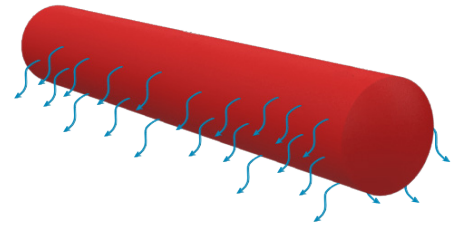


## TEXI-SOFT

The TEXI-SOFT textile duct has been designed for low speed diffusion ( $< 1 \text{ m/s}$ ). This diffusion is made through a porous fabric on the entire length or on part of the duct.

Based on the displacement of air volume according to the differences between ambient and pulsed air temperatures, this diffusion is used especially for cooling applications.

The diffused air, colder than the ambient air and therefore heavier flows down and cools down the required zone.



### APPLICATIONS

**Cooling in food industry** (ex : rooms for cheese refining, storage warehouses, slaughterhouses and meat cutting rooms, ...)

**Clean rooms : production or product packing zones, classified ISO 6 to ISO 8.**

- Pharmaceutical industry (ex : dry form),
- medical device (ex : biomedical equipments, ...),
- Optics
- Electronics

**Close protections for food industry (classified ISO 5 and ISO 6)**

**Air conditioning of industrial premises: printing halls,...**

**Comfort or industrial air conditioning of low height premises ( $H < 4 \text{ m}$ ) : conference rooms....**

### ADVANTAGES

- Excellent comfort thanks to very low residual air velocities ( $V_r < 0,3 \text{ m/s}$ ).
- Ideal for low height premises ( $H < 4 \text{ m}$ ) with needs for cooling or air-conditioning together with high comfort requirements.
- Can supply very large air flows between 200 and 3000  $\text{m}^3/\text{h}/\text{m}^2$  of duct.

### RECOMMENDATIONS AND LIMITS OF USE

To be avoided in the following cases :

- for heating only
- premises with a height  $H > 5 \text{ m}$ ,
- Impossible for public rooms

Weak diffusion throws (generally  $< 3 \text{ m}$  depending on the supplied air temperature and velocity). It must never exceed 5 m.

Appropriate air filtration is necessary in order not to clog the fabric, which increases pressure drop and reduces the air flow.

# TEXTILE DUCT

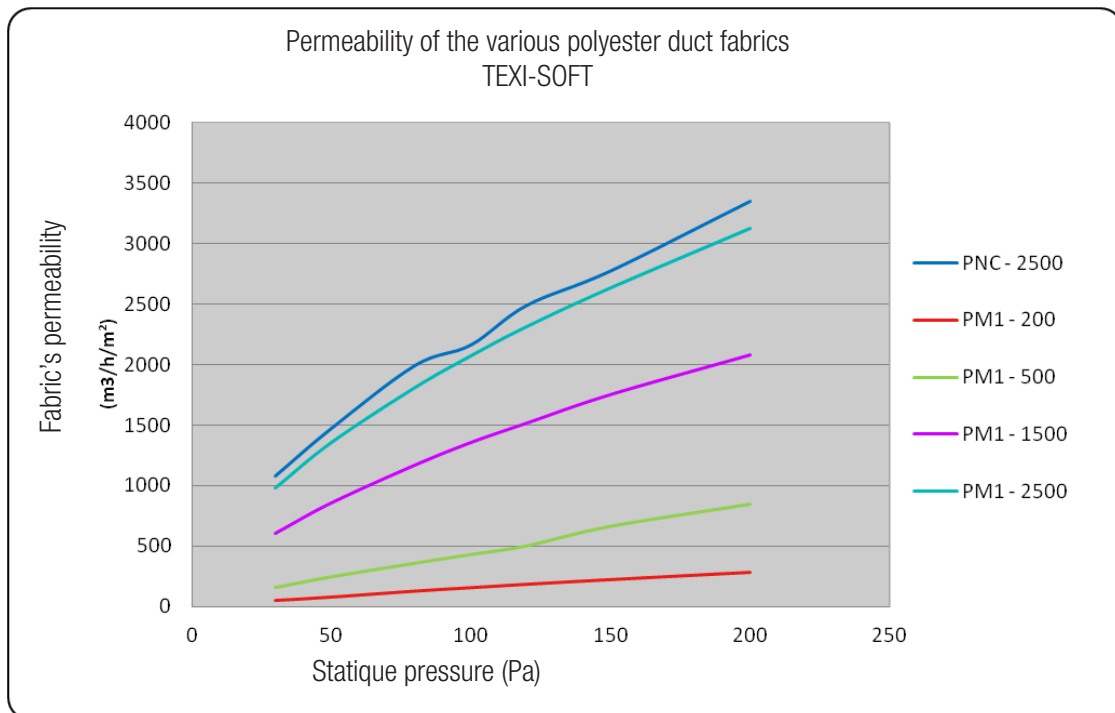
## TEXI-SOFT

### DIFFERENT TYPES OF FABRIC

All permeable fabrics whose permeability (measured in  $\text{m}^3/\text{h}/\text{m}^2$  under a certain static pressure, generally 120 Pa) is known and smooth on all the surface :

- Polyester M1 or not classified.
- Several levels of permeability available
- Each fabric is machine washable further to our instructions.
- Wide range of colors available (120 colors).

F2A Reference	Type of fabric	Weight/ $\text{m}^2$	Permeability under 120 Pa $\text{m}^3/\text{h}/\text{m}^2$
PNC - 2500	Polyester (no fire rating)	85	2488
PM1 - 200	Polyester M1	80	184
PM1 - 500	Polyester M1	80	504
PM1 - 1500	Polyester M1	80	1518
PM1 - 2500	Polyester M1	80	2316
PM1 - AS	Polyester M1 Anti-static	130	800 (under 200 Pa)

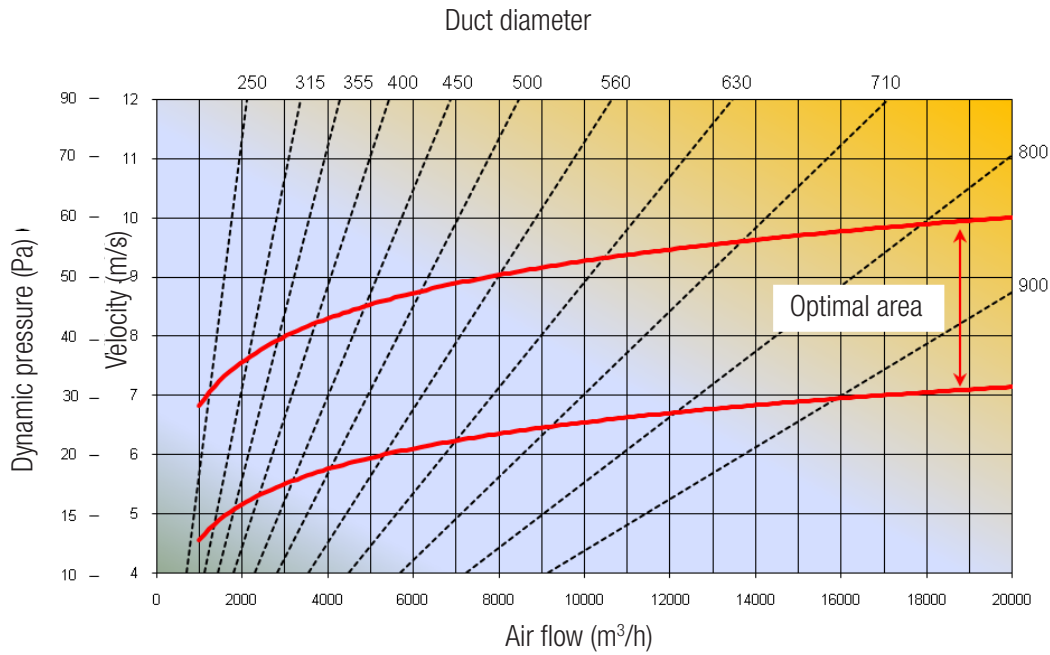


Information and data can not be considered as contractual. Design and data changes may occur without notice during F2A's continuous product development.

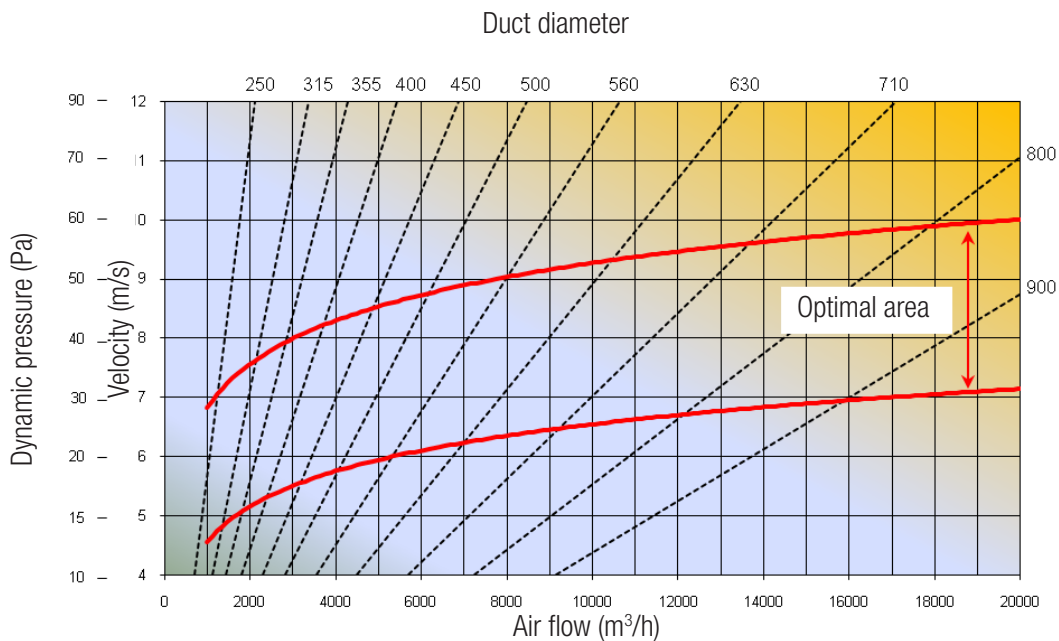
**SELECTION CHART FOR A CIRCULAR DUCT**

Charts A and B : diameter's selection depending on the input air flow.

**Chart A**



**Chart B**

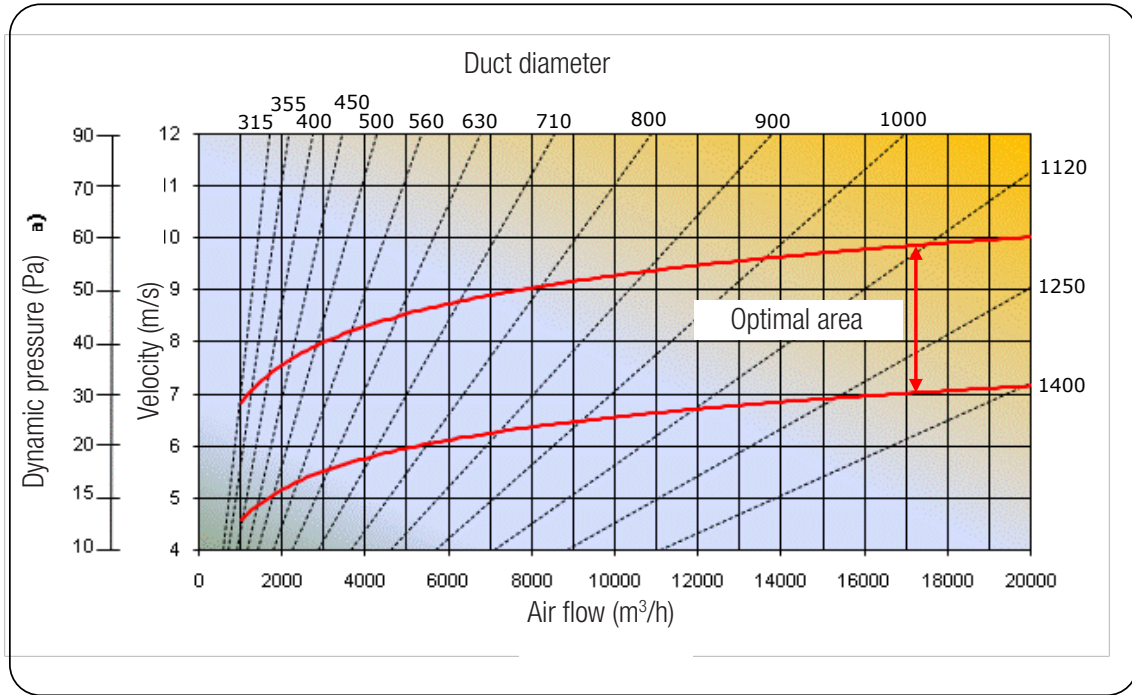


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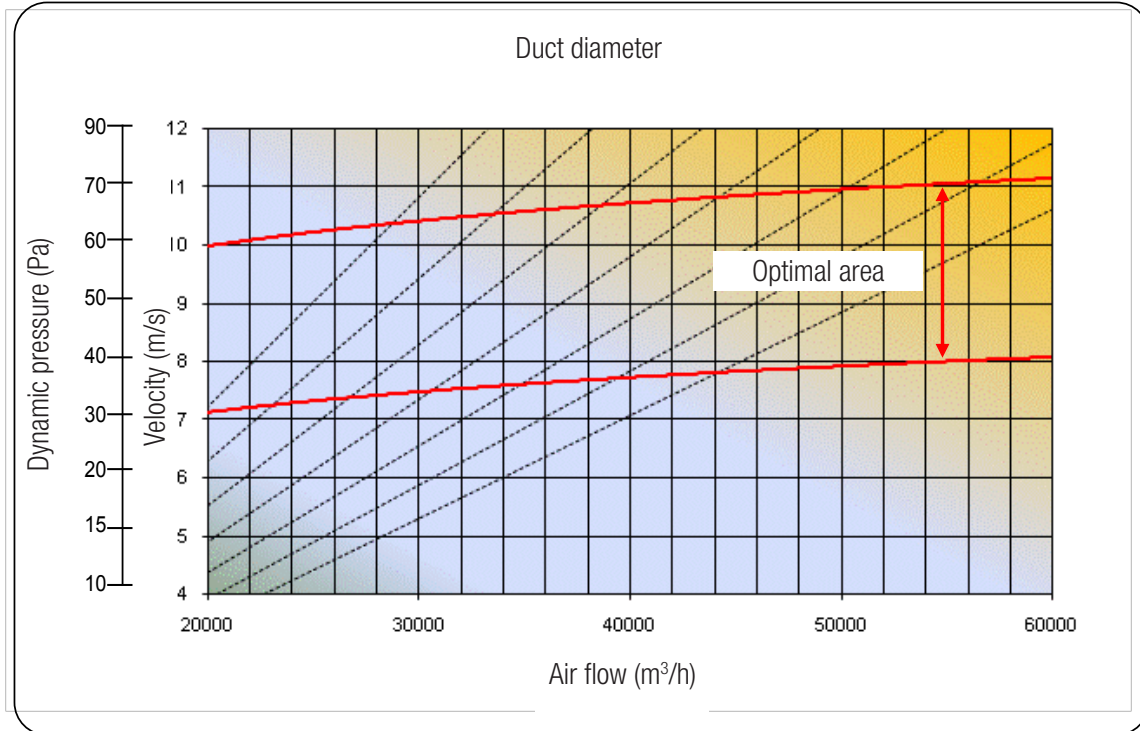
**SELECTION CHART FOR A 1/2 CIRCULAR DUCT**

Charts C and D : Diameter's selection depending on the input air flow.

**Chart C**



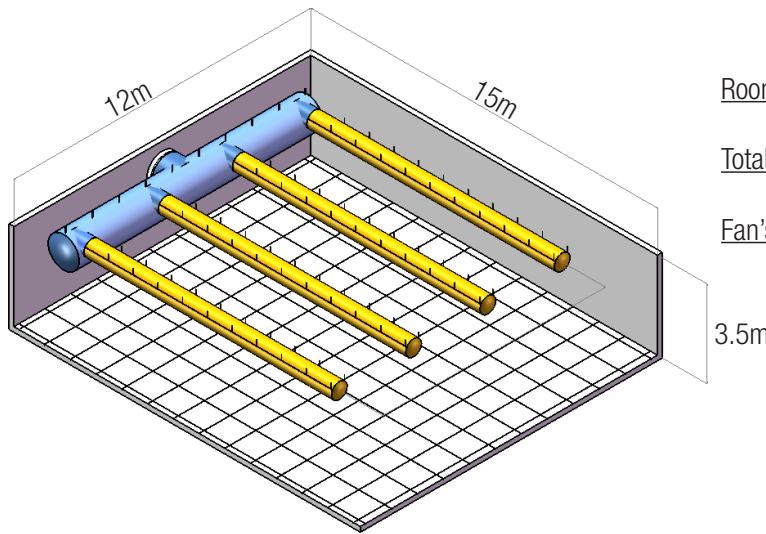
**Chart D**



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## EXAMPLE OF TEXI-SOFT PERMEABLE TEXTILE DUCT SIZING

Cooling of a clean room classified ISO 7 (10 000)



Room dimensions : 12 m x 15 m x 3,5 m

Total airflow : 40 000 m<sup>3</sup>/h

Fan's static pressure : 120 Pa

- The total air flow is dispatched through 4 parallel ducts  
Airflow per duct : 10 000 m<sup>3</sup>/h  
Length of each duct : 10 m  
Diameter of each circular duct: 630 mm (see chart A, V= 9 m/s)
- Porous surface : 19,84 m<sup>2</sup>
- Type of fabric : PM1 - 500 (Permeability under 120 Pa = 504 m<sup>3</sup>/h/m<sup>2</sup>)
- Diffusion velocity  $V_s = 0.14$  m/s

## AVAILABLE PRESSURE

The total available pressure of the fan  $P_t$  is given by the following formula :

$$P_t = P_{stat} + P_{dyn} + P_{additional}$$

With :

- $P_{stat}$  = Pressure drop due to the air going through the porous fabric.  
It depends on the air flow's velocity (ici, 0,18 m/s) and on the fabric's permeability.
- $P_{dyn}$  = Dynamic pressure of the air when it enters the duct (see charts A to D ) here  $P_{dyn} = 50$  Pa.
- $P_{additional}$  = Pressure loss added to the static pressure of the duct ( $P_{stat}$ ) due to the clogging of the duct (here  $P_{additional} = 0$ , a H14 filtration is recommended in a clean room to prevent any clogging of the duct)