ISO 12402-7:2020 (E)

Personal flotation devices — Part 7: Materials and components — Safety requirements and test methods

Contents

Foreword

Introduction

1 Scope

2 Normative references

3 Terms and definitions

4 Materials and components

4.1 General
4.1.1 Principles
4.1.2 Sampling
4.1.3 Pass or fail criteria
4.1.4 Units of measurement
4.1.5 Material
4.1.5.1 Non-metallic components and fabrics
4.1.5.2 Corrosion of metal components
4.1.5.3 Magnetic properties
4.1.5.4 Innocuousness
4.1.6 Sample conditioning
4.1.6.1 General
4.1.6.2 Standard conditioning
4.1.6.3 Temperature cycling
4.1.6.4 Accelerated weathering
4.2 Sewing thread
4.2.1 Construction
4.2.2 Performance
4.2.3 Loop breaking strength
4.3 Fabric
4.3.1 General
4.3.2 Performance
4.3.3 Colour
4.4 Structural webbing and tie tape
4.4.1 General
4.4.2 Torsional stiffness
4.5 Structural lacing
4.5.1 General
4.5.2 Construction
4.5.3 Performance
4.6 Structural zippers
4.6.1 Construction
4.6.2 Performance
4.6.2.1 General
4.6.2.2 Operability force test
4.6.2.3 Crosswise strength test
4.7 Hardware
4.7.1 Webbing closures and adjusters
4.7.1.1 Construction
4.7.1.2 Performance
4.7.1.2.1 Tensile strength
4.7.1.2.2 Strength/slippage

4.7.1.2.2.1 General
4.7.1.2.2.2 Loop assembly method
4.7.1.2.2.3 Fixed straight-length method
4.7.1.2.3 Inadvertent release test (dual-tab closure)
4.7.2 Lacing closures and adjusters
4.7.2.1 General
4.7.2.2 Performance
4.7.2.2.1 Tensile strength
4.7.2.2.2 Strength/slippage
4.7.2.2.2.1 General
4.7.2.2.2.2 Loop assembly method
4.7.2.2.2.3 Fixed straight-length method
4.7.2.2.3 Tab disengagement test
4.7.3 Multi-eyelet guides
4.7.3.1 Construction
4.7.3.2 Performance
4.7.3.2.1 Tensile strength
4.7.3.2.2 Cold flexibility test
4.8 Foam flotation material
4.8.1 General
4.8.2 Performance
4.8.2.1 Density after water absorption
4.8.2.2 Specific buoyancy
4.8.2.3 Thermal stability of buoyancy material
4.8.2.4 Test method for the compressibility of inherently buoyant material
4.8.2.5 Buoyancy retention factor (V-factor method)
4.8.2.5.1 General
4.8.2.5.2 Conditioning
4.8.2.5.3 Calculations
4.8.2.6 Tensile strength
4.8.2.7 Oil resistance
4.8.2.8 Cold flexibility
4.8.2.9 Compression deflection
4.8.2.10 Thickness
4.8.3 Knitted fabric laminated to foam flotation material
4.9 Inflation chamber materials
4.9.1 General
4.9.2 Performance
4.9.2.1 Tensile strength test
4.9.2.2 Trapezoid tear strength test
4.10 Polymeric foam coatings
4.10.1 Construction
4.10.2 Performance
4.10.2.1 Coating adhesion
4.10.2.2 Resistance to flex cracking
4.10.2.3 Elongation at break
4.10.2.4 Cold flexibility
4.10.2.5 Blocking
4.10.2.6 Water absorption
4.10.2.7 Volatile loss
4.11 Inflation systems for hybrid and solely inflatable lifejackets
4.11.1 Construction
4.11.1.1 General
4.11.1.2 Materials
4.11.1.3 Oral inflation systems
4.11.1.4 Actuation and re-arming of manual and automatic inflation systems
4.11.1.5 Means for verification of mechanism operation
4.11.1.6 Status indicators
4.11.2 Performance
4.11.2.1 General
4.11.2.2 Security of protruding oral inflation valve
4.11.2.3 Overpressure relief valve
4.11.2.4 Use characteristics test of automatic and manual inflation systems
4.11.3 Performance tests using human subjects

4.11.3.1 General
4.11.3.2 Type of inflation system and number of test participants (group size)
4.11.3.3 Indicator evaluation
4.11.4 Operability test of automatic inflation systems
4.11.5 Operability test of manual inflation systems
4.11.6 Operability test of oral systems
4.11.7 Discharge test of automatic and manual inflation systems
4.11.8 Humid atmosphere test of automatic inflation systems
4.11.9 System durability test of automatic and manual inflation systems
4.11.10 Operability test of over-pressure relief valves
4.11.11 Pull test of automatic and manual inflation systems, and cylinder-seal-indicating cylinders
4.11.12 Window material
4.12 Gas-filled cylinders
4.12.1 Construction
4.12.1.1 General
4.12.1.1.1 Cylinder body
4.12.1.1.2 Cap
4.12.1.1.3 Gas charge
4.12.1.1.4 Surface protection
4.12.1.2 Materials
4.12.1.2.1 Cylinder body
4.12.1.2.2 Cap
4.12.1.2.3 Gas
4.12.1.3 Cylinder type
4.12.2 Tests and acceptance criteria
4.12.2.1 Pressure test
4.12.2.2 Burst pressure test (hydrostatic)
4.12.2.3 Rupture test (thermal)
4.12.2.4 Cap piercing characteristics
4.12.2.5 Leakage
4.12.2.6 Mass or pressure of gas charge
4.12.2.7 Cylinder volume and maximum filling
4.12.2.8 Dimensions and workmanship
4.12.2.9 Test methods and samples
4.12.2.9.1 Test pressure test
4.12.2.9.1.1 General
4.12.2.9.1.2 CO2 filled cylinders
4.12.2.9.1.3 Permanent filled cylinders
4.12.2.9.1.4 Test pressure test for empty cylinders
4.12.2.9.1.5 Test samples for cap deformation
4.12.2.9.2 Burst pressure test
4.12.2.9.2.1 Procedure
4.12.2.9.2.2 Test sample
4.12.2.9.3 Rupture test (thermal)
4.12.2.9.3.1 Procedure
4.12.2.9.3.2 Test sample
4.12.2.9.4 Cap piercing test
4.12.2.9.4.1 Procedure
4.12.2.9.4.2 Test sample
4.12.2.9.5 Leakage test
4.12.2.9.5.1 Procedure
4.12.2.9.5.2 Test sample for determination of gas cylinder gross mass
4.12.2.9.6 Test for mass of gas charge or filling pressure
4.12.2.9.6.1 Procedure
4.12.2.9.6.2 Test sample
4.12.2.9.7 Cylinder volume and (for liquefied gases) maximum filling density test
4.12.2.9.7.1 Procedure
4.12.2.9.7.2 Test sample
4.12.2.9.8 Dimensions and workmanship tests
4.12.2.9.8.1 General
4.12.2.9.8.2 Procedure
4.12.2.9.8.3 Test sample
4.12.2.9.9 Corrosion resistance test

4.12.2.9.9.1 Procedure
4.12.2.9.9.2 Test sample
4.12.3 Marking

Annex A (informative) Mildew resistance of materials: Soil burial method

A.1 General
A.2 Specimens
A.2.1 Viability control specimens
A.2.2 Test specimens
A.3 Apparatus
A.3.1 Soil bed
A.3.2 Soil container
A.3.3 Incubator
A.4 Procedure
A.5 Report

Annex B (informative) Abrasion resistance of cloth: Oscillatory method (Wyzenbeek method)

B.1 General
B.2 Apparatus
B.2.1 Oscillatory cylinder
B.3 Procedure
B.4 Report

Annex C (informative) Example of a design drawing

Page count: 77