



Advanced  
Automation  
Systems

# Cu Emitter Line™

The Ultimate Solution  
for Subsurface Drip Irrigation (SDI)



# Cu Emitter Line™

## The Ultimate Solution for Subsurface Drip Irrigation (SDI)

Subsurface drip irrigation (SDI) is the most efficient irrigation method, since it delivers water directly to the root zone of plants through a network of buried driplines. An SDI system offers many advantages over traditional irrigation methods:

### 1. Water efficiency

- Reduced evaporation
- Precise water application
- Lower water usage

### 2. Improved crop yields and quality

- Consistent moisture levels
- Nutrient management
- Reduced stress on plants

### 3. Weed and disease control

- Reduced weed growth
- Lower disease risk

### 4. Soil health and erosion control

- Minimized soil erosion
- Improved soil structure

### 5. Labor and energy savings

- Reduced labor costs
- Energy efficiency

### 6. Flexibility and adaptability

- Suitable for various crops
- Adaptable to different terrains

### 7. Environmental benefits

- Reduced chemical leaching
- Conservation of water resources

### 8. Long-term cost savings

- Durability
- Increased profitability

### 9. Aesthetic and land use benefits

- Unobtrusive
- Land use efficiency

### 10. Climate resilience

- Drought mitigation
- Adaptation to climate change



The major drawback in SDI is emitter clogging.

Emitters can clog for several reasons:

- Root intrusion
- Algae and bacteria development
- Soil intrusion

Several reasons can lead to root intrusion but the most frequent is the lack of water. When irrigation cycles are not frequent enough, the roots reach for the water available nearby.

The roots of the plant enter the dripline through the outlet hole in order to find the water available in the dripline. This results to partial or full plugging, due to root intrusion into the emitter.

Emitter clogging leads to:

- Inefficient irrigation
- Inefficient fertilizer delivery
- Loss of crop yield
- Loss of plants
- Increased costs
- Reduced income from the lost crop

With our Cu Emitter Line™, we provide a solid defense against root intrusion in SDI installations. The copper oxide compound which our emitters contain, act as a barrier to roots and invasive underground rhizomes of the plants. Our Cu Emitter Line™ products use the same injection moulding process as the non Cu emitters, since the PE compound contains the active copper oxide ingredients.

We decided to utilize copper oxide compound because it acts as a natural barrier to roots and at the same time inhibits the growth of algae, bacteria, and fungi, reducing the risk of clogging in the emitters and dripline. It is recognized as the first antimicrobial metal and is widely used in many applications and industries.

The Cu Emitter Line™ product range is a comprehensive solution for SDI installations,

since it includes both Pressure Compensating (PC) and Turbulent Flow (TF) emitters.

- Cu Cyclone PC™
- Cu Triton PC™
- Cu Turbo™
- Cu Turbo Compact™

Cu Emitter Line™ in conjunction with our Anti-Siphon (AS) system, available in both Cyclone PC™ and Triton PC™ emitters, provide the best solution for SDI applications. The copper oxide compound prevents root intrusion and the development of algae, bacteria, and fungi, into the emitter, while the AS system prevents suction of dirt and impurities into the emitter during the system shut-off.



# Cu Cyclone PC™

## Copper Oxide Infused Flat PC Emitter

**Ultra slim high-tech concept, that fits any hose diameter. Provides high irrigation accuracy and consistent clog-free performance with the combination of copper oxide compound and anti-siphon technology**



### Copper Oxide Compound

Our Cu Emitter Line™, provides a solid defense against root intrusion in SDI installations. The copper oxide compound which our emitters contain, act as a barrier to roots and invasive underground rhizomes of the plants. Moreover, the Cu compound that we use inhibits the growth of algae, bacteria, and fungi development, reducing the risk of clogging in the emitters and dripline. The Cu Emitter Line™ products use the same injection moulding process as the non Cu emitters, since the PE compound contains the active copper oxide ingredients.

### Pressure Compensating (PC)

PC emitters incorporate a silicon membrane which enables the delivery of precise and equal amounts of water over a broad pressure range. Cu Cyclone PC™ emitters are designed for any kind of SDI application.

### Anti-Siphon (AS) and Non-Drain (ND)

The Anti-Siphon (AS) system is a specially designed mechanism that prevents suction of dirt and impurities into the emitter. The AS feature enables Cu Cyclone PC™ to be installed underground (SDI), perfectly maintaining its irrigation characteristics and its multi-year durability.

With the Non-Drain system the dripline remains full of water during irrigation intervals,

ensuring immediate and uniform irrigation along the dripline.

ND emitters eliminate drainage of the dripline, which is very important in SDI. In order to achieve the Non-Drain function, the emitter closes when the pressure is below 0,1 bar.

### Emitter Characteristics

Cu compound infused emitter that prevents root intrusion and inhibits the growth of algae, bacteria, and fungi development.

Wide range of flow rates from 1,0 to 3,8 l/h.

Designed for a wide range of wall thicknesses starting from 12 mil up to 47 mil (0,3 mm - 1,2 mm).

Suitable for driplines with internal diameter (ID) from 13,5 mm and on.

State of the art flat PC, AS, ND emitter technology.

Continuous self cleaning mechanism ensures non-clogging uninterrupted operation.

Excellent emission uniformity.

Excellent flow coefficient.

Low friction losses due to the ultra slim design of the emitter.

Injected molded emitters with excellent Coefficient of Variation (CV), less than 5%.

### SDI Applications

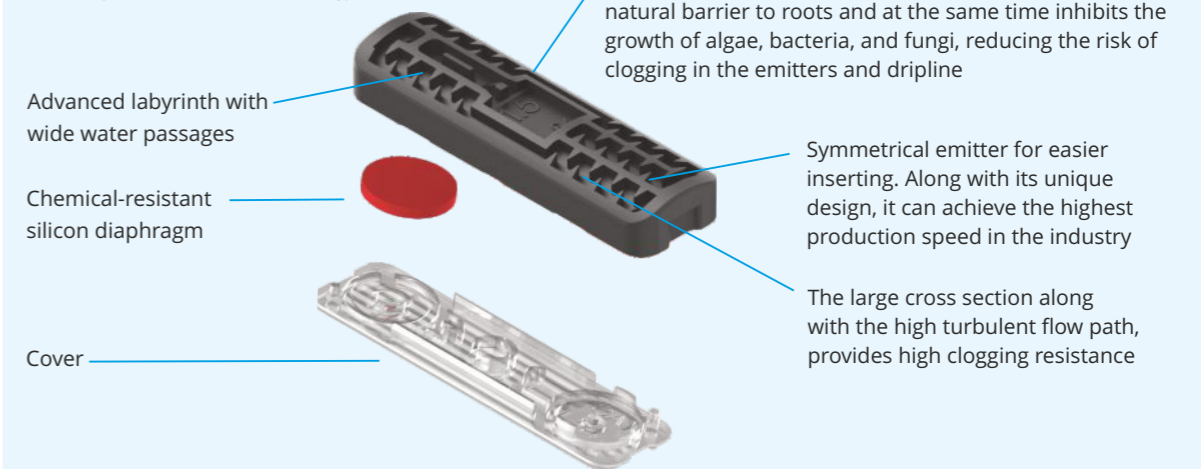
Suitable for all kind of SDI applications, from 5 to more than 15 years, depending on the dripline thickness.

### Cu Cyclone PC™ Design Characteristics

#### Cu Compound and AS technology

Ultra slim high-tech concept, that fits any hose diameter. Provides high accuracy and clog-free performance with the combination of Cu compound and AS technology

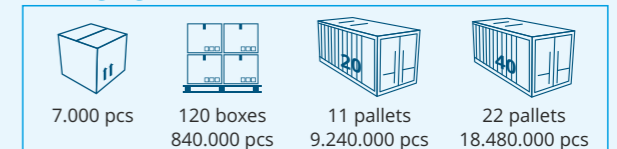
Cu Cyclone PC™ emitters have been tested by independent institutes worldwide and achieved the highest ranking for CV, emission uniformity, flow accuracy and clogging resistance



#### Actual Size



#### Packaging

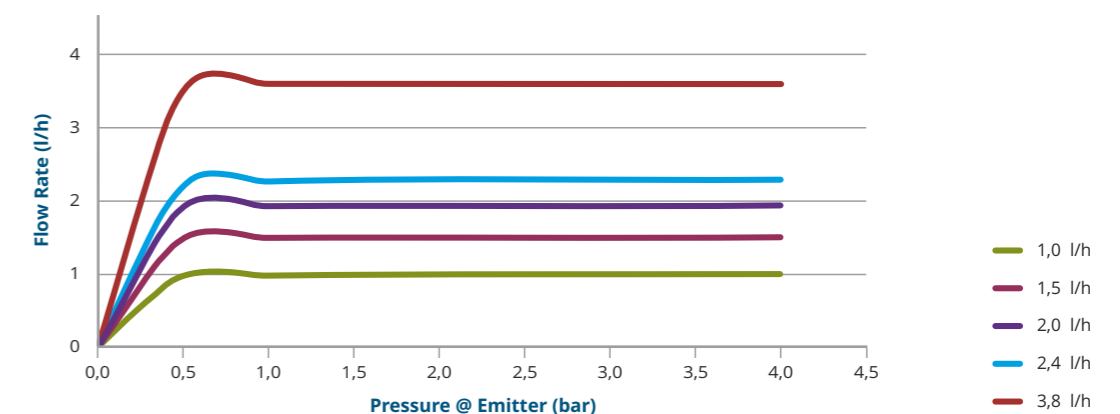


### Cu Cyclone PC™ Emitter Specifications

Nominal Flow Rate (l/h)	Constant k (bar)	Exponent (x)	Water Passage Width x Depth x Length (mm)	Filtration Area (mm <sup>2</sup> )	Recommended Filtration (mesh/micron)
1,0	1,0	0,0	0,82 x 0,76 x 139	37,37	150/100
1,5	1,5	0,0	1,06 x 0,85 x 132	37,37	150/100
2,0	1,9	0,0	1,08 x 0,88 x 93,5	37,37	120/130
2,4	2,3	0,0	1,19 x 0,90 x 89,6	37,37	120/130
3,8	3,6	0,0	1,30 x 0,90 x 78,7	37,37	120/130

Pressure range: 0,7 - 4,0 bar

### Cu Cyclone PC™ Emitter Flow Curves



# Cu Triton PC™

## Copper Oxide Infused Cylindrical PC Emitter

**The most durable Pressure Compensating emitter, designed for permanent crops with long laterals and multi-season subsurface applications**



### Copper Oxide Compound

Our Cu Emitter Line™, provides a solid defense against root intrusion in SDI installations. The copper oxide compound which our emitters contain, act as a barrier to roots and invasive underground rhizomes of the plants.

Moreover, the Cu compound that we use inhibits the growth of algae, bacteria, and fungi development, reducing the risk of clogging in the emitters and dripline. The Cu Emitter Line™ products use the same injection moulding process as the non Cu emitters, since the PE compound contains the active copper oxide ingredients.

### Pressure Compensating (PC)

PC emitters incorporate a silicon membrane which enables the delivery of precise and equal amounts of water over a broad pressure range. Cu Triton PC™ emitters are designed for multi-season deep buried SDI applications, for installations of more than 15 years.

### Anti-Siphon (AS) and Non-Drain (ND)

The Anti-Siphon (AS) system is a specially designed mechanism that prevents suction of dirt and impurities into the emitter. The AS feature enables Cu Triton PC™ to be installed underground (SDI), perfectly maintaining its irrigation characteristics and its multi-year durability.

With the Non-Drain system of Cu Triton PC™, the dripline remains full of water during irrigation intervals, ensuring immediate and uniform irrigation along the dripline. Non-

Drain emitters eliminate drainage and refill effect and improve efficiency in pulse irrigation. In order to achieve the Non-Drain function, the emitter closes when the pressure is below 0,1 bar.

### Emitter Characteristics

Cu compound infused emitter that prevents root intrusion and inhibits the growth of algae, bacteria, and fungi development.

Available in two flow rates 2 and 4 l/h.

Suitable for driplines with 16mm diameter.

The recommended wall thickness is 0,65 to 1,20 mm (25 - 47 mil)

Manufactured from the finest raw materials that provide durability and long-lasting performance.

Wide and accurate water passages along the labyrinth.

Special labyrinth design that ensures high turbulent flow of the water.

Continuous self cleaning mechanism ensures non-clogging uninterrupted operation.

High UV resistance.

Resistant to all nutrients used in agriculture.

Injected molded emitters with excellent Coefficient of Variation (CV), less than 5%.

Excellent for effluent water reuse.

Wide pressure compensation range.

### SDI Applications

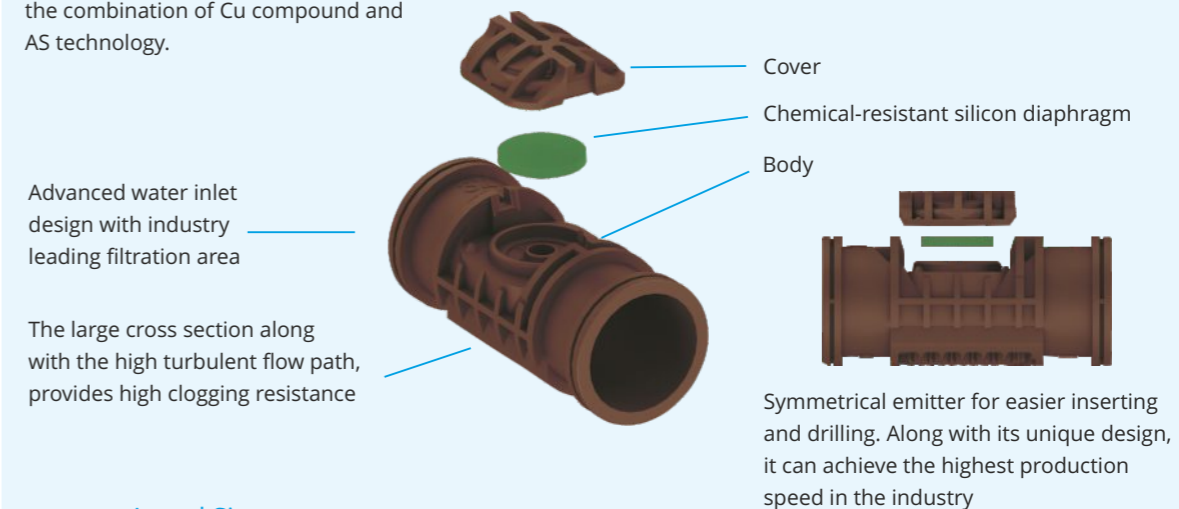
Suitable for deep buried multi seasonal SDI installations, for more than 15 years depending on dripline thickness.

### Cu Triton PC™ Design Characteristics

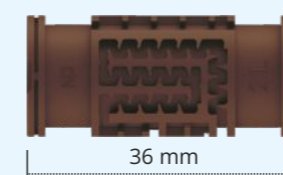
#### Cu Compound and AS technology

The most durable PC emitter, provides high accuracy and clog-free performance with the combination of Cu compound and AS technology.

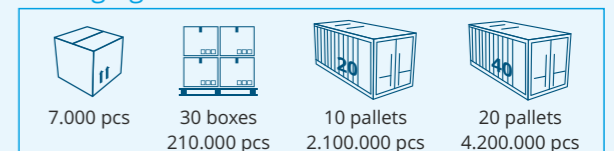
Cu Triton PC™ emitters have been tested by independent institutes worldwide and achieved the highest ranking for CV, emission uniformity, flow accuracy and clogging resistance



Actual Size



Packaging

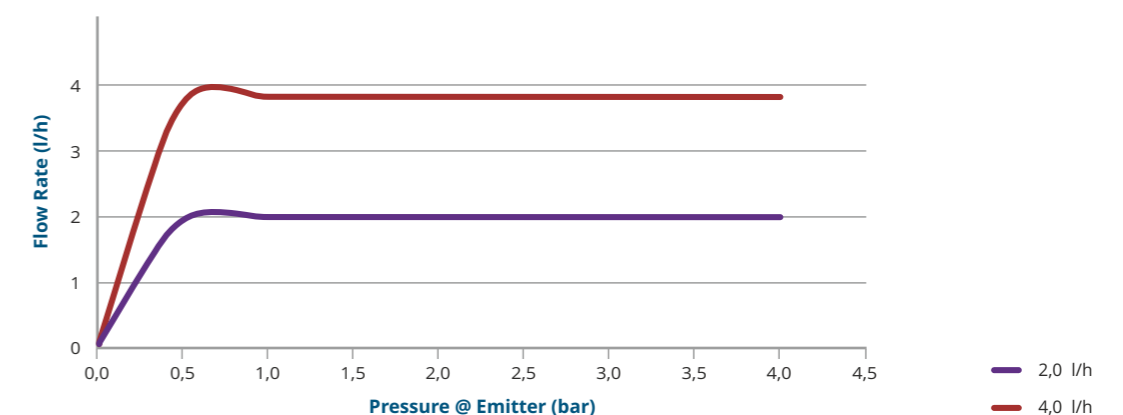


### Cu Triton PC™ Emitter Specifications

Nominal Flow Rate (l/h)	Constant k (bar)	Exponent (x)	Water Passage Width x Depth x Length (mm)	Filtration Area (mm <sup>2</sup> )	Recommended Filtration (mesh/micron)
2,0	2,0	0,0	1,10 x 1,20 x 62,7	14,00	120/130
4,0	3,8	0,0	1,30 x 1,20 x 51,9	14,00	120/130

Pressure range: 0,5 - 4,0 bar

### Cu Triton PC™ Emitter Flow Curves



# Cu Turbo™

## Copper Oxide Infused Flat Turbulent Emitter

**The most successful flat emitter, developed for a wide range of shallow and deep buried subsurface applications**



### Copper Oxide Compound

Our Cu Emitter Line™, provides a solid defense against root intrusion in SDI installations. The copper oxide compound which our emitters contain, act as a barrier to roots and invasive underground rhizomes of the plants. Moreover, the Cu compound that we use inhibits the growth of algae, bacteria, and fungi development, reducing the risk of clogging in the emitters and dripline. The Cu Emitter Line™ products use the same injection moulding process as the non Cu emitters, since the PE compound contains the active copper oxide ingredients.

### Emitter Flow Path

One of the most important elements in the design of an emitter is the flow path. Its width, depth and length determine the flow rate of the emitter in liters per hour but most importantly determines their anti-clogging ability. A highly turbulent flow design creates multiple vortexes inside the flow path and therefore prevents clogging.

### Emitter Characteristics

Cu compound infused emitter that prevents root intrusion and inhibits the growth of algae, bacteria, and fungi development.

Wide range of flow rates from 0,8 to 3,8 l/h.

Designed for insertion systems of wall thicknesses ranging from 5 mil up to 47 mil (0,135 mm - 1,2 mm).

Suitable for driplines with any diameter from 12 mm and on.

Highly turbulent labyrinth with large cross section design, ensure superior clogging resistance.

Symmetrical design allows the highest insertion rates and higher production speed.

Ideal for single season as well as multi-season subsurface installation.

Injected molded emitters with excellent Coefficient of Variation (CV), less than 5%.

Advanced water inlet design, increases filtering area and prevents particle insertion in the emitter, thus enhancing the anti-clogging performance.

### SDI Applications

Suitable for both shallow and deep buried SDI installations, for up to 15 years, depending on dripline thickness.

### Cu Turbo™ Design Characteristics

#### The Most Successful Flat Emitter

Developed for a wide range of SDI applications, up to 15 years depending on dripline thickness

Cu Turbo™ emitters have been tested by independent institutes worldwide and achieved the highest ranking for CV, emission uniformity, flow accuracy and clogging resistance

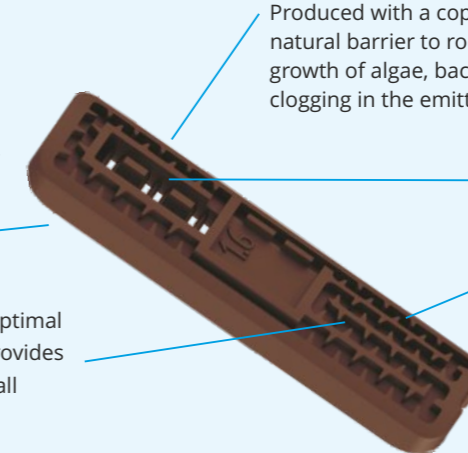
Symmetrical emitter for easier inserting and drilling. Along with its unique design, it can achieve the highest production speed in the industry

Produced with a copper oxide compound which acts as a natural barrier to roots and at the same time inhibits the growth of algae, bacteria, and fungi, reducing the risk of clogging in the emitters and dripline

The unique design and the optimal dimensions of the emitter provides the ability to insert it in all wall thicknesses and diameters

Advanced water inlet design with industry leading filtration area

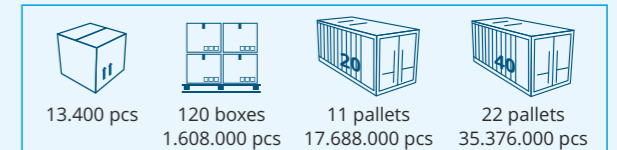
The large cross section along with the high turbulent flow path, provides high clogging resistance



#### Actual Size



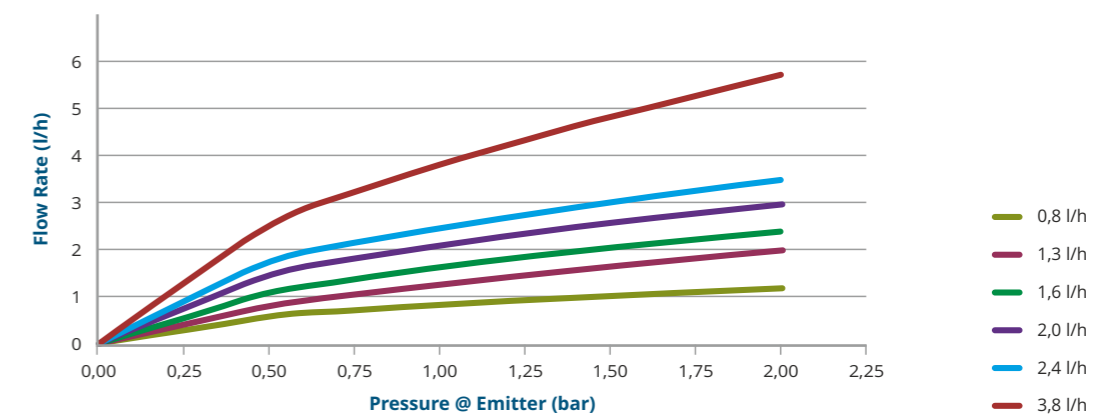
#### Packaging



### Cu Turbo™ Emitter Specifications

Nominal Flow Rate (l/h @ 1bar)	Constant k (bar)	Exponent (x)	Water Passage Width x Depth x Length (mm)	Filtration Area (mm <sup>2</sup> )	Recommended Filtration (mesh/micron)
0,8	0,82	0,48	0,62 x 0,62 x 116	20,00	120/130
1,3	1,25	0,49	0,70 x 0,62 x 106	20,00	120/130
1,6	1,61	0,49	0,70 x 0,67 x 106	20,00	120/130
2,0	2,07	0,47	0,75 x 0,75 x 104	20,00	120/130
2,4	2,46	0,48	0,75 x 0,85 x 104	20,00	120/130
3,8	3,80	0,49	0,97 x 0,85 x 64,4	12,00	120/130

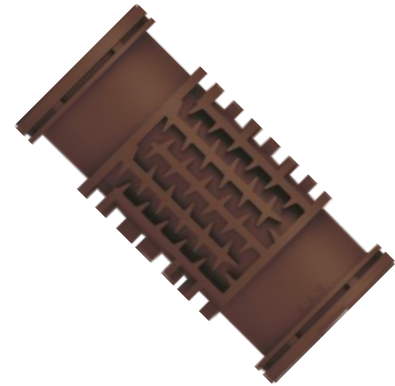
### Cu Turbo™ Emitter Flow Curves



# Cu Turbo Compact™

## Copper Oxide Infused Cylindrical Turbulent Emitter

**Compact and extremely durable emitter. Developed for a wide range of deep buried, multi seasonal subsurface applications, for more than 15 years, depending on dripline thickness.**



### Copper Oxide Compound

Our Cu Emitter Line™, provides a solid defense against root intrusion in SDI installations. The copper oxide compound which our emitters contain, act as a barrier to roots and invasive underground rhizomes of the plants. Moreover, the Cu compound that we use inhibits the growth of algae, bacteria, and fungi development, reducing the risk of clogging in the emitters and dripline. The Cu Emitter Line™ products use the same injection moulding process as the non Cu emitters, since the PE compound contains the active copper oxide ingredients.

### Emitter Flow Path

One of the most important elements in the design of an emitter is the flow path. Its width, depth and length determine the flow rate of the emitter in liters per hour but most importantly determines their anti-clogging ability. A highly turbulent flow design creates multiple vortexes inside the flow path and therefore prevents clogging.

### Emitter Characteristics

Cu compound infused emitter that prevents root intrusion and inhibits the growth of algae, bacteria, and fungi development.

Available in two flow rates 2,0 and 4,0 l/h. Suitable for driplines with 16 mm diameter. The recommended wall thickness is 0,65 to 1,20 mm (25 - 47 mil) Manufactured from the finest raw materials that provide durability and long-lasting performance.

Injected molded emitters with excellent Coefficient of Variation (CV), less than 5%.

Specially designed labyrinth creates high turbulent flow, therefore preventing clogging of the emitter.

Very high resistance to agrochemicals and hard field conditions.

Advanced water inlet design, increases filtering area and prevents particle insertion in the emitter, thus enhancing the anti-clogging performance.

Excellent for effluent water reuse.

### SDI Applications

Suitable for deep buried multi seasonal SDI installations, for more than 15 years, depending on dripline thickness.

### Cu Turbo Compact™ Design Characteristics

#### Compact and Durable Emitter

Compact and extremely durable emitter. Developed for a wide range of deep buried multi seasonal subsurface applications for more than 15 years

Cu Turbo Compact™ emitters have been tested by independent institutes worldwide and achieved the highest ranking for CV, emission uniformity, flow accuracy and clogging resistance

Produced with a copper oxide compound which acts as a natural barrier to roots and at the same time inhibits the growth of algae, bacteria, and fungi, reducing the risk of clogging in the emitters and dripline

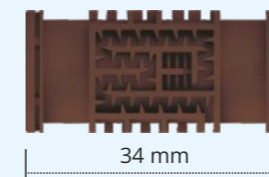
Symmetrical emitter for easier inserting and drilling. Along with its unique design, it can achieve the highest production speed in the industry



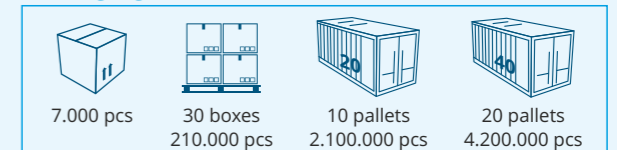
Advanced water inlet design with industry leading filtration area

The large cross section along with the high turbulent flow path, provides high clogging resistance

Actual Size



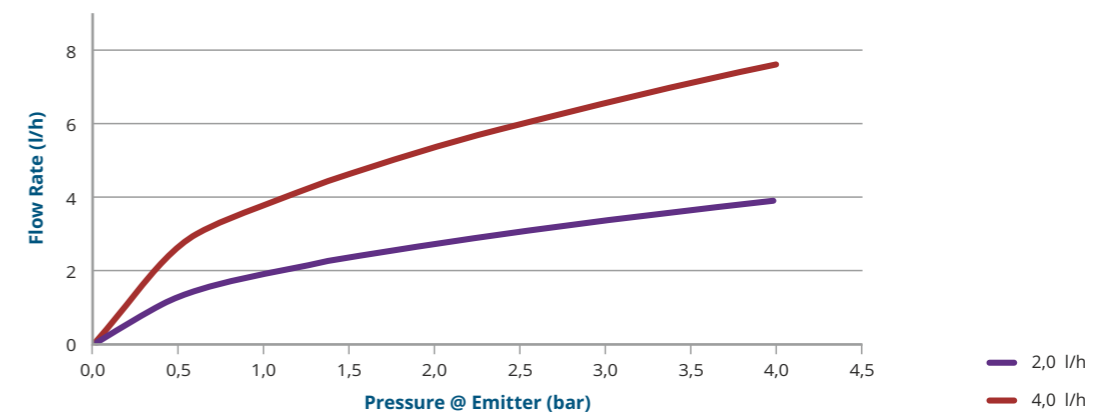
Packaging



### Cu Turbo Compact™ Emitter Specifications

Nominal Flow Rate (l/h @ 1bar)	Constant k (bar)	Exponent (x)	Water Passage Width x Depth x Length (mm)	Filtration Area (mm <sup>2</sup> )	Recommended Filtration (mesh/micron)
2,0	1,98	0,49	0,95 x 1,00 x 197	20,80	120/130
4,0	3,97	0,49	1,03 x 1,35 x 143	53,00	120/130

### Cu Turbo Compact™ Emitter Flow Curves





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