siplast™

CATALOGUE 2005

don't wait for rain™

irrigation systems

siplast™
IRRIGATION SYSTEMS

INDEX

siplast™
IRRIGATION SYSTEMS

"**Water** is an **universal commodity** and a **human** right"

Water is as precious as petroleum. Agriculture consumes from 70% to 80% of the available water, while 15% is used by industry and the rest is utilized for civil purposes.
This data, surely very important for those economically involved, shows the importance of a honest activity.
As 75% of the human population has water problems, avoiding this problem will be equivalent to turning our backs on our planet Earth, therefore letting the planet's future be uncertain. Moreover, working together with others also concerned about the good health of our planet, we are giving a hand in helping control the existing water crisis that has been around during the past years.
Considering all the **IRRITEC & SIPLAST** experience in this sector, we are convinced that for an appropriate environmental development, it is imperative to properly use our water resource .
We have revolutionized the Italian and International irrigation concept by introducing innovative solutions to the water problems, from the manufacture of tubes and drip irrigation hoses to all plastic fittings, with focus on drip and micro irrigation systems.
Users understand how those techniques have revolutionized the irrigation systems. Smaller water quantities are used to achieve optimum crop yields by using only the amount of water needed by the soil to sustain the crop and by proper application of plant nutrients. Those new practices have replaced old irrigation techniques in a very short time. **IRRITEC & SIPLAST** are among the first companies that have introduced environmental protection systems in Italy.
We have received a Quality ISO-9001 Certification for **IRRITEC** and an ISO-9001 and ISO-14001 Quality and Environmental Standard for **SIPLAST**, therefore offering solutions in the promotion of new working standards as well as the recycling of used materials.

junior®
light coextruded dripline

JUNIOR®, the result of SIPLAST research, is the technological answer to the new requirements of the drip irrigation market. It is versatile, reliable and cheap.

JUNIOR®, consists of a polyethylene pipe with an incorporated dripper manufactured by a coextrusion process, in compliance with the quality system standard ISO 9001.

JUNIOR®, offers excellent resistance to the thermal and mechanical stresses and keeps unchanged its characteristics. The most important innovation is the dripper that controls the flow rate. The technology applied to design and production, has permitted to obtain a dripper with excellent hydraulic characteristics in order to reach longer branch lengths, with high emission uniformity performance.

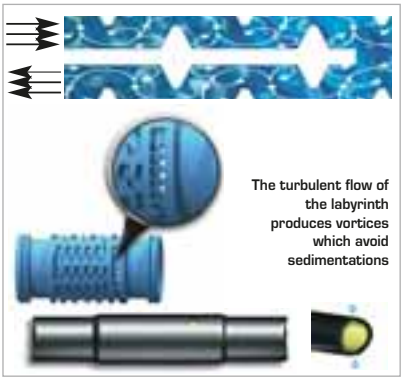
Technological characteristics:

- The dripper is only 32 mm long and implies minimum pressure losses allowing longer branch lengths;
- Dripper's filter reduces clogging possibilities with low water quality;
- The labyrinth of the turbulent flow dripper , designed to grant the emission uniformity, secures lower flow variations when varying working pressure;
- The drip points of the dripper enable a quickly and easy installation without checking the emission point position and secure pipe depletion at the end of the irrigation cycle.

Applications

JUNIOR® dripline
is successfully used:

- in vegetables and flowers crops;
- in greenhouses and in the open field;
- on ground with zero or minimum slope;
- in irrigation cycles with fertilizer.



JUNIOR® is available:

- in 16 and 20 mm diameter;
- flow rate: Ø 16 mm (1.60 lph), (2,10 lph) and (3.60 lph)
  Ø 20 mm (1.60 lph);
- wall thickness: Ø 16 35 mil (0.90 mm) 44 mil (1.10 mm);
  Ø 20 35 mil (0.90 mm) 47 mil (1.20 mm);
- with uniform spacing between drippers (15 cm minimum);
- with variable spacing (groups of drippers).

Dripper characteristics

Nomin. Diam. (mm)	Nomin. Flow rate (lph at 1 bar)	Labyrinth dimensions (mm) Depth.	Width.	Length.	Inlet Filter Area (mm²)	No. of holes	Recommended filtration efficiency (Mesh)	Flow equation k	x	Dripper colour
16	1.60	0.85	0.8	94	4.3	5	155	0.57	0.46	Gray
	2.10	0.90	0.9	70	12	20	120	0.66	0.50	Azure
	3.60	1.25	1.2	94	6.3	5	120	1.13	0.50	Beige
20	1.60	0.9	0.8	110	6.0	7	155	0.57	0.46	Gray

PE pipe characteristics

Nomin. Diam. (mm)	Pipe inside diam. (mm)	Pipe outside diam. (mm)	Pipe thickness (mm)	Pipe thickness (mil)	Max working pressure (bar)
16	13.8	15.6	0.90	35	3.0
		16.0	1.10	44	4.0
20	17.7	19.5	0.90	35	3.0
		20.1	1.20	47	4.0

Connecting systems and accessories
see pag. 23

junior®

light coextruded dripline

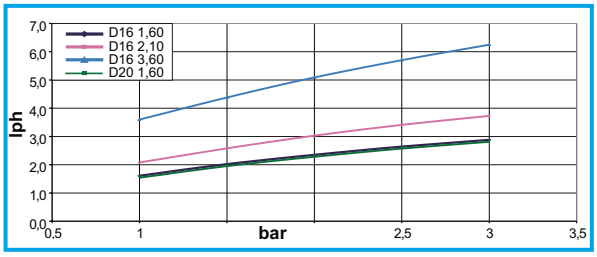
Flow rate (lph) related to the pipe thickness (mil) and pressure (bar)

Press. (bar)	16 mm 35 mil 1.60 lph	16 mm 44 mil 1.60 lph	16 mm 35 mil 2.10 lph	16 mm 44 mil 2.10 lph	16 mm 35 mil 3.60 lph	16 mm 44 mil 3.60 lph	20 mm 35 mil 1.60 lph	20 mm 47 mil 1.60 lph
0.5	1.21	1.15	1.53	1.42	2.61	2.55	1.21	1.14
1	1.61	152	2.08	1.98	3.57	3.51	1.61	1.51
1.5	1.98	1.92	2.58	2.47	4.35	4.27	1.98	1.91
2	2.29	2.22	3.03	2.99	5.06	4.92	2.30	2.21
2.5	2.57	2.50	3.41	3.30	5.66	5.50	2.58	2.49
3	2.81	2.72	3.73	3.63	6.22	6.05	2.82	2.71

Pressure - flow rate relation

Diameter (mm)	Flow rate (lph)	Pressure (bar) 1	1.5	2	2.5	3
16	1.60	1.61	1.98	2.29	2.57	2.81
16	2.10	2.08	2.58	3.03	3.41	3.73
16	3.60	3.57	4.35	5.06	5.66	6.22
20	1.60	1.61	1.98	2.30	2.58	2.82

Calculated on the average of 25 drippers



Ø 20 mm - Recommended branch length in meter, related to emission uniformity (E.U. %), at 1 bar

Diameter (mm)	Flow rate (lph)	Slope (%)	E.U. (%)	Spacing (cm) 20	30	40	50	60	75	100	125	150
16	1.60	2	**95**	31	36	39	41	43	44	46	46	47
			90	70	87	100	110	119	130	143	152	159
			85	88	110	127	142	154	169	189	203	213
		0	**95**	45	59	72	83	94	108	130	150	169
			90	82	108	131	152	171	198	239	276	310
			85	102	134	162	187	211	244	294	340	382
		-2	**95**	57	78	96	118	92	63	56	54	53
			90	94	126	155	186	211	249	306	365	422
			85	114	153	188	224	255	300	368	437	500
16	2.10	2	**95**	27	32	35	37	38	40	41	42	43
			90	60	75	86	96	104	114	127	136	143
			85	75	95	111	124	135	149	167	181	192
		0	**95**	38	50	60	69	78	90	109	126	141
			90	69	91	110	128	144	166	200	231	260
			85	86	112	136	158	178	206	248	286	322
		-2	**95**	47	63	81	94	112	95	54	51	49
			90	77	104	130	152	176	207	252	300	345
			85	94	126	158	184	213	250	305	360	414
16	3.60	2	**95**	21	26	29	32	34	36	38	40	41
			90	44	56	66	74	82	91	103	113	121
			85	56	71	84	95	104	117	134	147	159
		0	**95**	27	35	42	49	55	64	77	89	100
			90	49	64	78	90	101	117	141	163	184
			85	60	79	96	111	125	145	175	202	227
		-2	**95**	30	43	55	62	73	84	111	91	58
			90	53	72	89	103	119	138	173	202	230
			85	65	88	108	126	144	168	210	244	278
16	1.60	2	**95**	40	43	45	46	47	48	48	48	48
			90	99	119	133	144	152	160	170	173	176
			85	127	154	174	189	201	215	230	237	243
		0	**95**	71	93	112	130	146	169	203	231	260
			90	130	170	205	237	267	308	371	425	477
			85	160	209	253	292	329	380	458	524	589
		-2	**95**	93	86	62	57	55	53	52	52	51
			90	147	202	253	301	347	408	503	561	685
			85	183	250	310	368	421	493	592	673	762

Values shown in the chart are calculated with the KELLER - KARMELI EQUATION (1975)

Field slope (- downhill; + uphill)

$$E.U. = 100\left(1 - 1.27\frac{CV}{\sqrt{n}}\right)\frac{Q_{min}}{Q_{med}}$$

where CV = 0.03 (coefficient of technological variation) n = number of drippers for each plant
Qmin = minimum flow rate (lph) Qmed = medium flow rate (lph)

For a better uniformity of delivery in each system point, it is recommended to use E.U. values, higher than or equal to 90%

Dripline with uniform spacing between drippers

Dripline with variable spacing between drippers: groups of drippers

- S = spacing in cm between drippers;
- D = distance in cm between two groups of drippers with spacing S;
- N = number of drippers for each group (8 drippers maximum).

Junior® dripline is supplied in the following lengths:

Outside diameter (mm)	Reel length (m)	Volume (m^3)
16	25	0.02
16	50	0.04
16	100	0,06
16	400	0.20
20	25	0.03
20	50	0.05
20	100	0.09
20	300	0.22

mono® & tandem®

coextruded dripline

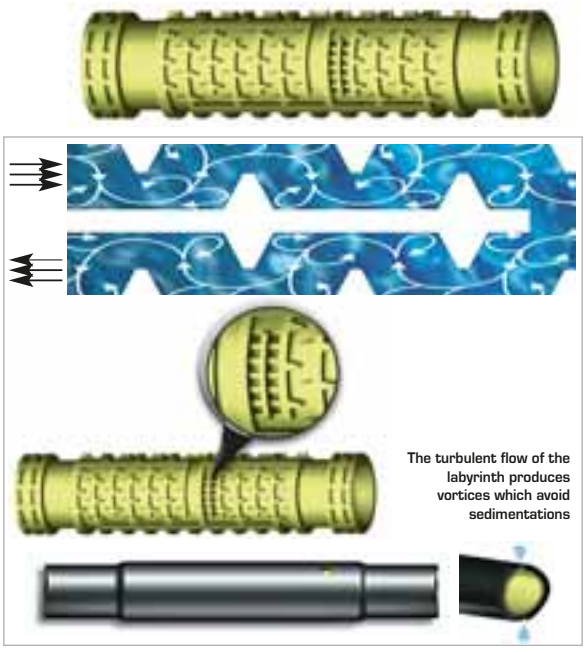
Conform to UNI EN ISO 9261 certificate

N. 190/2004 ISO 9261:2004

After decades of research and experience SIPLAST succeded in extruding MONO® dripline. It is a polyethylene pipe with incorporated drippers during the extrusion cycle. It is versatile, reliable and cheap.
Controls carried out during dripline production conform to the quality system standards ISO 9001 to grant the best Siplast's production performance.

Technological characteristics

- The turbulent flow dripper (self cleaning) avoids sedimentation inside the labyrinth;
- Dripper's filter reduces clogging possibilities with low water quality;
- The drip points of the dripper enable a quickly and easy installation without checking the emission point position and secure pipe depletion at the end of the irrigation cycle



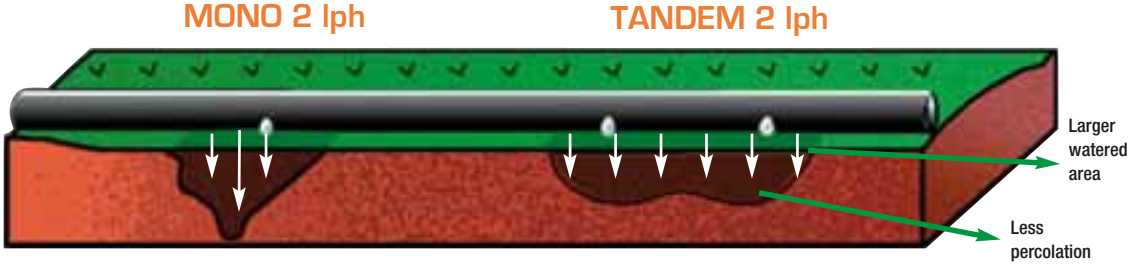
Applications

MONO® & TANDEM® dripline is successfully used:

- In vegetables and flowers crops;
- in greenhouses and in the open field;
- on ground with zero or minimum slope;
- in irrigation cycles with fertilizer;
- in mechanized installations.

TANDEM® is the result of the research and development work aimed to the continuous improvement of performances. Its peculiarity is the double drilling for points for each dripper.
The advantages of this technological innovation are:

- Increase of the watered area and less percolation;
- Possibility to install lines with larger spacings (cheaper) but with the same yield of flow rate and irrigated area and to obtain longer branch lengths.



Dripper characteristics

Nomin. Diam. (mm)	Nomin. Flow rate (lph at 1 bar)	Labyrinth dimensions (mm) Depth	Width	Length	Inlet filter Area (mm²)	No. of holes	Recommended filtration efficiency (Mesh)	Flow equation k	x	Dripper colour
16	1.50	0.8	1.2	198	5	7	155	0.41	0.57	Yellow
	2.10	1	1.3	198	10	10	120	0.69	0.50	Azure
	4.00	1.3	1.4	170	10	10	100	1.32	0.49	Black
	8.00	1.4	1.8	144	34	24	100	2.48	0.51	Red
20	1.70	1	1.3	264	10	7	155	0.56	0.52	Yellow
	2.20	1.2	1.2	264	10	7	120	0.80	0.49	Azure
	3.80	1.4	1.4	252	19	14	100	1.20	0.48	Black
	7.00	1.5	1.5	125	30	30	100	2.35	0.49	Red
	15.00	1.5	1.5	63	60	60	100	4.94	0.47	Green

PE pipe characteristics

Nomin. Diam. (mm)	Pipe inside diam. (mm)	Pipe outside diam. (mm)	Pipe thickness (mm)	Pipe thickness (mil)	Max working pressure (bar)
16	13.8	16.0	1.10	44	4.00
20	17.7	20.1	1.20	47	4.00

Connecting systems and accessories
see pag. 23

mono® & tandem®

coextruded dripline

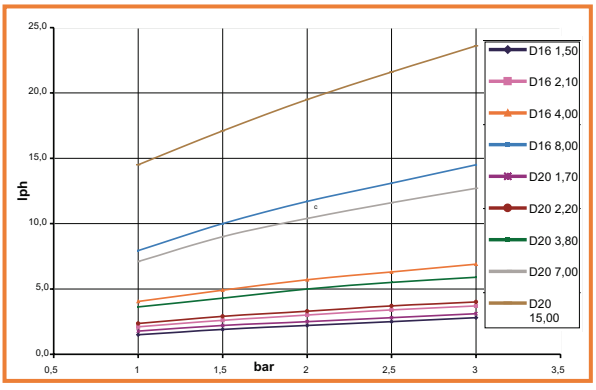
Conform to UNI EN ISO 9261 certificate

N. 190/2004 ISO 9261:2004

Pressure Flow rate relation

Diameter (mm)	Flow rate (lph)	Pressure (bar) 1	1.5	2	2.5	3
16	1.50	1.49	1.90	2.20	2.50	2.80
16	2.10	2.10	2.60	3.00	3.40	3.70
16	4.00	4.05	4.90	5.70	6.30	6.90
16	8.00	7.93	10.00	11.70	13.10	14.50
20	1.70	1.78	2.20	2.50	2.80	3.10
20	2.20	2.26	2.90	3.30	3.70	4.00
20	3.80	3.73	4.30	5.00	5.50	5.90
20	7.00	7.10	9.00	10.40	11.60	12.70
20	15.00	14.50	17.10	19.50	21.60	23.60

Calculated on the average of 25 drippers



Ø 16 mm - Recommended branch length in meter, related to the emission uniformity (E.U. %), at 1 bar

Diameter (mm)	Flow rate (lph)	Slope (%)	E.U. (%)	Spacing (cm) 20	30	40	50	60	75	100	125	150
16	1.50	2	95	25	30	33	34	36	37	38	39	40
			90	56	73	86	96	104	114	126	135	140
			85	71	93	111	125	137	152	169	183	193
		0	95	35	49	61	72	83	97	119	140	157
			90	65	91	113	134	153	180	221	259	292
			85	81	113	141	167	191	224	275	321	363
		-2	95	44	64	83	65	56	46	43	44	43
			90	73	105	134	162	188	227	287	350	403
			85	90	128	164	197	228	275	346	420	480
16	2.10	2	95	23	28	32	35	37	39	41	42	43
			90	48	64	76	87	96	107	121	132	139
			85	61	81	97	111	123	138	158	174	186
		0	95	29	41	51	60	69	81	99	117	133
			90	54	75	94	111	127	149	183	216	244
			85	67	93	116	137	157	185	227	267	303
		-2	95	34	52	65	82	94	70	58	52	50
			90	59	85	107	131	151	180	229	278	316
			85	72	103	131	159	183	219	227	334	380
16	4.00	2	95	17	22	26	29	31	34	37	39	40
			90	34	46	56	64	72	81	95	105	114
			85	42	57	70	81	91	104	122	136	148
		0	95	20	28	35	41	47	55	68	79	89
			90	37	51	64	75	86	101	124	144	164
			85	45	63	79	93	107	125	154	179	202
		-2	95	23	32	42	52	58	72	90	112	89
			90	39	55	70	85	97	117	146	176	202
			85	48	67	86	104	118	143	178	213	244
16	8.00	2	95	11	16	19	21	23	26	29	32	34
			90	22	30	37	44	49	56	67	76	83
			85	30	38	47	55	62	71	85	97	107
		0	95	13	18	22	26	30	35	43	51	57
			90	24	33	41	48	55	65	80	93	106
			85	29	40	50	60	68	80	99	115	131
		-2	95	14	21	27	30	35	43	56	65	77
			90	27	35	44	52	60	72	91	107	124
			85	30	41	54	64	74	88	111	130	150

Field slope (- downhill; + uphill)

mono® & tandem®

coextruded dripline

Conform to UNI EN ISO 9261 certificate

N. 190/2004 ISO 9261:2004

Ø 20 mm - Recommended branch length in meter, related to the emission uniformity (E.U. %), at 1 bar

Diameter (mm)	Flow rate (lph)	Slope (%)	E.U. (%)	Spacing (cm) 20	30	40	50	60	75	100	125	150
20	1.70	2	95	32	36	39	40	41	42	43	42	42
			90	77	97	112	122	131	140	149	155	159
			85	98	126	146	162	174	188	204	215	212
		0	95	52	71	89	104	119	140	171	199	225
			90	95	131	163	193	220	258	315	368	416
			85	118	162	202	239	272	319	391	456	516
		-2	95	67	100	96	52	49	47	46	45	45
			90	110	158	204	243	284	339	434	513	585
			85	134	192	247	293	342	407	512	597	680
20	2.20	2	95	30	35	38	40	42	43	44	44	45
			90	68	88	102	114	123	134	146	154	160
			85	86	112	132	148	161	177	196	210	219
		0	95	44	61	76	89	102	119	145	172	194
			90	81	111	139	164	187	219	268	316	357
			85	100	138	171	202	213	271	331	391	442
		-2	95	56	82	106	89	59	53	50	49	49
			90	92	131	168	202	234	283	357	425	499
			85	112	159	203	244	282	340	428	508	578
20	3.80	2	95	26	32	35	38	40	41	43	44	45
			90	55	72	86	97	106	117	131	141	149
			85	70	92	109	124	137	153	173	188	200
		0	95	34	48	59	70	79	93	114	132	150
			90	63	87	108	128	146	171	209	243	275
			85	78	107	134	158	180	211	258	301	340
		-2	95	41	58	78	93	113	96	56	53	51
			90	69	98	126	151	177	212	264	317	369
			85	85	119	153	183	214	256	318	381	441
20	7.00	2	95	18	24	27	30	33	35	38	40	41
			90	37	50	60	69	77	87	100	110	119
			85	47	63	76	87	97	111	129	143	155
		0	95	22	31	38	45	51	60	73	85	96
			90	41	56	70	82	94	110	134	155	176
			85	50	69	86	102	116	136	166	192	217
		-2	95	26	36	47	58	65	80	101	77	67
			90	44	61	78	94	107	129	161	189	217
			85	54	75	95	114	130	157	195	229	262
20	15.00	2	95	13	17	20	23	25	28	32	35	37
			90	25	34	41	48	54	62	73	82	90
			85	31	42	51	60	67	77	92	104	115
		0	95	14	20	25	29	33	39	48	55	62
			90	26	36	45	53	61	71	87	101	114
			85	32	45	56	66	75	88	107	125	141
		-2	95	16	23	28	34	39	48	62	71	84
			90	28	39	48	58	67	79	100	116	134
			85	34	47	59	70	81	97	121	141	163

Field slope (- downhill; + uphill)

Values shown in the chart are calculated with the KELLER - KARMELI EQUATION (1975)

$$E.U. = 100 \left(1 - 1.27 \frac{CV}{\sqrt{n}}\right) \frac{Q_{min}}{Q_{med}}$$

where CV = 0.03 (coefficient of technological variation) n = number of drippers for each plant

Qmin = minimum flow rate (lph) Qmed = medium flow rate (lph)

For a better uniformity of delivery in each system point, it is recommended to use E.U. values, higher than or equal to 90%

MONO & TANDEM® dripline is supplied in the following lengths:

Dripline with uniform spacing between drippers

Dripline with variable spacing between drippers: groups of drippers

- S = spacing in cm between drippers;
- D = distance in cm between two groups of drippers with spacing S;
- N = number of drippers for each group (8 drippers maximum).

Outside diameter (mm)	Reel length (m)	Volume (m^3)
16	25	0.02
16	50	0.04
16	100	0.06
16	400	0.20
20	25	0.03
20	50	0.05
20	100	0.09
20	300	0.22

multibar®

pressure compensated coextruded dripline

Conform to UNI EN ISO 9261 certificate

N. 191/2004 ISO 9261:2004

SIPLAST s.p.a., leader company in manufacturing irrigation systems, produces **MULTIBAR®** the pressure compensated dripline made of a polyethylene pipe with an incorporated dripper during the extrusion cycle of high pressure-compensated characteristics. For this reason Multibar is the suitable product to be installed in areas with big differences of level and where longer branch lengths are required with uniform flow rate in each system point and precise delivery of water for vintage crops. The Quality System of SIPLAST conform to the quality system standard ISO 9001 and grants the high quality production.

Technological characteristics

- Dripper's pressure compensated system is granted by the silicone diaphragm which secures a uniform flow rate on varying working pressure.
- The turbolent flow labyrinth (self cleaning) avoids sedimentations inside the labyrinth.
- Dripper's filter reduces clogging possibilities with low water quality.
- The drip points of the dripper enable a quickly and easy installation without checking the emission point position and secure pipe depletion at the end of the irrigation cycle.

For the above mentioned characteristics MULTIBAR® permits:

- perfect dosage of fertilizer in any system point;
- maximum precision in water distribuition in any topographical condition;
- branch lengths up to 800 meters;
- the use of working pressures from 0.5 to 4 bar.

Dripper characteristics

Nomin. Diam. (mm)	Nomin. Flow rate (lph at 1 bar)	Labyrinth dimensions (mm) Depth	Width	Length	Compensating range (bar)			Recommended filtration (Mesh)	Flow equation k	x	Inlet filter Area (mm²)	No. of holes	Dripper colour
16	1.60	1	0.8	35	0.5	-	4	155	1.51	0.020	3.6	12	Azure
	2.10	1.1	0.8	35	0.5	-	4	155	2.06	0.020	3.6	12	Black
	2.90	1.1	0.8	22	0.5	-	4	155	2.90	0.025	3.6	12	Brown
	3.80	1.3	1.1	35	0.5	-	4	155	3.65	0.020	3.6	12	Green
20	1.60	1.1	0.8	42	0.5	-	4	155	1.53	0.020	3.6	12	Azure
	2.10	1.25	0.8	42	0.5	-	4	155	2.10	0.020	3.6	12	Black
	2.90	1.25	0.8	32	0.5	-	4	155	2.75	0.027	3.6	12	Brown
	3.80	1.25	1.3	42	0.5	-	4	155	3.55	0.030	3.6	2	Green

PE pipe characteristics

Nomin. Diam. (mm)	Pipe inside diam. (mm)	Pipe outside diam. (mm)	Pipe thickness (mm)	Pipe thickness (mil)	Max working pression (bar)
16	13.8	16.0	1.05	0.44	4.0
20	17.7	20.1	1.15	0.47	4.0

Connecting systems and accessories

see pag. 23

multibar®

pressure compensated coextruded dripline

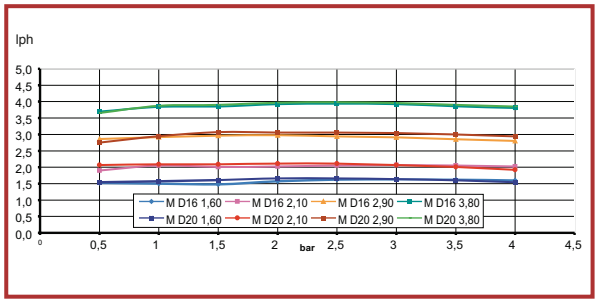
Conform to UNI EN ISO 9261 certificate

N. 191/2004 ISO 9261:2004

Pressure - flow rate relation

Diameter (mm)	Flow rate (lph)	Pressure (bar) 0.5	1	1.5	2	2.5	3	3.5	4
16	1.60	1.56	1.58	1.55	1.60	1.62	1.65	1.62	1.60
16	2.10	2.05	2.12	2.12	2.10	2.10	2.09	2.08	2.06
16	2.90	2.86	2.92	2.96	2.98	2.94	2.91	2.85	2.80
16	3.80	3.70	3.84	3.85	3.92	3.94	3.92	3.88	3.81
20	1.60	1.54	1.57	1.61	1.66	1.66	1.64	1.60	1.54
20	2.10	2.05	2.10	2.16	2.20	2.16	2.11	2.06	2.02
20	2.90	2.78	2.95	3.04	3.03	3.03	3.01	2.96	2.92
20	3.80	3.65	3.92	3.85	3.92	3.96	3.97	3.96	3.90

Calculated on the average of 25 drippers



Ø 16 mm - Recommended branch length in meter related to field slope and working pressure.

Compensating range: 0.5 - 4.0 bar

Diameter (mm)	Flow rate (lph)	Pressure (bar)	Slope (%)	Spacing (cm) 20	30	40	50	60	75	100	125	150
16	1.60	1.0	2	47	65	81	95	107	123	144	162	175
			0	51	73	93	113	131	157	197	236	270
			-2	54	80	106	131	156	193	254	317	377
		2.0	2	72	102	130	154	177	208	253	293	327
			0	75	108	139	168	195	234	294	351	403
			-2	78	114	148	181	214	261	336	411	482
		3.0	2	88	125	159	190	219	259	318	372	418
			0	90	130	167	202	235	282	354	423	485
			-2	93	135	175	214	251	305	390	475	554
		4.0	2	100	142	181	217	250	297	366	431	487
			0	102	146	188	228	265	318	400	478	548
			-2	104	151	196	238	279	339	432	525	611
16	2.10	1.0	2	41	57	71	83	94	109	130	146	159
			0	43	62	80	96	112	134	169	200	230
			-2	46	68	89	110	130	161	210	259	307
		2.0	2	62	88	112	134	154	181	222	257	288
			0	64	92	119	144	167	200	252	299	343
			-2	66	97	126	154	181	220	282	342	400
		3.0	2	76	108	137	164	189	224	277	323	364
			0	77	111	143	173	201	241	303	359	412
			-2	79	115	149	181	213	258	330	397	462
		4.0	2	86	122	156	187	216	257	318	372	422
			0	87	125	161	195	227	272	342	406	466
			-2	89	129	167	203	237	287	366	441	511
16	2.90	1.0	2	33	46	58	69	78	91	110	125	138
			0	35	50	64	77	90	107	135	160	183
			-2	36	53	70	86	101	124	161	197	233
		2.0	2	50	71	90	108	125	148	181	211	238
			0	51	74	95	115	133	160	201	238	273
			-2	53	76	99	121	142	172	220	266	310
		3.0	2	61	86	110	132	153	182	225	263	298
			0	62	89	114	138	160	192	241	287	329
			-2	63	91	118	143	168	203	258	311	360
		4.0	2	69	98	125	151	174	207	257	302	343
			0	70	100	129	156	181	217	273	324	371
			-2	71	102	132	161	188	227	288	343	400
16	3.80	1.0	2	28	40	50	60	68	80	96	111	123
			0	30	42	54	66	76	92	115	136	156
			-2	31	45	59	72	85	104	134	164	192
		2.0	2	43	61	78	93	108	127	157	184	207
			0	44	63	81	98	114	136	171	203	233
			-2	45	65	84	102	120	145	185	223	259
		3.0	2	52	74	95	114	131	156	194	227	258
			0	53	76	97	118	137	164	206	244	280
			-2	54	77	100	122	142	172	218	262	303
		4.0	2	59	84	107	129	150	178	221	261	296
			0	59	85	110	133	154	185	233	276	317
			-2	60	87	112	136	159	192	244	292	338

multibar®

pressure compensated coextruded dripline

Conform to UNI EN ISO 9261 certificate

N. 191/2004 ISO 9261:2004

Ø 20 mm - Recommended branch length in meter related to field slope and working pressure.

Compensating range: 0.5 - 4.0 bar

Diameter (mm)	Flow (lph)	Pressure (bar)	Slope (%)	Spacing (cm) 20	30	40	50	60	75	100	125	150
20	1.60	1.0	2	82	108	129	146	159	175	194	207	216
			0	95	133	168	200	229	271	334	391	444
			-2	108	159	209	258	307	379	491	612	728
		2.0	2	132	180	220	256	287	328	384	429	466
			0	141	198	250	297	342	404	498	583	662
			-2	151	217	280	340	399	484	620	749	876
		3.0	2	162	222	275	321	361	419	498	564	621
			0	170	238	301	358	411	486	600	702	796
			-2	178	255	327	395	461	555	705	845	971
		4.0	2	185	256	317	372	422	490	587	666	738
			0	193	271	341	406	467	552	680	792	900
			-2	201	286	365	440	512	615	775	920	990
20	2.10	1.0	2	70	93	112	128	141	157	177	192	203
			0	79	110	139	165	190	224	277	325	369
			-2	88	128	167	205	243	298	389	479	568
		2.0	2	111	152	187	218	246	282	334	376	412
			0	117	165	207	247	284	335	413	484	550
			-2	124	178	228	277	323	390	497	599	699
		3.0	2	135	187	232	272	308	357	428	487	540
			0	141	198	250	297	342	404	498	583	663
			-2	147	209	268	323	376	451	571	683	791
		4.0	2	156	216	269	316	359	418	504	571	636
			0	161	227	285	340	391	462	570	659	749
			-2	167	237	302	364	423	506	638	750	865
20	2.90	1.0	2	59	79	96	110	122	138	158	173	185
			0	64	90	114	135	155	184	226	266	302
			-2	70	102	133	162	191	233	302	370	436
		2.0	2	91	126	156	182	206	238	284	323	356
			0	96	134	169	201	232	274	337	396	450
			-2	100	143	183	221	258	310	393	473	550
		3.0	2	111	154	192	226	256	298	359	412	459
			0	115	162	204	242	279	329	406	477	542
			-2	119	169	216	260	301	361	455	544	628
		4.0	2	127	177	221	260	296	346	418	480	536
			0	131	184	232	276	317	375	462	539	612
			-2	135	191	243	292	338	404	507	600	691
20	3.80	1.0	2	51	69	84	97	108	123	142	157	169
			0	55	77	97	115	132	156	193	224	254
			-2	59	85	110	135	158	192	247	297	349
		2.0	2	78	108	134	157	179	207	248	281	312
			0	82	114	144	171	197	233	287	334	379
			-2	85	121	154	186	216	259	327	388	449
		3.0	2	95	132	165	194	221	258	312	356	397
			0	98	138	173	206	237	280	346	401	456
			-2	101	143	182	219	254	303	381	449	517
		4.0	2	108	150	188	222	253	296	359	412	461
			0	111	155	196	233	268	317	391	454	516
			-2	113	160	204	242	283	337	422	497	571

Dripline with uniform spacing between drippers

Dripline with variable spacing between drippers: groups of drippers

- S = spacing in cm between drippers;
- D = distance in cm between two groups of drippers with spacing S;
- N = number of drippers for each group (8 drippers maximum).

MULTIBAR® dripline is supplied in the following lengths:

Outside diameter (mm)	Reel length (m)	Volume (m^3)
16	25	0.02
16	50	0.04
16	100	0.06
16	400	0.20
20	25	0.03
20	50	0.05
20	100	0.09
20	300	0.22

rootguard®

subsurface drip irrigation systems

Conform to UNI EN ISO 9261 certificate
N. 191/2004 ISO 9261:2004

What is subsurface drip irrigation?

Traditional drip irrigation is found above ground, now with the invention of **ROOTGUARD®** the lines can be buried below ground surface for a long trouble-free life. Subsurface irrigation allows the precise application of water, nutrients and other agrochemicals directly to the root zone of plants reducing volumes and consequently lower costs and pollution.

This allows the farmer to optimize the growing environment and leads to higher quality and quantity crop yields.

An efficient installation has water moving by capillary action at a depth of 10 to 75 cm beneath the surface, forming a continuous wetted area along the plant rows. Frequent irrigation cycles (several times daily) maximize capillary action and minimize water surfacing.

The depth and placement of subsurface driplines is determined by the soil composition and the crop needs. Aiming at the quality of the product, reliability and ease of use, Siplast with **ROOTGUARD®** is providing the best products available in the Subsurface Irrigation market today.

Comparison table

Given the same amount of water, subsurface drip irrigation covers a 46% larger wetted volume of soil than a surface drip system. This decreases the saturation point of the soil, which not only leaves room for more air, but also improves the capillary movement of water and decreases the water lost by deep percolation.

Sub-surface dripline

Surface dripline

Water distribution 10 hours after 1 hour of watering

Connecting systems and accessories
see pag. 23

rootguard®

subsurface drip irrigation systems

Conform to UNI EN ISO 9261 certificate

N. 190/2004 ISO 9261:2004

Why using subsurface drip irrigation?

• Higher yields. Water and nutrients delivered directly to the root zone promote healthy plant growth and reduce plant stress.

• Healthier, better quality crops. Soil and foliage are kept dry, reducing fungal diseases caused by surface or overhead irrigation. Eliminates fruit and vegetable spotting commonly caused by overhead irrigation.

• Safe and efficient delivery of Fertilizers & Insecticides. Chemicals are directly applied to the roots with subsurface drip lines, reducing chemical pollution from leaching into the aquifer.

• Fewer weeds. A dry soil surface reduces germination.

• Improved soil aeration. Fine soil particles are not washed down, decreasing soil compaction and improving root growth.

• Dry soil surface. With a dry soil surface, cultural operations and harvest can take place while the system is operating and it is even possible the use of lawns.

• A longer or extended irrigation system life. The turbulent flow drip emitters and tubing are made with durable polymers. When placed underground the irrigation system is protected from damage caused by ultraviolet light, temperature fluctuations and damage due to cultural operations.

• A great saving of water. Elimination of the losses for evaporation, deep percolation, superficial sliding and displacement of the damp due to the wind.

• Less human or mechanical damage. No sprinkler heads, pipes or surface driplines that can cause injury, or be subjected to damage by vandalism , animals or harvest activities in the field.

• Less salts. Less water also means less salts in the soil or the aquifer.

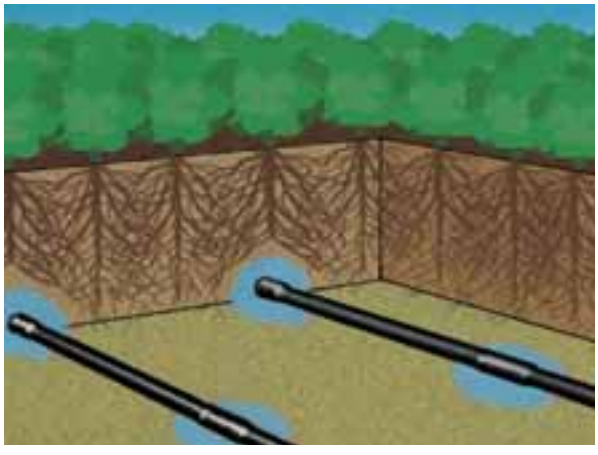
• Lower maintenance costs. The system is installed permanently below cultivation depth, and requires no handling.

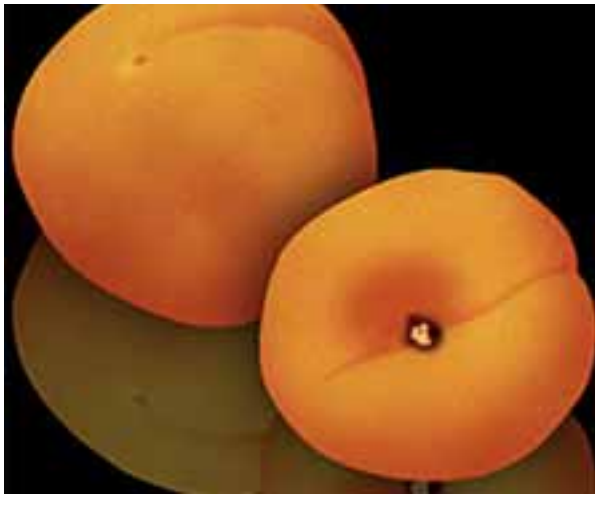
• Fewer chemicals. Fungicides and insecticides are not washed off by irrigation water and the direct delivery through the system reduces waste.

• Labor savings. Easier fertilizer application, less weed and disease control and less maintenance means less handling.

• No obstacles during the mechanized harvesting (vintage, use of shakers, olive cultivation).

• Improved orchard design because pipes are not visible.





rootguard®

subsurface drip irrigation systems

Conform to UNI EN ISO 9261 certificate
N. 190/2004 ISO 9261:2004

The ROOTGUARD® advantage

ROOTGUARD® technology combines Treflan with the drip emitter to inhibit root growth near the drip point. **TREFLAN®** is released at an uniform rate, maintaining enough concentration in the soil immediately surrounding the drip emitter to prevent longitudinal root growth into the emitter.
ROOTGUARD® technology cannot be used with root crops.

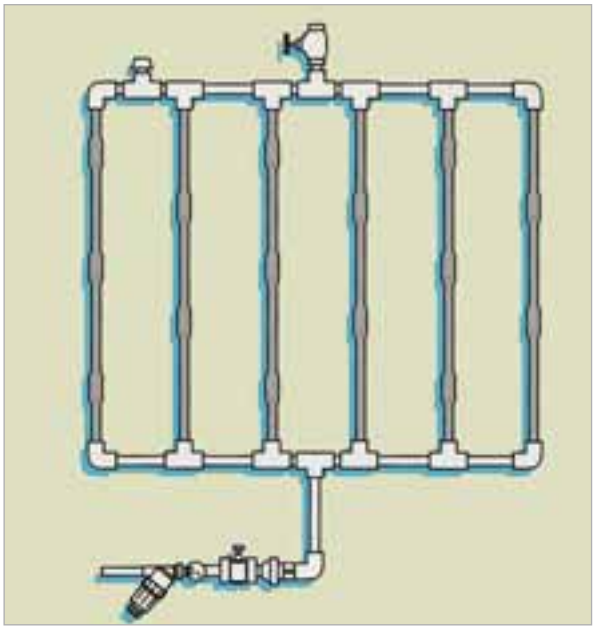
Products

Subsurface drip system uses the same basic components of a surface drip system, including water filtration and treatment, fertilizer and chemical injection, air vents, flush valves and manual or automatic control. The only and most important difference is the dripline with drip emitters manufactured with **ROOTGUARD®**.
Today Siplast supplies **ROOTGUARD®** technology together with its known driplines:

- **MONO®**
- **TANDEM®**
- **MULTIBAR®**

For the hydraulic characteristics of each dripline please consult the technical catalogues.

Typical Subsurface Drip Irrigation Design

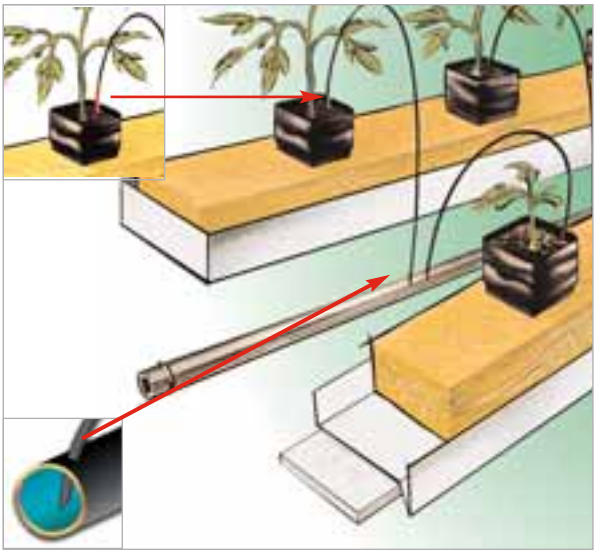


The technical manual for the installation and use of subsurface irrigation system **ROOTGUARD®** is available on request or can be down loaded free of charge from the web site www.subirrigazione.it.
Our technicians will give all the assistance for the design and installation of **ROOTGUARD®** system.
TREFLAN® is a DOWELANCO registered trade mark.
ROOTGUARD® is a A.I. INNOVATIONS registered trade mark.

capillar system

irrigation system with capillaries

The **CAPILLAR SYSTEM**, is a method for the localized irrigation, developed by **SIPLAST** to be used in the field of nurseries, protected crops and greenhouses.
The capillary is the main characteristic of this system. It is a micropipe with inside diameter from 0.6 mm to 1.5 mm manufactured by a coextrusion process. The monitoring by laser equipment of dimensional characteristics, allows a precision of one hundredth of millimeter. Good performances and reliable products are assured by ISO 9001 quality system standard.



The system

It consists of a polyethylene pipe and capillaries:

- The pipe, produced in diameters 16, 20, and 25 mm is punched with single or double hole at the requested spacing.
- The capillary, made in outer diameters 2.5 mm and 3.2 mm, is inserted in the pipe. At the end of the capillary is mounted a stake to be placed in the ground near the plant.

How does it work?

The laminar flow produced due to the very reduced diameters, permits to obtain a constant flow rate relative to capillary length and working pressure used.

Which are the advantages?

The **CAPILLAR SYSTEM** is a reliable and cheap irrigation system:

Outside diameter (mm)	Inside diameter (mm)
3.2	0.6 0.8 1.0 1.2 1.5

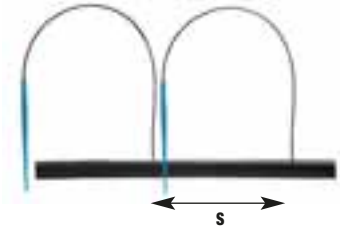
- the installation consist in laying the pipe with capillaries inserted on the ground. Then capillary is fixed to the ground, near the plant's stem, by means of the stake.
- In the event of capillary damage, it is enough to slip out the capillary from the pipe and replace it inserting a new one manually
- The flexibility of this system permits variation of flow rates by changing capillary lengths

Products

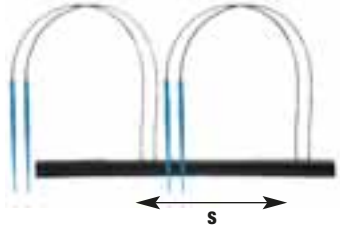
Siplast supplies:

- The complete irrigation system assembled. It consists of pipe with the capillary at the requested length and spacing, with single or double capillary or groups of capillaries.
- The pipe can be manually punched with the suitable hole puncher or ordered punched at the needed spacing and diameter accordingly to the capillary to insert. The punch can be single, double with a distance between holes of 2.5 cm or in groups.
- Three different kinds of stake to be applied at capillary end depending on use.

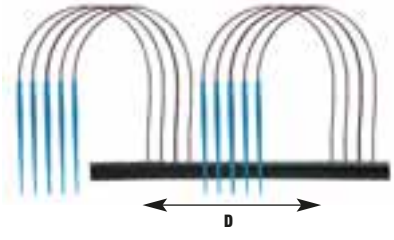
SPACING S



Double capillary (The distance between the two capillaries of the couple is 2.5 cm)



Double capillary in groups
(the distance between the two capillaries of the couple is 2.5 cm)



S= Spacing in cm between capillaries (minimum 7 cm)
D= Distance in cm between two groups of capillaries

Capillaries packing

Outside diameter (mm)	In carton reels m	Cutted in pieces*
2,5	800	500
3,2	500	500

* Length by request

capillar system

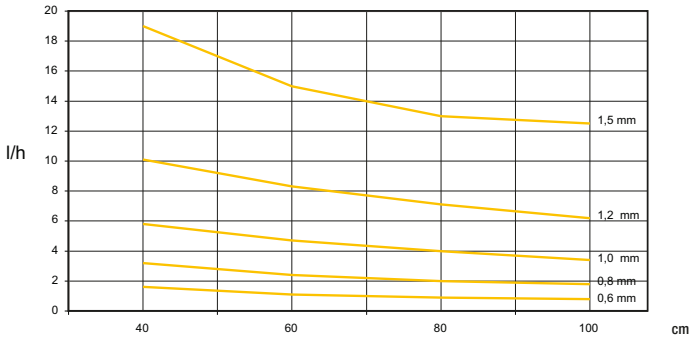
irrigation system with capillaries

Capillaries flow rate relative to inside diameter, length and working pressure

Flow rate relative to working pressure 0.5 bar

inside ø (mm)	Capillary length (cm)			
	40	60	80	100
0.6	1.6	1.1	0.9	0.8
0.8	3.2	2.4	2.0	1.8
1.0	5.8	4.7	4.0	3.4
1.2	10.1	8.3	7.1	6.2
1.5	19.0	15.0	13.0	12.5
	nominal flow rate (lph)			

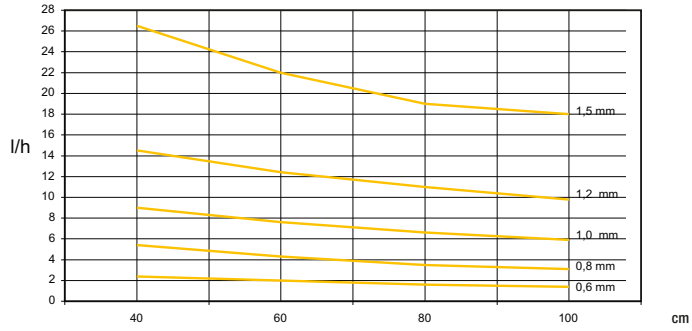
Flow rate relative to capillary length (cm) at 0.5 bar working pressure



Flow rate relative to working pressure 1 bar

inside ø (mm)	Capillary length (cm)			
	40	60	80	100
0.6	2.4	2.0	1.6	1.4
0.8	5.4	4.3	3.5	3.1
1.0	9.0	7.6	6.6	5.9
1.2	14.5	12.4	11.0	9.8
1.5	26.5	22.5	19.0	18.0
	nominal flow rate (lph)			

Flow rate relative to capillary length (cm) at 1 bar working pressure



Recommended branch lengths for 10% flow variation and 1 bar working pressure

Characteristics	
O.D. pipe (mm)	16
Nominal wall thickness (mm)	1.4

ø 16 mm

Capillary I.D. (mm)	0.6								0.8							
Capillary length (cm)	40		60		80		100		40		60		80		100	
Emission point	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D
Spacing (cm)																
7.5	16	9	18	10	21	11	22	12	10	6	11	7	12	7	14	8
10	18	11	23	13	27	15	28	16	13	7	15	8	17	9	18	10
12.5	25	14	28	16	32	18	34	19	15	9	18	10	20	11	21	12
15	28	16	32	18	37	21	39	22	18	10	20	12	23	12	25	14
17.5	32	18	36	21	42	24	44	25	20	12	23	13	26	15	28	16
20	35	20	40	23	46	27	48	28	22	13	25	15	29	17	31	18
25	41	25	47	28	54	32	57	34	26	16	30	18	34	20	36	22
30	47	28	53	32	62	37	65	39	30	18	34	20	39	23	41	25
35	52	32	59	36	69	42	72	44	33	20	38	23	44	26	46	28
40	58	35	65	40	76	46	79	48	37	22	41	25	48	29	50	31
Nominal flow rate (lph)	2.5		2.0		1.6		1.4		5.2		4.1		3.4		3.0	

Emission point: S = single; D = double

Capillary I.D. (mm)	1.0								1.2								1.5							
Capillary length (cm)	40		60		80		100		40		60		80		100		40		60		80		100	
Emission point	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D
Spacing (cm)																								
7.5	8	4	8	5	9	5	9	5	6	3	6	3	7	4	7	4	4	2	4	2	5	2	5	2
10	10	5	10	6	11	6	12	7	8	4	8	4	9	5	9	5	5	3	5	3	6	3	7	3
12.5	11	7	12	7	13	7	14	8	9	5	10	5	10	6	11	6	7	4	6	4	7	4	8	4
15	13	8	14	8	15	8	16	9	10	6	11	6	12	7	12	7	8	4	8	4	9	5	9	5
17.5	15	9	16	9	17	9	18	10	11	7	12	7	13	8	13	8	8	5	9	5	9	5	10	6
20	16	10	17	10	19	11	20	12	12	8	14	8	14	9	15	9	9	5	10	5	11	6	12	7
25	19	11	20	12	22	13	23	14	13	9	16	10	17	10	18	10	11	6	12	7	13	8	14	8
30	22	13	23	14	25	15	26	16	17	10	18	11	19	12	21	12	12	7	13	8	15	9	16	9
35	24	15	26	16	28	17	29	18	19	11	20	12	22	13	23	14	14	8	15	9	16	10	17	10
40	26	16	29	17	31	19	32	20	21	12	22	14	24	14	25	15	15	9	16	10	18	11	19	12
Nominal flow rate (lph)	9.0		7.5		6.6		5.9		14.5		12.4		10.9		9.7		26.5		22.0		19.0		18.0	

Lengths shown above have been calculated at 20°C water temperature

capillar system

irrigation system with capillaries

Recommended branch lengths for 10% flow variation and 1 bar working pressure

Characteristics	
O.D. pipe (m)	20
Nominal wall thickness mm	1.4

ø 20 mm

Capillary I.D. (mm)	0.6								0.8							
Capillary length (cm)	40		60		80		100		40		60		80		100	
Emission point	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D
Spacing (cm)																
7.5	26	15	30	16	34	19	36	20	17	9	19	10	22	12	23	13
10	33	20	37	21	43	24	45	26	21	11	24	13	27	15	29	16
12.5	39	22	44	25	51	29	54	31	25	14	28	16	33	18	34	20
15	45	26	51	29	59	34	62	36	28	16	32	19	37	21	39	23
17.5	50	29	57	33	66	39	69	40	32	18	36	21	42	24	44	26
20	55	33	63	37	73	43	76	45	35	21	40	23	46	27	48	29
25	65	39	74	44	86	51	90	53	41	25	47	28	54	32	57	34
30	74	45	84	50	98	59	102	61	47	28	53	32	61	37	64	39
35	82	50	93	57	109	66	114	69	52	32	59	36	68	41	72	44
40	90	55	102	62	119	73	125	76	57	35	65	40	75	46	79	49
Nominal flow rate (lph)	2.5		2.0		1.6		1.4		5.2		4.1		3.4		3.0	

Emission point: S = single; D = double

Capillary I.D. (mm)	1.0								1.2								1.5							
Capillary length (cm)	40		60		80		100		40		60		80		100		40		60		80		100	
Emission point	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D
Spacing cm																								
7.5	12	6	13	7	14	7	15	8	10	5	10	6	11	6	12	6	10	6	11	6	13	7	13	8
10	15	8	16	9	18	9	18	10	12	6	13	7	14	8	14	8	13	7	14	8	16	9	17	10
12.5	18	10	20	11	21	12	22	13	14	8	15	9	16	9	17	10	15	9	16	9	18	11	19	11
15	21	12	22	13	24	14	25	15	16	9	17	10	18	11	20	11	17	10	19	11	21	13	22	13
17.5	23	13	25	14	27	15	28	16	18	10	19	11	21	12	22	13	19	11	21	12	23	14	24	15
20	25	15	28	16	29	17	31	18	20	12	21	13	23	13	24	14	21	13	23	14	26	16	27	17
25	30	18	32	19	35	21	36	22	23	14	25	15	27	16	28	17	25	15	27	17	30	19	32	20
30	34	20	37	22	39	24	41	25	27	16	29	17	30	18	32	19	28	17	31	19	34	21	36	22
35	38	23	41	25	44	27	46	28	30	18	32	19	34	20	36	22	31	20	34	21	38	23	40	25
40	41	25	45	27	48	29	50	31	32	20	35	21	37	23	39	24	35	22	38	23	42	26	42	27
Nominal flow rate (lph)	9.0		7.5		6.6		5.9		14.5		12.4		10.9		9.7		26.5		22.0		19.0		18.0	

Characteristics	
O.D. pipe (mm)	25
Nominal wall thickness mm	1.5

ø 25 mm

Capillary I.D. (mm)	0.6								0.8							
Capillary length (cm)	40		60		80		100		40		60		80		100	
Emission point	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D
Spacing (cm)																
7.5	47	28	53	31	61	37	64	38	30	19	33	20	39	23	41	25
10	57	35	65	39	75	46	79	48	36	22	41	25	48	29	50	31
12.5	67	41	76	46	88	54	92	56	42	26	48	29	56	34	58	36
15	76	47	86	53	100	61	105	64	48	30	54	33	63	39	66	41
17.5	84	52	95	59	111	69	116	72	53	33	60	37	70	43	73	46
20	92	57	104	65	122	75	127	59	58	36	66	41	77	48	80	50
25	107	67	121	76	141	88	148	92	68	42	77	48	89	56	93	59
30	121	76	137	86	159	100	167	105	76	48	87	54	100	63	105	67
35	134	84	152	95	176	111	185	116	85	53	96	60	111	70	116	74
40	146	92	165	104	193	122	202	127	92	58	105	66	121	77	127	81
Nominal flow rate (lph)	2.5		2.0		1.6		1.4		5.2		4.1		3.4		3.0	

Emission point: S = single; D = double

Capillary I.D. (mm)	1.0								1.2								1.5							
Capillary length (cm)	40		60		80		100		40		60		80		100		40		60		80		100	
Emission point	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D
Spacing (cm)																								
7.5	21	13	23	14	25	15	26	16	17	10	18	10	19	11	20	12	10	6	11	6	13	7	13	8
10	26	16	29	17	30	18	32	19	20	11	22	13	23	14	25	15	13	7	14	8	16	9	17	10
12.5	31	19	33	20	36	22	37	23	24	14	26	16	27	17	29	18	15	9	16	9	18	11	19	11
15	35	21	38	23	40	25	42	26	27	16	29	18	31	19	33	20	17	10	19	11	21	13	22	13
17.5	38	24	42	26	45	28	47	29	30	19	32	20	34	21	37	23	19	11	21	12	23	14	24	15
20	42	26	46	29	49	30	51	32	33	20	36	22	38	23	40	25	21	13	23	14	26	16	27	17
31	49	31	53	33	57	36	59	37	38	24	41	26	44	27	46	29	25	15	27	17	30	19	32	20
30	55	35	60	38	64	40	67	42	43	27	46	29	49	31	52	33	28	17	31	19	34	21	36	22
35	61	38	66	42	71	45	74	47	48	30	51	32	55	34	58	37	31	20	34	21	38	23	40	25
40	66	42	73	46	77	49	81	51	52	33	56	36	60	38	63	40	35	22	38	23	42	26	42	27
Nominal flow rate (lph)	9.0		7.5		6.6		5.9		14.5		12.4		10.9		9.7		26.5		22.0		19.0		18.0	

Lengths shown above have been calculated at 20°C water temperature

irrigation pipes

low density polyethylene pipes for high pressure water supply

Suitable for drinkable water and alimentary fluids, conform

t o Suitable for drinkable water and alimentary fluids, conform to standards UNI 7990 Type 312. In conformity with sanitary regulations of Italian Department of Health (Notice dated December 2nd. 1978).

UNI 7990

LD PE pipes are supplied in straight segments and reels in the following lengths

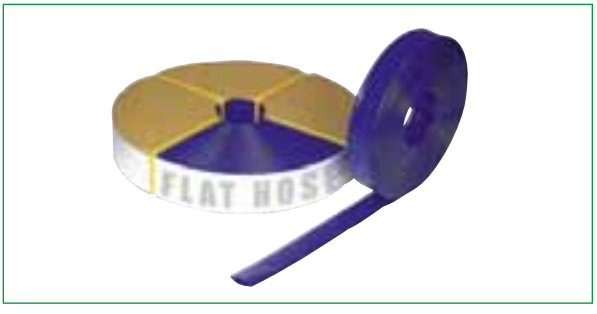
ø (mm)	16	20	25	32	40	50/63/75	90/110
Length (m)	500	300	200	200	100	100	50

Outside diameter (mm)	PN 4		PN 6		PN 10	
	Inside ø (mm)	Wall thickness (mm)	Inside ø (mm)	Wall thickness (mm)	Inside ø (mm)	Wall thickness (mm)
16	13.2	1.4*	12.8	1.6	11.6	2.2
20	16.8	1.6	16.6	1.7	14.6	2.7
25	21.6	1.7	20.6	2.2	18.2	3.4
32	28.2	1.9	26.4	2.8	23.2	4.4
40	35.2	2.4	33	3.5	29.2	5.4
50	44	3.0	41.4	4.3	36.4	6.8
63	55.6	3.7	52.2	5.4	45.8	8.6
75	66	4.5	62	6.5	54.6	10.2
90	79.4	5.3	74.4	7.8	65.6	12.2
110	97	6.5	91	9.5	80.2	14.9

*Without IIP brand

Flat Hose - flexible pipes monomolecular PVC film

Pipe made of soft PVC reinforced with a high resistant net. Can be easily trailed without problems. Allows quick laying and rolling up thanks to its light weight and flexibility, less stockage room required. Very easy to cut and connect, can be punched to insert fittings without infiltration risks (unique wall). Suitable for temporary water supply or frequently moved pipelines.



Flat Hose (light Blue)

Nominal size (inche)	Nominal size (mm)	Wall thickness (mm)	Weight (Kg/m)	Max working pressure at 20°C (bar)	Reel length (m)
1"1/2	40.0	1.30	0.205	5.0	50/100
2"	52.0	1.35	0.270	4.5	50/100
2"1/2	65.0	1.50	0.380	4.0	50/100
3"	77.0	1.70	0.530	4.0	50/100
4"	103.0	1.75	0.705	4.0	50/100
5"	128.0	2.00	0.935	3.0	50/100
6"	153.0	2.00	1.175	3.0	50/100

Flat Hose HI (dark Blue)

Nominal size (inches)	Nominal size (mm)	Wall thickness (mm)	Weight (Kg/m)	Max working pressure at 20°C (bar)	Reel length (m)
2"	52.0	1.60	0.333	7.0	50/100
2"1/2	66.0	1.70	0.430	7.0	50/100
3"	78.5	1.90	0.570	6.0	50/100
4"	104.5	2.30	0.865	6.0	50/100
5"	128.0	2.30	1.080	6.0	50/100
6"	156.5	2.60	1.482	6.0	50/100

irrigation pipes

micropipes for microirrigation

Micropipes manufactured with first quality virgin raw materials without cadmium and lead. Four different types of raw material: low density polyethylene, special soft polyethylene (PEM), semi flexible PVC (type 200) and flexible PVC (type 201).

Outside ø (mm)	Inside ø (mm)	KIND OF RAW MATERIAL			
		Low density polyethylene	Special soft polyethylene (PEM)	Semi flexible PVC type 200	Flexible PVC type 201
Characteristics		Max pressure (bar)	Max pressure (bar)	Max pressure (bar)	Max pressure (bar)
5.0	3.0	12	6	-	-
5.5	3.0	12	-	5	3
6.0	4.0	12	6	5	3
7.0	4.0	-	8	5	-
8.0	5.0	-	6	5	2.5
8.0	6.0	12	-	-	-
10.0	7.0	12	6	4	-
12.0	9.0	10	-	-	-
13.5	9.0	-	-	4	-

*Maximum pressure at 20°C

Weights and packing

Outside ø (mm)	Inside ø (mm)	KIND OF RAW MATERIAL											
		Low density polyethylene			Special soft polyethylene (PEM)			Semi flexible PVC type 200			Flexible PVC type 201		
Characteristics		gr/m*	kg/reel	m/reel	gr/m*	kg/reel	m/reel	gr/m*	kg/reel	m/reel	gr/m*	kg/reel	m/reel
5.0	3.0	11	4.4	400	11	4.4	400	-	-	-	-	-	-
5.5	3.0	-	-	-	-	-	-	22	6.6	300	21	6.3	300
6.0	4.0	15	3.8	250	16	4.0	250	23	5.8	250	23	5.8	250
7.0	4.0	-	-	-	24	4.8	200	35	7.0	200	-	-	-
8v0	5.0	-	-	-	30	4.5	150	40	6.0	150	39	5.9	150
8.0	6.0	20	3.0	150	-	-	-	-	-	-	-	-	-
10.0	7.0	38	3.8	100	37	3.7	100	45	4.5	100	-	-	-
12.0	9.0	43	21.5	500	-	-	-	-	-	-	-	-	-
13.5	9.0	-	-	-	-	-	-	90	9.0	100	-	-	-

*Indicative values

pipes for water conveyance

high density polyethylene pipe PE 80 σ 63 for high pressure water supply

High density PE pipes PE 80 SIGMA 63 suitable for drinkable water and alimentary fluids, conform to standards UNI EN 12201 and to sanitary regulations of Italian Department of Health (Notice no. 175 dated 06.04.2004).

UNI EN 12201

HD PE pipes are supplied in straight segments and reels in the following lengths

Diameter (mm)	20/25	32	40/50/63	75	90	110	from 125 to 315
Length (m)	200	100/200	100	50/100	50/100	50	6/12

Outside ø (mm)	SDR 17 PN 8			SDR 11 PN 12,5		
	wall thickness (mm)	inside ø (mm)	weight (kg/m)	wall thickness (mm)	inside ø (mm)	weight (kg/m)
20	1.6*	16.8	0.10	2.0	16.0	0.12
25	1.6*	21.8	0.13	2.3	20.4	0.17
32	2.0•	28.0	0.19	3.0	26.0	0.28
40	2.4•	35.2	0.29	3.7	32.6	0.43
50	3.0	44.0	0.45	4.6	40.8	0.66
63	3.8	55.4	0.72	5.8	51.4	1.05
75	4.5	66.0	1.01	6.8	61.4	1.46
90	5.4	79.2	1.45	8.2	73.6	2.12
110	6.6	96.8	2.16	10.0	90.0	3.15
125	7.4	116.2	2.76	11.4	102.2	4.08
140	8.3	123.4	3.46	12.7	114.6	5.08
160	9.5	141.0	4.52	14.6	130.8	6.67
180	10.7	158.6	5.71	16.4	147.2	8.44
200	11.9	176.2	7.05	18.2	163.6	10.40
225	13.4	198.2	8.94	20.5	184.0	13.17
250	14.8	220.4	10.99	22.7	204.6	16.20
280	16.6	246.8	13.77	25.4	229.2	20.30
315	18.7	277.6	17.44	28.6	257.8	25.70

* Not foreseen by Standards UNI
• Diameters produced according to EN 12201:03

pipes for water conveyance

high density polyethylene pipe PE 100 σ 80 for high pressure water supply

High density PE pipes PE 100 σ 80 suitable for drinkable water and alimentary fluids, conform to standards UNI EN 12201 and to sanitary regulations of Italian Department of Health (Notice no. 175 dated 06.04.2004).

UNI EN 12201

HD PE pipes are supplied in straight segments and reels in the following lengths

Diameter (mm)	20/25	32	40/50/63	75	90	110	from 125 to 315
Length (m)	200	100/200	100	50/100	50/100	50	6/12

Outside ø (mm)	SDR 17 PN 10			SDR 11 PN 16			SDR 7.4 PN 25		
	wall thickness (mm)	inside ø (mm)	weight (kg/m)	wall thickness (mm)	inside ø (mm)	weight (kg/m)	wall thickness (mm)	inside ø (mm)	weight (kg/mt)
20	-	-	-	2.0	16.0	0.12	3.0	14.0	0.16
25	-	-	-	2.3	20.4	0.17	3.5	18.0	0.24
32	-	-	-	3.0	26.0	0.28	4.4	23.2	0.39
40		-	-	3.7	32.6	0.43	5.5	29.0	0.60
50	3.0	44.0	0.45	4.6	40.8	0.67	6.9	36.2	0.94
63	3.8	55.4	0.72	5.8	51.4	1.05	8.6	45.8	1.48
75	4.5	66.0	1.02	6.8	61.4	1.47	10.3	54.4	2.11
90	5.4	79.2	1.46	8.2	73.6	2.13	12.3	65.4	3.02
110	6.6	96.8	2.17	10.0	90.0	3.16	15.1	79.8	4.52
125	7.4	110.2	2.77	11.4	102.0	4.10	17.1	90.8	5.82
140	8.3	123.4	3.48	12.7	114.6	5.11	19.2	101.6	7.31
160	9.5	141.0	4.54	14.6	130.8	6.71	21.9	116.2	9.51
180	10.7	158.6	5.74	16.4	147.2	8.48	24.6	130.8	12.03
200	11.9	176.2	7.09	18.2	163.6	10.46	27.4	145.2	14.88
225	13.4	198.2	8.99	20.5	184.0	13.24	30.8	163.4	18.80
250	14.8	220.4	11.02	22.7	204.6	16.28	34.2	181.6	23.21
280	16.6	246.8	13.84	25.4	229.2	20.41	38.3	203.4	29.10
315	18.7	277.6	17.53	28.6	257.8	25.84	43.1	228.8	36.4

pipes for gas-pipeline

high density polyethylene pipes for fuel gas conveyance

It is applied for distribution through underground pressure lines of fuel gas, conform to standard ISO 4437 – Type 316 and to Italian Ordinance dated 24/11/84, amendments and addendum.

ISO 4437

HD PE pipes are supplied in straight segments and reels in the following lengths

Diameter (mm)	20/25	32	40/50/63	75	90	110	from 125 to 315
Length (m)	200	100/200	100	50/100	50/100	50	6/12

Outside Ø (mm)	UNI ISO 4437-316 Serie S 12.5			UNI ISO 4437-316 Serie S 8			UNI ISO 4437-316 Serie S 5		
	wall thickness (mm)	inside ø (mm)	weight (kg/m)	wall thickness (mm)	inside ø (mm)	weight (kg/m)	wall thickness (mm)	inside ø (mm)	weight (kg/m)
20	-	-	-	-	-	-	3.0	14.0	0.16
25	-	-	-	-	-	-	3.0	19.0	0.21
32	-	-	-	-	-	-	3.0	26.0	0.28
40	-	-	-	3.0	34.0	0.35	3.7	32.6	0.43
50	-	-	-	3.0	44.0	0.45	4.6	40.8	0.66
63	-	-	-	3.6	55.8	0.68	5.8	51.4	1.05
75	-	-	-	4.3	66.4	0.97	6.8	61.4	1.46
90	-	-	-	5.2	79.6	1.41	8.2	73.6	2.12
110	-	-	-	6.3	97.4	2.07	10.0	90.0	3.15
125	-	-	-	7.1	110.8	2.66	11.4	102.2	4.08
140	-	-	-	8.0	124.0	3.33	12.7	114.6	5.08
160	6.2	147.6	3.04	9.1	141.8	4.35	14.6	130.8	6.67
180	7.0	166.0	3.84	10.3	159.4	5.52	16.4	147.2	8.44
200	7.7	184.6	4.70	11.4	177.2	6.79	18.2	163.6	10.40
225	8.7	207.6	5.91	12.8	199.4	8.56	20.5	184.0	13.17
250	9.7	230.6	7.32	14.2	221.6	10.57	22.7	204.6	16.20
280	10.8	258.4	9.13	15.9	284.0	13.329	25.4	229.2	20.30
315	12.2	290.6	11.63	17.9	279.2	16.73	28.6	257.8	25.70

connecting systems

dripline


ref. **830**


ref. **832**


ref. **833**


ref. **841**


ref. **842**


ref. **837**


ref. **838**


ref. **840**


ref. **842**


ref. **843**

capillar system - irrigation pipes


ref. **810**


ref. **811**


ref. **812**


ref. **814**


ref. **823**


ref. **604**

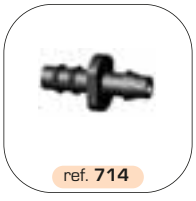

ref. **602**


ref. **DCU**


ref. **606**


ref. **840**

micropipes


ref. **714**


ref. **715**


ref. **707**


ref. **702**


ref. **703**

layflat


ref. **784**


ref. **782**


ref. **DLF**


ref. **TLF**

pipes for water conveyance


ref. **201**


ref. **210**


ref. **211**


ref. **212**


ref. **213**


ref. **214**


ref. **215**


ref. **216**


ref. **103**


ref. **105**

accessories

filters


ref. **FLC**


ref. **FLF**


ref. **FLH**


ref. **RFH**

valves - air valves
quick coupling valves - fertilizer injectors


ref. **VDA**


ref. **VMA**


ref. **VRA**


ref. **AAA**


ref. **VAA**


ref. **RMP**


ref. **RPP**


ref. **RMM**


ref. **RMA**


ref. **RDP**


ref. **SFP**


ref. **SFM**


ref. **SFF**


ref. **3FF**


ref. **3MF**


ref. **IVE**


ref. **SDE**


ref. **VFL**


ref. **IDS**


ref. **CHS**

valve boxes and manifold


ref. **POZ**


ref. **POZ**


ref. **407**


ref. **431**


ref. **435**

accessories


ref. **GRG**


ref. **PDL**


ref. **AFL**

for the above mentioned items ask for irritec catalogue.