

ISO 22762-3:2018 (E)

Elastomeric seismic-protection isolators — Part 3: Applications for buildings — Specifications

Contents

	Foreword
	Introduction
1	Scope
2	Normative references
3	Terms and definitions
4	Symbols
5	Classification
5.1	General
5.2	Classification by construction
5.3	Classification by tolerance on shear properties
6	Requirement
6.1	General
6.2	Type tests and routine tests
6.3	Functional requirements
6.4	Design compressive force and design shear displacement
6.5	Performance requirements
6.5.1	General
6.5.2	Compressive properties
6.5.2.1	General requirements
6.5.2.2	Test piece
6.5.2.3	Test condition
6.5.3	Shear properties
6.5.3.1	General requirements
6.5.3.2	Test piece
6.5.3.3	Test conditions
6.5.4	Tensile properties
6.5.4.1	General requirements
6.5.4.2	Test piece
6.5.4.3	Test conditions
6.5.5	Dependencies of shear properties
6.5.5.1	Shear strain dependency
6.5.5.1.1	General requirements
6.5.5.1.2	Test piece
6.5.5.1.3	Test conditions
6.5.5.2	Compressive stress dependency
6.5.5.2.1	General requirements
6.5.5.2.2	Test conditions
6.5.5.3	Frequency dependency
6.5.5.3.1	General requirements
6.5.5.3.2	Test piece
6.5.5.3.3	Test conditions
6.5.5.4	Repeated loading dependency
6.5.5.4.1	General requirements
6.5.5.4.2	Test piece
6.5.5.4.3	Test conditions
6.5.5.5	Temperature dependency

- 6.5.5.5.1 General requirements
- 6.5.5.5.2 Test piece
- 6.5.5.5.3 Test conditions
- 6.5.6 Dependencies of compressive properties
 - 6.5.6.1 Shear strain dependency
 - 6.5.6.1.1 General requirements
 - 6.5.6.1.2 Test piece
 - 6.5.6.1.3 Test conditions
 - 6.5.6.2 Compressive stress dependency
 - 6.5.6.2.1 General requirements
 - 6.5.6.2.2 Test piece
 - 6.5.6.2.3 Test conditions
- 6.5.7 Shear displacement capacity
 - 6.5.7.1 General requirements
 - 6.5.7.2 Test piece
 - 6.5.7.3 Test conditions
- 6.5.8 Durability
 - 6.5.8.1 Change in properties on ageing
 - 6.5.8.1.1 General requirements
 - 6.5.8.1.2 Test piece
 - 6.5.8.2 Creep
 - 6.5.8.2.1 General requirements
 - 6.5.8.2.2 Test piece
- 6.6 Rubber material requirements
 - 6.6.1 General
 - 6.6.2 Tensile properties
 - 6.6.3 Properties after ageing in air
 - 6.6.3.1 General requirements
 - 6.6.3.2 Test conditions
 - 6.6.4 Hardness
 - 6.6.5 Ozone resistance
 - 6.6.6 Other properties
- 6.7 Dimensional requirements
- 6.8 Requirements on steel used for flanges and reinforcing plates
- 6.9 Requirement on lead material for LRB
- 7 Design rules
 - 7.1 General
 - 7.2 Shape factor
 - 7.2.1 First shape factor
 - 7.2.2 Second shape factor
 - 7.3 Compression and shear properties
 - 7.3.1 Compressive stiffness
 - 7.3.2 Shear stiffness and equivalent damping ratio
 - 7.4 Ultimate properties
 - 7.4.1 Stability at zero displacement
 - 7.4.2 Stability and failure under large shear displacements
 - 7.4.3 Roll-out properties of isolators with recessed or dowelled connections (Type III)
 - 7.4.4 Tensile properties
 - 7.5 Reinforcing steel plates
 - 7.6 Connections
- 8 Manufacturing tolerances
 - 8.1 General
 - 8.2 Measuring instruments
 - 8.3 Plan dimensions
 - 8.3.1 Measurement method
 - 8.3.2 Tolerances
 - 8.4 Product height
 - 8.4.1 Measurement method
 - 8.4.2 Tolerances
 - 8.5 Flatness
 - 8.5.1 Measurement method
 - 8.5.2 Tolerances

8.6	Horizontal offset
8.7	Plan dimensions of flanges
8.8	Flange thickness
8.9	Tolerances on positions of flange bolt holes
9	Marking and labelling
9.1	General
9.2	Information to be provided
9.3	Additional requirements
9.4	Marking and labelling examples
10	Test methods
11	Quality assurance
Annex A	(normative) Tensile stress in reinforcing steel plate
A.1	Method for checking strength of reinforcing steel plate
A.2	Verification of Formula (A.1) by compressive failure testing of isolators
A.2.1	General
A.2.2	Test pieces
A.2.3	Test conditions
A.2.4	Test results
Annex B	(normative) Determination of ultimate property diagram based on experimental results
B.1	Test piece
B.2	Testing machine
B.3	Testing parameters
B.3.1	Compressive load
B.3.2	Compression-shear testing
B.3.3	Test temperature
B.4	Interpretation of results
Annex C	(informative) Minimum recommended physical properties of rubber material
Annex D	(informative) Effect of inner-hole diameter and second shape factor on shear properties
D.1	Effect of inner-hole diameter on compressive-stress dependency of shear stiffness
D.2	Effect of second shape factor on compressive-stress dependency of shear stiffness
D.3	Effect of second shape factor on change in isolator height during compression-shear loading
Annex E	(informative) Determination of compressive properties of elastomeric isolators
Annex F	(informative) Determination of shear properties of elastomeric isolators
F.1	Shear properties of linear natural rubber bearings
F.2	Shear properties of high-damping rubber bearings
F.3	Shear properties of lead rubber bearings
Annex G	(informative) Method of predicting buckling limit at large deformations
G.1	General
G.2	Buckling-limit calculation
G.3	Verification of Formula (G.1) by isolator tests
Annex H	(informative) Design of fixing bolts and flanges
H.1	Fixing bolts
H.2	Flanges