

Geberit HDPE Soil & Waste System Specification Clauses

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1000 PERFORMANCE OBJECTIVES

The soil and waste from the building will be collected and discharged to the below ground drainage system by the Geberit Ltd. HDPE systems in full compliance with BS EN 12056 part 2 gravity drainage systems inside buildings. All products to be either manufactured to BS EN 1519 or third party approved covered by BBA Certificate No. 92/2729.

2000 SYSTEM DESCRIPTION

All soil and waste pipework to be the Geberit HDPE System in the size range 32mm to 315mm. All joints to either be Butt or electroweld sleeve welded unless expansion joints are required when the Geberit purpose made seal ring joint expansion fitting must be used. All pipes must be black in colour with a minimum of 2% carbon black to prevent UV degradation.

All pipes must have been tempered to reduce the risk of shortening (reversion) from high temperature discharges.

3000 MATERIALS

All materials will be manufactured under a BS.5750/ISO 9000 approved scheme.

All component parts of the system will be covered by manufacturers warranty.

Pipe fittings and accessories: HDPE carrying a current BBA Certificate No. 92/2729 or be manufactured to BS EN 1519.

Physical characteristics of HDPE for the installation

The data shown below lists the physical characteristics required for the material.

Characteristic	Unit	Test Method	Test Specimen	
Density	g/cm ³	Din 53479	Plate	0,953...0,955
Reduced specific	dl/g	ISO/R 1191	0,1% solution	3,0
Viscosity (viscosity Coefficient)			in decalin	
Melt-flow index MFI 190/5	g/10 mins	Din 537735	granulate	0,4...0,7

Mechanical characteristics, measure under standard climatic conditions 23° C, 50% relative air humidity **

Tensile strength	N/mm ²	Din 53455.ISO/	Test specimen 3	22
Elongation at yield stress	%	R 527: test velocity	with measurements	15
Ultimate tensile strength	N/mm ²	125 mm/min	in the ratio 1:4	32
Elongation at break	%			> 800
Limit bending strength	N/mm ²	Din 53452	Standard small bar	28
			Injection moulded	
Torsion rigidity	N/mm ²	Din 53447	60mm x 6,35mm x 2mm	240
Bending creep modulus	N/mm ²	Bending creep test	120mm x 20mm x 6mm	800
1 minute value		ob 3 N/mm ²		
Indentation hardness	N/mm ²	Din 53456	Sheet, 4mm	40
30 second value		Test strength 132, 4N		
Shore hardness D	—	Din 53505	Sheet, 4mm	60
Impact strength	nJ/mm ²	Din 53453	Standard small bar, moulded	15
Impact strength at + 23° C and -40° C	mJ/mm ²	Din 53453	Standard small bar, injection moulded	

Thermal characteristics

Crystallite melting range	°C	Polarisation microscope	Microtome section	127...131
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Mean linear expansion Coefficient between 20° C and 90° C	K-1	Din 52328: ASTM D 696	50mm x 4mm x 4mm	1,7.10-4
Heat conductivity at 20° C	$\frac{W}{m \cdot K}$	Din 52612 sheet method	Plate, 8mm injection moulded	0,43

Electrical properties measured under standard climatic conditions of 23° C, 50% relative air humidity.

Specific transmission resistance	.cm	Din 53482 VDE 0303 Part 3	Foil, 0,2mm	>10
Surface resistance		Din 53482 VDE 0303 Part 3	Sheet, 1mm	>10
Electric strength	kV/cm	Din 53481 VDE 0303 Part 2	Foil, 0,2mm	700
Dielectric index (relative dielectric constant) at 2 10Hz	–	Din 53483, VDE 0303 Part4 (immersion method)	Foil, 0,2mm	2,50
Dielectric loss factor Tan 8 at 50 Hz	–	Din 53483, VDE 0303 Part 4	Foil, 0,2mm	6.10-4
10Hz	–			5.10-4
10Hz	–			5.10-4
10Hz	–			6.10-4
Track resistance		Din 53 480 VDE 0303 Part1	Sheet > 3mm	KA3c
Arc resistance		Din 53484 VDE 0303, Part 5	120mm x 120mm x 10mm	L4

4000 INSTALLATION

All pipe and fitting joints including the joint to the outlet will be fusion welded either electro Sleeve coupling or butt weld.

Expansion joints must be provided at a maximum of 5 metre intervals and / or changes in direction more than a metre apart unless clipping are positioned to allow movement.

Intermediate sliding supports must be provided in accordance with the Geberit application technique manual

Alternative fixing of horizontal pipes in excess of 1m in length may be made using the Geberit purpose made pipe bracket to a square rail immediately above the pipe. Fixed points will be provided at 5m intervals by a means of a welded sleeve on the pipe and a purpose made bracket between the sleeve and the square rail. The rail to be fixed to the roof structure at maximum intervals of 2.5m. The installer should allow for some secondary bracketing as a result of the height from fixing rail to roof structure. The installer is advised to visit site to survey the proposed routes.

Intermediate sliding supports to fasten the pipe to the rail will be at the following intervals:

Pipe 40mm to 75mm diameter	0.8m.
Pipe 90mm diameter and above	10 x overall pipe diameter.

5000 FIRE PROTECTION FOR HDPE PIPEWORK

Where pipes penetrate through fire compartments, built in fire sleeves must be provided in accordance with BS 476 and Building Regulations part B. Fire protection to HDPE pipework sizes 56mm, 110mm and 160mm outside diameter, where it passes through a designated fire barrier, compartment walls or floors, to be Terrain 'FIREBRAKE' (Ref. No. 1725) intumescent firesleeves. All Fire Sleeves to be tested to SIS 02 48 20, edition 2 and to hold an independent test certificate and have a fire rating ability of at least four hours, when built into the protected wall/floor.

The sleeve construction is to be of stainless steel, lined with a graphite based intumescent laminate. The one-piece shell is to be wrapped around the pipe and held in place by a locking tab.

One end of the body is to have tabs with holes for fixing to the surface.

Fixing instructions are to be as per manufacturer's recommendations.

Vertical fixing within floor slab

Vertical HDPE pipework of sizes 56mm, 110mm and 160mm outside diameter passing through a fire barrier to have a Firebrake Sleeve, supplied by Geberit, positioned within the slab thickness, but exposed at the soffit. Following installation, all openings around the sleeve to be made good using material that will provide the necessary fire rating, i.e. concrete.

Vertical fixing to soffit of floor slab

Vertical HDPE pipework of sizes 56mm, 110mm and 160mm outside diameter passing through a fire barrier to have a 'Firebrake' Sleeve, supplied by Geberit, fitted around the pipework and to be securely fixed flush with the soffit of the floor slab. Any imperfection between Firebrake flange and mating surface to be filled with intumescent mastic (Terrain Intumescent Mastic Ref. No. 1727).

Horizontal fixing within wall thickness

Horizontal HDPE pipework of sizes 56mm, 110mm and 160mm outside diameter passing through a fire barrier to have a Firebrake Sleeve, supplied by Geberit, fitted around the pipework within the wall thickness with one face of the sleeve exposed. If wall is of sufficient thickness to accommodate two sleeves, each sleeve to have a face exposed.

Horizontal fixing to surface of wall

Horizontal HDPE pipework of sizes 56mm, 110mm and 160mm outside diameter passing through a fire barrier to have a Firebrake Sleeve, supplied by Geberit, fitted around the pipework on both sides of the barrier. Both sleeves to be securely fixed to the barrier and any imperfection in the joint between the Firebrake flange and the barrier surface to be filled with an intumescent mastic (Terrain Intumescent Mastic Ref. No. 1727).

6000 HEALTH AND SAFETY

When the horizontal high level pipework is being installed at high level, the installer will be responsible for providing a suitable working platform for the installation of the pipework.

Where any power tools or electrical equipment is used in the installation of Geberit pipework a Risk assessment must be carried out before the commencement of work

7000 RECORD DRAWINGS

The installer will keep a set of working drawings on site marked-up to show "as installed" routes, sizes, access locations, invert levels etc. On completing the installation the installer will incorporate the alterations onto their working drawings using computer aided draughting and issue to the Client via the engineer.

It should be noted that the installation would not be deemed complete until the record drawings and where necessary revised calculations have been issued and accepted.

8000 OPERATING AND MAINTENANCE MANUALS

The installer will issue four bound copies of Operating and Maintenance manuals for the soil & waste disposal system to include the following as minimum:-

- (a) Indicating names and address of client, project manager, architect, consulting engineers, contractors and installer.
- (b) Description of systems installed.
- (c) Planned maintenance requirements.
- (d) Details of guarantee.
- (e) Isometrics (which have been produced using CAD).

It should be noted that the installation would not be deemed complete until the Operating and Maintenance Manuals have been issued and accepted.

9000 INSPECTION and TESTING

The work shall be inspected and tested during installation at agreed stages. **ALL WORK WHICH WILL BE CONCEALED SHALL BE TESTED BEFORE IT IS FINALLY ENCLOSED.** A final test shall be made upon completion for soundness and performance in accordance with BS EN 12056 Code of Practice for Sanitary Pipework

All completed soil & waste systems to be air tested to a minimum of 38mm water gauge over 3 minutes. There will be no drop in pressure during this period in time.