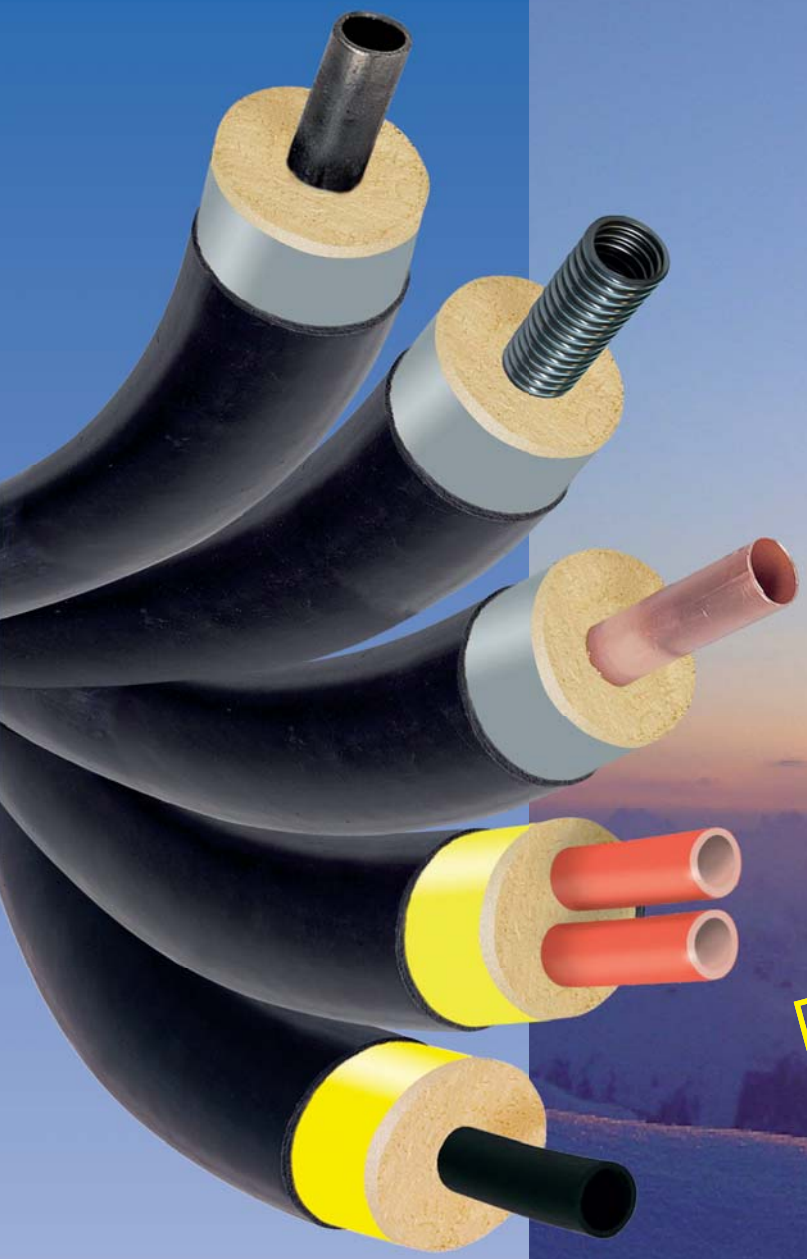
isoplus®

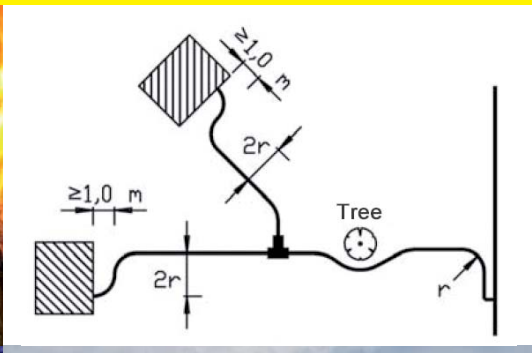
Transporting energy.



λ_{50} = 0,0218 W/(m·K)

FLEXIBLE COMPOUND SYSTEMS

www.isoplus-pipes.com



System

The flexible pipe system of **isoplus** is especially suitable for house connections, future extension works and can be led around obstructions such as buildings, trees or other pipeline systems. It can also be used for complete low-temperature systems in smaller nominal dimensions. Due to the continuous production of **isoplus** flex pipes a longitudinal compound pipe system comes into being, that means all three components (carrier pipe + insulation + jacket pipe) are connected nonpositive with each other.

Because of very small minimum bending radius of Flex pipes, it will be always possible to choose the direct way around obstacles, respectively to the house connection area. Due to the big delivery lengths the pipe laying works can be carried out in a very short time, without any joint-connections.

Also the underground engineering works can be reduced essentially because of the extreme narrow pipe trenches. During the laying works the hindrance of the building site can be reduced to a minimum. For these reasons flexible **isoplus** pipe systems represent a technically fully developed and **eco**nomically as well as **eco**logically perfect laying procedure for energy supply.

Heat-Insulation

Flex pipes are insulated with Polyurethane-hard-foam (PUR) in especially therefore designed prescription.
Foamed continuously in the production street aroundthe service pipe, a high quality insulation will be reached, with excellent thermal conductivity, λ_{50} **= 0,0218** W/(m•K) at low specific weight, due to an exothermical chemical reaction.

isoplus is using generally PUR-foam which is 100% free of chlorofluorocarbon (CFC). Cyclopentan (C_5H_{10}) is exclusively used as foaming agent. That means lowest possible ODP- and GWP-value at extremest heat insulation quality. ODP (ozone-reducing potential) = 0, GWP (greenhouse potential) = < 0,001 !

Jacket Pipe

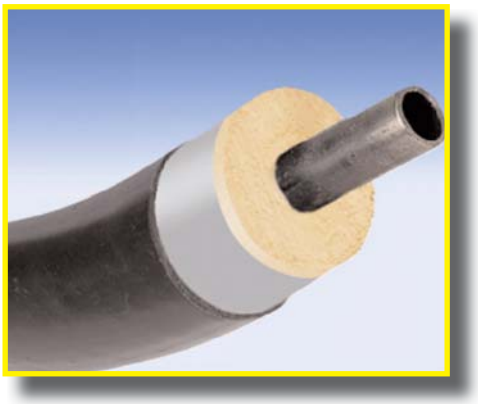
As jacket pipe for flexible pipes the proved PE-LLD with even surface will be used. **P**oly**e**thylene **L**inear **L**ow **D**ensity is a seamless viscoplastic thermoplastical material. Thermal conductivity λ_{PE} = 0,33 W/(m•K). PE-LLD is resistant against nearly all weather conditions and UV-rays, as well as against nearly all chemical reactions in the soil.
Therefore PE is recommended in all national and international standards as sole suitable material for direct underground laying.

Advantages of isoplus - Flexible Pipes

⇒ no anchors required for wall penetrations
⇒ Weldability of the carrier pipe (not at **isowell**)
⇒ more economic production of the preinsulated pipe system
⇒ lower pipe-covering-heights are possible, respectively shallow pipe laying
⇒ **isowell, isopex** and **isoclima** require no pipe-statical calculation (self-compensating)
⇒ nearly no assembling work for joint connections (trench can be filled immediately)
⇒ longitudinal watertight compound system, short delivery times, due to central stock
⇒ minimum bending radius starting from 700 mm, delivery in coils up to 360 m single lengths
⇒ more easy trench-buildings in intensively constructed areas, reduction of total time for construction, less traffic-interference

isoflex / isowell

The **isoflex**-carrier pipe consists of a longitudinal seam-welded, custom rolled precision steel pipe with especial measure-exactness and plain inner surface. Dimensions according to DIN EN 10220, Material P195GH+N (normally glowed), No. 1.0348. Technical delivery conditions acc. to option 1 of DIN EN 10305-3, with works certificate (APZ) acc. to EN 10204-3.1.



Connection Technology

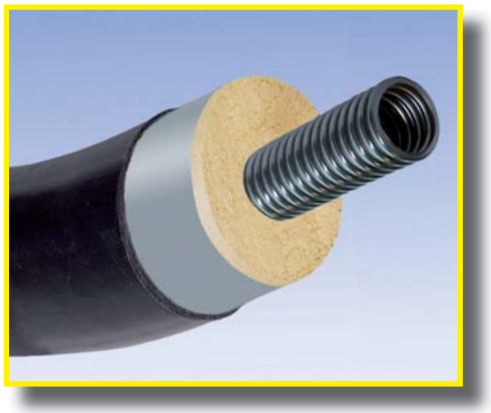
The connection of the steel pipe will be made by autogenously-welding or by Tungsten-Inert gas (TIG) welding procedure.

Application Range

Max. continuous operating temperature: 120 °C acc. to EN 15632-4
Permissible short-term peak temperature T_{max} : 140 °C acc. to EN 15632-4
Max. permissible operating pressure p_B : 25 bar
Max. permissible axial strength σ_{max} : 150 N/mm^2
Leak detection: prepared for **IPS-Cu**
Possible liquids: all heating-waters and other material-suitable liquids

Dimensions steel pipe P195GH + N			Jacket-Pipe-Outside-Ø D_a in mm	Max. delivery length in 1,00 m steps **L** in m	Maximum-Coil-outside-Ø d_R in mm	Minimum-Bending-radius **r** in m	Weight without water **G** in kg/m
Type	Outside-Ø d_a in mm	Wall-thickness **s** in mm					
isoflex - 20	20,0	2,0	75	100	2220	0,8	1,55
isoflex - 28	28,0	2,0	75	100	2220	0,8	1,93
isoflex - 28 v	28,0	2,0	90	100	2300	0,9	2,12
isoflex - 28 + 28	28,0	2,0	110	100	2440	1,1	3,72

The **isowell**®-carrier pipe consists of a flexible, spiral corrugated HYDRA® stainless-steel tube, longitudinal seam-welded, Material No. 1.4404. Technical delivery conditions and material according to EN 10028-7.



Connection Technology

The connection of the stainless-steel tube will be made by a screw flange, insulated by a heat shrink sleeve system.

Application Range

Max. continuous operating temperature: 120 °C acc. to EN 15632-4
Permissible short-term peak temperature T_{max} : 140 °C acc. to EN 15632-4
Max. permissible operating pressure p_B : 25 bar
Leak detection: prepared for **IPS-Cu**, **IPS-NiCr** and Brandes
Possible liquids: all heating-waters and other material-suitable liquids

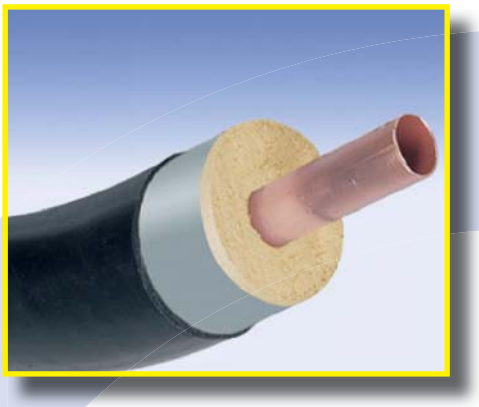
Dimensions stainless-steel pipe			Jacket-Pipe-Outside-Ø D_a in mm	Max. delivery length in 1,00 m steps **L** in m	Maximum-Coil-outside-Ø d_R in mm	Minimum-Bending-radius **r** in m	Weight without water **G** in kg/m
Type	Inside-Ø d_{a1} in mm	Wall-thickness **s** in mm					
isowell - 25	32,0	0,3	110	150	2530	0,9	1,51
isowell - 32	40,0	0,4	125	150	2550	1,0	1,93
isowell - 40	49,0	0,5	125	150	2550	1,0	2,19
isowell - 50	61,0	0,5	140	120	2690	1,1	2,63

In order to avoid the exchange of PUR-cell gas, in all **isoplus**-flexible pipes a diffusion barrier is included. This barrier-foil will be implemented between PUR-foam and jacket pipe during the production procedure. The used barrier-foils are granting the flexible pipes a constant and durable low engery loss during the duration of operation.

For **isoflex & isowell** a 100 % diffusion tight aluminium-foil will be used as barrier. In order to keep the compound system, the foil is coated on both sides by corona treated polyethylene.

isocu

The **isocu**-pipe consists of a seamless cold drawn copper pipe, according to EN 1057.
Dimensions, statical values and tolerances according to DIN 12449, Material Cu-DHP/R 220 (No. CW024A), in normal wall thickness, technical delivery conditions according to DIN 12735-2.



Connection Technology

The connection of the copper pipe will be made by capillary-soldering-fittings, acc. to DIN 1254 with the same wall thickness than the pipes, or by special suitable press fittings. It is not allowed to enlarge the copper pipes. The recommendations and/or instructions of the manufacturers of the fittings concerning soldering procedure and kind of soldering have to be considered.

Application Range

Max. continuous operating temperature: 120 °C acc. to EN 15632-4
Permissible short-term peak temperature T_{max}: 140 °C acc. to EN 15632-4
Maximum operating pressure p_B: 25 bar
Maximum permissible axial-tension σ_{max}: 110 N/mm^2
Leak detecting: without
Possible liquids: all potable- and heating-waters and other material-suitable liquids

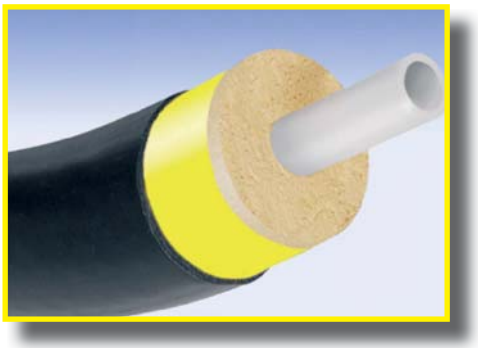
Dimensions copper pipe Cu-DHP/R 220			Jacket-Pipe-Outside-Ø **D_a** in mm	Max. delivery length in 1,00 m steps **L** in m	Maximum Coil-Outside-Ø **d_R** in mm	Minimum-Bending-radius **r** in m	Weight without water **G** in kg/m
Type	Outside-Ø **d_a** in mm	Wall-thickness **s** in mm					
isocu - 22	22,0	1,0	65	360	2200	0,8	1,13
isocu - 28	28,0	1,2	75	360	2200	0,8	1,55
isocu - 22+22	2 • 22,0	1,0	90	200	2300	0,9	2,01
isocu - 28+28	2 • 28,0	1,2	90	200	2300	0,9	2,61

For **isocu** a 100 % diffusion tight aluminium-foil will be used as barrier. In order to keep the compound system, the foil is coated on both sides by corona treated polyethylene.

Generally **isocu** pipes are produced and delivered **without leak deceting**.

isopex

The **isopex**-pipe consists of cross-linked **(X) PE-Xa**. Basic material is **PE**, with peroxide **(a)** added during extrusion. General material requirements acc. to EN ISO 15875-1, pipe series respectively measures acc. to EN ISO 15875-2. Resistant to aggressive chemicals and water.



Connection Technology

The connection of **PE-Xa** pipes is made in buried sections preferably with press connections-, clamp connections- and connection pieces. At accessible material transitions inside of buildings as well as for sanitary installations also screwed connections can be used. Electro - welding coupler available on request.

Application Range

Max. continuous operating temperature: 80 °C acc. to EN 15632-2
Permissible short-term peak temperature T_{max}: 95 °C acc. to EN 15632-2
Maximum operating pressure p_B: 6/10 bar
Leak detecting: without
Possible liquids: all potable- and heating-waters and other material-suitable liquids

Pipe systems according to EN 15632-2 are designed with the following temperature profile for a service life of at least 30 years of age:
29 years at 80 °C + 1 year at 90 °C + 100 hours at 95 °C
Other temp. / time profiles are applicable to ISO 13760 (Miner´s rule).
The maximum operating temperature must not exceed 95 ° C.

PIPE	Dimensions PE-Xa-Pipe: Type	Outside-Ø d_a in mm	Wall-thickness s in mm	Jacket-Pipe-Outside-Ø D_a in mm	Max. delivery length in 1,00 m steps L in m	Maximum Coil-Outside-Ø d_R in mm	Minimum-Bending-radius r in m	Weight without water G in kg/m
Pipe series 1; serie 5; SDR 11; operation pressure max. 6 bar, PN 12,5; with red coloured organic oxygen-diffusion-barrier E/VAL (Ethylenvenylalcohol) according to DIN 4726; according to AGFW FW 420.								
SINGLE-	**H - 25 / H - 25 v**	25,0	2,3	75 / 90	360 / 250	2530 / 2530	0,7 / 0,8	0,81 / 1,01
	H - 32 / H - 32 v	32,0	2,9	75 / 90	360 / 250	2530 / 2530	0,8 / 0,8	0,90 / 1,09
	H - 40 / H - 40 v	40,0	3,7	90 / 110	250 / 250	2530 / 2530	0,8 / 0,9	1,22 / 1,57
	H - 50 / H - 50 v	50,0	4,6	110 / 125	250 / 170	2530 / 2550	0,9 / 1,0	1,76 / 2,01
	H - 63 / H - 63 v	63,0	5,8	125 / 140	170 / 150	2550 / 2690	1,0 / 1,1	2,33 / 2,73
	H - 75 / H - 75 v	75,0	6,8	140 / 160	150 / 140	2690 / 2700	1,1 / 1,2	3,07 / 3,48
	H - 90 / H - 90 v	90,0	8,2	160 / 180	140 / 85	2700 / 2700	1,2 / 1,4	4,01 / 4,45
	H - 110 u* / H - 110 / H - 110 v*	110,0	10,0	160 / 180 / 200	140 / 85 / 75	2700/2700/2700	1,2/1,4/1,6	4,86/5,30/5,78
	H - 125 / H - 125 v*	125,0	11,4	180 / 200	85 / 75	2700 / 2700	1,4 / 1,6	6,07 / 6,54
	H - 140*	140,0	12,7	200	75	2700	1,6	7,37
	H - 125 Stg.	125,0	11,4	225	available only as a pipe bar in 12 m!			8,14
	H - 140 Stg.	140,0	12,7	225	available only as a pipe bar in 12 m!			8,92
	H - 160 Stg.	160,0	14,6	250	available only as a pipe bar in 12 m!			11,20
DOUBLE-	**H - 20 + 20 / H - 20 + 20 v***	2 • 20,0	2,0	75 / 90	360 / 250	2530 / 2530	0,9 / 0,9	0,87 / 1,06
	H - 25 + 25 / H - 25 + 25 v	2 • 25,0	2,3	90 / 110	250 / 250	2530 / 2530	0,9 / 0,9	1,14 / 1,49
	H - 32 + 32 / H - 32 + 32 v	2 • 32,0	2,9	110 / 125	250 / 170	2530 / 2550	0,9 / 1,0	1,66 / 1,91
	H - 40 + 40 / H - 40 + 40 v	2 • 40,0	3,7	125 / 140	170 / 150	2550 / 2690	1,0 / 1,1	2,17 / 2,57
	H - 50 + 50 / H - 50 + 50 v	2 • 50,0	4,6	160 / 180	140 / 85	2700 / 2700	1,2 / 1,4	3,36 / 3,80
	H - 63 + 63 / H - 63 + 63 v*	2 • 63,0	5,8	180 / 200	85 / 70	2700 / 2700	1,4 / 1,6	4,44 / 4,91
	H - 75 + 75*	2 • 75,0	6,8	200	75	2700	1,4	5,59

* Special material, H - 110 v, H - 125 v, H - 140, H - 63+63 v and H - 75+75 difficult processing at low temperature (below 5 °C), (Da=200mm!!)

Pipe series 2; serie 3,20; SDR 7,40; operation pressure max. 10 bar, PN 20; tested according to DVGW-paper W 531, with DVGW and ÖVGW-certificate.								
SINGLE-	**S - 25**	25,0	3,5	75	360	2530	0,7	0,88
	S - 32	32,0	4,4	75	360	2530	0,8	1,01
	S - 40	40,0	5,5	90	250	2530	0,8	1,39
	S - 50	50,0	6,9	110	250	2530	0,9	2,04
	S - 63	63,0	8,7	125	170	2550	1,0	2,77
DOUBLE-	**S - 25 + 20**	25,0 / 20,0	3,5 / 2,8	90	250	2530	0,9	1,21
	S - 32 + 20	32,0 / 20,0	4,4 / 2,8	110	250	2530	0,9	1,69
	S - 40 + 25	40,0 / 25,0	5,5 / 3,5	125	170	2550	1,0	2,20
	S - 50 + 32	50,0 / 32,0	6,9 / 4,4	140	150	2690	1,1	3,02
	S - 63 + 32	63,0 / 32,0	8,7 / 4,4	160	140	2700	1,2	3,91

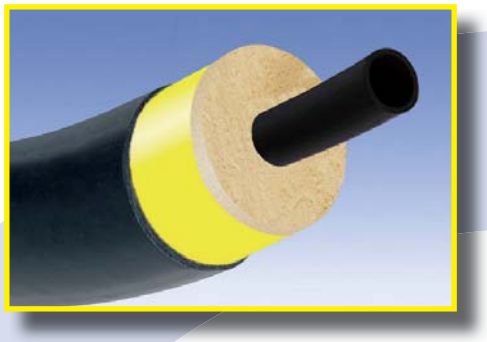
isopex contains a polyethylene-foil between insulation and jacket pipe. This foil will avoid the exchange of PUR-cell-gas as a barrier. That means the heat loss will remain on a constant low level during operation.
Generally **isopex** pipes are produced and delivered **without leak deceting**.

Heating

Sanitary

isoclima

The **isoclima** pipe consists of a seamlessly extruded, impact- and shatter-resistant, ductile and stable high-density polyurethane known as polyethylene 100. General quality requirements, pipe series, and measurements are in accordance with to DIN 8075, DIN 8074 / DIN EN 12201-2.
Polyethylene 100 pipes are tested for drinking water suitability from DN 20 to DN 50.



Connection Technology

A wide range of connection components is available. The connection of the **isoclima** pipe occurs in underground sections, preferably using weldable PEHD joints; butt welds, mirror-welds and screw-type[1] connections as well as clamp[2] connections are also options.

[1, 2] Caution, not permitted for drinking water applications!

Application Range

Maximum operating temperature* T_{max} : +40 °C*
Minimum operating temperature T_{min} : -40 °C
Maximum operating pressure* p_B : 11,6 bar*
Leak detecting: without
Possible liquids: Cold water, sewage, drinkable water - **NOT** allowed for gas supply!

* Design example: A service life of 50 years is achieved at a temperature of 40 °C and a pressure of 11,6 bar.
With increasing pressure and increasing temperature decreases the lifetime - context see table 2.

Dimension HD-PE 100 pipe			Jacket-Pipe Outside-Ø **D_a** in mm	Max. delivery-length in 1,00 m steps **L** in m	Max. coil-outside-Ø **d_a** in mm	Minimum bending-radius **r** in m	Weight without water **G** in kg/m
Type	Outside-Ø **d_a** in mm	Wall-thick-ness **s** in mm					
Pressure class SDR 11; ISO-S 5; PN 16, safety factor c = 1,25 (drinkable water, sewage)							
isoclima - 20	20,0	2,0	65	95	2500	0,8	0,65
isoclima - 25	25,0	2,3	75	95	2500	0,8	0,81
isoclima - 32	32,0	2,9	75	95	2500	0,9	0,89
isoclima - 40	40,0	3,7	90	95	2500	0,9	1,21
isoclima - 50	50,0	4,6	110	95	2500	1,0	1,75
isoclima - 63	63,0	5,8	125	150	2500	1,1	2,31
isoclima - 75	75,0	6,8	140	140	2700	1,2	3,04
isoclima - 90	90,0	8,2	160	120	2700	1,4	3,97
isoclima - 110 u	110,0	10,0	160	85	2700	1,4	4,80
isoclima - 110	110,0	10,0	180	85	2700	1,4	5,24

Tempera-ture in °C	Operating time in years	Operating pressure (Water) in bar
10	5	20,2
	10	19,8
	25	19,3
	50	19,0
20	5	16,9
	10	16,6
	25	16,2
	50	16,0
30	5	14,4
	10	14,1
	25	13,8
	50	13,5
40	5	12,3
	10	12,1
	25	11,8
	50	11,6
50	5	10,7
	10	10,4
	15	9,5
60	5	7,7

Table 2

isoclima contains a polyethylene-foil between insulation and jacket pipe. This foil will avoid the exchange of PUR-cell-gas as a barrier. That means the energy loss will remain on a constant low level during operation.

Generally **isoclima** pipes are produced and delivered **without leak deceting**.

Capacity [P] and Heat loss [q]

Type		Dimensioning						Heat-Loss***			
		Water-content **v** in Liter/m	Volume-flow **V´** in m^3/h	Flow-speed **w** in m/s	Transmittable capacity **P** in kW at spread*			Coefficient u in W/(m•K)	**q** per **pipe-meter** in W/m at average temperature T_M		
					20 K (6 K**)	30 K	40 K		70 K	60 K	50 K
	isoflex - 20	0,201	0,36 - 0,72	0,5 - 1,0	8 - 17	13 - 25	17 - 34	0,0955	5,732	4,777	3,821
	isoflex - 28	0,452	0,81 - 1,63	0,5 - 1,0	19 - 38	28 - 57	38 - 76	0,1248	7,490	6,242	4,993
	isoflex - 28 v	0,452	0,81 - 1,63	0,5 - 1,0	19 - 38	28 - 57	38 - 76	0,1072	6,430	5,358	4,287
	isoflex - 28 + 28	0,452	0,81 - 1,63	0,5 - 1,0	19 - 38	28 - 57	38 - 76	0,1615	9,692	8,076	6,461
	isowell - 25	0,881	0,87 - 1,45	0,3 - 0,5	20 - 34	30 - 51	40 - 67	0,1111	6,667	5,556	4,445
	isowell - 32	1,392	1,58 - 2,49	0,4 - 0,6	37 - 58	55 - 87	74 - 116	0,1218	7,307	6,089	4,871
	isowell - 40	2,091	2,72 - 4,07	0,4 - 0,6	63 - 95	95 - 142	126 - 190	0,1482	8,894	7,412	5,929
	isowell - 50	3,187	4,73 - 7,36	0,5 - 0,7	110 - 171	165 - 257	220 - 343	0,1628	9,767	8,139	6,511
	isocu - 22	0,314	0,57 - 1,13	0,5 - 1,0	13 - 26	20 - 39	26 - 53	0,1146	6,873	5,728	4,582
	isocu - 28	0,515	0,93 - 1,85	0,5 - 1,0	22 - 43	32 - 65	43 - 86	0,1248	7,490	6,242	4,994
	isocu - 22 + 22	0,314	0,57 - 1,13	0,5 - 1,0	13 - 26	20 - 39	26 - 56	0,1586	9,514	7,928	6,343
	isocu - 28 + 28	0,515	0,93 - 1,85	0,5 - 1,0	22 - 43	32 - 65	43 - 86	0,2182	13,089	10,908	8,726
isopex Heating-Single Standard	H - 25	0,327	0,59 - 1,18	0,5 - 1,0	14 - 27	21 - 41	27 - 55	0,1121	6,724	5,604	4,483
	H - 32	0,539	1,17 - 2,33	0,6 - 1,2	27 - 54	41 - 81	54 - 108	0,1405	8,428	7,023	5,619
	H - 40	0,835	1,80 - 3,61	0,6 - 1,2	42 - 84	63 - 126	84 - 168	0,1468	8,807	7,339	5,871
	H - 50	1,307	3,30 - 6,59	0,7 - 1,4	77 - 153	115 - 230	153 - 307	0,1514	9,084	7,570	6,056
	H - 63	2,075	5,23 - 10,5	0,7 - 1,4	122 - 243	182 - 365	243 - 487	0,1712	10,275	8,562	6,850
	H - 75	2,961	8,53 - 17,1	0,8 - 1,6	198 - 397	298 - 595	397 - 793	0,1851	11,104	9,254	7,403
	H - 90	4,254	12,3 - 24,5	0,8 - 1,6	285 - 570	428 - 855	570 - 1140	0,1989	11,932	9,944	7,955
	H - 110 u	6,362	20,6 - 41,2	0,9 - 1,8	479 - 959	719 - 1438	959 - 1918	0,2807	16,839	14,033	11,226
	H - 110	6,362	20,6 - 41,2	0,9 - 1,8	479 - 959	719 - 1438	959 - 1918	0,2270	13,622	11,351	9,081
	H - 125	8,203	26,6 - 53,2	0,9 - 1,8	618 - 1237	927 - 1855	1237 - 2473	0,2880	17,282	14,402	11,522
	H - 140	10,315	33,4 - 66,8	0,9 - 1,8	777 - 1555	1166 - 2332	1555 - 3110	0,2945	17,669	14,724	11,779
	H - 125 Stg.	8,203	26,6 - 53,2	0,9 - 1,8	618 - 1237	927 - 1855	1237 - 2473	0,2307	13,841	11,534	9,227
	H - 140 Stg.	10,315	33,4 - 66,8	0,9 - 1,8	777 - 1555	1166 - 2332	1555 - 3110	0,2747	16,480	13,733	10,986
	H - 160 Stg.	13,437	48,4 - 96,7	1,0 - 2,0	1125 - 2250	1688 - 3376	2250 - 4501	0,2903	17,418	14,515	11,612
isopex Heating-Single reinforced	H - 25 v	0,327	0,59 - 1,18	0,5 - 1,0	14 - 27	21 - 41	27 - 55	0,0976	5,857	4,881	3,905
	H - 32 v	0,539	1,17 - 2,33	0,6 - 1,2	27 - 54	41 - 81	54 - 108	0,1185	7,109	5,924	4,739
	H - 40 v	0,835	1,80 - 3,61	0,6 - 1,2	42 - 84	63 - 126	84 - 168	0,1214	7,286	6,072	4,858
	H - 50 v	1,307	3,30 - 6,59	0,7 - 1,4	77 - 153	115 - 230	153 - 307	0,1329	7,971	6,643	5,314
	H - 63 v	2,075	5,23 - 10,5	0,7 - 1,4	122 - 243	182 - 365	243 - 487	0,1498	8,985	7,488	5,990
	H - 75 v	2,961	8,53 - 17,1	0,8 - 1,6	198 - 397	298 - 595	397 - 793	0,1573	9,435	7,863	6,290
	H - 90 v	4,254	12,3 - 24,5	0,8 - 1,6	285 - 570	428 - 855	570 - 1140	0,1704	10,221	8,518	6,814
	H - 110 v	6,362	20,6 - 41,2	0,9 - 1,8	479 - 959	719 - 1438	959 - 1918	0,1939	11,635	9,696	7,757
	H - 125 v	8,203	26,6 - 53,2	0,9 - 1,8	618 - 1237	927 - 1855	1237 - 2473	0,2368	14,206	11,838	9,470
isopex Heating-Double Standard	H - 20 + 20	0,201	0,36 - 0,72	0,5 - 1,0	8 - 17	13 - 25	17 - 34	0,1735	10,411	8,676	6,941
	H - 25 + 25	0,327	0,59 - 1,18	0,5 - 1,0	14 - 27	21 - 41	27 - 55	0,1773	10,637	8,864	7,091
	H - 32 + 32	0,539	1,17 - 2,33	0,6 - 1,2	27 - 54	41 - 81	54 - 108	0,1901	11,408	9,507	7,606
	H - 40 + 40	0,835	1,80 - 3,61	0,6 - 1,2	42 - 84	63 - 126	84 - 168	0,2154	12,921	10,768	8,614
	H - 50 + 50	1,307	3,30 - 6,59	0,7 - 1,4	77 - 153	115 - 230	153 - 307	0,2001	12,005	10,004	8,003
	H - 63 + 63	2,075	5,23 - 10,5	0,7 - 1,4	122 - 243	182 - 365	243 - 487	0,2401	14,405	12,004	9,603
	H - 75 + 75	2,961	8,53 - 17,1	0,8 - 1,6	198 - 397	298 - 595	397 - 793	0,2751	16,507	13,756	11,005
isopex Heating Double reinf.	H - 20 + 20 v	0,201	0,36 - 0,72	0,5 - 1,0	8 - 17	13 - 25	17 - 34	0,1391	8,345	6,954	5,564
	H - 25 + 25 v	0,327	0,59 - 1,18	0,5 - 1,0	14 - 27	21 - 41	27 - 55	0,1394	8,366	6,972	5,578
	H - 32 + 32 v	0,539	1,17 - 2,33	0,6 - 1,2	27 - 54	41 - 81	54 - 108	0,1593	9,561	7,967	6,374
	H - 40 + 40 v	0,835	1,80 - 3,61	0,6 - 1,2	42 - 84	63 - 126	84 - 168	0,1788	10,731	8,942	7,154
	H - 50 + 50 v	1,307	3,30 - 6,59	0,7 - 1,4	77 - 153	115 - 230	153 - 307	0,1687	10,121	8,434	6,747
	H - 63 + 63 v	2,075	5,23 - 10,5	0,7 - 1,4	122 - 243	182 - 365	243 - 487	0,1986	11,918	9,931	7,945
isopex Sanitary-Single	S - 25	0,254	1,10 - 1,28	1,2 - 1,4	26 - 30	38 - 45	51 - 60	0,1114	6,685	5,571	4,457
	S - 32	0,423	1,83 - 2,13	1,2 - 1,4	42 - 50	64 - 74	85 - 99	0,1395	8,368	6,974	5,579
	S - 40	0,661	2,85 - 3,33	1,2 - 1,4	66 - 77	100 - 116	133 - 155	0,1457	8,744	7,287	5,829
	S - 50	1,029	4,45 - 5,19	1,2 - 1,4	103 - 121	155 - 181	207 - 241	0,1503	9,016	7,513	6,011
	S - 63	1,633	7,06 - 8,23	1,2 - 1,4	164 - 191	246 - 287	328 - 383	0,1698	10,187	8,489	6,791
isopex Sanitary-Double	S - 25 + 20	0,254	1,37 - 1,56	1,5 - 1,7	32 - 36	48 - 54	64 - 72	0,1616	9,697	8,081	6,465
	S - 32 + 20	0,423	2,28 - 2,59	1,5 - 1,7	53 - 60	80 - 90	106 - 120	0,1587	9,523	7,936	6,349
	S - 40 + 25	0,661	3,57 - 4,04	1,5 - 1,7	83 - 94	124 - 141	166 - 188	0,1722	10,329	8,608	6,886
	S - 50 + 32	1,029	5,56 - 6,30	1,5 - 1,7	129 - 147	194 - 220	259 - 293	0,1960	11,758	9,798	7,838
	S - 63 + 32	1,633	8,82 - 9,99	1,5 - 1,7	205 - 232	308 - 349	410 - 465	0,1954	11,725	9,771	7,817
	isoclima - 20	0,201	0,87 - 1,01	1,2 - 1,4	6 - 7	-	-	0,1051	-	-	-
	isoclima - 25	0,327	1,41 - 1,65	1,2 - 1,4	10 - 11	-	-	0,1121	-	-	-
	isoclima - 32	0,539	2,33 - 2,72	1,2 - 1,4	16 - 19	-	-	0,1406	-	-	-
	isoclima - 40	0,835	3,61 - 4,21	1,2 - 1,4	25 - 29	-	-	0,1469	-	-	-
	isoclima - 50	1,307	5,65 - 6,59	1,2 - 1,4	39 - 46	-	-	0,1515	-	-	-
	isoclima - 63	2,075	8,96 - 10,46	1,2 - 1,4	63 - 73	-	-	0,1714	-	-	-
	isoclima - 75	2,961	15,99 - 18,12	1,5 - 1,7	112 - 126	-	-	0,1852	-	-	-
	isoclima - 90	4,254	22,97 - 26,04	1,5 - 1,7	160 - 182	-	-	0,1990	-	-	-
	isoclima - 110 u	6,362	38,93 - 43,51	1,7 - 1,9	272 - 304	-	-	0,2810	-	-	-
	isoclima - 110	6,362	38,93 - 43,51	1,7 - 1,9	272 - 304	-	-	0,2272	-	-	-

*The mentioned values are based on a medium specific heat capacity [cm] of the water of 4.187 J/(kg•K)

The transmittable capacity at **isoclima based on a spread of 6 K.

***All values are based on a covering height [ÜH] of 0,80 m, a conductivity of soil [λ_E] of 1,0 W/(m•K), a soil temperature [T_E] of 10 °C as well as a pipe distance of 100 mm at single pipes. Average temperature $T_M = (T_{VL} + T_{RL}) : 2$

Flex Pipe

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