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HILTI FIRESTOP GENERAL NOTES

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|  | **GENERAL notes for FIRESTOP system** | |
| **1.0** | **general** | |
|  | **1.1** | **DEFINITION**  FIRESTOP: MATERIAL OR COMBINATION OF MATERIALS USED TO RETAIN INTEGRITY OF FIRE-RATED CONSTRUCTION BY MAINTAINING AN EFFECTIVE BARRIER AGAINST THE SPREAD OF FLAME, SMOKE, AND HOT GASES THROUGH PENETRATIONS AND JOINTS IN FIRE-RATED WALL AND FLOOR ASSEMBLIES. |
|  | **1.2** | **GENERAL DESCRIPTION of the work**  ONLY TESTED FIRESTOP SYSTEMS SHALL BE USED IN SPECIFIC LOCATIONS AS FOLLOWS:   1. THROUGH-PENETRATIONS IN FIRE-RATED VERTICAL ASSEMBLIES. 2. THROUGH-PENETRATIONS IN FIRE-RATED HORIZONTAL ASSEMBLIES. 3. THROUGH-PENETRATIONS IN vertical service shafts. 4. FIRE-RESISTIVE JOINTS (WHETHER STATIC OR DYNAMIC) BETWEEN FIRE-RATED WALLS, FLOORS, AND FLOOR / CEILING ASSEMBLIES. 5. EXPANSION JOINTS IN WALLS AND FLOORS. 6. PERIMETER JOINTS AT THE INTERSECTION OF EXTERIOR CURTAIN WALL ASSEMBLY AND FLOOR / CEILING ASSEMBLIES. 7. Locations with other forms of gap or opening in assemblies where the fire integrity is compromised. |
| **2.0** | **FIRESTOP STANDARDs** | |
|  | **2.1** | FIRESTOP SYSTEMS SHALL conform to *‘ASTM / UL STANDARD’* OR *‘EN STANDARD’* provided withsystem test approval from accredited testing laboratories. THE FIRESTOP SYSTEMS SHALL be designed and tested as follows: - |
|  | **2.1.1** | **through-penetrationS firestop systemS** |
|  |  | 1. STANDARD REQUIREMENT - ***‘ASTM E814 / UL 1479’*** OR ***‘EN 1366-3’*** 2. **INTUMESCENCE** PROPERTY FOR COMBUSTIBLE PENETRANTS |
|  | **2.1.2** | **FIRE-RESISTIVE joint systemS** |
|  |  | 1. STANDARD REQUIREMENT - ***‘ASTM E1966 / UL 2079’*** OR ***‘EN 1366-4’*** 2. MOVEMENT CAPABILITY |
|  | **2.1.3** | **PERIMETER JOINTS SYSTEMS** |
|  |  | 1. STANDARD REQUIREMENT *-* ***‘ASTM E2307’*** OR ***‘EN 1364-4’*** 2. MOVEMENT CAPABILITY |
|  | **2.1.4** | **OTHER TESTING CONDITIONS** |
|  |  | 1. ACOUSTIC INSULATION 2. GAS TIGHTNESS 3. MOVEMENT CAPABILITY 4. WATER TIGHTNESS 5. AGEING RESISTANCE 6. MOLD AND MILDEW RESISTANCE 7. ELECTRICAL RESISTANCE |
|  | **2.2** | FIRESTOP SYSTEMS WHEN IN THE EVENT OF NO QUALIFIED TESTED SYSTEM IS AVAILABLE FROM A MANUFACTURER FOR SPECIFIC APPLICATION, AN ENGINEERING JUDGMENT (EJ) SHALL BE DERIVED BY THE MANUFACTURER FROM SIMILAR QUALIFIED TESTED SYSTEM DESIGNS OR OTHER TEST REPORTS. THE EVALUATION OF ENGINEERING JUDGMENT (EJ) DOCUMENTS SHALL FOLLOW THE GUIDELINES SET FORTH BY INTERNATIONAL FIRESTOP COUNCIL (IFC). |
|  | **2.3** | FIRESTOP SYSTEMS (THROUGH-PENETRATIONS, FIRE-RESISTIVE JOINTS, OR PERIMETER JOINTS) MAY HAVE ADDITIONAL PERFORMANCE REQUIREMENTS SUCH AS COMPENSATION OF MOVEMENT, AIR / SMOKE TIGHTNESS, ACOUSTIC PROPERTIES ETC. WHICH ARE NOT DESCRIBED IN THE ABOVE STANDARDS BUT SHALL BE CONSIDERED IN REFERENCE TO THE PROJECT REQUIREMENT. |
| **3.0** | **QUALITY ASSURANCE** | |
|  | **3.1** | firestop compound shall not contain any harmful solvents or inorganic fibers. The firestop material must be unaffected by moisture and must maintain the fire integrity of the floor or wall assembly for its fire RATING WHICH is tested in accordance WITH applicable referenced standards. |
|  | **3.2** | proposed firestop materials and methods shall conform to applicable governing codes having local jurisdiction – under by-laws ubbl 1984 and general provisions of contract, which are accepted for use by director general of fire services (d.g.f.s.) or bomba. |
|  | **3.3** | Firestop systems do not re-establish the structural integrity of load bearing assemblies or support live loads and traffic. installer shall consult the structural engineer prior to penetrating any load bearing assembly. |
|  | **3.4** | installation of Firestop systemS shall CONFORM requirements of qualified STANDARDS or manufacturer's approved modifications, as supported by engineering Judgment (EJ). |
|  | **3.5** | It is recommended that firestop systems TO be supplied and installed by a manufacturer-accredited specialist contractor (e.g., Hilti Accredited Firestop Specialist Contractor – HAFSC), or an equivalent certified by the firestop system manufacturer, to ensure the highest standard of installation quality and compliance. |
| **4.0** | **tender submissions – INFORMATION REQUIRED IN TENDER RETURN** | |
|  | **4.1** | The Tenderer shall submit the following information within the tender submission: -   1. Statement of compliance with the fireSTOP specification AS PER SECTION 2.1. 2. product Data sheets of the proposed fireSTOP SYSTEMs FOR FIRE compartmentation. 3. other firestop test reports, where relevant OF the proposed PRODUCT WHICH are performed by an accredited anD INDEPENDENT TEST LABORATORY: - 4. acoustic 5. GAS TIGHTNESS 6. MOVEMENT CAPABILITY 7. WATER TIGHTNESS 8. AGEING RESISTANCE 9. MOLD & mILDEW RESISTANCE 10. ELECTRICAL RESISTANCE 11. GREEN BUILDING CERTIFICATION - VOC 12. VALID ‘Jabatan Bomba dan Penyelamat Malaysia’ Fire Certificate. 13. Local Commercial Project Reference. |
|  | **4.2** | UPON AWARD of the contract, the INSTALLER SHALL FOLLOW THE SUBMITTALS REQUIRED UNDER SECTION 5.0 OF THE GENERAL NOTES. |
|  | **4.3** | If the tenderer proposes a different proprietary product, it must be submitted FOR THE ARCHITECT’S AND PROJECT CONSULTANT’S REVIEW AND APPROVAL AS AN ACCEPTABLE EQUIVALENT. |
| **5.0** | **SUBMITTALs** | |
|  | **5.1** | THE INSTALLER IS REQUIRED TO SUBMIT THE FOLLOWING DOCUMENTS FOR ARCHITECT’S AND PROJECT CONSULTANT’S REVIEW AND APPROVAL PRIOR TO INSTALLATION OF FIRESTOP SYSTEMS,   1. MANUFACTURER’S SPECIFICATION AND TECHNICAL DATA FOR EACH MATERIAL SUPPORTED BY ‘Jabatan Bomba dan Penyelamat Malaysia’ fire CERTIFICATE. 2. MATERIAL SAFETY DATA SHEETS. 3. DOCUMENTATION OF QUALIFIED TESTED FIRESTOP SYSTEMS TO BE USED, WHICH MEET THE applicable referenced standards 4. MANUFACTURER’S PRINTED INSTALLATION INSTRUCTIONS (MPII). 5. IF APPLICABLE, ENGINEERING JUDGMENT (EJ) REPORT FOR A PARTICULAR APPLICATION WHERE THERE IS NO SPECIFIC TESTED AND LISTED FIRESTOP SYSTEM AVAILABLE. 6. IF APPLICABLE, MATERIAL CERTIFICATE COMPLYING WITH GREEN BUILDING CERTIFICATION REQUIREMENTS FOR INDOOR ENVIRONMENTAL QUALITY CREDIT – VOC CONTENT AND VOC EMISSION. |
|  | **5.2** | SUBMISSION OF ENGINEERING JUDGMENT (EJ) – WHERE THERE IS NO SPECIFIC TESTED AND LISTED FIRESTOP SYSTEM AVAILABLE FOR A PARTICULAR APPLICATION, THE INSTALLER SHALL REQUEST THE MANUFACTURER TO PROVIDE A SITE-SPECIFIC EJ. THE INSTALLER SHALL THEN SUBMIT THE EJ FOR THE ARCHITECT’S AND PROJECT CONSULTANT’S APPROVAL AND ACCEPTANCE PRIOR TO INSTALLATION ON SITE. |
|  | **5.3** | THE INSTALLER IS REQUIRED TO SUBMIT SHOP DRAWINGS (IF APPLICABLE) SHOWING DETAILS OF EACH FIRESTOP SYSTEM, WHERE THE CONSTRUCTION DETAILS SHALL ACCURATELY REFLECT THE ACTUAL JOBSITE CONDITIONS. |
|  | **5.4** | THE INSTALLER IS required To prepare an installation demo of the firestop systemS with SUBMITTED firestop materials on site prior to jobsite implementation, for further comments and acceptance by Architect and project consultants. |
|  | **5.5** | THE INSTALLER IS REQUIRED TO submit \_\_\_ years Jointly and Severally Warranty to PROJECT CONSULTANT; TOGETHER WITH Forms C1, C2 and C3 for Bomba’s acceptance. |
| **6.0** | **EXECUTION** | |
|  | **6.1** | **DELIVERY AND STORAGE** |
|  | **6.1.1** | Deliver materials undamaged, in original, unopened containers WITH INTACT AND LEGIBLE MANUFACTURER’S LABELS, IDENTIFYING PRODUCT NAME, MANUfacturer's name, MANUFACTURING and EXPIRY DATE, LOT NUMBER, AND ‘U.L.’ or ‘eta’ brand designation, product description and ‘U.L.’ or ‘eta’ classification markING. |
|  | **6.1.2** | MATERIALS SHALL BE STORED AND HANDLED AS PER THE MANUFACTURER’S INSTRUCTIONS TO PREVENT DETERIORATION OR DAMAGE DUE TO MOISTURE, TEMPERATURE CHANGES, CONTAMINANTS, OR OTHER CAUSES. |
|  | **6.1.3** | Comply with recommended procedures, precautions or remedies described in Material Safety Data Sheets as applicable. |
|  | **6.1.4** | ALL MATERIALS SHALL BE INSTALLED PRIOR TO THE EXPIRATION OF SHELF LIFE. |
|  | **6.2** | **site examination and preparation** |
|  | **6.2.1** | General conditions of substrates, opening configurations, penetrating items, joint gaps, and other conditions affecting performance shall be thoroughly examined. |
|  | **6.2.2** | The installer shall VERIFY all pipes, conduits, cables, and / or other items which penetrate THROUGH FIRE-RATED COMPARTMENT HAVE BEEN PERMANENTLY INSTALLED before starting the FIRESTOP INSTALLATION, UNLESS THE SPECIFIED FIRESTOP SYSTEMS ALLOW FOR POST-INSTALLED PENETRANTS. |
|  | **6.2.3** | THE INSTALLATION of FIRESTOP systems shall commence only after unsatisfactory SITE conditions have been corrected. |
|  | **6.2.4** | Clean substrate of dirt, dust, grease, oil, loose materials, rust or other matter that may affect the proper fitting or adhesion of the firestopping materials. |
|  | **6.3** | **Installation** |
|  | **6.3.1** | The Installer shall install firestop in accordance with certified listed systems, including illustrations, installation drawings therein and manufacturer’s installation instructions. |
|  | **6.3.2** | the installer shall Seal all openings or gaps made by penetrations or joints to ensure compliance of fire rating, AND AIR, smoke & water tightness. |
|  | **6.3.3** | Firestopping may be necessary in various sections of the project specifications. the installer shall identify All locations that require firestopping, and the work in this section should be coordinated with related sections to ensure a consistent and effective firestopping system throughout the project. |
|  | **6.3.4** | the installer shall Schedule firestop installation after the penetrating items have been fully installed AND prior to covering or concealing the openings. |
|  | **6.3.5** | the installer must ENSURE a reasonable degree of workmanship, which would indicate compliance of the specified design. |
|  | **6.3.6** | Upon completion of the firestop installation, the installer is recommended to provide a labelled manufacturer’s firestop sticker at the firestop INSTALLATION area. |
|  | **6.4** | **installer qualifications** |
|  | **6.4.1** | the installer shall be certified, licensed, or otherwise Trained by the manufacturer, having provided with the necessary installation training conducted by THE MANUFACTURER’S representative to install the manufacturer’s products as per specified requirements. |
|  | **6.4.2** | in the event of arranging firestop installation TRAINING, the manufacturer’s representative shall provide an onsite firestop installation training to the installer and the training record must be submitted by the installer to the main contractor and project consultant for record purposes. |
| **7.0** | **inspection** | |
|  | **7.1** | the installed firestop systems shall not be concealed from view until all relevant parties have inspected and APPROVED: -   1. Architect 2. project consultant 3. inspector of works from relevant parties 4. Manufacturer’s REPRESENTATIVE, if required by (I) and (II) |
|  | **7.2** | construction documents detailing the firestop locations and SYSTEMS MUST BE KEPT ON SITE TO ASSIST IN THE CONDUCT OF INSPECTION. |
|  | **7.3** | Walk-Through VISUAL INSPECTIONS shall BE MADE DURING THE PRELIMINARY AND FINAL INSPECTION WITH appropriate tools, such as MEASURING TAPE, FLASHLIGHT etc. |
|  | **7.4** | the visual inspections shall be conducted only when requested by ARCHITECT OR PROJECT CONSULTANT. THESE VISUAL INSPECTION SHOULD INCLUDE the attendance of stakeholders as per clause 7.1, INCLUDING THE INSTALLER AND RELEVANT PARTIES SUCH AS THE PROJECT OWNER, WHERE APPLICABLE. |
|  | **7.5** | when necessary or required, A DESTRUCTIVE EVALUATION shall BE conducted upon request by ARCHITECT, project consultant, or inspector of works. the destructive tested area shall be made good by the firestop installer after evaluation. |
|  | **7.6** | THE OFFICIAL visual inspection and / or destructive evaluation report shall be compiled and submitTED to THE ARCHITECT and project consultant for documentation purposes. |
|  | **7.7** | the firestop installer shall Rectify the defect works if any, based on the manufacturer’s recommended Rectification method. |

**ANNEX A**

**Table A-1: Inspection Checklist for Through Penetrations**

|  |  |  |
| --- | --- | --- |
| CHECK POINTS | OBSERVATION | COMMENTS |
| 1) Is the hourly fire rating of the referenced firestop system or EJ greater than or equal to the fire rating of the floor/wall assembly being penetrated? | Yes No N/A |  |
| 2) Does the floor or wall construction match the floor/wall assembly tested in the firestop system or EJ? | Yes No N/A |  |
| 3) Does the penetrating Item(s) match the acceptable list of penetrants (material, size, diameter, insulation type and thickness, etc.) shown in the firestop system or EJ? | Yes No N/A |  |
| 4) Does the field installation comply with the following requirements of the referenced firestop system or EJ?  a) Size of opening  b) Minimum and maximum annular space requirements  c) Proper backing material (when required)  d) Proper firestopping product, including type, amount, thickness, orientation, etc.  e) Proper accessories installed, including anchor/fasteners, mounting or cover plates, frames, etc.  f) For multiple penetrants: proper distance between penetrating items  g) For cables: allowable cable size, spacing, bundle size, and percent fill of opening | Yes No N/A |  |
| 5) For wall assemblies, verify that the field installation was installed properly on both sides of the wall. | Yes No N/A |  |

**Table A-2: Inspection Checklist for Fire-Resistive Joints**

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| CHECK POINTS | OBSERVATION | COMMENTS |
| 1) Is the hourly fire rating of the referenced fire resistive joint system or EJ greater than or equal to the fire rating of the floor/wall assembly? | Yes No N/A |  |
| 2) Does the floor and/or wall construction match the floor/wall assembly tested in the firestop system or EJ? | Yes No N/A |  |
| 3) Is the fire resistive joint system tested for movement required for the assembly? Does it match the required class and type of movement? | Yes No N/A |  |
| 4) Does the field installation comply with the following requirements of the referenced fire resistive joint system or EJ?  a) Minimum and/or maximum width of the joint  b) Proper backing material (when required), including proper orientation and compression of backing material  c) Proper firestopping product, including type, amount, thickness, orientation, etc.  e) Proper accessories installed, including anchor/fasteners, mounting or cover plates, frames, etc.  f) For firestop spray products: does the applied firestop spray overlap the adjacent surfaces properly? | Yes No N/A |  |

**Table A-3: Inspection Checklist for Perimeter Fire Barrier Joints**

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| CHECK POINTS | OBSERVATION | COMMENTS |
| 1) Is the hourly fire rating of the referenced perimeter fire barrier system or EJ greater than or equal to the fire rating of the floor assembly? | Yes No N/A |  |
| 2) Does the floor construction and the exterior wall construction match the floor/wall construction tested in the perimeter fire barrier system or EJ? | Yes No N/A |  |
| 3) Does the curtain wall construction comply with the following requirements of the referenced perimeter fire barrier system or EJ?  a) Does the system include vision glass (if applicable)?  b) Proper spacing of mullions and transoms?  c) Proper mullion coverings (type, thickness, density, etc.)  c) Proper curtain wall spandrel insulation (type, thickness, density, etc.)  d) Proper spandrel panel perimeter angles or stiffeners (dimensions, gauge, fastener spacing, etc.) | Yes No N/A |  |
| 4) Does the field installation of the firestopping materials comply with the following requirements of the referenced fire resistive joint system or EJ?  a) Minimum and/or maximum width of the joint  b) Proper backing material installed including proper orientation, depth, and compression of backing material  c) Proper firestopping product, including type, amount, thickness, orientation, etc.  e) Proper accessories installed, including support clips for backing material.  f) For firestop spray products: does the applied firestop spray overlap the adjacent surfaces properly? | Yes No N/A |  |

***\*Last Revision: Jul 2025***

**Table of Additional Attributes of Firestop Products**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **Attributes** | **FIRESTOP PRODUCTS** | | | | | | | | | | | | | | | | | |
| **Elastomeric Silicone Firestop SealanT**  (CP601S) | **Flexible Acrylic Firestop SealanT**  (CP606) | **Cementitious Based Firestop Mortar**  (CP636) | **Intumescent Firestop Collar**  **(**CP644 / CP643N) | **Intumescent Firestop Wrap**  (CP648E) | **Firestop Speed Sleeve**  (CP653) | **Firestop Expansion Foam**  (CP660) | **Fire Safety Coating**  (CP670) | **FIRE CAVITY BARRIER (VENTILATED)**  (CP674V) | **FIRE CAVITY BARRIER (Non-VENTILATED)**  (CP674 NV) | **FIRESTOP CABLE COATING**  (CP679 PLUS) | **Intumescent Firestop Block**  (CFS-BL) | **FIRESTOP CAST-IN DEVICE**  (CP680P) | **Stainless Steel Composite Sheet**  (CFS-COS) | **Firestop Acrylic Joint Spray**  (CFS-SP WB) | **Intumescent Firestop SealanT**  (FS-ONE MAX) | **Firestop Silicone Joint Spray**  (CFS-SP SIL) |
| **Acoustic Insulation[[1]](#footnote-1)** | ✓ | ✓ | ✓ |  | ✓ | ✓ | ✓ | ✓ |  |  |  | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Gas Tightness2** | ✓ | ✓ | ✓ |  |  | ✓ | ✓ | ✓ |  |  |  | ✓ | ✓ |  | ✓ | ✓ | ✓ |
| **Movement Capability3** | ±25% | ±12.5% |  |  |  |  |  |  |  |  |  |  |  |  | ±50% |  |  |
| **Water Tightness4** | ✓ | ✓ |  |  |  |  |  | ✓ |  |  |  |  |  |  | ✓ |  | ✓ |
| **Ageing Resistance** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  |  | ✓ | ✓ |  | ✓ | ✓ | ✓ | ✓ |
| **Mold & Mildew Resistance5** | Rating 0 | Rating 0 | Rating 0 | Rating 0 | Rating 0 |  | Rating 0 | Rating 0 |  |  |  | Rating 0 | RATING 0 |  | Rating 0 | Rating 0 |  |
| **Electrical Resistance** | ✓ |  |  |  |  |  | ✓ | ✓ |  |  |  | ✓ |  |  |  | ✓ |  |
| **Green Building Product6** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  |  |  | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

**Notes:**

**1 acoustic insulation** tested under standard reference of EN ISO 10140 and EN ISO 717 - airborne sound insulation.

**2 gas tightness** tested under standard reference of en 1026 and en 12211 – air permeability.

**3 Movement capability** tested under standard reference of EN ISO 11600 – Elasticity.

**4 water tightness** tested under standard reference of ul 1479 – w-rating.

**5 mold& Mildew resistance** tested under standard reference of astm g 21-96 in respect of en iso 846, whereby the material will be rated between 0 to 4, with rating 0 exhibits no attack by fungi.

**6 green building certificates** may consist of the following depending on the product: (1) VOC Content / emission, (2) epd, (3) C2C, (4) LCA

**SCHEDULE OF FIRESTOP APPLICATION - through-penetration**

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| **CATEGORIES** | **NO. OF PENETRANT** | **TYPES OF APPLICATIONS** | **ADDITIONAL PROPERTIES** | **OPENING / GAP SIZE** | **FIRE-RATED  BASE MATERIAL** | **FIRE INTEGRITY (UP TO)** | **APPLICABLE PRODUCTS** | **EXAMPLE OF UL REFERENCES** |
| **THROUGH-PENETRATION FIRE-STOPPING  (PIPING)** | SINGLE PENETRANT | NON-COMBUSTIBLE (METAL) PIPE | NON-INSULATED | OUTSIDE DIAMETER (OD) ≤ 203mm (8") | CONCRETE WALL / FLOOR | 2 HOURS / 3 HOURS / 4 HOURS | INTUMESCENT FIRESTOP SEALANT (FS-ONE MAX) | C-AJ-1380, C-BJ-1037 |
| CAST-IN FIRESTOP SLEEVE (CP 680-P) | F-A-1016, F-A-1017, F-A-1091 |
| SILICONE FIRESTOP SEALANT (CP601S) | C-AJ-1498, C-AJ-1150 |
| FLEXIBLE ACRYLIC FIRESTOP SEALANT (CP606) | C-AJ-1150, C-AJ-1609 |
| 203mm (8") < OUTSIDE DIAMETER (OD) ≤ 610mm (24") | 2 HOURS / 3 HOURS / 4 HOURS | INTUMESCENT FIRESTOP SEALANT (FS-ONE MAX) | C-AJ-1155 |
| SILICONE FIRESTOP SEALANT (CP601S) | C-AJ-1149, C-AJ-1158, C-AJ-1630 |
| FLEXIBLE ACRYLIC FIRESTOP SEALANT (CP606) | C-AJ-1372 |
| 610mm (24") < OUTSIDE DIAMETER (OD) ≤ 762mm (30") | 2 HOURS / 3 HOURS | INTUMESCENT FIRESTOP SEALANT (FS-ONE MAX) | C-AJ-1226 |
| SILICONE FIRESTOP SEALANT (CP601S) | C-AJ-1425 |
| FLEXIBLE ACRYLIC FIRESTOP SEALANT (CP606) | C-AJ-1453 |
| INSULATED | PIPE OUTSIDE DIAMETER (INCLUSIVE INSULATION) ≤ 203mm (8") | CONCRETE WALL / FLOOR | 2 HOURS / 3 HOURS / 4 HOURS | INTUMESCENT FIRESTOP SEALANT (FS-ONE MAX) | C-AJ-5343 |
| CAST-IN FIRESTOP SLEEVE (CP 680-P) | F-A-5018 |
| INTUMESCENT FIRESTOP WRAP (CP 648E) | C-AJ-5342 |
| SILICONE FIRESTOP SEALANT (CP601S) | C-AJ-5048 |
| FLEXIBLE ACRYLIC FIRESTOP SEALANT (CP606) | C-AJ-5048 |

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| **CATEGORIES** | **NO. OF PENETRANT** | **TYPES OF APPLICATIONS** | **ADDITIONAL PROPERTIES** | **OPENING / GAP SIZE** | **FIRE-RATED  BASE MATERIAL** | **FIRE INTEGRITY (UP TO)** | **APPLICABLE PRODUCTS** | **EXAMPLE OF UL REFERENCES** |
| **THROUGH-PENETRATION FIRE-STOPPING**  **(PIPING)** | SINGLE PENETRANT | NON-COMBUSTIBLE (METAL) PIPE | INSULATED | 203mm (8") < PIPE OUTSIDE DIAMETER (INCLUSIVE OF INSULATION) ≤ 254mm (24") | CONCRETE WALL / FLOOR | 2 HOURS / 3 HOURS / 4 HOURS | INTUMESCENT FIRESTOP SEALANT (FS-ONE MAX) | C-AJ-5061 |
| INTUMESCENT FIRESTOP WRAP (CP 648E) | C-AJ-5341 |
| SILICONE FIRESTOP SEALANT (CP601S) | F-A-5042 |
| FLEXIBLE ACRYLIC FIRESTOP SEALANT (CP606) | C-AJ-5265 |
| COMBUSTIBLE PIPE (E.G. uPVC, PVC, ABS, CPVC, PVDF, PP, FRPP ETC.) | NON-INSULATED | OUTSIDE DIAMETER (OD) ≤ 50mm (2") | CONCRETE WALL / FLOOR | 2 HOURS / 3 HOURS / 4 HOURS | INTUMESCENT FIRESTOP SEALANT (FS-ONE MAX) | C-AJ-2567, W-J-2057 |
| CAST-IN FIRESTOP SLEEVE (CP 680-P) | F-A-2053 |
| INTUMESCENT FIRESTOP WRAP (CP 648E) W/ COLLAR | C-AJ-2372 |
| INTUMESCENT FIRESTOP COLLAR (CP 644 / CP 634N) | C-AJ-2109 |
| 50mm (2") < OUTSIDE DIAMETER (OD) ≤ 102mm (4") | INTUMESCENT FIRESTOP SEALANT (FS-ONE MAX) | C-AJ-2335 |
| CAST-IN FIRESTOP SLEEVE (CP 680-P) | F-A-2053 |
| INTUMESCENT FIRESTOP WRAP (CP 648E) W/ COLLAR | C-AJ-2342, C-BJ-2017 |
| INTUMESCENT FIRESTOP COLLAR (CP 643N / CP 644) | C-AJ- 2110 |
| 102mm (4") < OUTSIDE DIAMETER (OD) ≤ 254mm (10") | CAST-IN FIRESTOP SLEEVE (CP 680-P) | F-A-2166 |
| INTUMESCENT FIRESTOP WRAP (CP 648E) W/ COLLAR | C-AJ-2371 |
| INTUMESCENT FIRESTOP COLLAR (CP 643N / CP 644) | C-AJ-2109, W-J-2091 |

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| **CATEGORIES** | **NO. OF PENETRANT** | **TYPES OF APPLICATIONS** | **ADDITIONAL PROPERTIES** | **OPENING / GAP SIZE** | **FIRE-RATED  BASE MATERIAL** | **FIRE INTEGRITY (UP TO)** | **APPLICABLE PRODUCTS** | **EXAMPLE OF UL REFERENCES** |
| **THROUGH-PENETRATION FIRE-STOPPING**  **(PIPING)** | SINGLE PENETRANT |  |  | 305mm (12")  [356mm (14") / 457mm (18")] - EJ IS RECOMMENDED! |  | 3 HOURS | INTUMESCENT FIRESTOP WRAP (CP 648E) W/ COLLAR | C-AJ-2420 |
| INSULATED | PIPE OUTSIDE DIAMETER (INCLUSIVE INSULATION) ≤ 152mm (6") |  | 2 HOURS | INTUMESCENT FIRESTOP SEALANT (FS-ONE MAX) | C-AJ-2632 |
| CAST-IN FIRESTOP SLEEVE (CP 680-P) | F-A-2205 |
| INTUMESCENT FIRESTOP WRAP (CP 648E) | C-AJ-5320 |
| **THROUGH-PENETRATION FIRE-STOPPING  (CABLING)** | SINGLE PENETRANT | CABLE / CABLE BUNDLE | FIXED | MAX OPENING OF 152mm (6") DIAMETER | CONCRETE WALL / FLOOR | 2 HOURS / 3 HOURS / 4 HOURS | INTUMESCENT FIRESTOP SEALANT (FS-ONE MAX) | C-AJ-3180, C-AJ-3095, W-J-3050 |
| ADJUSTABLE / REPENETRATION | SPEED SLEEVE (CP 653) | C-AJ-3282, C-AJ-3282, W-J-3167 |
| FIXED | MAX OPENING OF 101mm (4") DIAMETER | 2 HOURS / 3 HOURS | ELASTOMETRIC SILICONE FIRESTOP SEALANT (CP601S) | C-AJ-3070 |
| FLEXIBLE ACRYLIC FIRESTOP SEALANT (CP606) | C-AJ-3181 |
| **THROUGH-PENETRATION FIRE-STOPPING  (LARGE OPENING)** | MULTIPLE PENETRANTS  (SINGLE TRADE) | MULTIPLE PENETRATIONS W/ SAME TYPE OF SERVICES | NON-LOAD BEARING | MAX SIZE OF OPENING 1,239cm2 W/ MAX DIEMNSION OF 610mm | CONCRETE WALL / FLOOR | 2 HOURS / 3 HOURS | INTUMESCENT FIRESTOP SEALANT (FS-ONE MAX) | C-AJ-8333, C-AJ-5044 |
| MAX SIZE OF OPENING 6,606cm2 W/ MAX DIMENSION OF 813mm | CONCRETE WALL / FLOOR | 2 HOURS | STAINLESS STEEL COMPOSITE SHEET (CFS-COS) | C-AJ-2885, C-AJ-8318 |
| LARGE OPENINGS (FIT TO TEST) | CONCRETE WALL / FLOOR | 2 HOURS / 3 HOURS / 4 HOURS | INTUMESCENT FIRESTOP BLOCK (CFS-BL) | C-AJ-8211 |
| MAX SIZE OF OPENING 2,323cm2 W/ MAX DIMENSION 622mm | CONCRETE WALL | 2 HOURS | FIRESTOP EXPANSION FOAM (CP660) | W-J-1327 |

|  |  |  |  |  |  |  |  |  |
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| **CATEGORIES** | **NO. OF PENETRANT** | **TYPES OF APPLICATIONS** | **ADDITIONAL PROPERTIES** | **OPENING / GAP SIZE** | **FIRE-RATED  BASE MATERIAL** | **FIRE INTEGRITY (UP TO)** | **APPLICABLE PRODUCTS** | **EXAMPLE OF UL REFERENCES** |
| **THROUGH-PENETRATION FIRE-STOPPING**  **(LARGE OPENING)** | MIXED PENETRANTS  (MULTI-TRADE) | MULTIPLE PENETRATIONS  W/ DIFFERENT TYPE OF SERVICES | NON-LOAD BEARING | MAX SIZE OF OPENING 9,290cm2 W/ MAX DIEMNSION OF 1,219mm | CONCRETE WALL / FLOOR | 2 HOURS / 3 HOURS / 4 HOURS | INTUMESCENT FIRESTOP SEALANT (FS-ONE MAX) | C-AJ-8143 |
| MAX SIZE OF OPENING 6,606cm2 W/ MAX DIMENSION OF 813mm | CONCRETE WALL / FLOOR | STAINLESS STEEL COMPOSITE SHEET (CFS-COS) | C-AJ-8252, C-AJ-8250 |
| LARGE OPENINGS (FIT TO TEST) | CONCRETE WALL / FLOOR | INTUMESCENT FIRESTOP BLOCK (CFS-BL) | C-AJ-8207, W-J-8043 |

**\*NOTES:**

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2. CERTAIN APPLICATIONS MAY REQUIRE SECONDARY PRODUCTS TO COMPLIMENT THE FULL SOLUTION OF A PASSIVE FIRE PROTECTION SYSTEM.

3. FOR ANY APPLICATIONS WHICH ARE NOT COVERED BY QUALIFIED TESTED SYSTEM, HILTI IS CAPABLE TO PROVIDE AN ENGINEERING JUDGMENT (EJ) TOGETHER WITH HILTI'S INSTALLATION METHOD.

4. IN CASE OF FURTHER ENQUIRIES, PLEASE DO NOT HESITATE TO CONTACT HILTI'S CUSTOMER SERVICE AT **TOLL FREE 1800-88-0985** OR SEND AN EMAIL TO HILTI AT **MY.ENGINEERING@HILTI.COM**.

**SCHEDULE OF FIRESTOP APPLICATION – joints and others**

|  |  |  |  |  |  |  |  |  |
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| **CATEGORIES** | **TYPE OF BARRIER** | **TYPES OF APPLICATIONS** | **ADDITIONAL PROPERTIES** | **OPENING / GAP SIZE** | **FIRE-RATED  BASE MATERIAL** | **FIRE INTEGRITY (UP TO)** | **APPLICABLE PRODUCTS** | **EXAMPLE OF UL REFERENCES** |
| **FIRE-RESISTIVE JOINTS** | EXPANSION JOINTS CONTROL JOINTS SEISMIC JOINTS | BOTTOM-OF-WALL JOINTS (BW) FLOOR-TO-FLOOR JOINTS (FF) FLOOR-TO-WALL JOINTS (FW) HEAD-OF-WALL JOINTS (HW) WALL-TO-WALL JOINTS (WW) | MOVEMENT CAPABILITY UP TO ±50% WEATHER RESISTANT | MAX GAP WIDTH 152mm (6") | CONCRETE WALL / FLOOR GYPSUM WALL / FLOOR | 2 HOURS / 3 HOURS / 4 HOURS | ELASTOMETRIC SILICONE FIRESTOP SEALANT (CP601S) | HW-D-1008, FF-D-1125, FF-D-1047 |
| MOVEMENT CAPABILITY UP TO ±25% ACOUSTIC PROPERTIES | MAX GAP WIDTH 95mm (3.75") | FLEXIBLE ACRYLIC FIRESTOP SEALANT (CP606) | HW-D-1009, FF-D-1012, FW-D-1071 |
| LIFT DOOR / DOOR FRAME |  |  | WALL | 2 HOURS | FLEXIBLE ACRYLIC FIRESTOP SEALANT (CP606) |  |
|
| **FIRE-RATED PERIMETER** | PERIMETER BARRIER | CURTAIN WALL JOINTS | MOVEMENT CAPABILITY UP TO ±50% | MAX JOINT WIDTH 200mm | HORIZONTAL JOINTS | 2 HOURS | FIRETOP JOINT SPRAY (CFS-SP WB) | HI/BPF 120-12 |
| **EXTERNAL WALL SYSTEMS** | FACADE SYSTEMS | EXTERNAL CLADDING (HORIZONTAL) |  | MAX WIDTH 400mm |  | 1 HOUR | FIRE CAVITY BARRIER (VENTILATED) (CP 674 V) |  |
| EXTERNAL CLADDING (VERTICAL) | FIRE CAVITY BARRIER (NON-VENTILATED) (CP 674 NV) |  |
| **CABLE COATING** | FLAME SPREAD RETARDANT | INDUSTRY CABLES | CHEMICAL RESISTANCEWATER RESISTANCEOIL RESISTANCEUV RESISTANCEFM / IEC COMPLIANCE |  |  | IEC 60332-3-22CATEGORY A: 2018 FOR 60 MINS | FIRESTOP CABLE COATING (CP679A PLUS) |  |

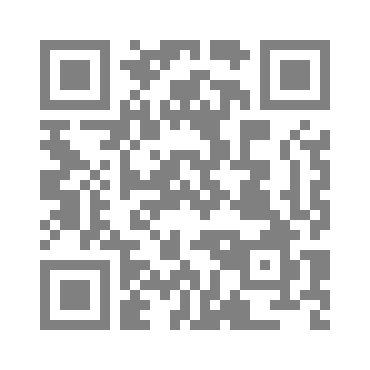
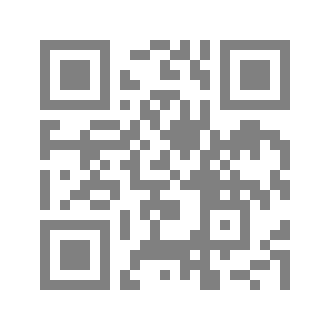
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1. [↑](#footnote-ref-1)