

# 1 AIR DIFFUSERS

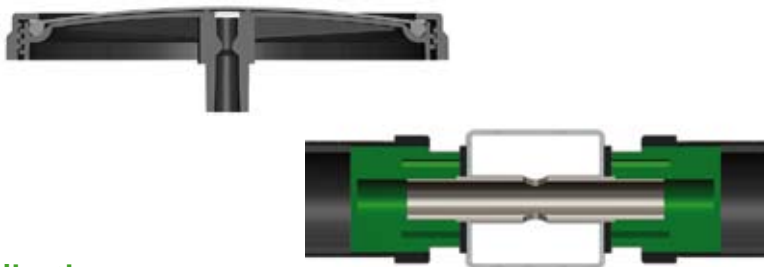


The Zenit range includes both disc and tube membrane air diffusers. Both models are fitted with high-quality membranes with perforation ensuring high oxygen transfer with low headloss, minimizing the relative energy consumption. Disc diffusers can be fitted with ball check valves. Zenit is able to design the most efficient aeration system for the customer's specifications, and supply the complete system, including detailed assembly drawings.

## Operating principle

During operation, the membrane inflates to open the tiny holes and allow the air to flow out in the form of fine bubbles. When the blower stops, the membrane deflates and pressure of the water pushes it back into contact with the supporting disc.

In this condition, the holes are closed and the central part, free from holes and specially shaped, acts as a check valve, ruling out all possible inflow of liquid.



## Application

Membrane air diffusers are generally used in waste water treatment where sewage have to be aerated to activate biological oxidation of the organic material and nitrification processes.

They are also used in pre-aeration and aeration processes in oxidation tanks and aerobic digestion plants for civil and industrial sludges.



# 1.1 OXYPLATE 9-12

## Disc air diffusers

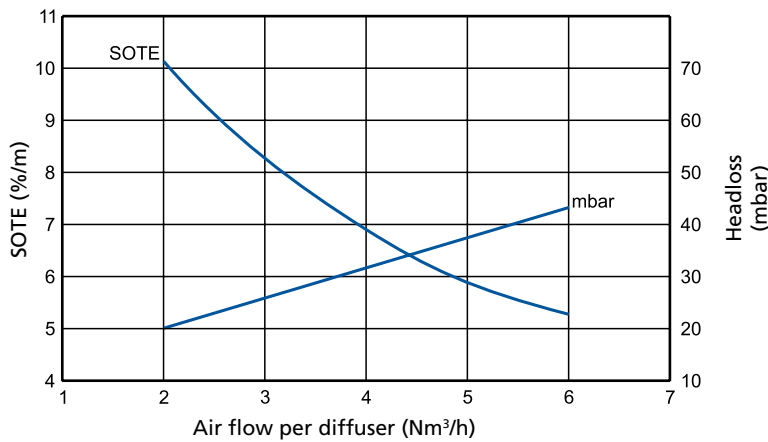


### Description and applications

Disc diffusers having elastomer membrane with tiny holes for application in waste water treatment processes in reactors with continuous or intermittent aeration. especially recommended for high-efficiency permanent installations. The quality, design and membrane hole size ensure unbeatable efficiency in terms of the ideal oxygen transfer-headloss balance.

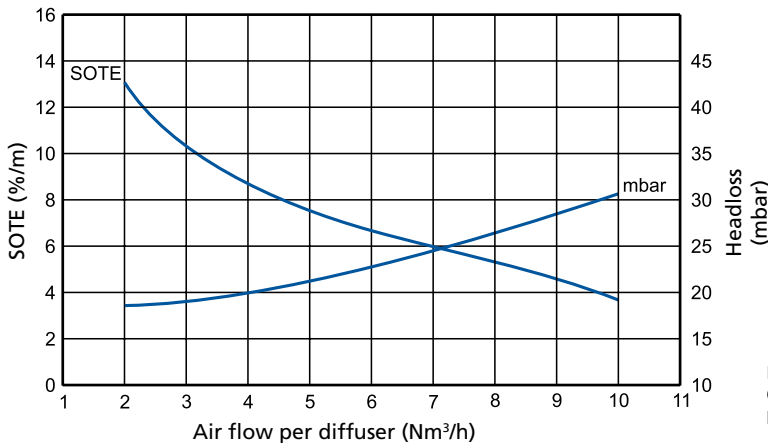
### Performance

#### OXYPLATE 9



EPDM LP membrane. fine bubbles  
Oxygen transfer according with ATV M209  
Density 6.5%

#### OXYPLATE 12



EPDM LP membrane. fine bubbles  
Oxygen transfer according with ATV M209  
Density 5.3%

### Technical characteristics

|                          |                    | OXYPLATE 9" | OXYPLATE 12" |
|--------------------------|--------------------|-------------|--------------|
| External diameter        | mm                 | 270         | 340          |
| Min. operating flow rate | Nm <sup>3</sup> /h | 2           | 2            |
| Max. operating flow rate | Nm <sup>3</sup> /h | 6           | 10           |
| Max overload flow *      | Nm <sup>3</sup> /h | 10          | 15           |
| Active surface area      | m <sup>2</sup>     | 0.038       | 0.06         |
| Membrane thickness       | mm                 | 2 ± 0.15    | 2 ± 0.15     |

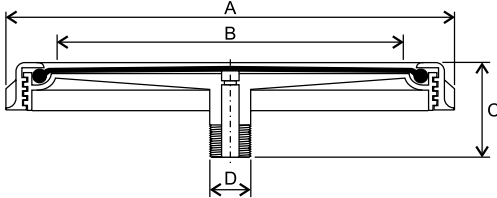
Data with fine-bubble EPDM LP membrane

\* No more than 10 min/day for membrane cleaning. tests. etc.

## Construction materials

|               | OXYPLATE 9"        | OXYPLATE 12" |
|---------------|--------------------|--------------|
| Diffuser body | PP GF 30           | PP GF 30     |
| Ring-nut      | PP GF 30           | PP GF 30     |
| Membrane      | EPDM LP / SILICONE | EPDM LP      |

## Overall dimensions and weights



|              | A   | B   | C  | D         | E  | Kg  |
|--------------|-----|-----|----|-----------|----|-----|
| OXYPLATE 9"  | 270 | 220 | 76 | 3/4 NPT m | 32 | 0.7 |
| OXYPLATE 12" | 340 | 310 | 76 | 3/4 NPT m | 32 | 1.2 |

Measurements in mm

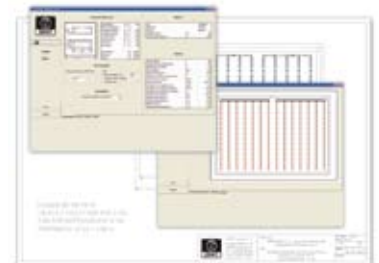
## Accessories and components

ZENIT is able to design and build complete aeration systems including disc-shaped diffusers and preassembled PVC air distribution networks.

The high degree of standardization, combined with the use of special components manufactured by ZENIT itself, allows the construction of simple, reliable, quick-to-install systems which are surprisingly inexpensive in spite of the use of top-quality materials such as PVC PN10 pipelines and stainless steel supports.



To facilitate the installation and servicing of its diffuser systems, Zenit has produced a series of tools that make every procedure quick and effective.



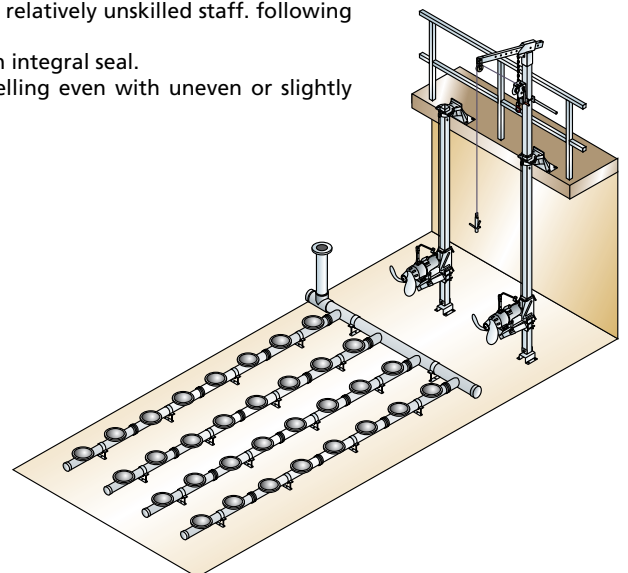
The use of dedicated software packages makes system design a quick operation, from the process to the optimal layout, through to cost analysis and generation of the bill of materials.

## Installations

Preassembled systems are designed for quick, easy installation even by relatively unskilled staff, following the detailed instructions provided.

All connections are made by means of special self-aligning flanges with integral seal.

The supports are easily height-adjustable (up to 20 cm) to allow levelling even with uneven or slightly sloping tank bottoms.



# 1.2 OXYTUBE 2

## Tube air diffusers



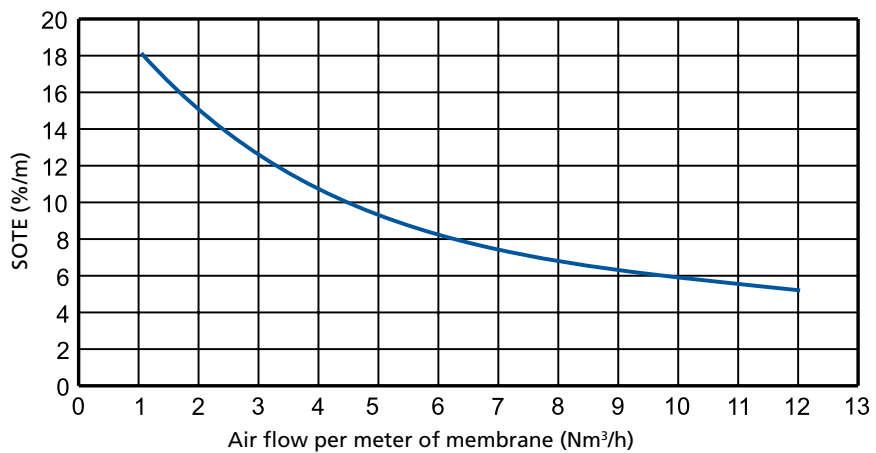
### Description and applications

Especially recommended for the construction of lifting aeration systems and in all cases where a large output surface area is required with only a small number of air distribution pipelines. Diffusers basically consist of a head with threaded connection, the rigid polypropylene support and the tubular membrane in elastomer with tiny holes, secured with stainless steel band clamps.

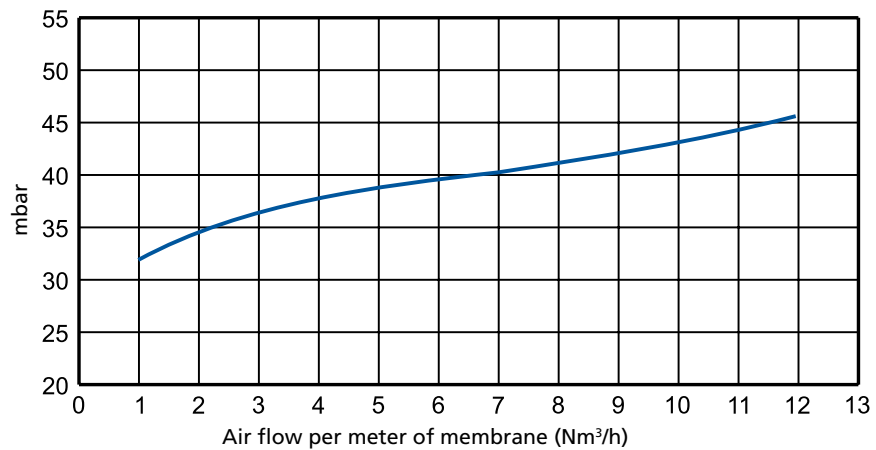
### Performance

#### Oxygen transfer

density 10% - test according with ATV-M 209



#### Headloss



### Technical characteristics

|                          |       | OXYTUBE 2-500 | OXYTUBE 2-750 | OXYTUBE 2-1000 |
|--------------------------|-------|---------------|---------------|----------------|
| Support diameter         | mm    | 63            | 63            | 63             |
| Perforation length       | mm    | 500           | 750           | 1000           |
| Min. operating flow rate | Nm³/h | 1             | 2             | 3              |
| Max. operating flow rate | Nm³/h | 6             | 9             | 12             |
| Max overload flow *      | Nm³/h | 10            | 15            | 20             |
| Active surface area      | m²    | 0.09          | 0.135         | 0.18           |
| Membrane thickness       | mm    | 1.7±0.2       | 1.7±0.2       | 1.7±0.2        |

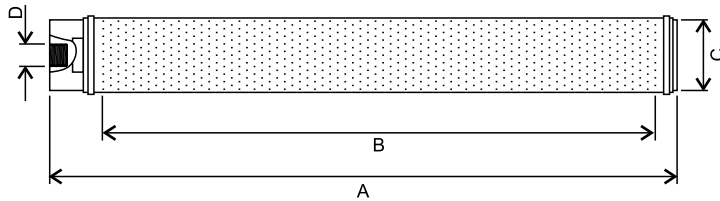
Data with fine-bubble EPDM LP membrane

\* No more than 10 min/day for membrane cleaning, tests, etc.

## Construction materials

|             |   |
|-------------|---|
| Membrane    | EPDM LP / SILICONE                      |
| Support     | PP                                      |
| Head        | PP GF 30                                |
| Band clamps | V2A (stainless steel 1.4301 – AISI 304) |
| Gasket      | EPDM th. 4 mm                           |
| Connector   | V2A (stainless steel 1.4301 – AISI 304) |

## Overall dimensions and weights



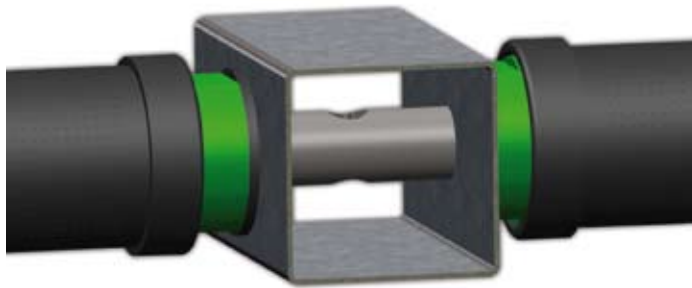
|              | A    | B    | C  | D         | Kg  |
|--------------|------|------|----|-----------|-----|
| OXYTUBE 500  | 560  | 500  | 63 | 3/4" WR f | 0.8 |
| OXYTUBE 750  | 810  | 750  | 63 | 3/4" WR f | 1.1 |
| OXYTUBE 1000 | 1060 | 1000 | 63 | 3/4" WR f | 1.3 |

Measurements in mm

## Accessories and components

Membranes made of different materials are available for different applications:

- EPDM LP with low plasticizer content (<15%) for civil wastewater with some industrial input and industrial wastewater with low grease, oil and hydrocarbon content. Maximum operating temperature 80 °C.
- SILICONE for industrial wastewater with high grease and hydrocarbon content. Maximum operating temperature 100 °C.



- Stainless steel connectors for installation of diffusers in pairs facing each other on square manifold of 80x80 mm or 100x100 mm.
- Adaptors for manifolds with existing holes.

## Lifting systems

Especially recommended for small/medium sized systems, or in general in all cases where it is not possible to empty the tank for maintenance. These systems are built with stainless steel grids comprising basically a square manifold on which the diffusers are installed in facing pairs, a dropleg, one or more stiffener tie-rods and a draining system.

The individual grids are simply placed on the bottom of the tank and connected to the main air pipeline with a flange.

Stability is ensured by counterweights that also act as feet.

No runner or anchor systems are required.

The individual assemblies are therefore easy to remove and install with the tank full and in operation.

