UL 2515

STANDARD FOR SAFETY

Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings

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UL Standard for Safety for Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings, UL 2515

Second Edition, Dated February 5, 2019

Summary of Topics

The revision of ANSI/UL 2515 dated March 22, 2022 includes clarification on where to measure the minimum inside diameter of socket specified in Table 5 – Table 8.

As noted in the Commitment for Amendments statement located on the back side of the title page, UL, CSA, and ANCE are committed to updating this harmonized standard jointly.

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

The revised requirements are substantially in accordance with Proposal(s) on this subject dated September 10, 2021.

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Association of Standardization and Certification
NMX-J-765-ANCE
First Edition

CSA Group
CSA C22.2 No. 2515:19
Second Edition

Underwriters Laboratories Inc.
UL 2515
Second Edition

Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings

February 5, 2019

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Commitment for Amendments

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This ANSI/UL Standard for Safety consists of the Second Edition including revisions through March 22, 2022. The most recent designation of ANSI/UL 2515 as an American National Standard (ANSI) occurred on March 22, 2022. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page (front and back), or the Preface.

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Preface

This is the harmonized ANCE, CSA Group, and UL standard for Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings. It is the first edition of NMX-J-765-ANCE, the second edition of CSA C22.2 No. 2515, and the second edition of UL 2515. This edition of NMX-J-765-ANCE is the first edition published. This edition of CSA C22.2 No. 2515 supersedes the previous edition(s) published on July 31, 2009. This edition of UL 2515 supersedes the previous edition(s) published on July 31, 2009. This harmonized standard has been jointly revised on March 22, 2022. For this purpose, CSA Group and UL are issuing revision pages dated March 22, 2022, and ANCE is issuing a new edition dated March 22, 2022.

This harmonized standard was prepared by the Association of Standardization and Certification, (ANCE), CSA Group and Underwriters Laboratories Inc. (UL). The efforts and support of the conduit manufacturing industry and the Technical Harmonization Subcommittee for Conduit and Tubing, of the Council of the Harmonization of Electrotechnical Standards for the Nations of the Americas (CANENA), are gratefully acknowledged.

This standard is considered suitable for use for conformity assessment within the stated scope of the standard.

The present Mexican standard was developed by the CT 23 Electrical Accessories (Wiring Devices) from the Comité de Normalización de la Asociación de Normalización y Certificación, A.C., CONANCE, with the collaboration of the electrical manufacturers and users.

This standard was reviewed by the CSA Integrated Committee on Nonmetallic Conduit, Tubing, and Fittings, under the jurisdiction of the CSA Technical Committee on Wiring Products and the CSA Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the CSA Technical Committee.

This standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

Application of Standard

Where reference is made to a specific number of samples to be tested, the specified number is to be considered a minimum quantity.

Note: Although the intended primary application of this standard is stated in its scope, it is important to note that it remains the responsibility of the users of the standard to judge its suitability for their particular purpose.

Level of harmonization

This standard uses the IEC format but is not based on, nor is it considered equivalent to, an IEC standard.

This standard is published as an equivalent standard for ANCE, CSA Group and UL.

An equivalent standard is a standard that is substantially the same in technical content, except as follows: Technical national differences are allowed for codes and governmental regulations as well as those recognized as being in accordance with NAFTA Article 905, for example, because of fundamental climatic, geographical, technological, or infrastructural factors, scientific justification, or the level of protection that the country considers appropriate. Presentation is word for word except for editorial changes.

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Reasons for differences from IEC

The Technical Harmonization Subcommittee identified several IEC standards that address electrical conduit and tubing included in the scope of this standard. The IEC standards for electrical conduit and tubing are recognized as being generally system-specific, containing the requirements for the relevant conduits and cables and associated fittings in several discrete IEC standards.

The THSC determined the safe use of electrical conduit and tubing is dependent on the design and performance of the conduit and tubing systems with which they are intended to be installed. Significant investigation is required to assess safety and system compatibility issues that may lead to harmonization of traditional North American electrical conduit and tubing and associated fittings with those presently addressed in the known IEC standards. The THSC agreed such future investigation might be facilitated by completion of harmonization of the North American standards for electrical conduit and tubing and their fittings.

Interpretations

The interpretation by the standards development organization of an identical or equivalent standard is based on the literal text to determine compliance with the standard in accordance with the procedural rules of the standards development organization. If more than one interpretation of the literal text has been identified, a revision is to be proposed as soon as possible to each of the standards development organizations to more accurately reflect the intent.

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Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings

1 Scope

1.1 This Standard specifies the requirements for low-halogen aboveground (Type AG) reinforced thermosetting resin conduit (RTRC) and fittings for installation and use in accordance with CSA C22.1, Canadian Electrical Code (CEC), Part I, NFPA 70, National Electrical Code (NEC) and NOM-001-SEDE, Standard for Electrical Installations (Mexico), in non-hazardous locations.

1.2 The products specified in this Standard are intended for use at -40°C (-40°F) to 110 °C (230°F). The products are for use above ground in exposed and concealed locations. The products are also suitable for use below ground by direct burial or by encasement in concrete.

1.3 Type AG conduit has not been evaluated for directional boring applications.

1.4 This Standard covers ID (dimensions based on inside diameters) and IPS (dimensions based on outside diameters of iron pipe sizes) conduit and fittings. Trade sizes (metric designators) are 1/2 (16) to 6 (155).

Note: The values in parenthesis are metric size designations of conduits and fittings and do not necessarily reflect metric trade sizes.

1.5 ID and IPS conduit are designated as SW (Standard Wall) or HW (Heavy Wall), which refer to specific wall thicknesses.

1.6 Fittings specified in this Standard include, but are not limited to, straight couplings, 5° angle couplings, adapters, and elbows with plain ends or integral belled ends at one or both ends, expansion joints, and conduit bodies.

Note: In Canada, conduit bodies are not evaluated as outlet boxes – they are fittings. Requirements in this standard for conduit bodies intended for use as outlet boxes do not apply in Canada. In Mexico and the United States, a conduit body may be used as an outlet box for the splicing of conductors.

1.7 For products intended for use in Canada, general requirements are given in CSA-C22.2 No. 0.

2 Definitions

2.1 The following definitions apply in this Standard:

2.2 Conduit body – a separate portion of a conduit system that provides access through a removable cover(s) to the interior of the system at a junction of two or more sections of the system or at a terminal point of the system.

2.3 Integral belled end – a belled end installed at the factory, either integrally wound or a permanently attached coupling.

2.4 Low-halogen – a material having not more than 0.2% by weight of total halogen content.

2.5 Type AG – conduit and associated fittings that have been evaluated for use in exposed or concealed locations and/or for direct burial with or without being encased in concrete.

Note: For other definitions, refer to the CE Code, Part 1, the NEC and/or NOM-001-SEDE.

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3 Reference publications and units of measurement

3.1 Reference publications

3.1.1 Where reference is made to any Standards, such reference shall be considered to refer to the latest editions and revisions thereto available at the time of printing, unless otherwise specified.

Product Standardization and Certification Center (CNCP)

NMX-E-186-CNCP
Plastic industry – Conduit and fittings – IZOD impact resistance of rigid materials – Test method

SCFI Standard**

NMX-E-003-SCFI
Plastic industry – Determination of thickness of plastic films and sheets by mechanical scanning – Test method

NMX-J-70-SCFI
Plastic industry – Pipes and fittings – Deflection temperature under load – Test method

SEDE* Standard**

NOM-001-SEDE
Standard for Electrical Installations

ANCE Standards

NMX-J-451-ANCE
Wires and cables – Thermoset insulated wires and cables – Specifications

NMX-J-511-ANCE
Cable tray – Metallic cable tray – Specifications and test methods

NMX-J-192-ANCE
Wires and cables – Flame test on electrical cables – Test methods

NMX-J-553-ANCE
Wires and Cables – Weather Resistance of Insulation or Jacket of Electrical Conductors – Test Method

CSA Group Standards

C22.1
Canadian Electrical Code (CE_Code), Part I

CSA C22.2 No. 0
General Requirements – Canadian Electrical Code, Part 1

C22.2 No. 38
Thermoset Insulated Wires and Cables

C22.2 No. 126.1
Metal Cable Tray Systems

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UL Standard

UL 44
Thermoset-Insulated Wires and Cables

ANSI/NFPA† Standard

NFPA 70
National Electrical Code (NEC)

ASTM‡ Standards

D 256
Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics

D 638
Standard Test Method for Tensile Properties of Plastics

D 648
Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position

D 5025
Standard Specification for Laboratory Burner Used for Small-Scale Burning Tests on Plastic Materials

D 5207
Standard Practice for Calibration of 20-mm (50-W) and 125-mm (500-W) Test Flames for Small-Scale Burning Tests on Plastic Materials

G 151
Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources

G 153-04
Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials

G 155
Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials

CAN/CGSB§ Standard

3.14-2006
Liquefied Petroleum Gas (Propane) for Fuel Purposes

National Research Council Canada Publication

National Building Code of Canada

NEMA* Standard

VE-1 2002
Metal Cable Tray Systems

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† American National Standards Institute/National Fire Protection Association.

‡ American Society for Testing and Materials.

§ Canadian General Standards Board.

** National Electrical Manufacturers Association.*

*** Secretary of Commerce and Industrial Development (Mexico)*

**** Secretary of Energy (Mexico)*

3.2 Units of measurement

3.2.1 The values given in SI (metric) units normative. Any other values given shall be for information only.

4 Construction

4.1 General

4.1.1 Conduit shall be fiber impregnated with a cured thermosetting resin compound. The conduit shall have a uniform wall, a smooth interior, and shall not contain any features that can damage wiring installed in the conduit.

4.1.2 Conduit shall be straight, and both ends of each length of conduit shall be perpendicular to the longitudinal axis of the conduit.

4.1.3 Integral and non-integral connections shall provide a mechanically secure and watertight joint.

4.2 Conduit with an integral belled end

4.2.1 The dimensions of conduit with an integral coupling on one end shall be in accordance with Table 1 to Table 4. They shall also meet the requirements of 5.7 and 5.8.

4.3 Couplings

4.3.1 Couplings shall be straight with belled ends, or 5° angle couplings. Dimensions of couplings shall be in accordance with Table 5 to Table 8. Couplings shall also meet the requirements of 5.7 and 5.8.

4.4 Elbows

4.4.1 Elbows shall be provided with plain ends or have an integral belled end at one or both ends. Elbows shall also meet the requirements of 5.7.

4.4.2 The radius and dimension of an elbow shall be as shown in Table 9 and Figure 1.

4.4.3 The straight-end portions (see dimension L_s on Figure 1) of an elbow shall be at least 13 mm (1/2 in) longer than the maximum socket depth.

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4.5 Adapters

4.5.1 Threaded adapters and threaded box connectors

4.5.1.1 Adapters for joining conduit to other threaded systems shall be as specified in Table 10.

4.5.2 Other adapters

4.5.2.1 Other adapters shall meet the watertightness test specified in 5.7 and the joint separation requirements specified in 5.8.

4.5.3 Bore of conduit and elbows

4.5.3.1 The internal diameter of a finished elbow shall be such that a round ball or an equivalent mandrel will pass freely through the bore of the conduit and elbow. The diameter of the ball or equivalent mandrel shall be 90% of the original internal diameter for conduit and 85% of the original internal diameter for elbows.

Note: As an alternative to using a ball to check the bore of conduit and elbows, an inside micrometer gauge or a telescopic gauge and micrometer caliper may be used.

4.6 Conduit bodies

Note: In Canada, conduit bodies are not evaluated as outlet boxes – they are fittings. Requirements in this Standard for conduit bodies intended for use as outlet boxes do not apply in Canada. In Mexico and the United States, a conduit body may be used as an outlet box for the splicing of conductors.

4.6.1 General

4.6.1.1 Conduit bodies shall be of thermosetting resin material that provides flame and mechanical properties consistent with the conduit system.

4.6.1.2 A conduit body shall have a cross-sectional area not less than that specified in Table 11, based on the largest size raceway that is intended to be connected to it.

4.6.1.3 A conduit body having provision for the connection of conduit larger than the 1/2 (16) trade size:

a) shall have a removable blank cover; and

b) shall comply with 4.6.2.1 and 4.6.2.3.

4.6.1.4 The requirement in 4.6.1.3 does not apply to a conduit body:

a) marked for use only with 6 AWG (13.30 mm^2) or smaller conductors;

b) having an internal length (measured as shown in Figure 2) that is equal to or greater than the dimensions specified in Table 12.

4.6.1.5 A conduit body having a raceway entry in the wall opposite the removable cover specified in 4.6.1.3(a) shall have a distance from the cover to the opposite wall not less than that specified in Table 13.

4.6.1.6 With reference to 4.6.1.5, the distance shall be measured from points located at each of the raceway entries where the axis of the raceway passes through the plane of the end stop of the conduit hub to the inside surface of the cover. See Figure 2.

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4.6.1.7 A conduit body shall also comply with 6.6 and 6.7.

4.6.2 Capacity

4.6.2.1 A conduit body that does not change the direction of wiring passing through it shall have a length not less than eight times the trade size of the connected largest conduit. The length shall be measured inside the conduit body from the end stop of the conduit hub, away from the center of the body, to an equivalent point on the conduit hub on the opposite wall, or for a conduit body having a single raceway entry, to the opposite wall. See Figure 2.

Note: Measurements expressed as multiples of trade sizes may be determined by converting the trade size of the raceway (not the metric designator) to a value expressed in millimeters. Example: 1/2 trade size × 8 = 4 = 4 inches = 101.6 mm.

4.6.2.2 A conduit body that is shorter than the requirement specified in 4.6.1.5 complies when it is investigated for installation of a combination of conductors that are less than the specified maximum fill for the largest conduit size that the conduit body will accommodate. See 6.7.

4.6.2.3 A conduit body constructed to enable a change in the direction of the axis of a conduit system (see Figure 2) shall have a distance inside the body between each conduit entry and the entry hub on the opposite wall of the body intended to enclose a common conductor not less than that specified in (a) or between each conduit entry and the opposite wall not less than the sum of (a) and (b) (see note to 4.6.2.1):

a) six times the trade size of the largest conduit for which the body is intended; and

b) the sum of the diameters of all other conduit entries in the same wall of the body.

4.6.2.4 A conduit body having smaller dimensions than those specified in 4.6.2.3 shall be investigated for installation of a combination of conductors, including 4 AWG (21.2 mm^2) or larger, that is less than the specified maximum fill for the largest conduit size that the conduit body is intended to accommodate. See 6.7.

4.6.3 Covers

4.6.3.1 Conduit bodies shall be furnished with a blank cover. Threaded inserts may be molded into or assembled on the body.

4.6.3.2 Mating surfaces of a cover and body shall provide a close fit. A gasket, where required to provide a tight fit, shall be provided with the cover. The gasket shall not be required to be cemented or otherwise secured in place on the cover.

4.6.3.3 A cover shall be attached to the body by No. 6 or larger machine screws not having more than 32 threads per 25.4 mm (1 in). The screws shall thread into metal having at least two full threads.

5 Qualification tests

5.1 Conditioning

5.1.1 Unless specified otherwise in the description of the test, all specimens shall be preconditioned for at least 24 h in still air at a temperature of 23 ±2°C (73 ±4°F).

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5.2 Compression

5.2.1 General

5.2.1.1 The internal diameter of conduit shall not decrease by more than 25% during application of the force specified in Table 14 and Table 15 when tested in accordance with 5.2.2 to 5.2.4. The conduit shall show no evidence of cracking or buckling after removal from the compression machine.

5.2.2 Apparatus

5.2.2.1 The apparatus for this test shall consist of:

a) an inside micrometer or telescopic gauges and a micrometer caliper; and

b) a compression machine having 2 steel platens at least 150 mm (6.0 in) long and 10 mm (0.4 in) thick, and capable of running at a speed within the range of 10 to 15 mm/min (0.4 to 0.6 in/min).

5.2.3 Specimens

5.2.3.1 The specimens shall consist of three 150 ±3 mm (6.0 ±0.125 in) lengths of conduit.

5.2.4 Procedure

5.2.4.1 The inside diameter of the specimen shall be measured and recorded. The specimen shall be placed between the plates of the compression machine such that the measured inside diameter is perpendicular to the platens. The machine shall be set in motion until the force specified in Table 14 and Table 15 has been applied to the specimen. The machine shall be stopped and the inside diameter re-measured. The percent decrease in the internal diameter shall be calculated and recorded.

5.3 Beam strength

5.3.1 General

5.3.1.1 The ultimate beam strength of conduit shall not be less than that specified in Table 16 when tested in accordance with 5.3.2 and 5.3.3.

5.3.2 Apparatus

5.3.2.1 The apparatus for this test shall consist of

a) two rigidly supported V-blocks carefully aligned on a free span (see Figure 3). The angle of the "V" shall be 120 ±3°;

b) a suitable testing machine having a speed of 10 to 15 mm/min (0.4 to 0.6 in/min); and

c) a flexible strap having a width of 50 ±3 mm (2.0 ±0.125 in).

5.3.3 Procedure

5.3.3.1 The flexible strap shall be placed around the conduit specimen at the center of the span and attached to the testing machine.

5.3.3.2 The testing machine shall be set in motion. The conduit shall not buckle.

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5.4 Impact resistance at low temperature

5.4.1 When tested in accordance with 5.4.2 to 5.4.4, there shall not be any fracture or break in the laminate surface of seven out of ten 200 mm (8.0 in) long specimens of the finished conduit. A fracture or break shall be considered to have occurred where a broken section of the laminate forms a protrusion within the inside diameter or extends beyond the outside diameter of the conduit. The portions of the conduit within 50 mm (2.0 in) from the cut ends of the specimen shall not be examined.

5.4.2 The specimens shall be cut from finished lengths of each trade size of conduit. The specimens, the test apparatus, and the surrounding air shall be in thermal equilibrium with one another at a temperature of -40 ±1°C (-40 ±1°F) during the test. Each specimen shall be tested separately while resting on a solid, flat steel plate that is at least 13 mm (1/2 in) thick and shall be firmly anchored with its upper surface horizontal.

5.4.3 When it is necessary to remove the specimen from the low-temperature chamber due to handling difficulties, the impact test shall commence as soon as possible and shall be completed within 15 s of the time of removal.

5.4.4 The impact energy shall be provided by a weight of 9 kg (20 lbs) in the form of a 51 mm (2.0 in) solid, right-circular, steel cylinder with a flat impact face having rounded edges, as shown in Figure 4, falling freely through a vertical guide with the impact force as specified in Table 17 and Table 18. The flat face of the weight shall strike the center of the specimen. Provision shall be made for keeping the weight from striking the specimen more than once.

5.5 Water absorption

5.5.1 Conduit shall not absorb water more than 0.25 percent of its weight while immersed for 24 h in distilled water when tested in accordance with 5.5.2 to 5.5.4.

5.5.2 The cut edges of a specimen shall be sealed with epoxy cement. The cement shall cure at room temperature for 24 h. Specimens shall be preconditioned by drying in a full-draft circulating-air oven at a temperature of 50 ±3°C (122 ±5°F) for 24 h, after which they shall remain in still air at a temperature of 23 ±2°C (73 ±4°F) for 24 h.

5.5.3 Following conditioning, the weight of the specimen, W_1, shall be determined to within 5 mg of balance, and the specimen shall then be immersed in distilled water for 24 h at a temperature of 23 ±2°C (73 ±4°F). The specimen shall then be removed from the water, dried quickly inside and out with a clean piece of lint-free, absorbent material, and its weight, W_2, shall immediately be determined within 5 mg of balance. W_2/W_1 shall not be larger than 1.0025.

5.5.4 When a specimen is known to contain or is suspected of containing an appreciable amount of water-soluble material, two specimens shall be preconditioned by drying in a full-draft circulating-air oven at a temperature of 50 ±1°C (122 ±2°F) for 24 h and cooling in a desiccator for 24 h; then their weight, W_1, shall be immediately determined. The specimens shall then be immersed in distilled water for 24 h with the water at a temperature of 23 ±2°C (73 ±4°F). Immediately following this immersion, the specimens shall be reconditioned for 24 h in the oven at 50 ±3°C (122 ±5°F), cooled in a desiccator for 24 h, and their weight, W_2, immediately determined.

5.6 Chemical resistance (optional)

5.6.1 Conduit and any adhesive system used to bond lengths of conduit shall be subjected to the tests described in 5.6.2 to 5.6.10 if marked in accordance with 6.5. The results of the test on any trade size of conduit shall be considered representative of the performance of the whole size range.

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5.6.2 After being exposed to the reagents indicated by the manufacturer at the intended concentration and temperature for 90 days, the crush strength of specimens of the finished conduit shall not be reduced by more than 15 percent, nor shall the specimens experience a change in weight of more than 2.5 percent. Where there is more than 1.0 percent change in weight after 90 days of exposure to the reagent, that change shall not be more than 1.65 times the change in weight measured after 30 days of exposure to the reagent. There shall not be any softening or disintegration of the specimens as a result of exposure to the reagents.

Note: A reagent is commonly understood to be a substance used to produce a characteristic reaction in chemical analysis. For the purpose of this Standard, however, term "reagent" is referred to in the less restrictive sense as any chemical, oil, or other substance that has a corrosive or degrading influence on conduit or conduit products.

5.6.3 Twelve 50 mm (2 in) long specimens shall be used for each reagent. Each specimen shall be cut from clean lengths of the finished conduit and cleaned of loose particles and ragged edges. The edges of all specimens shall be coated with the same resin used to fabricate the conduit. The weight of each specimen, W_1, shall be determined prior to immersing the specimen in the test solution. Six additional specimens shall be prepared and set aside for comparison purposes during the crush test.

5.6.4 The weighed specimens shall each be immersed in the reagents in separate, covered containers that do not react with the reagent. Each container shall be filled with the reagent at the intended concentration and temperature to the depth necessary to completely cover the specimens that are placed in it. When the liquid comes to rest in each container, the containers shall be closed and kept at the intended temperature for 30 days without agitation of the reagent.

5.6.5 After 30 days, half of the specimens shall be removed from the reagent, rinsed with clean cold water, and carefully wiped dry inside and out with a clean piece of lint-free, absorbent material. The weight of each of the six dried specimens, W_2, shall be determined to within 10 mg of balance and compared to the original weight, W_1, of the specimen. W_2 shall not be greater than 1.025 times W_1.

5.6.6 The six specimens immersed for 30 days and the specimens set aside for testing unaged shall be in thermal equilibrium with one another, the testing machine, and the surrounding air at a temperature of 23 ±2°C (73 ±3°F) throughout the test. The inside diameter of each specimen shall be measured and recorded. The specimens shall then be tested separately between a pair of rigid, flat steel plates that are at least 150 mm (6 in) long and that are horizontal and parallel to one another. The measured inside diameter shall be perpendicular to the platens. One plate shall be moved toward the other at the rate of 12.7 ±3.2 mm/min (0.5 ±0.125 in/min):

a) until the surface of the specimen pulls away from contact with either plate, that is, until the specimen buckles; or

b) until the minor axis measured inside the flattening specimen is 60 percent of the inside diameter measured before the test.

5.6.7 The crushing loads at the buckling and 60 percent points shall be noted on the dial on the machine and recorded for each specimen. The loads at each of these points for the aged specimens shall each be divided by the average loads at each of these points for the unaged specimens. The resulting ratios shall not be less than 0.85, and no conditioned specimen shall crack or collapse before buckling or the 60 percent point is reached.

5.6.8 The six remaining specimens shall remain immersed for an additional 60 days at the intended temperature. After the full 90 days, the specimens shall be removed from the reagent, rinsed, and dried as specified in 5.6.6 before being re-weighed. The weight of each of the dried specimens, W_3, shall be determined to within 10 mg of balance. The following requirements apply:

a) W_3 shall not be greater than 1.025 times W_1.

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