SCG PP-R PIPE

For Hot and Cold Water in Plumbing and HVAC Systems

"Homogeneous Welding, Easy Installation and High Reliability"

The First
Low-Carbon Pipe Innovation
for Sustainability in Thailand

Low Carbon

DVGW CERT

NSF Certified to NSF/ANSI/CAN 61 & 372

Made in Thailand

About the Products

Nawaplastic Industries Co., Ltd., an affiliate of the SCG Group, has been the manufacturer of “SCG Pipes” since 1970. Through our extensive experience and a strong commitment to meeting a wide range of application needs and ensuring customer satisfaction, we are dedicated to the continuous improvement of products and services. We also prioritize innovation and product diversification in pipes, fittings, and accessories for comprehensive applications.
This includes professional consultation services from our expert team to reinforce our position as a leading provider of piping solutions—whether for plumbing systems (hot and cold water, and drainage), electrical and communication conduit systems, agricultural irrigation systems, or utility and infrastructure systems.

SCG PP-R Pipes and Fittings

Manufactured from PP-R 80 (polypropylene random copolymer 80), a high-quality raw material according to European standards. The products can withstand working pressures of up to 20 bar and working temperatures of up to 95°C. The pipes and fittings are heat-fused into a homogeneous structure, ensuring a leak-free system. They are ideal for use in plumbing systems, hot water supply, distilled and potable water systems, chilled water systems in HVAC applications, industrial cooling systems, marine piping systems, and pneumatic systems. These pipes are suitable for a wide range of applications, including residential buildings, commercial facilities, and industrial plants, etc.

Properties of SCG PP-R Pipes and Fittings

International Quality Standards
Manufactured from high-quality raw materials in compliance with European standards, with certifications for pipes according to DIN 8077 and DIN 8078, and for fittings according to DIN 16962 and ISO 15874. They are also certified by DVGW, NSF, MiT, CFP, and CFR.

Hygienic, Rust-Proof and Free from Heavy Metals and Contaminants
PP-R pipes are clean, safe, and non-rusting. They are free from heavy metals, contaminants, and any abnormal color or odor. Their opaque nature also helps prevent algae formation inside the pipes.

Long Service Life
High-quality PP-R material offers strong mechanical and chemical resistance, reducing cracking, corrosion, and wear for lasting durability.

Lighter and More Cost-Effective
SCG PP-R pipes are lighter and more cost-effective than conventional metal pipes, contributing to efficient system performance with easier handling, installation, and transportation.

Low-Carbon Pipe for Sustainability
SCG PP-R pipes and fittings are Low-Carbon piping systems and the first in Thailand to receive both the Carbon Footprint of Product (CFP) label and the Carbon Footprint Reduction (CFR) label from the Thailand Greenhouse Gas Management Organization (Public Organization).

Energy Efficiency and Superior Thermal Insulation
PP-R pipes have low thermal conductivity, which significantly reduces heat loss compared to metal pipes. This allows for thinner external insulation and contributes to overall energy savings in piping systems.

Easy Installation and Leak-Free Performance through Homogeneous Heat Fusion
SCG PP-R pipes and fittings enable easy installation using heat fusion welding methods, forming homogeneous joints that ensure leak-free performance and long-term reliability.

Capabilities of “SCG Pipes”

Superior Quality

* A product quality control system is in place under the attentive supervision of a professional team throughout every process.
* Our products are manufactured with advanced machinery and technology, ensuring high quality and environmental sustainability.

Superior Service

* Professional pre- and after-sales services are delivered by our dedicated team of experts.
* Fast and reliable delivery services are available nationwide.

Superior Availability

* A comprehensive range of pipes, fittings, and accessories is available to meet diverse application needs.
* We are committed to meeting diverse customer needs through strategic global partnerships, ensuring a complete and reliable product offering.

Superior Confidence

* Each product undergoes quality inspection in compliance with both Thai and international standards.
* Quality is guaranteed throughout the product’s lifetime.

SCG PP-R Pipes

Manufactured according to DIN 8077 and DIN 8078 standards.

SDR 11 (PN10)

Working Temperature	: 3-60 °C
Working Pressure	: 10 bar
Color	: Green with blue stripe
Length	: 4 meters

SDR 7.4 (PN16)
SDR 6 (PN20)

Working Temperature	: 3-95 °C
Working Pressure	: 16, 20 bar
Color	: Green with red stripe
Length	: 4 meters

FIBER COMPOSITE
SDR 6 (PN20)

Working Temperature	: 3-95 °C
Working Pressure	: 20 bar
Color	: Green with gray stripe
Length	: 4 meters

Size [mm(inch)]	Outside Diameter (mm)	Thickness (mm)				Weight (kg/m)			
		SDR 11 (PN 10) ●	SDR 7.4 (PN 16) ●	SDR 6 (PN 20) ●	SDR 6 (PN 20) ●	SDR 11 (PN 10) ●	SDR 7.4 (PN 16) ●	SDR 6 (PN 20) ●	SDR 6 (PN 20) ●
20 (1/2")	20.00	2.00	-	3.40	3.40	0.12	-	0.18	0.17
25 (3/4")	25.00	2.30	-	4.20	4.20	0.18	-	0.27	0.26
32 (1")	32.00	2.90	-	5.40	5.40	0.27	-	0.45	0.43
40 (1 1/4")	40.00	3.70	-	6.70	6.70	0.43	-	0.70	0.67
50 (1 1/2")	50.00	4.60	-	8.30	8.30	0.63	-	1.05	1.03
63 (2")	63.00	5.80	-	10.50	10.50	1.03	-	1.62	1.65
75 (2 1/2")	75.00	6.80	-	12.50	12.50	1.30	-	2.34	2.39
90 (3")	90.00	8.20	-	15.00	15.00	2.00	-	3.38	3.47
110 (4")	110.00	10.00	15.10	18.30	18.30	3.04	4.30	5.05	5.23
160 (6")	160.00	14.60	21.90	26.60	21.90	6.90	9.04	10.70	9.50
200 (8")	200.00	18.20	-	-	-	9.95	-	-	-
250 (10")	250.00	22.70	-	-	-	15.50	-	-	-
315 (12")	315.00	28.60	-	-	-	24.60	-	-	-

Remarks:
1. SDR (Standard Dimension Ratio) is the ratio between the outside diameter and the thickness of the pipe.
2. PN (Nominal Pressure) is a pressure rating at 20°C. The actual allowable pressure may vary based on temperature, fluid type, and safety factors.
3. The wall thickness of the 20 mm (1/2") PN10 PP-R pipe has been increased from 1.9 mm to 2.0 mm to enhance application suitability.
4. PP-R fiber composite pipes are manufactured with sizes and dimensions conforming to DIN 8077, and are pressure-tested at 20°C for 1 hour and at 95°C for 1,000 hours in accordance with DIN 8078.
5. The 160 mm (6") PP-R fiber composite pipe is manufactured to SDR 7.4 (PN20) classification.

Certificates

NSF certificate is issued by NSF International to confirm that a product meets strict health, safety, and performance standards, especially for drinking water, food contact, and public health applications.

DVGW certificate is issued by DVGW association to confirm that a product meets German and European standards for safety, hygiene, and performance in gas and water systems.

"Made in Thailand (MiT) is a certification issued by the Federation of Thai Industries (FTI), confirming that a product is genuinely made in Thailand using local labor, materials, and production processes."

Carbon Footprint of Product (CFP) label is the mark that shows the total greenhouse gas emissions generated throughout a product's entire life cycle. It is issued by

Carbon Footprint Reduction (CFR) label is the mark that shows the certified reduction of at least 2% in greenhouse gas emissions throughout the product life cycle, compared to a defined baseline. It is issued by

Product Safety & Warnings

1. **Select the appropriate product classification for each application and performance characteristics.** Please refer to the product manual for specifications and guidance.
2. **Please read the installation instructions in the manual carefully.** Technical guidance from our technical service personnel is recommended before use.
3. **Use only welding machines and equipment supplied or approved by the company.** Ensure all parts used in the systems must comply with the relevant product standards and that the electrical system is stable and properly grounded in accordance with electrical safety regulations.
4. **Do not install in wet or humid conditions.** This may cause serious injury or property damage.
5. **Pressure testing must follow standard limits.** Over-pressurization may result in physical injury or property damage.
6. **Dispose of products as per government regulations.** Do not incinerate improperly, as this may cause harm to individuals, property, and the environment.
7. **For any use beyond the manual's scope,** please consult a company specialist or authorized representative prior to use.

For further information, please contact us at 02-555-0888

SCG PP-R SOCKET FUSION FITTINGS

Manufactured according to DIN 16962 and ISO 15874 standards.


Socket


45° Elbow


90° Elbow


Tee


Reducing Socket


90° Reducing Elbow


Reducing Tee

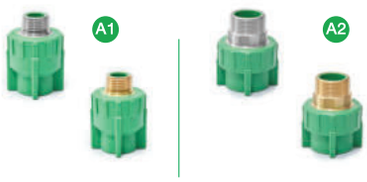

Cap

Female Socket

90° Female Elbow

Female Tee

90° Male Elbow



Male Socket

Male Tee


Female Union


Male Union


90° Female Elbow with Seat


Female Saddle


Double Female Elbow


Stop Valve


Union Ball Valve


Male Ball Valve


Female Ball Valve


Saddle

Union


Male Access Plug


4 Way Cross


Cross Fitting


Cross Pipe

Stub Flange


Bushing

SCG PP-R SOCKET FUSION FITTINGS AND ACCESSORIES


Aiguille Saddle


Welding Saddle Mould


Repairing Stick


Repairing Stick Mould


Welding Mould


Digital Welding Machine


Pipe Clip-Low


Pipe Clamp*


Flange
[DIN PN16/ANSI 150P/JIS 10K]


Rubber Gasket

Remarks:
* Imported product.
• Threaded fittings are available in brass and brass with nickel-plated materials.

SCG PP-R ELECTROFUSION FITTINGS (PN20)

Manufactured according to ISO 15874 standard.


Socket (EF)


45° Elbow (EF)


90° Elbow (EF)


Reducing Socket (EF)


Tee (EF)


Reducing Tee (EF)


Flange Adaptor (EF)


Flange (BF/EF)
[DIN PN16/ANSI 150P/JIS 10K]

Remarks: The rubber gasket commonly used with components in the socket fusion category.

SCG PP-R BUTT FUSION FITTINGS (PN10)

Manufactured according to DIN 16962 and ISO 15874 standards.


45° Elbow (BF)


90° Elbow (BF)


Reducing Socket (BF)


Cap (BF)


Tee (BF)


Reducing Tee (BF)


Flange Adaptor (BF)


Flange (BF/EF)
[DIN PN16/ANSI 150P/JIS 10K]

Remarks: The rubber gasket commonly used with components in the socket fusion category.

SCG PP-R PIPES AND FITTINGS INSTALLATION METHOD BY SOCKET FUSION

1

Cut the pipe squarely to the required length, and clean both the inner surface of the fitting and the outer surface of the pipe at the welding area before heating.

2

Mark the socket insertion depth from the pipe end using a marker plate or tape measure, as specified in the Socket Fusion table.

3

When the display shows 245–265°C and the green light is on, push the PP-R pipe and fitting onto the heater to the marked depth. Then start timing the heating process according to the pipe size and duration specified in the Socket Fusion table.

4

After the specified heating time, join the pipe and fitting by fully inserting them to the marked depth.

5

Allow the joint to cool for the specified time before proceeding to the next connection or use.

QR Code
Demonstration VDO for PP-R Socket Fusion Welding Method

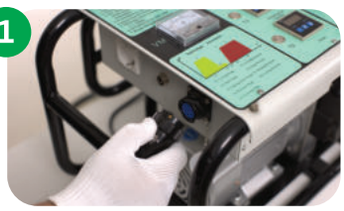
QR Code
Demonstration VDO for Large Sizes of PP-R Socket Fusion Welding Method*

SCG PP-R Aligner: "Scorpion"

*Remark: Designed for socket fusion welding of pipes of 90 mm (3") and above, to enhance installation efficiency. The Scorpion is protected under a petty patent, with final pending completion by 2025.

SCG PP-R PIPES AND FITTINGS INSTALLATION METHOD BY BUTT FUSION

1

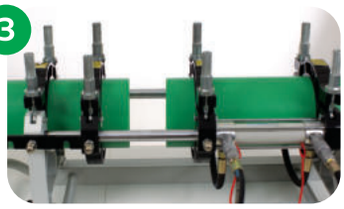


Connect the hydraulic hose to the pipe clamping frame. Then, plug the milling cutter and heating plate into the machine (hydraulic unit). Switch on and test the clamp frame by moving the lever forward and back.

2

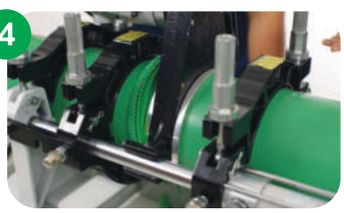
Set the heater temperature to 230°C (+5/–0°C). Set the Soaking Time (T2) and Cooling Time (T5) according to the butt fusion table.

3



Cut pipe ends square, place them on both sides of the clamp frame, and tighten the clamps. Ensure each end extends approximately 5 cm beyond the clamps.

4

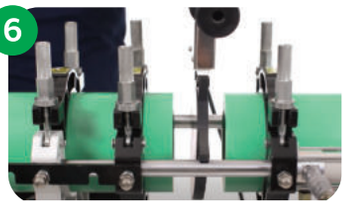


Lock the milling cutter in place, then switch it on to trim the pipe ends. Move the lever back to retract the pipes, switch off the tool, and move the lever forward to check the alignment of both pipe ends. Clean the pipe ends thoroughly.

5

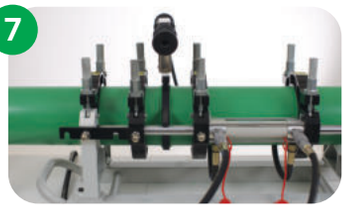
Determine the Drag Pressure to compensate for machine force loss or pipe movement resistance before each weld. Add this value to P1 and P3 as specified in the table, then set the pressure to (P1 + Drag Pressure).

6



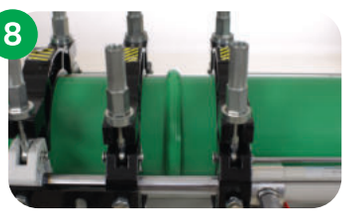
Place the heating plate between the pipe ends, ensuring the surface is clean before each use.

7



Release the pressure (P1 + Drag Pressure) during heat soaking until the weld bead forms as specified. Then reduce the pressure to 0.3 bar (P2) and continue heating (press T2 to start the countdown). Once T2 ends, remove the plate within the time specified for T3.

8

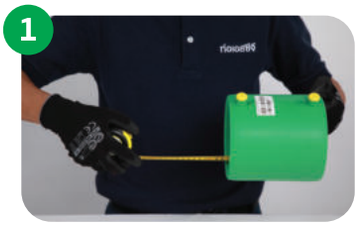


Join the pipes with the pressure (P3 + Drag Pressure) within time T4. Maintain constant pressure, then press T5 to start the cooling countdown. Once the cooling is complete, release the joint and proceed to the next weld.

QR Code
Demonstration VDO for PP-R Butt Fusion Welding Method

SCG PP-R PIPES AND FITTINGS INSTALLATION METHOD BY ELECTRO FUSION

1



Cut the pipe square, then measure the insertion depth from the socket end to the internal ridge. Mark it clearly on the pipe.

2

Peel the pipe surface 1 cm over the marked area. Ensure a tight, aligned fit with the fitting.

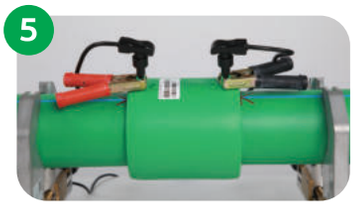
3

Wipe the outer surface of the pipe and the inner surface of the fitting using SCG pipe cleanser. Use a clean, lint-free cloth or tissue paper to remove oil residues, dust, and moisture.

4

Fully insert the pipe to the insertion depth of the fitting. Connect the fusion connector to both terminals of the fitting. Scan the parameter barcode on the fitting to verify data accuracy and scan the traceability barcode 3 times. The machine will then supply current. Do not move the pipe or fitting during the welding process.

5



After welding, an indicator stick will emerge to confirm the pipe and fitting are properly fused. Allow the assembly to cool for the specified duration before handling.

Electrofusion Machine

QR Code

Demonstration VDO for PP-R Electrofusion Welding Method

TABLE: THE SOCKET FUSION WELDING METHOD PARAMETERS

Size mm (inch)	Insertion Depth (mm)	Heating Time (sec)		Welding Time (sec)	Cooling Time (sec)
		PN 10	PN 20		
20 (1/2")	14.0	3	5	4	2
25 (3/4")	15.0	5	7	4	2
32 (1")	17.0	6	8	6	4
40 (1 1/4")	19.0	12		6	4
50 (1 1/2")	23.0	18		6	4
63 (2")	24.0	24		6	6
75 (2 1/2")	26.0	30		8	8
90 (3")	29.0	40		8	8
110 (4")	32.5	50		10	8
160 (6")	43.0	80		15	15

TABLE: THE BUTT FUSION WELDING METHOD PARAMETERS

				Phase1 Heating		Phase2 Soaking		Phase3 Welding			
Size	Model	Thickness	Welding Temperature	Pressure +Drag Pressure	PP-R Bead Height	Pressure	Soaking Time	Transfer Time	Pressure Rising Time	Pressure+ Drag Pressure	Cooling Time
mm	SDR	mm	°C	P1 + DP (bar)	mm	P2 (bar)	T2 (sec)	T3 (sec)	T4 (sec)	P3 + DP (bar)	T5 (sec)
110	11	10.0	Set the machine temperature at 230+5/-0 (The heat plate temperature must be measured at 210°C-230°C)	7.4 + DP	3	0.3	110	7	6	7.4 + DP	240
160	11	14.6		15.8 + DP	3		161	7	8	15.8 + DP	360
200	11	18.2		13.5 + DP	4		200	10	9	13.5 + DP	480
250	11	22.8		21.1 + DP	4		251	10	11	21.1 + DP	660
315	11	28.7		33.5 + DP	5		316	13	12	33.5 + DP	720
110	7.4	14.9		10.5 + DP	3		164	10	6	10.5 + DP	360
160	7.4	21.7		22.3 + DP	4		239	12	8	22.3 + DP	540
110	6	18.4		12.5 + DP	4		202	10	6	12.5 + DP	480
160	6	26.7		26.4 + DP	5		294	16	8	26.4 + DP	660

CERTIFICATES

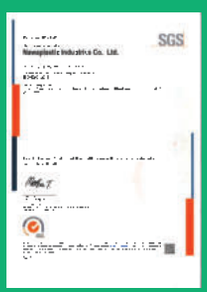
PP-R pipes and fittings are certified according to DVGW quality standards

PP-R pipes and fittings are certified according to DVGW hygiene standards

ISO 9001: 2015
Quality Management System

ISO 14001: 2015
Environmental Management System

ISO 45001: 2018
Occupational Health and Safety Management System

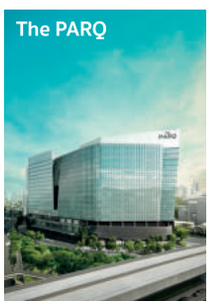


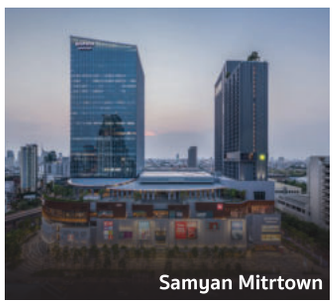
ISO 50001: 2018
Energy Management System

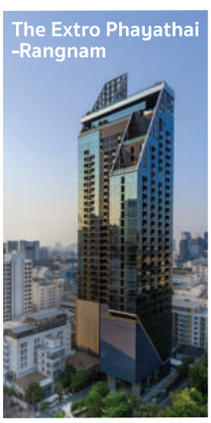
PP-R pipes and fittings are certified according to NSF 61&372 standards.

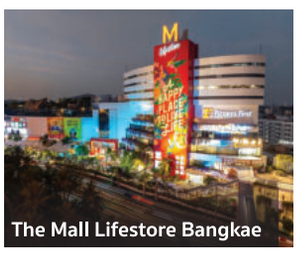
QR Code
NSF Certified Product Details

REFERENCE PROJECTS









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1st Edition