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Agrément Certificate
19/5697
Product Sheet 1

GEBERIT SILENT-PP DRAINAGE SYSTEM

GEBERIT SILENT-PP PIPES, FITTINGS, CONNECTIONS AND WASTE FITTINGS

This Agrément Certificate Product Sheet(1) relates to the Geberit Silent-PP Drainage System, comprising of polypropylene Geberit Silent-PP Pipes, Fittings, Connections and Waste Fittings, for use in installations designed in accordance with BS EN 12056-2 : 2000 and BS EN 12056-3 : 2000, for the conveyance of above ground soil and waste drainage, and gravity rainwater pipes, in domestic, commercial and public buildings.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

Strength — the products have adequate strength to resist the loads experienced under normal installation and service (see section 6).

Performance of joints — the products are easily installed and joints will remain watertight under normal service conditions (see section 7).

Resistance to elevated temperatures — the products have adequate resistance to the temperatures likely to be found in domestic waste water (see section 10).

Durability — the products will have a service life in excess of 50 years (see section 13).

The BBA has awarded this Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 14 October 2019

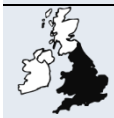
Paul Valentine
Technical Excellence Director

Claire Curtis-Thomas
Chief Executive

The BBA is a UKAS accredited certification body – Number 113.
The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk
Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.
Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

Regulations

In the opinion of the BBA, Geberit Silent-PP Pipes, Fittings, Connections and Waste Fittings, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	**H1**	**Foul water drainage**
Comment:		The products will convey the flow of foul water and minimise the risk of blockage or leakage. See sections 4.1, 7 and 8 of this Certificate.
Requirement:	**H3(1)**	**Rainwater drainage**
Comment:		The products will convey the flow of surface water and minimise the risk of blockage or leakage. See sections 4.1, 7 and 8 of this Certificate.
Regulation:	**7**	**Materials and workmanship (applicable to Wales only)**
Regulation:	**7(1)**	**Materials and workmanship (applicable to England only)**
Comment:		The products are acceptable. See section 14 and the *Installation* part of this Certificate.
Regulation:	**7(2)**	**Materials and workmanship (applicable to England only)**
Comment:		The use of the products is restricted by this Regulation. See section 11.1 of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)(2)**	**Durability, workmanship and fitness of materials**
Comment:		The products are acceptable. See sections 12 and 13 and the *Installation* part of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	3.6(a)	Surface water drainage
Comment:		The products will satisfy the relevant requirements of this Standard, with reference to clause 3.6.1(1)(2). See sections 4.1, 7 and 8 of this Certificate.
Standard:	3.7(b)(c)	Wastewater drainage
Comment:		The products will satisfy the relevant requirements of this Standard, with reference to clause 3.7.1(1)(2). See sections 4.1, 7 and 8 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The products can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	**12**	**Building standards applicable to conversions**
Comment:		Comments in relation to the products under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1(1)(2) and Schedule 6(1)(2).

(1) Technical Handbook (Domestic).
(2) Technical Handbook (Non-Domestic).

The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	**23(a)(i)(iii)(b)(i)**	**Fitness of materials and workmanship**
Comment:		The products are acceptable. See section 13 and the *Installation* part of this Certificate.

Regulation:	**79**	**Drainage systems**
Comment:		The products will contribute to satisfying the relevant requirements of this Regulation. See sections 4.1, 7 and 8 of this Certificate.
Regulation:	**80**	**Sanitary pipework**
Comment:		The products will contribute to satisfying the relevant requirements of this Regulation. See sections 4.1, 7 and 8 of this Certificate.
Regulation:	**82**	**Rainwater drainage**
Comment:		The products will contribute to satisfying the relevant requirements of this Regulation. See sections 4.1, 7 and 8 of this Certificate.

Construction (Design and Management) Regulations 2015
Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See section: 3 *Delivery and site handling* (3.3) and the *Installation* part of this Certificate.

Additional Information

NHBC Standards 2019

In the opinion of the BBA, Geberit Silent-PP Pipes, Fittings, Connections and Waste Fittings, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 8.1 *Internal services,* Section 8.1.6 *Soil and waste systems.*

CE marking

The Certificate holder has taken the responsibility of CE marking the elastomeric rubber sealing rings, in accordance with harmonised European Standard BS EN 681-1 : 1996.

Technical Specification

1 Description

1.1 The Geberit Silent-PP Drainage System comprises polypropylene (PP) Geberit Silent-PP Pipes, Fittings, Connections and Waste Fittings and associated elastomeric rubber (EPDM) sealing rings. The products are used as part of the Geberit Silent-PP Drainage System, inside buildings for application area code B only, as defined in BS EN 1451-1 : 2017.

1.2 Gerberit Silent-PP Pipes are made of three-layers: the outer layer (black in colour) is made of PP copolymer, the middle layer (grey in colour) is made of mineral reinforced PP, and the inner layer (white in colour) is made of PP copolymer. The pipes range from 32 to 160 mm nominal diameter (DN) and can be supplied in lengths from 15 cm to 3 m, as shown in Table 1. The material properties of Gerberit Silent-PP Pipes are given in Table 10.

1.3 Gerberit Silent-PP Fittings, Connections and Waste Fittings are black(1) in colour and are made from mineral reinforced PP only. Unlike the pipes, the fittings are made of only one product material and not structured in layers. All connections are made by push fittings. As per Tables 2 to 8 and the material properties given in Table 11, Geberit Silent-PP Fittings comprise:

- reducers
- bends
- T and Y Branch Fittings
- special branch fittings
- access pipes

- connections
- waste fittings.

(1) Except connections and waste fittings for WC, which are white in colour.

1.4 The EPDM sealing rings are manufactured and CE marked in accordance with BS EN 681-1 : 1996, as shown in Table 9 of this Certificate. The sealing rings must be fitted in accordance with the Certificate holder's installation instructions, to ensure a watertight joint.

1.5 Ancillary items used with the products, but outside the scope of this Certificate, include brackets, adaptors, protective caps, retaining claws and lubricant. The Certificate holder's advice can be sought for the appropriate ancillary items to be used with the products.

Table 1 Pipes

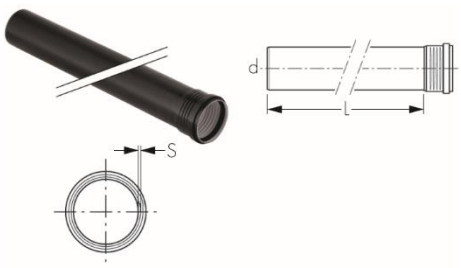
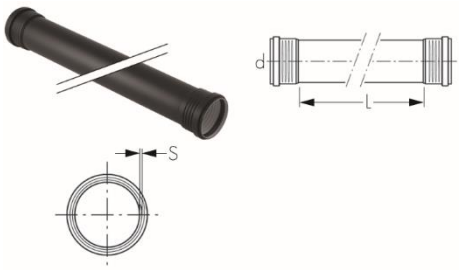
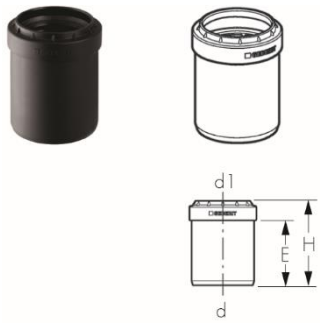
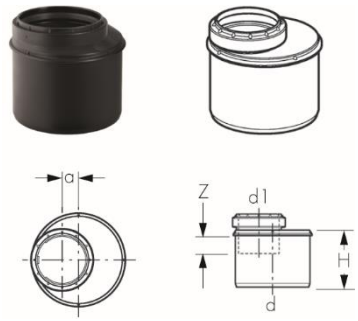
Geberit Silent-PP pipe with one socket	Article no.	DN (mm)	d, ø (mm)	s (mm)	L (mm)
	390.000.14.1	30	32	2	150 – 3000
	390.100.14.1	40	40	2	150 – 3000
	390.200.14.1	50	50	2	150 – 3000
	390.300.14.1	70	75	2.6	150 – 3000
	390.400.14.1	90	90	3.1	150 – 3000
	390.500.14.1	100	110	3.6	150 – 3000
	390.600.14.1	125	125	4.2	150 – 3000
	390.700.14.1	150	160	5.2	150 – 3000
Geberit Silent-PP pipe with two sockets	Article no.	DN (mm)	d, ø (mm)	s (mm)	L (mm)
	390.010.14.1	30	32	2	500 – 3000
	390.110.14.1	40	40	2	500 – 3000
	390.210.14.1	50	50	2	500 – 3000
	390.310.14.1	70	75	2.6	500 – 3000
	390.410.14.1	90	90	3.1	500 – 3000
	390.510.14.1	100	110	3.6	500 – 3000
	390.610.14.1	125	125	4.2	500 – 3000

Table 2 Reducers

Geberit Silent-PP reducer, concentric, short	Article no.	DN	d, ø (mm)	d1, ø (mm)	H (cm)	E (cm)
	390.179.14.1	40 / 30	40	32	6.8	5
	390.278.14.1	50 / 40	50	40	6.8	5.2

Geberit Silent-PP reducer, eccentric, short	Article no.	DN	d, ø (mm)	d1, ø (mm)	a (cm)	H (cm)	Z (cm)
	390.373.14.1	70 / 50	75	50	1	8.4	2.3
	390.474.14.1	90 / 50	90	50	1.7	8.8	2.4
	390.475.14.1	90 / 70	90	75	0.4	8.9	2.8
	390.575.14.1	100 / 50	110	50	2.6	9.5	2.4
	390.576.14.1	100 / 70	110	75	1.4	9.6	2.9
	390.577.14.1	100 / 90	110	90	0.6	9.8	3.2

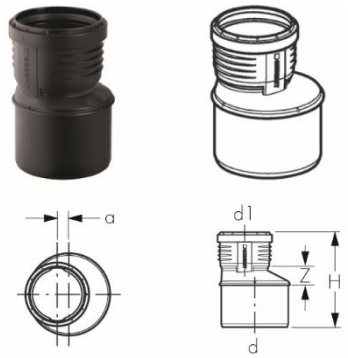
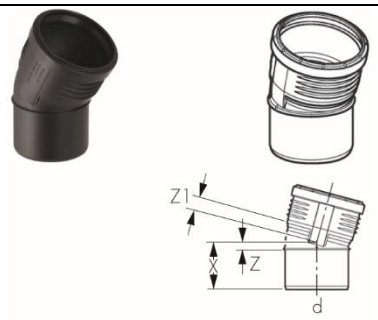
Geberit Silent-PP reducer, eccentric	Article no.	DN	d, ø (mm)	d1, ø (mm)	a (cm)	H (cm)	Z (cm)
	390.271.14.1	50 / 40	50	40	0.5	11.4	1.6
	390.279.14.1	50 / 30	50	32	0.9	11.3	1.9
	390.372.14.1	70 / 50	75	50	1.2	13.3	2.6
	390.471.14.1	90 / 40	90	40	2.4	14.6	3.8
	390.472.14.1	90 / 50	90	50	1.9	14.6	3.4
	390.473.14.1	90 / 70	90	75	0.7	13.9	2.2
	390.571.14.1	100 / 40	110	40	3.3	16.4	4.9
	390.572.14.1	100 / 50	110	50	2.8	16.4	4.5
	390.573.14.1	100 / 70	110	75	1.7	15.7	3.3
	390.574.14.1	100 / 90	110	90	1	15.7	2.7
	390.675.14.1	125 / 100	125	110	0.7	17.1	2.9
	390.775.14.1	150 / 100	160	110	2.3	19.4	4.5
	390.776.14.1	150 / 125	160	125	1.7	19.4	4

Table 2 Reducers (continued)

Geberit Silent-PP reducing bend 87.5°	Article no.	DN	d, ø (mm)	d1, ø (mm)	H (cm)	Z (cm)	Z1 (cm)
	390.225.14.1	40 / 50	40	50	8.1	3.1	3.5

Table 3 Bends

Geberit Silent-PP bend 15° angle	Article no.	DN	d, ø (mm)	X (cm)	Z (cm)	Z1 (cm)
	390.020.14.1	30	32	5	0.6	1
	390.120.14.1	40	40	5.4	0.7	1.1
	390.220.14.1	50	50	5.8	0.7	1.1
	390.320.14.1	70	75	6.5	0.9	1.5
	390.420.14.1	90	90	7.3	1.2	1.7
	390.520.14.1	100	110	8.2	1.4	2
	390.620.14.1	125	125	8.8	1.4	2.3
	390.720.14.1	150	160	9.7	1.7	2.6

Geberit Silent-PP bend 30° angle	Article no.	DN	d, ø (mm)	X (cm)	Z (cm)	Z1 (cm)
	390.021.14.1	30	32	5.2	0.8	0.9
	390.121.14.1	40	40	5.7	0.9	1
	390.221.14.1	50	50	6.2	1.1	1
	390.321.14.1	70	75	7	1.5	1.5
	390.421.14.1	90	90	7.9	1.8	1.7
	390.521.14.1	100	110	9	2.1	2.2
	390.621.14.1	125	125	9.8	2.4	2.5
	390.721.14.1	150	160	11	3	2.8

Table 3 Bends (continued)

Geberit Silent-PP bend 45° angle	Article no.	DN	d, ø (mm)	X (cm)	Z (cm)	Z1 (cm)
	390.022.14.1	30	32	5.5	1	1.1
	390.122.14.1	40	40	6	1.2	1.3
	390.222.14.1	50	50	6.5	1.5	1.4
	390.322.14.1	70	75	7.6	2	2.1
	390.422.14.1	90	90	8.5	2.4	2.5
	390.522.14.1	100	110	9.7	3	2.9
	390.622.14.1	125	125	10.7	3.3	3.3
	390.722.14.1	150	160	12.2	4.2	4

Geberit Silent-PP bend 67.5° angle	Article no.	DN	d, ø (mm)	X (cm)	Z (cm)	Z1 (cm)
	390.023.14.1	30	32	5.9	1.5	1.5
	390.123.14.1	40	40	6.5	1.8	1.8
	390.223.14.1	50	50	7.2	2.1	2.1
	390.323.14.1	70	75	8.6	3	3
	390.423.14.1	90	90	9.7	3.6	3.5
	390.523.14.1	100	110	11.2	4.4	4.3
	390.623.14.1	125	125	12.3	4.9	4.9
	390.723.14.1	150	160	14.3	6.2	6.1

Geberit Silent-PP bend 87.5° angle	Article no.	DN	d, ø (mm)	X (cm)	Z (cm)	Z1 (cm)
	390.024.14.1	30	32	6.4	1.9	2
	390.124.14.1	40	40	7.1	2.3	2.5
	390.224.14.1	50	50	7.9	2.8	3
	390.324.14.1	70	75	9.7	4.1	4.2
	390.424.14.1	90	90	11	4.9	4.8
	390.524.14.1	100	110	12.8	6	6
	390.624.14.1	125	125	14.2	6.8	6.7
	390.724.14.1	150	160	16.6	8.5	8.4

Table 4 T and Y Branch fittings

Geberit Silent-PP branch fitting 45°	Article no.	DN	d, ø (mm)	d1, ø (mm)	H (cm)	Z1 (cm)	Z2 (cm)	Z3 (cm)
	390.030.14.1	30 / 30	32	32	9.4	1	4	4
	390.130.14.1	40 / 30	40	32	9.7	0.6	4.6	4.4
	390.131.14.1	40 / 40	40	40	9.8	1.2	5	5
	390.230.14.1	50 / 30	50	32	10	0.1	5.3	4.9
	390.231.14.1	50 / 40	50	40	10.2	0.7	5.8	5.6
	390.232.14.1	50 / 50	50	50	11.4	1	6.3	6.3
	390.331.14.1	70 / 40	75	40	12	0.6	7.6	7
	390.332.14.1	70 / 50	75	50	13.4	0.1	8.1	7.6
	390.333.14.1	70 / 70	75	75	15	1.9	9.4	9.4
	390.432.14.1	90 / 50	90	50	13	0.6	9.1	8.4
	390.433.14.1	90 / 70	90	75	17.5	1.2	10.4	10.2
	390.434.14.1	90 / 90	90	90	19.6	2.2	11.3	11.3
	390.531.14.1	100 / 40	110	40	13.4	2.2	10.1	8.8
	390.532.14.1	100 / 50	110	50	14.8	1.5	10.6	9.5
	390.533.14.1	100 / 70	110	75	18.3	0.2	11.9	11.2
	390.534.14.1	100 / 90	110	90	20.3	1.3	12.6	12.2
	390.535.14.1	100 / 100	110	110	23.3	2.7	13.8	13.8
	390.634.14.1	125 / 90	125	90	21	0.6	13.6	12.9
	390.635.14.1	125 / 100	125	110	23.7	2.1	14.7	14.3
	390.636.14.1	125 / 125	125	125	25.9	3.1	15.4	15.4
	390.735.14.1	150 / 100	160	110	24.5	0.4	17.2	16.1
	390.736.14.1	150 / 125	160	125	26.6	1.4	17.9	17.1
	390.737.14.1	150 / 150	160	160	31.5	3.9	19.6	19.5

Table 4 T and Y Branch fittings (continued)

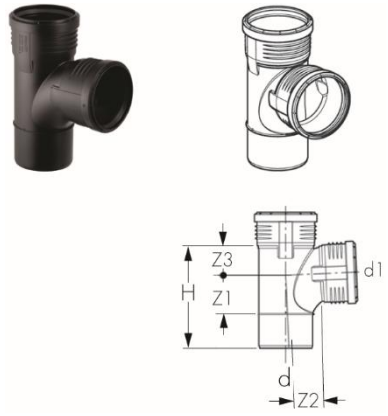
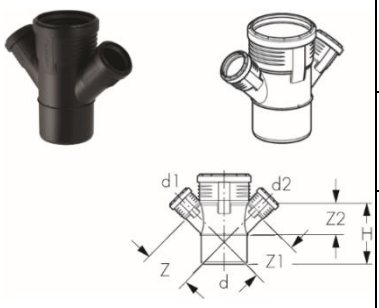
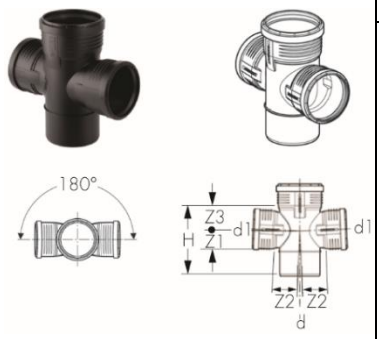
Geberit Silent-PP branch fitting 87.5°	Article no.	DN	d, ø (mm)	d1, ø (mm)	H (cm)	Z1 (cm)	Z2 (cm)	Z3 (cm)
	390.046.14.1	30 / 30	32	32	8.2	1.7	2.1	2.1
	390.147.14.1	40 / 40	40	40	9.2	2.2	2.2	2.2
	390.247.14.1	50 / 40	50	40	9.5	2.2	2.8	2.2
	390.248.14.1	50 / 50	50	50	10.5	2.7	2.8	2.8
	390.347.14.1	70 / 40	75	40	10.4	2.3	4.2	2.6
	390.348.14.1	70 / 50	75	50	11.4	2.8	4.2	3.1
	390.349.14.1	70 / 70	75	75	13.9	4	4.3	4.3
	390.448.14.1	90 / 50	90	50	12.1	2.8	4.9	3.2
	390.449.14.1	90 / 70	90	75	14.6	4	5.1	4.5
	390.547.14.1	100 / 40	110	40	12.4	2.7	6	2.9
	390.548.14.1	100 / 50	110	50	12.9	2.8	6	3.2
	390.549.14.1	100 / 70	110	75	15.4	4	6.1	4.5
	390.650.14.1	125 / 90	125	90	17.1	4.6	6.9	5.2
	390.651.14.1	125 / 100	125	110	21.3	6.6	7.8	7.3
	390.652.14.1	125 / 125	125	125	20.6	6.4	6.8	6.8
	390.751.14.1	150 / 100	160	110	19.8	5.5	8.8	6.2
	390.752.14.1	150 / 125	160	125	21.3	6.4	8.7	6.9
	390.753.14.1	150 / 150	160	160	24.8	8.2	8.6	8.6
Geberit Silent-PP branch fitting 87.5°, swept-entry	Article no.	DN	d, ø (mm)	d1, ø (mm)	H (cm)	Z1 (cm)	Z2 (cm)	Z3 (cm)
	390.454.14.1	90 / 90	90	90	17.7	6.7	7	4.9
	390.554.14.1	100 / 90	110	90	18.6	6.8	8.1	5
	390.555.14.1	100 / 100	110	110	21.2	8.2	7.7	6.1

Table 4 T and Y Branch fittings (continued)

Geberit Silent-PP double branch fitting 45°	Article no.	DN	d, ø (mm)	d1, ø (mm)	d2, ø (mm)	H (cm)	Z (cm)	Z1 (cm)	Z2 (cm)
	390.469.14.1	90/ 50 / 50	90	50	50	13.9	9.1	9.1	8.4
	390.569.14.1	100 / 50 / 50	110	50	50	14.8	10.6	10.6	9.5

Geberit Silent-PP double branch fitting 87.5°	Article no.	DN	d, ø (mm)	d1, ø (mm)	H (cm)	Z1 (cm)	Z2 (cm)	Z3 (cm)
	390.665.14.1	125 / 100 / 100	125	110	21.3	6.6	7.8	7.3

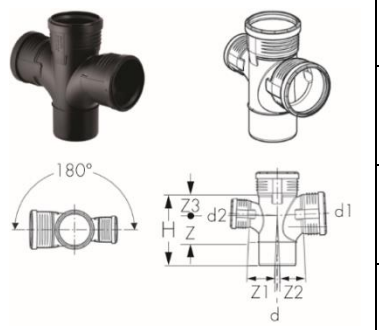
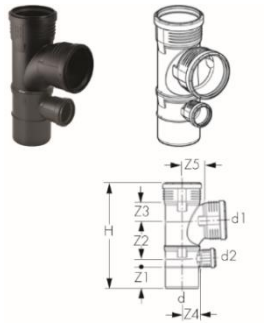
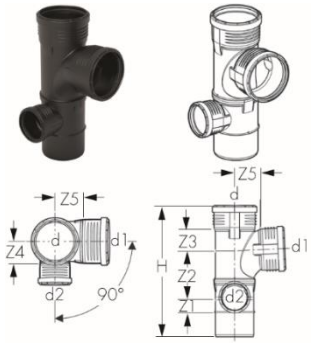
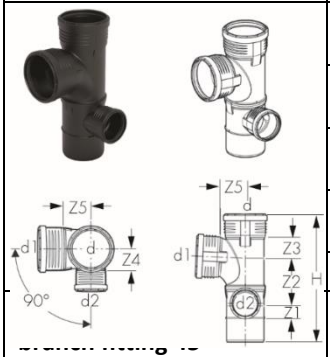
Geberit Silent-PP double branch fitting 87.5°, swept-entry	Article no.	DN	d, ø (mm)	d1, ø (mm)	d2, ø (mm)	H (cm)	Z (cm)	Z1 (cm)	Z2 (cm)	Z3 (cm)
	390.466.14.1	90 / 90 / 90	90	90	90	17.7	6.7	7	7	4.9
	390.567.14.1	100 / 100 / 70	110	110	75	21.2	8.2	8.3	7.7	6.1
	390.566.14.1	100 / 100 / 100	110	110	110	21.2	8.2	7.7	7.7	6.1

Table 5 Special Branch fittings

Geberit Silent-PP combined branch fitting 87.5°, swept-entry	Article no.	DN	d, ø (mm)	d1, ø (mm)	d2, ø (mm)	H (cm)	Z1 (cm)	Z2 (cm)	Z3 (cm)	Z4 (cm)	Z5 (cm)
	390.456.14.1	90 / 90 / 50	90	90	50	30.6	2.8	10.7	4.9	4.9	7
	390.556.14.1	100 / 90 / 50	110	90	50	32.4	2.8	10.9	5	6	8.1
	390.558.14.1	100 / 100 / 50	110	110	50	35	2.8	12.4	6.1	6	7.7

Geberit Silent-PP combined corner branch fitting 87.5°, swept-entry, left	Article no.	DN	d, ø (mm)	d1, ø (mm)	d2, ø (mm)	H (cm)	Z1 (cm)	Z2 (cm)	Z3 (cm)	Z4 (cm)	Z5 (cm)
	390.470.14.1	90 / 90 / 50	90	90	50	30.6	3.2	10.9	5.2	4.9	6.7
	390.570.14.1	100 / 90 / 50	110	90	50	32.4	3.3	11.1	5.4	5.9	7.8
	390.578.14.1	100 / 100 / 50	110	110	50	35	3.3	12.6	6.5	5.9	7.4
	390.561.14.1	100 / 100 / 70	110	110	75	37.5	4.2	13.8	6.5	6	7.8

Geberit Silent-PP combined corner branch fitting 87.5°, swept-entry, right	Article no.	DN	d, ø (mm)	d1, ø (mm)	d2, ø (mm)	H (cm)	Z1 (cm)	Z2 (cm)	Z3 (cm)	Z4 (cm)	Z5 (cm)
	390.462.14.1	90 / 90 / 50	90	90	50	30.6	3.2	10.9	5.2	4.9	6.7
	390.562.14.1	100 / 90 / 50	110	90	50	32.4	3.3	11.1	5.4	5.9	7.8
	390.565.14.1	100 / 100 / 50	110	110	50	35	3.3	12.6	6.5	5.9	7.4
	390.560.14.1	100 / 100 / 70	110	110	75	37.5	4.2	13.8	6.5	6	7.8

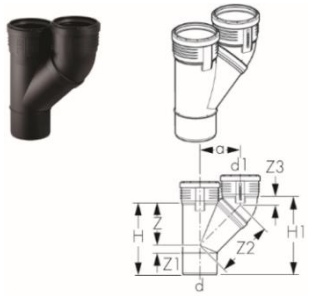
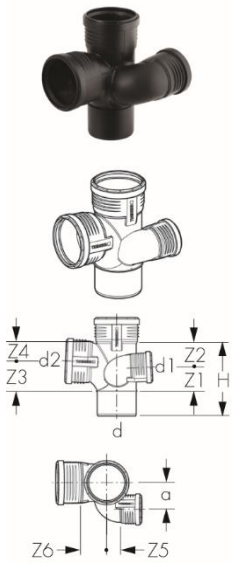
	Article no.	DN	d, ø (mm)	d1, ø (mm)	a (cm)	H (cm)	H1 (cm)	Z (cm)	Z1 (cm)	Z2 (cm)	Z3 (cm)
	390.457.14.1	90 / 90	90	90	11	19.6	21.4	11.3	2.2	15	2.5
	390.557.14.1	100 / 100	110	110	13	23.3	25.5	13.8	2.7	18.4	2.9

Table 5 Special Branch fittings (continued)

Geberit Silent-PP duct branch fitting 87.5°, swept-entry, left	Article no.	DN	d, ø(mm)	d1, ø(mm)	d2, ø(mm)	a (cm)	H (cm)	Z1 (cm)	Z2 (cm)	Z3 (cm	Z4 (cm)	Z5 (cm)	Z6 (cm)
	390.464.14.1	90 / 70 / 90	90	75	90	8.2	17.6	6.3	5.3	6.7	4.9	3.5	6.9
	390.564.14.1	100 / 70 / 100	110	75	110	9.2	21.1	6.7	7.6	8.2	6.1	4.4	7.7

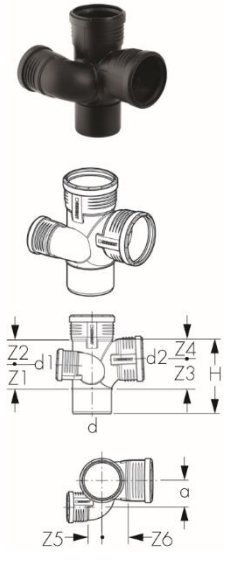
Geberit Silent-PP duct branch fitting 87.5°, swept-entry, right	Article no.	DN	d, ø(mm)	d1, ø(mm)	d2, ø(mm)	a (cm)	H (cm)	Z1 (cm)	Z2 (cm)	Z3 (cm	Z4 (cm)	Z5 (cm)	Z6 (cm)
	390.463.14.1	90 / 70 / 90	90	75	90	8.2	17.6	6.3	5.3	6.7	4.9	3.5	6.9
	390.563.14.1	100 / 70 / 100	110	75	110	9.2	21.1	6.7	7.6	8.2	6.1	4.4	7.7

Table 5 Special Branch fittings (continued)

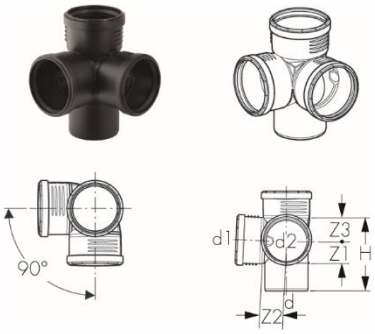
Geberit Silent-PP corner branch fitting 87.5°	Article no.	DN	d, ø(mm)	d1, ø(mm)	d2, ø(mm)	H (cm)	Z1 (cm)	Z2 (cm)	Z3 (cm)
	390.459.14.1	90 / 90 / 90	90	90	90	15.7	4.6	5	5
	390.559.14.1	100 / 100 / 100	110	110	110	18.6	5.6	6	6.1
	390.662.14.1	125 / 100 / 100	125	110	110	21.3	6.6	7.8	7.3

Table 6 Access Pipes

Geberit Silent-PP access pipe 90° with round service opening	Article no.	DN	d, ø (mm)	H (cm)	L (cm)
	390.227.14.1	50	50	12.3	4.7
	390.327.14.1	70	75	15.4	6.1
	390.427.14.1	90	90	17.7	7.4
	390.527.14.1	100	110	21	9
	390.627.14.1	125	125	21.5	9.8
	390.727.14.1	150	160	22.2	11.6

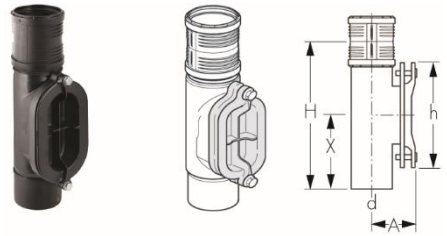
Geberit Silent-PP access pipe 90° with oval service opening	Article no.	DN	d, ø (mm)	A (cm)	H (cm)	h (cm)	X (cm)
	390.503.14.1	100	110	12	40.3	28	20
	390.603.14.1	125	125	12.5	41.4	28	20.5
	390.703.14.1	150	160	14	43.4	28	21.5

Table 7 Connections

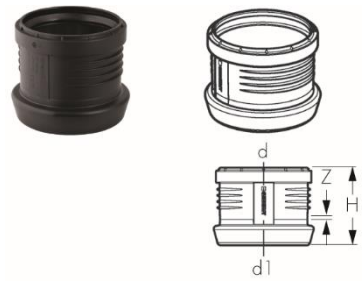
Geberit Silent-PP adaptor socket to Geberit Silent-db20	Article no.	DN	d, ø (mm)	d1, ø (mm)	H (cm)	Z (cm)
	390.296.14.1	50 / 56	50	56	8.7	0.3
	390.396.14.1	70 / 70	75	75	9.2	0.3
	390.496.14.1	90 / 90	90	90	9.7	0.3
	390.596.14.1	100 / 100	110	110	10.4	0.3
	390.796.14.1	150 / 150	160	160	13.6	0.4

Table 7 Connections (continued)

Geberit Silent-PP double ring seal socket	Article no.	DN	d, ø (mm)	H (cm)	Z (cm)
	390.016.14.1	30	32	9	0.1
	390.116.14.1	40	40	9.6	0.1
	390.216.14.1	50	50	10.3	0.1
	390.316.14.1	70	75	11.3	0.2
	390.416.14.1	90	90	12.4	0.2
	390.516.14.1	100	110	13.9	0.3
	390.616.14.1	125	125	15.2	0.4
	390.716.14.1	150	160	16.5	0.4

Geberit Silent-PP slip coupling	Article no.	DN	d, ø (mm)	H (cm)
	390.017.14.1	30	32	9
	390.117.14.1	40	40	9.6
	390.217.14.1	50	50	10.3
	390.317.14.1	70	75	11.3
	390.417.14.1	90	90	12.4
	390.517.14.1	100	110	13.9
	390.617.14.1	125	125	15.2
	390.717.14.1	150	160	16.5

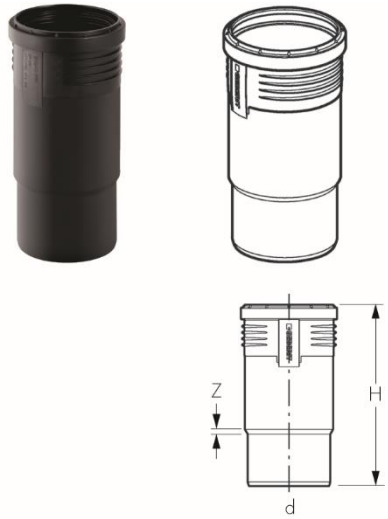
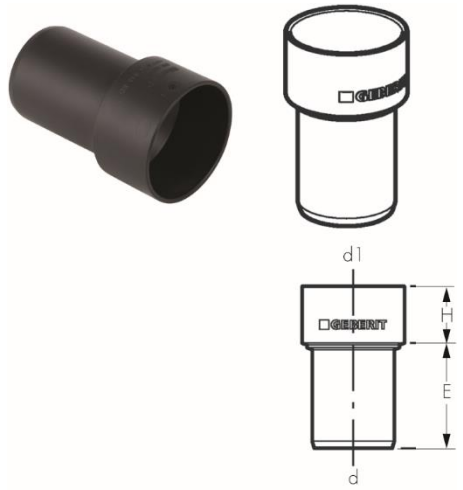
Geberit Silent-PP repair socket	Article no.	DN	d, ø (mm)	H (cm)	Z (cm)
	390.118.14.1	40	40	16.8	0.1
	390.218.14.1	50	50	18.1	0.3
	390.318.14.1	70	75	19.8	0.6
	390.418.14.1	90	90	21.7	0.3
	390.518.14.1	100	110	24.2	0.5
	390.618.14.1	125	125	26.5	0.6
	390.718.14.1	150	160	29	0.6

Table 7 Connections (continued)

Geberit Silent-PP straight connector	Article no.	DN	d, ø (mm)	d1, ø (mm)	H (cm)	E (cm)
	390.080.14.1	30	32	46	3.5	4.5
	390.180.14.1	40	40	46	3.2	4.7
	390.281.14.1	50	50	58	3.2	5.1

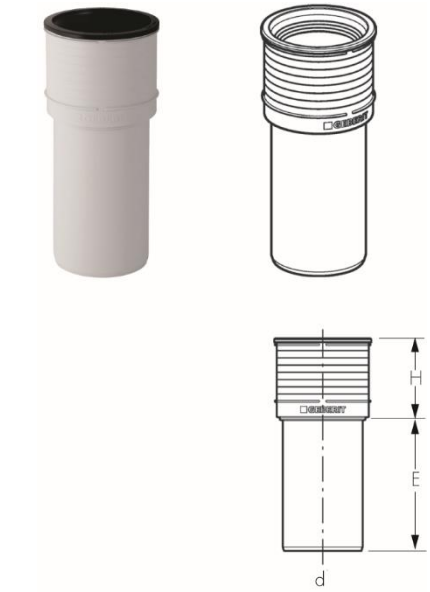
Geberit Silent-PP straight connector for WC	Article no.	DN	d, ø (mm)	H (cm)	E (cm)
	390.592.11.1	100	110	10.9	18

Table 7 Connections (continued)

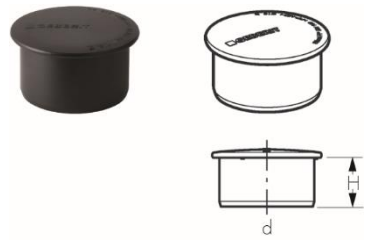
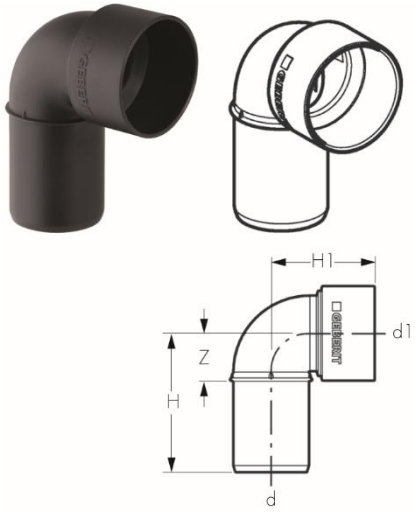
Geberit Silent-PP socket plug	Article no.	DN	d, ø (mm)	H (cm)
	390.128.14.1	40	40	4.1
	390.228.14.1	50	50	4.7
	390.328.14.1	70	75	5.4
	390.428.14.1	90	90	6
	390.528.14.1	100	110	6.6
	390.628.14.1	125	125	7.3
	390.728.14.1	150	160	7.9

Table 8 Waste Fittings

Geberit Silent-PP connection bend 90°	Article no.	DN	d, ø (mm)	d1, ø (mm)	H (cm)	H1 (cm)	Z (cm)
	390.083.14.1	30	32	46	7.1	5.1	2.6
	390.183.14.1	40	40	46	7.4	5.5	2.6
	390.283.14.1	50	50	46	8.2	5.7	3.2
	390.284.14.1	50	50	58	8.3	5.9	3.2

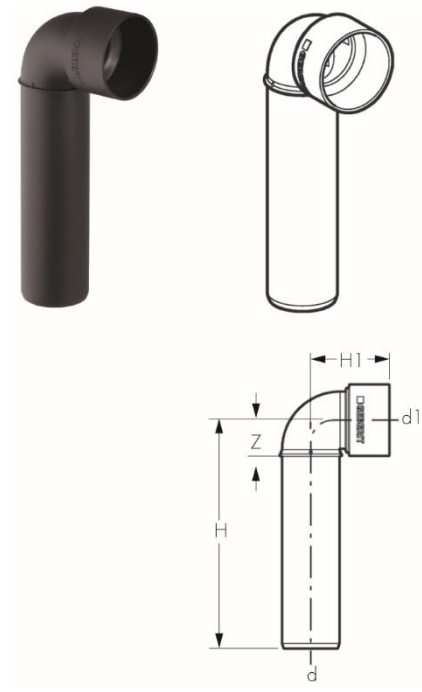
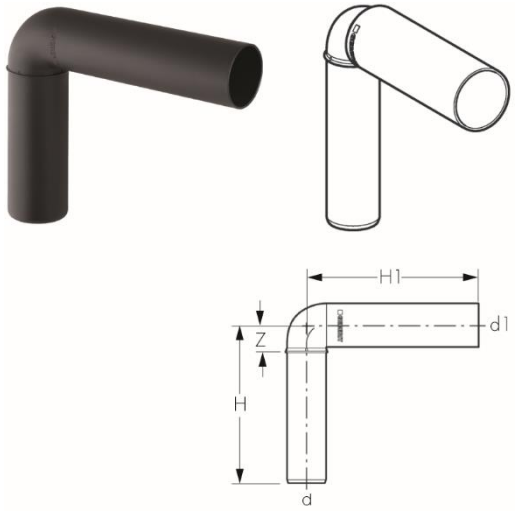
Geberit Silent-PP connection bend 90°, long	Article no.	DN	d, ø (mm)	d1, ø (mm)	H (cm)	H1 (cm)	Z (cm)
	390.186.14.1	40	40	46	16	5.5	11.3

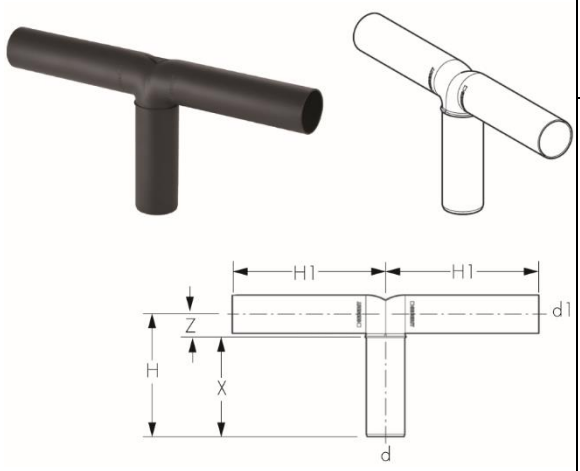
Table 8 Waste Fittings (continued)

Geberit Silent-PP connection bend 90°, extended



Article no.	DN	d, ø (mm)	d1, ø (mm)	H (cm)	H1 (cm)	Z (cm)
390.286.14.1	50	50	46	16	20	10.9
390.287.14.1	50	50	58	16	20	10.9

Geberit Silent-PP double connection bend 90°, extended



Article no.	DN	d, ø (mm)	d1, ø (mm)	d2, ø (mm)	H (cm)	H1 (cm)	X (cm)	Z (cm)
390.289.14.1	50 / 40 / 40	50	46	46	16	20	10.9	5.1

Table 8 Waste Fittings (continued)

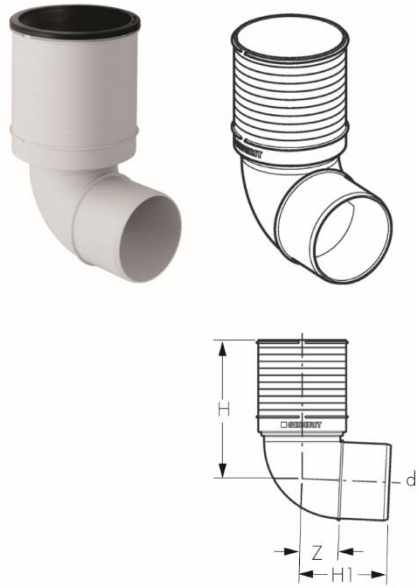
Geberit Silent-PP connection bend 87.5° for WC	Article no.	DN	d, ø (mm)	H (cm)	H1 (cm)	Z (cm)
	390.493.11.1	90	90	20	12.6	5.8
	390.593.11.1	100	110	19.1	11	4.9

Table 9 Seals

Geberit Silent-PP lip seal	Article no.	DN	d, ø (mm)
	242.278.00.1	30	32
	241.785.00.1	40	40
	241.786.00.1	50	50
	241.787.00.1	70	75
	241.790.00.1	90	90
	241.791.00.1	100	110
	242.279.00.1	125	125
	242.280.00.1	150	160
Geberit Silent-PP lip seal, symmetric	Article no.	DN	d, ø (mm)
	242.281.00.1	30	32
	241.792.00.1	40	40
	241.793.00.1	50	50
	241.794.00.1	70	75
	241.795.00.1	90	90
	241.796.00.1	100	110
	242.282.00.1	125	125
	242.283.00.1	150	160

Geberit Silent-PP sleeve	Article no.	d, ø (mm)
	241.797.00.1	110

Table 10 Material properties of Silent PP Pipes

Property	Test method reference	Specification
Basic Material	N/A	Polypropylene copolymer
Filler (for middle layer)	N/A	Talcum
Reference density (middle layer)	BS EN ISO 1183-1	1.1 – 1.2 g·cm^3
Thermal stability - OIT (middle layer)	BS EN 728	≥ 8 minutes (200^{o}C)
Longitudinal reversion	BS EN ISO 2505	≤2% (150°C, 60 minutes)

Table 11 Material properties of Silent PP Fittings

Property	Test method reference	Specification
Basic Material	N/A	Polypropylene copolymer
Filler (for middle layer)	N/A	Chalk
Reference density (middle layer)	BS EN ISO 1183-1	1.2 g·cm^3
Thermal stability - OIT (middle layer)	BS EN 728	≥ 8 minutes (200°C)
Melt mass-flow rate	BS EN ISO 1133-1	0.4 – 2.0 g (10 min)$^{-1}$ 2.16 kg at 230°C

2 Manufacture

2.1 Gerberit Silent-PP Pipes are made of three-layers that are manufactured from PP material (PP copolymer, mineral reinforced PP and PP copolymer) by coextrusion in one step. Most Gerberit Silent-PP Fittings, Connections and Waste Fittings are manufactured through injection moulding, some fittings which consist of several fittings' parts are welded together. The EPDM sealing rings are externally bought-in products.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of Geberit International AG has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 and BS EN ISO 14001 : 2015 by SQS (Certificate H20644).

3 Delivery and site handling

3.1 Pipes up to a length of 0.5 m are delivered to site loosely packaged in cardboard boxes. Pipes with a length of 1.0 m are connected with pipe clamps and form a pipe bundle. Several pipe bundles are packed on frame pallets. All fittings are loosely packaged in cardboard boxes.

3.2 Pipes, fittings and connections must be transported in their original packaging (cardboard box, pipe bundles or frame pallets) if possible. When loading pipes and fittings, it must be made sure that no damage can occur during transport. For this purpose, couplings must be stacked in an offset pattern. During unloading, it must be ensured that pipes and fittings are not thrown down. Pipes must not be dragged across the floor or pulled over edges.

3.3 Handling, storage and transportation of the pipes, fittings and connections must be in accordance with the Certificate holder's instructions, with care taken to avoid damage by dropping or dragging. They should be adequately supported at all times, and contact with sharp projections, protuberances and abrasive surfaces should be avoided.

3.4 When long-term storage is envisaged, the products must be protected from direct sunlight. If protection cannot be provided, consideration must be given to the effects of daily exposure to direct sunlight:

- up to 3 months — negligible UV degradation but possible extreme surface temperatures of up to 80°C may cause some localised distortion

- 3 to 12 months — may have significant effect on the impact resistance and physical properties
- over 12 months — damage will occur unless protection provided.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Geberit Silent-PP Pipes, Fittings, Connections and Waste Fittings.

Design Considerations

4 General

4.1 Geberit Silent-PP Pipes, Fittings, Connections and Waste Fittings are satisfactory for use in domestic, commercial and public buildings, and in installations designed in accordance with BS EN 12056-2 : 2000 and BS EN 12056-3 : 2000 for conveyance of above ground soil and waste drainage and gravity rainwater pipes as is permitted to be discharged into public sewers by the Water Industry Act 1991 (England and Wales), and surface water and sewage as is permitted and defined by the Sewerage (Scotland) Act 1968 and the Water and Sewerage Services (Northern Ireland) Order 2006.

4.2 This Certificate does not cover the use of any of the products for untreated trade effluent.

5 Practicability of installation

The products are designed to be installed by a competent general plumber, or a contractor, experienced with these types of products.

6 Strength

6.1 Geberit Silent-PP Pipes, Fittings, Connections and Waste Fittings will have adequate resistance to the forms of loading associated with installation.

6.2 The products should be protected from impacts, for example from being dropped from a height.

7 Performance of joints

7.1 When correctly made, the joints will not be adversely affected by thermal movement.

7.2 The joints will remain watertight under conditions of pipeline movement in the range expected to occur in normal good drainage practice.

8 Flow characteristics

A system comprising Geberit Silent-PP Pipes, Fittings, Connections and Waste Fittings will have normal flow characteristics associated with conventional domestic plastics drainage systems and sewerage systems.

9 Resistance to chemicals

9.1 Geberit Silent-PP Pipes, Fittings, Connections and Waste Fittings are resistant to a wide range of chemicals. The suitability of the products for a particular application can be determined using ISO TR 10358 : 1993. The advice of the Certificate holder should be sought for resistance to chemicals not covered by this document.

9.2 The products will be unaffected by the types and quantities of chemicals likely to be found in drainage and sewage effluents defined in section 4.1.

10 Resistance to elevated temperatures

The products have adequate resistance to the temperatures likely to occur in drainage and sewage effluents defined in section 4.1.

11 Properties in relation to fire

11.1 The products passing through a fire rated wall or floor should not be used on buildings in England that have a storey at least 18 m above ground level and contain: one or more dwellings, an institution, a room for residential purposes (excluding any room in a hostel, hotel or boarding house), student accommodation, care homes, sheltered housing, hospitals or dormitories in boarding schools.

11.2 The national Building Regulations concerning the prevention of fire spread by fire-stopping must be taken into account at the design stage, if the products pass through a fire rated wall or floor.

11.3 In common with other plastic materials, the products are combustible and in a fire may ignite and burn. They will not result in the release of toxic gases, however, consideration should be given to the need for protective, fire-resistant ducting when assessing the fire risk in a building, particularly where large quantities of piping may otherwise be exposed.

11.4 When pipes with an internal diameter greater than 40 mm are used, special attention must be taken to confirm whether or not the products have to be encased by protective shafts or isolated between separating elements.

12 Maintenance

The products can be removed and replaced. The installation must be designed so that access is provided in accordance with BS EN 12056-2 : 2000, Annex NG4.

13 Durability

In the opinion of the BBA, when used in accordance with this Certificate, the material from which the products are manufactured will not significantly deteriorate, and the anticipated service life of the products will be in excess of 50 years.

14 Reuse and recyclability

The products contain PP, which can be recycled.

Installation

15 Procedure

15.1 Installation of Geberit Silent-PP Pipes, Fittings, Connections and Waste Fittings must be in accordance with the Certificate holder's guidelines, and the recommendations for building drainage and sanitation given in BS EN 12056-5 : 2000 and BS EN 1451-1 : 2017, where appropriate.

15.2 Geberit Silent-PP Pipes can be cut to length and chamfered with tools that are typically available at a building site. Chamfer dimensions are given in the Certificate holder's installation guidelines for all pipe diameters.

15.3 Geberit Silent-PP pipelines are laid against the direction of flow. 45° bends can be used to realise changes in direction. The minimum slope of the underground, collector and connection pipes should comply with those stipulated in the country specific regulations.

15.4 For establishing push-in connections, the appropriate installer must:

- check the position of the inserted lip seal in the sleeve corrugation and make sure it is intact
- clean the inside of the sleeve with lip seal and the push-fit end with a clean cloth
- if necessary, spread a thin layer of lubricant evenly on the spigot
- insert the spigot up to the sleeve base while twisting the pipe slightly
- mark the inserted pipe at the sleeve edge with a marker pen
- if necessary, pull the inserted pipe end back 10 mm in the ring seal socket. This way, changes in the length of the pipe caused by heat can be accommodated in the ring seal sockets. This expansion compensation only refers to socket pipes, not to fittings. Fittings must always be inserted into the ring seal socket up to the insertion depth marking
- for the vertical installation of pipelines, the individual socket pipes must be fastened with pipe brackets under the socket. This prevents the pipe ends which were pulled back by 10 mm from subsequent slipping
- for vertical and horizontal installations of pipelines, sections must be equipped with an expansion compensation of 10 mm created in this way at least every 3 m or once per floor.

15.5 Fixed and loose pipe brackets are used for the installation and fastening of Geberit Silent-PP pipelines:

- fixed pipe bracket — installed directly after the ring seal socket in horizontal and vertical installation, and prevents the corresponding pipe or fitting from slipping out
- loose pipe bracket — used for laying pipes in vertical installation. In the case of horizontal installation, the loose pipe bracket serves as the actual support bracket.

15.6 The fastening distances (outside the scope of this Certificate) are given in the Certificate holder's installation guidelines for vertical and horizontal installation, as follows:

Table 12 Fastening distances for horizontal and vertical pipe layout

Diameter d, ø (mm)	Maximum fastening distance with horizontal pipe layout (m)	Maximum fastening distance with vertical pipe layout (m)
32	0.50	1.5
40	0.60	1.5
50	0.75	1.5
75	1.10	2.0
90	1.35	2.0
110	1.65	2.0
125	1.85	2.0
160	2.40	2.0

Technical Investigations

16 Tests

Tests were carried out as per BS EN 1451-1 : 2017 and the results assessed to determine:

For pipes:

- dimensions as per BS EN 1451-1 : 2017 and BS EN ISO 3126 : 2005
- impact resistance at (round the clock method) as per BS EN ISO 3127 : 2017
- impact resistance at (staircase method) as per BS EN ISO 11173 : 2017
- longitudinal reversion as per BS EN ISO 2505 : 2005

For fittings and connections:

- dimensions as per BS EN 1451-1 : 2017 and BS EN ISO 3126 : 2005

- impact strength (drop test) as per BS EN ISO 13263 : 2017
- effects of heating as per BS EN ISO 580 : 2005

For the system:

- water-tightness as per BS EN ISO 13254 : 2017
- airtightness as per BS EN ISO 13255 : 2017
- elevated temperature cycling as per BS EN ISO 13257 : 2018
- leak-tightness of joints as per BS EN ISO 13259 : 2018

For the material:

- reference density as per BS EN ISO 1183-1 : 2019
- melt-mass flow rate as per BS EN ISO 1133-1 : 2011
- thermal stability (OIT) as per BS EN 728 : 1997
- longitudinal reversion as per BS EN ISO 2505 : 2005.

17 Investigations

17.1 An evaluation of data was made to assess:

- practicability of installation
- flow characteristics
- resistance to chemicals.

17.2 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

17.3 A site visit was conducted to establish the ease of installation.

Bibliography

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BS EN 728 : 1997 *Plastics piping and ducting systems — Polyolefin pipes and fittings — Determination of oxidation induction time*

BS EN 1451-1 : 2017 *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure. Polypropylene (PP). Specifications for pipes, fittings and the system*

BS EN 12056-2 : 2000 *Gravity Drainage Systems inside Buildings — Sanitary pipework, layout and calculation*
BS EN 12056-3 : 2000 *Gravity Drainage Systems inside Buildings — Roof drainage, layout and calculation*
BS EN 12056-5 : 2000 *Gravity Drainage Systems inside Buildings — Installation and testing, instructions for operation, maintenance and use*

BS EN ISO 580 : 2005 *Plastics piping and ducting systems. Injection-moulded thermoplastics fittings. Methods for visually assessing the effects of heating*

BS EN ISO 1133-1 : 2011 *Plastics — Determination of the melt mass-flow rate (MFR) and the melt volume-flow rate (MVR) of thermoplastics — Standard method*

BS EN ISO 1183-1 : 2019 *Plastics — Methods for determining the density and relative density of non-cellular plastics — Immersion method, liquid pycnometer method and titration method*

BS EN ISO 2505 : 2005 *Thermoplastics pipes. Longitudinal reversion. Test methods and parameters*

BS EN ISO 3126 : 2005 *Plastics piping systems. Plastics components. Determination of dimensions*

BS EN ISO 3127 : 2017 *Thermoplastics pipes. Determination of resistance to external blows. Round-the-clock method*

BS EN ISO 9001 : 2015 *Quality Management System – Requirements*

BS EN ISO 14001 : 2015 *Environmental Management System – Requirements*

BS EN ISO 11173 : 2017 *Thermoplastics pipes. Determination of resistance to external blows. Staircase method*

BS EN ISO 13254 : 2017 *Thermoplastics piping systems for non-pressure applications - Test method for watertightness*

BS EN ISO 13255 : 2017 *Thermoplastics piping systems for soil and waste discharge inside buildings. Test method for airtightness of joints*

BS EN ISO 13257 : 2018 *Thermoplastics piping systems for non-pressure applications. Test method for resistance to elevated temperature cycling*

BS EN ISO 13259 : 2018 *Thermoplastics piping systems for underground non-pressure applications. Test method for leaktightness of elastomeric sealing ring type joints*

BS EN ISO 13263 : 2017 *Thermoplastics piping systems for non-pressure underground drainage and sewerage. Thermoplastics fittings. Test method for impact strength*

ISO TR 10358 : 1993 *Plastics pipes and fittings — Combined chemical-resistance classification table*

18 Conditions

18.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

18.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

18.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

18.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

18.5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

18.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.

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