

## PLUMBING SPECIFICATIONS

### DOMESTIC WATER PIPING - COPPER TUBE AND FITTINGS

- A. HARD COPPER PIPE: ASTM B 88, TYPE L (ASTM B 88M, TYPE B) WATER TUBE, DRAIN TEMPER.
- CAST-COPPER SOLDER-JOINT FITTINGS: ASME B16.18, PRESSURE FITTINGS.
  - WROUGHT-COPPER SOLDER-JOINT FITTINGS: ASME B16.22, WROUGHT-COPPER PRESSURE FITTINGS.
  - BRONZE FLANGES: ASME B16.24, CLASS 150, WITH SOLDER-JOINT ENDS.
  - COPPER UNIONS: MSS J-323, CAST-COPPER-ALLOY, HEXAGONAL-STOCK BODY, WITH BALL-AND-SOCKET, METAL-TO-METAL SEATING SURFACES, AND SOLDER-JOINT OR THREADED ENDS.
- B. SOFT COPPER TUBE: ASTM B 88, TYPE K (ASTM B 88M, TYPE A) AND ASTM B 88, TYPE L (ASTM B 88M, TYPE B) WATER TUBE, ANNEALED TEMPER.
- COPPER SOLDER-JOINT FITTINGS: ASME B16.22, WROUGHT-COPPER PRESSURE FITTINGS.
- COPPER PRESSURE-SEAL-JOINT FITTINGS: ASME B16.22, WROUGHT-COPPER PRESSURE FITTINGS.
- MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
- AWWA CO.
  - VEGA; PLUMBING AND HEATING SYSTEMS.
  - NPS 2 (DN 50) AND SMALLER: WROUGHT-COPPER FITTING WITH EPDM-RUBBER O-RING SEAL IN EACH END.
  - NPS 3 AND NPS 4 (DN 80 AND DN 100): CAST-BRONZE OR WROUGHT-COPPER FITTING WITH EPDM-RUBBER O-RING SEAL IN EACH END.
- C. DIELECTRIC FITTINGS
- GENERAL REQUIREMENTS: ASSEMBLY OF COPPER ALLOY AND FERROUS MATERIALS WITH SEPARATING NONCONDUCTIVE INSULATING MATERIAL. INCLUDE END CONNECTIONS COMPATIBLE WITH PIPES TO BE JOINED.
- D. DRAWING PLANS, SCHEMATICS, AND DIAGRAMS INDICATE GENERAL LOCATION AND ARRANGEMENT OF DOMESTIC WATER PIPING. INDICATED LOCATIONS AND ARRANGEMENTS ARE USED TO SIZE PIPE AND CALCULATE FRICTION LOSS, EXPANSION, AND OTHER DESIGN CONSIDERATIONS. INSTALL PIPING AS INDICATED UNLESS DEVIATIONS TO LAYOUT ARE APPROVED ON COORDINATION DRAWINGS.
- E. INSTALL COPPER TUBING UNDER BUILDING SLAB ACCORDING TO CDA'S "COPPER TUBE HANDBOOK".
- F. INSTALL SHUTOFF VALVE IMMEDIATELY UPSTREAM OF EACH DIELECTRIC FITTING.
- G. INSTALL DOMESTIC WATER PIPING LEVEL WITH 0.125 PERCENT SLOPE DOWNWARD TOWARD DRAIN AND FLOOR.
- H. INSTALL PIPING CONCEALED FROM VIEW AND PROTECTED FROM PHYSICAL CONTACT BY BUILDING OCCUPANTS UNLESS OTHERWISE INDICATED AND EXCEPT IN EQUIPMENT ROOMS AND SERVICE STAIRS.
- I. INSTALL PIPING INDICATED TO BE EXPOSED AND PIPING IN EQUIPMENT ROOMS AND SERVICE AREAS AT RIGHT ANGLES OR PARALLEL TO BUILDING WALLS. DIAGONAL RUNS ARE PROHIBITED UNLESS SPECIFICALLY INDICATED OTHERWISE.
- J. INSTALL PIPING ABOVE ACCESSIBLE CEILINGS TO ALLOW SUFFICIENT SPACE FOR CEILING PANEL REMOVAL, AND COORDINATE WITH OTHER SERVICES OCCUPYING THAT SPACE.
- K. INSTALL SPRINKLER ADJUSTMENT AND SPECIALTIES TO ALLOW SERVICE AND MAINTENANCE.
- L. INSTALL PIPING TO PERMIT VALVE SERVICING.
- M. INSTALL NIPPLES, UNIONS, COUPLERS, AND VALVES WITH PRESSURE RATINGS THE SAME AS OR HIGHER THAN SYSTEM PRESSURE RATING USED IN APPLICATIONS BELOW UNLESS OTHERWISE INDICATED.
- N. INSTALL PIPING FREE OF SAGS AND BENDS.
- O. INSTALL FITTINGS FOR CHANGES IN DIRECTION AND BRANCH CONNECTIONS.
- P. INSTALL UNIONS IN COPPER TUBING AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT, MACHINE, AND SPECIALTY.
- Q. INSTALL SLEEVES FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FLOORS.
- R. INSTALL ESCUTCHEONS FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FLOORS.
- S. INSTALL SHUTOFF VALVE CLOSE TO WATER MAIN ON EACH BRANCH AND RISER SERVING PLUMBING FIXTURES OR EQUIPMENT, AND ON EACH BRANCH SUPPLY TO EQUIPMENT, AND ON EACH WATER SUPPLY TO PLUMBING FIXTURES THAT DO NOT HAVE SUPPLY STOPS. USE BALL VALVES FOR PIPING NPS 2 (DN 50) AND SMALLER. USE GATE VALVES FOR PIPING NPS 2-1/2 (DN 65) AND LARGER.
- T. HANGER AND SUPPORT INSTALLATION: SUPPORT VERTICAL PIPING AND TUBING AT BASE AND AT EACH FLOOR.
- U. ROD DIAMETERS MAY BE REDUCED ONE SIZE FOR DOUBLE-ROD HANGERS, TO A MINIMUM OF 3/8 INCH (10 MM).
- V. INSTALL HANGERS FOR COPPER TUBING WITH THE FOLLOWING MAXIMUM HORIZONTAL SPACING AND MINIMUM ROD DIAMETERS:
- NPS 3/4 (DN 20) AND SMALLER: 60 INCHES (1500 MM) WITH 3/8-INCH (10-MM) ROD.
  - NPS 1 AND NPS 1-1/4 (DN 25 AND DN 32): 72 INCHES (1800 MM) WITH 3/8-INCH (10-MM) ROD.
  - NPS 1-1/2 AND NPS 2 (DN 40 AND DN 50): 96 INCHES (2400 MM) WITH 3/8-INCH (10-MM) ROD.
  - NPS 2-1/2 (DN 65): 108 INCHES (2700 MM) WITH 1/2-INCH (13-MM) ROD.
  - NPS 3 TO NPS 5 (DN 80 TO DN 125): 10 FEET (3 M) WITH 1/2-INCH (13-MM) ROD.
  - NPS 6 (DN 150): 10 FEET (3 M) WITH 5/8-INCH (16-MM) ROD.
  - NPS 8 (DN 200): 10 FEET (3 M) WITH 3/4-INCH (19-MM) ROD.
- W. INSTALL SUPPORTS FOR VERTICAL COPPER TUBING EVERY 10 FEET (3 M).
- X. FIELD QUALITY CONTROL PERFORM TESTS AND INSPECTIONS.
- PIPING INSPECTIONS:
- DO NOT ENCLOSE, COVER, OR PUT PIPING INTO OPERATION UNTIL IT HAS BEEN INSPECTED AND APPROVED BY AUTHORITIES HAVING JURISDICTION AT LEAST ONE DAY BEFORE INSPECTION MUST BE MADE. PREPARE TESTS SPECIFIED BELOW IN PRESENCE OF AUTHORITIES HAVING JURISDICTION.
  - ROUGH-IN-INSPECTION: ARRANGE FOR INSPECTION OF PIPING BEFORE CONCRETE OR CLOSING-IN AFTER ROUGH-IN AND BEFORE SETTING FIXTURES.
  - FINAL INSPECTION: ARRANGE FINAL INSPECTION BY AUTHORITIES HAVING JURISDICTION TO OBSERVE TESTS SPECIFIED BELOW AND TO ENSURE COMPLIANCE WITH REQUIREMENTS.
  - REINSPECTION: IF AUTHORITIES HAVING JURISDICTION FIND THAT PIPING WILL NOT PASS TESTS OR INSPECTIONS, MAKE REQUIRED CORRECTIONS AND ARRANGE FOR REINSPECTION.
  - PREPARE INSPECTION REPORTS AND HAVE THEM SIGNED BY AUTHORITIES HAVING JURISDICTION.
- Y. PIPING TESTS:
- FILL DOMESTIC WATER PIPING. CHECK COMPONENTS TO DETERMINE THAT THEY ARE NOT AIR BOUND AND THAT PIPING IS FULL OF WATER.
  - TEST FOR LEAKS AND DEFECTS IN NEW PIPING AND PARTS OF EXISTING PIPING THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED. IF TESTING IS PERFORMED IN SEGMENTS, SUBMIT A SEPARATE REPORT FOR EACH TEST, COMPLETE WITH DIAGRAM OF PORTION OF PIPING TESTED.
  - LEAKAGE NEW, ALTERED, EXTENDED, OR REPLACED DOMESTIC WATER PIPING UNCOVERED AND UNCONCEALED UNTIL IT HAS BEEN TESTED AND APPROVED. EXPOSE WORK THAT WAS COVERED OR CONCEALED BEFORE IT WAS TESTED.
  - CAP AND SUBJECT PIPING TO STATIC WATER PRESSURE OF 50 PSIG (345 KPA) ABOVE OPERATING PRESSURE, WITHOUT EXCEEDING PRESSURE RATING OF PIPING SYSTEM MATERIALS. ISOLATE TEST SOURCE AND ALLOW TO STAND FOR FOUR HOURS. LEAKS AND LOSS IN TEST PRESSURE CONSTITUTE DEFECTS THAT MUST BE REPAIRED.
  - REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING OR PORTION THEREOF UNTIL SATISFACTORY RESULTS ARE OBTAINED.
  - PREPARE REPORTS FOR TESTS AND FOR CORRECTIVE ACTION REQUIRED.
- Z. DOMESTIC WATER PIPING WILL BE CONSIDERED DEFECTIVE IF IT DOES NOT PASS TESTS AND INSPECTIONS.
- AA. PREPARE TEST AND INSPECTION REPORTS.
- AB. CLEAN AND DISINFECT POTABLE AND NON-POTABLE DOMESTIC WATER PIPING AS FOLLOWS:
- PURGE NEW PIPING AND PARTS OF EXISTING PIPING THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED BEFORE USING.
  - USE PURGING AND DISINFECTING PROCEDURES PRESCRIBED BY AUTHORITIES HAVING JURISDICTION; IF METHODS ARE NOT PRESCRIBED, USE PROCEDURES DESCRIBED IN EITHER AWWA C651 OR AWWA C652 OR FOLLOW PROCEDURES DESCRIBED BELOW:
- FLUSH PIPING SYSTEM WITH CLEAN, POTABLE WATER UNTIL DIRTY WATER DOES NOT APPEAR AT OUTLETS.
  - FLUSH SYSTEM WITH CLEAN, POTABLE WATER UNTIL NO CHLORINE IS IN WATER COMING FROM SYSTEM AFTER THE STANDING TIME.
  - SUBMIT WATER SAMPLES IN STERILE BOTTLES TO AUTHORITIES HAVING JURISDICTION. REPEAT PROCEDURES IF BIOLOGICAL EXAMINATION SHOWS CONTAMINATION.
- AC. UNDER-BUILDING-SLAB, DOMESTIC WATER PIPING, NPS 2 (DN 50) AND SMALLER, SHALL BE THE FOLLOWING:
- SOFT COPPER TUBE, ASTM B 88, TYPE L (ASTM B 88M, TYPE B); WROUGHT-COPPER SOLDER-JOINT FITTINGS, AND BRAZED JOINTS.
- AD. ABOVEGROUND DOMESTIC WATER PIPING, NPS 2 (DN 50) AND SMALLER, SHALL BE THE FOLLOWING:
- HARD COPPER TUBE, ASTM B 88, TYPE L (ASTM B 88M, TYPE B); WROUGHT-COPPER SOLDER-JOINT FITTINGS, AND SOLDERED JOINTS.
  - COPPER PRESS FITTINGS: AT THE CONTRACTOR'S OPTION ON THE DOMESTIC HOT AND COLD WATER PIPING, COILING COIL, CONDENSATE DRAIN IN COPPER LINES 1/2" DIAMETER UP THROUGH 2-1/2" DIAMETER MECHANICAL PRESS (PRO-PRESS) JOINTS AND FITTINGS INCLUDING THE SMART CONNECTION FEATURE OPTION TO ENSURE THAT UNPRESSURIZED FITTING WILL EASILY BE DETECTED DURING PRESSURE TESTING AS MANUFACTURER BY VEGA, NIBCO AND APOLLO PRESS WILL BE ACCEPTABLE PROVIDED THE FITTING MANUFACTURER'S RECOMMENDED CHIPPING TOOL, WITH PROPERLY SIZED REPLACEMENT JAWS ARE UTILIZED RIGID TOOL COMPANY. INSTALLATION WILL BE IN ACCORDANCE WITH MANUFACTURER'S APPROVED PUBLISHED GUIDELINES.
- AE. ABOVEGROUND DOMESTIC WATER PIPING, NPS 2-1/2 TO NPS 4 (DN 65 TO DN 100), SHALL BE OF THE FOLLOWING:
- HARD COPPER TUBE, ASTM B 88, TYPE L (ASTM B 88M, TYPE B); CAST-COPPER SOLDER-JOINT FITTINGS, AND SOLDERED JOINTS.
  - GALVANIZED-STEEL PIPE: GROOVED-JOINT, GALVANIZED-STEEL-PIPE APPURTENANCES, AND GROOVED JOINTS.
- AH. DRAWINGS INDICATE VALVE TYPES TO BE USED. WHERE SPECIFIC VALVE TYPES ARE NOT INDICATED, THE FOLLOWING REQUIREMENTS APPLY:
- SHUTOFF DUTY: USE BALL VALVES FOR PIPING NPS 2 (DN 50) AND SMALLER. USE GATE VALVES WITH FLANGED ENDS FOR PIPING NPS 2-1/2 (DN 65) AND LARGER.
  - THROTTLING DUTY: USE BALL VALVES FOR PIPING NPS 2 (DN 50) AND SMALLER. USE BALL VALVES WITH FLANGED ENDS FOR PIPING NPS 2-1/2 (DN 65) AND LARGER.
  - HOT-WATER CIRCULATION VALVES: CALIBRATED BALANCING VALVES.
  - DRAIN DUTY: HOSE-END DRAIN VALVES.
- AI. USE CHECK VALVES TO MAINTAIN CORRECT DIRECTION OF DOMESTIC WATER FLOW TO AND FROM EQUIPMENT.
- AJ. IRON GROOVED-END VALVES MAY BE USED WITH GROOVED-END PIPING.

- AK. WATER HAMMER ARRESTERS
- MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
    - AMTROL, INC.
    - JOSAM COMPANY.
    - MFAB, INC.
    - D. PIP INC.
    - SIOUX CHIEF MANUFACTURING COMPANY, INC.
    - WATTS DIVISION OF SMITH INDUSTRIES, INC.
    - G. TYLER PIPE, WADE DIV.
    - H. WAITS DRAMAQUE PRODUCTS INC.
  - STANDARD: ASSE 101 OR PDI-WH201.
  - PIPE: COPPER SUEB (C) MATERIALS; CAST-IRON SOIL PIPE AND FITTINGS; GASKETS; AND GASKETED JOINTS.
  - SIZES: ASSE 1010, SIZES AA AND A THROUGH F OR PDI-WH 201, SIZES A THROUGH F.
- INSTALL WATER HAMMER ARRESTERS IN WATER PIPING ACCORDING TO PDI-WH 201.
- INSTALL AIR VENTS AT HIGH POINTS OF WATER PIPING. INSTALL DRAIN PIPING AND DISCHARGE OUTDOOR DRAIN.
- SANITARY WASTE AND STORM PIPING**
- A. SUB-AND-SPOOT, CAST-IRON SOIL PIPE AND FITTINGS
- PIPE AND FITTINGS: ASTM A 74, SERVICE CLASS(E)
- GASKETS: ASTM C 564, RUBBER.
- B. HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS
- PIPE AND FITTINGS: ASTM A 888 OR OSP# 301.
- STANDARDS: ASME A112.31, CAST-IRON SOIL PIPE FOR CLEANOUT TEST TEST.
- SIZE: SAME AS CONNECTED DRAINAGE PIPING.
- CLOSURE: HUBLESS-SPIGOT, CAST-IRON SOIL PIPE T-BRANCH AS REQUIRED TO MATCH CONNECTED PIPING.
- CLOSURE: COUNTERSUNK PLUG.
- CLOSURE PLUG SIZE: SAME AS OR NOT MORE THAN ONE SIZE SMALLER THAN CLEANOUT SIZE.
- CLOSURE: STAINLESS-STEEL PLUG WITH SEAL.
- C. METAL FLOOR CLEANOUTS
- MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
- JOSAM COMPANY; JOSAM DIV.
  - SMITH, JAY R. MFG. CO.; DIVISION OF SMITH INDUSTRIES, INC.
  - TYLER PIPE, WADE DIV.
  - ZURN PLUMBING PRODUCTS GROUP; SPECIFICATION DRAINAGE OPERATION. STANDARD: ASME A112.36.2M FOR THREADED, ADJUSTABLE HOUSING CLEANOUT. SIZE: SAME AS CONNECTED BRANCH. TYPE: ADJUSTABLE HOUSING THREADED, ADJUSTABLE HOUSING. COMPANY: ASME A112.36.2M, INCLUDE WALL ACCESS.
- D. DRAWING PLANS, SCHEMATICS, AND DIAGRAMS INDICATE GENERAL LOCATION AND ARRANGEMENT OF DRAINAGE SYSTEMS. INDICATED LOCATIONS AND ARRANGEMENTS ARE USED TO SIZE PIPE AND CALCULATE FRICTION LOSS, EXPANSION, PUMP SIZING, AND OTHER DESIGN CONSIDERATIONS. INSTALL PIPING AS INDICATED UNLESS DEVIATIONS TO LAYOUT ARE APPROVED ON COORDINATION DRAWINGS.
- E. INSTALL PIPING IN CONCEALED LOCATIONS UNLESS OTHERWISE INDICATED AND EXCEPT IN EQUIPMENT ROOMS AND SERVICE AREAS.
- F. INSTALL PIPING INDICATED TO BE EXPOSED AND PIPING IN EQUIPMENT ROOMS AND SERVICE AREAS AT RIGHT ANGLES OR PARALLEL TO BUILDING WALLS. DIAGONAL RUNS ARE PROHIBITED UNLESS SPECIFICALLY INDICATED OTHERWISE.
- G. INSTALL PIPING ABOVE ACCESSIBLE CEILINGS TO ALLOW SUFFICIENT SPACE FOR CEILING PANEL REMOVAL.
- H. INSTALL PIPING TO PERMIT VALVE SERVICING.
- I. INSTALL PIPING FREE OF SAGS AND BENDS.
- J. INSTALL PIPING TO PERMIT VALVE SERVICING.
- K. INSTALL PIPING TO PERMIT VALVE SERVICING.
- L. MAKE CHANGES IN DIRECTION FOR SOIL AND WASTE DRAINAGE AND VENT PIPING USING APPROPRIATE BRANCHES, BENDS, AND LONG-TURN FITTINGS.
- M. LAY BURIED BUILDING DRAINAGE PIPING BEGINNING AT LOW POINT OF EACH SYSTEM. INSTALL TRIPLE TO GRABES AND ALIGNMENT INDICATED, WITH UNBROCKED TYPICAL OF INVERT. PLACE HUB ENDS OF PIPING UPSTREAM. INSTALL REQUIRED GASKETS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS FOR USE OF LUBRICANTS, CEMENTS, AND OTHER JOINTING REQUIREMENTS. MAINTAIN SMB IN PIPING AND PULL PAST EACH JOINT AS COMPLETED.
- N. INSTALL SOIL AND WASTE DRAINAGE AND VENT PIPING AT THE FOLLOWING MINIMUM SLOPES UNLESS OTHERWISE INDICATED:
- BUILDING SANITARY DRAIN: 2 PERCENT DOWNWARD IN DIRECTION OF FLOW FOR PIPING NPS 3 (DN 80) AND SMALLER; 1 PERCENT DOWNWARD IN DIRECTION OF FLOW FOR PIPING NPS 4 (DN 100) AND LARGER.
  - HORIZONTAL SANITARY DRAINAGE PIPING: 1 PERCENT DOWNWARD IN DIRECTION OF FLOW.
  - VENT PIPING: 1 PERCENT DOWN TOWARD VERTICAL FIXTURE VENT OR TOWARD VENT STACK.
- O. INSTALL CAST-IRON SOIL PIPING ACCORDING TO CSP#1 "CAST IRON SOIL PIPE AND FITTINGS HANDBOOK", CHAPTER IV, "INSTALLATION OF CAST IRON SOIL PIPE AND FITTINGS."
- P. DO NOT ENCLOSE, COVER, OR PUT PIPING INTO OPERATION UNTIL IT IS INSPECTED AND APPROVED BY AUTHORITIES HAVING JURISDICTION AT LEAST ONE DAY BEFORE INSPECTION MUST BE MADE. PREPARE TESTS SPECIFIED BELOW IN PRESENCE OF AUTHORITIES HAVING JURISDICTION.
- ROUGH-IN-INSPECTION: ARRANGE FOR INSPECTION OF PIPING BEFORE CONCRETE OR CLOSING-IN AFTER ROUGH-IN AND BEFORE SETTING FIXTURES.
- FINAL INSPECTION: ARRANGE FINAL INSPECTION BY AUTHORITIES HAVING JURISDICTION TO OBSERVE TESTS SPECIFIED BELOW AND TO ENSURE COMPLIANCE WITH REQUIREMENTS.
- REINSPECTION: IF AUTHORITIES HAVING JURISDICTION FIND THAT PIPING WILL NOT PASS TESTS OR INSPECTIONS, MAKE REQUIRED CORRECTIONS AND ARRANGE FOR REINSPECTION.
- PREPARE INSPECTION REPORTS AND HAVE THEM SIGNED BY AUTHORITIES HAVING JURISDICTION.
- Y. PIPING TESTS:
- FILL DOMESTIC WATER PIPING. CHECK COMPONENTS TO DETERMINE THAT THEY ARE NOT AIR BOUND AND THAT PIPING IS FULL OF WATER.
  - TEST FOR LEAKS AND DEFECTS IN NEW PIPING AND PARTS OF EXISTING PIPING THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED. IF TESTING IS PERFORMED IN SEGMENTS, SUBMIT A SEPARATE REPORT FOR EACH TEST, COMPLETE WITH DIAGRAM OF PORTION OF PIPING TESTED.
  - LEAKAGE NEW, ALTERED, EXTENDED, OR REPLACED DOMESTIC WATER PIPING UNCOVERED AND UNCONCEALED UNTIL IT HAS BEEN TESTED AND APPROVED. EXPOSE WORK THAT WAS COVERED OR CONCEALED BEFORE IT WAS TESTED.
  - CAP AND SUBJECT PIPING TO STATIC WATER PRESSURE OF 50 PSIG (345 KPA) ABOVE OPERATING PRESSURE, WITHOUT EXCEEDING PRESSURE RATING OF PIPING SYSTEM MATERIALS. ISOLATE TEST SOURCE AND ALLOW TO STAND FOR FOUR HOURS. LEAKS AND LOSS IN TEST PRESSURE CONSTITUTE DEFECTS THAT MUST BE REPAIRED.
  - REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING OR PORTION THEREOF UNTIL SATISFACTORY RESULTS ARE OBTAINED.
  - PREPARE REPORTS FOR TESTS AND FOR CORRECTIVE ACTION REQUIRED.
- Z. DOMESTIC WATER PIPING WILL BE CONSIDERED DEFECTIVE IF IT DOES NOT PASS TESTS AND INSPECTIONS.
- AA. PREPARE TEST AND INSPECTION REPORTS.
- AB. CLEAN AND DISINFECT POTABLE AND NON-POTABLE DOMESTIC WATER PIPING AS FOLLOWS:
- PURGE NEW PIPING AND PARTS OF EXISTING PIPING THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED BEFORE USING.
  - USE PURGING AND DISINFECTING PROCEDURES PRESCRIBED BY AUTHORITIES HAVING JURISDICTION; IF METHODS ARE NOT PRESCRIBED, USE PROCEDURES DESCRIBED IN EITHER AWWA C651 OR AWWA C652 OR FOLLOW PROCEDURES DESCRIBED BELOW:
- FLUSH PIPING SYSTEM WITH CLEAN, POTABLE WATER UNTIL DIRTY WATER DOES NOT APPEAR AT OUTLETS.
  - FLUSH SYSTEM WITH CLEAN, POTABLE WATER UNTIL NO CHLORINE IS IN WATER COMING FROM SYSTEM AFTER THE STANDING TIME.
  - SUBMIT WATER SAMPLES IN STERILE BOTTLES TO AUTHORITIES HAVING JURISDICTION. REPEAT PROCEDURES IF BIOLOGICAL EXAMINATION SHOWS CONTAMINATION.
- AC. UNDER-BUILDING-SLAB, DOMESTIC WATER PIPING, NPS 2 (DN 50) AND SMALLER, SHALL BE THE FOLLOWING:
- SOFT COPPER TUBE, ASTM B 88, TYPE L (ASTM B 88M, TYPE B); WROUGHT-COPPER SOLDER-JOINT FITTINGS, AND BRAZED JOINTS.
- AD. ABOVEGROUND DOMESTIC WATER PIPING, NPS 2 (DN 50) AND SMALLER, SHALL BE THE FOLLOWING:
- HARD COPPER TUBE, ASTM B 88, TYPE L (ASTM B 88M, TYPE B); WROUGHT-COPPER SOLDER-JOINT FITTINGS, AND SOLDERED JOINTS.
  - COPPER PRESS FITTINGS: AT THE CONTRACTOR'S OPTION ON THE DOMESTIC HOT AND COLD WATER PIPING, COILING COIL, CONDENSATE DRAIN IN COPPER LINES 1/2" DIAMETER UP THROUGH 2-1/2" DIAMETER MECHANICAL PRESS (PRO-PRESS) JOINTS AND FITTINGS INCLUDING THE SMART CONNECTION FEATURE OPTION TO ENSURE THAT UNPRESSURIZED FITTING WILL EASILY BE DETECTED DURING PRESSURE TESTING AS MANUFACTURER BY VEGA, NIBCO AND APOLLO PRESS WILL BE ACCEPTABLE PROVIDED THE FITTING MANUFACTURER'S RECOMMENDED CHIPPING TOOL, WITH PROPERLY SIZED REPLACEMENT JAWS ARE UTILIZED RIGID TOOL COMPANY. INSTALLATION WILL BE IN ACCORDANCE WITH MANUFACTURER'S APPROVED PUBLISHED GUIDELINES.
- AE. ABOVEGROUND DOMESTIC WATER PIPING, NPS 2-1/2 TO NPS 4 (DN 65 TO DN 100), SHALL BE OF THE FOLLOWING:
- HARD COPPER TUBE, ASTM B 88, TYPE L (ASTM B 88M, TYPE B); CAST-COPPER SOLDER-JOINT FITTINGS, AND SOLDERED JOINTS.
  - GALVANIZED-STEEL PIPE: GROOVED-JOINT, GALVANIZED-STEEL-PIPE APPURTENANCES, AND GROOVED JOINTS.
- AH. DRAWINGS INDICATE VALVE TYPES TO BE USED. WHERE SPECIFIC VALVE TYPES ARE NOT INDICATED, THE FOLLOWING REQUIREMENTS APPLY:
- SHUTOFF DUTY: USE BALL VALVES FOR PIPING NPS 2 (DN 50) AND SMALLER. USE GATE VALVES WITH FLANGED ENDS FOR PIPING NPS 2-1/2 (DN 65) AND LARGER.
  - THROTTLING DUTY: USE BALL VALVES FOR PIPING NPS 2 (DN 50) AND SMALLER. USE BALL VALVES WITH FLANGED ENDS FOR PIPING NPS 2-1/2 (DN 65) AND LARGER.
  - HOT-WATER CIRCULATION VALVES: CALIBRATED BALANCING VALVES.
  - DRAIN DUTY: HOSE-END DRAIN VALVES.
- AI. USE CHECK VALVES TO MAINTAIN CORRECT DIRECTION OF DOMESTIC WATER FLOW TO AND FROM EQUIPMENT.
- AJ. IRON GROOVED-END VALVES MAY BE USED WITH GROOVED-END PIPING.

- AF. ABOVEGROUND, SOIL AND WASTE PIPING 6" AND SMALLER SHALL BE ANY OF THE FOLLOWING:
- SERVICE CLASS, CAST-IRON SOIL PIPE AND FITTINGS; GASKETS; AND GASKETED JOINTS.
  - HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS HEAVY-DUTY HUBLESS-PIPING COUPLINGS; AND COUPLED JOINTS.
- AG. ABOVEGROUND, SOIL AND WASTE PIPING 8" AND LARGER SHALL BE ANY OF THE FOLLOWING:
- SERVICE HEIGHT (SV) HUB AND SPOOT CAST IRON SOIL PIPE FITTINGS
- AH. ABOVEGROUND, VENT PIPING 6" AND SMALLER SHALL BE ANY OF THE FOLLOWING:
- HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS; CSP# HUBLESS-PIPING COUPLINGS; AND COUPLED JOINTS.
- AI. ABOVEGROUND, VENT PIPING 8" AND LARGER SHALL BE ANY OF THE FOLLOWING:
- SERVICE CLASS, CAST-IRON SOIL PIPE AND FITTINGS; GASKETS; AND GASKETED JOINTS.
  - SOLID WALL PVC PIPE, PVC SOCKET FITTINGS, AND SOLVENT-CEMENTED JOINTS
- CLEANOUTS**
- A. EXPOSED METAL CLEANOUTS
- MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
- JOSAM COMPANY; JOSAM DIV.
  - MFAB, INC.
  - SMITH, JAY R. MFG. CO.; DIVISION OF SMITH INDUSTRIES, INC.
  - ZURN PLUMBING PRODUCTS GROUP; SPECIFICATION DRAINAGE OPERATION. STANDARD: ASME A112.31, CAST-IRON SOIL PIPE FOR CLEANOUT TEST TEST.
- SIZE: SAME AS CONNECTED DRAINAGE PIPING.
- BODY MATERIAL: HUB-AND-SPOOT, CAST-IRON SOIL PIPE T-BRANCH AS REQUIRED TO MATCH CONNECTED PIPING.
- CLOSURE: COUNTERSUNK PLUG.
- CLOSURE PLUG SIZE: SAME AS OR NOT MORE THAN ONE SIZE SMALLER THAN CLEANOUT SIZE.
- CLOSURE: STAINLESS-STEEL PLUG WITH SEAL.
- B. METAL FLOOR CLEANOUTS
- MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
- JOSAM COMPANY; JOSAM DIV.
  - SMITH, JAY R. MFG. CO.; DIVISION OF SMITH INDUSTRIES, INC.
  - TYLER PIPE, WADE DIV.
  - ZURN PLUMBING PRODUCTS GROUP; SPECIFICATION DRAINAGE OPERATION. STANDARD: ASME A112.36.2M FOR THREADED, ADJUSTABLE HOUSING CLEANOUT. SIZE: SAME AS CONNECTED BRANCH. TYPE: ADJUSTABLE HOUSING THREADED, ADJUSTABLE HOUSING. COMPANY: ASME A112.36.2M, INCLUDE WALL ACCESS.
- C. CAST-IRON WALL CLEANOUTS
- MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
- JOSAM COMPANY; JOSAM DIV.
  - SMITH, JAY R. MFG. CO.; DIVISION OF SMITH INDUSTRIES, INC.
  - TYLER PIPE, WADE DIV.
  - ZURN PLUMBING PRODUCTS GROUP; SPECIFICATION DRAINAGE OPERATION. STANDARD: ASME A112.36.2M, INCLUDE WALL ACCESS.
- SIZE: SAME AS CONNECTED DRAINAGE PIPING.
- D. HUB-AND-SPOOT, CAST-IRON SOIL PIPE T-BRANCH AS REQUIRED TO MATCH CONNECTED PIPING.
- CLOSURE: COUNTERSUNK OR RAISED-HOOD, BRASS PLUG.
- E. METAL FLOOR CLEANOUTS
- MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
- JOSAM COMPANY; JOSAM DIV.
  - SMITH, JAY R. MFG. CO.; DIVISION OF SMITH INDUSTRIES, INC.
  - TYLER PIPE, WADE DIV.
  - ZURN PLUMBING PRODUCTS GROUP; SPECIFICATION DRAINAGE OPERATION. STANDARD: ASME A112.36.2M, INCLUDE WALL ACCESS.
- SIZE: SAME AS CONNECTED DRAINAGE PIPING.
- F. FOR CLEANOUTS LOCATED IN CONCEALED PIPING, INSTALL CLEANOUT WALL ACCESS COVERS, OF TYPES INDICATED WITH FRAME AND COVER FLUSH WITH FINISHED WALL.
- G. INSTALL FLOOR DRAINS AT LOW POINTS OF SURFACE AREAS TO BE DRAINED. SET GRATES OF DRAINS FLUSH WITH FINISHED FLOOR, UNLESS OTHERWISE INDICATED.
- H. INSTALL FLASHING ASSEMBLIES ON SANITARY STACK VENTS AND VENT STACKS THAT EXTEND THROUGH ROOF.
- I. ASSEMBLE OPEN DRAIN FITTINGS AND INSTALL WITH TOP OF HUB 2 INCHES (51 MM) ABOVE FINISHED FLOOR.
- J. INSTALL DEEP-SEAL TRAPS ON FLOOR DRAINS AND OTHER WASTE OUTLETS, IF INDICATED.
- K. INSTALL FLOOR-DRAIN, TRAP-SEAL PRIMER FITTINGS ON INLET TO FLOOR DRAINS THAT REQUIRE TRAP-SEAL PRIMER CONNECTION.
- L. EXCEPTION: FITTING MAY BE OMITTED IF TRAP HAS TRAP-SEAL PRIMER CONNECTION.
- M. SIZE: SAME AS FLOOR DRAIN INLET.
- N. INSTALL CARBON-STEEL PIPE HANGERS FOR HORIZONTAL PIPING IN CORROSSIVE ENVIRONMENTS.
- O. INSTALL STAINLESS-STEEL PIPE HANGERS FOR HORIZONTAL PIPING IN CORROSSIVE ENVIRONMENTS.
- P. INSTALL CARBON-STEEL PIPE SUPPORT CLAMPS FOR VERTICAL PIPING IN CORROSSIVE ENVIRONMENTS.
- Q. INSTALL INDIVIDUAL, STRAIGHT, HORIZONTAL PIPING RIGS:
- 1.00 FEET (30 M) AND LESS: MSS TYPE 1, ADJUSTABLE, STEEL GLEVES HANGERS.
  - LONGER THAN 100 FEET (30 M): MSS TYPE 43, ADJUSTABLE ROLLER HANGERS.
  - LONGER THAN 100 FEET (30 M) IF INDICATED: MSS TYPE 49, SPRING CONNECTION ROLLS.
  - MULTIPLE, STRAIGHT, HORIZONTAL PIPING RUNS 100 FEET (30 M) OR LONGER: MSS TYPE 44, PIPE ROLLS; SUPPORT PIPE ROLLS ON TRAFFICE.
- U. BASE OF VERTICAL PIPING: MSS TYPE 52, SPRING HANGERS.
- V. FITTING, HORIZONTAL PIPING AND TUBING WITHIN 12 INCHES (300 MM) OF EACH SUPPORT, VALVE, AND COUPLING.
- W. DURING INSTALLATION, NOTIFY AUTHORITIES HAVING JURISDICTION AT LEAST 24 HOURS BEFORE INSPECTION MUST BE MADE. PREPARE TESTS SPECIFIED BELOW IN PRESENCE OF AUTHORITIES HAVING JURISDICTION.
- ROUGH-IN-INSPECTION: ARRANGE FOR INSPECTION OF PIPING BEFORE CONCRETE OR CLOSING-IN AFTER ROUGH-IN AND BEFORE SETTING FIXTURES.
- FINAL INSPECTION: ARRANGE FINAL INSPECTION BY AUTHORITIES HAVING JURISDICTION TO OBSERVE TESTS SPECIFIED BELOW AND TO ENSURE COMPLIANCE WITH REQUIREMENTS.
- REINSPECTION: IF AUTHORITIES HAVING JURISDICTION FIND THAT PIPING WILL NOT PASS TESTS OR INSPECTIONS, MAKE REQUIRED CORRECTIONS AND ARRANGE FOR REINSPECTION.
- PREPARE INSPECTION REPORTS AND HAVE THEM SIGNED BY AUTHORITIES HAVING JURISDICTION.
- Y. PIPING TESTS:
- FILL DOMESTIC WATER PIPING. CHECK COMPONENTS TO DETERMINE THAT THEY ARE NOT AIR BOUND AND THAT PIPING IS FULL OF WATER.
  - TEST FOR LEAKS AND DEFECTS IN NEW PIPING AND PARTS OF EXISTING PIPING THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED. IF TESTING IS PERFORMED IN SEGMENTS, SUBMIT A SEPARATE REPORT FOR EACH TEST, COMPLETE WITH DIAGRAM OF PORTION OF PIPING TESTED.
  - LEAKAGE NEW, ALTERED, EXTENDED, OR REPLACED DOMESTIC WATER PIPING UNCOVERED AND UNCONCEALED UNTIL IT HAS BEEN TESTED AND APPROVED. EXPOSE WORK THAT WAS COVERED OR CONCEALED BEFORE IT WAS TESTED.
  - CAP AND SUBJECT PIPING TO STATIC WATER PRESSURE OF 50 PSIG (345 KPA) ABOVE OPERATING PRESSURE, WITHOUT EXCEEDING PRESSURE RATING OF PIPING SYSTEM MATERIALS. ISOLATE TEST SOURCE AND ALLOW TO STAND FOR FOUR HOURS. LEAKS AND LOSS IN TEST PRESSURE CONSTITUTE DEFECTS THAT MUST BE REPAIRED.
  - REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING, OR PORTION THEREOF, UNTIL SATISFACTORY RESULTS ARE OBTAINED.
  - PREPARE REPORTS FOR TESTS AND FOR CORRECTIVE ACTION REQUIRED.
- Z. DOMESTIC WATER PIPING WILL BE CONSIDERED DEFECTIVE IF IT DOES NOT PASS TESTS AND INSPECTIONS.
- AA. PREPARE TEST AND INSPECTION REPORTS.
- AB. CLEAN AND DISINFECT POTABLE AND NON-POTABLE DOMESTIC WATER PIPING AS FOLLOWS:
- PURGE NEW PIPING AND PARTS OF EXISTING PIPING THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED BEFORE USING.
  - USE PURGING AND DISINFECTING PROCEDURES PRESCRIBED BY AUTHORITIES HAVING JURISDICTION; IF METHODS ARE NOT PRESCRIBED, USE PROCEDURES DESCRIBED IN EITHER AWWA C651 OR AWWA C652 OR FOLLOW PROCEDURES DESCRIBED BELOW:
- FLUSH PIPING SYSTEM WITH CLEAN, POTABLE WATER UNTIL DIRTY WATER DOES NOT APPEAR AT OUTLETS.
  - FLUSH SYSTEM WITH CLEAN, POTABLE WATER UNTIL NO CHLORINE IS IN WATER COMING FROM SYSTEM AFTER THE STANDING TIME.
  - SUBMIT WATER SAMPLES IN STERILE BOTTLES TO AUTHORITIES HAVING JURISDICTION. REPEAT PROCEDURES IF BIOLOGICAL EXAMINATION SHOWS CONTAMINATION.
- AC. UNDER-BUILDING-SLAB, DOMESTIC WATER PIPING, NPS 2 (DN 50) AND SMALLER, SHALL BE THE FOLLOWING:
- SOFT COPPER TUBE, ASTM B 88, TYPE L (ASTM B 88M, TYPE B); WROUGHT-COPPER SOLDER-JOINT FITTINGS, AND BRAZED JOINTS.
- AD. ABOVEGROUND DOMESTIC WATER PIPING, NPS 2 (DN 50) AND SMALLER, SHALL BE THE FOLLOWING:
- HARD COPPER TUBE, ASTM B 88, TYPE L (ASTM B 88M, TYPE B); WROUGHT-COPPER SOLDER-JOINT FITTINGS, AND SOLDERED JOINTS.
  - COPPER PRESS FITTINGS: AT THE CONTRACTOR'S OPTION ON THE DOMESTIC HOT AND COLD WATER PIPING, COILING COIL, CONDENSATE DRAIN IN COPPER LINES 1/2" DIAMETER UP THROUGH 2-1/2" DIAMETER MECHANICAL PRESS (PRO-PRESS) JOINTS AND FITTINGS INCLUDING THE SMART CONNECTION FEATURE OPTION TO ENSURE THAT UNPRESSURIZED FITTING WILL EASILY BE DETECTED DURING PRESSURE TESTING AS MANUFACTURER BY VEGA, NIBCO AND APOLLO PRESS WILL BE ACCEPTABLE PROVIDED THE FITTING MANUFACTURER'S RECOMMENDED CHIPPING TOOL, WITH PROPERLY SIZED REPLACEMENT JAWS ARE UTILIZED RIGID TOOL COMPANY. INSTALLATION WILL BE IN ACCORDANCE WITH MANUFACTURER'S APPROVED PUBLISHED GUIDELINES.
- AE. ABOVEGROUND DOMESTIC WATER PIPING, NPS 2-1/2 TO NPS 4 (DN 65 TO DN 100), SHALL BE OF THE FOLLOWING:
- HARD COPPER TUBE, ASTM B 88, TYPE L (ASTM B 88M, TYPE B); CAST-COPPER SOLDER-JOINT FITTINGS, AND SOLDERED JOINTS.
  - GALVANIZED-STEEL PIPE: GROOVED-JOINT, GALVANIZED-STEEL-PIPE APPURTENANCES, AND GROOVED JOINTS.
- AH. DRAWINGS INDICATE VALVE TYPES TO BE USED. WHERE SPECIFIC VALVE TYPES ARE NOT INDICATED, THE FOLLOWING REQUIREMENTS APPLY:
- SHUTOFF DUTY: USE BALL VALVES FOR PIPING NPS 2 (DN 50) AND SMALLER. USE GATE VALVES WITH FLANGED ENDS FOR PIPING NPS 2-1/2 (DN 65) AND LARGER.
  - THROTTLING DUTY: USE BALL VALVES FOR PIPING NPS 2 (DN 50) AND SMALLER. USE BALL VALVES WITH FLANGED ENDS FOR PIPING NPS 2-1/2 (DN 65) AND LARGER.
  - HOT-WATER CIRCULATION VALVES: CALIBRATED BALANCING VALVES.
  - DRAIN DUTY: HOSE-END DRAIN VALVES.
- AI. USE CHECK VALVES TO MAINTAIN CORRECT DIRECTION OF DOMESTIC WATER FLOW TO AND FROM EQUIPMENT.
- AJ. IRON GROOVED-END VALVES MAY BE USED WITH GROOVED-END PIPING.

### PLUMBING PIPING INSULATION

- A. INSULATION MATERIALS
- PRODUCTS SHALL NOT CONTAIN ASBESTOS, LEAD, MERCURY, OR MERCURY COMPOUNDS.
- PRODUCTS THAT COME IN CONTACT WITH STAINLESS STEEL SHALL HAVE A LEACHABLE CHLORIDE CONTENT OF LESS THAN 50 PPM WEIGHTED ACCORDING TO ASTM A 871.
- B. FOAM INSULATION MATERIALS SHALL NOT USE CFC OR HCFC BLOWING AGENTS IN THE MANUFACTURING PROCESS.
- C. MINERAL-FIBER, PREFORMED PIPE INSULATION
- PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE THE FOLLOWING [PROVIDE ONE OF THE FOLLOWING]:
- CERTAIN TEED, CO.
  - JOHNS MANVILLE, MORO-K.
  - WAFAP INSULATION SYSTEMS; 1000-REGREE PIPE INSULATION.
  - MANSON INSULATION, INC.; ALEY-K.
  - OWENS CORNING; FIBERGLAS PIPE INSULATION.
  - 850 DEG F (454 DEG C) MATERIALS: MINERAL OR GLASS FIBERS BONDED WITH THE THERMOSETTING RESIN. COMPLY WITH ASTM C 547, TYPE I, GRADE A, WITH FACTORY-APPLIED ASA-SL. FACTORY-APPLIED JACKET REQUIREMENTS ARE SPECIFIED IN "FACTORY-APPLIED JACKETS" ARTICLE.
- D. MINERAL-FIBER INSULATING CEMENT: COMPLY WITH ASTM C 195.
- PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE THE FOLLOWING:
- RAMCO INSULATION, INC.; SUPER-SIK.
- E. MINERAL-FIBER, HYDRAULIC-SETTING INSULATING AND FINISHING CEMENT: COMPLY WITH ASTM C 449.
- PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE THE FOLLOWING:
- RAMCO INSULATION, INC.; RAMCOITE 1200 AND QUIK-COTE.
- F. ADHESIVES
- MINERAL-FIBER SHALL BE COMPATIBLE WITH INSULATION MATERIALS, JACKETS, AND SUBSTRATES AND FOR BONDING INSULATION TO ITSELF AND TO SURFACES TO BE INSULATED, UNLESS OTHERWISE INDICATED.
- MINERAL-FIBER ADHESIVE: COMPLY WITH MIL-A-3316C, CLASS 2, GRADE A.
- PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
- CHILDERS BRAND, SPECIALTY CONSTRUCTION BRANDS, INC., A BUSINESS OF H. B. FULLER COMPANY; CP-30.
  2. EAGLE BRIDGES - MARATHON INDUSTRIES; 225.
  3. FOSTER BRAND, SPECIALTY CONSTRUCTION BRANDS, INC., A BUSINESS OF H. B. FULLER COMPANY; 30-25.
  4. MON-ECO INDUSTRIES, INC.; 22-25.
- FOR INDOOR APPLICATIONS, USE ADHESIVE THAT HAS A VOC CONTENT OF 80 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).
- G. ASU ADHESIVE, AND FSX JACKET ADHESIVE, COMPLY WITH MIL-A-3316C, CLASS 2, GRADE A FOR BONDING INSULATION TO METAL SEAMS AND JOINTS.
- PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
- CHILDERS BRAND, SPECIALTY CONSTRUCTION BRANDS, INC., A BUSINESS OF H. B. FULLER COMPANY; CP-30.
  2. EAGLE BRIDGES - MARATHON INDUSTRIES; 225.
  3. FOSTER BRAND, SPECIALTY CONSTRUCTION BRANDS, INC., A BUSINESS OF H. B. FULLER COMPANY; 30-25.
  4. MON-ECO INDUSTRIES, INC.; 22-25.
- FOR INDOOR APPLICATIONS, USE ADHESIVE THAT HAS A VOC CONTENT OF 50 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).
- H. MASTICS
- MATERIALS SHALL BE COMPATIBLE WITH INSULATION MATERIALS, JACKETS, AND SUBSTRATES. COMPLY WITH MIL-PRC 12956, TYPE II FOR INDOOR APPLICATIONS. USE MASTICS THAT HAVE A VOC CONTENT OF 50 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).
- I. VAPOR-BARRIER MASTIC: SOLVENT BASED; SUITABLE FOR INDOOR USE ON BELOW-AMBIENT SERVICES.
- PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
- CHILDERS BRAND, SPECIALTY CONSTRUCTION BRANDS, INC., A BUSINESS OF H. B. FULLER COMPANY; CP-30.
  2. MARATHON INDUSTRIES; 501.
  3. FOSTER BRAND, SPECIALTY CONSTRUCTION BRANDS, INC., A BUSINESS OF H. B. FULLER COMPANY; 30-25.
  4. MON-ECO INDUSTRIES, INC.; 55-10.
- WATER-VAPOR PERMEANCE: ASTM F 1249, 0.05 PERM (0.03 METRIC PERM) AT 35-MIL (0.9-MM) DRY FILM THICKNESS.
- SERVICE TEMPERATURE RANGE: 0 TO 180 DEG F (MINUS 18 TO PLUS 82 DEG C).
- SOLIDS CONTENT: ASTM D 1644, 44 PERCENT BY VOLUME AND 62 PERCENT BY WEIGHT. COLOR: WHITE.
- J. JOINT SEALANTS
- ASU FLASHING SEALANTS, AND VINYL, PVC, AND PVC JACKET FLASHING SEALANTS.
- PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
- CHILDERS BRAND, SPECIALTY CONSTRUCTION BRANDS, INC., A BUSINESS OF H. B. FULLER COMPANY; CP-30.
  2. MARATHON INDUSTRIES; 501.
  3. FOSTER BRAND, SPECIALTY CONSTRUCTION BRANDS, INC., A BUSINESS OF H. B. FULLER COMPANY; 30-25.
  4. MON-ECO INDUSTRIES, INC.; 55-10.
- WATER-VAPOR PERMEANCE: ASTM F 1249, 0.05 PERM (0.03 METRIC PERM) AT 35-MIL (0.9-MM) DRY FILM THICKNESS.
- SERVICE TEMPERATURE RANGE: 0 TO 180 DEG F (MINUS 18 TO PLUS 82 DEG C).
- S