



FLOWTITE Case Studies

- Stormwater Systems -



AMIAANTIT PIPE SYSTEMS

The FLOWTITE GRP piping products and accessories sold by the AMIANTIT Group offer many advantages for the use in stormwater applications.



The worldwide product availability of FLOWTITE GRP pipes has established projects all over the world. This case study brochure represents only a small extract of the available references.

Many other countries around the world realized a huge number of installations and an increasing number of projects are recently in work.




Further information about additional references and case studies can be found on our website at www.amiantit.com!

Additional information about product advantages and the available product range of our GRP pipes for many applications can be requested from your local dealer.




Case Study -1-

PROJECT NAME:	Combined sewer overflow system in Gattendorf	
Community/Country:	Germany / Gattendorf	
Amiantit location	AMIANTIT Germany	
Description:	Combined sewer overflow system with storage capacity of 325 m ³ .	
<i>application:</i>	Stormwater	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	1 bar	
<i>type of project:</i>	<ul style="list-style-type: none"> ■ new installation 	
<i>demanded standards / specifications / approvals:</i>	DIN 14364 DIN EN 1610	
<i>Special requirement on pipe-system:</i>	Buoyancy protection; fast installation; special construction; individual solution	
<i>project value in US\$:</i>	US\$ 216,410	
	<i>chosen pipe system:</i>	<ul style="list-style-type: none"> ■ GRP round filament
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight ■ corrosion resistance ■ flow characteristics ■ mech. properties ■ high product life; fast and easy installation; economical; variable system/material; less maintenance as result of self cleaning effect
Project owner:	Community Gattendorf	
consultant / engineer:	Ing. Bruchner, Konratsreuth	
contractor:	Vogtländische Straßen-, Tief- und Rohrleitungsbau GmbH, Rodewisch	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	165	
<i>Diameter DN min / max (mm):</i>	1600	
<i>Pressure PN min / max (bar):</i>	1	
<i>Stiffness SN min / max (N/m²):</i>	10000	
<i>joint types:</i>	FLOWTITE standard coupling	
<i>fittings used:</i>	Elbows, manholes	
Installation Details:		
<i>type:</i>	<ul style="list-style-type: none"> ■ open trench 	
<i>laying depth (m):</i>	0.70 - 1.70	
<i>native soil type:</i>	Soil class G3	
<i>backfill soil type / compaction:</i>	Soil class G1	
<i>Project duration:</i>	4 months	
<i>Year start / end:</i>	2009	
		

Case Study -2-

PROJECT NAME:	Cascade sewer with storage capacity and overflow in Berg Hardermannsgrün		
Community/Country:	Germany / Berg Hardermannsgrün		
Amiantit location	AMIANTIT Germany		
Description:	Worldwide first "cascade sewer with storage capacity and overflow" to defuse hydraulic bottlenecks in sewer systems; a combination of pipes with storage capacity and special sewer constructions from the continuously winded pipes of the FLOWTITE system.		
<i>application:</i>	Stormwater		
<i>transported medium</i>	Raw water		
<i>working pressure</i>	1 bar		
<i>type of project:</i>	■ new installation		
<i>demanded standards / specifications / approvals:</i>	DIN 14364 DIN EN 1610		
<i>Special requirement on pipe-system:</i>	Buoyancy protection; fast installation; special construction; individual solution		
<i>project value in US\$:</i>	US\$ 743,000		
			
<i>chosen pipe system:</i>	■ GRP round filament		
<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight ■ high product life; fast and easy installation; economical; variable system/material; less maintenance as result of self cleaning effect 		
Project owner:	Community Berg		
consultant / engineer:	USS Consult, Naila		
contractor:	Vogtländische Straßen-, Tief- und Rohrleitungsbau GmbH, Rodewisch		
Pipe Details - material:			
<i>Total pipeline length (m):</i>	750		
<i>Diameter DN min / max (mm):</i>	500 / 2900		
<i>Pressure PN min / max (bar):</i>	1		
<i>Stiffness SN min / max (N/m²):</i>	5000		
<i>joint types:</i>	FLOWTITE standard coupling		
<i>fittings used:</i>	none		
Installation Details:			
<i>type:</i>	■ open trench		
<i>laying depth (m):</i>	1 - 5.80		
<i>native soil type:</i>	Soil class G3		
<i>backfill soil type / compaction:</i>	Soil class G1 (sand & gravel); grain size of 8/16mm and 16/32mm		
<i>Project duration:</i>	12 months		
<i>Year start / end:</i>	2007 / 2008		
Summary:	<p>Worldwide first "cascade sewer with storage capacity and overflow"; a 1000 cubic meters holding, about 150 meters cascade sewer with storage capacity and overflow, which extends about three area levels; components:</p> <ul style="list-style-type: none"> - An inflow construction - 3 parts of cascade sewer with storage capacity and overflow DN 2900 - 2 cascade constructions - 1 manhole with regulation - 1 overflow with wellspring pot DN 2900 		
			



Case Study -3-

PROJECT NAME:	Overflow system for stormwater in Langgöns	
Community/Country:	Germany / Langgöns	
Amiantit location	AMIANTIT Germany	
Description:	Underground GRP reservoir for a motorway deposition, with 800m³ storage capacity, originally tendered in concrete.	
<i>application:</i>	Stormwater	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	1 bar	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	DIN 14364 DIN EN 1610	
<i>Special requirement on pipe-system:</i>	Buoyancy protection; fast installation; special construction; individual solution	
<i>project value in US\$:</i>	US\$ 509,200	
	<i>chosen pipe system:</i>	■ GRP round filament
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight ■ high product life; fast and easy installation; economical;
Project owner:	ASV, Schotten	
consultant / engineer:	ASV, Schotten	
contractor:	Herzog, Marburg	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	170	
<i>Diameter DN min / max (mm):</i>	2700	
<i>Pressure PN min / max (bar):</i>	1	
<i>Stiffness SN min / max (N/m²):</i>	10000	
<i>joint types:</i>	FLOWTITE standard coupling	
<i>fittings used:</i>	none	
Installation Details:		
<i>type:</i>	■ open trench	
<i>laying depth (m):</i>	2.0	
<i>native soil type:</i>	Soil class G3	
<i>backfill soil type / compaction:</i>	Soil class G1 and G2	
<i>Project duration:</i>	1.5 months	
<i>Year start / end:</i>	2008	
		




Case Study -4-

PROJECT NAME:	Overflow system for stormwater in Lübbenau (1,200m³)	
Community/Country:	Germany / Lübbenau	
Amiantit location	AMIANTIT Germany	
Description:	1,200m ³ overflow system for stormwater.	
<i>application:</i>	Stormwater	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	1 bar	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	DIN 14364 DIN EN 1610	
		chosen pipe system: ■ GRP round filament
		why our product? ■ light weight ■ high product life; fast and easy installation; economical; less maintenance as result of self cleaning effect
Project owner:	Kaufland Logistik GmbH, Lübbenau	
consultant / engineer:	Meinberg + Meinberg Planungs- und Projektsteuerungsgesellschaft	
contractor:	STRABAG AG Berlin-Brandenburg, Niederlassung Lübben	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	255	
<i>Diameter DN min / max (mm):</i>	2500	
<i>Pressure PN min / max (bar):</i>	1	
<i>Stiffness SN min / max (N/m²):</i>	5000	
Installation Details:		
<i>type:</i>	■ open trench	
<i>laying depth (m):</i>	5.5	
<i>native soil type:</i>	Soil class G2	
<i>backfill soil type / compaction:</i>	Soil class G2	
<i>Project duration:</i>	1 month	
<i>Year start / end:</i>	2009	
		


Case Study -5-

PROJECT NAME:	Frevar Rabekken	
Community/Country:	Fredrikstad, Norway	
Amiantit location	AMIANTIT Norway	
Description:	Pipes with manholes in a special design.	
<i>application:</i>	Stormwater	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	1 bar	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	EN 1796	
<i>Special requirement on pipe-system:</i>	Manholes	
<i>project value in US\$:</i>	US\$ 180,000	
	<i>chosen pipe system:</i>	■ GRP round filament
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight ■ corrosion resistance
Project owner:	Frevar KF, Fredrikstad	
consultant / engineer:	Cowi AS, Fredrikstad	
contractor:	Leif Grimsrud AS, Fredrikstad	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	700	
<i>Diameter DN min / max (mm):</i>	600	
<i>Pressure PN min / max (bar):</i>	1	
<i>Stiffness SN min / max (N/m²):</i>	10000	
<i>joint types:</i>	FLOWTITE standard coupling	
<i>fittings used:</i>	Special designed manholes	
Installation Details:		
<i>type:</i>	■ open trench	
<i>trench dimensions (m):</i>	2.5	
<i>laying depth (m):</i>	1.7 - 2.0	
<i>native soil type:</i>	Clay	
<i>backfill soil type / compaction:</i>	Gravel	
<i>Project duration:</i>	5 months	
<i>Year start / end:</i>	2009	
Summary:	Specially tailor – made manholes	
		

Case Study -6-

PROJECT NAME:	Modlinska street Warsaw	
Community/Country:	Warsaw, Poland	
Amiantit location	AMIANTIT Poland	
Description:	Rainwater retention tank for rainwater drained from northern road branch of Modlińska Street in Warsaw.	
<i>application:</i>	Stormwater	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	1 bar	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	AT-2002-1285-04	
<i>Special requirement on pipe-system:</i>	DN 3000mm, tightness and large rainwater retention capability	
<i>project value in US\$:</i>	US\$ 535,000	
<i>chosen pipe system:</i>	■ GRP round filament	
<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight ■ corrosion resistance ■ flow characteristics ■ mech. properties 	
Project owner:	ZDM Warsaw	
consultant / engineer:	BAKS Sp. z o.o. Warsaw	
contractor:	AJMAX Sp. z o.o., Warsaw	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	2,562	
<i>Diameter DN min / max (mm):</i>	200 / 3000	
<i>Pressure PN min / max (bar):</i>	1	
<i>Stiffness SN min / max (N/m²):</i>	10000	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	Manholes	
Installation Details:		
<i>type:</i>	■ open trench	
<i>trench dimensions (m):</i>	3.8	
<i>laying depth (m):</i>	7	
<i>native soil type:</i>	Medium sand	
<i>backfill soil type / compaction:</i>	Medium sand Proktor 98%	
<i>quality measures during installation:</i>	DN 3000mm retention tank leak tightness test	
<i>Project duration:</i>	5 months	
<i>Year start / end:</i>	2008	
Summary:	First use of DN 3000 mm FLOWTITE GRP pipe for a retention tank in Poland.	
		



Case Study -7-

PROJECT NAME:	Unilever Poznań	
Community/Country:	Poznań, Poland	
Amiantit location	AMIANTIT Poland	
Description:	Retention tank for the Unilever plant buildings.	
<i>application:</i>	Stormwater	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	1 bar	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	AT-15-7880/2008	
<i>project value in US\$:</i>	US\$ 250,000	
	<i>chosen pipe system:</i>	■ GRP round filament
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight ■ corrosion resistance ■ flow characteristics ■ mech. properties
Project owner:	Unilever Poland SA, Poznań	
consultant / engineer:	EKOPROJEKT, Poznań	
contractor:	PHARMGAS SA, Poznań	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	102	
<i>Diameter DN min / max (mm):</i>	2400	
<i>Pressure PN min / max (bar):</i>	1	
<i>Stiffness SN min / max (N/m²):</i>	5000	
<i>joint types:</i>	FLOWTITE standard couplings, Straub joints	
<i>fittings used:</i>	Manholes	
Installation Details:		
<i>type:</i>	■ open trench	
<i>trench dimensions (m):</i>	35 x 25 m	
<i>laying depth (m):</i>	4.5	
<i>native soil type:</i>	Sand	
<i>backfill soil type / compaction:</i>	Sand	
<i>Project duration:</i>	12 months	
<i>Year start / end:</i>	2007 / 2008	
Summary:	The retention tank made of GRP pipes is now saving the investor from inundation during heavy rain falls.	
		

Case Study -8-

PROJECT NAME:	Wilanowska street Warsaw	
Community/Country:	Warsaw, Poland	
Amiantit location	AMIANTIT Poland	
Description:	Installation of DN 3000mm rainwater retention tank in Wilanowska Street in Warsaw.	
<i>application:</i>	Stormwater	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	1 bar	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	AT-2002-1285-04	
<i>Special requirement on pipe-system:</i>	tightness and large rainwater volume retention capability	
<i>project value in US\$:</i>	US\$ 1,340,000	
	<i>chosen pipe system:</i>	■ GRP round filament
	<i>other materials in this project?</i>	Meyer Polycrete pipes DN 400
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight ■ corrosion resistance ■ flow characteristics ■ mech. properties
Project owner:	ZDM Warsaw	
consultant / engineer:	AZET Sp. z o.o., Warsaw	
contractor:	Pol-Aqua, Piaseczno	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	1,766	
<i>Diameter DN min / max (mm):</i>	200 / 3000	
<i>Pressure PN min / max (bar):</i>	1	
<i>Stiffness SN min / max (N/m²):</i>	10000	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	Manholes	
Installation Details:		
<i>type:</i>	■ open trench	
<i>laying depth (m):</i>	5.0	
<i>native soil type:</i>	Medium sand	
<i>backfill soil type / compaction:</i>	Medium sand Proktor 98%	
<i>quality measures during installation:</i>	DN 3000 mm retention tank leak tightness test	
<i>Project duration:</i>	6 months	
<i>Year start / end:</i>	2009	
Summary:	The biggest current installation in Poland for retention tanks made of DN 3000mm FLOWTITE GRP pipes.	
		



Case Study -9-

PROJECT NAME:	İSKİ Besiktas Sewage Project	
Community/Country:	Besiktas, Turkey	
Amiantit location	Subor Boru Sanayi ve Ticaret A.Ş.	
Description:	Project collects storm water sewage from Besiktas in İstanbul.	
<i>application:</i>	Stormwater	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	6 bar	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	TSEN 1796 ASTM AWWA	
<i>Special requirement on pipe-system:</i>	fast installation; tailor-made construction	
		<p><i>chosen pipe system:</i> ■ GRP round filament</p> <p><i>why our product?</i></p> <ul style="list-style-type: none"> ■ light weight ■ corrosion resistance ■ flow characteristics ■ mech. properties ■ price
Project owner:	Water and Sewage Authorization of İstanbul (İSKİ), Turkey	
consultant / engineer:	Water and Sewage Authorization of İstanbul (İSKİ), Turkey	
contractor:	Salman Construction Company, İstanbul, Turkey	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	1,378	
<i>Diameter DN min / max (mm):</i>	2400	
<i>Pressure PN min / max (bar):</i>	6	
<i>Stiffness SN min / max (N/m²):</i>	5000	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	Elbows, tees, flanges	
Installation Details:		
<i>type:</i>	■ open trench	
<i>trench dimensions (m):</i>	8.5	
<i>laying depth (m):</i>	1.5	
<i>native soil type:</i>	Medium, soil group 3	
<i>backfill soil type / compaction:</i>	Crashed stone/ Impact Compactor, Plate Compactor	
<i>deflection min/max:</i>	0.5°	
<i>quality measures during installation:</i>	Deflection control and hydrostatic pressure tests	
<i>Project duration:</i>	3.5 months	
<i>Year start / end:</i>	2002	
Summary:	FLOWTITE GRP pipes were preferred due to their easy installation features. It was possible to complete the project in a short time.	



Case Study -10-

PROJECT NAME:	İSKİ Kasimpasa Sewage Project	
Community/Country:	Kasimpasa, Turkey	
Amiantit location	Subor Boru Sanayi ve Ticaret A.Ş.	
Description:	Project collects storm water from Kasimpasa in İstanbul.	
<i>application:</i>	Stormwater	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	6 bar	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	TSEN 1796 ASTM AWWA	
<i>Special requirement on pipe-system:</i>	fast installation	
	<i>chosen pipe system:</i>	■ GRP round filament
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight ■ corrosion resistance ■ flow characteristics ■ mech. properties ■ price
Project owner:	Water and Sewage Authorization of İstanbul (İSKİ), Turkey	
consultant / engineer:	Water and Sewage Authorization of İstanbul (İSKİ), Turkey	
contractor:	Fermak Construction Company, Turkey	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	168	
<i>Diameter DN min / max (mm):</i>	2200	
<i>Pressure PN min / max (bar):</i>	6	
<i>Stiffness SN min / max (N/m²):</i>	5000	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	Elbows, tees, flanges	
Installation Details:		
<i>type:</i>	■ open trench	
<i>trench dimensions (m):</i>	8.5	
<i>laying depth (m):</i>	1.5	
<i>native soil type:</i>	cohesive soil	
<i>backfill soil type / compaction:</i>	Crashed stone	
<i>deflection min/max:</i>	0.5°	
<i>quality measures during installation:</i>	Deflection control	
<i>Project duration:</i>	1 week	
<i>Year start / end:</i>	2006	
Summary:	Due to easy installation as an advantage at big diameters, FLOWTITE GRP pipes were preferred in this project.	

Case Study -11-

PROJECT NAME:	İSKİ Beylerbeyi Sewage Project	
Community/Country:	Beylerbeyi, Turkey	
Amiantit location	Subor Boru Sanayi ve Ticaret A.Ş.	
Description:	Project collects stormwater from Beylerbeyi in İstanbul.	
<i>application:</i>	Stormwater	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	6 bar	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	TSEN 1796 ASTM AWWA	
<i>Special requirement on pipe-system:</i>	3 pipelines in one trench; fast installation	
	<i>chosen pipe system:</i>	■ GRP round filament
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight ■ corrosion resistance ■ flow characteristics ■ mech. properties ■ price
Project owner:	Water and Sewage Authorization of İstanbul (İSKİ), Turkey	
consultant / engineer:	Water and Sewage Authorization of İstanbul (İSKİ), Turkey	
contractor:	Çelikler Construction Company, Turkey	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	1,800	
<i>Diameter DN min / max (mm):</i>	2100 / 2400	
<i>Pressure PN min / max (bar):</i>	6	
<i>Stiffness SN min / max (N/m²):</i>	5000	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	Elbows, tees, reducers, flanges	
Installation Details:		
<i>type:</i>	■ open trench	
<i>trench dimensions (m):</i>	8.5	
<i>laying depth (m):</i>	1.5	
<i>native soil type:</i>	Granular soil	
<i>backfill soil type / compaction:</i>	Crashed stone/ Impact Compactor, Plate Compactor	
<i>thrust blocks / lockjoints:</i>	10 thrust blocks	
<i>deflection min/max:</i>	0.5°	
<i>quality measures during installation:</i>	Deflection control	
<i>Project duration:</i>	5 months	
<i>Year start / end:</i>	2005	
Summary:	In the project, three parallel lines of GRP pipes were installed in the same trench; production and installation of the pipes were completed in 2 months.	

Case Study -12-

PROJECT NAME:	SASKİ Samsun Sewage Project	
Community/Country:	Samsun, Turkey	
Amiantit location	Subor Boru Sanayi ve Ticaret A.Ş.	
Description:	Project collects Storm water from Samsun.	
<i>application:</i>	Stormwater	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	6 bar	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	TSEN 1796 ASTM AWWA	
	<i>chosen pipe system:</i>	■ GRP round filament
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight ■ corrosion resistance ■ flow characteristics ■ mech. properties ■ price
Project owner:	Water and Sewage Authorization of Samsun (SASKİ), Turkey	
consultant / engineer:	Water and Sewage Authorization of İstanbul (İSKİ), Turkey	
contractor:	Siyahkalem Construction Company, İstanbul, Turkey	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	5,369	
<i>Diameter DN min / max (mm):</i>	1000 / 1600	
<i>Pressure PN min / max (bar):</i>	6	
<i>Stiffness SN min / max (N/m²):</i>	2500	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	Elbows, tees, flanges	
Installation Details:		
<i>type:</i>	■ open trench	
<i>trench dimensions (m):</i>	8.5	
<i>laying depth (m):</i>	1.5	
<i>native soil type:</i>	Cohesive and granular soil	
<i>backfill soil type / compaction:</i>	Crashed stone	
<i>deflection min/max:</i>	0.5°	
<i>Project duration:</i>	7 months	
<i>Year start / end:</i>	2005	
Summary:	FLOWTITE GRP pipes were the preferred pipe material due to delivery advantages and easy and fast installation features in the project.	

Case Study -13-

PROJECT NAME:	Combined Sewer Overflow system Laufenbach	
Community/Country:	Gossau, Switzerland	
Amiantit location	AMIANTIT Germany	
Description:	Installation of a stormwater tank.	
<i>application:</i>	Stormwater	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	1 bar	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	SIA	
<i>Special requirement on pipe-system:</i>	lightweight components, fast and easy installation	
<i>project value in US\$:</i>	US\$ 260,000	
	<i>chosen pipe system:</i>	■ GRP round filament
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight ■ high product life; fast and easy installation; complete system; potable water capability
Project owner:	Community of Gossau	
consultant / engineer:	Benz AG, Zürich	
contractor:	Künzli AG, Gossau	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	400	
<i>Diameter DN min / max (mm):</i>	1400	
<i>Pressure PN min / max (bar):</i>	1	
<i>Stiffness SN min / max (N/m²):</i>	10000	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	none	
Installation Details:		
<i>type:</i>	■ open trench	
<i>trench dimensions (m):</i>	2.00 x 4.20	
<i>laying depth (m):</i>	3.4	
<i>native soil type:</i>	Soil class G2	
<i>backfill soil type / compaction:</i>	encased in concrete	
<i>Project duration:</i>	2 months	
<i>Year start / end:</i>	2008	
		

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