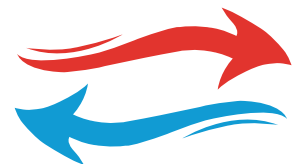


TEXTILE AIR DUCTING SYSTEMS

*Air flow from
the fabric*



ESAIR FABRIC

About us



Discover
the potential

TVT Tekstil Dış Ticaret ve Danışmanlık Ltd. Şti. has been operating textile and textile machinery business in Turkey and around countries since 1997.

Esair Fabric, which is a registered mark of TVT Tekstil, is developed by TVT Tekstil after heavy R&D study to design and produce fabric air ducts for each project's specific requirements.

Esair Fabric is the first and only domestically fabric air duct producer company of Turkey.

Why Fabric Air Ducts?

- Hygienic, Anti Bacterial
- Easy To Wash
- Zippered Connection
- Uniform Air Distribution
- Lightweight, Low Transportation
- Easy and Quick Assembly
- Quiet, Comfortable
- Decorative
- Different Color Options
- Tailor Made Production
- Non-condensing
- Eco-friendly



Duct Sections



Circle



Quarter Circle

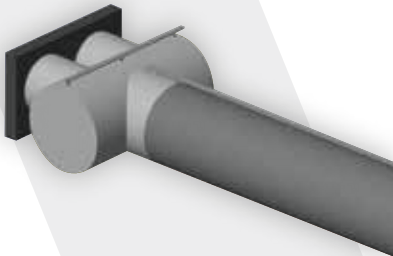


Semi Circle



Rectangular

Connection Ducts



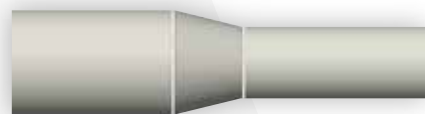
Collector



Elbow



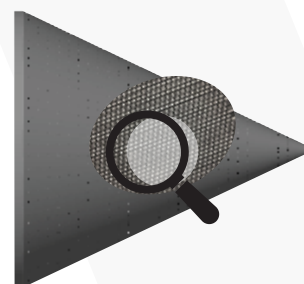
Reducer (Single Suspension)



Reducer (Double Suspension)



T Duct



Conical Equalizer

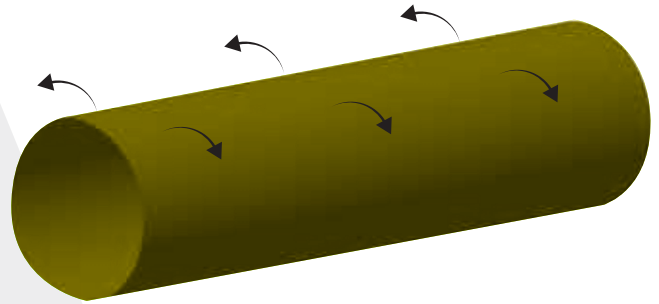
Flow Types

FABRIC FLOW

Air is distributed through fabric surface by its permeable structure.

Air Permeability: Fabric structure can be designed according to required air flow rate in 120 Pa.

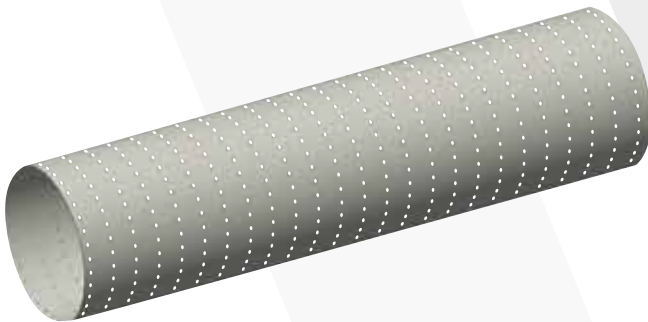
**Short Range
Cooling**



MICRO HOLE FLOW

Air is uniformly distributed through the micro holes by laser cut in specified gaps and sizes on the fabric.

Hole Size: 120-500 μm
**Short - Middle Range
Cooling**

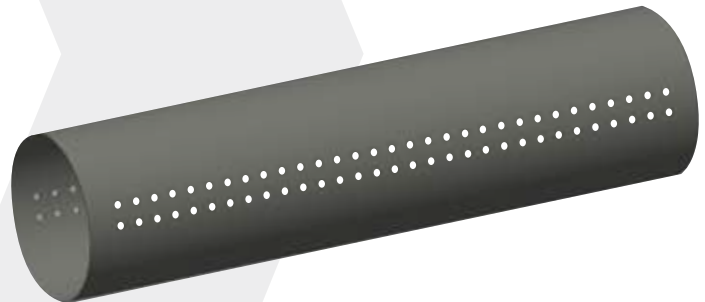


PERFORATED HOLE FLOW

Air distribution is provided by specified directions and rows of perforated holes that are cut with laser on the duct.

Hole Size: 4-14 mm

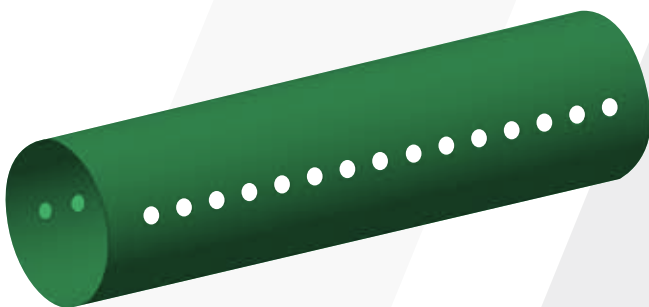
**Middle Range
Cooling - Heating**



HIGH THROW FLOW

Air is distributed by laser cut wide spaced large holes on the duct.

Hole Size: 15-60 mm
**Long Range
Cooling - Heating**

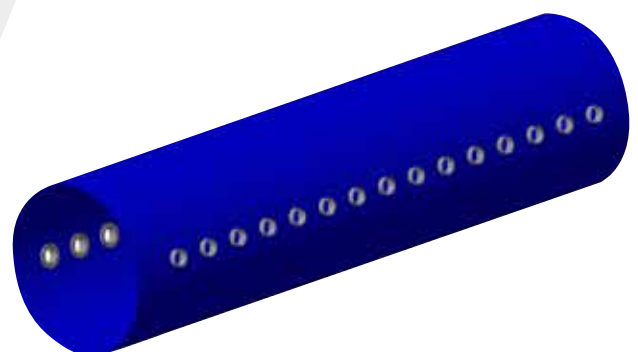


NOZZLE FLOW

Air is distributed by nozzles mounted on laser cut large holes on the duct.

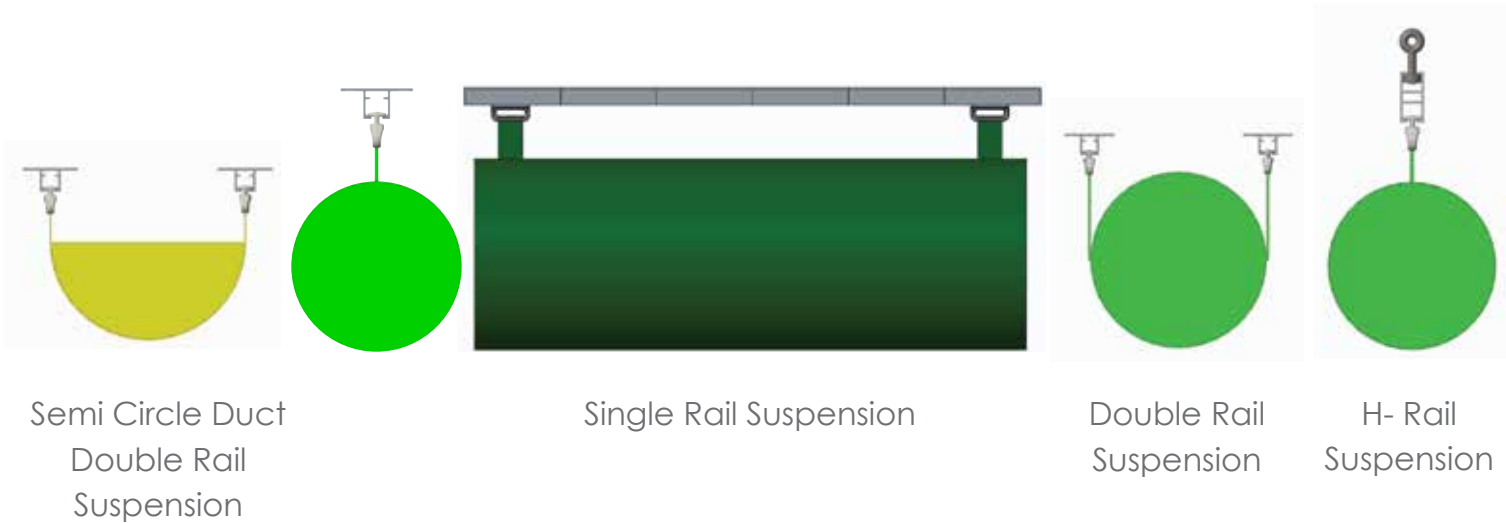
Hole Size: 18,36 mm

**Long Range
Cooling - Heating**

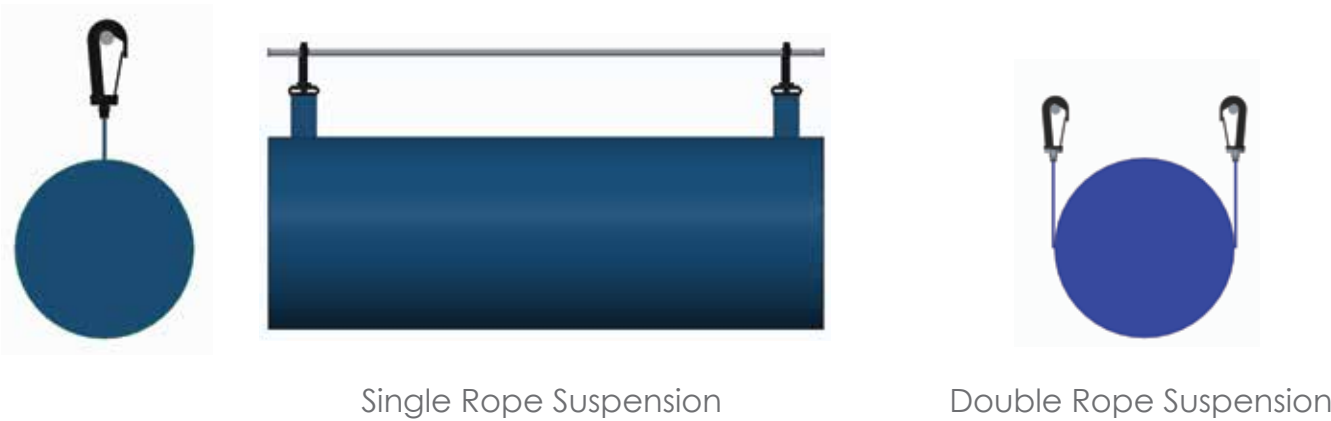


Suspension and Assembly

≈ ALUMINIUM RAIL SUSPENSION



≈ STAINLESS ROPE SUSPENSION



ESAIR Fabric Types and Properties

1/1 PLAIN TYPE

- ≈ %100 Polyester
- ≈ Unit weight 270 gr/m² ± 5
- ≈ High tenacity
- ≈ After washing, unshrinkability of fabric is around +%1.
- ≈ Air permeability is 100 ± 20 m³/h-m² under 120 Pa pressure.
- ≈ Standard Anti-bacterial treatment (AATCC 100 Test Certificate).
- ≈ Optional flame retardant treatment (EN 13501-1 Fire Classification Certificate) and anti-static treatment (EN 1149-1 Test Certificate).

3/1 TYPE

- ≈ %100 Polyester
- ≈ Unit weight 260 gr/m² ± 5
- ≈ High tenacity
- ≈ After washing, unshrinkability of fabric is around +%1.
- ≈ Air permeability is 250 ± 25 m³/h-m² under 120 Pa pressure, new fabric structures can be designed for different flow rates.
- ≈ Standard Anti-bacterial treatment (AATCC 100 Test Certificate).
- ≈ Optional flame retardant treatment (EN 13501-1 Fire Classification Certificate) and anti-static treatment (EN 1149-1 Test Certificate).

2X2 TYPE

- ≈ %100 Polyester
- ≈ Unit weight 285 gr/m² ± 5
- ≈ High tenacity
- ≈ After washing, unshrinkability of fabric is around +%1.
- ≈ Air permeability is 50 ± 10 m³/h-m² under 120 Pa pressure.
- ≈ Standard Anti-bacterial treatment (AATCC 100 Test Certificate).
- ≈ Optional flame retardant treatment (EN 13501-1 Fire Classification Certificate) and anti-static treatment (EN 1149-1 Test Certificate).

TREVIRA

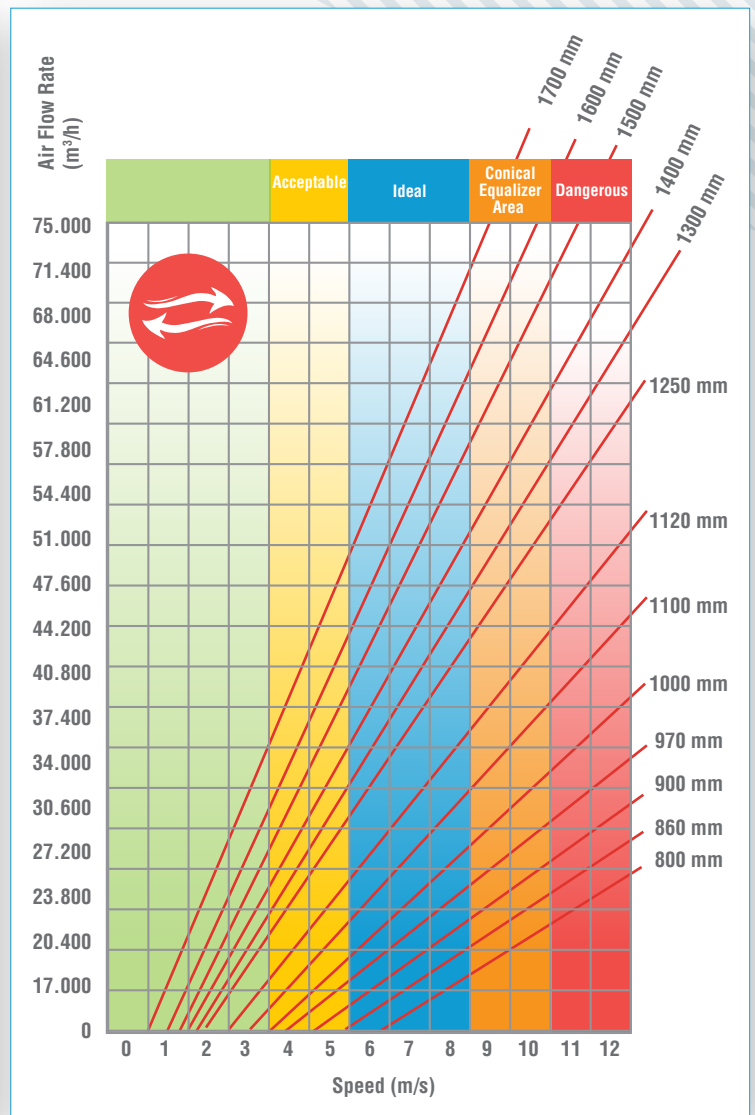
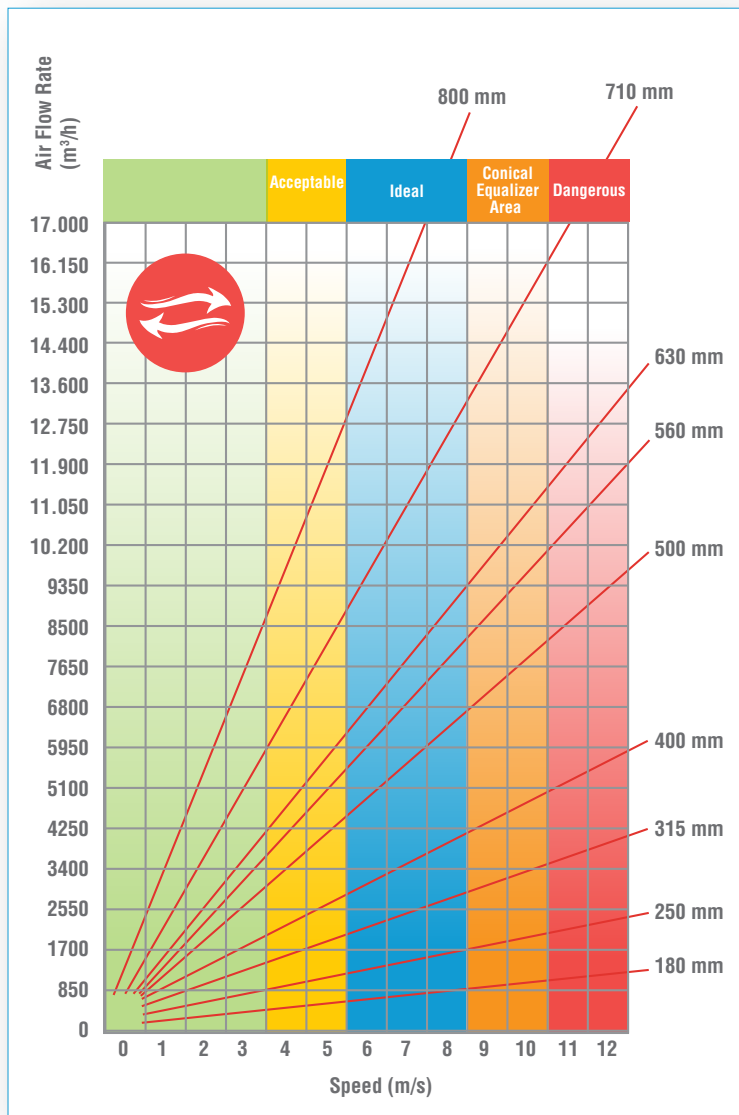
- ≈ Specially woven fabric produced by %100 Polyester Trevira CS yarn.
- ≈ Unit weight 285 gr/m² ± 5
- ≈ High tenacity
- ≈ After washing, unshrinkability of fabric is around +%1.
- ≈ Air permeability is 40 ± 5 m³/h-m² under 120 Pa pressure.
- ≈ Standard Flame retardant treatment (EN 13501-1 Fire Classification Certificate)
- ≈ Optional anti-bacterial treatment (AATCC 100 Test Certificate) and anti-static treatment (EN 1149-1 Test Certificate).

AIR AND WATER IMPERMEABLE TYPE

All fabric types detailed above can be made air and water impermeable by applying different coatings.

COLOR CHART	Green	P 340
	Dark Gray	P190
	Light Yellow	P234
	White	P010
	Dark Blue	P458

Duct Diameter Selection



Calculations - Pressure Loss

≈ PRESSURE LOSS IN CIRCULAR DUCTS

$$\frac{\Delta P}{L} = 3 \times 10^7 f \left(\frac{Q^{1,82}}{d_e^{4,86}} \right)$$

Esair 1/1 $f = 0,975$

Esair 1/3 $f = 0,980$

Esair 2/2 $f = 0,977$

ΔP : Friction loss (pa)

L : Duct length (m)

d_e : Duct diameter (mm)

V : Air speed (m/s)

Q : Air flow rate (L/s)

f : Friction coefficient

≈ PRESSURE LOSS IN CONNECTION DUCTS

$$\Delta p_d = C h_v \quad h_v = 0,6137 v^2$$

p_d : Dynamic loss in connection ducts [Pa]

C : Friction coefficient of connection ducts

h_v : Velocity head [Pa]

Connection Duct	C Coefficient
Reduction	0,25
Elbow	0,27
Y-Duct	0,30
T-Duct	0,37

Practical Note

Static pressure at the middle of the fabric duct should be at least 2 times of dynamic pressure at the entrance of the fabric duct.

Certificates

≈ EN 13501 Fire Classification Report

THE DENGY & KALIRAYVUN MERKEZİ BAĞKANLIĞI YAPI MALİ, YANGIN VE AKUSTİK LAB.
MEMBER OF THE TEST AND CALIBRATION CENTER CONSTRUCTION MATERIALS FIRE and ACUSTICS LAB.

MUAYENE - DENEY SONUÇLARI TEST RESULTS

AB-0001-T
483911
08-19

REACTION TO FIRE CLASSIFICATION

1. Introduction
This classification report defines the classification assigned to the product "trademarked Esair Fabric® - Esair, Fabric designed for Air Distribution and Fabric Duct Systems" in accordance with the procedures given in the standard TS EN 13501-1-A1: 2013 using data from reaction to fire tests.

REACTION TO FIRE CLASSIFICATION ACCORDING TO TS EN 13501-1

SPONSOR (Name&Address)	TVT TEKSTİL DİŞ TİCARET VE DANIŞMANLIK LTD. ŞTİ. İstoc Sırası 35. Ada No:7 Bağcılar/İSTANBUL
DEMANDED BY (Name&Address)	TVT TEKSTİL DİŞ TİCARET VE DANIŞMANLIK LTD. ŞTİ. İstoc Sırası 35. Ada No:7 Bağcılar/İSTANBUL
MANUFACTURER (Name&Address)	TVT TEKSTİL DİŞ TİCARET VE DANIŞMANLIK LTD. ŞTİ. İstoc Sırası 35. Ada No:7 Bağcılar/İSTANBUL
PREPARED BY	TSE Construction Materials Fire and Acoustics Laboratory
CLASSIFICATION REPORT NO.	483911
DATE OF ISSUE	9.08.2019
ISSUE NUMBER	1/2

This classification report consists of 4 pages and may only be used or reproduced in its entirety.

2. Details of Classified Product

2.1. General
The classified product is defined as "trademarked Esair Fabric® - Esair, Fabric designed for Air Distribution and Fabric Duct Systems"

2.2. Product Description

General Description	Fabric designed for Air Distribution and Fabric Duct Systems
Trademark	Esair Fabric® - Esair
Related Specification(s)	-

Sample Properties (Designated Features)

Thickness	0,40 mm (measured mean value)
Weight per unit area	264,13 kg/m² (measured mean value)

LAB.0129-08 22.07.2019 8

THE DENGY & KALIRAYVUN MERKEZİ BAĞKANLIĞI YAPI MALİ, YANGIN VE AKUSTİK LAB.
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08-19

4. Classification and Direct Field of Application

4.1. Reference of classification
This classification has been carried out in accordance with clause 11.6, clause 11.9.2 and clause 11.10.1 of TS EN 13501-1-A1: 2013

4.2. Classification
In relation to its reaction to fire behaviour, the product "trademarked Esair Fabric® - EsairFabric designed for Air Distribution and Fabric Duct Systems" has been classified as:

B

In relation to its reaction to fire behaviour, the product "trademarked Esair Fabric® - EsairFabric designed for Air Distribution and Fabric Duct Systems" has been classified as:

s1

In relation to its reaction to fire behaviour, the product "trademarked Esair Fabric® - EsairFabric designed for Air Distribution and Fabric Duct Systems" has been classified as:

d0

Fire behaviour	Smoke production	Flaming droplets
B	s1	d0

REACTION TO FIRE CLASS: B-s1,d0

4.3. Field of Application
This classification is valid for the products manufactured with the same recipe, same type, under the same product name and product details defined in Clause 2 in the following end use applications:
- Applications where the fabrics are directly mounted on metal frames or where they are fixed on surfaces with reaction to fire class of at least A2-s1,d0 with minimum 40 mm air gap.
- Applications involving the use of custom metal fixing elements that are provided by the manufacturer.
- Applications without any gaps.

5. Limitations
At the time of publishing of the standard TS EN 13501-1-A1: 2013, there wasn't any decision concerning the duration of validity of a classification report.

The present document represents neither type approval nor certification of the product.

End of classification report.

LAB.0129-08 22.07.2019 8

≈ AATCC 100 Anti-Bacterial Test Report

≈ DIN EN 1149-1 Anti-Static Test Report

FABRIC DUCT WASHING INSTRUCTIONS

- ≈ Fabric duct should be washed under 40 °C with standard detergent.
- ≈ As Esair Fabric, we suggest our customers to use our ALKAOIL washing detergent and ALKADEZ anti-bacterial detergent which are especially influential on heavy and bacteria dirt.
- ≈ We are also providing customized washing operation for all type of fabric ducts by using our improved detergents in special industrial washing machines.

All of the informations and images in this catalogue purposes to inform, they are non-binding because they can be changed in time and requirements.



ESAIR FABRIC Textile (Fabric) Air Ducts

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