

# ChillPex Pex/Al/Pex Piping Specification

## System Design and Application Classifications

Pipe Material	Applications	Service Temperatures	Maximum Working Pressure
PEX/AL/PEX	Hot & cold water supply, under floor heating, radiator heating, etc.	-40°C - +95°C	PN14 = 14 bar

### Technical data of overlapped welded multilayer pipes (Pex-Al-Pex)

Normal Size		16	20	25	32	40	50	63
Outside Diameter (mm)		16	20	25	32	40	50	63
Inside Diameter (mm)		12	16	20	26	32	41	51
Tolerance of Pipe Thickness (mm)	Min	2.00	2.00	2.40	2.90	4	4.5	6
	Max	2.25	2.25	2.70	3.20	4.6	5.2	6.8
Burst Pressure (mpa)	Min	6.00	5.00	4.00	4.00	4.00	3.50	3.50
Minimum Thickness of Aluminum (mm)		0.21	0.24	0.26	0.31	0.4	0.5	0.6
Long Term Hydrostatic Strength (mpa)		2.70	2.70	2.30	2.10	2.10	2.00	2.00

# ChillPex Pex-Al-Pex Piping Specification

## System Design and Application Classifications



### ChillPex Piping System is Designed for a 50 year life span

ChillPex multilayer product has been tested by SKZ Germany for the Determination of Long Term Hydrostatic Strength in compliance with ISO 9080:2003-10 and has been shown to have a predicted working life of greater than 50 years. The full SKZ report is provided in Appendix 1.

### Chlorine resistance

The WaterPex/HeatPex/ChillPex piping system has achieved the highest level of Chlorine resistance. For further information contact The Cousta Group

### UV Rating

The ChillPex multilayer pipe does not contain carbon black and are not UV rated. Regardless of UV resistance, current regulations require all Pex systems to be protected from direct exposure to UV light. A UV rated conduit is provided for the ChillPex system.

### Recommended Spacing of Brackets and Clips for WaterPex system.

Piping for Water Supply		Max. Recommended Spacing of Brackets and Clips (m)	
Size		Horizontal or Grades Pipes	Vertical Pipes
16mm		0.60	1.20
20mm		0.70	1.40
25mm		0.75	1.50
32mm		0.85	1.70
40mm		0.90	1.80
50mm		1.05	2.10
63mm		1.10	2.20

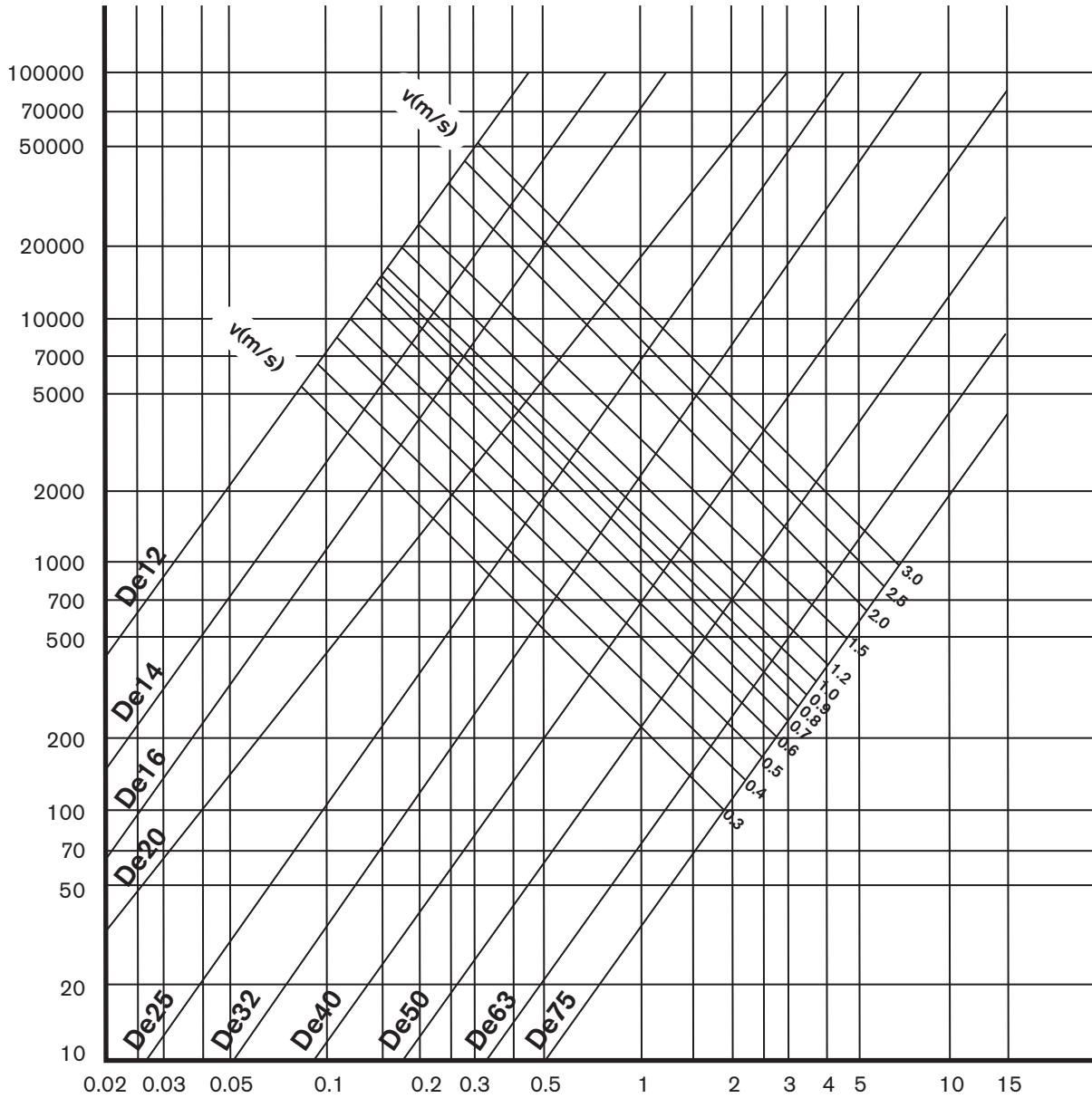
*Drawing on AS3500.5:2012 Table 2.14.4 for cold and heated water*

### Volume per metre of pipe

DN Size	ID	Radius (mm)	Radius (cm)	Height (cm)	Pi	Volume (ml/metre)	Volume (litre/metre)
16mmx2.0	12	6	0.6	100	3.14	113.1428571	0.113
20mmx2.0	16	8	0.8	100	3.14	201.1428571	0.201
25mmx2.0	20	10	1	100	3.14	314.28571473	0.314
32mmx2.0	26	13	1.3	100	3.14	531.1428571	0.531

# ChillPex Multilayer Piping System

## Flow Rate



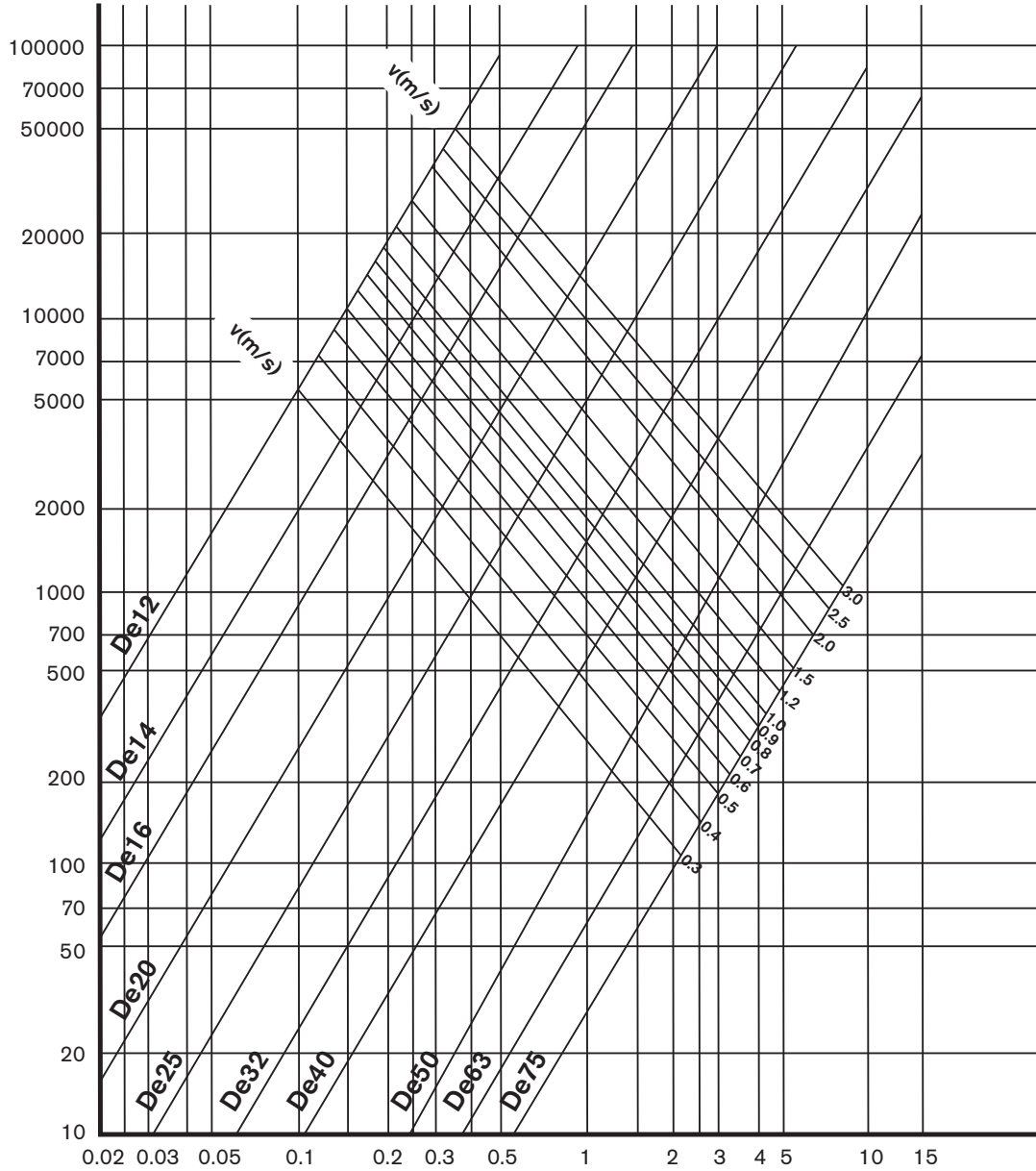
### Flux L/s

Water temperature: 10°C Medium: water

**Figure 1: pressure loss diagram of cold water pipe**

# ChillPex Multilayer Piping System

## Flow Rate



Flux L/s

Water temperature: 65°C Medium: water

Figure 1: pressure loss diagram of hot water pipe

# ChillPex Multilayer Piping System

## Pressure Loss Table - fluid Temperature of 10 C

(V – m/s; i – Pa/m)

Q		16mm		20mm		25mm		32mm		40mm	
m <sup>3</sup> /h	L/S	V	i	V	i	V	i	V	i	V	i
0.072	0.02	0.171	65.3								
0.108	0.03	0.257	134.0	0.155	40.2						
0.144	0.04	0.342	223.2	0.207	66.9	0.13	22.1				
0.18	0.05	0.428	331.7	0.258	99.4	0.162	32.9				
0.216	0.06	0.513	458.2	0.31	137.4	0.195	45.4				
0.252	0.07	0.599	602.4	0.362	180.7	0.227	59.6	0.139	18.6		
0.288	0.08	0.684	763.4	0.413	229.1	0.26	75.6	0.159	23.4		
0.324	0.09	0.77	940.9	0.465	282.2	0.292	93.3	0.179	28.9		
0.36	0.1	0.855	1134.3	0.517	340.3	0.325	112.4	0.199	34.9	0.131	12.8
0.432	0.12	1.027	1567.3	0.62	470.1	0.39	155.3	0.239	48.2	0.157	17.7
0.504	0.14	1.198	2060.3	0.723	617.9	0.455	204.1	0.278	63.3	0.183	23.3
0.576	0.16	1.369	2610.9	0.826	783.1	0.52	258.7	0.318	80.2	0.209	29.6
0.648	0.18	1.54	3217.7	0.93	965.2	0.585	318.9	0.358	98.9	0.235	36.3
0.72	0.2	1.711	3879.1	1.033	1163.6	0.65	384.4	0.398	119.3	0.262	43.9
0.9	0.25	2.139	5762.9	1.291	1728.6	0.812	571.0	0.497	177.2	0.327	65.1
1.08	0.3	2.566	7963.6	1.55	2388.7	0.974	789.0	0.597	244.8	0.392	90.0
1.26	0.35	2.994	10468.2	1.808	3139.9	1.137	1037.3	0.696	321.8	0.458	118.4

# ChillPex Multilayer Piping System

## Pressure Loss Table - fluid Temperature of 10 C



(V – m/s; i – Pa/m)

Q		v		25mm		32mm		40mm		50mm	
m <sup>3</sup> /h	L/S	V	i	V	i	V	i	V	i	V	i
1.44	0.4	2.066	3979.3	1.299	1314.4	0.796	407.9	0.523	150.0	0.317	45.3
1.62	0.45	2.324	4904.0	1.461	1619.9	0.895	502.6	0.589	184.8	0.356	55.8
1.8	0.5	2.583	5911.9	1.624	1952.8	0.995	606.0	0.654	222.8	0.396	67.2
1.98	0.55	2.841	7001.0	1.786	2312.5	1.094	717.6	0.719	263.9	0.435	79.6
2.16	0.6	3.1	8169.4	1.949	2698.6	1.193	837.4	0.785	307.9	0.475	92.9
2.34	0.65			2.111	3110.3	1.293	965.1	0.85	354.8	0.515	107.1
2.52	0.7			2.273	3547.4	1.392	1100.7	0.916	404.6	0.554	122.1
2.7	0.75			2.436	4009.2	1.492	1244.1	0.981	457.3	0.594	138.1
2.88	0.8			2.598	4623.4	1.591	1394.9	1.046	512.9	0.633	154.7
3.06	0.85			2.761	5005.9	1.691	1553.3	1.112	571.1	0.673	172.4
3.24	0.9			2.923	5540.1	1.79	1719.2	1.177	632.0	0.713	190.7
3.42	0.95			3.085	6097.9	1.89	1892.2	1.243	695.6	0.752	209.9
3.6	1					1.989	2072.5	1.309	761.9	0.792	229.9
3.96	1.1					2.188	2454.2	1.439	902.3	0.871	272.3
4.32	1.2					2.387	2863.8	1.57	1052.7	0.95	317.7
4.68	1.3					2.586	3300.8	1.7	1213.5	1.029	366.2
5.04	1.4					2.785	3764.5	1.831	1383.9	1.109	417.7

# ChillPex Multilayer Piping System

## Pressure Loss Table - fluid Temperature of 10 C

(V – m/s; i – Pa/m)

Q		16mm		20mm		25mm		32mm		40mm	
m <sup>3</sup> /h	L/S	V	i	V	i	V	i	V	i	V	i
0.072	0.02	0.171	51								
0.108	0.03	0.257	104.7	0.155	31.4						
0.144	0.04	0.342	174.4	0.207	52.3	0.13	17.3				
0.18	0.05	0.428	259.2	0.258	77.7	0.162	25.7				
0.216	0.06	0.513	358.1	0.31	107.4	0.195	35.5				
0.252	0.07	0.599	470.8	0.362	141.2	0.227	46.6	0.139	14.5		
0.288	0.08	0.684	596.6	0.413	179	0.26	59.1	0.159	18.3		
0.324	0.09	0.77	735.3	0.465	220.5	0.292	72.9	0.179	22.6		
0.36	0.1	0.855	886.4	0.517	265.9	0.325	87.8	0.199	27.3	0.131	10
0.432	0.12	1.027	1224.8	0.62	367.4	0.39	121.4	0.239	37.7	0.157	13.8
0.504	0.14	1.198	1610.1	0.723	482.9	0.455	159.5	0.278	49.5	0.183	18.2
0.576	0.16	1.369	2040.4	0.826	612	0.52	202.2	0.318	62.7	0.209	23.1
0.648	0.18	1.54	2514.6	0.93	754.3	0.585	249.2	0.358	77.3	0.235	28.4
0.72	0.2	1.711	3031.4	1.033	909.3	0.65	300.4	0.398	93.2	0.262	34.3
0.9	0.25	2.139	4503.6	1.291	1350.9	0.812	446.2	0.497	138.5	0.327	50.9
1.08	0.3	2.566	6223.4	1.55	1866.7	0.974	616.6	0.597	191.3	0.392	70.3
1.26	0.35	2.994	8180.7	1.808	2453.8	1.137	810.6	0.696	251.5	0.458	92.5

# ChillPex Multilayer Piping System

## Pressure Loss Table - fluid Temperature of 10 C



(V – m/s; i – Pa/m)

Q		20mm		25mm		32mm		40mm		50mm	
m <sup>3</sup> /h	L/S	V	i	V	i	V	i	V	i	V	i
1.44	0.4	2.066	3109.7	1.299	1027.2	0.796	318.8	0.523	117.2	0.317	35.4
1.62	0.45	2.324	3832.4	1.461	1265.9	0.895	392.8	0.589	144.4	0.356	43.6
1.8	0.5	2.583	4620	1.624	1526.1	0.995	473.6	0.654	174.1	0.396	52.5
1.98	0.55	2.841	5471.1	1.786	1807.2	1.094	560.8	0.719	206.2	0.435	62.2
2.16	0.6	3.1	6384.2	1.949	2108.9	1.193	654.4	0.785	240.6	0.475	72.6
2.34	0.65			2.111	2430.6	1.293	754.2	0.85	277.3	0.515	83.7
2.52	0.7			2.273	2772.2	1.392	860.2	0.916	316.2	0.554	95.4
2.7	0.75			2.436	3133.1	1.492	972.2	0.981	357.4	0.594	107.9
2.88	0.8			2.598	3613.1	1.591	1090.1	1.046	400.8	0.633	120.9
3.06	0.85			2.761	3912	1.691	1213.9	1.112	446.3	0.673	134.7
3.24	0.9			2.923	4329.5	1.79	1343.5	1.177	493.9	0.713	149
3.42	0.95			3.085	4765.4	1.89	1478.7	1.243	543.6	0.752	164
3.6	1					1.989	1619.6	1.309	595.4	0.792	179.7
3.96	1.1					2.188	1917.9	1.439	705.1	0.871	212.8
4.32	1.2					2.387	2238	1.57	822.7	0.95	248.3
4.68	1.3					2.586	2579.5	1.7	948.3	1.029	286.2
5.04	1.4					2.785	2941.9	1.831	1081.5	1.109	326.4



# Chill Pex F5 Fittings

## Technical Information

### (1) Design, materials of construction and operating conditions

Application	Cold water, hot water, gas and compressed air
Working Temperature	-20°C ~ 95°C

Structure Drawing And Main Components	Material
<p>The diagram shows a cross-section of a fitting assembly. Component 1 is the main body, component 2 is an isolating ring, component 3 is a sleeve, and component 4 is an O-ring. The assembly is shown connecting two pipes.</p>	<ol style="list-style-type: none"> <li>1. Main body: DZR Brass</li> <li>2. Isolating ring: Polyethylene</li> <li>3. Sleeve: Stainless Steel Sleeve SS304</li> <li>4. O-ring NBR</li> </ol>

### (2) Pressure loss

F5 U-Profile Press Fittings For Gas Supply														
Nominal size	16		20		25		32		40		50		63	
Zeta values § (-)/ equivalent Pipe length eL [m]	§	eL	§	eL	§	eL	§	eL	§	eL	§	eL	§	eL
Press Elbow 90	1.08	0.90	1.00	1.08	1.06	1.41	0.94	2.00	0.93	2.31	1.08	0.90	1.08	0.90
Equal Straight Union	0.62	0.52	0.54	0.58	0.56	0.73	0.48	1.02	0.46	1.16	0.62	0.52	-	-
Straight at flow speed	0.67	1.58	0.59	1.50	0.65	1.56	0.53	1.44	0.51	1.42	0.67	1.58	0.67	1.58
Branch at flow speed	0.56	1.32	0.63	1.62	0.87	2.08	1.12	3.06	1.28	3.56	0.56	1.32	0.56	1.32
Equal Tee "Y" type	1.20	1.00	-	-	-	-	-	-	-	-	1.20	1.00	1.20	1.00

Zeta Value and equivalent pipe length of F5 u-profile press fittings for gas supply.  
A water velocity of 2m/s has been used for the calculation of equivalent pipe lengths

# ChillPex F5 Fittings

## Technical Information



### (3) The torque resistance of thread

Thread Size	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"
Torque /N·m	75	100	125	160	200	250	300

### (4) Fitting stress corrosion resistance

All fittings are tested according to ASTM B858 "Standard Test Method for Ammonia Vapour Test for Determining Susceptibility to Stress Corrosion Cracking in Copper Alloys"

It is required that there shall be no evidence of cracking when viewed with a microscope with a minimum magnification of 10X.





# ChillPex Double Leak Detection Fittings

## Technical Information

### (1) Design, materials of construction and operating conditions

Application	Cold water, hot water
Working Temperature	-40°C ~ 80°C
Maximum working pressure	10 Bar
Application	Class 1,2/10Bar, Class 4,5/6Bar
Materials of Construction	Body - DZR brass      Sleeve - SS304 Isolating Ring - Polyethylene Orings - NBR and EPDM

### (2) Pressure loss

Inside Dimension (mm) Outside Dimension (mm)	1216		1620		2025	
		eL		eL		eL
Press Elbow 90 	1.2	1.44	1.01	1.52	1.01	1.81
Equal Straight Union 	0.81	0.97	0.62	0.94	0.62	1.11
Straight at flow speed 	0.86	1.03	0.67	1.00	0.66	1.19
Branch at flow speed 	1.77	2.12	1.58	2.37	1.57	2.83

### 3) The torque resistance of thread

Thread Size	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"
Torque / N·m	75	100	125	160	200	250	300

### 4) Fitting stress corrosion resistance

All fittings are tested according to ASTM B858 "Standard Test Method for Ammonia Vapour Test for Determining Susceptibility to Stress Corrosion Cracking in Copper Alloys"

It is required that there shall be no evidence of cracking when viewed with a microscope with a minimum magnification of 10X.

# ChillPex Double Leak Detection Fittings

## Design Features

Leak detection U-profile press fitting with double leakage indication



**Leakage Indication 1**  
Haven't been pressed



**Leakage Indication 2**  
After being pressed



### Technical Features:

Size: 16mm - 25mm  
Temperature range: -40°C - 95°C  
Pressure range: 0-10 Bar  
Pressing profile: U

### Design Criteria:

EN ISO21003, NK 18  
DVGW W534, AS4176  
AS537 .2

