Radius - Kelit
Infrastructure

Flexible pre-insulated pipe systems

2017 05

Radius-Kelit Infrastructure

Flexible pre-insulated pipe systems

Radius-Kelit Infrastructure offers a unique range of flexible bonded pre-insulated polymer solutions for use in heating and hot water supply applications.

Radius-Kelit flexible pre-insulated pipes are insulated using a highly-efficient CFC-free polyurethane (PUR) foam. Continuously applied during the manufacturing process, the systems achieve low thermal conductivity values, which offers greater economic and environmental benefits to system owners and operators.

The constituent parts of the pipe, such as the service pipe, insulation and outer jacket are all bonded together. This allows for self-compensation against the effects of thermal expansion and prevents longitudinal water ingress should the casing be accidentally damaged in the future.

A corrugated outer jacket gives Radius-Kelit flexible pre-insulated pipes the ability to achieve tighter bending radii, providing benefits during installation such as avoiding unforeseen obstacles and other existing services in the ground. This flexibility helps reduce the requirement for additional bend components and speeds up the installation time, resulting in lower costs on site.

Use of innovative Thermoplastic Reinforced Service (TRS) pipes with a PEX-a liner and high-modulus aramid reinforcement mesh in FibreFlex and FibreFlex Pro pipe systems allows to increase both operating pressure and temperature, which significantly extends the boundaries for flexible pre-insulated plastic pipes heating applications.

Pre-insulated TRS pipes have been widely used in East European heating networks since 2004 and with a total length of more than 8000 km pipes installed have proven its high reliability and ease of installation.

Due to reduced wall thickness, pre-insulated TRS pipes have smaller OD compared to conventional plastic service pipes, which allows a thicker insulation layer with same outer jacket dimensions. This, combined with low value of the cyclopenthane-based PUR foam insulation thermal conductivity of ≤0.021 W/mK, makes pre-insulated TRS pipes an outstanding, highly-efficient solution for heating networks.

KELIT PEX

A pre-insulated flexible pipe system for heating applications

KELIT PEX Sanitary

A pre-insulated flexible pipe system for hot potable water supply applications

FibreFlex

An energy-efficient pre-insulated flexible pipe system for heating applications

FibreFlex Pro

An energy-efficient pre-insulated flexible pipe system for heating applications at elevated temperatures and pressures

KELIT PEX

A pre-insulated flexible pipe system
for heating applications

Applications:
Heating networks, local district heating networks.

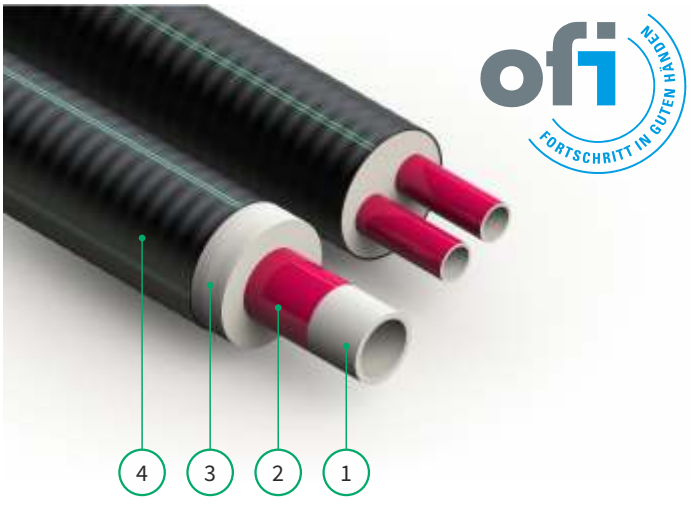
Description:
Cross-linked (by peroxide method) polyethylene PEX-a SDR 11 service pipe is used for KELIT PEX pipes with maximum 6 bar operating pressure at 80 °C continuous operating temperature (application temperature profile according to EN 15632-2:2015).

EVOH barrier layer for service pipe prevents oxygen penetration into heating network.

Highly efficient cyclopenthane-based PUR foam insulation gives a very low thermal conductivity value of ≤0.021 W/mK.

To accommodate the varying heat loss requirements of the pipe network, KELIT PEX pipes are available with a range of insulation thickness options to suit the required system insulation class (only standard insulation series S1 is mentioned).

KELIT PEX pipe system is manufactured in full accordance with EN 15632:2015 and OFI CERT ZG 200-1 Technical Specification.



1. PEX-a service pipe **2.** Oxygen diffusion barrier
3. Semi-flexible polyurethane foam **4.** Jacket pipe

Technical Specification:

Max continuous operating temperature:	+80°C
Max variable operating temperature:	+95°C
Max operating pressure:	6 bar at +80°C
Insulation thermal conductivity:	≤ 0.021 W/mK
Service pipe:	PEX-a
Thermal insulation:	PUR, CFC-free, cyclopenthane-based
Jacket pipe:	corrugated PE-LD

KELIT PEX, IS1

Dimension	Service pipe size, OD×s, mm	Jacket pipe size, JD, mm
25/76	25.0×2.3	76
32/76	32.0×2.9	76
40/91	40.0×3.7	91
50/111	50.0×4.6	111
63/126	63.0×5.8	126
75/142	75.0×6.8	142
90/162	90.0×8.2	162
110/162	110.0×10.0	162
125/182	125.0×11.4	182
140/202	140.0×12.7	202

KELIT PEX DUO, IS1

Dimension	Service pipe size, OD×s, mm	Jacket pipe size, JD, mm
25+25/91	25.0×2.3	91
32+32/111	32.0×2.9	111
40+40/126	40.0×3.7	126
50+50/162	50.0×4.6	162
63+63/182	63.0×5.8	182
75+75/202	75.0×6.8	202

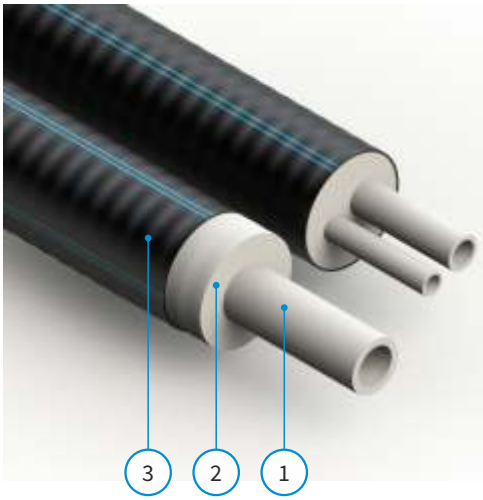
KELIT PEX Sanitary

A pre-insulated flexible pipe system for hot potable water supply applications

Applications:
Hot potable water supply networks.

Description:
Cross-linked (peroxide method) polyethylene PEX-a SDR 7.4 service pipe is used for KELIT PEX Sanitary pipes with maximum 10 bar operating pressure at 80°C continuous operating temperature.

In order to guarantee drinking water safety, hygienic safe service pipe and CO_2-based polyurethane (PUR) insulation foam are used. Relevant hygiene approvals are in place.



1. PEX-a service pipe **2.** Semi-flexible polyurethane foam **3.** Jacket pipe

Technical Specification:

Max continuous operating temperature:	+80°C
Max variable operating temperature:	+95°C
Max operating pressure:	10 bar at +80°C
Insulation thermal conductivity:	≤ 0.023 W/mK
Service pipe:	PEX-a
Thermal insulation:	PUR, CFC-free, CO_2-based
Jacket pipe:	corrugated PE-LD

KELIT PEX Sanitary

Dimension	Service pipe size, OD×s, mm	Jacket pipe size, JD, mm
20/76	20.0×2.8	76
25/76	25.0×3.5	76
32/76	32.0×4.4	76
40/91	40.0×5.5	91
50/111	50.0×6.9	111
63/126	63.0×8.7	126

KELIT PEX Sanitary DUO

Dimension	Service pipe size, OD×s, mm	Jacket pipe size, JD, mm
25+20/91	25.0×4.0 + 20.0×2.8	91
32+20/111	32.0×4.4 + 20.0×2.8	111
40+25/126	40.0×5.5 + 25.0×3.5	126
50+32/142	50.0×6.9 + 32.0×4.4	142
63+32/162	63.0×8.7 + 32.0×4.4	162

FibreFlex

An energy-efficient pre-insulated flexible pipe system for heating applications

Applications:
Elevated pressure heating networks, small and mid-sized district heating networks.

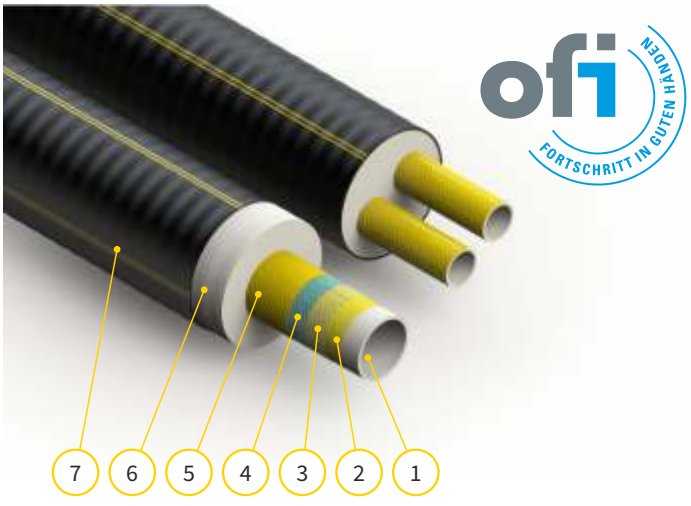
Description:
An innovative Thermoplastic Reinforced Service (TRS) pipe with PEX-a liner and a high modulus aramid reinforcement mesh is used for FibreFlex pipes for maximum 10 bar operating pressure at continuous 80°C operating temperature (application temperature profile according to EN 15632-2, OFI CERT ZG 200-2 Class A).

An oxygen barrier layer prevents oxygen diffusion into the network.

Due to reduced wall thickness, FibreFlex service pipes have smaller OD compared to conventional plastic solutions, which allows a thicker insulation layer with same jacket dimensions. This, combined with the low thermal conductivity value of the cyclopentane-based PUR foam insulation ≤0.021 W/mK, makes FibreFlex pipes an **outstanding, high-energy-efficient** solution for heating networks.

Use of FibreFlex pipes in applications with operating pressures lower than 10 bar provides a higher safety factor for heating pipe networks.

The FibreFlex pipe system is manufactured in accordance with OFI CERT ZG 200-2 Class A Technical Specification.



1. PEX-a liner **2.** Adhesive layer **3.** Aramid fibre mesh
4. Adhesive layer with oxygen barrier **5.** Service pipe jacket
6. Polyurethane foam **7.** Jacket pipe

Technical Specification:

Max continuous operating temperature:	+80°C
Max variable operating temperature:	+95°C
Max operating pressure:	10 bar at +80°C
Insulation thermal conductivity:	≤ 0.021 W/mK
Service pipe:	PEX-a with aramid reinforcement
Thermal insulation:	PUR, CFC-free, cyclopenthane-based
Jacket pipe:	corrugated PE-LD

FibreFlex

Dimension	Service pipe size, OD×s, mm	Jacket pipe size, JD, mm
25/91	25.0×2.2	91
32/91	32.0×2.5	91
40/111	40.0×2.8	111
50/111	47.6×3.6	111
63/126	58.5×4.0	126
75/142	69.5×4.6	142
90/162	84.0×6.0	162
110/182	101.0×6.5	182
125/202	116.0×6.8	202
140/202	127.0×7.1	202
160/225*	144.0×7.5	225

* will be available soon

FibreFlex DUO

Dimension	Service pipe size, OD×s, mm	Jacket pipe size, JD, mm
25+25/111	25.0×2.2	111
32+32/126	32.0×2.5	126
40+40/142	40.0×2.8	142
50+50/162	47.6×3.6	162
63+63/182	58.5×4.0	182
75+75/202	69.5×4.6	202

FibreFlex Pro

An energy-efficient pre-insulated flexible pipe system for heating applications at elevated temperatures and pressures

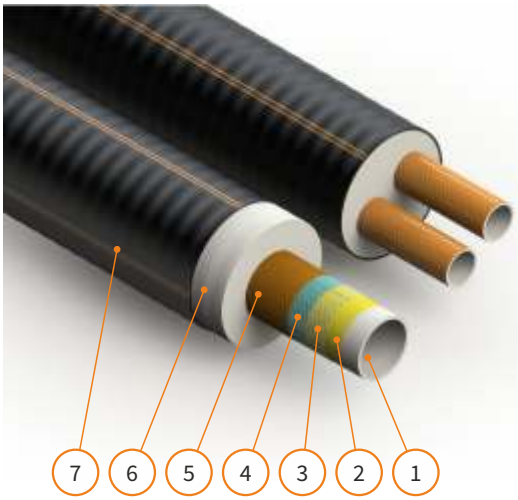
Applications:
Elevated temperature and pressure heating networks, large- and medium-size district heating networks.

Description:
An innovative Thermoplastic Reinforced Service (TRS) pipe with PEX-a liner and high modulus aramid reinforcement mesh is used for FibreFlex Pro pipes for maximum 16 bar operating pressure at continuous 95°C operating temperature (application temperature profile according to OFI CERT ZG 200-2 Class C).

Both the carrier pipe and outer jacket have diffusion barrier layers to prevent oxygen entering the system.

Due to reduced wall thickness, FibreFlex Pro service pipes have smaller OD compared to conventional plastic solutions, which allows a thicker insulation layer with same jacket dimensions. This, combined with the low value of the cyclopenthane-based PUR foam insulation thermal conductivity of ≤0.021 W/mK, makes FibreFlex Pro pipes an outstanding, **highly-energy-efficient** solution for heating networks.

FibreFlex Pro is an innovative solution, enables the safe implementation of plastic flexible pre-insulated pipe system in district heating networks with **elevated operating temperatures and pressures**, where previously, only steel pipes could operate.



1. PEX-a liner **2.** High temperature adhesive **3.** Aramid fibre mesh
4. High temperature adhesive with oxygen barrier **5.** Service pipe jacket
6. Polyurethane foam **7.** Diffusion barrier jacket

Technical Specification:

Max continuous operating temperature:	+95°C
Max variable operating temperature:	+115°C
Max operating pressure:	10/16 bar at +95°C
Insulation thermal conductivity:	≤ 0.021 W/mK
Service pipe:	PEX-a with aramid reinforcement
Thermal insulation:	PUR, CFC-free, cyclopenthane-based
Jacket pipe:	corrugated PE-LD

FibreFlex Pro

Dimension	Service pipe size, OD×s, mm	Jacket pipe size, JD, mm
50/111	47.6×3.6	111
63/126	58.5×4.0	126
75/142	69.5×4.6	142
90/162	84.0×6.0	162
110/182	101.0×6.5	182
125/202	116.0×6.8	202
140/202	127.0×7.1	202
160/225*	144.0×7.5	225

* will be available soon

FibreFlex Pro DUO

Dimension	Service pipe size, OD×s, mm	Jacket pipe size, JD, mm
50+50/162	47.6×3.6	162
63+63/182	58.5×4.0	182
75+75/202	69.5×4.6	202

Fittings and Accessories

KELIT PEX

KELIT PEX pipes are connected using press or clamp connectors of different configurations (weld adaptors, couplers, elbows, tees).

The installation of the press connector requires the pipe end to be expanded before placing the metal insert into the pipe; this is followed by the compression of the outer sleeve onto the pipe's outer surface with use of an industry-standard PEX press tool.

To install the clamp connector no need for pipe end to be expanded is required. Compression of outer sleeve is done with use of a conventional nut driver without the need for any special tooling.

clamp

press

FibreFlex

FibreFlex pipes are connected using press connectors of different configurations (weld adaptors, couplers, elbows, tees).

The installation principle of the press connector is the same as for KELIT PEX. Industry-standard PEX press tools may be used when installing FibreFlex press connectors to FibreFlex pipes (up to and including 110 mm diameter). For bigger sizes Radius-Kelit press tool is available.

Insulation Shells for KELIT PEX and FibreFlex

Insulation Shells of different configurations are available for KELIT PEX and FibreFlex pipes joints (Straight, T-Branch, Elbow 90 Degree). Combined with specially-designed sealing rings, they provide reliable insulation for all types of FibreFlex connectors. These insulation shells are quick and easy to install without the need for special tooling.

FibreFlex Pro

FibreFlex Pro press connectors have an additional polymer sleeve, which placed between the outer sleeve and service pipe, provides the required compression without any need for the pipe end to be expanded before positioning the steel insert into the pipe.

Industry standard PEX press tools may be used when installing FibreFlex press connectors to FibreFlex pipes (up to and including 110 mm diameter). For bigger sizes Radius-Kelit press tool is available.

To insulate the joints, a heat-shrink insulated casing joint is used.

FibreFlex Pro Pre-insulated fittings

A range of insulated pre-fabricated steel fittings complete with press fitting adaptors are available for FibreFlex and FibreFlex Pro pipe systems.

When insulating the joints, a heat-shrink insulated casing joint is used.

Radius-Kelit Infrastructure GesmbH, a member of international Radius-Systems Group, is an Austria-based manufacturer with more than 40 years of experience in the design and production of pre-insulated pipes. Product ranges include high-quality conventional rigid and flexible pipe products and a new class of flexible pre-insulated reinforced plastic pipe systems that open up new opportunities for heating networks. Through sister companies and partners Radius-Kelit is serving the European market.

The high quality of products manufactured by Radius-Kelit Infrastructure is ensured by the continually maintained quality system, which meets the ISO 9001 standard and is certified by BSI (British Standard Institute).The company is also certified to the environmental standard EN 14001.

The reliability and high quality of flexible pre-insulated pipes is confirmed by Austrian accredited certification body OFI CERT, as is evidenced by certificates according to OFI CERT ZG 200-1,2 technical specification.

The high efficiency of the foamed polyurethane (PUR) insulation layer (0.021 W/mK for cyclopenthane-based foam) proven by TGM Austrian certification body, combined with a stable continuous insulation process of flexible pre-insulated pipes make KELIT PEX and FibreFlex (Pro) a highly-energy-efficient solution for heating networks.

bsi.

ofi FORTSCHRITT IN GUTEN HÄNDEN

tgm Die Schule der Technik

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