Summary of Tests on Category A to C	53
E.2.4	Comments on the test conditions	54
E.3	Dynamic characteristics of 150 mm stroke buffer	54
E.3.1	General	54
E.3.2	Comments on test conditions	55
E.4	Dynamic characteristics of 110 mm stroke buffers	55
Annex F (normative) Endurance testing under service load for elastic system		57
F.1	Aim of the test	57
F.2	Test principle	57
F.3	Test results to be obtained	57
F.4	Test procedure	58
F.4.1	Endurance test assembly	58
F.4.2	Preliminary test	58
F.4.3	Endurance test	59

F.4.4	Final static test	59
Annex G (normative) Endurance testing under buffing load for life cycle simulation		60
G.1	Endurance tests for elastic systems for freight wagons	60
G.1.1	Aim of the test	60
G.1.2	Test principle	60
G.1.3	Test results to be obtained	60
G.1.4	Test procedure	60
G.1.5	Delivery of elastic systems	62
G.2	Endurance test for elastic system for coaches	63
G.2.1	General	63
G.2.2	Tests under alternating loads	63
G.2.3	Repeated buffing tests	64
G.2.4	Conditions to be observed	64
Annex H (informative) Guidelines for buffer head materials		65
H.1	Example of test programme requirements for verification of buffer head materials	65
H.2	Buffer head materials	66
Annex I (normative) Crashworthy buffers for tank wagons		68
I.1	Requirements for crashworthy buffers	68
I.1.1	Objectives	68
I.1.2	Additional requirements	68
I.2	Test procedure for crashworthy buffers	68
Annex J (normative) Maximum space envelope of crashworthy buffers		70
Annex ZA (informative) Relationship between this European Standard and the Essential requirements of EU Directive 2016/797/EC aimed to be covered		73
Bibliography		75