



PIPE MASTER
PT. SENINDO KAYA ABADI

CPVC FIRE PROTECTION PIPE AND FITTINGS



CPVC PIPEMASTER™



KEGUNAAN DAN APLIKASI

- ✓ INSTALASI PIPA SISTEM SPRINKLER PROTEKSI KEBAKARAN
- ✓ INSTALASI DI ATAS TANAH DAN DI BAWAH TANAH
- ✓ NFPA13: PERUMAHAN, APARTEMEN, CONDOMINIUM, PERKANTORAN, HOTEL & RESORT, RUMAH SAKIT, SEKOLAH/UNIVERSITAS, MUSIUM, AUDITORIUM, BISOKOP, MALL, DLL.

SOLUSI PIPA SPRINKLER UNTUK PEMBANGUNAN NUSANTARA

ABOUT CPVC

CPVC pipes and fittings are made from a special thermoplastic known chemically as Chlorinated Polyvinyl Chloride (CPVC). CPVC pipes and fittings for fire sprinkler system are provide unique advantages in sprinkler installations including superior hydraulics, ease of joining, increased hanger spacing in comparison to other thermoplastics and ease of assembly. CPVC pipes and fittings are fully approved for use in all light and ordinary hazardous rooms applications as per NFPA 13.

KEY PROPERTIES

HIGH FLASH IGNITION TEMPERATURE – CPVC has a flash ignition temperature of 480°C compare to other ordinary combustibles, such as wood, ignite at 260°C or less. CPVC has a significantly lower heat of combustion at 7,700 BTU’s/lb. Accordingly, CPVC cannot be the ignition source of a fire.

SUPERIOR HYDRAULIC CAPABILITIES - With a Hazen-Williams friction coefficient of C=150, CPVC smooth interior surface offers lower friction loss than metal systems, enables to use smaller pipe diameters and save on material costs.

CORROSION RESISTANCE - CPVC pipe gives excellent resistance under the harshest environmental condition. This is due to their high degree of inertness and resistance to corrosion.

NO FLAME SPREAD & LOW SMOKE GENERATION - CPVC pipe and fittings has no flame spread as well as low Smoke Generation in the case of Fire.

SYSTEM ADVANTAGES

- No pre-cutting and expensive fabrication required
 - Can be easily connected to the convectional piping systems
 - Flexibility in the piping for greater ease of installation
 - Resistant to Corrosion and foreign contaminant build up
- Inexpensive tools required for installation
 - Easy repairing or modification on site
 - Designed for a 50 years life expectancy

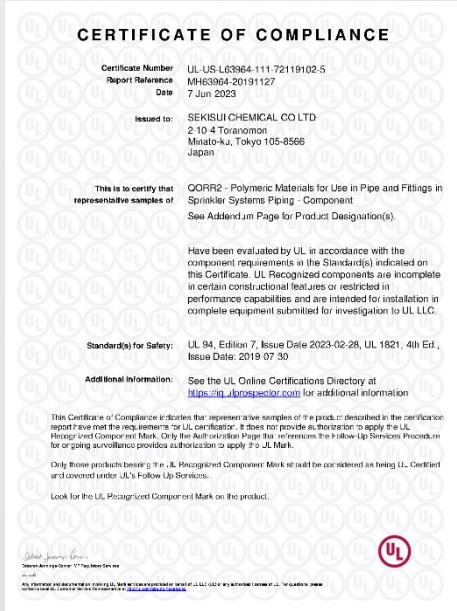
STANDARD AND APPLICATION

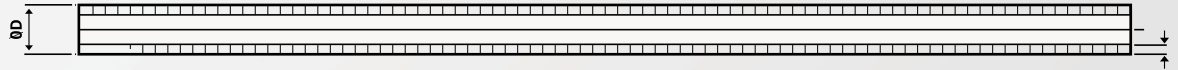
- NFPA 13 – Light Hazard occupancies as defined in the Standard for installation of Sprinkler Systems, such as Churches, Schools, Hotels, Condominiums, Hospitals, Offices, and High Rises.
- NFPA 13D – Residential occupancies as defined in the Standard for sprinkler Systems in One and Two Family Dwellings and Manufactured Homes.
- NFPA 13R – Residential, Multi-Story and Multi-Family.
- NFPA 90 – Air Plenums, as defined by the installation of Air Conditioning and Ventilating Systems.
- NFPA 24 – Underground water pressure service.
- UL 1821 – Standard for Thermoplastic Sprinkler Pipe and Fittings for Fire Protection Service
- SNI 3839-1:2024 – Tata cara perencanaan dan pemasangan sistem sprinkler kebakaran – Bagian 1: Prinsip Umum

SPECIFICATION

Classification	Description
Pipe	Chlorinated Polyvinyl Chloride ASTM F442 Class SDR13.5 working pressure at 22,22 Bar
Fittings	CPVC Injection Molded Sanitary fittings, Solvent Cement joint type: 1. ASTM F437 Standard Specification for Threaded CPVC Pipe Fittings. 2. ASTM F439 Standard Specification for CPVC Pipe Fittings, SCH80.
Solvent Cement/ Connection	1. ASTM F493 Standard Specification for Solvent Cements for CPVC Pipe & Fittings. 2. ASTM F3328 Standard Practice for the One Step Method of CPVC Joint 3. ASTM D2855 Standard Practice for the Two Step Method of CPVC Joint
Requirement for Use in Sprinkler Systems	1. NFPA 13 Standard for The Installation of Sprinkler System. 2. NFPA 13D, 13R, 24 – Underground Water Services. 3. UL 1821 Standard for Thermoplastic Sprinkler Pipe and Fittings for Fire Protection Service

UL CERTIFIED COMPOUNDS



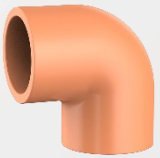


PRESSURE PIPE – Standard ASTM F442 Class SDR13.5

Nominal Size		Outside Diameter (mm)		Wall Thickness (mm)		Pressure Rating at 22.7°C
In	mm	Average	Tolerance	Average	Tolerance	
3/4	20	26.7	±0.10	1.98	±0.51	315 PSI (22.22 kg/cm²)
1	25	33.4	±0.13	2.46	±0.51	
1-1/4	32	42.2	±0.13	3.12	±0.51	
1-1/2	40	48.2	±0.15	3.58	±0.51	
2	50	60.3	±0.15	4.47	±0.53	
2-1/2	65	73.0	±0.18	5.41	±0.66	
3	80	88.9	±0.20	6.58	±0.79	
4	100	114.3	±0.23	8.46	±1.02	
6	150	168.3	±0.28	12.47	±1.50	

NOTE: Dimension 6 Inch and bigger sizes, minimum order requirement or replaced by CPVC class SCH80 in grey colour

ELBOW 90° (KNEE 90°)

	Nominal Size		Class	Standard
	In	mm		
	3/4	20	SCH80	ASTM F439
	1	25	SCH80	ASTM F439
	1-1/4	32	SCH80	ASTM F439
	1-1/2	40	SCH80	ASTM F439
	2	50	SCH80	ASTM F439
	2-1/2	65	SCH80	ASTM F439
	3	80	SCH80	ASTM F439
	4	100	SCH80	ASTM F439
	6	150	SCH80	ASTM F439

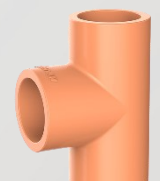
COUPLING (SOCKET)

	Nominal Size		Class	Standard
	In	mm		
	3/4	20	SCH80	ASTM F439
	1	25	SCH80	ASTM F439
	1-1/4	32	SCH80	ASTM F439
	1-1/2	40	SCH80	ASTM F439
	2	50	SCH80	ASTM F439
	2-1/2	65	SCH80	ASTM F439
	3	80	SCH80	ASTM F439
	4	100	SCH80	ASTM F439
	6	150	SCH80	ASTM F439

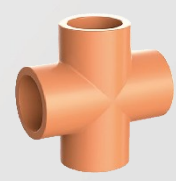
ELBOW 45° (KNEE 45°)

	Nominal Size		Class	Standard
	In	mm		
	3/4	20	SCH80	ASTM F439
	1	25	SCH80	ASTM F439
	1-1/4	32	SCH80	ASTM F439
	1-1/2	40	SCH80	ASTM F439
	2	50	SCH80	ASTM F439
	2-1/2	65	SCH80	ASTM F439
	3	80	SCH80	ASTM F439
	4	100	SCH80	ASTM F439
	6	150	SCH80	ASTM F439

STRAIGHT TEE (EQUAL TEE)

	Nominal Size		Class	Standard
	In	mm		
	3/4	20	SCH80	ASTM F439
	1	25	SCH80	ASTM F439
	1-1/4	32	SCH80	ASTM F439
	1-1/2	40	SCH80	ASTM F439
	2	50	SCH80	ASTM F439
	2-1/2	65	SCH80	ASTM F439
	3	80	SCH80	ASTM F439
	4	100	SCH80	ASTM F439
	6	150	SCH80	ASTM F439

TEE CROSS

	Nominal Size		Class	Standard
	In	mm		
	3/4	20	SCH80	ASTM F439
	1	25	SCH80	ASTM F439
	1-1/4	32	SCH80	ASTM F439
	1-1/2	40	SCH80	ASTM F439
	2	50	SCH80	ASTM F439
	2-1/2	65	SCH80	ASTM F439
	3	80	SCH80	ASTM F439
	4	100	SCH80	ASTM F439
	6	150	SCH80	ASTM F439

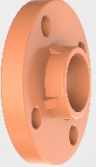
END CAP (DOP)

	Nominal Size		Class	Standard
	In	mm		
	3/4	20	SCH80	ASTM F439
	1	25	SCH80	ASTM F439
	1-1/4	32	SCH80	ASTM F439
	1-1/2	40	SCH80	ASTM F439
	2	50	SCH80	ASTM F439
	2-1/2	65	SCH80	ASTM F439
	3	80	SCH80	ASTM F439
	4	100	SCH80	ASTM F439
	6	150	SCH80	ASTM F439

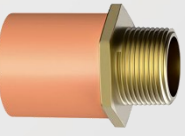
REDUCER BUSHING (VLOK RING)

	Nominal Size						Class	Standard
	In			mm				
	1	x	3/4	25	x	20	SCH80	ASTM F439
	1-1/4	x	3/4	32	x	20	SCH80	ASTM F439
	1-1/4	x	1	32	x	25	SCH80	ASTM F439
	1-1/2	x	1	40	x	25	SCH80	ASTM F439
	1-1/2	x	1-1/4	40	x	32	SCH80	ASTM F439
	2	x	1	50	x	25	SCH80	ASTM F439
	2	x	1-1/4	50	x	32	SCH80	ASTM F439
	2	x	1-1/2	50	x	40	SCH80	ASTM F439
	2-1/2	x	1	65	x	25	SCH80	ASTM F439
	2-1/2	x	1-1/4	65	x	32	SCH80	ASTM F439
	2-1/2	x	1-1/2	65	x	40	SCH80	ASTM F439
	2-1/2	x	2	65	x	50	SCH80	ASTM F439
	3	x	1	80	x	25	SCH80	ASTM F439
	3	x	1-1/4	80	x	32	SCH80	ASTM F439
	3	x	1-1/2	80	x	40	SCH80	ASTM F439
	3	x	2	80	x	50	SCH80	ASTM F439
	3	x	2-1/2	80	x	65	SCH80	ASTM F439
	4	x	2	100	x	50	SCH80	ASTM F439
	4	x	2-1/2	100	x	65	SCH80	ASTM F439
	4	x	3	100	x	80	SCH80	ASTM F439
	6	x	3	150	x	80	SCH80	ASTM F439
	6	x	4	150	x	100	SCH80	ASTM F439

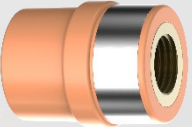
FLANGE ADAPTOR

	Nominal Size		Class Socket	Class Flange	Standard		No. of Bolts	Torque ft./lbs.
	In	mm			Socket	Bolt Hole		
	1-1/2	40	SCH80	ANSI 150	ASTM F439	ANSI B16.5	4	25
	2	50	SCH80	ANSI 150	ASTM F439	ANSI B16.5	4	25
	2-1/2	65	SCH80	ANSI 150	ASTM F439	ANSI B16.5	4	25
	3	80	SCH80	ANSI 150	ASTM F439	ANSI B16.5	4	25
	4	100	SCH80	ANSI 150	ASTM F439	ANSI B16.5	8	25
	6	150	SCH80	ANSI 150	ASTM F439	ANSI B16.5	8	40

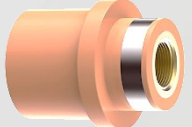
MALE THREAD ADAPTOR (SDL)

	Nominal Size			Thread	Class	Standard	Thread Standard
	20	x	3/4"	BSPT	SCH80	ASTM F437	ISO 7-1 / BS EN 10226-1
	25	x	1"	BSPT	SCH80	ASTM F437	ISO 7-1 / BS EN 10226-1
	32	x	1-1/4"	BSPT	SCH80	ASTM F437	ISO 7-1 / BS EN 10226-1
	40	x	1-1/2"	BSPT	SCH80	ASTM F437	ISO 7-1 / BS EN 10226-1
	50	x	2"	BSPT	SCH80	ASTM F437	ISO 7-1 / BS EN 10226-1

FEMALE THREAD ADAPTOR (SDD)

	Nominal Size			Thread	Class	Standard	Thread Standard
	20	x	3/4"	BSPT	SCH80	ASTM F437	ISO 7-1 / BS EN 10226-1
	25	x	1"	BSPT	SCH80	ASTM F437	ISO 7-1 / BS EN 10226-1
	32	x	1-1/4"	BSPT	SCH80	ASTM F437	ISO 7-1 / BS EN 10226-1
	40	x	1-1/2"	BSPT	SCH80	ASTM F437	ISO 7-1 / BS EN 10226-1
	50	x	2"	BSPT	SCH80	ASTM F437	ISO 7-1 / BS EN 10226-1

SPRINKLER HEAD ADAPTOR

	Nominal Size			Thread	Class	Standard	Thread Standard
	20	x	1/2"	NPT	SCH80	ASTM F437	ANSI B1.20.1 / ASTM F1498
	25	x	1/2"	NPT	SCH80	ASTM F437	ANSI B1.20.1 / ASTM F1498
	25	x	3/4"	NPT	SCH80	ASTM F437	ANSI B1.20.1 / ASTM F1498

CPVC ADHESIVE – Standard ASTM F493, NSF/ANSI 14 & 61

	Type	Colour	Size	Dimension Usage Range
	CPVC Solvent Cement – Heavy Body	Gray	473 mL	3/4" (20 mm) – 6" (150 mm) or Bigger
	CPVC/PVC Primer – Water Thin	Purple	473 mL	2,5" (65 mm) – 6" (150 mm) or Bigger

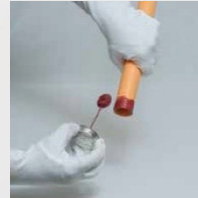
INSTALLATION

1. PIPE CUTTING



- Cut pipe square. As joints are sealed at the base of the fitting socket. An angled cut may result in joint failure.
- Acceptable tools include mitre saw, Mechanical cut off saw or wheel cutter. Wheel type cutters must employ a blade designed for plastics.

3. SOLVENT CEMENT APPLICATION



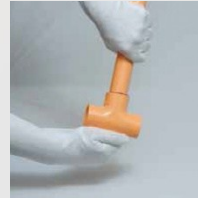
- Apply medium layer of cement Inside the Fitting and apply full even layer Outside of Pipe.
- Use an applicator that is one half the pipe diameter.
- Too large an applicator will force excessive cement in to the inner side surface of small diameter fittings.
- Too small applicator will not apply sufficient cement to large diameter systems.

2. REMOVE BURR & BEVEL



- Remove all burrs from inside and outside of pipe with a knife-edge, file or deburring tool Chamfer (bevel) the end of the pipe 10°-15°.
- Remove surface dirt, grease or moisture with a clean dry cloth.
- With light pressure, pipe should go one third to one half of the way into the fitting socket. Pipes and Fittings that are too tight or too loose should not be used.

4. JOINT PIPE & FITTING



- Assemble pipe and fitting socket till it contacts socket bottom. Give pipe a quarter turn. Hold the pipe and Fitting together until the pipe does not back out.
- Remove excessive cement from the exterior. A properly made joint will show a continue bead of cement around the perimeter.
- Observe all safety precautions.

Follow manufacturer's instructions for all related products and installation.

CONNECTION SET TIME & CURE TIME

Nominal Pipe Size (Metric) Inch (mm)	Cure Time for Test Pressure	
	100 Psi (7.0 Kg/Cm ²)	225 Psi (15.8 Kg/Cm ²)
3/4" (DN20)	45 minutes	1 hour
1" (DN25)	45 minutes	1,5 hours
1-1/4" (DN32)	45 minutes	3 hours
1-1/2" (DN40)	1,5 hours	3 hours
2" (DN50)	6 hours	8 hours
2-1/2" & 3" (DN65 & DN80)	8 hours	12 hours
≥ 4" (DN100)	16 hours	24 hours

SOLVENT CEMENT REQUIREMENTS

Nominal Pipe Size (Metric) Inch (mm)	Number of Joints Per Can (473mL)
3/4" (DN20)	142
1" (DN25)	95
1-1/4" (DN32)	68
1-1/2" (DN40)	53
2" (DN50)	37
2-1/2" (DN65)	26
3" (DN80)	21
4" (DN100)	15
6" (DN150)	5

HANGER & SUPPORT (Spacing for Water Filled Pipe)

A. SPACING FOR PIPE

Nominal Pipe Size		Max. Support Spacing
Inch	mm	
3/4	20	1.67 meters
1	25	1.82 meters
1-1/4	32	1.98 meters
1-1/2	40	2.13 meters
2	50	2.43 meters
2-1/2	65	2.74 meters
3	80	3.04 meters
4	100	3.35 meters
6	150	3.50 meters

B. SPACING FOR DROP TEE (Sprinkler Head)

Nominal Size		Max. Support Spacing	
Inch	mm	Less than 100 Psi (690 KPa)	More than 100 Psi (690 KPa)
3/4	20	1.22 meters	0.91 meters
1	25	1.52 meters	1.22 meters
1-1/4	32	1.83 meters	1.52 meters
≥ 1-1/2	≥ 40	2.13 meters	2.13 meters

C. SPACING FOR DROP ELBOW (Sprinkler Head)

Nominal Size		Max. Support Spacing	
Inch	mm	Less than 100 Psi (690 KPa)	More than 100 Psi (690 KPa)
3/4	20	1.22 meters	0.15 meters
1	25	1.52 meters	0.23 meters
1-1/4	32	1.83 meters	0.31 meters
≥ 1-1/2	≥ 40	0.23 meters	0.31 meters

PROJECT REFERENCE WITH USED CPVC FIRE SPRINKLER PIPE

No.	Project Name	Developer	Building	Location	Year
1	Elmech Workshop Cakung	PT. Sinar Arta Mulia	Workshop	Jakarta Timur	2019
2	Aloft Beachwalk by Marriott	PT. Indonesian Paradise Property Tbk.	Hotel	Bali	2019
3	Axia South Cikarang, Tower 3	PT. Toyota Tsusho Real Estate Cikarang	Apartment	Bekasi	2020
4	JW Marriott Hurun Beach Resort	PT. Tarika Nirmana Hurun	Hotel	Lampung	2021
5	GTN Data Center – ASD System	PT. Graha Teknologi Nusantara	Data Center	Bekasi	2022
6	Microsoft Data Center – ASD System	Microsoft Indonesia	Data Center	Bekasi	2022
7	RA Premiere Simatupang (Rennovation)	PT. Radian Hispitality International	Hotel	Jakarta Selatan	2022
8	Softex Plant Indonesia (Rennovation)	PT. Softex Indonesia	Office	Karawang	2023
9	Softex Plant Indonesia (Rennovation)	PT. Softex Indonesia	Office	Sidoarjo	2023
10	The Luxury Collection by Marriott	PT. Fortuna Paradiso Optima	Hotel	Labuan Bajo, NTT	2023
11	Chedi Resort (M-Gallery)	PT. Resor Pantai Belitung	Hotel	Belitung	2024
12	The Westin Hotel Nusadua (Rennovation Phase 1)	PT. Nusadua Graha Internasional	Hotel	Bali	2024
13	The Luxury Collection by Marriott	PT. Step Up Solusi Indonesia	Hotel	Bali	2024
14	Bvlgari Resort Uluwatu (Rennovation)	PT. Jimbaran Villas (MRA Group)	Hotel	Bali	2024
15	Paradisus by Melia Bali (Rennovation)	PT. Suryalaya Anindita International	Hotel	Bali	2024
16	The Mulia Resort Nusadua (Rennovation)	PT. Mulia Group	Hotel	Bali	2024
17	Grand Outlet Mall Bali (GOB)	PT. Bali Turtle Island Development	Mall	Bali	2025
18	The Westin Hotel Nusadua (Rennovation Phase 2)	PT. Nusadua Graha Internasional	Hotel	Bali	2025

Prestige References



The Luxury Collection (Labuan Bajo)



Axia South Cikarang Tower 3 (Bekasi)



The Westin by Marriott (Bali)



Bvlgari Resort Uluwatu (Bali)



JW Marriott Hurun Beach (Lampung)



Paradisus by The Melia (Bali)