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| **Page No** | **Title** |  | **Sub Clause & Sub title** | **Content** |  |  |
| **Clause & Title** | **Update / Change** | **Comment** |
| i | Title |  |  | Structural Glazing Sealant Specification | Structural Glazing Silicone Sealant - Specification | updated to reflect scope of the standard |
| ii | Foreword | 3rd para |  | This standard is intended to provide guidance on the proper use of sealants in structural glazing application. | This standard is intended to provide guidance on the proper use silicone sealants in structural glazing application. |  |
|  |  |  |  | ISO 8339:2005 Building construction — Sealants —  Determination of tensile properties  (Extension to break) |  |  |
| 1 | Title |  |  |  | Structural Glazing Silicone Sealant - Specification |  |
| 1 | Scope | 1 |  | This standard describes the properties of liquid  applied, one-component or multicomponent,  chemically curing elastomeric structural silicone  sealants herein referred to as the sealant. | This standard describes the properties of cold liquid applied, one-component or multicomponent, chemically curing elastomeric structural silicone sealants herein referred to as the sealant. |  |
|  | Standard Laboratory Condition |  | 4 |  |  | No change |
| 2 | Material Test Certificate (MTC) Storage and Disposal |  | 8.1 | Material test certificate (MTC) from the sealant  manufacturer shall be made available for every  batch/lot. The lot/batch acceptance tests as  mentioned in the Table 1 shall be submitted before  the delivery of material to the project site, attesting  that the sealant materials conform to the  specification requirements. | Material test certificate (MTC) from the sealant  manufacturer shall be made available for every  batch/lot. The lot/batch acceptance tests as  mentioned in foot note under Table 1 shall be submitted before  the delivery of material to the project site, attesting  that the sealant materials conform to the  specification requirements. | updated to reflect the format |
| 2 | Table 1 Requirement of sealant |  | i | (3) 150 | (3) 100 |  |
|  |  |  | iv | (3) 4.8mm | (3) 5mm |  |
|  |  |  | vi | (2) Adhesion in Peel2) | (2) Adhesion in Peel2) a) For Dry test  b) For Wet test |  |
|  |  |  |  | (3) 100 percent cohesive  failure with minimum  5.25 N/mm | a) 100% Cohesive failure with minimum 5N/mm b) ≥ 95% Cohesive failure with minimum 5N/mm |  |
|  |  |  | vii | (4) IS 3400 (Part 12) | (4) IS 3400 (Part 12) - Crescent test piece die |  |
| 3 | Table 1 (Concluded) |  | ix | (4) IS 3400 (Part 1) | IS 3400 (Part 1) - Dumb-bells - Type 1 |  |
|  |  |  | x | Ultimate tensile strength2), (Min) (N/mm2): a) 23 °C ± 2 °C and 50 percent ± 10 percent RH relative humidity) b) 88 °C c) - 29 °C  d) Water immersion e) A minimum of 5 000 h weathering | Ultimate tensile strength2), (Min) (N/mm2): a) Standard laboratory condition b) 88 °C ± 2°C  c) - 29 °C ± 2°C  d) Water immersion 7days e) A minimum of 5 000h weathering |  |
|  | 10 Packing and Marking | 10.1 Packing | 10.1.1 | Single-component sealants are generally packed in moisture barrier packaging material such as plastic cartridges of generally 300 ml (± 10 percent) in volume and in multi-layered foil packs of 500 ml and 600 ml in volume | Single-component sealants are generally packed in moisture barrier packaging material such as plastic cartridges of generally 200 ml to 325 ml in volume and in multi-layered foil packs of 500 ml and 600 ml in volume |  |
|  |  |  | 10.1.2 | The multi-component sealants are generally packed in steel drums and in plastic pails. The base materials are packed generally in 250 kg to 275 kg in steel drum and crosslinker/catalyst/curing agents are packed in airtight container of plastic/steel drums between 17 kg and 25 kg. | The multi-component sealants are generally packed in steel drums and in plastic pails. The base materials are packed generally in 225 kg to 300 kg in steel drum and crosslinker/catalyst/curing agents are packed in airtight container of plastic/steel drums between 17 kg and 25 kg. |  |
| 4 | Annex A | A-Significance and Use | A-2.2 | This test method also covers the option of measuring the freeze-thaw and heat stability of such sealants. | ~~This test method also covers the option of measuring the freeze-thaw and heat stability of such sealants.~~ | Not Applicable |
|  |  |  | A-2.3 | This test method provides for an option of  either a metal or plastic nozzle. It is intended that  the metal nozzle be used when greater precision is  required, plastic nozzle may be used for general  screening of sealant properties or for developmental  purposes when a large number of test specimens are  being tested. This test method measures the volume  of sealant extruded over a given period of time at a  given pressure (kPa). | This test method provides for an option of either a metal or plastic nozzle. This test method measures the volume of sealant extruded over a given period of time at a given pressure (kPa). | Both results are within negligible range |
|  |  | A-3 Apparatus | A-3.1 | High density polyethylene cartridge, with  plunger and cap, 177 ml capacity, with the front end  having an inside diameter of 13.7 mm ± 0.05 mm | High density polyethylene cartridge, with plunger and cap, 200ml to 325ml capacity, with the front end having an inside diameter of 13.5 mm ± 0.5 mm | Tolerence added |
|  |  | A-3.2 Nozzle | A-3.2.1 | Metal nozzle, threaded to fit threaded end of polyethylene cartridge with the dimensions given in Fig. 1. | Metal/Plastic nozzle, threaded to fit threaded end of polyethylene cartridge with the dimensions given in Fig. 1. |  |
|  |  |  | A-3.2.2 | Polyethylene cartridge nozzle, 64 mm in  length with 3 mm orifice. | ~~Polyethylene cartridge nozzle, 64 mm in length with 3 mm orifice.~~ | Repeated |
|  |  |  | A-3.3 | Air supply, to provide 280 kPa ± 7 kPa pressure with appropriate fitting and air lines to attach to an air powered gun for convenience of use. | Air supply, to provide 620 kPa ± 30kPa pressure with appropriate fitting and air lines to attach to an air powered gun for convenience of use. |  |
|  |  |  | A-3.4 | Caulking gun, 177 ml capacity, air powered. | Caulking gun, 200 ml to 325ml capacity, air powered |  |
|  |  |  | A-3.8 | Pycnometer, or suitable apparatus to obtain a specific gravity | ~~Pycnometer, or suitable apparatus to obtain a specific gravity~~ | Not required as per the current methodology |
|  |  | A-5 Procedure | A-5.1 | Condition the unopened container of sealant for at least 16 h at standard conditions. Determine the specific gravity of the sealant using pycnometer. For multiple component systems, mix 100 g sealant with the proper amount of curing agent. | Condition the unopened container of sealant for at least 16 h at standard conditions. Determine the specific gravity of the sealant using pycnometer. |  |
|  |  |  | A-5.5 | Extrude the sealant at 280 kPa ± 7 kPa  pressure into the pre weighed container  (nearest 0.1 g) for 60 s. Make sure all of the material  that has exited the end of the nozzle is in the  container. | ~~Extrude the sealant at 280 kPa ± 7 kPa pressure into the pre weighed container (nearest 0.1 g) for 60 s. Make sure all of the material  that has exited the end of the nozzle is in the container.~~ |  |
|  |  |  | A-5.6 | Weigh the container to the nearest 0.1 g and subtract the initial weight, to obtain the weight of the extruded sealant. Convert the weight of the sealant to volume of sealant by dividing the weight by the specific gravity. If all the material is extruded in less than 60 s, note the length of time required and calculate the volume of sealant that would have been  extruded in 60 s as follows: 𝑁𝑢𝑚𝑏𝑒𝑟 𝑜𝑓 𝑔𝑟𝑎𝑚𝑠 𝑁𝑢𝑚𝑏𝑒𝑟 𝑜𝑓 𝑆𝑒𝑐𝑜𝑛𝑑𝑠 × 60 𝑠𝑒𝑐𝑜𝑛𝑑𝑠 1 𝑚𝑖𝑛𝑢𝑡𝑒 × 1 𝑆𝑝𝑒𝑐𝑖𝑓𝑖𝑐 𝑔𝑟𝑎𝑣𝑖𝑡𝑦 = 𝑁𝑢𝑚𝑏𝑒𝑟 𝑜𝑓 𝑚𝑖𝑙𝑙𝑖𝑙𝑖𝑡𝑒𝑟𝑠 𝑚𝑖𝑛𝑢𝑡𝑒𝑠 | Weigh the container to the nearest 0.1 g and subtract the initial weight, to obtain the weight of the extruded sealant. Calculate the extrusion rate as per formula in A-6.2 |  |
|  |  | ~~A-6 PROCEDURE B~~ |  | A-6.1 Follow the methodology briefed in A-3 to A-5 with the following modification. Load the  cartridge with sample. Assemble the cartridge, gun,  and nozzle. Attach the air supply and adjust the gage  to read 620 kPa. Extrude a small amount of material  to fill the nozzle and clear trapped air. | ~~A-6.1 Follow the methodology briefed in A-3 to A-5 with the following modification. Load the  cartridge with sample. Assemble the cartridge, gun,  and nozzle. Attach the air supply and adjust the gage  to read 620 kPa. Extrude a small amount of material  to fill the nozzle and clear trapped air.~~ |  |
|  |  |  | Fig.1 | Metal Nozzle Dimension | Plastic / Metal Nozzle dimesion |  |
|  | Annex B | B-3 Apparatus required | B-3.5 | Chamber, capable of maintaining 38 °C ± 2 °C  and 95 percent relative humidity. | Standard Laboratory condition |  |
|  |  | B-4 Procedure | B-4.1.1 | Condition at least 250 g of base compound and appropriate amounts of curing agent for at least 24 h at standard conditions; then mix the components thoroughly for 5 min. | Condition at least 250 g of base compound and appropriate amounts of curing agent for at least 24 h at standard conditions; then mix the components thoroughly for 5 min. Alternatively, metering & mixing equipment installed in the same environment with the material can also be used to get homogeneous mix of the sealant for the test. |  |
|  |  |  | B-4.1.3 | At the end of the curing period, take three hardness readings on each specimen at standard conditions. Hold the durometer on the surface of the specimen and press it firm against the surface using a force of about 12.749 N. Keep the pressure foot parallel to the surface of the specimen. Take the instantaneous indentation reading immediately after making fir contact between the pressure foot and the specimen. After taking the first reading, shift the durometer (or specimen) to a new position in order to avoid errors due to fatigue and surface effects from the previous indentation. Take readings on smooth portions of the surface no closer than 13 mm from the edges of the sealant pat and also no closer than 25 mm from each other. Note the individual values, each rounded off to the nearest unit on the scale. | At the end of the curing period, take three hardness readings on each specimen at standard conditions. Hold the durometer on the surface of the specimen and press it firm against the surface using a force of about 12.5 N (±0.5N). Keep the pressure foot parallel to the surface of the specimen. Take the instantaneous indentation reading immediately after making first contact between the pressure foot and the specimen.Equipment capable enough to exert the force automatically and capture the reading can also be used. After taking the first reading, shift the durometer (or specimen) to a new position in order to avoid errors due to fatigue and surface effects from the previous indentation. Take readings on smooth portions of the surface no closer than 13 mm from the edges of the sealant pat and also no closer than 25 mm from each other. Note the individual values, each rounded off to the nearest unit on the scale. |  |
|  |  |  | Notes-2 | The highest precision in this test can be obtained when the durometer (see Fig. 2) is supported by a rigid stand and a dead weight is fastened directly to the instrument with the centre of gravity of the weight acting in line of the indentor point. A freely acting total deadweight load of approximately 12.749 N has been found satisfactory for the testing of various sealants. | The highest precision in this test can be obtained when the durometer (see Fig. 2) is supported by a rigid stand and a dead weight is fastened directly to the instrument with the centre of gravity of the weight acting in line of the  indentor point. A freely acting total deadweight load of approximately 12.5 N (±0.5N) has been found satisfactory for the testing of various sealants. |  |
|  |  |  | B-4.2.3 | Cure the test specimens for a total of 21 days  as follows: a) Seven days at standard conditions, followed by 7 days in a chamber controlled at 38 °C ± 2 °C, 95 percent relative humidity; and again for 7 days at standard conditions | Cure the test specimens for a total of 21 days |  |
|  |  |  | Fig.2 | Durometer |  |  |
|  | Annex C | C-4 Apparatus Required | c-4.3 | Rectangular brass or TFE-fluorocarbon frame, with inside dimensions 130 mm × 40 mm × 3.2 mm | Rectangular Aluminium /brass / TFE-fluorocarbon frame, with inside dimensions 130 mm (±5mm) × 40 mm (±5mm) × 3 mm ((±0.5mm)) |  |
|  |  |  | C-4.4 | Aluminium panels, three, each 152 mm × 80 mm by 0.6 mm to 1.6 mm | Aluminium panels, three, each 150 mm (±5mm) × 80 mm (±5mm) by 0.6 mm to 1.6 mm |  |
|  |  |  | C-4.5 | Straight edge, metal or plastic, about 152 mm long. | Straight edge, metal or plastic, about 150 mm long. |  |
|  |  |  | C-4.7 | Spatula, steel, about 152 mm long. | Spatula, steel, about 150 mm long. |  |
|  |  | C-6 | C-6.1 | Condition at least 400 g of base compound and appropriate amount of curing agent in closed containers for at least 24 h at standard conditions; then mix thoroughly together for five min. Weigh each of the three aluminium panels to the nearest 0.01 g. Centre the brass frame on an aluminium panel. Fill the frame with the mixed compound and strike it off flat with the straightedge. Run a thinbladed knife along the inside of the frame to separate it from the sealant and immediately lift the frame from the sealant (see Note). Prepare two more specimens the same way. | Condition at least 400 g of base compound and appropriate amount of curing agent in closed containers for at least 24 h at standard conditions; then mix thoroughly together for five min. Alternatively, metering & mixing equipment installed in the same environment with the material can also be used to get homogeneous mix of the sealant for the test. Weigh each of the three aluminium panels to the nearest 0.01 g. Centre the frame on an aluminium panel. Fill the frame with the mixed compound and strike it off flat with the straightedge. Run a thinbladed knife along the inside of the frame to separate it from the sealant and immediately lift the frame from the sealant (see Note). Prepare two more specimens the same way. |  |
|  |  |  |  | NOTE — In the case of self-levelling sealants, do not lift  the brass frame until the sealant is sufficiently set that it will  retain its rectangular shape. | ~~NOTE — In the case of self-levelling sealants, do not lift the brass frame until the sealant is sufficiently set that it will retain its rectangular shape.~~ |  |
|  |  |  | Fig 3 | EXAMPLES OF CRACKING OBTAINABLE IN THIS TEST NUMBER 0 IN THE FIGURE REPRESENT NO CREAKING | EXAMPLES OF CRACKING OBTAINABLE IN THIS TEST NUMBER.  0 IN THE FIGURE REPRESENT NO CRACKING |  |
|  | Annex D | D-5 Procedure | D-5.3 | Condition both the test jig and the sealant to be  tested for at least 5 h at 23 °C ± 2 °C. | Condition both the test jig and the sealant to be tested for at least 5 h at Standard laboratory Condition |  |
|  |  |  | D-5.4 | Place the mixed, conditioned sealant in the jig cavity. Level the sealant flush with the surface of the block, using one gentle upward stroke of the plastic scraper held at a 45° angle. Avoid forming air pockets in the sealant, especially near the surface of the plunger. Carefully clean the area around the  cavity with the plastic scraper and a cloth. The loading operation should be completed within 2 min and with minimum amount of working of the sample | Place the mixed, conditioned sealant in the jig cavity. Level the sealant flush with the surface of the block, using one gentle upward stroke of the Metal / plastic scraper held at a 45° angle. Avoid forming air pockets in the sealant, especially near the surface of the plunger. Carefully clean the area around the  cavity with the plastic scraper and a cloth. The loading operation should be completed within 2 min and with minimum amount of working of the sample |  |
|  | Annex E | E-3 Apparatus | E-3.1 | Cabinet or room, capable of maintaining standard conditions. | Cabinet or room, capable of maintaining standard laboratory conditions. |  |
|  |  |  | E-3.2 | Weight, rectangular, with dimensions of 41 mm by 19 mm and mass of 30 g. | Weight, rectangular, with dimensions of 40 mm X 20 mm ± 1mm and mass of 30 g ± 2g |  |
|  |  |  | E-3.4 | Rectangular plates, several (often 6 or more),  rectangular, approximately 152 mm by 76 mm made  of non-porous material such as tin-plated steel or  aluminium. | Rectangular plates, several (often 6 or more), rectangular, approximately 152 mm by 76 mm ( ± 2mm) made of non-porous material such as tin-plated steel or  aluminium. Alternatevely, Cleaned and dried polyethylene sheet of 0.25 Sqmts can be spread and taped firmly on to a Non-porous surface such as Granite or metal table. |  |
|  |  |  | E-3.5 | Template, rectangular, of steel, brass or other  suitable material, 3.2 mm thick with inside  dimensions 95 mm by 25.4 mm; outside dimensions  approximately 120 mm by 31 mm | Template, rectangular, of steel, brass or other suitable material, 3mm ± 1mm thick with inside dimensions 95 mm by 25 mm ± 2; outside dimensions  approximately 120 mm by 30 mm ± 2mm or a Tooling device with an indentation of 3mm can be used. |  |
|  |  | E-6 Alternate Procedure |  |  | Spread the sealant sample 3mm +/- 0.8mm thick on the polyethylene sheet taped to a non-porous substrate, using the tooling device.  The surface area should be at least 300mm X 2. Start the timer at once. At intervals of 5 min or less lay a clean polyethylene strip on a fresh surface and gently set the 30g ±2g weight on the strip, leave it for 4 (+2) - 0 s, and remove it, gently. Pull the strip straight up, from one end, or as specified. Record and report the time when the strip pulls away cleanly from the sample. |  |
|  |  | Fig 5 |  |  | 5a,5b,5c,5d, 5e |  |
|  | Annex F | F-4 Apparatus | F-4.1 | Tensile testing machine with tension grips  capable of pulling at the rate of separation of  approximately 50 mm/min, and having a chart  indicator calibrated in 0.45 N units. | Tensile testing machine with tension grips capable of pulling at the rate of separation of approximately 50 mm/min ± (5mm/min), and having a chart indicator calibrated in 0.45 N units. |  |
|  |  |  | F-4.3 | Masking tape, paper, roll, 25 mm wide | Masking tape, paper, roll, 25 mm ± 1mm wide |  |
|  |  |  | F-4.4 | Wire mesh screen, stainless steel or aluminium, 20 mesh, 0.4 mm wire thickness, cut to a width of 25 + 0, - 2 mm by a minimum length of 250 mm. Alternatively, 12.7 mm width wire mesh can also be used to evaluate the substrate in the  testing | Wire mesh screen, stainless steel or aluminium, 20 mesh, 0.4 mm ±0.1mm wire thickness, cut to a width of 25 (+ 0, - 2 mm) by a minimum length of 250 mm ±5mm. Alternatively, 12 mm ±1mm width wire mesh can also be used to evaluate the substrate in the testing |  |
|  |  |  |  | Aluminium or similar rigid material, created to produce a 2 mm × 25 mm sealant bead and 4 mm × 25 mm sealant bead after tooling (see Fig. 6). The width of the tooling device may be up to 27 mm to allow easy tooling of the sealant without snagging the edges of the screen. | Aluminium or similar rigid material, created to produce a 2 mm (±0.5) × 25 mm (±1mm) sealant bead and 4 mm (± 1mm) × 25 mm (±1mm) sealant bead after tooling (see Fig. 6). The width of the tooling device may be up to 28 mm (±2 mm) to allow easy tooling of the sealant without snagging the edges of the screen. |  |
|  |  |  | Fig 6 |  | Special Tooling device |  |
|  |  |  |  |  | a-g |  |
|  |  | F-6 Test procedure | F-6.3 | Pull the screen at a rate of 50 mm/min for a  total of 1 min. | Pull the screen at a rate of 50 mm/min (5mm/min) for a total of 1 min. |  |
|  | Annex G | G-3 Apparatus and Material | G-3.1 | Glass panels, clear float glass, approximately 76.2 mm × 50.8 mm × 6.4 mm Eight panels are required for each material being tested. | Glass panels, clear float glass, approximately 75 mm ( ± 5mm) × 50 mm ( ±5mm) × 6mm ( ±0. 5mm) Eight panels are required for each material being tested. |  |
|  |  |  | G-3.2 | Bond breaker tape, 25.4 mm × 76.2 mm piece for each panel. The bond breaker tape must be compatible with the sealants being tested. | Bond breaker tape, 25mm ( ± 1mm) × 75mm ( ± 5mm) piece for each panel. The bond breaker tape must be compatible with the sealants being tested. |  |
|  |  |  | G-3.3 | Thermometer, for example, 28.9 °C to 100 °C. | Thermometer capable of measuring 100 °C. |  |
|  |  |  | G-3.5 | A suitable UV exposure apparatus will consist of UVA-340 lmps in a symmtrical array situated 254 mm from the surface of the test specimens (see Fig. 13). The apparatus shall be capable of maintaining a temperature at the test specimens of 48 °C ± 2 °C Infrared lamps or other sources of heat may be used to maintain the required temperature | A suitable UV exposure apparatus will consist of UVA-340 lmps in a symmtrical array situated 250 ( ± 5mm) mm from the surface of the test specimens (see Fig. 13). The apparatus shall be capable of maintaining a temperature at the test specimens of 48 °C ± 2 °C Infrared lamps or other sources of heat may be used to maintain the required temperature |  |
|  |  |  |  | Prepare a total of eight samples (four controls without accessory and four test specimens with accessory). Cut a piece of accessory material approximately 6.4 mm × 51 mm × 6.4 mm and place it on the centre of the piece of glass as shown  in Fig. 12. Both the reference sealant and the test sealant are tested in contact with the accessory | Prepare a total of eight samples (four controls without accessory and four test specimens with accessory). Cut a piece of accessory material approximately 6mm (± 1mm) X 50mm (± 5mm) X 6mm(± 1mm) and place it on the centre of the piece of glass as shown in Fig. 12. Both the reference sealant and the test sealant are tested in contact with the accessory |  |
|  |  |  |  | Apply a bead of the test sealant on one side of the accessory and a bead of translucent or light colour reference sealant along the other side of the accessory. Tool the sealant so that good contact with the glass occurs and the sealant is on top of the accessory. The thickness of the sealant on top of the  accessory shall be approximately 3.2 mm | Apply a bead of the test sealant on one side of the accessory and a bead of translucent or light colour reference sealant along the other side of the accessory. Tool the sealant so that good contact with the glass occurs and the sealant is on top of the accessory. The thickness of the sealant on top of the  accessory shall be approximately 3mm to 5mm |  |
|  |  |  | FIG |  | 11,12,13,14 |  |
|  | Annex H | H-2 Significance and use | H-2.2 | Although this test method is conducted at one  prescribed environmental condition, other  environmental conditions and duration cycles can be  employed. | This test is conducted on samples conditioned/Exposed to:  a) standard laboratory conditions b) Higher temperature c) Negative temperature d) Submerged under water  e) UV Exposure |  |
|  |  | H-3 Apparatus and material | H-3.1 | Tensile testing machine, capable of  producing a tensile load on the specimen at the rate  of 50.8 mm/min ± 5.1 mm/min. | Tensile testing machine, capable of producing a tensile load on the specimen at the rate of 50 mm/min ± 5 mm/min. |  |
|  |  |  | Notes | This test method is based on identical substrates of 6.3 mm × 25.4 mm × 76.2 mm clear float glass. Other substrates may be tested; however, consideration needs to be given to maintaining adequate rigidity of the substrates during testing. | This test method is based on identical substrates of 6mm (± 1mm) × 25mm (± 1mm) × 75 mm (± 5mm) clear float glass. Other substrates may be tested; however, consideration needs to be given to maintaining adequate rigidity of the substrates during testing. |  |
|  |  | H-4 Test Specimen | H-4.1.2 | Apply recommended primer, if required. Then, construct the test specimen assemblies by forming a sealant cavity 12.7 mm × 12.7 mm × 50.8 mm between two substrate panels (see Fig. 15A) with the aid of appropriate spacers. | Apply recommended primer, if required. Then, construct the test specimen assemblies by forming a sealant cavity 12mm × 12mm × 50mm (± 0.5mm) between two substrate panels (see Fig. 15A) with the aid of appropriate spacers. |  |
|  |  | H-5 Conditioning | H-5.1 |  | Cure the specimens for 21 days at standard conditions. Any deviations from the curing conditions must be listed in the report. Remove all  spacer sections from the specimens. If desired, spacers may be removed prior to the end of the 21 day cure. If removed early, note this in the report. |  |
|  |  |  | H-5.2 |  | Condition five specimens for 1 h at 88 °C ± 2 °C in a forced air oven. Test the specimens at 88 °C ± 2 °C. |  |
|  |  |  | H-5.3 |  | Condition five specimens for 1 h at −29 °C ± 2 °C. Test the specimens at −29 °C ± 2 °C |  |
|  |  |  | H-5.4 |  | Immerse five specimens in deionized or distilled water at standard temperature for seven days. Test the specimens at standard conditions within 10 min after their removal from the water. |  |
|  |  |  | H-5.5 |  | Expose five specimens to artificial weathering following H-8 for a minimum of 5000 h. |  |
|  |  | Fig |  |  | 15 A,B,C |  |
|  |  | Fig |  |  | 16 A,B,C |  |
|  |  | H-8 Artificial weathering apparatus | H-8.1 |  | Use fluorescent UVA-340 lamps. The spectral power distribution of UVA-340 fluorescent lamps shall comply with the requirements specified in Table 2. In apparatus with irradiance control, irradiance shall be set at 0.89 W/(m2 · nm) at 340 nm. Seal any holes larger than 2 mm in specimens and any opening larger than 1 mm around irregularly shaped specimens to prevent loss of water vapor. Attach porous specimens to a solid backing, such as aluminum, that can act as a vapor barrier For specimens that are less than 20 mm thick, including support dimensions, the exposure cycle shall be 8 h UV at an uninsulated black panel temperature set at 60 °C followed by 4 h wetting by condensation at an uninsulated black panel temperature set at 50 °C. The maximum allowable operational temperature fluctuation is +/- 2°C For specimens that are more than 20 mm thick, including support dimensions, the exposure cycle shall be 5 h UV only at an uninsulated black panel temperature set at 60 °C followed by 1 h UV plus wetting by water spray on the front surface. The water temperature shall be less than 40 °C. The maximum allowable operational temperature fluctuation is +/-2 °C.  NOTE—Wetting by condensation is not applicable to specimens having a thickness greater than 20 mm because of inadequate heat transfer. Initiate exposure at the beginning of the UV period. Keep one test specimen as an unexposed file specimen and store at standard conditions and away from light.  Place at least three of the cured specimens and the control material, if used, in the artificial weathering apparatus with the sealant surface facing the radiation source. |  |
|  |  |  | H-8.2 |  | The test specimens shall be mounted so that the plane of the test surface is at a distance from the lamps consistent with the practice for operation of that apparatus. Refer to the appropriate practice for information about proper specimen mounting.  Specimens should be confined to an exposure area in which the irradiance is at least 90 % of the irradiance at the center of the exposure area. If the specimens do not completely fill the racks, fill the empty spaces with blank metal panels to maintain the test conditions within the chamber.  The apparatus shall be operated continuously. However, if the test needs to be interrupted to perform routine maintenance or inspection, it should be during a dry stage. Specimens should not be removed from the exposure apparatus for more than 24 h and then returned for additional exposure because this does not produce the same results on all materials as tests run without this type of interruption. When specimens have to be removed for more than 24 h, report the elapsed time. |  |
|  |  |  | H-8.3 |  | After artificial weathering, condition the samples for at least 2 h at standard conditions |  |
|  |  |  |  |  |  |  |
|  |  | Table 2 |  |  | J-6 DETERMINING CONFORMANCE TO RELATIVE SPECTRAL POWER DISTRIBUTION TABLES |  |
|  |  | J-6 |  |  |  |  |