

Flexigas

Flexigas™ DS (Double Sleeve) – Data Sheet

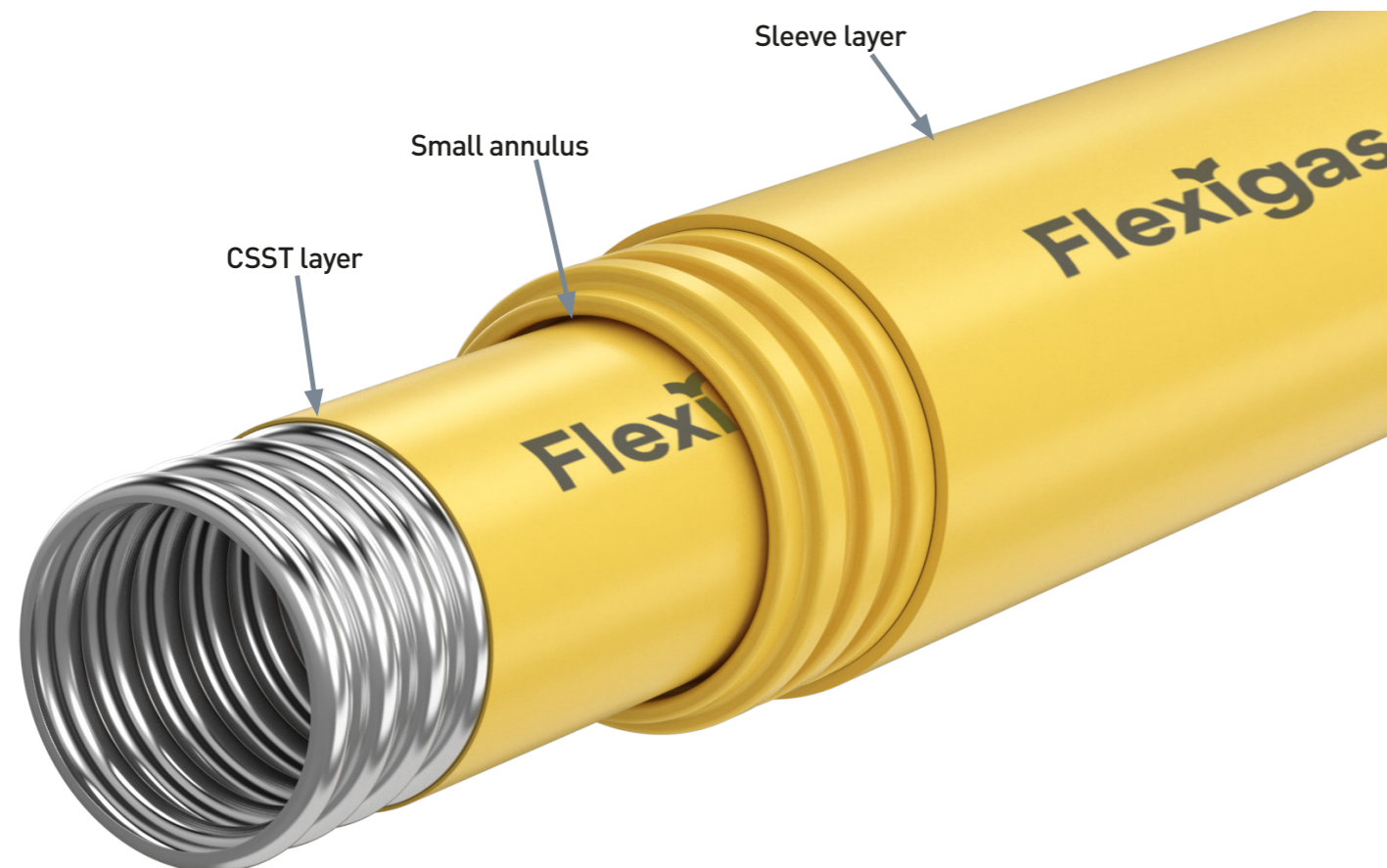
Description

Flexigas™ DS is a double layered flexible gas piping system

- The 1st (inner CSST layer) consisting of Corrugated Stainless Steel Tubing – CSST (plus yellow polyethylene cover) manufactured to BS/EN15266 “Stainless steel pliable corrugated tubing kits in buildings for gas with an operating pressure up to 0,5 bar” and certified in accordance with the BSI Kitemark certification scheme.
- The 2nd (outer sleeve layer) consisting of corrugated PVC sleeving, with an exterior polyethylene cover, which is marked to identify the inner CSST layer as a tube carrying gas.

The outer sleeve layer is designed to meet the definition of a sleeve according to BS 6891 and IGEM/UP/2, 3 & 7, and is in slidable configuration with the inner CSST layer. The outer sleeve layer may be used as a sleeve to pass through:

- Solid floors
- Solid walls and structural elements of a building
- Earth or ground / soil
- Screed
- Unventilated voids and unventilated risers.



Definition of a sleeve in UK installation standards

In BS 6891

- Section 3.38 – Sleeve – protective pipe forming an annulus embedded in the structure through which pipework can be inserted and withdrawn.

In IGEM/UP/2

- Section 5.2.7 – A sleeve is defined as a case (normally tubular) inserted through a void or space in a building for the reception of a gas installation pipe and is impermeable to gas (known as pipe in pipe).
- Section 5.2.7.2 – Where pipework is required to be enclosed in a sleeve, for example when passing through a wall or unventilated void, the factory applied coating (or cover) on copper pipe or pliable corrugated stainless-steel tube shall not be considered to fulfill such a purpose.

Relevant Installation Standards in the UK

- BS6891– Installation of low pressure gas pipework of up to 35 mm (R1.1/4) in domestic premises (2nd family gas). BS5482 – Code of practice for domestic butane- and propane-gas-burning installations. Installations at permanent dwellings, residential park homes and commercial premises, with installation pipework sizes not exceeding DN 25 for steel and DN 28 for corrugated stainless steel or copper.
- IGUM/UP/2 Edition 2/3 – Installation pipework on industrial and commercial premises.

Pressure Testing & Corrosion Protection:

- All installations must be pressure tested for leaks in accordance with the relevant installation standard.
- Only non-corrosive leak detection fluid suitable for stainless steel can be used.
- Any exposed stainless steel (for example a cut on the outer cover) and the small gap between the tail on the nut of the fitting and the tube must be wrapped with silicone tape (after gas tightness test has been completed).

Corrugated Stainless Steel Tubing Layer (1st layer):

- Tubing is made from 1.4404 or 1.4541 Stainless Steel conforming to BS/EN 10088, selected from Table of EN15266.
- Pressure shall not exceed .5bar as per BS/EN15266
- Tightness in case of fire:
 - Both Fire Test A and Fire Test B of EN1775 have been conducted by BSI and passed.
 - 650°C for 30 min < 150 “dm” ^3/h
- The yellow jacket is extruded from fire-retardant Polyethylene and is resistant to UV (ultra-violates).
 - Class reaction to fire: B-s1 d0 (no reaction to fire)
 - Polyethylene cover >0.5mm thickness and contains chloride content <50 ppm.
 - Suitable for direct burial if required.
- Clean circular cuts of the tubing shall be made to ensure reliable flaring of the tubing.

Sleeve Outer Layer (2nd layer):

- Corrugated sleeving
 - Is in slidable configuration with the 1st layer.
 - Class reaction to fire: B-s1 d0 (no reaction to fire)
- Yellow exterior jacket is extruded from fire-retardant Polyethylene and is resistant to UV (ultra-violetes).
 - Class reaction to fire: B-s1 d0 (no reaction to fire)
 - Polyethylene cover >0.5mm thickness and contains chloride content <50 ppm.
- Markings on the outer jacket of the 2nd layer, such as the DN size, Kitemark number and the word "GAS" all refer to the inner CSST layer.
- Meets the definition of a sleeve in UK regulations.

Dimensions of Flexigas™ DS

CSST layer (1st layer)

Tubing Size	DN 15	DN 22	DN 28	DN 32	DN 40	DN 50
Outer Diameter (without cover)	18.1 mm	25.6 mm	32 mm	38 mm	50 mm	60 mm
Internal Diameter	14.1 mm	21.4 mm	27 mm	33 mm	41 mm	50 mm
Tubing Wall Thickness	0.25 mm	0.25 mm	0.25 mm	0.3 mm	0.3 mm	0.3 mm
1 st Polyethylene Jacket Thickness	0.75 mm	0.75 mm	0.75 mm	0.75 mm	0.75 mm	0.75 mm

Sleeve layer (2nd layer)

Tubing Size	DN 15	DN 22	DN 28	DN 32	DN 40	DN 50
Internal Diameter (sleeve)	21 mm	29 mm	35 mm	43.5 mm	55.5 mm	65.5 mm
Annulus between layers	0.75 mm	1 mm	1 mm	2 mm	2mm	2mm
Sleeve Thickness	2 mm	2.5 mm	2.5 mm	3 mm	3 mm	3 mm
2 nd Polyethylene Jacket Thickness	0.6 mm	0.6 mm	0.6 mm	0.6 mm	0.6 mm	0.6 mm
Total Max Diameter - Flexigas DS	26 mm	35 mm	41 mm	51 mm	63 mm	73 mm

Lengths of Flexigas™ DS

Flexigas™ DS is available in 25m, 50m and 75m lengths as standard, and customs lengths on request.

Clipping and supporting Flexigas™ DS

Flexigas DS™ should be clipped and supported according to Table 4 of BS 6891.

- Clips (rubber lined rings / Munsen rings) can be attached directly to the sleeve layer.
- As the annulus between layers is so small, the CSST is well supported inside the sleeve.
 - Clips / supports in an unventilated riser should be attached directly to the outer sleeve.

	DN 15	DN 22	DN 28	DN 32	DN 40	DN 50
Vertical	1.2	1.8	1.8	2.5	2.5	2.5
Horizontal	1.2	1.8	1.8	2.5	2.5	2.5

Mechanical Fittings:

- Flexigas™ full range of fittings are compatible with Flexigas™ DS.
- Fittings are made from dezincification resistant (DR) brass.
- Fittings provide a metal-to-metal self-flaring seal. No rubber or plastic components or sealant material shall be used.
- 130+ fitting codes available. A tick below indicates fitting available in corresponding DN size:

	DN 15	DN 22	DN 28	DN 32	DN 40	DN 50
Male	✓	✓	✓	✓	✓	✓
Female	✓	✓	✓	✓	✓	
Union	✓	✓	✓	✓	✓	✓
Reducing Union	✓	✓	✓	✓	✓	
Copper Union	✓	✓	✓	✓	✓	
Tees	✓	✓	✓	✓	✓	
Reducing Tees	✓	✓	✓	✓	✓	
Female Tee	✓	✓				
Copper / Flexigas Tee	✓	✓	✓	✓	✓	
Elbow	✓	✓	✓	✓	✓	
Female Elbow	✓	✓	✓	✓	✓	
Copper / Flexigas Elbow	✓	✓	✓	✓	✓	
Winged Female Elbow	✓					

Electrical Bonding

- All installations shall be earth bonded according to BS 6891.
- The (patent pending) FG Bond feature is certified with BSI and meets the requirements for earth bonding according to BS 6891.
- Traditional earth bonding clamps may also be used.

Certification/Training

- Only installers licensed by the Health and Safety Executive are permitted to make gas installations in the UK.

Damage to Outer Sleeve Layer

- Any damage to the outer sleeve layer, to the point of causing a hole, should be repaired using self-amalgamating silicone tape available from Flexigas. Damage to both the outer cover and the corrugated sleeve can be repaired using self-amalgamating silicone tape.

This information sheet must be read in conjunction with the full Design and Installation Manual – UK Edition and any relevant standard.