



ADVANCED FLOW  
SYSTEMS™



# ULTRA SILENT™

Soundproof Drainage Piping Systems



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Vision without a task is only a dream.  
A task without a vision is but drudgery.  
But vision with a task is a dream fulfilled.

Anonymous

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**Dear Customers,**

All important pursuits begin with a vision. At Huliot, every day we focus our energies on giving practical meaning to our Corporate Vision, which we refashioned in September 2008. The company's vision appears on the wall at the entrance of all of our manufacturing plants and logistics centers. All Huliot staff, from management to production and logistics, share and embrace the same strategic vision.

Extracts from Huliot's Corporate Vision

Huliot will excel in the development and production of innovative solutions, creating added value for its customers.

Huliot will act to protect the physical environment, and to raise awareness about environmental protection.

Huliot's development of our Ultra Silent™ acoustically insulated drainage systems is an expression of our commitment to make our 'vision' a reality. Noise reduced drainage in the home is not only about environmental quality, but indeed about quality of life.

In our personal lives, we have all learned that we are capable of adapting to almost any situation, and we can learn to live with many hardships and disturbances, when faced with no choice. However, when we become aware of superior and readily available alternatives, most of us are no longer prepared to be deprived of them.

Huliot's Ultra Silent™ systems are so effective and so affordable that it makes no sense to install anything else in a new construction project. Beyond our commitment to realizing our 'vision', these product lines are also about leadership. We didn't just decide to make a better drainage system and reduce the noise of drainage flow...we decided and committed ourselves to producing the best acoustically insulated drainage system available in the world today. A challenging, yet achievable mission.

Over the past five years, we have implemented the largest investment plan in the company's 67 year history.

We purchased the most sophisticated production technology available, and invested in cutting-edge mold technology. We executed a relentless and uncompromising material development program to create the highest performing material compound available for its purpose.

Five years later, I am proud to declare: "MISSION ACCOMPLISHED".



**Paul Steiner**  
C.E.O.  
Huliot A.C.S. Ltd.

# Index

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The Ultra Silent™ System Advantages .....	4
Acoustic .....	5
1. Applications .....	7
2. Technical Data .....	8
• 2.1   Materials: .....	8
• 2.2   Method of connection .....	8
• 2.3   Marking .....	8
• 2.4   Temperature performance .....	9
• 2.5   Chemical resistance .....	9
• 2.6   Fire Classification .....	9
• 2.7   Ring stiffness .....	9
• 2.8   Elastic modulus .....	9
• 2.9   Elongation .....	9
• 2.10   Quality, Environmental, Occupational Health and Safety management .....	9
• 2.11   Standards .....	9
• 2.12   System approvals .....	9
3. Product Range .....	10
• Pipes .....	10
• Bend .....	12
• Branch .....	14
• Inspection Pipe, Double Socket, Sleeve .....	16
• Long Socket, Reducer .....	17
• WC Bend .....	18
• WC Connector .....	19
• Lockseal™, Ultra Seal™, Lubricant .....	20
• Trap .....	21
4. Sound Insulation .....	22
• 4.1   Why soundproof insulation .....	22
• 4.2   Noise sources and sound levels .....	22
• 4.3   Consideration of noise insulation in the planning phase .....	22
• 4.4   The soundproof insulation of Ultra Silent™ .....	24
5. Transportation, storage and installation .....	28
• 5.1   Loading, transport and unloading .....	28
• 5.2   Storage and protection .....	28
• 5.3   Cutting to length and assembly preparations .....	28
• 5.4   Push-fit connection method .....	29
• 5.5   Mounting with clamps .....	29
• 5.6   Installation instructions .....	30
• 5.7   Installing Ultra Silent™ system through ceilings, floors and walls .....	31
• 5.8   Repairs and irregular installation .....	32
• 5.9   LockSeal™ and installing in concrete .....	33
6. Appendices .....	35
• SKZ Certificate .....	35
• IBS Certificate .....	36
• Guarantee Declaration .....	37
• Chemical resistance .....	38

## Ultra Silent™ the System

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Reducing noise from wastewater and drainage systems in the home is not only about environmental quality but about quality of life.

Huliot's Ultra Silent™ present systems that are so effective and affordable it doesn't make sense to install anything else in a new construction project.

Huliot's Ultra Silent™ is an effective non-pressure soundproof wastewater and drainage piping system made of mineral-reinforced polypropylene compound (PP-MD). Available in diameters from 32 mm to 160mm, Ultra Silent™ products comply with all mechanical and measurement requirements (EN 1451-1) and suit above and below ground installation both inside and outside the building structure.

The system fittings are produced from black PP-MD compound and sealed with SBR-NR seals.

**All pipes have three layers to provide the highest mechanical performance.**

- External black PP layer provides high-impact strength and excellent UV resistance.
- Intermediate PP-MD layer provides acoustic insulation and increases the pipe stiffness.
- Internal low-friction white PP layer provides the best flow performance, high resistance to chemical agents and high-definition contrast for visual monitoring.

## Ultra Silent™ System Advantages

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- Fraunhofer IBP Test Laboratory results: Best measured acoustic insulation 19 db (A) at 4 l/s with basic clamps (EN 14366)
- Enhanced flow rate due to smart, progressive design and full range of fittings
- High temperature resistance: 95 °C long term, 98 °C short term
- Extreme low-temperature impact strength: -20 °C for assembly
- Improved fire behavior classification: D-s2-d2 (EN 13501-1)
- Lightweight, easy handling and installation: Push-fit, ring seal, connection method
- Swept branches improve the flow rate and reduce turbulence flow and accompanying airborne noise.
- Extra socket depth for increased connection stabilization.
- Best resistance to corrosive materials and longer lasting than other plastics and cast iron: durable for 100 years, according to raw material manufacturers, and more than 50 years, according to confirmed standard cycle test results .
- Environmentally friendly: most neutral material with the smallest carbon footprint and without risk during the material and product production process; 100% recyclable. Huliot's Ultra Silent™ systems carry the Green Label licenses by World Green Building Council (WGBC).
- Negligible linear expansion in any direction and no need for special fittings.

# Acoustic

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## Noises from wastewater and drainage systems

Every object in motion makes noise when it transmits vibrations – in the form of pressure or negative pressure waves – to the surrounding air. There are two types of noise in drainage and wastewater systems:

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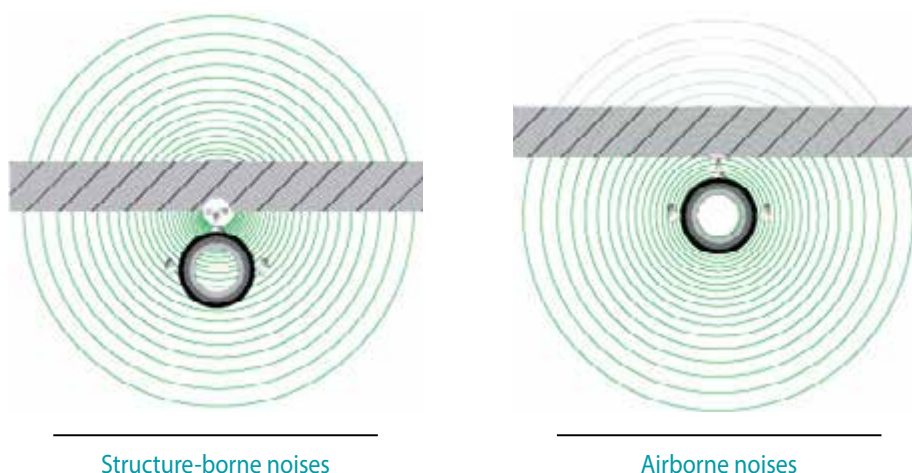
### Airborne noise

comes from pipelines and is generated by wastewater flowing inside. In this case, a soundproof drainage and wastewater system should limit the propagation of airborne noise and keep it inside the pipes. This is achieved by using a specially formulated material (using minerals), a three-layer pipe structure, high manufacturing quality and correct installation.

### Structure-borne

noise comes from pipes and fittings as well as the system of fastening to the building's structure such as brackets and clamps. This sound comes from the noise inside these systems, which makes them vibrate (acoustic resonance).

The resonance is transmitted through the pipe clamps to the building's structure and is heard in neighboring rooms as an irritating acoustic wave. In this case, it is important to design the system of fastening pipes and fittings to the building's structure in such a way that the acoustic resonance is reduced to the minimum.



The Ultra Silent™ system's acoustic performance was tested at the Fraunhofer IBP Test Laboratory (Germany) in accordance with DIN 4109 and EN 14366 standards.

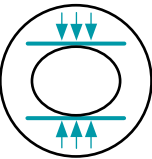
# Ultra Silent™ the System



EN 13501  
D-s2-d2

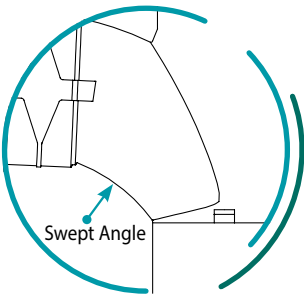
15 dB(A)

Measurement test results according to EN14366 (with Müpro “Yellow” clamps)				
System / Flow rate	0.5 l/s	1.0 l/s	2.0 l/s	4.0 l/s
Ultra Silent™	10 db	13 db	15 db	19 db

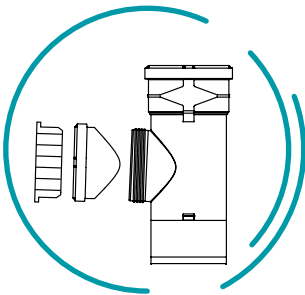


ULTRA ring stiffness strength / ULTRA acoustic insulation - combining the most advanced production technology with Huliot’s uniquely formulated compound.

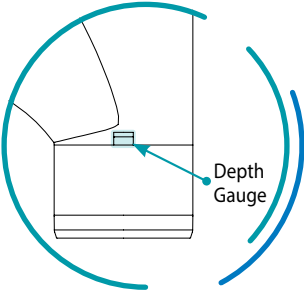
## Ultra Silent™ System Advantages



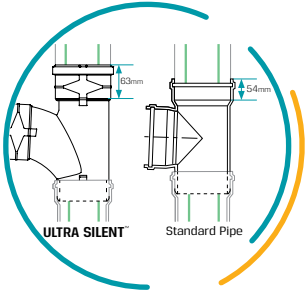
- Clever Design**
- Ultra Discharge Rate
  - Ultra Smooth Flow



- Internal Plug**
- Ultra Smooth Flow
  - Ultra Silent



- Depth Gauge**
- Ultra Fit








- Extra Socket Depth**
- Ultra Stable
  - Ultra Solid

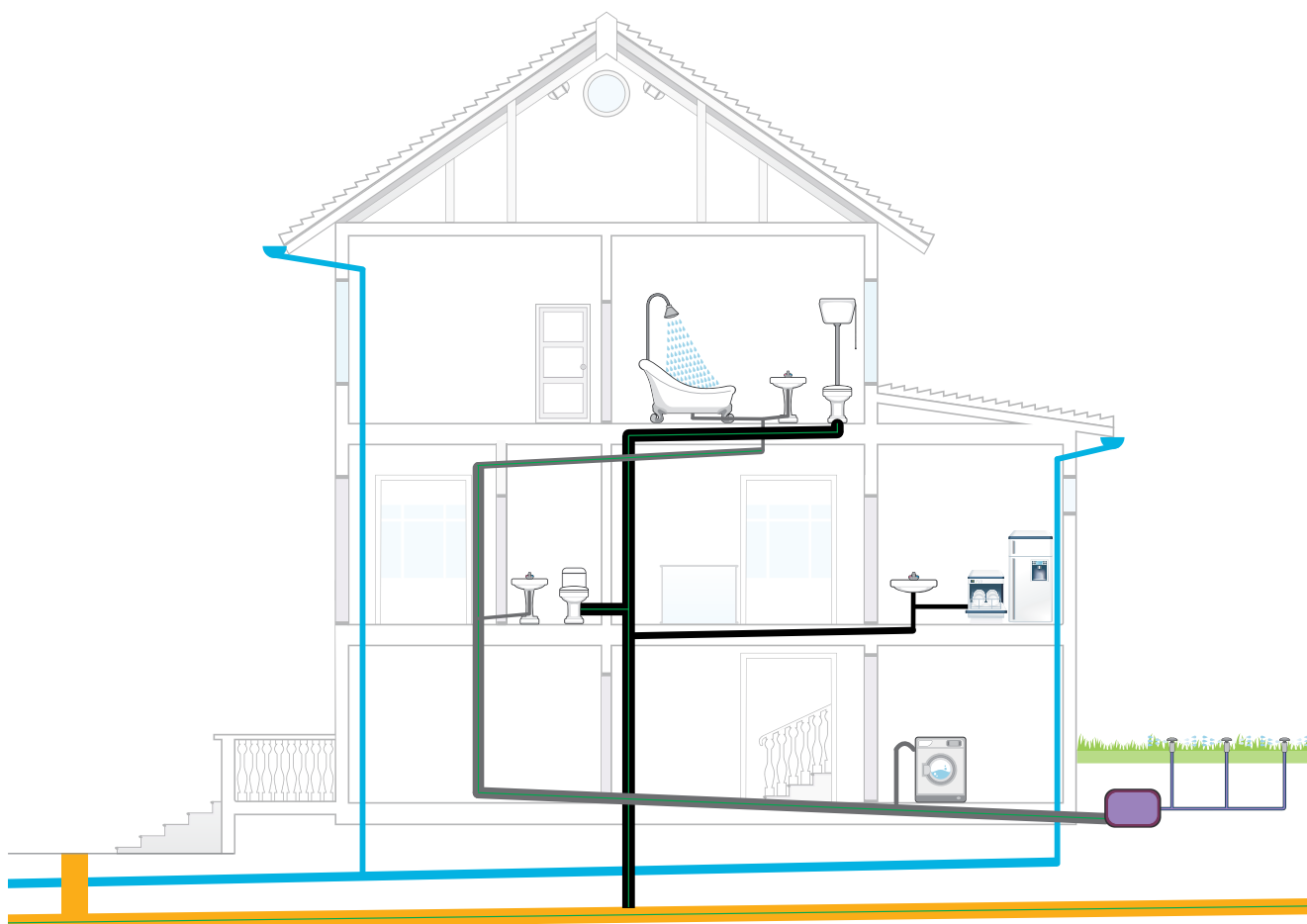
# 1 | Applications

Ultra Silent™ Soundproof pipes and fittings for drainage, soil and waste water discharge, low and high temperature, made of PP-MD (Polypropylene and mineral filled polypropylene compounds) in diameters Ø32-160 with push-fit connection method.

Application area "BD" according to SKZ specification for test and inspection HR 3.43.

Waste water, drainage and sewerage applications

-  **Grey waste water** - Collecting water from bathroom sinks, baths and showers and from washing machines. Applicable systems: Ultra Silent™, HT System and Thread Lock™.
-  **Waste water** - Collecting waste water from toilets and kitchen sinks. Applicable systems: Ultra Silent™ and HT System.
-  **Rain water drainage** - Collecting rain water from roofs, gutters, balconies and outdoor surfaces. Applicable systems: Ultra Silent™ and HT System.
-  **Sewerage** - Collecting water from building waste water discharge systems to the municipal infrastructure. Applicable systems: Ultra SWG™ and KG System.
-  **Grey water recycling system** - For garden irrigation systems and for toilet flushing systems. Applicable systems: Clear Grey™ and Grey Flow™.

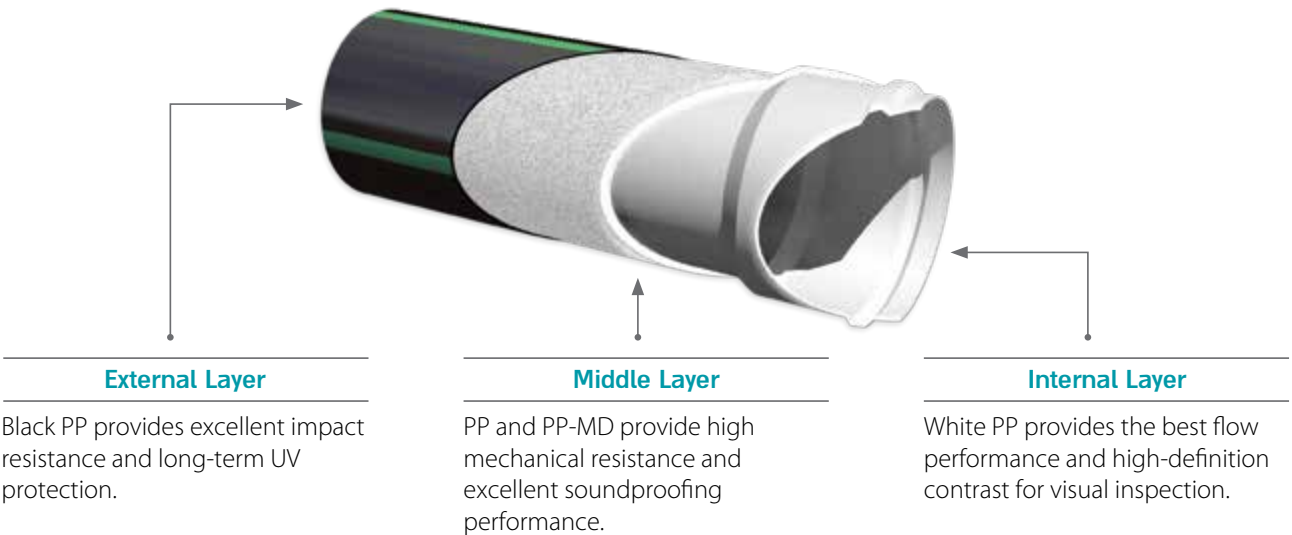


## 2 | Technical Data

### 2.1 | Materials:

All materials comply with RoHS directive and are Halogen and Cadmium free (see appendix 2).

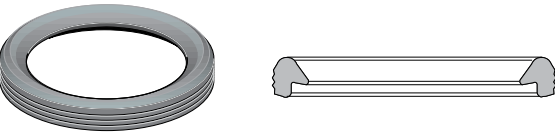
#### Triple layer pipe



#### Fittings

### 2.2 | Method of connection

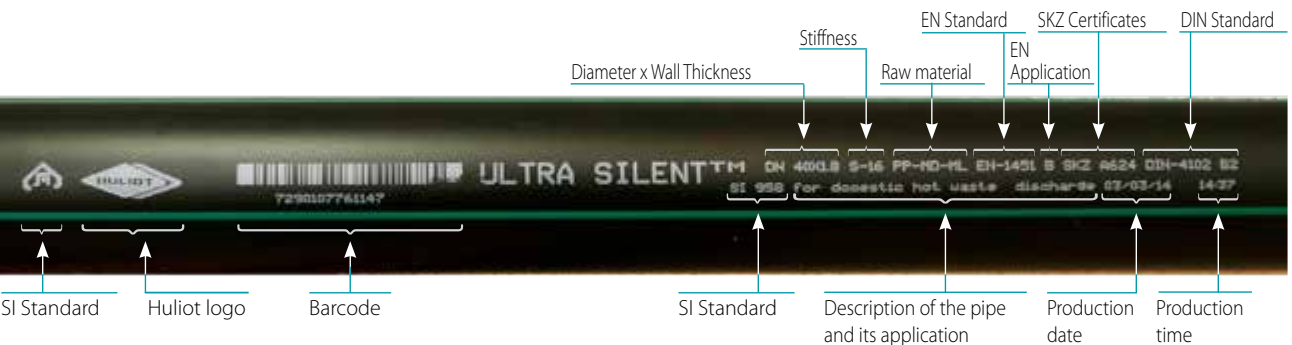
All products are connected by means of push-fit insertion, with single-lip high quality seals made of SBR-NR, for guaranteed sealing and leak-proof performance.



### 2.3 | Marking

Pipe markings - On each pipe, the following details will be clearly printed at least once every meter, with indelible ink: Producer - HULIOT, system type, dimensions, materials, stiffness level, number of the applicable standard and category of application, date of manufacture and Standards Institute symbols.

Fittings markings - Every fitting will be marked with all required information as follows: Producer - HULIOT, system type, dimensions, materials, stiffness level, number of the applicable standard and category of application, date of manufacture and Standards Institute symbols.



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## 2.4 | Temperature performance

### Hot water resistance

- 95°C for long term (3000 hours/50 years = 10 min/day).
- 98°C for short term (200 hours/50 years = 40 sec/day).
- 60°C for permanent load (90,000 hours/50 years = 5 hours/day).

### Low temperature impact strength

- -25°C for permanent load after assembly.
- Approved by SKZ (TR 104959/13) according to DIN EN ISO 291:2008-08 for impact resistance
- in -20°C conditions (for transportation, assembly and short-term storage).

## 2.5 | Chemical resistance

System materials are resistant to aggressive discharge media in the range of pH 2 to pH 12 according to DIN 8078 (for chemical list - see appendix 3; page 32).

## 2.6 | Fire Classification

- The Ultra Silent™ system tested and certified by IBS according to EN 13501-1:2009 and classified D-s2,d2 (see appendices).
- The Ultra Silent™ system meets the requirements of EN 4102-2 with fire classification B2, smoke development category Q1 (low smoke development) and drip formation category TR1 (no drip formation).

## 2.7 | Ring stiffness

Ring stiffness was tested according to ISO 9969 and reached the following results for dimensions Ø32-160: Ultra Silent™ pipes - SN6 (at least 6.0 kN/m<sup>2</sup>).

## 2.8 | Elastic modulus

E-modulus tested according to ISO 178 and reached the results of 2300-3000 for Ultra Silent™ pipes.

## 2.9 | Elongation

Coefficient of elongation was tested and reached the results of 0.09 mm/°K for Ultra Silent™ pipes.

## 2.10 | Quality, Environmental, Occupational Health and Safety management

Quality Management according to ISO 9001:2008, Environmental Management according to ISO 14001:2004 and Occupational Health and Safety Management according to OHSAS 18001:2007 approved and certified by SII.



## 2.11 | Standards

EN 1451-1: Polypropylene (PP) piping systems for soil and waste discharge (low and high temperature) within the building structure.

EN13501-1:2009: Classification of system's fire behavior, smoke emission, flaming and droplets

EN 4102-2: Reaction to fire tests - Ignitability of building products subjected to direct impingement of flame.

EN 14366: Laboratory measurement of noise from waste water installations.

IGTD 116 Based on standards TSC 29:

Huliot is licensed to mark the following products with the Green Label:

License No. 70304 for Ultra Silent products

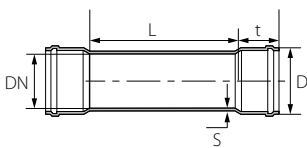
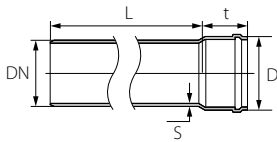
License No. 70305 for Ultra SWG products



## 2.12 | System approvals

SKZ mark approval certification No. A624 (see appendix 2; page 30).

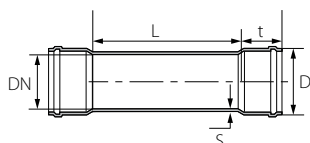
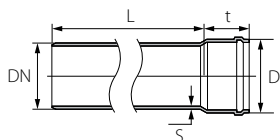
Fraunhofer IBP test reports P-BA 78-81/2012e (see chapter 4.5; page 23).



# Pipes



Usem Silent Pipe With One Socket	Usdm Silent Pipe With Two Sockets	DN	L	D	S	t	.pcs 	.pcs 
5753200015	-	32	150	45	1.8	42	20	1440
5753200025	-	32	250	45	1.8	42	20	960
5753200050	5753232050	32	500	45	1.8	42	20	480
5753200100	5753232100	32	1000	45	1.8	42	15	300
5753200150	5753232150	32	1500	45	1.8	42	15	300
5753200200	5753232200	32	2000	45	1.8	42	15	300
5753200300	5753232300	32	3000	45	1.8	42	15	300
5754000015	-	40	150	55	1.8	44	20	1440
5754000025	-	40	250	55	1.8	44	20	960
5754000050	5754040050	40	500	55	1.8	44	20	480
5754000100	5754040100	40	1000	55	1.8	44	15	420
5754000150	5754040150	40	1500	55	1.8	44	15	420
5754000200	5754040200	40	2000	55	1.8	44	15	420
5754000300	5754040300	40	3000	55	1.8	44	15	420
5755000015	-	50	150	65	1.8	46	20	960
5755000025	-	50	250	65	1.8	46	20	540
5755000050	5755050050	50	500	65	1.8	46	20	400
5755000075	-	50	750	65	1.8	46	15	270
5755000100	5755050100	50	1000	65	1.8	46	15	270
5755000150	5755050150	50	1500	65	1.8	46	15	270
5755000200	5755050200	50	2000	65	1.8	46	15	270
5755000300	5755050300	50	3000	65	1.8	46	15	270
5757500015	-	75	150	90	2.2	49	20	360
5757500025	-	75	250	90	2.2	49	20	240
5757500050	5757575050	75	500	90	2.2	49	20	160
5757500075	-	75	750	90	2.2	49	10	120
5757500100	5757575100	75	1000	90	2.2	49	10	120
5757500150	5757575150	75	1500	90	2.2	49	10	120
5757500200	5757575200	75	2000	90	2.2	49	10	120
5757500300	5757575300	75	3000	90	2.2	49	10	120
5759000015	-	90	150	107	2.8	54	16	384
5759000025	-	90	250	107	2.8	54	20	160
5759000050	5759090050	90	500	107	2.8	54	10	100
5759000100	5759090100	90	1000	107	2.8	54	10	100
5759000150	5759090150	90	1500	107	2.8	54	10	100
5759000200	5759090200	90	2000	107	2.8	54	10	100
5759000300	5759090300	90	3000	107	2.8	54	10	100

## Pipes



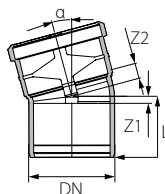
Usdm Silent Pipe With One Socket	Usdm Silent Pipe With Two Sockets	DN	L	D	S	t	.pcs 	.pcs 
5751100015	-	110	150	130	3.4	65	20	180
5751100025	-	110	250	130	3.4	65	20	120
5751100050	5751111050	110	500	130	3.4	65	20	80
5751100075	-	110	750	130	3.4	65	10	80
5751100100	5751111100	110	1000	130	3.4	65	10	80
5751100150	5751111150	110	1500	130	3.4	65	10	80
5751100200	5751111200	110	2000	130	3.4	65	10	80
5751100300	5751111300	110	3000	130	3.4	65	10	80
5751200015	-	125	150	149	3.9	72	6	180
5751200025	-	125	250	149	3.9	72	6	108
5751200050	5751212050	125	500	149	3.9	72	6	48
5751200100	5751212100	125	1000	149	3.9	72	10	80
5751200150	5751212150	125	1500	149	3.9	72	10	80
5751200200	5751212200	125	2000	149	3.9	72	10	80
5751200300	5751212300	125	3000	149	3.9	72	10	80
5751600015	-	160	150	186	4.9	75	8	48
5751600025	-	160	250	186	4.9	75	8	48
5751600050	-	160	500	186	4.9	75	8	32
5751600100	-	160	1000	186	4.9	75	6	24
5751600150	-	160	1500	186	4.9	75	6	24
5751600200	-	160	2000	186	4.9	75	6	24
5751600300	-	160	3000	186	4.9	75	6	24



## Ultra Silent Pipes Without socket

Item Code	DN	Standard L
5777500300	75	3
5779000300	90	3
5771100300	110	3
5771200300	125	3
5771600300	160	3
5777500050	75	(0.5 Mtr)
5779000050	90	(0.5 Mtr)
5771100050	110	(0.5 Mtr)
5771200050	125	(0.5 Mtr)
5771600050	160	(0.5 Mtr)
5777500100	75	(1.0 Mtr)
5779000100	90	(1.0 Mtr)
5771100100	110	(1.0 Mtr)
5771200100	125	(1.0 Mtr)
5771600100	160	(1.0 Mtr)

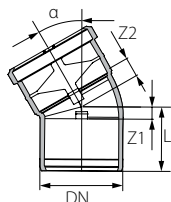
Item Code	DN	Standard L
5777500150	75	(1.5 Mtr)
5779000150	90	(1.5 Mtr)
5771100150	110	(1.5 Mtr)
5771200150	125	(1.5 Mtr)
5771600150	160	(1.5 Mtr)
5777500200	75	(2.0 Mtr)
5779000200	90	(2.0 Mtr)
5771100200	110	(2.0 Mtr)
5771200200	125	(2.0 Mtr)
5771600200	160	(2.0 Mtr)



## USB Bend 15°



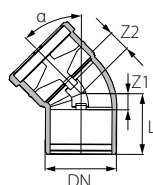
Code	DN	L	Z1	Z2		
7070000170	32	44.5	4.0	9.0	50	3000
7070010170	40	51.5	4.0	10.0	40	2400
7070020170	50	56.5	5.0	11.0	40	1200
7070030170	75	63.5	7.0	14.0	20	600
7070090170	90	68.0	8.0	16.0	20	480
7070040170	110	78.0	6.0	19.0	20	240
7070050170	125	87.0	12.0	21.9	10	160
7070060170	160	99.0	8.0	22.0	5	80



## USB Bend 30°



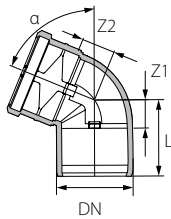
Code	DN	L	Z1	Z2		
7070000370	32	47.5	5.0	10.0	50	3000
7070010370	40	54.5	7.0	13.0	40	2400
7070020370	50	59.5	8.0	14.0	40	1200
7070030370	75	68.5	12.0	18.0	20	600
7070090370	90	74.0	14.0	20.5	20	320
7070040370	110	85.0	16.0	25.5	20	240
7070050370	125	104	29.0	30.0	10	160
7070060370	160	105.0	27.0	29.0	5	80



## USB Bend 45°



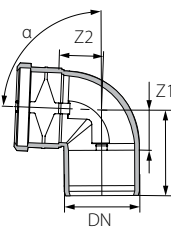
Code	DN	L	Z1	Z2		
7070000470	32	53.0	8.0	13.0	40	2400
7070010470	40	58.5	11.0	17.0	40	2400
7070020470	50	64.0	13.0	19.0	40	1200
7070030470	75	74.5	18.0	24.0	20	600
7070090470	90	81.0	21.0	27.5	20	320
7070040470	110	94.0	25.0	33.5	20	240
7070050470	125	104.0	29.0	38.0	10	160
7070060470	160	116.0	36.0	44.0	5	60
7070080470	200	148.0	49.0	63.0	3	36



## USB Bend 67.5°



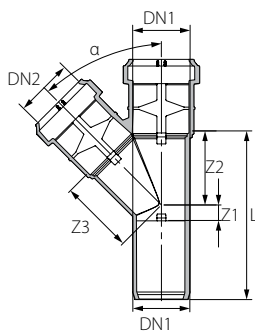
Code	DN	L	Z1	Z2		
7070000670	32	58.0	13.0	18.0	40	2400
7070010670	40	65.5	18.0	24.0	40	1600
7070020670	50	72.5	21.0	27.0	40	1200
7070030670	75	85.5	29.0	35.0	20	480
7070090670	90	94.0	34.0	40.0	20	320
7070040670	110	110.0	44.0	48.0	20	240



## USB Bend 87.5°



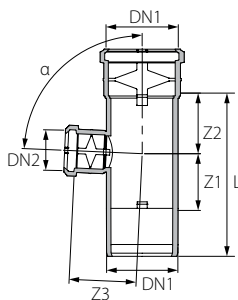
Code	DN	L	Z1	Z2		
7070000870	32	64.0	20.0	24.0	40	2400
7070010870	40	73.5	26.0	32.0	40	1600
7070020870	50	79.5	28.5	35.0	40	1200
7070030870	75	99.5	43.0	49.0	20	480
7070090870	90	110.0	50.0	56.0	20	320
7070040870	110	129.0	60.0	66.0	20	240
7070050870	125	142.0	67.0	73.0	10	160
7070060870	160	162.0	79.5	81.0	5	60



## USEA Branch 45°



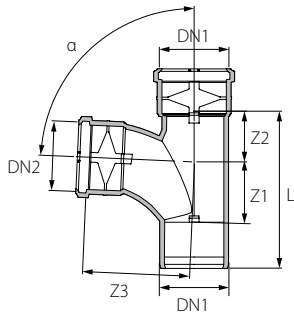
Code	DN1	DN2	Z1	Z2	Z3	L		
7070600470	32	32	9.0	42.0	42.0	95.0	20	1200
7070611470	40	40	11.0	52.0	52.0	111.0	20	800
7070621470	50	40	13.0	64.0	57.0	129.0	20	600
7070622470	50	50	13.0	64.0	64.0	129.0	20	600
7070632470	75	50	18.0	95.0	100.0	170.0	20	320
7070633470	75	75	18.0	95.0	95.0	170.0	20	320
7070691470	90	40	32.5	112.5	92.0	205.0	10	120
7070692470	90	50	32.5	112.5	89.0	205.0	10	120
7070699470	90	90	33.0	113.0	112.5	206.0	10	160
7070641470	110	40	17.0	112.0	96.5	148.5	10	160
7070642470	110	50	17.0	108.0	96.5	148.5	10	160
7070643470	110	75	2.0	121.0	113.5	184.5	10	160
7070649470	110	90	25.0	137.0	143.0	231.0	10	120
7070644470	110	110	25.0	137.0	137.0	231.0	8	96
7070654470	125	110	18.0	145.0	149.0	238.0	8	96
7070655470	125	125	31.0	152.0	152.0	258.0	6	72
7070664470	160	110	39.0	159.0	169.0	284.0	5	60
7070666470	160	160	39.0	194.0	194.0	319.0	3	36
7070686470	200	160	19.0	213.0	224.0	343.0	2	16
7070688470	200	200	25.0	219.0	226.0	399.0	4	16



## USEA Branch 87.5°



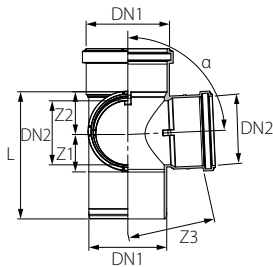
Code	DN1	DN2	Z1	Z2	Z3	L		
7070600870	32.1	32.5	-	24.0	52.0	88	20	1600
7070611870	40	40	13.0	64.0	64.0	64.5	20	600
7070621870	50	40	32.3	31.0	62.0	112.5	20	600
7070622870	50	50	31.0	30.0	62.0	112.5	20	600
7070632870	75	50	58.0	55.0	60.0	170.0	20	320
7070633870	75	75	58.0	55.0	55.0	114.5	20	320
7070692870	90	50	69.0	76.0	83.0	205.0	10	120
7070642870	110	50	32.0	65.0	36.5	137.5	10	160
7070655870	125	125	78.0	73.0	72.0	225.0	6	72
7070666870	160	160	97.0	87.0	144.0	276.0	4	48



## USIA Swept Branch 87.5°



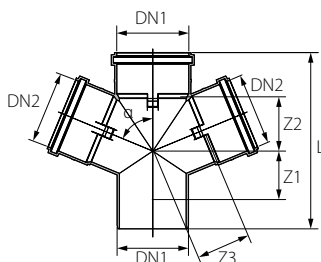
Code	DN1	DN2	Z1	Z2	Z3	L		
7070799870	90	90	79.0	66.0	97.0	205.0	10	160
7070743870	110	75	82.0	60.0	97.0	211	10	120
7070749870	110	90	82.0	60.0	97.0	211.0	10	120
7070744870	110	110	82.0	60.0	97.0	211.0	10	120
7070754870	125	110	100.0	65.0	117.0	240	6	72
7070764870	160	110	96.0	84.0	117.0	266	4	48



## USED Corner Branch 87.5°



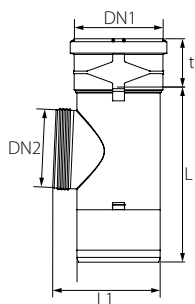
Code	DN1	DN2	Z1	Z2	Z3	L		
7071244870	110	110	82.0	56.0	151.0	207.0	6	72
7071254870	125	110	58.0	75.0	140.0	207.0	5	60



## USDA Double Branch 67.5°



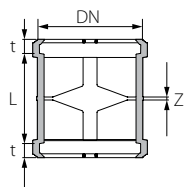
Code	DN1	DN2	Z1	Z2	Z3	L		
7071042670	110	50	17.0	54.0	73.0	207.0	8	128
7071044670	110	110	51.0	85.0	85.0	272.0	6	72



## USRE Inspection Pipe



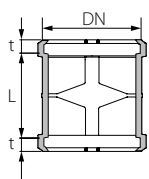
Code	DN1	DN2	t	L	L1		
7079120070	50	45.0	55.0	140.0	65.0	20	800
7079130070	75	45.0	71.0	140.0	98.0	20	320
7079190070	90	77.4	58.0	200.0	129.0	10	180
7079140070	110	97.0	64.0	231.0	140.0	10	120
7079150070	125	97.0	73.0	222.0	164.8	8	96
7079160070	160	97.0	85.0	236.0	198.4	6	72
7079180070	200	97.0	93.0	343.0	231.0	2	24



## USMM Double Socket



Code	DN	t	L	Z		
7071710270	40	14.0	60.0	2.0	30	1800
7071720270	50	14.0	68.0	2.0	20	1200
7071730270	75	14.0	77.0	2.3	20	800
7071790270	90	14.0	85.0	1.4	20	480
7071740270	110	17.0	97.0	3.3	20	320
7071750270	125	16.8	118.6	4.1	10	160
7071760270	160	17.0	131.0	4.5	10	120
7071780270	200	28.3	192.2	5.8	2	48

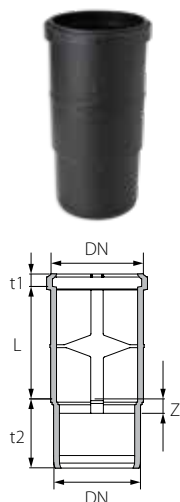
## USU Sleeve





Code	DN	t	L		
7071710070	40	14.0	60.0	30	1800
7071720070	50	14.0	68.0	20	1200
7071730070	75	14.0	77.0	20	800
7071790070	90	14.0	85.0	20	480
7071740070	110	17.0	97.0	20	320
7071750070	125	16.8	118.6	10	160
7071760070	160	17.0	131.0	10	120
7071780070	200	28.3	192.2	2	48



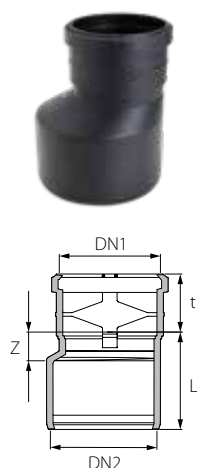
## USLL Long Socket





Code	DN	t1	t2	L	Z		
7072210070*	40	13,1	107.0	66.0	13.0	-	-
7072220070	50	13,1	99.0	61.0	7.0	20	1200
7072230070	75	13,1	113.0	69.0	10.0	20	360
7072290070	90	13,1	131.0	76.0	13.0	20	320
7072240070	110	16,0	141.0	87.0	14.0	15	180
7072250070	125	19,1	189.0	91.0	16.0	10	120
7072260070	160	23,1	107.0	160.0	20.5	6	72

\* Will be available in 2018



## USR Reducer

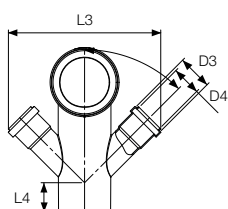
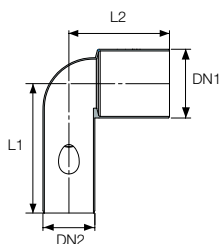


Code	DN1	DN2	L	t	Z		
7072110070	32	40	48.0	42.0	14.0	30	1800
7072120070	32	50	65.0	42.0	15.0	30	1800
7072121070	40	50	64.0	42.0	15.0	30	1800
7072191070	40	90	93.0	47.0	35.0	20	800
7072141070	40	110	122.5	43.0	51.0	20	480
7072132070	50	75	85.0	47.0	26.0	20	1200
7072192070	50	90	97.0	47.0	34.0	20	800
7072142070	50	110	118.0	47.0	46.0	20	480
7072193070	75	90	86.0	51.5	24.0	20	600
7072143070	75	110	106.0	52.0	34.0	20	360
7072149070	90	110	101.0	55.0	29.0	20	360
7072154070	110	125	106.0	64.0	29.0	10	240
7072164070	110	160	137.0	64.0	84.0	10	160
7072165070	125	160	140.0	55.0	74.0	10	80
7072186070	160	200	153.0	80.0	54.0	6	96

## WC Bend





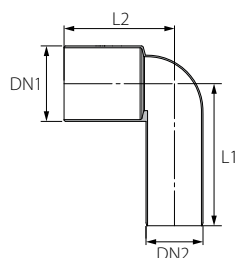
Code	Item Description	DN1	DN2	L1	L2	Z	L3	L4	D3	D4		
7154040490	USSBL WC Bend Ø110+Double Ø40/45°	90.0	40.0	225.0	185.0	60.0	250.9	50.9	50.1	41.1	8	96
7155050490	USSBL WC Bend Ø110+Double Ø50/45°	110.0	50.0	225.0	185.0	60.0	264.0	50.9	60.1	51.1	8	96



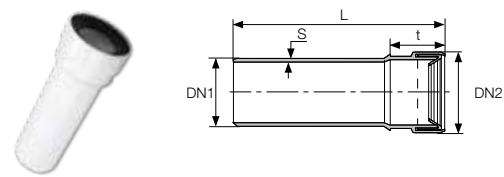
## USSBL Long WC Bend



Code	Item Description	DN	L1	L2	Z		
7195000070	USSBL Long WC Bend	90.0	175.0	225.0	60.0	10	120
7155000070	USSBL Long WC Bend	110.0	185.0	226.0	60.0	10	120

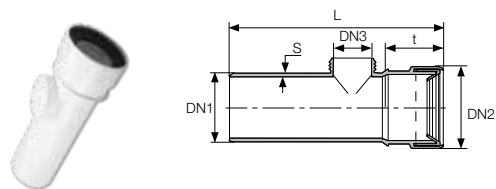


# WC Connector



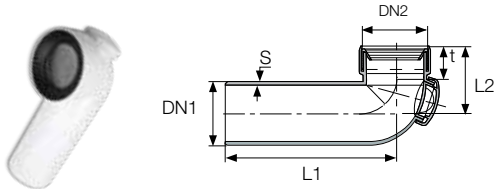
Straight WC Connector

Item Code	DN
41540020	110



Straight WC Connector With Inspection

Item Code	DN
41540027	110





Bend WC Connector With Inspection

Item Code	DN
41542866	110

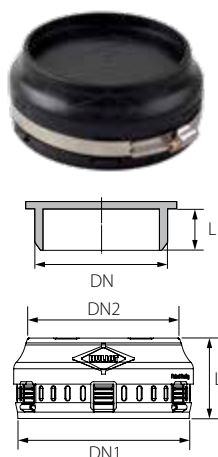
## Accessories



### US Lockseal™



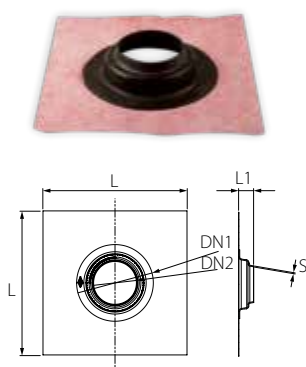
Code	DN	DN1	DN2	L		
7072330000	75	91.5	79.8	59	40	960
7072340000	110	130	112	63	30	480
7072350000	125	149	126.6	94	16	288
7072360000	160	186.5	162	99.7	10	160



### End Lock™



Code	DN	DN1	DN2	L	L1		
7078004000	110	130	112	63	62	30	480
7078005000	125	149	126.6	94	75	12	192
7078006000	160	186.5	162	99.7	86	8	128



### US Ultra Seal™



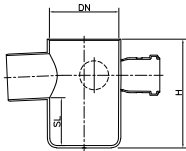
Code	DN	DN1	DN2	L	S	L1		
7981100000	110	220	102	340	3	52	30	480
7981250000	125	239	121	500	3	52	20	320
7981600000	160	266	149	500	3	52	20	320

### US Lubricant



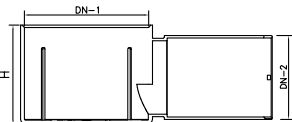
Code	ml		
47700012	250	50	-
47700013	1000	12	1728

## Multi Trap With Risers And Gratings



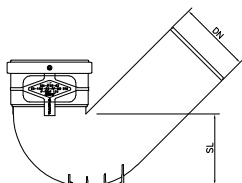
Code	Item Description	DN1	SL	H
69011750	Multitrap	110	76	173

## Nahani Trap With Gratings



Code	Item Description	DN1	DN2	H
69111750	Nahani Trap	110	75	88

## P - Trap With Risers



Code	Item Description	DN	SL
49540750	P Trap	110	107

## 4 | Sound Insulation

### 4.1 | Why soundproof insulation

The human aspiration to improve quality of life has led to the treatment all types of pollution, most of which are created by humanity itself. Noise is a treatable pollution in almost every living environment, particularly noise generated by humankind.

Disruptive noises in buildings have triggered the pursuit of the minimization of that noise pollution. People should be protected from disturbing airborne and structure-borne sound. Architectural sound protection measures are most relevant in buildings where people spend relatively long time periods (e.g. residences, offices, etc). Disturbing noise is mainly caused by sources within the construction itself (structure-borne noise), generally deriving from building engineering systems, that either directly or indirectly give rise to noise.

### 4.2 | Noise sources and sound levels

DIN 4109: Sound insulation in buildings, specifies the requirements for the sound insulation of rooms requiring protection against noise and the permissible noise levels in rooms requiring protection against noise in residential and non-residential buildings. Compliance with these requirements is necessary in order to achieve the stated noise protection goals. The requirements of DIN 4109 apply to the protection against noise emanating from other rooms (e.g. neighboring apartments) which arises during normal use, noise emanating from building services and from commercial and industrial businesses in the same building or in structurally connected buildings, outdoor noise, e.g. traffic noise and noise from commercial and industrial businesses that are not structurally connected with rooms requiring noise protection (see table 4.2.1). The requirements form the basis for the design of new buildings and alterations to existing ones. The standard only applies to refurbishment work if the noise protection measures are technically feasible.

Table of sound levels L (loudness) and corresponding sound pressure and sound intensity		
Sound Sources (Noise) Examples with distance	Sound Pressure Level $L_p$ dB SPL	Sound Pressure W/m <sup>2</sup> Sound energy quantity
Jet aircraft, 50 m away	140	100
Chainsaw, 1 m distance	110	0.1
Disco, 1 m from speaker	100	0.01
Kerbside of busy road, 5 m	80	0.0001
Vacuum cleaner, distance 1 m	70	0.00001
Average home	50	0.0000001
Quiet library	40	0.00000001
Quiet bedroom at night	30	0.000000001
Ultra Silent™ system	19	
Rustling leaves in the distance	10	0.00000000001
Threshold of hearing	0	0.0000000000001

### 4.3 | Consideration of noise insulation in the planning phase

For the best acoustic insulation, several topics must be considered during the planning phase of building construction and the waste water system:

- The location and orientation of the building.
- The design of the residence, the location and orientation of the rooms, particularly in multi-floor buildings.
- Construction materials: walls, partitions, ceiling, doors and windows, etc. with attention to the acoustic insulation performances of each material.
- Location of sanitary outlets and waste water installation in relation to living and sleeping areas. E.g. bedroom with attached bathroom separated by a partition, with the waste water receptor located on the back wall (Figure 1) or living room with waste water receptor within the room (Figure 2).

Figure 2: Receptor in the bedroom/living room

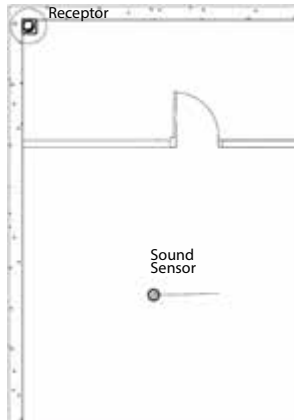
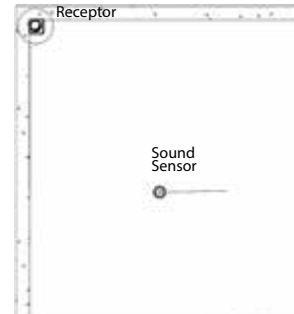


Figure 2: Receptor in the bedroom/living room



Select the waste water system siding, covering and coating materials required to reach the desired acoustic insulation, considering the receptor location, the acoustic performances of the waste water system and the estimated flow rate.

Thermoplastic foaming sheet (Figure 3) with acoustic performance of:

Hz	125	250	500	1k	2k	4k	8k
Insertion Loss Dw	-1.4	-0.3	4.1	15.1	22.7	29.2	31.8

Figure 3:

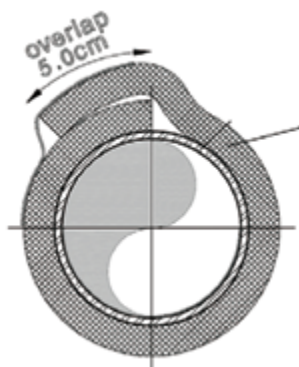
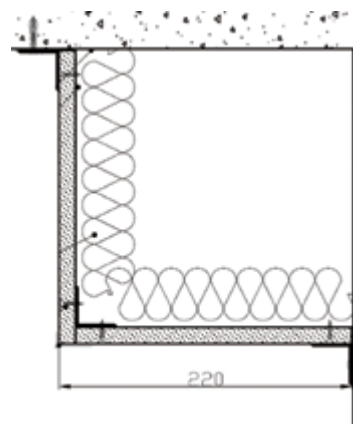


Figure 4:



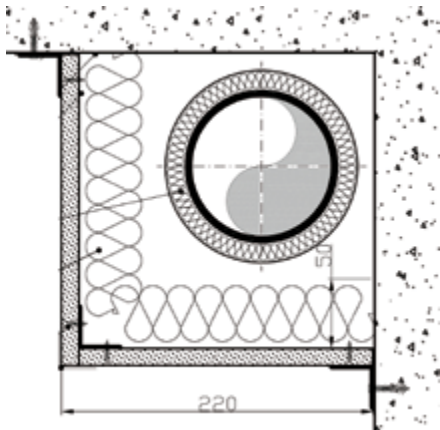
Gypsum (plaster board) wall (12.5mm/0.5") with sound absorbing material, e.g. mineral wool, (Figure 4) with acoustic performance (according to ISO 15665) of:

Hz	125	250	500	1k	2k	4k	8k
Insertion Loss Dw	2	1	10	24	25	30	46

Combination of gypsum wall (12.5mm/0.5") with sound absorbing material (e.g. mineral wool) and thermoplastic foaming sheet (Figure 5) with acoustic performance (according to ISO 15665) of:

Hz	125	250	500	1k	2k	4k	8k
Insertion Loss Dw	0.6	0.7	14.1	39.1	47.7	59.2	77.8

Figure 5:

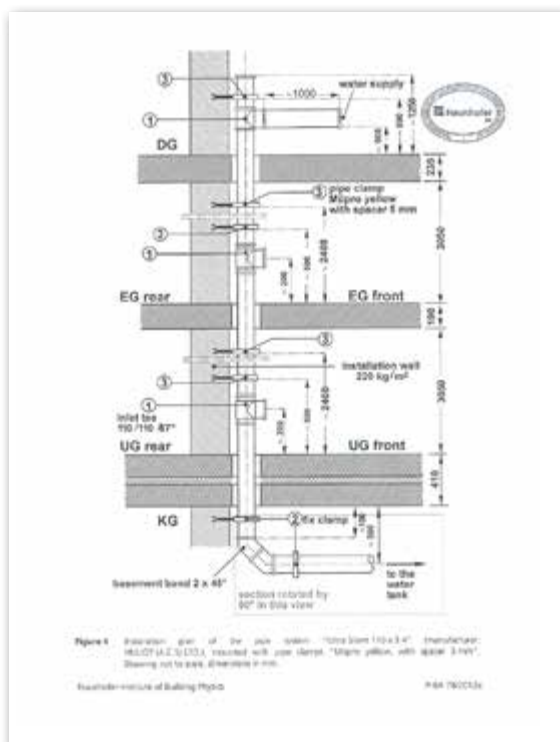


#### 4.4 | The soundproof insulation of Ultra Silent™



The system's acoustic performance was tested at the Fraunhofer Laboratory (Germany) in accordance with the DIN 4109 and the EN 14366 standards (see 4.4.1-3). Accordingly, several scenarios were tested and calculated (according to ISO 15665 and ISO 10140-2) (see 4.4.4-5).

The Ultra Silent™ pipe system assembly which was tested at the Fraunhofer Laboratory is represented in figure 6 with pipes and fittings with diameter of 110mm, with pipe clamps of several types (e.g. Müpro DAMMGLUST yellow, Bismat 2000 etc).

Figure 6





	Flow rate [l/s]	0.5	1.0	2.0	4.0
 With MÜPRO DAMMGLUST Yellow clamps TR; P-BA 78/2012e	UG front sound level [dB(A)] (EN ISO/IEC 17025)	48	52	54	56
	UG rear sound level [dB(A)] (EN ISO/IEC 17025)	13	16	18	21
	Airborne sound pressure level [dB(A)] (DIN EN 14366)	48	52	54	56
	Structure borne sound level [dB(A)] (DIN EN 14366)	10	13	15	19
 With BISMAT 2000 clamps TR; P-BA 77/2012e	UG front sound level [dB(A)] (EN ISO/IEC 17025)	48	51	54	55
	UG rear sound level [dB(A)] (EN ISO/IEC 17025)	13	16	19	23
	Airborne sound pressure level [dB(A)] (DIN EN 14366)	48	51	54	55
	Structure borne sound level [dB(A)] (DIN EN 14366)	10	13	17	21


25

[illegible]

- Bedroom area of 12m<sup>2</sup> including 4m<sup>2</sup> bathroom with partition and door, with the waste water receptor located at the bathroom's far corner, as appears in chapter 4.3.4 Figure 1.
- Huliott Ultra Silent™ Ø110 receptor with 2 l/s water flow rate.
- The receptor is covered with gypsum wallboard (12.5mm/0.5") lined with sound absorbing material (e.g. mineral wool) as appears in chapter 4.3.5.2, Figure 4.

[Hz]	Noise measured on the pipe [dB(A)]	Noise reduction by the gypsum cover	Noise reduction by the door
100	19	1.8	26.5
125	20.5	1.7	17.5
160	22	2.1	18.3
200	22.5	0.8	14.5
250	25	0.7	15.9
315	27.5	0.1	12.7
400	34	6.3	15.0
500	35.5	13	16.4
630	37	14.3	16.6
800	37.5	24.2	15.9
1000	37.5	23	16.1
1250	37	25	15.7
1600	39.5	23.5	16.9
2000	42	26.1	15.5
2500	44	27	12.4
3150	45	26.5	10.7
4000	46.5	31	11.6
5000	48	39.4	13.6

The second scenario is based on:

- Bedroom area of 12m<sup>2</sup>, with the waste water receptor located at the corner of the room as appears in chapter 4.3.4 Figure 2.
- Huliott Ultra Silent™ Ø110 receptor with 2 l/s water flow rate.
- The receptor is covered with a combination of gypsum wallboard (12.5mm/0.5") lined with sound absorbing material (e.g. mineral wool) and thermoplastic foaming sheet, as appears in chapter 4.3.5.3 Figure 5.

The calculated sound measurement results appear in the table below:

[Hz]	Noise measured on the pipe [dB(A)]	Noise reduction by the gypsum cover	Noise reduction by the door
100	19	-0.21	0.48
125	20.5	-0.99	3.23
160	22	-2.69	4.46
200	22.5	-1.16	5.26
250	25	-0.12	5.64
315	27.5	0.42	6.73
400	34	1.56	6.24
500	35.5	4.53	5.21
630	37	9.60	5.85
800	37.5	12.49	6.60
1000	37.5	16.19	6.54
1250	37	18.68	6.93
1600	39.5	20.88	6.29
2000	42	23.07	6.24
2500	44	25.19	7.21
3150	45	28.27	7.28
4000	46.5	28.95	7.21
5000	48	30.66	7.21

The sound level measured [dB (A)] is LAF max = 27.2 dB

## 5 | Transportation, storage and installation

### 5.1 | Loading, transport and unloading

It is recommended to handle the pipes and fittings in their original sales packaging to protect them and prevent damage during loading and transporting.

Load and transport pipes in straight, horizontal position with the full length supported (note that the sockets are unencumbered all around), avoid extreme pressure on the pipes (straps or other heavy materials).

Unload and handle pipes carefully and lay them in a straight, horizontal position (pay attention to positioning of the sockets), on a smooth surface.

Figure 1



Figure 2



Short pipes (150/250 mm) and fittings should be packed in carton boxes. Protect them from rain and moisture and store them in a dry place.

### 5.2 | Storage and protection

- It is recommended to store the pipes and fittings in their original sales packaging and to protect them from damage.
- Ultra Silent™ pipes are UV protected and can be stored outdoors for up to 3 years (depending on geographical location). The gasket material can withstand outdoor storage for up to 3 years and after this period must be replaced before installing.
- When using mechanical tools and machines (forklifts, cranes etc.) extra caution should be taken to prevent damage to the products.
- Optical defects (external scratches and pigment changes etc.) have no influence on the quality and/or functionality of the system.

### 5.3 | Cutting to length and assembly preparations

- Pipes are sold in various lengths with one or two sockets and gaskets and with plain ends pre-beveled. If cutting to length is needed, use only proper cutting tools for plastic pipes (manual or mechanical) and work according to all safety rules, using proper protective equipment.
- It is recommended to bevel the cut pipe end for easier installation (angle of approximately 15° with bevel length of 5 mm). Removing chips, shavings and sawdust is necessary before installing.

#### 5.4 | Push-fit connection method

- Check the position and integrity of the lip seal in the socket gasket slot. Clean the seal and the socket.
- Clean the plain pipe end from sawdust and scraps - it's recommended to apply a thin layer of lubricant around the plain pipe end.
- Push the plain end into the socket while slightly turning until the end of the socket sleeve, then pull the pipe back approximately 10 mm (Figure 1).

Figure 1

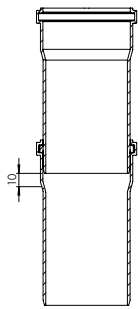
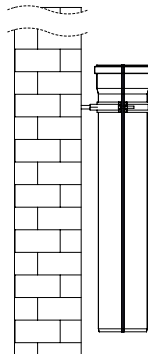


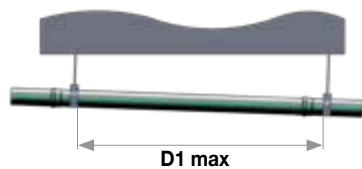
Figure 2



#### 5.5 | Mounting with clamps

- For mounting Ultra Silent™ system, use steel brackets with rubber inserts approved for acoustic insulation systems.
- Where pipes are installed vertically, every pipe must be fastened with brackets directly under the socket, to prevent pipe movement (Figure 2).
- Maximum distances between the brackets for horizontal and vertical installation, as below. (See table and Figure 3):

Pipe DN (external diameter)	Max. bracket distance for horizontal installation - D1 max	Max. bracket distance for vertical installation - D max
Ø 50	0.80	1.50
Ø 75	1.10	2.00
Ø 90	1.40	2.00
Ø 110	2.00	2.00
Ø 125	2.00	2.00
Ø 160	2.40	2.00



## 5.6 | Installation instructions

- For vertical wall mounting, 2 brackets will be assembled on every floor, taking into account the specified maximum distance between brackets as per table in 5.5.3.
- Fixed bracket: The first of the two brackets on each floor should be installed in the lower third of the floor height, just below the pipe or fitting socket, and must be tightened according to the instructions in 5.6.4, below.
- Sliding bracket: The second of the two brackets should be mounted in the upper third of the floor height, with the bracket rubber only lightly touching the pipe to enable linear expansion of the pipe system (Figure 4).

Figure 4

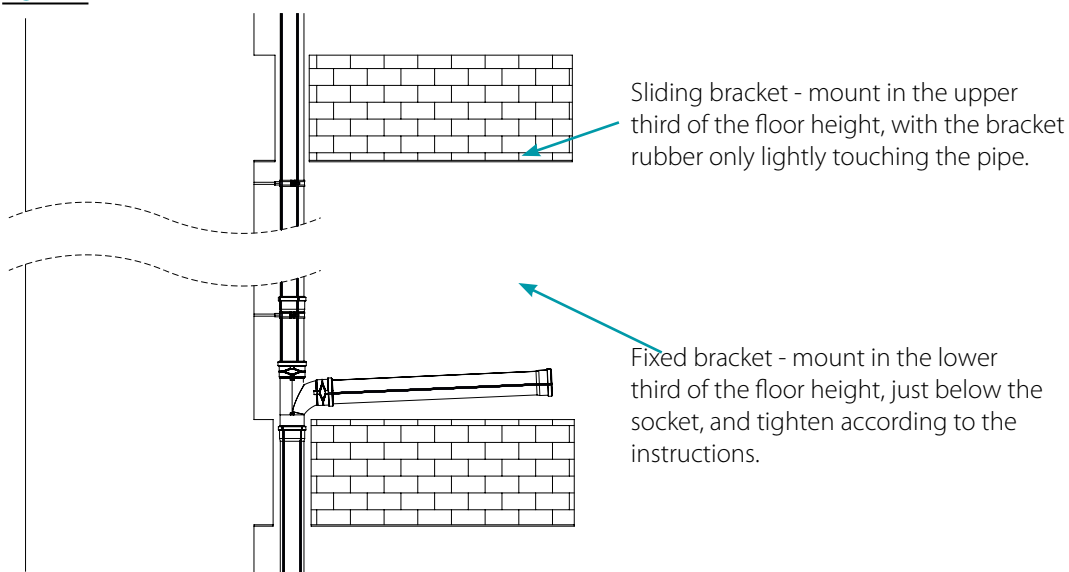
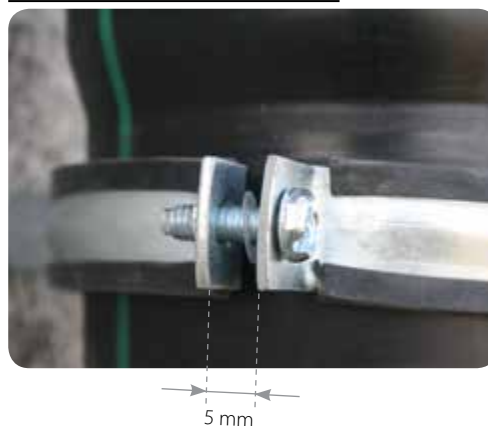


Figure 5 - **Incorrect tightening:**



Figure 6 - **Correct tightening:**



- Bracket tightening: In order to prevent structure-borne noise transmission, use only recommended brackets with proper dimensions and leave space of 5 mm in the bracket aperture when screwing closed (Figures 5-6).

## 5.7 | Installing Ultra Silent™ system through ceilings, floors and walls

- It is important in acoustic insulated systems to avoid contact between system components and rigid elements, such as walls, ceilings, floors etc., in order to prevent structure-borne noise transmission.
- For pipes traversing walls and ceilings, a space of at least 30 mm should be maintained between the pipe and any rigid material.
- If the spaces around the pipes traversing walls and floors must be filled, use only soft construction materials such as foam or glass fiber (Figure 7).
- For improved hydraulic flow and reduced noise, 87° bends are not recommended to be used for changing flow direction from vertical to horizontal. It is preferable to use two 45° bends, with 250 mm minimum length of connecting pipe between them (Figure 8).

Figure 7

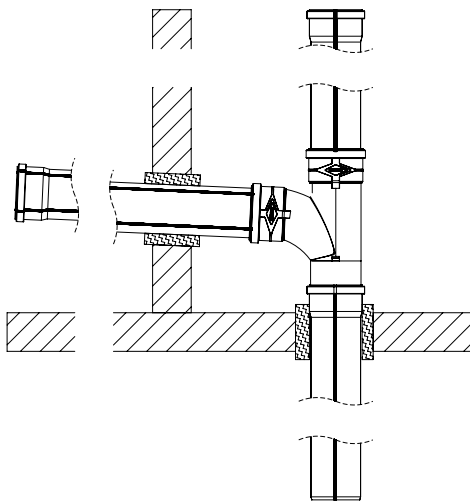
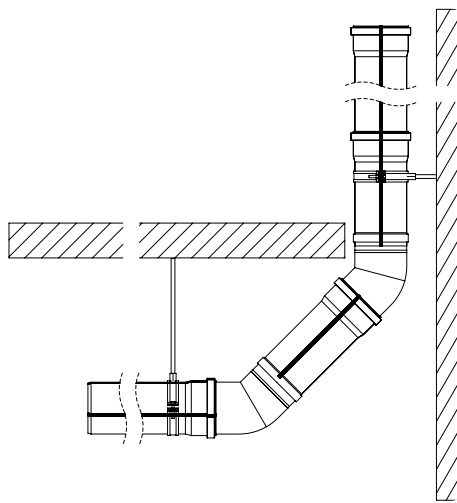
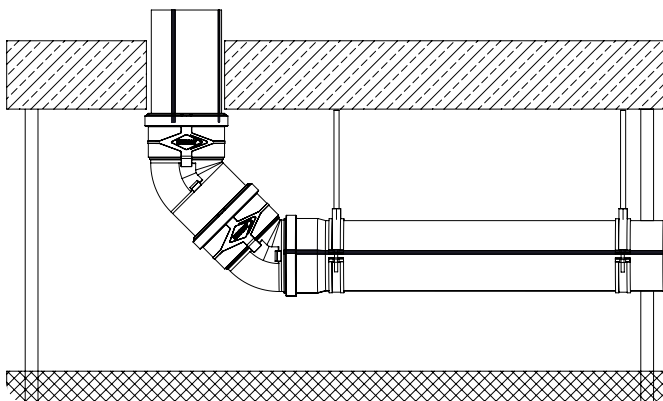


Figure 8



- When installing pipes in open spaces (such as basements, parking garages etc.), above suspended ceilings or behind screen walls, prevent any contact of other material (such as suspended ceiling, electrical, water, ventilation and air conditioning systems etc.) with the pipes (Figure 9).

Figure 6



## 5.8 | Repairs and irregular installation

- To add a branch (USEA) to an existing pipe with long socket (USTL) and sleeve (USU), insert the long socket plain end into the branch socket, cut the equivalent of the socket length from the existing pipe piece. Insert the long socket into the upper pipe all the way. Fix the sleeve on the lower pipe and slide the branch and long socket down into the sleeve (Figure 10). An alternative possibility is to use two sleeves and plain pipe (the minimum plain pipe length must be more than double that of the external pipe diameter DN, as in Figure 11).
- To fix punctured or damaged pipe, the same methods can apply with one socket pipe (USEM) instead of the branch and for adding inspection pipe (USRE) or double branch (USDA).

Figure 10

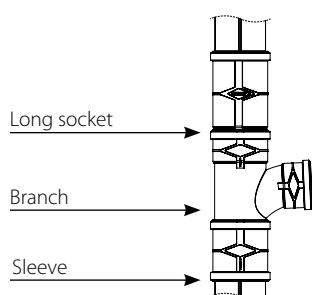
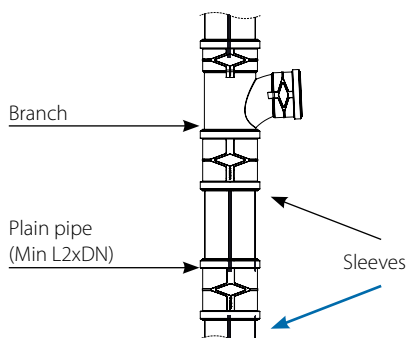
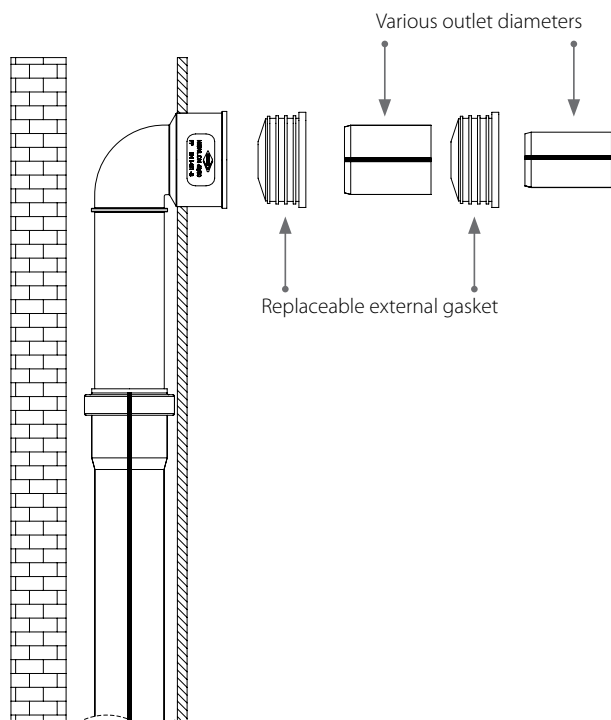


Figure 11



- Installing technical bends/siphon connectors can facilitate connection to various types of siphons or drainage outlets (air conditioning condensation water, washing machine etc.), by replacing only the external gasket (provided separately). See Figure 12.

Figure 12





## 5.9 | LockSeal™ and installing in concrete

### Lock Seal™ Applications

- Installing pipes in concrete (locking): Use of Lock Seal™ prevents the concrete lift force and vibrations from separating the pipes.
- Installing pipes in concrete (sealing): Use of Lock Seal™ prevents the concrete slurry from infiltrating to the gasket and negatively impacting sealing.
- Installing pipes with long-span suspension: Use of Lock Seal™ creates a firmer connection between the pipes providing additional safety for the system, especially for horizontal configuration in open spaces with vehicle traffic (e.g. parking garages, warehouses, plants, airports etc.)

### LockSeal™ Advantages

- Easy and fast assembly
- Can replace welded connection methods
- Increased safety margin
- Tool-free installation



### Installing Ultra Silent™ system in concrete

The Ultra Silent™ system can be installed in concrete walls, columns and floors, when carried out in strict accordance with the installation instructions, as they appear in this chapter. It is essential to insulate the entire system, inclusive of all components, with suitable noise reduction materials that prevent any direct contact between rigid construction elements and the Ultra Silent™ system.

### Lock Seal™ Assembly instructions

- Push the wide opening of the Lock Seal™ onto the fitting or pipe socket and push lightly but firmly until the locking grips pass the socket and you hear a "click".
- Insert the plain end of the fitting or pipe into the socket through the narrow part of the Lock Seal™ (normal push-fit connection method) and tighten the metal clamp by turning the key all the way until it stops.
- For disassembling - open the clamp and pull the pipe, while simultaneously pulling the Lock Seal™ from the socket and with flat end tool (e.g. screwdriver). Release the grips one at a time, until dismantled.



**1**

Assemble the narrow part of the Lockseal™ socket to the extremity of the pipe or the socket.



**4**

Tighten the metal band until the key is released.



**2**

Insert the plain end of the fitting or pipe into the socket (normal push-fit connection method).



**3**

Insert the plain end of the fitting or pipe into the socket (normal push-fit connection method).



**5**

For disassembly, release the band and open the clips to pull off the Lockseal™.



**6**

To facilitate the assembly, it is recommended to use Huliote's pipe lubricant.

- \* Lockseal™ is designed for use with PP pipes whose resilience to hydrostatic pressure and annular strength are suitable for concrete casting.  
Ultra Silent™ is currently the only piping system that meets these conditions.

## 7 | Appendices

# ZERTIFIKAT

## Certificate

**SKZ - TeConA GmbH awards the following company**

**HULIOT A.C.S. Ltd.**  
**Kibbutz Sde Nehemia**  
**12145 D.N. GALIL ELYON**  
**ISRAEL**

Production plant: HULIOT A.C.S. Ltd, IL-12145 D.N. GALIL ELYON

the right to use the **SKZ** - testing and inspection mark

A 624

for the following plastic products

**Waste water pipes and -fittings, group 1 and 2**  
**Pipes made of polypropylene PP/PP-MD/PP**  
**Fittings made of polypropylene PP-MD**  
**within the building structure**  
 Trade name: **ULTRA SILENT**  
**SKZ specification for tests and inspection HR 3.43**

Users of the **SKZ** - mark are obliged to observe the required regulations for the production and testing of these products.

Date of initial certification: ---  
 Date of expiry: 19 February 2018

Würzburg, 20 February 2013

Certification body

The original language of this certificate is German. In case of doubt, the German version is obligatory.

Das Kunststoffzentrum

**Test report no.:** 99804/12

**Customer:** HULIOT A.C.S. Ltd.  
Kibbutz Sde Nehemia  
12145 D.N. Galil Elyon  
ISRAEL

**Order:** Initial type test on a push fit system "ULTRA SILENT", pipes made of PP/PP-MD/PP, fittings made of PP-MD, for soil and waste discharge (low and high temperature), application area "SD", for dimension groups 1 and 2, according to SKZ Specification for Test and Inspection HR 3.43 (November 2011)

**Trade name:** "ULTRA SILENT"

**Assessment of test results:** see item 1

**Letter ref.:** 2013-02-19 Ref: Ref. Lenz

**Receipt of samples:** see item 2 Sampling: ---

**Test period:** from 2012-12-03 to 2013-01-16

**This test report comprises 15 pages.**  
 Würzburg, 2013-01-17  
 Lenz

Dipl.-Ing. MAS Samir

SKZ

Page 3 of 15  
Test report no. 99804/12

**Order**

By its letter of 19 October 2012 the company HULIOT A.C.S. Ltd., Kibbutz Sde Nehemia, 12145 D.N. Galil Elyon, ISRAEL, instructed SKZ - TeConA GmbH to execute an initial type test on a push fit system "ULTRA SILENT", pipes made of PP/PP-MD/PP, fittings made of PP-MD, for soil and waste discharge (low and high temperature), application area "SD", for dimension groups 1 and 2, according to SKZ Specification for Test and Inspection HR 3.43 (November 2011).

**2 Test material**

On 30 November and 12 December 2012 SKZ - TeConA GmbH received following samples for testing:

Sample no.	DN	Wall thickness (mm)	Quantity	Description
Pipes with socket				
1	32	1.8	6 x 1.0 m	made of PP/PP-MD/PP
2	40	1.8	6 x 1.0 m	
3	50	1.8	6 x 1.0 m	
4	50	1.8	6 x 2.0 m	
5	75	2.4	6 x 1.0 m	
6	90	2.8	6 x 1.0 m	
7	110	3.4	6 x 1.0 m	
8	110	2.4	6 x 2.0 m	
9	125	3.0	6 x 1.0 m	
10	160	4.5	6 x 1.0 m	
Pipes without socket				
11	50	1.8	12 x 1.0 m	made of "basic-polymer" (unformed)
12	90	1.8	12 x 0.3 m	
13	50	1.8	50 x 0.2 m	made of PP/PP-MD/PP
14	50	1.8	6 x 1.0 m	
15	75	2.4	12 x 0.3 m	
16	75	2.4	50 x 0.2 m	

SKZ

Page 15 of 15  
Test report no. 99804/12

**4.13 Airtightness**

Sample no.	Air pressure (bar)	Test period (min)	Mean value	Set value	Remark
Without angular deflection					
1, 2, 3, 5, 6, 7, 8, 10	0.1	> 5	> 5	> 5	no leakage
Maximal angular deflection at 0°, 90°, 180° and 270°					
1, 2, 3, 5, 6, 7, 8, 10	0.1	> 1	> 1	> 1	no leakage

**4.14 Elevated temperature cycling**

Sample no.	Sample	Cycles	Snagging (mm)	Actual value	Set value	Remark
4	pipe	1000	2.0	0.3		no leakage
21	elbow	1000				leakage before and after the test
29	branch	1000				
34	reducer	1000				

**4.15 Tightness of elastomeric ring seal joints**

Sample no.	Characteristics	Pressure (bar)	Mean value (min)	Set value (min)	Remark
2 5	Water pressure	0.05			
	Air pressure	0.05	> 15	> 15	no leakage

**5 Assessment of test results**

All tested pipes and fittings for soil and waste discharge have met the requirements of SKZ-Specification for Test and Inspection HR 3.43 (November 2011) "Plastic pipes and fittings made of mineral filled PP for soil and waste discharge within the building structure".

# Classification of Reaction to Fire Performance

Report on classification of the burning behaviour of the building product  
"Huliot Ultra Silent"

Report no.: 12112903A  
Date: 27.05.2013  
Official in charge: H. Aglas/ko  
DD: 818

**Applicant/manufacturer:** Huliot  
Kibbutz Sde Nehemia  
IL-12145 D.N. Galil Elyon

**Date of application:** 01.02.2013

**Specimen of classification:** Plastic piping system "Huliot Ultra Silent"

**Short evaluation:** In accordance with EN 13501-1:2009 the above mentioned building product is ranked into the European Class **D – s2, d2** because of its fire behaviour. The classification of reaction to fire and the therefore valid practical range of application is obvious by the representational classification report.

This report contains: **5** text pages

The duplication of this classification report in extracts is only allowed with written authorisation from the IBS



## 1.) Introduction:

This classification report defines the classification which is assigned to the building product Plastic piping system "Huliot Ultra Silent" in agreement with the in EN 13501-1:2007 stated method.

## 2.) Details of the classified building product:

### 2.1) Type and application range:

The building product Plastic piping system "Huliot Ultra Silent" is defined as a type of classified product". This classification applies to the field of application mentioned under 5.).

### 2.2) Description:

The building product Plastic piping system "Huliot Ultra Silent" completely described in the test reports mentioned under 3.1) which are based on the classification.

## 3.) Test reports and results in support of classification:

### 3.1) Test reports:

Name of the laboratory	Holder of test report	Number of the test reports	Test method
IBS Linz	Huliot	12112903-1	ÖNORM EN 13823:2011
IBS Linz	Huliot	12112903-2	ÖNORM EN ISO 11925-2:2011

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## 3.2) Test results:

Test method	Parameter	Number of tests	Test result	
			Constant parameter average (m)	Discrete parameter
ÖNORM EN 13823	FIGRA <sub>100</sub> (W/m)	3 (test series)	645,8	(-)
	FIGRA <sub>300</sub> (W/m)		645,8	(-)
	THR <sub>100</sub> (MJ)		29,3	(-)
	LFS < edge		(-)	J
	SMOGR <sub>100</sub> (m <sup>3</sup> /s)		16,1	(-)
ÖNORM EN ISO 11925-2	TBR <sub>1000</sub> (m <sup>2</sup> )		141,8	(-)
	Fl ≤ 150 mm		(-)	J
ÖNORM EN ISO 11925-2	Flame impingement of angle 30°		(-)	N
	Ignition of fiber paper		(-)	N

(-) not applicable

## 4.) Classification and direct field of application:

### 4.1) Reference and direct field of application:

This classification has been carried out in accordance to the sections 6, 7, 8 and 10.4 of the European standard EN 13501-1:2009.

## 4.2) Classification:

The building product Plastic piping system "Huliot Ultra Silent" in relation to its reaction to fire behaviour is classified as follows:

**D**

The additional classification in relation to smoke emission is:

**S2**

The additional classification in relation to flaming droplets/particles is:

**D2**

The format of the classification of the burning behaviour for building products without flooring is:

Fire behaviour	Smoke emission	No flaming droplets/particles
D	s	2

i.e.: D – s2, d2

## 5.) Field of application:

This classification is valid for the following product parameters and end use application.

As tested under the basic conditions of the product standard

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# Guarantee Declaration

---

## Valid for the following areas of application:

1. Ultra Silent™ (pipes & fittings) noise insulated above-ground drainage.
2. HT-PP (pipes & fittings) above-ground drainage.
3. Thread Lock™ TL system - waste water pipes & fittings.



## Periods and Scope of Coverage

Huliot Pipes & Fittings Pvt Ltd. warrants to each end-user purchaser, (excluding the USA and Canada) that its products will be free from defects in materials and workmanship under normal use and service (liability for damages resulting from manufacturing errors, material defects, deficiencies caused by incorrect storage, laying and installation instructions), for a period of 10 years from the date of manufacture in accordance with the terms of this warranty.

Huliot Pipes & Fittings Pvt Ltd. will repair or supply an equivalent replacement product in the event that the product is determined by Huliot Pipes & Fittings Pvt Ltd. to be defective within the warranty period. Any replaced or repaired product will be warranted only for the unexpired portion of the original warranty period, up to a INR 50000000 ( 5 CR ) per occurrence in the event of damage.

## Exclusions from Coverage

This warranty will not apply or will be voided at the manufacturer's sole discretion if the product in question was not manufactured by Huliot Pipes & Fittings Pvt Ltd., even if it is sold by Huliot Pipes & Fittings Pvt Ltd., and also excludes defects or failures caused after shipment by:

1. Improper installation (including, without limitation, misalignment) and unless all the measures necessary for damage minimization were initiated immediately.
2. Use in improper applications or conditions or in conjunction with improper materials (including, without limitation, improper lubricants, pastes, solvents or sealants).
3. Contact with aggressive chemical agents, freezing or overheating of liquids in the product, or unusual pressure, surges or pulsation.
4. Vibration.
5. Temperature shock.
6. U.V. degradation.
7. Failure to adhere to Huliot Pipes & Fittings Pvt Ltd.'s instructions concerning the proper handling, installation, testing and use of the product.
8. Failure to adhere to applicable standards set forth by local laws, codes, or regulations and the applicable 'Industry standards' OR
9. Any other improper activities not listed above or damage caused by the fault or negligence of anyone other than Huliot Pipes & Fittings Pvt Ltd.

Every claim for breach under this warranty shall be void unless it is made in writing to Huliot Pipes & Fittings Pvt Ltd. and postmarked within five business (5) days of the date the defect was discovered or in the exercise of ordinary care should have been discovered and, in any event, the claim must also be made within ten (10) years of the date of the Huliot Pipes & Fittings Pvt Ltd. invoice. As noted above, products manufactured by Huliot Pipes & Fittings Pvt Ltd. are marked with a Huliot Pipes & Fittings Pvt Ltd. stencil. This limited warranty excludes any product not manufactured by Huliot Pipes & Fittings Pvt Ltd. even if it is sold by Huliot Pipes & Fittings Pvt Ltd.

Any claim for breach of warranty must be sent to:

Huliot Pipes & Fittings Pvt Ltd : fax +91 265 2330672, Email [marketing.office@huliot.in](mailto:marketing.office@huliot.in), [india.office@huliot.in](mailto:india.office@huliot.in), [info@huliot.in](mailto:info@huliot.in)

No claim under this limited warranty will be valid unless (1) proof of purchase with the date thereof as well as a description of the alleged defect in reasonable detail is presented to the satisfaction of Huliot Pipes & Fittings Pvt Ltd. (2) written permission and/or a Return Goods Authorization (RGA) is obtained from Huliot Pipes & Fittings Pvt Ltd. (3) Huliot Pipes & Fittings Pvt Ltd. is given a meaningful and reasonable opportunity to inspect the allegedly defective product and its installation at the site and (4) at Huliot Pipes & Fittings Pvt Ltd.'s request, representative samples/photos of the allegedly defective product are returned to Huliot Pipes & Fittings Pvt Ltd. in accordance with Huliot Pipes & Fittings Pvt Ltd.'s instructions.

## Chemical resistance

Chemical or Product	Concentration	Temperature °C		
		20	60	100
Acetic acid	Up to 40%	S	S	-
Acetic acid	50%	S	S	L
Acetic acid, glacial	> 96%	S	L	NS
Acetic anhydride	100%	S	-	-
Acetone	100%	S	S	-
Aceprophenone	100%	S	L	-
Acrylonitrile	100%	S	-	-
Air	-	S	S	S
Allyl alcohol	100%	S	S	-
Almond oil	-	S	-	-
Alum	Sol	S	S	-
Ammonia, aqueous	Sat.sol	S	S	-
Ammonia, dry gas	100%	S	-	-
Ammonia, liquid	100%	S	-	-
Ammonium acetate	Sat. sol	S	S	-
Ammonium chloride	Sat.sol	S	S	-
Ammonium fluoride	Up to 20%	S	S	-
Ammonium hydrogen carbonate	Sat.sol	S	S	-
Ammonium metaphosphate	Sat.sol	S	S	S
Ammonium nitrate	Sat.sol	S	S	S
Ammonium persulphate	Sat.sol	S	S	-
Ammonium phosphate	Sat.sol	S	-	-
Ammonium sulphate	Sat.sol	S	S	S
Ammonium sulphide	Sat.sol	S	S	-
Amyl acetate	100%	L	-	-
Amyl alcohol	100%	S	S	S
Aniline	100%	S	S	-
Apple juice	-	S	-	-
Aqua regia	HCl/HNO <sub>3</sub> =3/1	NS	NS	NS
Barium bromide	Sat.sol	S	S	S
Barium carbonate	Sat.sol	S	S	S
Barium chloride	Sat.sol	S	S	S
Barium hydroxide	Sat.sol	S	S	S
Barium sulphide	Sat.sol	S	S	S

Chemical or Product	Concentration	Temperature °C		
		20	60	100
Beer	-	S	S	-
Benzene	100%	L	NS	NS
Benzoic acid	Sat.sol	S	S	-
Benzyl alcohol	100%	S	L	-
Borax	Sol	S	S	-
Boric acid	Sat.sol	S	-	-
Boron trifluoride	Sat.sol	S	-	-
Bormine, gas	-	NS	NS	NS
Bromine, liquid	100%	NS	NS	NS
Butane, gas	100%	S	-	-
Butanol	100%	S	L	L
Butyl acetate	100%	L	NS	NS
Butyl glycol	100%	S	-	-
Butyl phenols	Sat.sol	S	-	-
Butyl phthalate	100%	S	L	L
Calcium carbonate	Sat.sol	S	S	S
Calcium chlorate	Sat.sol	S	S	-
Calcium chloride	Sat.sol	S	S	S
Calcium hydroxide	Sat.sol	S	S	S
Calcium hypochlorite	Sol	S	-	-
Calcium nitrate	Sat.sol	S	S	-
Camphor oil	-	NS	NS	NS
Carbon dioxide, dry gas	-	S	S	-
Carbon dioxide, wet gas	-	S	S	-
Carbon disulphide	100%	S	NS	NS
Carbon monoxide, gas	-	S	S	-
Carbon tetrachloride	100%	NS	NS	NS
Castor oil	100%	S	S	-
Caustic soda	Up to 50%	S	L	L
Chlorine, aqueous	Sat.sol	S	L	-
Chlorine, dry gas	100%	NS	NS	NS
Chlorine, liquid	100%	NS	NS	NS
Chloroacetic acid	Sol	S	-	-
Chloroethanol	100%	S	-	-

# Chemical resistance

Chemical or Product	Concentration	Temperature °C		
		20	60	100
Chloroform	100%	L	NS	NS
Chlorosulphonic acid	100%	NS	NS	NS
Chrome alum	Sol	S	S	-
Chromic acid	Up to 40%	S	L	NS
Citric acid	Sat.sol	S	S	S
Coconut oil	-	S	-	-
Copper (II) chloride	Sat.sol	S	S	-
Copper (II) nitrate	Sat.sol	S	S	S
Copper (II)	Sat.sol	S	S	-
Corn oil	-	S	L	-
Cottonseed oil	-	S	S	-
Cresol	Greater than 90%	S	-	-
Cyclohexane	100%	S	-	-
Cyclohexanol	100%	S	L	-
Cyclohexanone	100%	L	NS	NS
Decalin (decahydronaphthalene)	100%	NS	NS	NS
Dextrin	Sol	S	S	-
Dextrose	Sol	S	S	S
Dibutyl phthalate	100%	S	L	NS
Dichloroacetic acid	100%	L	-	-
Dichloroethylene (A and B)	100%	L	-	-
Diethanolamine	100%	S	-	-
Diethyl ether	100%	S	L	-
Diethylene glycol	100%	S	S	-
Diglycolic acid	Sat.sol	S	-	-
Diisooctyl	100%	S	L	-
Dimethyl amine, gas	-	S	-	-
Dimethyl formamide	100%	S	S	-
Dioctyl phthalate	100%	L	L	-
Dioxane	100%	L	L	-
Distilled water	100%	S	S	S
Ethanolamine	100%	S	-	-
Ethyl acetate	100%	L	NS	NS
Ethyl alcohol	Up to 95%	S	S	S

Chemical or Product	Concentration	Temperature °C		
		20	60	100
Ethyl chloride, gas	-	NS	NS	NS
Ethylene chloride (mono and di)	-	L	L	-
Ethyl ether	100%	S	L	-
Ethylene glycol	100%	S	S	S
Ferric chloride	Sat.sol	S	S	S
Formaldehyde	40%	S	-	-
Formic acid	10%	S	S	L
Formic acid	85%	S	NS	NS
Formic acid, anhydrous	100%	S	L	L
Fructose	Sol	S	S	S
Fruit juice	-	S	S	S
Gasoline, petrol (aliphatic hydrocarbons)	-	NS	NS	NS
Gelatine	-	S	S	-
Glucose	20%	S	S	S
Glycerine	100%	S	S	S
Glycolic acid	30%	S	-	-
Heptane	100%	L	NS	NS
Hexane	100%	S	L	-
Hydrobromic acid	Up to 48%	S	L	NS
Hydrochloric acid	Up to 20%	S	S	S
Hydrochloric acid	30%	S	L	L
Hydrochloric acid	From 35 to 36%	S	-	-
Hydrofluoric acid	Dil.sol	S	-	-
Hydrofluoric acid	40%	S	-	-
Hydrogen	100%	S	-	-
Hydrogen chloride, dry gas	100%	S	S	-
Hydrogen peroxide	Up to 10%	S	-	-
Hydrogen peroxide	Up to 30%	S	L	-
Hydrogen sulphide, dry gas	100%	S	S	-
Iodine, in alcohol	-	S	-	-
Isoctane	100%	L	NS	NS
Isopropyl alcohol	100%	S	S	S
Isopropyl ether	100%	L	-	-

## Chemical resistance

Chemical or Product	Concentration	Temperature °C		
		20	60	100
Lactic acid	Up to 90%	S	S	-
Lanoline	-	S	L	-
Linseed oil	-	S	S	S
Magnesium carbonate	Sat.sol	S	S	S
Magnesium chloride	Sat.sol	S	S	-
Magnesium hydroxide	Sat.sol	S	S	-
Magnesium sulphate	Sat.sol	S	S	-
Maleic acid	Sat.sol	S	S	-
Mercury (II) chloride	Sat.sol	S	S	-
Mercury (II) cyanide	Sat.sol	S	S	-
Mercury (I) nitrate	Sol	S	S	-
Mercury	100%	S	S	-
Methyl acetate	100%	S	S	-
Methyl alcohol	5%	S	L	L
Methyl amine	Up to 32%	S	-	-
Methyl bromide	100%	NS	NS	NS
Methyl ethyl ketone	100%	S	-	-
Methylene chloride	100%	L	NS	NS
Milk	-	S	S	S
Monochloroacetic acid	>85%	S	S	-
Naphtha	-	S	NS	NS
Nickel chloride	Sat.sol	S	S	-
Nickel nitrate	Sat.sol	S	S	-
Nickel sulphate	Sat.sol	S	S	-
Nitric acid	Up to 30%	S	NS	NS
Nitric acid	From 40 to 50%	L	NS	NS
Nitric acid, fuming (with nitrogen dioxide)	-	NS	NS	NS
Nitrobenzene	100%	S	L	-
Oleic acid	100%	S	L	-
Oleum (sulphuric acid with 60% of SO <sub>3</sub> )	-	S	L	-
Olive oil	-	S	S	L
Oxalic acid	Sat.sol	S	L	NS
Oxygen, gas	-	S	-	-
Paraffin oil (FL65)	-	S	L	NS

Chemical or Product	Concentration	Temperature °C		
		20	60	100
Peanut oil	-	S	S	-
Peppermint oil	-	S	-	-
Perchloric acid	(2 N) 20%	S	-	-
Petroleum ether (ligroin)	-	L	L	-
Phenol	5%	S	S	-
Phenol	90%	S	-	-
Phosphine, gas	-	S	S	-
Phosphoric acid	Up.to 85%	S	S	S
Phosphorus oxychloride	100%	L	-	-
Picric acid	Sat.sol	S	-	-
Potassium bicarbonate	Sat.sol	S	S	S
Potassium borate	Sat.sol	S	S	-
Potassium bromate	Up to 10%	S	S	-
Potassium bromide	Sat.sol	S	S	-
Potassium carbonate	Sat.sol	S	S	-
Potassium chlorate	Sat.sol	S	S	-
Potassium chlorite	Sat.sol	S	S	-
Potassium chromate	Sat.sol	S	S	-
Potassium cyanide	Sol	S	-	-
Potassium dichromate	Sat.sol	S	S	S
Potassium ferricyanide	Sat.sol	S	S	-
Potassium fluoride	Sat.sol	S	S	-
Potassium hydroxide	Up to 50%	S	S	S
Potassium iodide	Sat.sol	S	-	-
Potassium nitrate	Sat.sol	S	S	-
Potassium perchlorate	10%	S	S	-
Potassium permanganate	(2 N) 30%	S	-	-
Potassium persulphate	Sat.sol	S	S	-
Potassium sulphate	Sat.sol	S	S	-
Propane, gas	100%	S	-	-
Propionic acid	>50%	S	-	-
Pyridine	100%	L	-	-
Seawater	-	S	S	S
Silicon oil	-	S	S	S



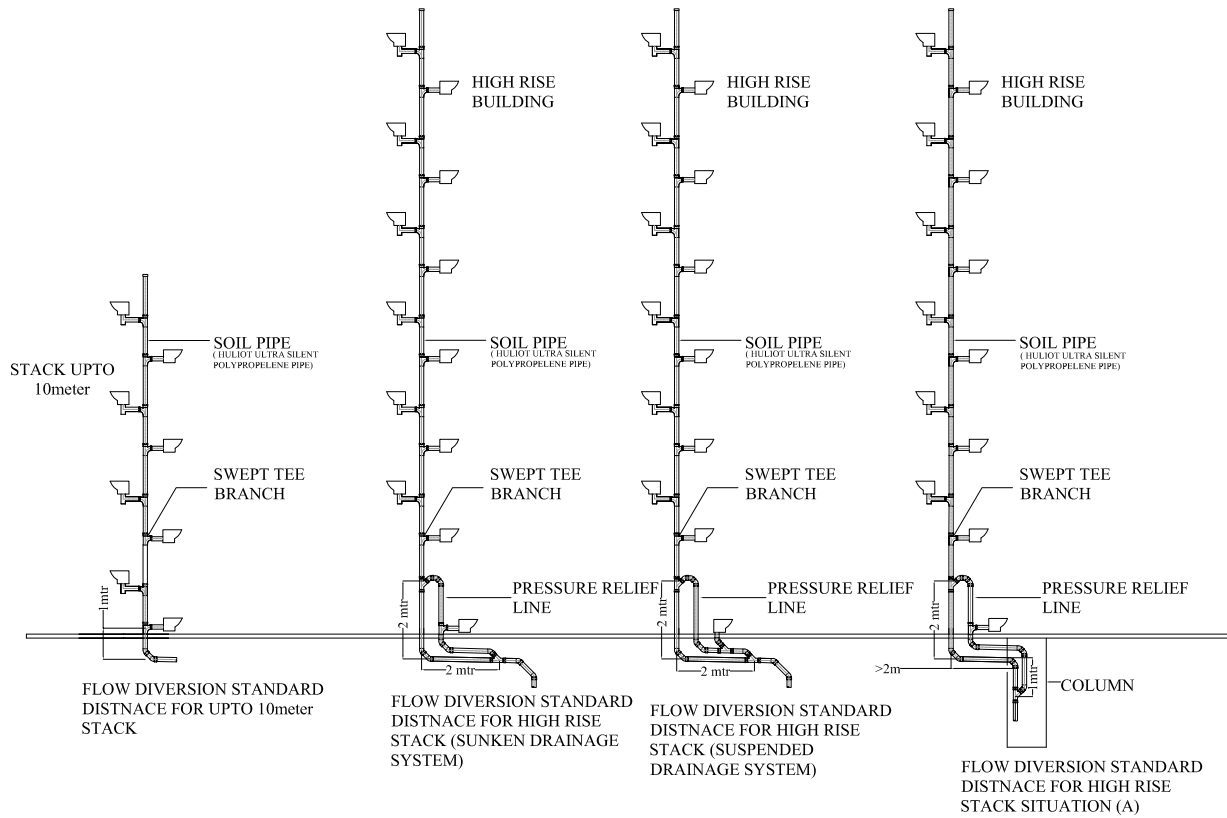
## Chemical resistance

Chemical or Product	Concentration	Temperature °C		
		20	60	100
Silver nitrate	Sat.sol	S	S	L
Sodium acetate	Sat.sol	S	S	S
Sodium benzoate	35%	S	L	-
Sodium bicarbonate	Sat.sol	S	S	S
Sodium carbonate	Up to 50%	S	S	L
Sodium chlorate	Sat.sol	S	S	-
Sodium chloride	Sat.sol	S	S	-
Sodium chlorite	2%	S	L	NS
Sodium chlorite	20%	S	L	NS
Sodium dichromate	Sat.sol	S	S	S
Sodium hydrogen carbonate	Sat.sol	S	S	S
Sodium hydrogen sulphate	Sat.sol	S	S	-
Sodium hydrogen sulphite	Sat.sol	S	-	-
Sodium hydroxide	1%	S	S	S
Sodium hydroxide	From 10 to 60%	S	S	S
Sodium hypochlorite	5%	S	S	-
Sodium hypochlorite	10% - 15%	S	-	-
Sodium hypochlorite	20%	S	L	-
Sodium metaphosphate	Sol	S	-	-
Sodium nitrate	Sat.sol	S	S	-
Sodium perborate	Sat.sol	S	S	-
Sodium phosphate (neutral)	-	S	S	S
Sodium silicate	Sol	S	S	-
Sodium sulphate	Sat.sol	S	S	-
Sodium sulphide	Sat.sol	S	-	-
Sodium sulphite	40%	S	S	S
Sodium thiosulphate (hypo)	Sat.sol	S	-	-
Soybean oil	-	S	L	-
Succinic acid	Sat.sol	S	S	-
Sulphuric acid	Up to 10%	S	S	S
Sulphuric dioxide, dry or wet	100%	S	S	-
Sulphur acid	From 10 to 30%	S	S	-
Sulphuric acid	50%	S	L	L
Sulphuric acid	96%	S	L	NS

Chemical or Product	Concentration	Temperature °C		
		20	60	100
Sulphuric acid	98%	L	NS	NS
Sulphurous acid	Up to 30%	S	-	-
Tartaric acid	Sat.sol	S	S	-
Tetrahydrofuran	100%	L	NS	NS
Tetralin	100%	NS	NS	NS
Thiophene	100%	S	L	-
Tin (IV) chloride	Sol	S	S	-
Tin (II) chloride	Sat.sol	S	S	-
Toluene	100%	L	NS	NS
Trichloroacetic acid	Up to 50%	S	S	-
Trichloroethylene	100%	NS	NS	NS
Triethanolamine	Sol	S	-	-
Turpentine	-	NS	NS	NS
Urea	Sat.sol	S	S	-
Vinegar	-	S	S	-
Water brackish, mineral, potable	-	S	S	S
Whiskey	-	S	S	-
Wines	-	S	S	-
Xylene	100%	NS	NS	NS
Yeast	Sol	S	S	S
Zinc chloride	Sat.sol	S	S	-
Zinc sulphate	Sat.sol	S	S	-

S - satisfied  
L - limited  
NS - non-satisfied

# Huliot Ultra Silent PP Drainage Solution



**SINGLE STACK SYSTEM WITH SWEPT TEE**

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