

FLAMEBLOCK

Korea's Best

THE FIRST AND STILL THE BEST

FLAMEBLOCK
Korea's Best



ASUNG Plastic Valve
Clean Flow-Tech

HEAD OFFICE

4F A-Sung Bldg, 544 Gyeongin-Ro, Guro-Gu, Seoul (08278)
Tel : 82-2-2671-1900-5 Fax : 82-2-2671-5687

BUSAN BEANCH

B-202 Seo-Myejeonpo shopping arcade, 33 Jeonpo-Daero,
255 Beon-gil, Busanjin-Gu, Busan (47247)
Tel : 82-51-818-7781-4 Fax : 82-51-804-4060

FACTORY

280, Haean-Ro, Danwon-Gu, Ansan-Si, Gyeonggi-Do (15612)
Tel : 82-31-494-8193-4 Fax : 82-31-492-6650

28-110, Bugokgongdan 4-Gil, Dangjin-Si, Chungcheongnam-Do (31721)
Tel : 82-41-357-8192-5 Fax : 82-41-357-8676

CHINA

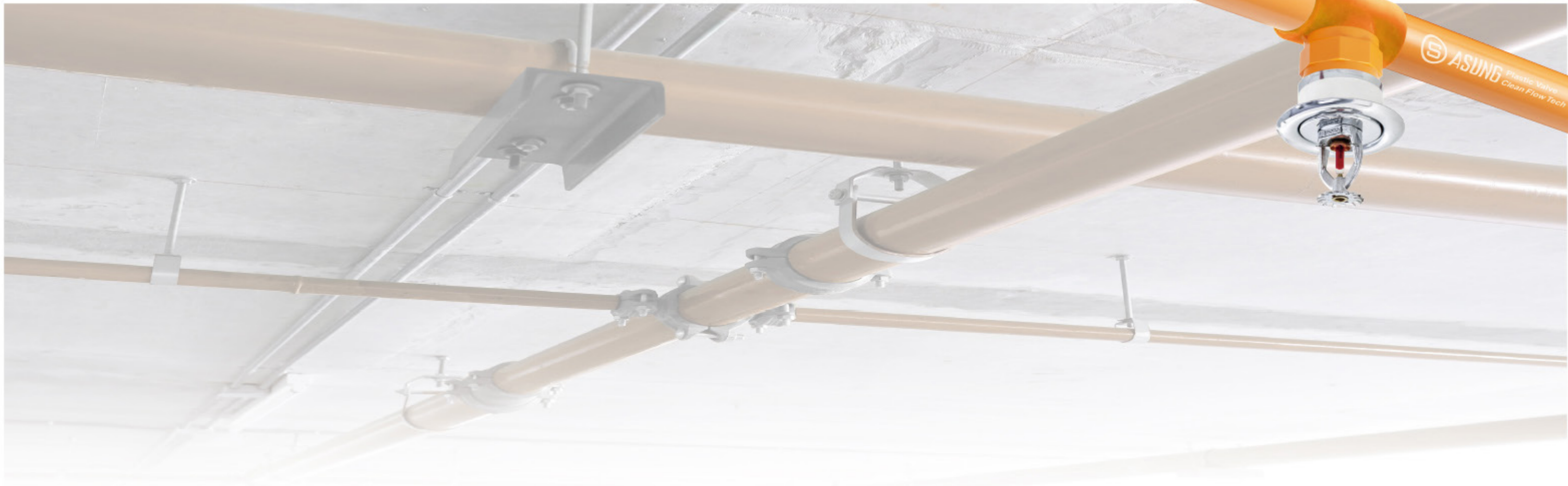
A-2115 Oriental International Plaza, 85 LouShanGuan Rd,
Changning District, Shanghai, China, 200336
Office : 86-21-62782288 #215 Fax : 86-21-6278-3723

HONG KONG

Rm401-403, 4/F, Honour Industrial Centre, 6 Sun Yip St.,
Chai Wan, Hong Kong

Homepage : www.asungvalve.com
E-mail : asung@asungvalve.com

ASUNG Plastic Valve
Clean Flow-Tech



Fire Sprinkler System

FLAMEBLOCK
Korea's Best



Contents

| | | |
|-----|--|----|
| 01. | Company Introduction | 04 |
| 02. | Overview and structure of synthetic resin for firefighting | 06 |
| 03. | Characteristics and Technology | 06 |
| | Destructive and Flattening test results | 10 |
| 04. | Piping material comparison | 12 |
| 05. | Quality control status and inspection items | 14 |
| 06. | Legal basis of use | 14 |
| 07. | CPVC piping system | 15 |
| 08. | Construction manual | 27 |
| 09. | Construction photos | 34 |
| 10. | Approval nomination | 36 |
| 11. | Product Approval / Performance Certificate | 37 |
| 12. | Test Report | 38 |
| 13. | Major construction results | 39 |
| 14. | Other products | 43 |

01 Company Introduction



Company establishment 1967 years
C E O Hyoungsoo KIM
Employees 250 (2015)

Company History

| | |
|-----------|---|
| 1967. 08. | Asung PVC founded |
| 1979. 09. | Namyangju new factory built |
| 1985. 10. | Factory moved to Ansan Industrial Complex |
| 1987. 11. | Built Headquarter Office Building in Guro-gu Seoul |
| 1988. 10. | Mold Plant established |
| 1989. 01. | Started producing CPVC valve, pipe and fittings |
| 1995. 07. | Conversion to corporation, Asung Plastic Valve Co., Ltd |
| 1997. 07. | Obtained ISO9000 |
| 2002. 02. | Product approved by Korea Fire Industry and Technology (KFI) |
| 2004. 09. | Asung Clean Flow Tech Co., Ltd established |
| 2005. 09. | Obtained NeP Certificate (CLEAN PVC pipe / Ministry of Trade, Industry & Energy) |
| 2006. 04. | Asung Clean Flow Tech Dangjin Factory established |
| 2010. 01. | Extrusion production capacity expansion completed for 100,000 apartments project |
| 2011. 12. | Corporate R & D Center approved |
| 2012. 02. | Product approved by Korea Fire Industry and Technology (KFI) |

Address

| | |
|---------------------|--|
| HEAD OFFICE | 4F A-Sung Bldg, 544 Gyeongin-Ro, Guro-Gu, Seoul |
| BUSAN BRANCH | B-202 Seo-Myenjeonpo shopping arcade, 33 Jeonpo-Daero, 255 Beon-gil, Busanjin-Gu, Busan |
| FACTORY | 280, Haean-Ro, Danwon-Gu, Ansan-Si, Gyeonggi-Do 28-110, Bugokgongdan 4-Gil, Dangjin-Si, Chungcheongnam-Do |



- South Korea**
 Seoul : HEAD OFFICE
 Busan : BRANCH
 Ansan : FACTORY
 Dangjin : FACTORY
- China**
 Shanghai : REPRESENTATIVE OFFICE
 Hong Kong : REPRESENTATIVE OFFICE
• North / Central / South America
 Canada, USA
 Chile, Brazil
- Asia**
 Azerbaijan, China, Indonesia, Japan, Kuwait, Malaysia, Myanmar, Philippines, Singapore, Taipei, Thailand, Vietnam
- Europe**
 Bulgaria
• Africa
 Nigeria

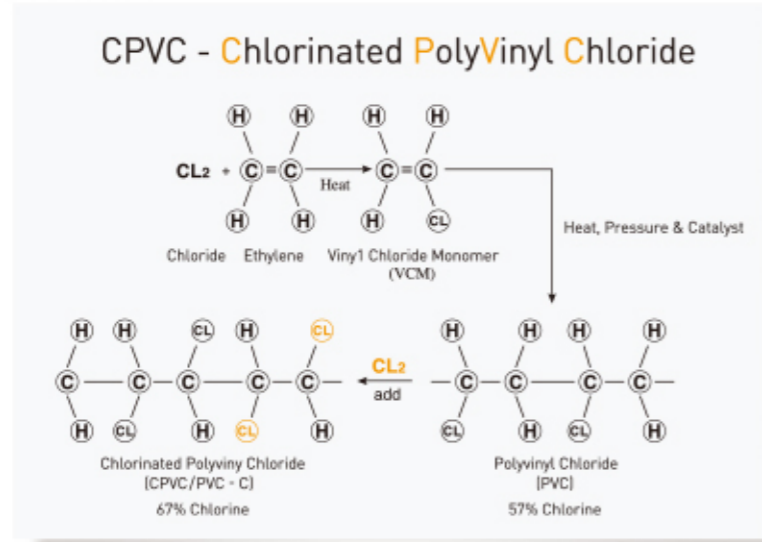
02 Overview and structure of synthetic resin for firefighting

Overview

What is Sprinkler CPVC resin?

CPVC pipe is excellent in chemical resistance, corrosion resistance and construction ability as much as Polyvinylchloride. And it improves heat-resistance which is a disadvantage of polyvinylchloride.

Structure



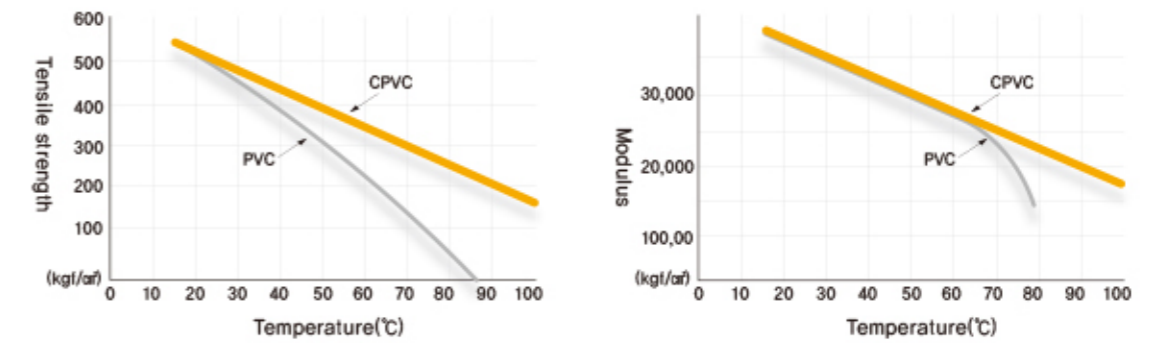
03 Characteristics and Technology

General property of CPVC

| Property | Unit | Test method | CPVC | |
|-----------------------|-------------------------------------|------------------------|------------|----------------------|
| Physical property | Gravity | ASTM D 792 | 1.53 | |
| | Hardness | ASTM D 785 | 140 | |
| | Absorption | mg/cm ² | ASTM D 570 | 0.04~0.06 |
| Mechanical properties | Tensile strength | JIS K 6742 | 500~550 | |
| | Bending strength | ASTM D 970 | 900 | |
| | Compression strength | ASTM D 695 | 700 | |
| | Cutting strength | ASTM D 732 | 420 | |
| | Elongation | % | | 40~80 |
| | Termination factor | kgf/cm ² | ASTM D 747 | 3x10 ⁷ |
| | Specific heat | | | 0.38 |
| | Impact strength | kgf-cm/cm ² | ASTM D 256 | 8.0 |
| | The coefficient of linear expansion | °C ⁻¹ | ASTM D 696 | 6~8x10 ⁻⁵ |
| Thermal properties | Specific heat | cal/(g°C) | | 0.2~0.3 |
| | Thermal conductivity | kcal/(h.m.°C) | | 0.095~0.12 |
| | Softening Temperature | °C | JIS K 6742 | 110~117 |
| | Thermal processing temperature | °C | | 150~160 |
| | Combustibility | | ASTM D 635 | |
| Electrical properties | Volume resistivity | Ω.cm | ASTM D 257 | 5.5x10 ¹⁵ |
| | Withstanding voltage | KV/mm | | 40 over |
| | Permittivity | | ASTM D 150 | 3.2 |

Temperature change and mechanical strength

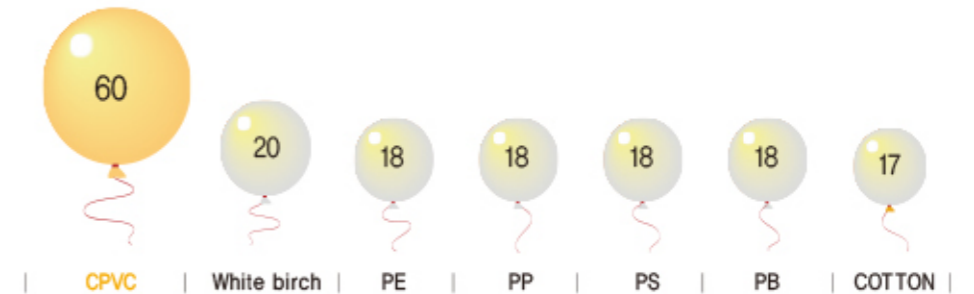
Please note that CPVC piping material has good tensile strength and elastic modulus comparing with general PVC piping material but be aware that mechanical property can be changed according to temperature change.



Self-extinguishing

In order that CPVC burns, it requires much more oxygen (limiting oxygen ration: 60%) than the amount of oxygen in the air (21%). It prevents the spread of flame not burning itself.

*Limiting oxygen tation(L.O.I)



*It requires 3 times of the oxygen content in the atmosphere (21%) (not combustible).

Fire test

Fire test certified by Korea Institute of Industrial Fire (see Appendix video).

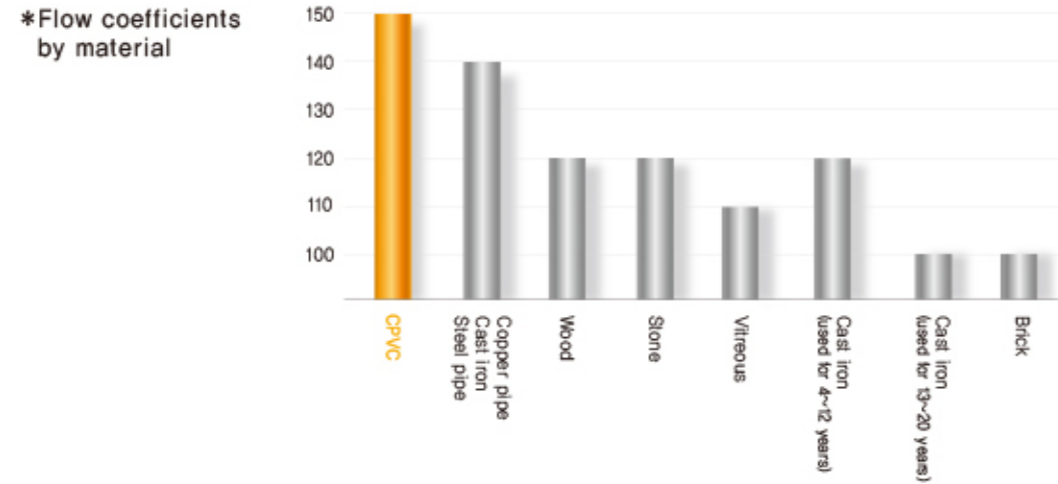
Test conditions :

- Site size : 9.0x9.0x4.6(m)
- Fire source : Heptane 24ℓ
- Piping pressure : 7kg · f/cm², 11kg · f/cm²



Low friction loss

CPVC piping material is very effective as sprinkler piping material as it has lower surface resistance to fluid flow than other piping material.



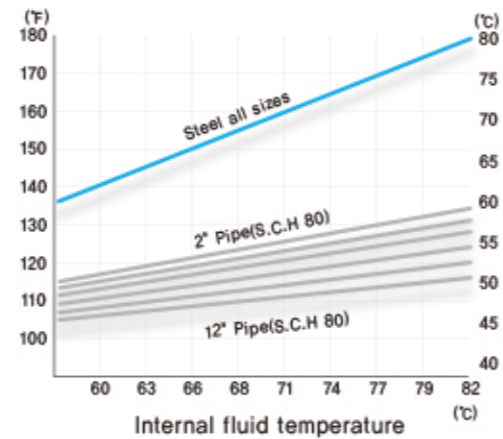
Thermal conductivity

Since CPVC piping material has low thermal conductivity, it is possible to decline thermal loss and keep constant processing temperature. Therefore, it can be used as piping which requires insulation and cold storage.

*Conductivity coefficient bt material

| Material name | Thermal conductivity (kcal/m.h.deg) |
|-----------------------------|-------------------------------------|
| Strength of carbon | 51 |
| Strength of stainless steel | 22 |
| Coper pipe | 333 |
| CPVC | 0.12 |

*PIPE surface temperature of the internal fluid temperature



Electric thermal conductivity

CPVC piping material has good electric thermal conductivity. Unlike metal pipe, there is no fear of illumination and no electric leakage through the pipe.

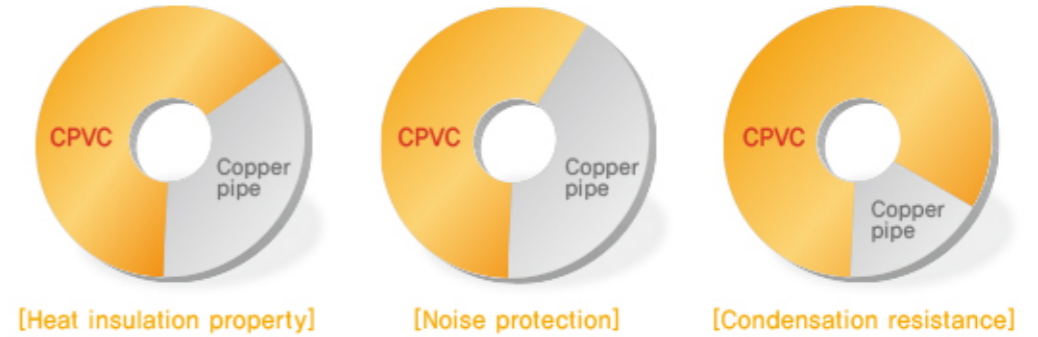
Excellent Construction ability

Since CPVC piping material is light and easy to cut and joint, it is convenient to construct plumbing in a small space.

Heat resistance and chemical resistance

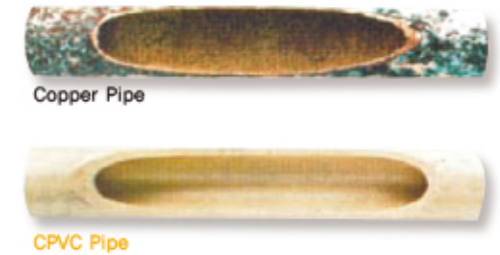
CPVC is heat resistant pipe which can be used wonderfully at high temperature of 90°C higher than general PVC piping temperature of 60°C. It can be used properly for high temperature chemical piping as it has excellent chemical resistance enough to be used for piping of bathroom and hot spring.

*Excellent heat retention and low noise



There is no corrosion or scale.

As synthetic resin product, CPVC has not only no corrosion but scale at all so that you can use them for several decades without change of the property. Since rust doesn't block the sprinkler nozzle like metal piping material, it is semi-permanent and it doesn't need separate maintenance.

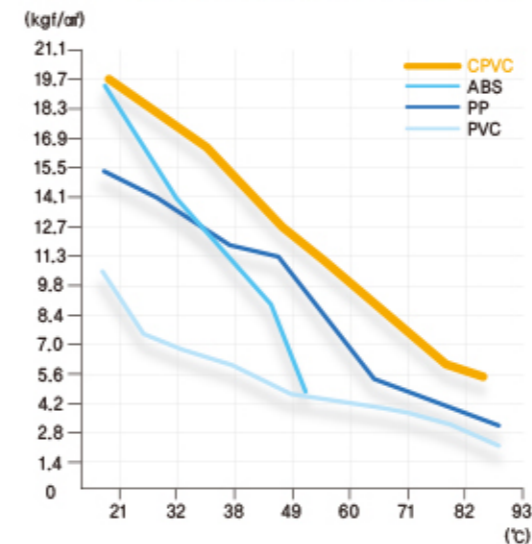


▲ Comparison after using for 30 years

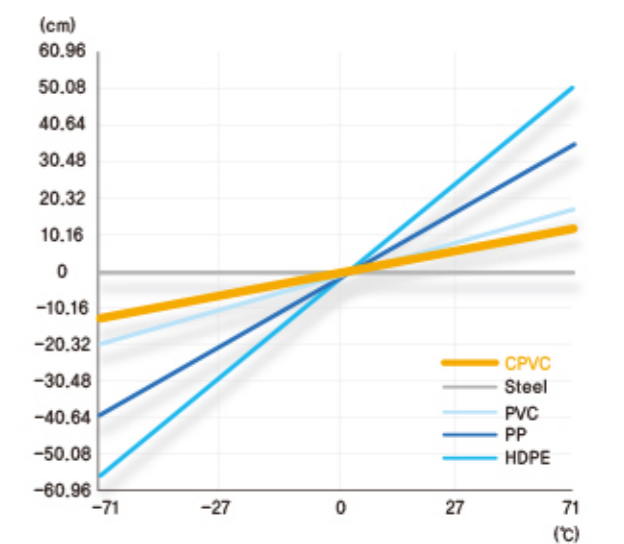
Excellent resistance to high temperature and high pressure

CPVC is excellent in chemical resistance to corrosion liquid (acid and alkali) and is the best material used in the piping of every waste water of high temperature and high pressure.

Maximum pressure and temperature of pipe use



Expansion and deflation status by resin (temperature)



Destructive and Flattening test results

A. Pressure-resistant destructive test

- a. Destructive test 95kgf/cm² Data
 - a-1. Destructive test 95kgf/cm² Graph enlarge

B. Flattening test

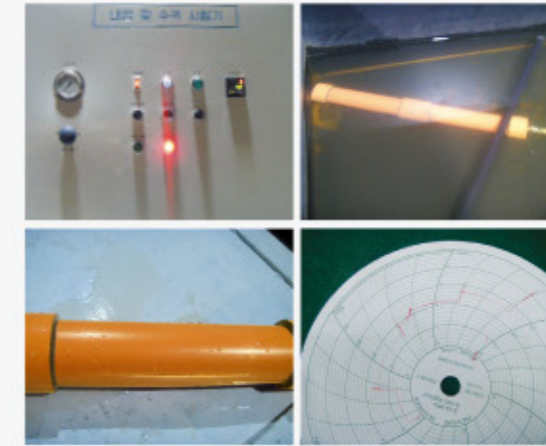
- b. PIPE compression 30%
 - b-1. Compression 30% Data
 - b-2. Compression 30% Graph
- b. PIPE compression 50%
 - b-3. Compression 50% Data
 - b-4. Compression 50% Graph
- b. PIPE compression 90%
 - b-5. Compression 90% Data
 - b-6. Compression 90% Graph



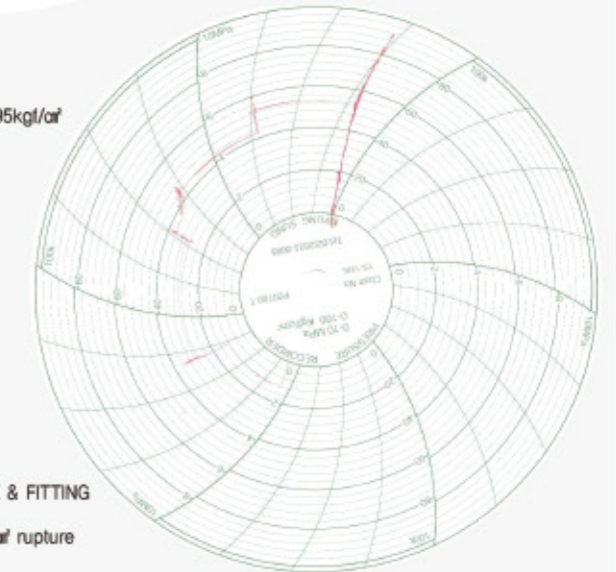
FLAMEBLOCK
Korea's Best

A. Pressure-resistant destructive test

- a. destructive test 95kgf/cm² Data



a-1. Destructive test 95kgf/cm² Graph Enlarge



Product name : PIPE & FITTING
Standard : 65A
Destruction : 95kgf/cm² rupture

B. Flattening test

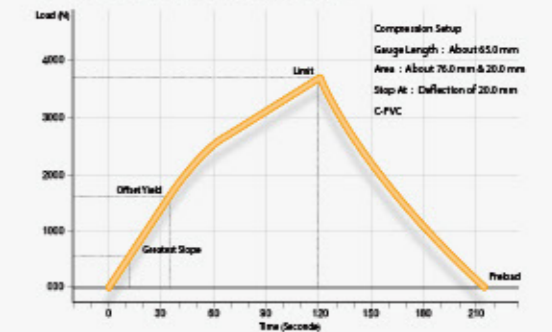
- b. PIPE Compression 30%

- b-1. Compression 30% Data



Before compression 30% being compressed after 30% compression

- b-2. Compression 30% Graph



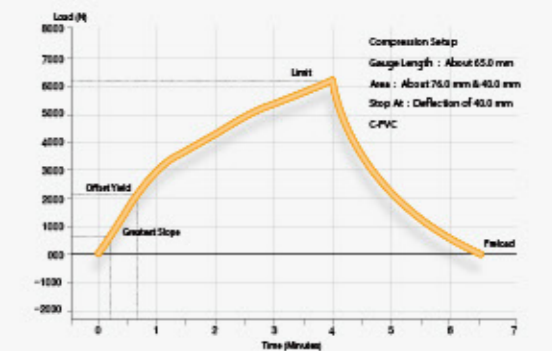
- b. PIPE Compression 50%

- b-3. Compression 50% Data



Before compression 50% being compressed after 50% compression

- b-4. Compression 50% Graph



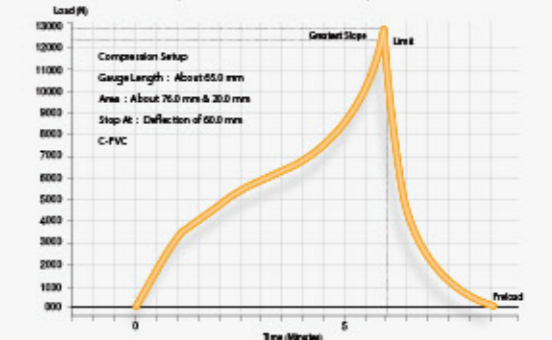
- b. PIPE Compression 90%

- b-5. Compression 90% Data



Before compression 90% being compressed after 90% compression

- b-6. Compression 90% Graph



04 Piping material comparison

Characteristic comparison of CPVC and white pipe

| Item | Carbon steel pipe | CPVC pipe | |
|--------------------------------|---|--|---------------------------------|
| Piping type | Piping using carbon steel pipe | Using chlorinated polyvinyl chloride | |
| Content | Fe is main component | Chlorinated Polyvinyl Chloride | |
| Hygiene | Old piping may cause iron oxide or corrosion and be harmful to body | Hygienic : Material itself inhibits bacteria creation, approved by NSF for drinking water piping | |
| Construction | It need skillful workers for welding, screw joint, It takes long working time and needs equipment such as a welder | Installation is easy : Bond adhesion, short working time and specialized tools not required | |
| Thermal conductivity and noise | Condensation occurs and noise transmitted due to high thermal conductivity (Thermal conductivity 51,12 kcal/h.m°C ▶ 426 times higher than CPVC) | Low thermal conductivity and keeps a certain fixed temperature, excellent noise protection (thermal conductivity of 0,0095~0,12 kcal/hm°C) | |
| Self-extinguishing | Yes | Yes- better than existing PVC | |
| Durability | Corrosion | Yes | No |
| | Rust | Yes- Occurs in/outside of pipe and welding area | No |
| | Scale | Yes- Inside diameter gets smaller by iron oxide | No |
| | Life span | Short- Short lifespan due to fast corrosion | Long- No pipe exchange required |
| Economics | High installation cost, durability lowered and need to exchange for remodeling. | Easy to install and low cost, No replacement cost required owing to permanence of the pipe. | |
| Fluid flow | C Factor- Steel, cast iron, copper (new) - 130~140 Cast iron (4~12 years) - 120 Cast iron (13~20 years) - 100 | C Factor - 150 As it has good corrosion and abrasion resistance, no corrosion or scale formed and no flow rate changes even used more than decades. | |



Properties comparison of fire extinguishing pipe for sprinkler (wet type)

| Item | Property | Steel pipe (KS D3507) | Copper L type (KS D5301) | CPVC | Remark |
|----------------------|----------------------------|--------------------------------|--------------------------|---------------------------------------|--|
| Pressure resistance | Pressure used | 12,3kgf/cm ² | 12,3kgf/cm ² | 12,3kgf/cm ² | 1,5times of pressure tested |
| | Melting point | 1,427~1,538°C | 1,082°C | 103°C | Self-extinguishing 60 |
| Heat resistance | Thermal Conductivity | 51(kcal/m.h.deg) | 333(kcal/m.h.deg) | 0,12(kcal/m.h.deg) | No impact on insulation and condensation |
| | Application | Not limited | Wet type | Burried, fireproof, semi-nonflammable | |
| Corrosion resistance | Corrosion rate | High | Slight high | None | Oxide, transition |
| | Chlorine residue | Weak | Moderate | Strong | Fighting water (tap) |
| | Flow coefficient (C-value) | 120(decrease) | 120(decrease) | 150(no change) | Corrosion, scale |
| Workability | Weight(kg/m) | 2,46 | 0,97 | 0,49 | Base on D-25 |
| | Joint method | Screw, welding, groove, flange | Welding(soft, hard) | Adhesive, screw, flange | Sealing and bonding |
| | Safety | Dangerous (fire, machining) | Dangerous (fire work) | Excellent | Adhesive ventilation required |
| | External impact | Strong | Moderate | Moderate | Note UV light |
| | Tool/ Equipment | Pipe machine, welder | Welder, oxygen container | Not required | Cutting and jointing |
| Economics | Initial investment | 100% | 215% | 89,5% | Material, labor, expenses |
| Durability | Lifespan | 10~20 years | 40~50 years | Semi-permanent | Strong to base and weak acid |



05 Quality control status and inspection items

Performance certification of fire extinguishing synthetic resin pipe and technology level of products inspection

| Test item | Standard | Temperature | Result | Remark |
|-------------------------|---|----------------------------------|------------|--------|
| Shape and structure | check in/out diameter and thickness standard | | | |
| Pressure test | There shouldn't be water leakage or transformation after 2 minutes with water pressure of 60kgf/cm ² | Room temperature | No problem | |
| Vibration test | In a state of putting pressures on 1m length pipe, It should pass the vibration test with amplitude 0.5mm and frequency 25±5/sec for 30 hours | | No problem | |
| Temperature repeat test | It should pass the pressure test with 3.5kg/cm ² of water pressure at 1.7°C for 24 hours repeated 5 cycles. | 0°C Maximum using temperature | No problem | |
| Falling weight test | It should be no problem after steel bar falling test after 24 hours' exposure. It should pass the pressure test. | -18°C, 0°C 20°C | No problem | |
| Fire test | There should not be any rupture, separation or water leakage | | | |

Quality standard and inspection items

| Test item | Standard | Temperature | Result | Remark |
|--------------------|---|-------------|--------|--|
| Destructive test | There should not be damage like cracks (890N×5min) It should pass pressure test after this test | | | |
| Torsion | It should not exceed 75% of minimum bending radius | -18°C, 21°C | | |
| Flame retardant | It should be classified as HB grade | | | |
| Weathering | There should not be any powder, blistering or peeling phenomenon | | | |
| Pressure Loss Test | Test with pressure gauges on both sides of 6m pipe (measure average pressure loss factor) | | | |
| Water hammer test | It should pass pressure test after 3000 times of pressure change with two times of 0~maximum using pressure at the rate of 10 times per minute. | | | Max pressure Over 1.2Mpa (12.24kgf/cm ²) |

06 Legal basis of use

Announcement No. 2015-22, No. 23-Ministry of Public Safety and Security
 Fire safety standard of indoor fire hydrant facility (NFSC102) : Article 6 (piping)
 Fire safety standards of the sprinkler equipment (NFSC103) : Article 8 (piping)

- ① ...
- ② and other parts ...
- ③ Notwithstanding the provisions of Article 1, fire extinguishing plastic pipe can be installed suitable performance test technology standard designated and noticed by National Emergency Management Agency at the places of following items.
 2. In the case of installation in a duct or pit comparted from other parts with refractory structure.
 3. In case of installation of pipe in wet type in the ceiling (it includes bottom of upper floor any any) with non-combustible or quasi-noncombustible materials.

07 CPVC Piping System

Fire Sprinkler System



FLAMEBLOCK
Korea's Best

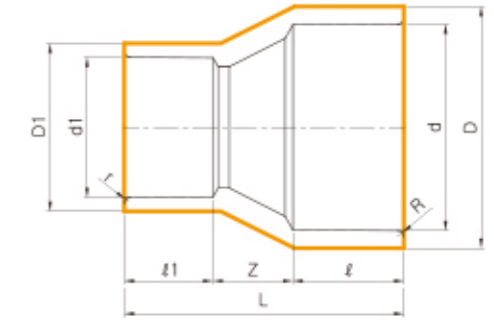
PIPE



unit: mm

| NOMINAL SIZE | | D | | t | | L |
|--------------|--------|-----------------|---------------------|-----------------|---------------------|-------|
| mm | inch | Basic Dimension | Max. Min. Tolerance | Basic Dimension | Max. Min. Tolerance | |
| 25A | 1" | 33.4 | ±0.13 | 2.46 | +0.51 -0.00 | 4,000 |
| 32A | 1-1/4" | 42.2 | ±0.13 | 3.12 | +0.51 -0.00 | |
| 40A | 1-1/2" | 48.2 | ±0.15 | 3.58 | +0.51 -0.00 | |
| 50A | 2" | 60.3 | ±0.15 | 4.47 | +0.53 -0.00 | |
| 65A | 2-1/2" | 73.0 | ±0.18 | 5.41 | +0.66 -0.00 | |
| 80A | 3" | 88.9 | ±0.20 | 6.58 | +0.79 -0.00 | |
| 100A | 4" | 114.3 | ±0.23 | 8.46 | +1.02 -0.00 | |
| 125A | 5" | 141.3 | ±0.25 | 10.46 | +1.24 -0.00 | |
| 150A | 6" | 168.3 | ±0.28 | 12.47 | +1.50 -0.00 | |

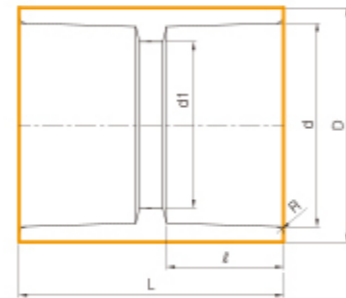
REDUCER SOCKET



unit: mm

| NOMINAL SIZE | | D | d | | l | R | D1 | d1 | | l1 | r | Z | L |
|--------------|---------------|-----|-----------------|---------------------|------|------|-----|-----------------|---------------------|------|------|------|-------|
| mm | inch | | Basic Dimension | Max. Min. Tolerance | | | | Basic Dimension | Max. Min. Tolerance | | | | |
| 32Ax25A | 1-1/4"x1" | 52 | 42.42 | ±0.13 | 31.8 | 1.59 | 43 | 33.66 | ±0.13 | 28.6 | 1.59 | 14.6 | 75.0 |
| 40Ax25A | 1-1/2"x1" | 61 | 42.42 | ±0.13 | 34.9 | 1.59 | 43 | 33.66 | ±0.13 | 28.6 | 1.59 | 12.5 | 76.0 |
| 40Ax32A | 1-1/2"x1-1/4" | 61 | 48.56 | ±0.15 | 34.9 | 1.59 | 52 | 42.42 | ±0.13 | 31.8 | 1.59 | 17.8 | 84.5 |
| 50Ax25A | 2"x1" | 72 | 60.63 | ±0.15 | 38.1 | 1.59 | 42 | 33.66 | ±0.13 | 28.6 | 1.59 | 11.3 | 78.0 |
| 50Ax32A | 2"x1-1/4" | 72 | 60.63 | ±0.15 | 38.1 | 1.59 | 52 | 42.42 | ±0.13 | 31.8 | 1.59 | 22.1 | 92.0 |
| 50Ax40A | 2"x1-1/2" | 72 | 60.63 | ±0.15 | 38.1 | 1.59 | 59 | 48.59 | ±0.15 | 34.9 | 1.59 | 19.0 | 92.0 |
| 65Ax40A | 2-1/2"x1-1/2" | 90 | 73.38 | ±0.18 | 44.4 | 2.38 | 72 | 48.56 | ±0.15 | 34.9 | 1.59 | 28.7 | 108.0 |
| 65Ax50A | 2-1/2"x2" | 90 | 73.38 | ±0.18 | 44.4 | 2.38 | 72 | 60.63 | ±0.15 | 38.1 | 1.59 | 25.5 | 108.0 |
| 80Ax40A | 3"x1-1/2" | 104 | 89.31 | ±0.20 | 47.6 | 2.38 | 72 | 48.56 | ±0.15 | 34.9 | 1.59 | 24.5 | 107.0 |
| 80Ax50A | 3"x2" | 104 | 89.31 | ±0.20 | 47.6 | 2.38 | 72 | 60.63 | ±0.15 | 38.1 | 1.59 | 21.3 | 107.0 |
| 80Ax65A | 3"x2-1/2" | 105 | 89.31 | ±0.20 | 47.6 | 2.38 | 90 | 73.38 | ±0.18 | 44.4 | 2.38 | 19.0 | 111.0 |
| 100Ax50A | 4"x2" | 132 | 114.76 | ±0.23 | 57.1 | 2.38 | 72 | 60.63 | ±0.15 | 38.1 | 1.59 | 26.8 | 122.0 |
| 100Ax80A | 4"x3" | 133 | 114.76 | ±0.23 | 57.1 | 2.38 | 105 | 89.31 | ±0.20 | 47.6 | 2.38 | 25.3 | 130.0 |
| 125Ax100A | 5"x4" | 162 | 141.81 | ±0.25 | 76.2 | 2.38 | 133 | 114.76 | ±0.23 | 57.1 | 2.38 | 21.7 | 155.0 |
| 150Ax100A | 6"x4" | 188 | 168.83 | ±0.28 | 76.2 | 3.18 | 132 | 114.76 | ±0.23 | 57.1 | 2.38 | 43.7 | 177.0 |
| 150Ax125A | 6"x5" | 189 | 168.83 | ±0.28 | 76.2 | 3.18 | 161 | 141.81 | ±0.25 | 76.2 | 2.38 | 30.6 | 183.0 |

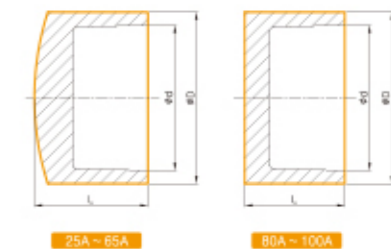
SOCKET



unit: mm

| NOMINAL SIZE | | D | d | | d1 | l | R | L |
|--------------|--------|-------|-----------------|---------------------|--------|------|------|-----|
| mm | inch | | Basic Dimension | Max. Min. Tolerance | | | | |
| 25A | 1" | 42.0 | 33.66 | ±0.13 | 25.15 | 28.6 | 1.59 | 63 |
| 32A | 1-1/4" | 52.0 | 42.42 | ±0.13 | 33.91 | 31.8 | 1.59 | 73 |
| 40A | 1-1/2" | 61.0 | 48.56 | ±0.15 | 39.73 | 34.9 | 1.59 | 80 |
| 50A | 2" | 73.0 | 60.63 | ±0.15 | 51.33 | 38.1 | 1.59 | 86 |
| 65A | 2-1/2" | 92.0 | 73.38 | ±0.18 | 61.32 | 44.4 | 2.38 | 113 |
| 80A | 3" | 107.0 | 89.31 | ±0.20 | 76.40 | 47.6 | 2.38 | 123 |
| 100A | 4" | 133.5 | 114.76 | ±0.23 | 100.61 | 57.1 | 2.38 | 128 |
| 125A | 5" | 160.0 | 141.81 | ±0.25 | 126.37 | 76.2 | 2.38 | 169 |
| 150A | 6" | 190.0 | 168.83 | ±0.28 | 152.04 | 76.2 | 3.18 | 184 |

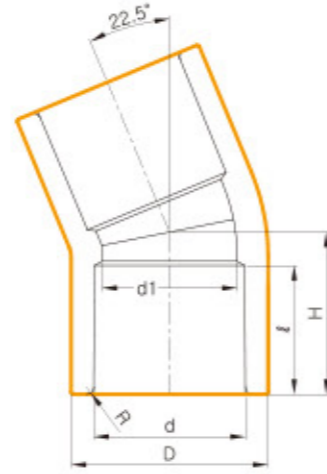
CAP



unit: mm

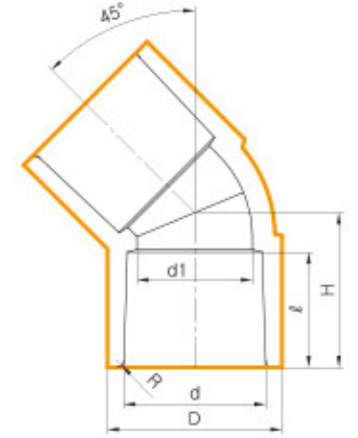
| NOMINAL SIZE | | D | d | L |
|--------------|--------|-------|--------|------|
| mm | inch | | | |
| 25A | 1" | 43.7 | 33.66 | 39.5 |
| 32A | 1-1/4" | 53.0 | 42.42 | 44.5 |
| 40A | 1-1/2" | 60.0 | 48.56 | 48.5 |
| 50A | 2" | 73.0 | 60.63 | 52 |
| 65A | 2-1/2" | 88.5 | 73.38 | 60.0 |
| 80A | 3" | 107.0 | 89.31 | 61.0 |
| 100A | 4" | 132.0 | 114.81 | 69.0 |

22.5° ELBOW



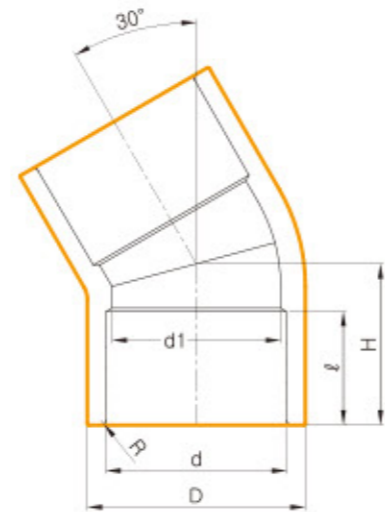
| NOMINAL SIZE | | D | d | | d1 | l | R | H |
|--------------|------|------|-----------------|---------------------|-------|------|------|----|
| mm | inch | | Basic Dimension | Max. Min. Tolerance | | | | |
| 25A | 1" | 43.7 | 33.66 | ±0.13 | 25.15 | 28.6 | 1.59 | 36 |
| 50A | 2" | 73.0 | 60.63 | ±0.15 | 51.33 | 38.1 | 1.59 | 50 |

45° ELBOW



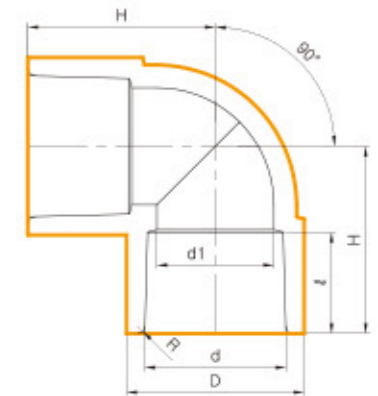
| NOMINAL SIZE | | D | d | | d1 | l | R | H |
|--------------|--------|-------|-----------------|---------------------|--------|------|------|-------|
| mm | inch | | Basic Dimension | Max. Min. Tolerance | | | | |
| 25A | 1" | 43.5 | 33.66 | ±0.13 | 25.15 | 28.6 | 1.59 | 39.0 |
| 32A | 1-1/4" | 52.0 | 42.42 | ±0.13 | 33.91 | 31.8 | 1.59 | 44.0 |
| 40A | 1-1/2" | 64.0 | 48.56 | ±0.15 | 39.73 | 34.9 | 1.59 | 48.0 |
| 50A | 2" | 76.0 | 60.63 | ±0.15 | 51.33 | 38.1 | 1.59 | 56.0 |
| 65A | 2-1/2" | 92.0 | 73.38 | ±0.18 | 61.32 | 44.4 | 2.38 | 63.0 |
| 80A | 3" | 105.0 | 89.31 | ±0.20 | 76.40 | 47.6 | 2.38 | 70.0 |
| 100A | 4" | 133.0 | 114.76 | ±0.23 | 100.61 | 57.1 | 2.38 | 88.0 |
| 125A | 5" | 161.0 | 141.81 | ±0.25 | 126.37 | 76.2 | 2.38 | 118.0 |
| 150A | 6" | 189.0 | 168.83 | ±0.28 | 152.04 | 76.2 | 3.18 | 126.0 |

30° ELBOW



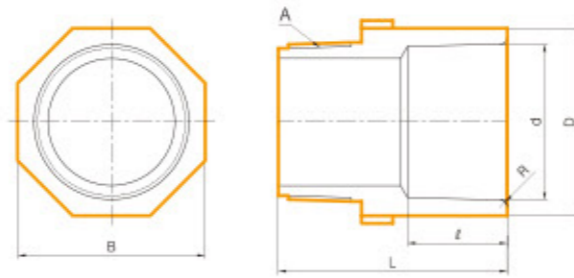
| NOMINAL SIZE | | D | d | | d1 | l | R | H |
|--------------|--------|------|-----------------|---------------------|-------|------|------|------|
| mm | inch | | Basic Dimension | Max. Min. Tolerance | | | | |
| 50A | 2" | 73.0 | 60.63 | ±0.15 | 51.33 | 38.1 | 1.59 | 54.0 |
| 65A | 2-1/2" | 88.5 | 73.38 | ±0.18 | 61.32 | 44.4 | 2.38 | 62.0 |

90° ELBOW



| NOMINAL SIZE | | D | d | | d1 | l | R | H |
|--------------|--------|-------|-----------------|---------------------|--------|------|------|-----|
| mm | inch | | Basic Dimension | Max. Min. Tolerance | | | | |
| 25A | 1" | 45 | 33.66 | ±0.13 | 25.15 | 28.6 | 1.59 | 51 |
| 32A | 1-1/4" | 52.0 | 42.42 | ±0.13 | 33.91 | 31.8 | 1.59 | 57 |
| 40A | 1-1/2" | 62.0 | 48.56 | ±0.15 | 39.73 | 34.9 | 1.59 | 64 |
| 50A | 2" | 75.0 | 60.63 | ±0.15 | 51.33 | 38.1 | 1.59 | 76 |
| 65A | 2-1/2" | 90.0 | 73.38 | ±0.18 | 61.32 | 44.4 | 2.38 | 88 |
| 80A | 3" | 107.0 | 89.31 | ±0.20 | 76.40 | 47.6 | 2.38 | 100 |
| 100A | 4" | 132.0 | 114.76 | ±0.23 | 100.61 | 57.1 | 2.38 | 119 |
| 125A | 5" | 161.0 | 141.81 | ±0.25 | 126.37 | 76.2 | 2.38 | 156 |
| 150A | 6" | 189.0 | 168.83 | ±0.28 | 152.04 | 76.2 | 3.18 | 172 |

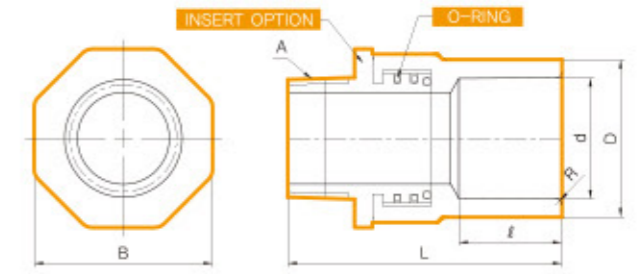
VALVE SOCKET



unit:mm

| NOMINAL SIZE | | A | D | d | l | R | L | B |
|--------------|-----------|-------|------|-------|------|------|----|----|
| mm | inch | | | | | | | |
| 25AxPT1" | 1"xPT1" | PT1" | 43 | 33.66 | 28.6 | 1.59 | 59 | 43 |
| 32AxPT1½" | 1½"xPT1½" | PT1½" | 52 | 42.42 | 31.8 | 1.59 | 68 | 52 |
| 40AxPT1½" | 1½"xPT1½" | PT1½" | 60 | 48.56 | 34.9 | 1.59 | 75 | 60 |
| 50AxPT2" | 2"xPT2" | PT2" | 73 | 60.63 | 38.1 | 1.59 | 88 | 73 |
| 65AxPT2½" | 2½"xPT2½" | PT2½" | 88.5 | 73.38 | 44.4 | 2.38 | 93 | 89 |

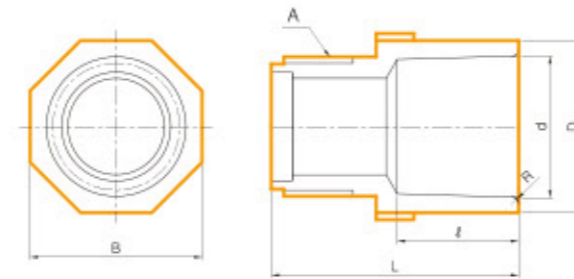
VALVE SOCKET



unit:mm

| NOMINAL SIZE | | A | D | d | l | R | L | B |
|--------------|-----------|-------|------|-------|------|------|-------|------|
| mm | inch | | | | | | | |
| 25AxPT1" | 1"xPT1" | PT1" | 43.7 | 33.66 | 28.6 | 1.59 | 76 | 49.5 |
| 32AxPT1½" | 1½"xPT1½" | PT1½" | 53 | 42.42 | 31.8 | 1.59 | 85 | 59 |
| 40AxPT1½" | 1½"xPT1½" | PT1½" | 60 | 48.56 | 34.9 | 1.59 | 88 | 66 |
| 50AxPT2" | 2"xPT2" | PT2" | 73 | 60.63 | 38.1 | 1.59 | 98.5 | 79 |
| 65AxPT2½" | 2½"xPT2½" | PT2½" | 88.5 | 73.38 | 44.4 | 2.38 | 113.0 | 95.5 |

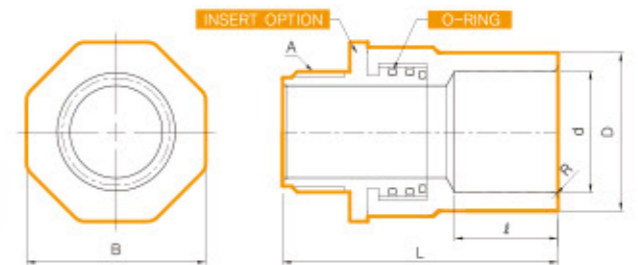
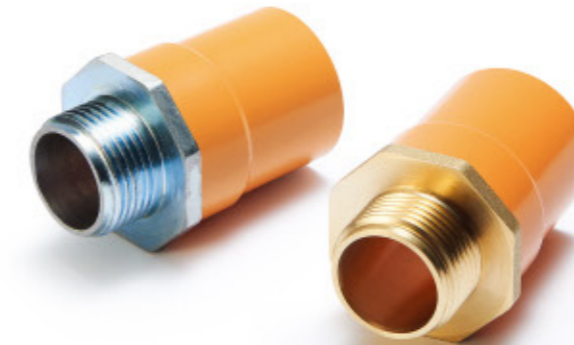
PF VALVE SOCKET



unit:mm

| NOMINAL SIZE | | A | D | d | l | R | L | B |
|--------------|---------|------|----|-------|------|------|----|----|
| mm | inch | | | | | | | |
| 25AxPF1" | 1"xPF1" | PF1" | 43 | 33.66 | 28.6 | 1.59 | 54 | 43 |

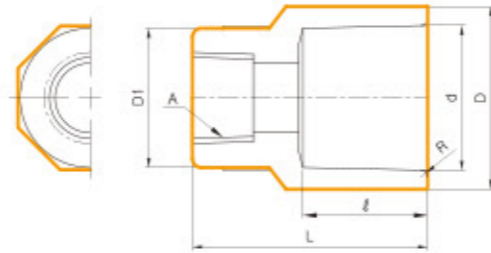
PF VALVE SOCKET



unit:mm

| NOMINAL SIZE | | A | D | d | l | R | L | B |
|--------------|---------|------|------|-------|------|------|----|------|
| mm | inch | | | | | | | |
| 25AxPF1" | 1"xPF1" | PF1" | 43.7 | 33.66 | 28.6 | 1.59 | 76 | 49.5 |

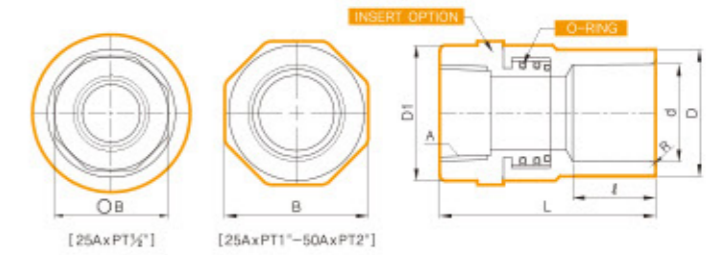
FAUCET SOCKET



unit: mm

| NOMINAL SIZE | | A | D | d | l | R | L | D1 |
|--------------|-----------------|----------|------|-------|------|------|------|-------|
| mm | inch | | | | | | | |
| 25AxPT1/2" | 1"xPT1/2" | PT1/2" | 43.0 | 33.66 | 28.6 | 1.59 | 57.0 | 33.5 |
| 25AxPT1" | 1"xPT1" | PT1" | 43.0 | 33.66 | 28.6 | 1.59 | 60.0 | 48.0 |
| 32AxPT1 1/2" | 1 1/2"xPT1 1/2" | PT1 1/2" | 52.0 | 42.42 | 27.0 | 1.59 | 65.5 | 60.0 |
| 40AxPT1 1/2" | 1 1/2"xPT1 1/2" | PT1 1/2" | 58.0 | 48.56 | 29.0 | 1.59 | 67.5 | 66.0 |
| 50AxPT2" | 2"xPT2" | PT2" | 72.0 | 60.63 | 33.5 | 1.59 | 78.0 | 80.5 |
| 65AxPT2 1/2" | 2 1/2"xPT2 1/2" | PT2 1/2" | 88.5 | 73.38 | 44.4 | 2.38 | 82.5 | 100.0 |

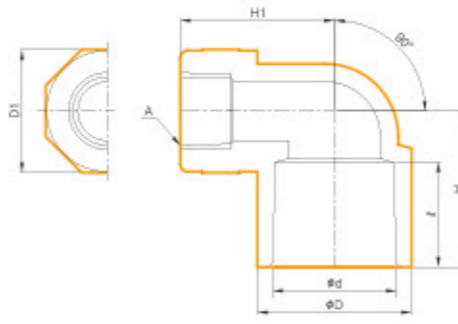
FAUCET SOCKET



unit: mm

| NOMINAL SIZE | | A | D | d | l | R | L | B | D1 |
|--------------|-----------------|----------|------|-------|------|------|-------|------|------|
| mm | inch | | | | | | | | |
| 25AxPT1/2" | 1"xPT1/2" | PT1/2" | 43.7 | 33.66 | 28.6 | 1.59 | 70.0 | 31.5 | 35.5 |
| 25AxPT1" | 1"xPT1" | PT1" | 43.7 | 33.66 | 28.6 | 1.59 | 74.5 | 49.5 | 46.7 |
| 32AxPT1 1/2" | 1 1/2"xPT1 1/2" | PT1 1/2" | 53.0 | 42.42 | 31.8 | 1.59 | 82.0 | 59.0 | 56.0 |
| 40AxPT1 1/2" | 1 1/2"xPT1 1/2" | PT1 1/2" | 60.0 | 48.56 | 34.9 | 1.59 | 86.0 | 66.0 | 63.0 |
| 50AxPT2" | 2"xPT2" | PT2" | 73.0 | 60.63 | 38.1 | 1.59 | 95.0 | 79.0 | 76.0 |
| 65AxPT2 1/2" | 2 1/2"xPT2 1/2" | PT2 1/2" | 88.5 | 73.38 | 44.4 | 2.38 | 109.0 | 95.5 | 92.5 |

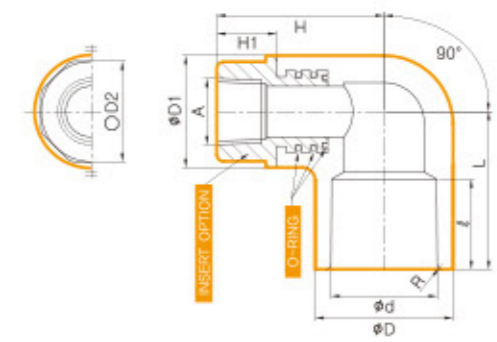
FAUCET 90° ELBOW



unit: mm

| NOMINAL SIZE | | A | l | H | H1 | D | D1 | d |
|--------------|-----------|--------|------|------|------|------|------|-------|
| mm | inch | | | | | | | |
| 25AxPT1/2" | 1"xPT1/2" | PT1/2" | 28.6 | 42.5 | 42.0 | 42.0 | 33.5 | 33.66 |

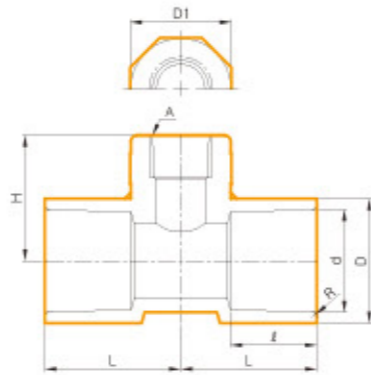
FAUCET 90° ELBOW



unit: mm

| NOMINAL SIZE | | A | D | d | | l | D1 | D2 | H | H1 | L | R |
|--------------|-----------|--------|------|-----------------|---------------------|------|------|------|------|------|------|------|
| mm | inch | | | Basic Dimension | Max. Min. Tolerance | | | | | | | |
| 25AxPT1/2" | 1"xPT1/2" | PT1/2" | 43.7 | 33.66 | ±0.13 | 28.6 | 35.5 | 31.5 | 53.0 | 19.0 | 50.0 | 1.59 |

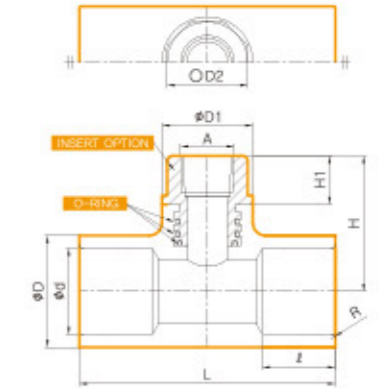
FAUCET TEE



unit: mm

| NOMINAL SIZE | | A | D | d | l | R | L | D1 | H |
|--------------|-----------|--------|------|-------|------|------|----|------|----|
| mm | inch | | | | | | | | |
| 25AxPT1/2" | 1"xPT1/2" | PT1/2" | 41.5 | 33.66 | 28.6 | 1.59 | 45 | 33.5 | 43 |

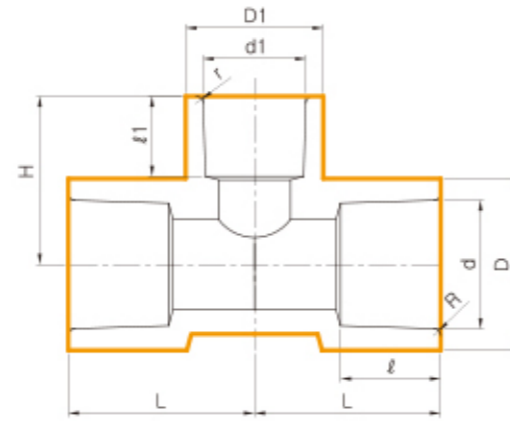
FAUCET TEE



unit: mm

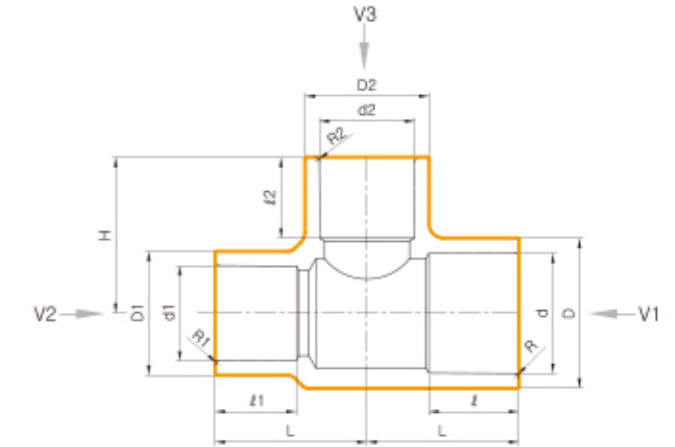
| NOMINAL SIZE | | A | D | d | | l | D1 | D2 | H | H1 | L | R |
|--------------|-----------|--------|------|-----------------|---------------------|------|------|------|------|------|-------|------|
| mm | inch | | | Basic Dimension | Max. Min. Tolerance | | | | | | | |
| 25AxPT1/2" | 1"xPT1/2" | PT1/2" | 43.7 | 33.66 | ±0.13 | 28.6 | 35.5 | 31.5 | 53.0 | 19.0 | 100.0 | 1.59 |

REDUCER TEE



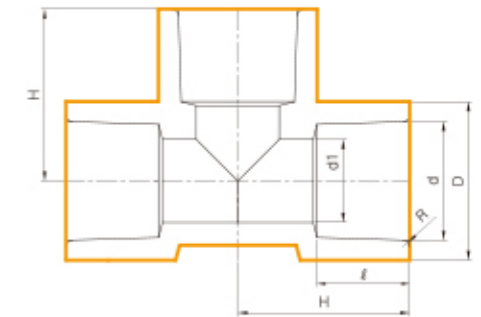
| NOMINAL SIZE | | D | d | | ℓ | R | L | D1 | d1 | | ℓ1 | r | H |
|--------------|---------|-------|-----------------|---------------------|------|------|-------|-----|-----------------|---------------------|------|------|-------|
| mm | Inch | | Basic Dimension | Max. Min. Tolerance | | | | | Basic Dimension | Max. Min. Tolerance | | | |
| 32Ax25A | 1½"x1" | 53,5 | 42,42 | ±0,13 | 31,8 | 1,59 | 56,0 | 45 | 33,66 | ±0,13 | 28,6 | 1,59 | 56,0 |
| 40Ax25A | 1½"x1" | 62,0 | 48,56 | ±0,15 | 34,9 | 1,59 | 61,5 | 45 | 33,66 | ±0,13 | 28,6 | 1,59 | 61,5 |
| 40Ax32A | 1½"x1½" | 62,0 | 48,56 | ±0,15 | 34,9 | 1,59 | 61,5 | 52 | 42,42 | ±0,13 | 31,8 | 1,59 | 61,5 |
| 50Ax25A | 2"x1" | 72,5 | 60,63 | ±0,15 | 38,1 | 1,59 | 71,0 | 44 | 33,66 | ±0,13 | 28,6 | 1,59 | 71,0 |
| 50Ax32A | 2"x1½" | 72,5 | 60,63 | ±0,15 | 38,1 | 1,59 | 71,0 | 52 | 42,42 | ±0,13 | 31,8 | 1,59 | 71,0 |
| 50Ax40A | 2"x1½" | 75,0 | 60,63 | ±0,15 | 38,1 | 1,59 | 71,0 | 62 | 48,56 | ±0,15 | 34,9 | 1,59 | 71,0 |
| 65Ax25A | 2½"x1" | 90,0 | 73,38 | ±0,18 | 44,4 | 2,38 | 88,5 | 42 | 33,66 | ±0,13 | 28,6 | 1,59 | 79,0 |
| 65Ax32A | 2½"x1½" | 88,0 | 73,38 | ±0,18 | 44,4 | 2,38 | 88,5 | 58 | 42,42 | ±0,13 | 31,8 | 1,59 | 87,5 |
| 65Ax40A | 2½"x1½" | 88,0 | 73,38 | ±0,18 | 44,4 | 2,38 | 88,5 | 58 | 48,56 | ±0,15 | 34,9 | 1,59 | 87,5 |
| 65Ax50A | 2½"x2" | 88,0 | 73,38 | ±0,18 | 44,4 | 2,38 | 88,5 | 71 | 60,63 | ±0,15 | 38,1 | 1,59 | 87,5 |
| 80Ax32A | 3"x1½" | 107,0 | 89,31 | ±0,20 | 47,6 | 2,38 | 107,0 | 62 | 42,42 | ±0,13 | 31,8 | 1,59 | 86,5 |
| 80Ax40A | 3"x1½" | 107,0 | 89,31 | ±0,20 | 47,6 | 2,38 | 107,0 | 62 | 48,56 | ±0,15 | 34,9 | 1,59 | 86,5 |
| 80Ax50A | 3"x2" | 107,0 | 89,31 | ±0,20 | 47,6 | 2,38 | 107,0 | 75 | 60,63 | ±0,15 | 38,1 | 1,59 | 93,5 |
| 80Ax65A | 3"x2½" | 107,0 | 89,31 | ±0,20 | 47,6 | 2,38 | 99,5 | 88 | 73,38 | ±0,18 | 44,4 | 2,38 | 99,5 |
| 100Ax40A | 4"x1½" | 134,0 | 114,76 | ±0,23 | 57,1 | 2,38 | 132,0 | 76 | 48,56 | ±0,15 | 34,9 | 1,59 | 105,0 |
| 100Ax50A | 4"x2" | 134,0 | 114,76 | ±0,23 | 57,1 | 2,38 | 132,0 | 76 | 60,63 | ±0,15 | 38,1 | 1,59 | 105,0 |
| 100Ax80A | 4"x3" | 134,0 | 114,76 | ±0,23 | 57,1 | 2,38 | 132,0 | 107 | 89,31 | ±0,20 | 47,6 | 2,38 | 117,0 |

THREE REDUCER TEE



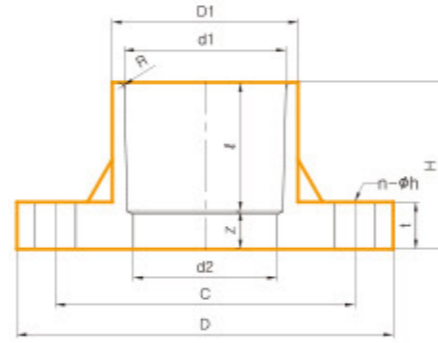
| NOMINAL SIZE | | D | d | | ℓ | R | L | D1 | d1 | | ℓ1 | R1 | d2 | | ℓ2 | R2 | H | |
|--------------|------------|------|-----------------|---------------------|------|------|------|------|-----------------|---------------------|------|------|-----------------|---------------------|-------|------|------|------|
| mm | inch | | Basic Dimension | Max. Min. Tolerance | | | | | Basic Dimension | Max. Min. Tolerance | | | Basic Dimension | Max. Min. Tolerance | | | | |
| 32Ax25Ax25A | 1½"x1"x1" | 53,0 | 42,42 | ±0,13 | 31,8 | 1,59 | 53,5 | 43,7 | 33,66 | ±0,13 | 28,6 | 1,59 | 43,7 | 33,66 | ±0,13 | 28,6 | 1,59 | 55,0 |
| 40Ax32Ax25A | 1½"x1½"x1" | 60,0 | 48,56 | ±0,15 | 34,9 | 1,59 | 57,0 | 53,0 | 42,42 | ±0,13 | 31,8 | 1,59 | 43,7 | 33,66 | ±0,13 | 28,6 | 1,59 | 59,0 |
| 50Ax40Ax25A | 2"x1½"x1" | 73,0 | 60,63 | ±0,15 | 38,1 | 1,59 | 60,5 | 60,0 | 48,56 | ±0,15 | 34,9 | 1,59 | 43,7 | 33,66 | ±0,13 | 28,6 | 1,59 | 65,0 |
| 50Ax40Ax32A | 2"x1½"x1½" | 73,0 | 60,63 | ±0,15 | 38,1 | 1,59 | 65,5 | 60,0 | 48,56 | ±0,15 | 34,9 | 1,59 | 53,0 | 42,42 | ±0,13 | 31,8 | 1,59 | 68,0 |
| 50Ax40Ax40A | 2"x1½"x1½" | 73,0 | 60,63 | ±0,15 | 38,1 | 1,59 | 68,5 | 60,0 | 48,56 | ±0,15 | 34,9 | 1,59 | 60,0 | 48,56 | ±0,15 | 34,9 | 1,59 | 71,5 |

TEE



| NOMINAL SIZE | | D | d | | d1 | ℓ | R | H |
|--------------|------|-----|-----------------|---------------------|--------|------|------|-------|
| mm | inch | | Basic Dimension | Max. Min. Tolerance | | | | |
| 25A | 1" | 45 | 33,66 | ±0,13 | 25,15 | 28,6 | 1,59 | 49 |
| 32A | 1-½" | 52 | 42,42 | ±0,13 | 33,91 | 31,8 | 1,59 | 55,5 |
| 40A | 1-½" | 62 | 48,56 | ±0,15 | 39,73 | 34,9 | 1,59 | 61,5 |
| 50A | 2" | 75 | 60,63 | ±0,15 | 51,33 | 38,1 | 1,59 | 71 |
| 65A | 2-½" | 90 | 73,38 | ±0,18 | 61,32 | 44,4 | 2,38 | 89 |
| 80A | 3" | 107 | 89,31 | ±0,20 | 76,40 | 47,6 | 2,38 | 99,5 |
| 100A | 4" | 134 | 114,76 | ±0,23 | 100,61 | 57,1 | 2,38 | 132,5 |
| 125A | 5" | 161 | 141,81 | ±0,25 | 126,37 | 76,2 | 2,38 | 155,5 |
| 150A | 6" | 189 | 168,83 | ±0,28 | 152,04 | 76,2 | 3,18 | 178 |

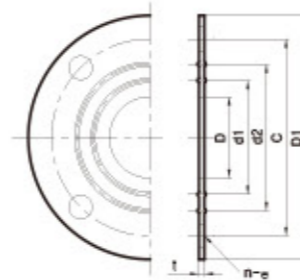
T.S FLANGE



unit:mm

| NOMINAL SIZE | | SOCKET DIMENSIONS | | | | | | | FLANGE DIMENSIONS | | | |
|--------------|---------|-------------------|--------|--------|------|------|------|-----|-------------------|-----|----|------|
| mm | inch | D1 | d1 | d2 | l | Z | R | H | D | C | t | n-φh |
| 25 | 1" | 42.5 | 33.66 | 25.15 | 28.6 | 17.4 | 1.59 | 46 | 125 | 90 | 15 | 4-19 |
| 32 | 1'-1/4" | 52 | 42.42 | 33.91 | 31.8 | 18.2 | 1.59 | 50 | 135 | 100 | 16 | 4-19 |
| 40 | 1'-1/2" | 61 | 48.56 | 39.73 | 34.9 | 26.1 | 1.59 | 61 | 140 | 105 | 16 | 4-19 |
| 50 | 2" | 74 | 60.63 | 51.33 | 38.1 | 31.9 | 1.59 | 70 | 155 | 120 | 20 | 4-19 |
| 65 | 2'-1/4" | 87 | 73.38 | 61.32 | 44.4 | 33.6 | 2.38 | 78 | 175 | 140 | 22 | 4-19 |
| 80 | 3" | 102 | 89.31 | 76.40 | 47.6 | 33.4 | 2.38 | 81 | 185 | 150 | 22 | 8-19 |
| 100 | 4" | 130 | 114.76 | 100.61 | 57.1 | 42.9 | 2.38 | 100 | 210 | 175 | 22 | 8-19 |
| 125 | 5" | 160 | 141.81 | 126.37 | 76.2 | 44.8 | 2.38 | 121 | 250 | 210 | 25 | 8-23 |
| 150 | 6" | 189 | 168.83 | 152.04 | 76.2 | 73.8 | 3.18 | 150 | 280 | 240 | 25 | 8-23 |

GASKET



unit:mm

| NOMINAL SIZE | | D | | d1 | d2 | C | D1 | t | n | e |
|--------------|---------|-----------------|-----|-----|-----|-----|----|---|----|---|
| mm | inch | Basic Dimension | | | | | | | | |
| 25A | 1" | 30 | 38 | 53 | 90 | 123 | 3 | 4 | 19 | |
| 32A | 1'-1/4" | 35 | 44 | 59 | 100 | 133 | 3 | 4 | 19 | |
| 40A | 1'-1/2" | 43 | 54 | 69 | 105 | 138 | 3 | 4 | 19 | |
| 50A | 2" | 54 | 68 | 83 | 120 | 153 | 3 | 4 | 19 | |
| 65A | 2'-1/4" | 69 | 86 | 101 | 140 | 173 | 3 | 4 | 19 | |
| 80A | 3" | 83 | 98 | 112 | 150 | 183 | 3 | 8 | 19 | |
| 100A | 4" | 102 | 120 | 138 | 175 | 208 | 3 | 8 | 19 | |
| 125A | 5" | 127 | 145 | 166 | 210 | 248 | 3 | 8 | 23 | |
| 150A | 6" | 150 | 168 | 190 | 240 | 278 | 3 | 8 | 23 | |

08 Construction Manual

Fire Sprinkler System



FLAMEBLOCK
Korea's Best

1. Principle of TS bonding method

- * TS bonding (socket welding or bonding method) is pressed bonding using elasticity of CPVC and expansion lubrication of CPVC by adhesive at taper part at the entrance of the fitting.
- * It allows the pipe to be inserted deeper as there is 0.1mm expansion lubrication layer on each coated surface by applying adhesive on the pipe and fitting.
- * After inserting, the fitting tightens the pipe tightly and the pipe is inserted more and more tightly and the expansion lubrication layer of the fitting and the pipe is bonded.

2. Construction Specification



1 Cutting

Cut the pipe at right angle and check the cutting plane. You can use cutting tools (wheel type, ratchet type, saw, iron cutter).



2 Deburring & Beveling

Round the pipe with the outer diameter of 10°~15°. It helps the pipe to be inserted into the fittings.



3 Fitting preparation

Remove foreign materials and cutting debris in the pipe, then wipe the dust, grease and moisture on in/outside of the pipe and fittings with clean dry cloth.



4 Checking (before applying)

- * Check if the pipe is dry before inserting into the fitting.
- * Insert the pipe into the fitting before applying the glue.
- * Measure inserting depth and mark a line on the pipe, And then insert 2cm more and mark second reference line, as first inserting depth line can be removed during the construction by primer or solvent cement.



- * Pipe should be inserted into the fitting up to 1/3~2/3 of the depth tightly.
- * If the insert is bad, start from the beginning (1).



5 Solvent Cement (BOND)

- * Check the content opening the lid and shake well to mix the content before working. (sediment subsidence prevention)
- * Check if the solvent cement is in good condition and make sure it is not in gel condition. If it is hardened or gel condition, discard the product. Close the solvent cement (adhesive) cap after working to prevent hardening.



6 Solvent Cement Application

Remove dust and foreign material with paper towel or clean cloth and cleaner.

* Solvent cement work order

Using brush and tool, apply solvent cement to the pipe thick and evenly 2~3 times as deep as inserting depth.

Apply to fitting insertion portion uniformly 2~3 times and apply to the pipe in the same way.



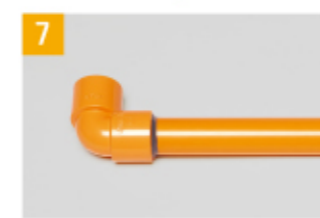
* Note

Apply solvent cement after pre-treatment of primer if required.

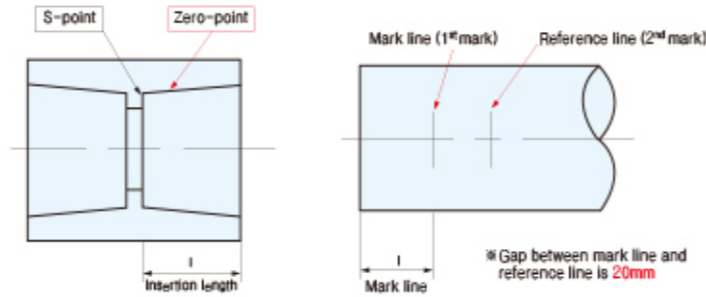


7 Assembly

- * Insert the pipe to the end turning it 1/3~2/3 rotation.
- * Hold jointing part for 10~30 seconds to prevent the pipe from sliding off after being bonded (longer time required for larger diameter pipe).
- * Check if the fitting is correctly aligned and the pipe is inserted to the end of the fitting.
- * Check the bead of solvent cement (bond) around the pipe and fitting.
- * If bead is not formed uniformly at inserting part or there is empty space, solvent cement can't be applied and there is a risk of leakage. You have to cut this wrong part and reconstruct with new product.



Solvent cement welding work



Insertion length of each section (Table 1)

| Bore(Nominal) | Insertion length | Bore(Nominal) | Insertion length |
|---------------|------------------|---------------|------------------|
| 25A | 29 | 80A | 48 |
| 32A | 32 | 100A | 57 |
| 40A | 35 | 125A | 67 |
| 50A | 38 | 150A | 76 |
| 65A | 44 | 200A | 102 |

Note : Solvent cement (bond)

- * Use CPVC only glue.
- * Clean and remove moisture before applying solvent cement.
- * Shake the solvent cement (bond) before using. (check condition to prevent sediment subsidence)
- * Do not use the solvent cement hardened or in gel condition.
- * It is volatile so do not use or store around the place with heat.
- * Proper ventilation is required and avoid contacting with skin and eyes.
- * After use, the container should be kept closed.
- * Have pressure test after minimum curing time after joining (24~96 hours)

Curing time of solvent cement

Pipe size, stiff level when inserting, moisture and temperature affect work and curing time. Drying time will be shorter for small size, stiff joining, higher temperature and dry condition and vice versa. Do not apply any impact (stress) to joint part for 1~5 minutes according to pipe size and temperature during joining.

Following start/ setting/ assembly time should keep below curing time.

| Pipe diameter | Curing time (15kgf/cm ² pressure test) | | |
|---------------|---|----------|-----------|
| | Curing time by ambient temperature | | |
| | 15°C~38°C | 4°C~15°C | -17°C~4°C |
| 25A | 6 hours | 12 hours | 48 hours |
| 32A | 6 hours | 32 hours | 10 day |
| 40A | 12 hours | 32 hours | 10 day |
| 50A | 12 hours | 48 hours | 15 day |
| 65A | 24 hours | 96 hours | 15 day |
| 80A | 24 hours | 96 hours | 15 day |
| 100A | 24 hours | 96 hours | 15 day |

Adhesive Requirements Table(1kg/can)

| Pipe diameter | 25A | 32A | 40A | 50A | 65A | 80A | 100A | 125A | 150A | 200A |
|----------------|-----|-----|------|------|------|------|------|------|------|-------|
| Requirement(g) | 8 | 11 | 14,1 | 20,3 | 28,4 | 35,7 | 50 | 62,3 | 125 | 249,9 |
| Joining points | 125 | 91 | 71 | 50 | 35 | 28 | 20 | 16 | 8 | 4 |

Hanger and supporting device (NFPA 13, NFPA 13R, NFPA 13D)

- * Hanger should be designed to endure the 5 times of the weight of sprinkler pipe filled with water plus 113kg at each supporting point according to the standard of NFPA13 and NFPA13R.
- * Plastic pipe should have narrower supporting point considering reaction of water spray during sprinkler hear operation.

* Supporting point space by piping material

| Sprinkler material | Size (mm) | | | | | |
|--------------------|----------------------------|-----|-----|-----|-----|-----|
| | 25A | 32A | 40A | 50A | 65A | 80A |
| CPVC Pipe | Supporting point space (m) | | | | | |
| | 1.8 | 2.0 | 2.1 | 2.4 | 2.7 | 3.0 |

* How to connect sprinkler head (when connecting SP flexible joint)

- ① To join SP flexible joint with C-PVC, use screw connection method.
- ② Connect SP flexible joint directly to C-PVC PF valve socket (25mm) after removing the Nipple.
- ③ Screw method of SP flexible joint is constructed in inch specification.
 - ▶ SP flexible joint inch specification + C-PVC PF valve socket (25mm) connection work
- ④ Do not use Teflon tape or chemical adhesive when connecting with SP flexible joint
 - ▶ Do not use Teflon tape or chemical adhesive when connecting with SP flexible joint.
 - ▶ when using Teflon tape, there is the possibility of leakage if PF valve socket doesn't adhere to O-ring of SP joint.



3. Facility guideline

Hydraulic test

- ① For CPVC pipe hydraulic test, never use air and compressed gas and use wet pressure test with water.
- ② Maintain pressure of 15~20kgf/cm² more than 1.5 times of maximum working pressure 12kgf/cm² and check leakage and pressure change.
- ③ When filling water for pressure test, remove air in the pipe completely and increase the pressure gradually.

Connection of other piping material

Valve socket, screw or flange can be used to connect with other piping material.

Screw connection

- 1) PT screw (general valve socket) connection
 - Use Teflon tape to prevent water leakage
 - Use tools to join within one rotation after tightening with hand first.
 - * Excessive tightening may cause damage of piping and fittings.
- 2) PF screw (flexible piping) connection
 - Check compatibility with our product before construction
 - Use tools to join within half rotation after tightening with hand first.
 - * Excessive tightening may cause damage of piping and fittings.
 - * Do not use Teflon or chemicals for SP only socket.



Flange connection

- Connect the flange maintaining a straight line. Piping line should be supported and ensure the safety to prevent lateral movement to damage the flange or generate stress.
- Washer and nut are to be used to tight all the bolts.
- Excessive tightening the bolt may damage the flange.
- FF type gasket should be used.



4. Precautions and measures during construction

| Problems | Causes | Measures | Remark |
|---|-----------------------------------|--|--------|
| Joint leakage and extubation | Lack of adhesive | Apply glue 2/3 of pipe diameter evenly Apply to pipe ends thickly. Apply to inner tube joint thin, evenly. | |
| | Poor insert | Insert pipe to the stopper position. | |
| | Burr removal | Remove burr of the pipe. | |
| | Scratches and debris in the pipe | Check if there is any scratches or debris at the pipe joint. | |
| | Reuse of adhesive applied product | Repaired product by a joint construction defect after construction using adhesive can't be used again and should be discarded. | |
| Leakage when connecting SO flexible joint | Valve socket (25mm) connection | PF valve socket 25mm connection—inch screw (parallel thread) Using of Teflon or glue on the threads is prohibited. | |

5. CPVC notices

Storage and transport

1. To keep CPVC pipes outdoor, avoid direct sunlight and cover the tent not to be heated.
2. Avoid the impact and do not put heavy things on it.
3. Store away from high temperature and hot place otherwise it may be transformed.
4. Pipe must be kept on the stand and load on the bottom not higher than 1m after fixing with wedge.
5. Accessories should be kept in the carton until being used and do not load paking box high.
6. Do not drop or drag the pipe to scratch the surface of the pipe during transportation (in particular, be careful in winter as impact strength is weakened).
7. Store the adhesive in the place with proper temperature (4~38℃) avoiding direct sunlight
8. Be sure to be fully aware of user manual provided manufacturer/supplier before working.

General construction detail

1. Never do thermal processing to CPVC pipe as it results in a change of physical property.
2. Do not contact with or use any chemicals (acetone, paint thinner, creosote, pesticides, oil paint etc.) otherwise they may change the property of CPVC pipe.
3. Screw or processing with scratches to CPVC pipe is prohibited. Don't hit the pipe with hammer to insert.
4. Use cutting tools of copper or steel pipe to cut CPVC pipe but blunt or damaged blade should not be used.
5. When cutting CPVC pipe, do not bend the pipe in a state that pipe isn't completely cut and remove burr of cut section.
6. Be sure to use high purity Teflon tape on the screw part of valve socket fastened with iron part. Pay attention not to make excessive tightening occur.
7. Do not use Teflon tape or apply adhesive to thread of the screw when joining CPVC PF valve socket (25mm) with SP joint.
8. After pipe assembly, head assembly should be done after bond curing of the piping.

09 Construction photos



Chungbuk National University dorm



Second alarm valve and fire hydrant box



Household piping (remodeling)



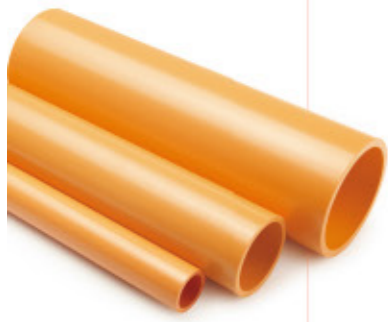
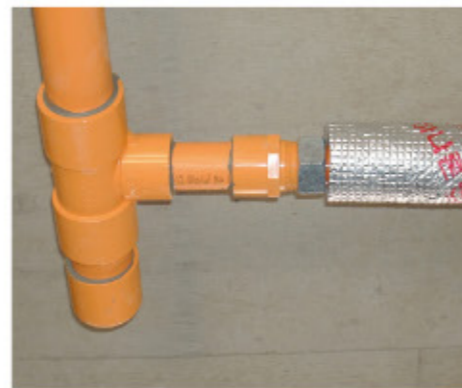
Connection with other piping (valve socket and flange connection)



Angle valve connection and test valve piping



Household piping



10 Approval nomination

(Approval nomination)

To : _____

Project name : _____

_____ I wish your company's development and prosperity.

We would like to participate in above project of your company are submitting relevant material for approval. If you review and nominate our company, we will try our best to satisfy the quality, functionality and delivery.

Thank you.

Month Day Year

Asung Clean Flow Tech

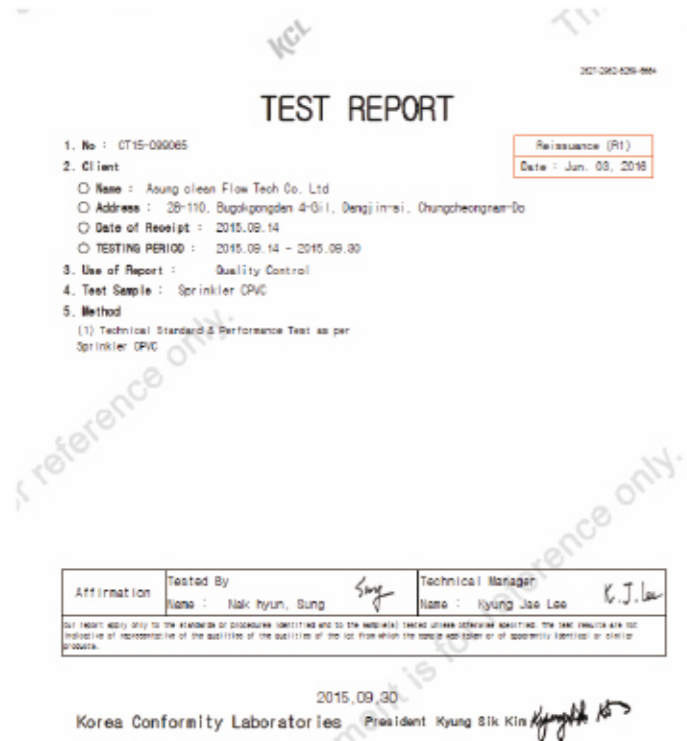
Hyoungsoo KIM - CEO



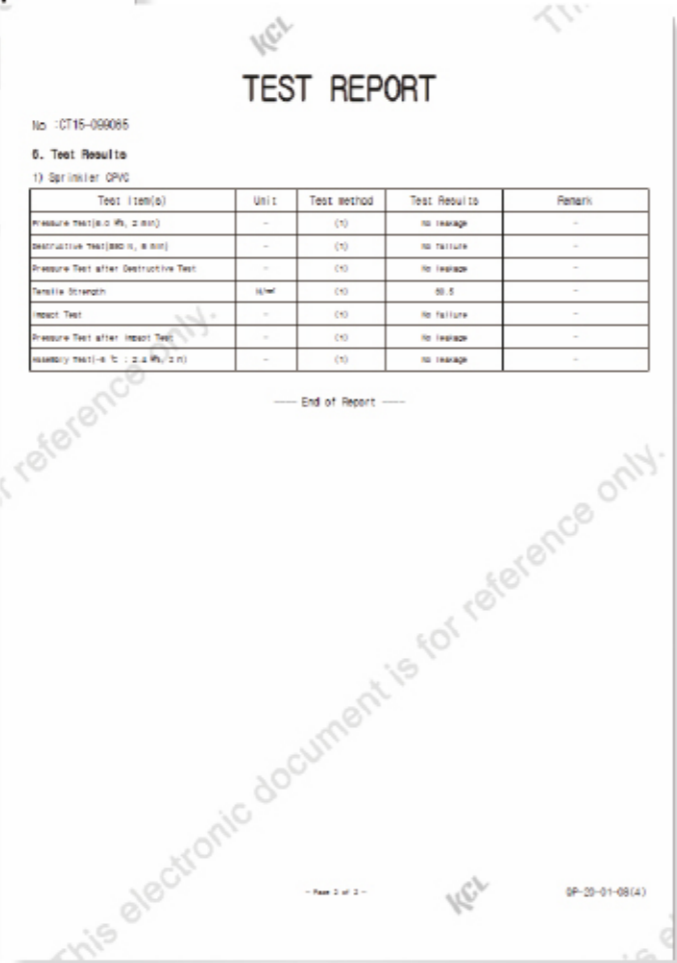
11 Product approval / Performance Certificate



12 Test reports



Address : 340-27 252-7, Techno 2-ro, Yuseong-gu, Daejeon, Korea 305-384-1894
 Result Inquiry : Plastic Reliability Center 82-42-934-1894



13 Major construction results

| Customer | Installation Co | Project name | Household | Remark |
|------------|-----------------|---------------------------------|-----------|------------------|
| Gawha | Shingi Eng | Busan Inkwang Apartment | 455 | 2011. 12 moved |
| Kwangshin | Kookdo Const | Cheonbuk Province | 350 | 2016. 02 planned |
| Kyungnam | Daehung | Ansan City Apartment remodeling | 1370 | 2005. 10 moved |
| Kyungnam | Daechang | Chungbuk University dorm | 10F 3bldg | 2006. 03 moved |
| Kyungdong | Daechang | Choongnam Honorsvill 8BL | 990 | 2016. 01 planned |
| Kukdong | Doojun | Seoul Deungchon-dong | 275 | 2016. 04 planned |
| Kukdong | Namhyoung | Daegu City Namsan-dong | 946 | 2014. 03 moved |
| Kukdong | Woono | Chungnam Hongsung-gun | 938 | 2014. 06 moved |
| Kunhwa | Taelim | Cheonnam Mokpo City | 832 | 2014. 02 moved |
| Kumsung | Daechang | Daejeon Jookdong District A1-1 | 998 | 2016. 06 planned |
| Namhai | Jeonghan | Daegu Technopolis A-12BL | 759 | 2016. 02 planned |
| Dongkwang | Daera | Kyonggi Ansung Dongkwang Apt | 576 | 2008. 12 moved |
| Daekwang | San ING | Cheonnam Sooncheon City | 436 | 2016. 07 planned |
| Daebang | Samwoo | Kwangju Suwan District apt. | 545 | 2011. 11 moved |
| Daebang | Joocheon | Busan Myoungji New Town A3BL | 737 | 2016. 01 planned |
| Daebang | Inha | Kyongnam Yangsan City | 1158 | 2016. 05 planned |
| Daesung | Daekwang | Choongbuk Jeungpyoung-gun | 989 | 2015. 02 moved |
| Daesung | Jinhung | Choongbuk Jincheon-gun | 587 | 2015. 09 moved |
| Daewoo | Hwanhyung | Incheon Yunsae University | - | 2012. 12 moved |
| Daewoo | Daechang | Sejong City Areum-dong | 2400 | 2014. 02 moved |
| Daewoo | Wooyang | Anyang City Hogae-dong | 410 | 2015. 08 moved |
| Daewoo | Woojung | Kyongbuk Kyongsan City | 743 | 2016. 02 planned |
| Daehee | Daekun | Choongnam Dangjin-gun apt. | 129 | 2010. 06 planned |
| Doosan | Haneun Enc | Seoul Soojeong apt. remodeling | 84 | 2008. 10 moved |
| Doosan | Haneun Enc | Kyonggi Bucheon City Weve apt. | 1843 | 2011. 10 moved |
| Doosan | Daeyou | Seoul Sadang-dong Weve apt. | 451 | 2011. 11 moved |
| Doosan | Haneun Enc | Busan Genesis apt | 572 | 2011. 12 moved |
| Doosan | Shinyoung | Seoul Sinwol-dong Weve apt | 357 | 2012. 02 moved |
| Doosan | Daeyoung | Kyonggi Ilisan Weve apt | 1200 | 2013. 04 moved |
| Doosan | Mookyoung | Woolsan Mooku-dong Weve apt | 461 | 2013. 08 moved |
| Doosan | Daehyun | Busan Woo-dong 1108 | 581 | 2014. 11 moved |
| Lotte | Daechang | Choongnam Danjin Lotte Castle | 706 | 2012. 04 moved |
| Lotte | Hyundai | Choongnam Hongsung Lotte Castle | 885 | 2012. 12 moved |
| Lotte | Duksin | Busan Jungkwan Lotte Castle | 911 | 2013. 06 moved |
| Lotte | Yousung | | | |
| Lotte | Duksin | Kyonggi Yongin Giheung-gu | 625 | 2014. 12 moved |
| Lotte | Woojung | | | |
| Lotte | Poongsan | Kyonggi Ansung City | 2320 | 2016. 02 planned |
| Lotte | Kihung | | | |
| Lotte Eng. | Hyundai | Cheonnam Sooncheon Lotte | 674 | 2009. 09 moved |
| Moa Const | Yongsang | Choongnam Hongsung New Town | 1260 | 2016. 06 planned |
| Moa Eng | Samwoo | Sejong Sodam-dong | 1211 | 2016. 08 planned |

| Customer | Installation Co | Project name | Household | Remark |
|-----------|-----------------|------------------------------------|-----------|------------------|
| Moonjang | Daekwng | Cheonan City Sinbang-dong | 305 | 2016. 11 planned |
| Bando | Daehan | Incheon Cheongra District apt | 854 | 2012. 08 moved |
| Baksang | Taeshin | Namyangjoo Byulnae-dong | 512 | 2015. 11 moved |
| Byuksan | Sinseung | Incheon Gaeyang-dong Blooming | 200 | 2009. 10 moved |
| Byuksan | Yunchang | Icheon Kwango Blooming apr | 227 | 2010. 03 moved |
| Byuksan | Haehung | Yangpyung Blooming apt | 921 | 2010. 04 moved |
| Byuksan | Haekwang | Pajoo Gyoha New Town | 1145 | 2010. 08 moved |
| Byuksan | Daejeong | Ansung Gongdo Blooming | 1378 | 2010. 08 moved |
| Byuksan | Yunchang | Ilsan Siksa-dong Blooming pat | 2735 | 2010. 10 moved |
| Byuksan | Hansan | Seoul Gochuk-dong Blooming apt | 339 | 2010. 11 moved |
| Byuksan | Sam-A | Buan Dang-ri Blooming apt | 300 | 2011. 02 moved |
| Byuksan | Daehung | Kyonggi Kwangjoo Blooming apt | 716 | 2011. 05 moved |
| Byuksan | Yunchang | Busan Jangcheon-dong Blooming | 600 | 2012. 06 moved |
| Bokwang | Joochung | Incheon Cheongra Doll Class apt | 190 | 2012. 01 moved |
| Samsung | Saebang | Seoul Mapo Yonggang-dong | 563 | 2014. 07 moved |
| Seohan | Bosung | Hanam Misa Riverside LH | 620 | 2015. 11 moved |
| Seohee | Mookyoung | Daegu Yuchon-dong Star Hills apt | 900 | 2013. 04 moved |
| Seohee | Icontrols | Chongjoo Seohee Star hills apt | 508 | 2016. 06 planned |
| Seohee | Daechang | Choongnam Naepo LH Humancia | 2127 | 2015. 09 moved |
| Seohae | Sunmin | Incheon Cheongra District apt | 336 | 2011. 02 moved |
| Sejong | Daekwang | Suncheon Ocheon District A-3BL | 646 | 2016. 06 planned |
| Ssangyong | Changhwa | Seoul Dokok-dong remodeling | 386 | 2011. 08 moved |
| Serveone | Wooyang | Pajoo LG Display dorm | 1400 | 2011. 10 moved |
| Sindonga | Haneun | Seoul Sukwan-dong apt | 199 | 2011. 01 moved |
| Yangwoo | Cheongwon | Jicheon Kwanghaewon 35-8 | 240 | 2015. 10 moved |
| Youngmoo | Geo | Kwangju Joongheung-dong | 309 | 2016. 02 planned |
| Woonam | Hwankyung | Pajoo Gyoha New Town apt | 985 | 2010. 06 moved |
| Woonam | Sewoon | Goyang Samsung Woonam Firstvill | 611 | 2015. 09 moved |
| Woolim | C&EGS | Gumi ogae-dong pat | 720 | 2015. 04 moved |
| Woomi | Kumho | Daegu Technopolis Woomirin apt | 827 | 2015. 12 moved |
| Woobang | Samyoung | Kyungbuk Yaecheon Woobang apt | 356 | 2016. 04 planned |
| Yulim | Daehan | Mokpo Okam-dong apt | 477 | 2014. 05 moved |
| Yulim | Daehan | Busan Bumcheon-dong apt | 381 | 2014. 09 moved |
| Isoo | Ace Teck | Icheon Aniheung-dong apt | 214 | 2014. 11 moved |
| Ijin | SAT&S | Busan Gijang-gun apt | 539 | 2014. 09 moved |
| IDTC | Taelim | Incheon guwol-dong apt | 1113 | 2014. 08 moved |
| Ilsung | GS Eng | Yangju Duckheong apt | 272 | 2011. 12 moved |
| Ilsung | Kookmin | Incheon Kuwol-dong apt | 768 | 2014. 10 moved |
| Jeil | Geo | Daegu Dalsung-gun apt | 1029 | 2016. 12 planned |
| Junghung | Geo | Sejong Joongheung S Class apt | 866 | 2014. 10 moved |
| Junghung | Geo | Sejong Joongheung S Class apt | 1371 | 2015. 02 moved |
| Junghung | Geo | Sejong Joongheung S Class Parkview | 440 | 2015. 11 moved |
| Junghung | Geo | Sejong Joongheung S Class Parkview | 852 | 2015. 12 planned |
| Junghung | Kumho | Cheonan Buldang-dong apt | 294 | 2015. 12 moved |

| Customer | Installation Co | Project name | Household | Remark |
|-----------|----------------------|----------------------------------|-----------|-------------------|
| Junghung | Jeonghan | Kimcheon Joongheung S Class | 452 | 2016. 06 planned |
| Junghung | Taelim | Najoo Bitgram-dong apt | 993 | 2016. 09 planned |
| Junghung | Geo | Sejong Sodam-dong S Class | 946 | 2016. 09 planned |
| Junghung | Samyoung | Cheonan Buldang-dong apt | 1416 | 2016. 12 planned |
| Junghung | Geo | Cheonan Pradium Lake apt | 1096 | 2017. 02 planned |
| Jinhung | Sejong | Insal Lubens County Officetel | 522 | 2012. 04 moved |
| Cheongho | Newseok Eng | Anyang Manan-gu apt | 145 | 2014. 12 moved |
| Kolon | Hong Center | Daegu Chilsung-dong apt | 464 | 2014. 06 moved |
| Kolon | Haneun Enc | Seoul G-valley Bizplaza | - | 2014. 07 moved |
| Taeyoung | Bibong | Najoo Innovation City | - | 2015. 08 finished |
| Taeyoung | Bibong | Sungnam Jeongja-dong apt | - | 2015. 12 finished |
| Pacific | Seongma | Hanam Misa LH Riverside apt | 664 | 2015. 07 moved |
| Pacific | Seongma | Hwasung Namyang New Town | 876 | 2016. 01 planned |
| Torcidy | EA Tech | Kwangju Jungheung-dong apt | 116 | 2015. 07 moved |
| T.E.C | Haekwang | Changwon Hyun-dong LH | 1124 | 2015. 10 moved |
| Posco | Kookjae | Incheon Cheongra The# Lakepark | 766 | 2013. 04 moved |
| Hygen | C & Tech | Chungju bonghyung-dong pat | 315 | 2015. 09 moved |
| KORAIL | Hansan | Anyang Bumgaesa Station | - | 2012. 10 finished |
| Halla | Dongbang | Kimpo Janggi Sinyung GWELL | 267 | 2008. 12 moved |
| Halla | Daehung | Hwasung Hyangnam GWELL | 365 | 2008. 04 moved |
| Halla | Woosang | Cheongju Gangseo Halla Vivaldi | 416 | 2008. 12 moved |
| Halla | Cheongok | Pajoo Wonjung Halla Vivaldi | 460 | 2008. 12 moved |
| Halla | Dongbang Taeyoung | Gunsan Susong-dong Halla Vivaldi | 782 | 2008. 12 moved |
| Halla | Hansan Seil E&S | Choongnam Dangjin Halla Vivaldi | 710 | 2009. 08 moved |
| Halla | Yunchang | Namyangyoo Halla Vivaldi | 434 | 2009. 08 moved |
| Halla | Mookyoung Yunil | Cheonan Sinbang Halla Vivaldi | 764 | 2009. 09 moved |
| Halla | Joongang | Wonju Woosan-dong Halla Vivaldi | 634 | 2009. 09 moved |
| Halla | Haneun | Seoul Wangsimni Halla Vivaldi | 82 | 2009. 09 moved |
| Halla | Woosang | Cheongju Bokdae Halla Vivaldi | 450 | 2009. 12 moved |
| Halla | Taeyoung | Yeosoo Woongcheon Halla Vivaldi | 1084 | 2010. 07 moved |
| Halla | Woosang Hanshin | Daejeon Doan Halla Vivaldi | 752 | 2011. 06 moved |
| Halla | Woosang Yunchang | Daejeon Doan Fahrenheit | 885 | 2011. 10 moved |
| Halla | Taeyoung | Yeosoo Woongcheon GWELL apt | 670 | 2014. 12 moved |
| Halla | Haneun | Seoul Dokok-dong apt | 110 | 2016. 05 planned |
| Hanshin | Bosung | Sejong Arum-dong Hansin Hyu+ | 687 | 2015. 04 moved |
| Hanjin | Daehan | Jinjoo Chojang Hemoro Rubiche | 564 | 2014. 10 moved |
| Hwasung | Wooil | Daegu Hwasung Dreampark | 360 | 2012. 09 moved |
| Hyundai D | Haneun | Ilsan Duki-dong I' Park | 84 | 2010. 12 moved |
| Hyundai | Seojeong | Sejong Dodam-dong apt | 876 | 2014. 12 moved |

| Customer | Installation Co | Project name | Household | Remark |
|----------|---------------------|-------------------------------------|-----------|-------------------|
| Hyundai | Mookyoung | Pyungtak Songdam-ri apt | 952 | 2016. 10 planned |
| HD Emco | Seongbo | Jeonjoo Hyundai Amco Town | 510 | 2013. 01 moved |
| HD Emco | Junjae | Dangjin Hyundai Amco Town | 370 | 2013. 06 moved |
| HD Emco | Junjae | Seoul Sangdo-dong Hyundai Amco Town | 422 | 2013. 08 moved |
| HD Emco | Seongbo | Gunsan Jikok-dong apt | 956 | 2014. 09 moved |
| HD Emco | Junjae | Hanam Hakam-dong Amco Town | 975 | 2015. 10 moved |
| HD Emco | Samwoo | Woolsan Hwajeong-dong Hyundai Amco | 1897 | 2015. 11 moved |
| HD Emco | Samwoo | Seoul Gongnung-dong apt | 234 | 2016. 01 planned |
| Hyubsung | Hosung | Busan Kumjung-gu Hyubsung Empire | 353 | 2013. 11 moved |
| Hoban | Jinsung | Kwangju Soowan Hoban apt | 1175 | 2012. 08 moved |
| Hoban | Jinsung | Goyang Samsung-dong Hoban apt | 1456 | 2012. 08 moved |
| Hoban | Jinsung | Jeonjoo Jung-dong Hoban apt | 731 | 2014. 07 moved |
| Hoban | Jeonghan | Sejong Dodam-dong Hoban apt | 678 | 2014. 11 moved |
| Hoban | Geo | Sejong Jongchon-dong Hoban apt | 1371 | 2015. 02 moved |
| Hoban | Jeonghan | Hwasung Dongtan Hoban apt | 1002 | 2015. 03 moved |
| Hoban | Jinsung | Soowon Youngtong Hoban apt | 508 | 2015. 03 moved |
| Hoban | Daejin | Sejong 1-1 Hoban apt 5 | 424 | 2015. 06 moved |
| Hoban | Jeonghan | Hwasung Dongtan Hoban 2 | 992 | 2015. 11 moved |
| Hoban | Daeha | Kangwon-do Geodoo Hoban Eco | 345 | 2016. 04 planned |
| Hoban | Woochang | Sihung Jeonwang-dong Hoban 2 | 1401 | 2017. 01 planned |
| Hoban | Jeonghan Taelin | Incheon Songdo Hoban apt | 1834 | 2017. 03 planned |
| Hunghan | Duksin | Jinjoo Pyunggeo-dong apt | 1308 | 2015. 04 moved |
| Hunghan | Solim | Kyungnam Geochang apt | 800 | 2013. 03 moved |
| Heesung | Gidong | Suwon Ingae-dong apt | 150 | 2011. 01 moved |
| EG | Jinhung | Kwangju Sunam-dong EG The1 | 562 | 2016. 04 planned |
| EG | Jinhung | Kimcheon EG The1 | 486 | 2016. 12 planned |
| GS Const | Dongbang | Ilal Siksa EG The1 | 2532 | 2010. 10 moved |
| GS Const | Dongwon | Masan Gyowon Moohak Xi apt | 705 | 2010. 11 moved |
| GS Const | Dangsan | Incheon Gumdan Xi apt | 413 | 2010. 12 moved |
| GS Const | Dongbang | IncheonSongdo Harbor View apt | 1069 | 2011. 02 moved |
| GS Const | Cheongwon | Busan Yunji Xi apt | 667 | 2011. 05 moved |
| GS Const | Sebang | Hwasung Dongtan Central Xi apt | 559 | 2015. 01 moved |
| GS Const | Duksin | Woolsan Mugao-dong Webe Xi | 461 | 2013. 08 moved |
| KR Ind | Yunchang Seongbo | Daejeon Gwanjeo District LH | 1401 | 2016. 08 planned |
| SK Const | Seonga Changhwa | Seoul Yungdungpo Proson | 1280 | 2011. 11 finished |
| SK Const | Backsan | Seoul Gangnam Gaenari apt | 250 | 2012. 08 moved |
| SK Const | Inha | Siheung Baegot New Town | 1422 | 2015. 07 moved |
| SK Const | Daejeong | Jeonjoo Hyoja-dong apt | 392 | 2016. 02 planned |

14 Other Products

MATERIAL

U-PVC
C-PVC
HT-PVC
CLEAN-PVC
PP
PVDF



PRODUCTS

GATE VALVE
DIAPHRAGM VALVE
NEW DIAPHRAGM VALVE
TRUE UNION DIAPHRAGM VALVE
GAUGE VALVE
GLOBE VALVE
BALL VALVE
TRUE UNION BALL VALVE
3-WAY TRUE UNION BALL VALVE
COMPACT BALL VALVE
LAB COCK VALVE
BUTTERFLY VALVE
FOOT VALVE
BALL CHECK VALVE
SWING CHECK VALVE
STRAINER
SIGHT GLASS

