inGremio®

inGremio

anniversary 35 YEARS

Family business...

INGREMIO is a manufacturing enterprise. The Firm was established in 1983 as a **family business**. Now the company is based on its **tradition with all new modern advantages**.

in gremio [latin definition: together, as one, with one voice,...]

Zbigniew Kotulski
Owner

Artur Kotulski
Production Director

Wojciech Kotulski
Marketing Director

2019

Over 6000 m2, more than 30 production lines

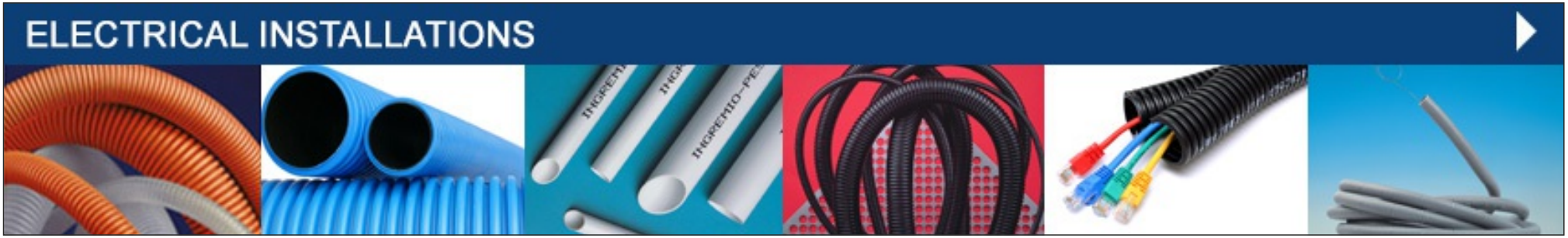
2019

70% of production is exported to whole Europe

Millions of meters...

Millions of meters of Ingremio pipes are already used in many countries worldwide. We manufacture over thousands tons of plastic materials per year.

Target Industries...



Target Industries...

Target Industries...

Target Industries...

Target Industries...

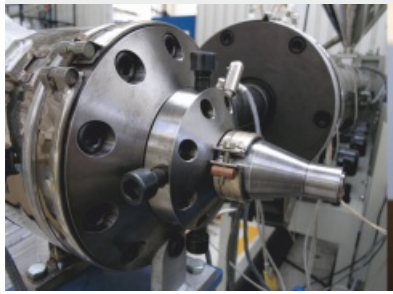
Target Industries...

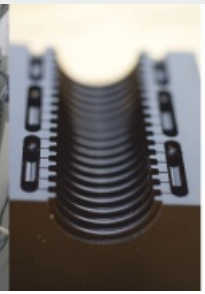
Specialization...

Ingremio is one of the European most advanced and specialized manufacturers of preinsulated pipes and protective corrugated pipes. That is why our clients call us **„the specialists”.**

Technology oriented company...

Specialists in designing and manufacturing **unique equipment for unusual products**.





Quality Management...

Developments achieved by production enhancement, technological progress and specialisation in this product sector, leads to overall quality improvements. To come up to costumers and market expectations Ingremio implemented the latest Quality Management System and the Technical Specification, ISO 9001 and ISO/TS 16949.

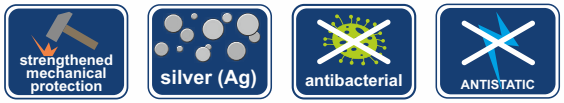
ISO 9001

ISO TS 16949

AIRFLEX Ag

SILVER TECHNOLOGY

- **Anti-bacterial**, fungicidal interior layer containing silver in the amount of **150 ppm** within the polymer's matrix.
- The application of **silver** ensures unlimited in time bactericidal action regardless of air temperature and humidity and prevents development of defense mechanisms by bacteria.
- The interior layer also has **anti-static properties**.
- The smooth interior surface makes it possible to attain **high air flows** at **low pressure losses**, contributing to the low energy consumption of the entire system, easy to clean.



AIRFLEX Ag

SILVER TECHNOLOGY

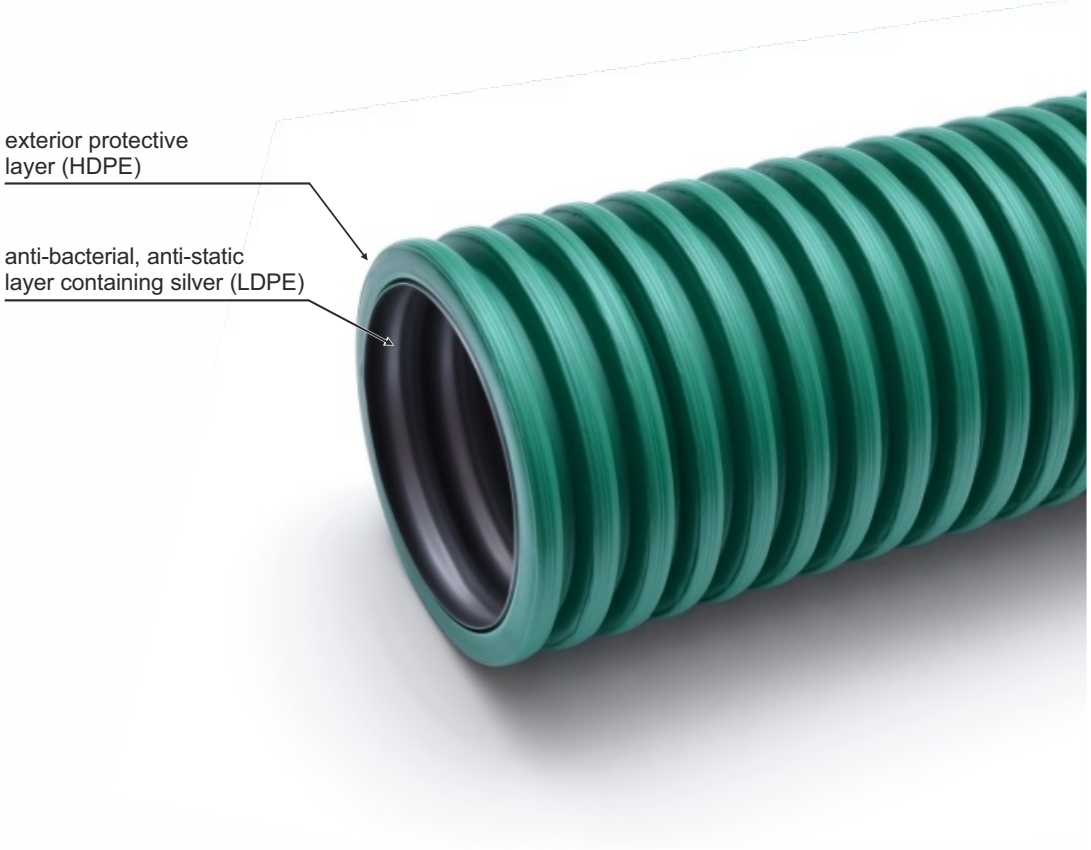
Mechanical strength (PN-EN 61386-24): **450N**
Impact resistance (PN-EN 61386-24): **Normal (N)**
Bending resistance: **pliable**
Flammability: **flammable**
Effectiveness of product's anti-bacterial action after 24h: **61% - 92%**

Exterior layer:

Material: **polyethylene mod. (HDPE-mod.)**
Color: **green**

Interior layer:

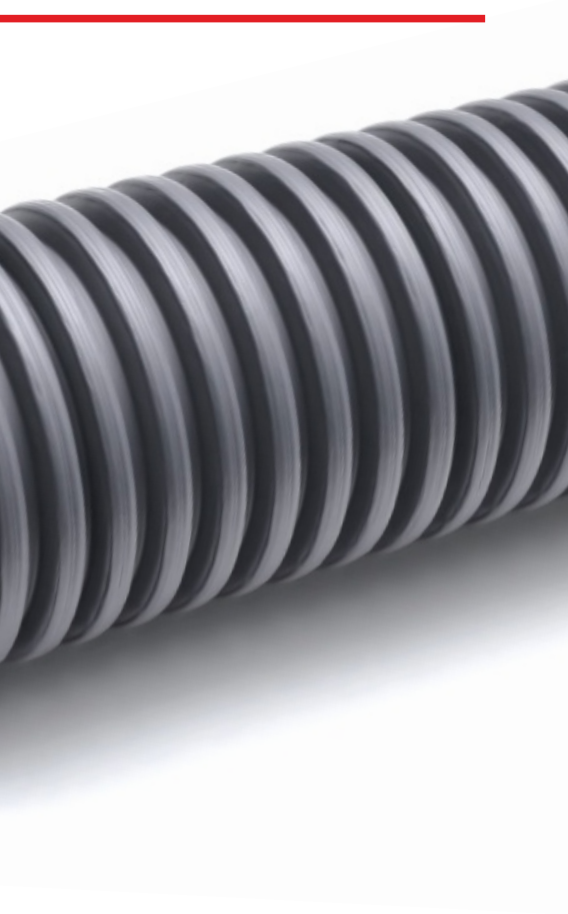
Material: **polyethylene mod. (LDPE-mod.), silver 150 ppm (anti-bacterial layer, antistatic)**
Color: **silver**



AIRFLEX Ag- HFFR

SILVER TECHNOLOGY

- Have an exterior protective layer made from **flame-retardant halogen-free** material.
- Recommended for ventilation and recovery systems at locations where increased **fire safety** is required and locations subject to more stringent requirements concerning toxic chemical compounds released during burning.
- All the same proporties like Airflex Ag.



halogen free | self-extinguishing | strengthened mechanical protection | silver (Ag) | antibacterial | ANTISTATIC

AIRFLEX Ag- HFFR

SILVER TECHNOLOGY

Mechanical strength (PN-EN 61386-24): **450N**

Impact resistance (PN-EN 61386-24): **Normal (N)**

Bending resistance: **pliable**

Flammability: **halogen free, self-extinguishing HB (UL94)**

Effectiveness of product's anti-bacterial action after 24h: **61% - 92%**

Exterior layer:

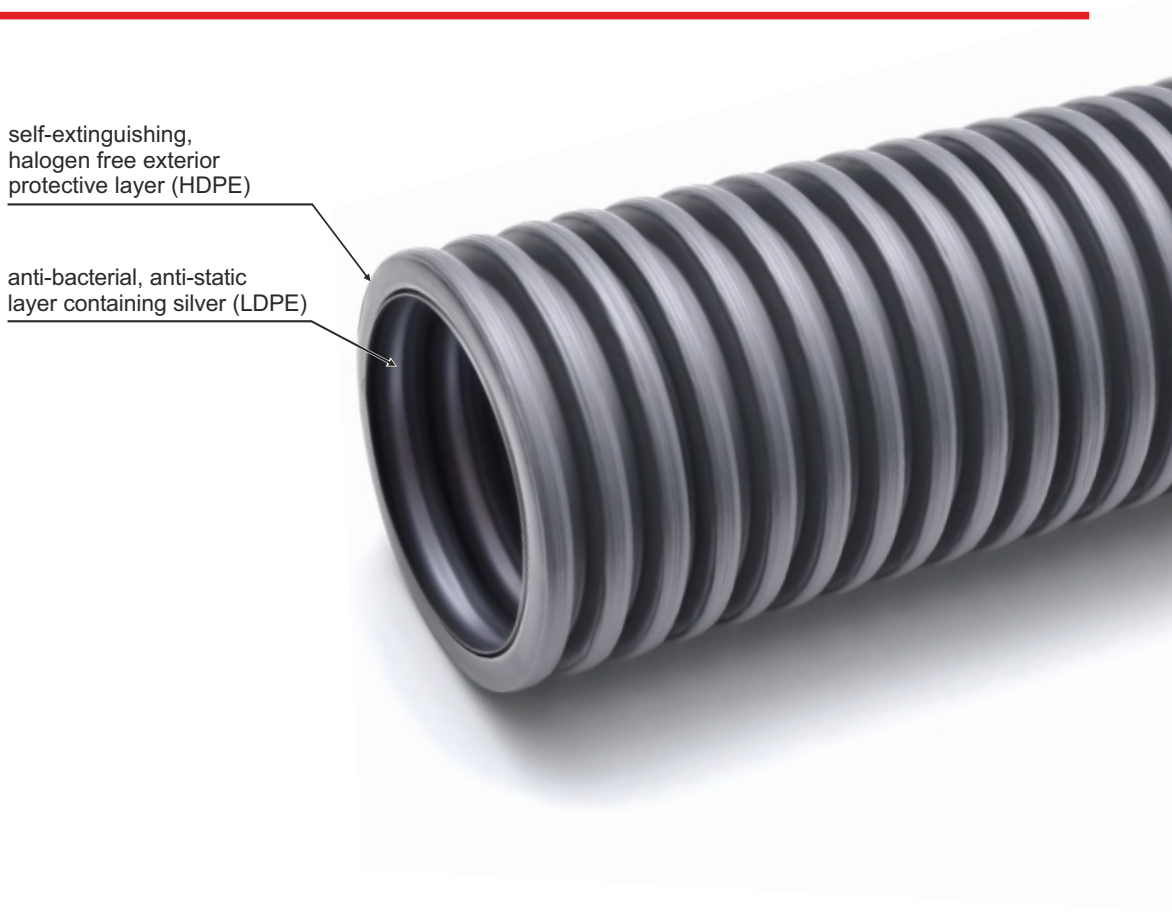
Material: **polyethylene mod. (HDPE-mod.)**

Color: **silver**

Interior layer:

Material: **polyethylene mod. (LDPE-mod.), silver 150 ppm (antibacterial layer, antistatic)**

Color: **silver**



A SHORTENED TEST CERTIFICATE

No. B- 43232/24375/15

On the basis of the tests carried out at the SLB ITA-TEST in Warsaw
ul. Obozowa 82a
between 07.04.2015 – 24.04.2015, it has been stated, that:

AIR-FLEX TUBE shows antibacterial properties, defined on the basis of the norm:
ISO 22196 *Plastics – Measurement of antibacterial activity on plastics surfaces.*

Antibacterial activity (R) amounts to:

for *Escherichia coli* (ATCC 8739) - 0,40

for *Staphylococcus aureus* (ATCC 6538P) - 1,07

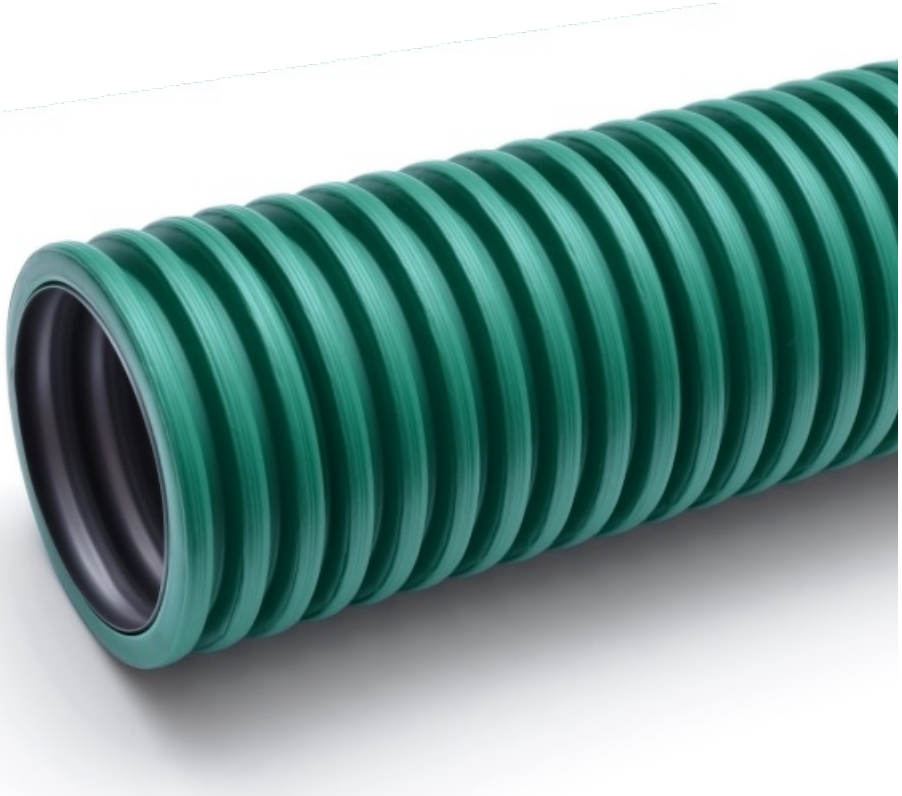
The test was performed by

Specjalistyczne Laboratorium Badawcze
itu-test
mgr Karolina ZIMAKOWSKA
mikrobiolog

Test supervisor

Specjalistyczne Laboratorium Badawcze
itu-test
dr inż. Joanna ROMAN
Kierownik Pracowni badań mikrobiologicznych

Warsaw, June 11, 2015



Percentage reduction in the number of living microorganism cells

Escherichia coli	61%
Staphylococcus aureus	92%

Declaration of Performance nr 33/2017

1. Unique identification code of the product-type:
Double walled pipes Airflex, made out from HDPE.
Dimensions: DN: 50, 63, 75, 90, 110, 160, 200mm

2. Intended use/es:
Airflex are designed for circulation of air in forced ventilation systems in residential, utility and industrial buildings.

3. Manufacturer:
Zakład Przetwórstwa Tworzyw Sztucznych Ingremio - Peszel

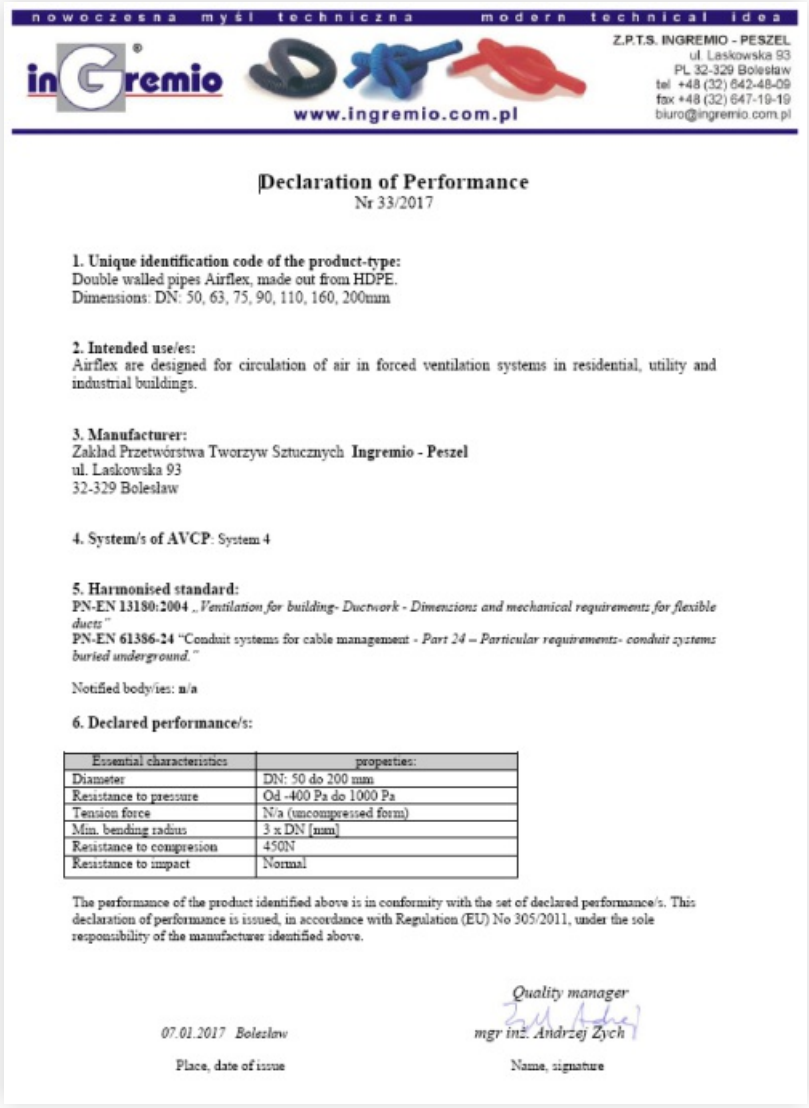
4. System/s of AVCP:
System 4

5. Harmonised standard:
PN-EN 13180:2004 „Ventilation for building- Ductwork - Dimensions and mechanical requirements for flexible ducts”

PN-EN 61386-24 “Conduit systems for cable management - Part 24 – Particular requirements - conduit systems buried underground.”
Notified body/ies: **n/a**

6. Declared performance/s:

Essential characteristics	properties:
Diameter	DN: 50 do 200 mm
Resistance to pressure	from -400 Pa to 1000 Pa
Tension force	N/a (uncompressed form)
Min. bending radius	3 x DN [mm]
Resistance to compresion	450N
Resistance to impact	Normal



nowoczesna myśl techniczna modern technical idea

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fax +48 (32) 647-19-19
biuro@ingremio.com.pl

www.ingremio.com.pl

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ul. Laskowska 93
32-329 Bolesław

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Notified body/ies: **n/a**

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Essential characteristics	properties:
Diameter	DN: 50 do 200 mm
Resistance to pressure	Od -400 Pa do 1000 Pa
Tension force	N/a (uncompressed form)
Min. bending radius	3 x DN [mm]
Resistance to compresion	450N
Resistance to impact	Normal

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Quality manager

07.01.2017 Bolesław — *mgr inż. Andrzej Zych*

Place, date of issue — Name, signature

Appendix No. 1. Exemplary photographs illustrating the anti-microorganism activity of the tested sample compared to the effect of the control sample (without the anti-microorganism agent) after 24 h of contact with the strain.

Photo. A – the photograph of reduction of cells of the Escherichia coli strain (ATCC 8739) on the MacConkey Agar substrate

Control sample
(10^{-5} dilution)

Tested sample
(10^{-5} dilution)

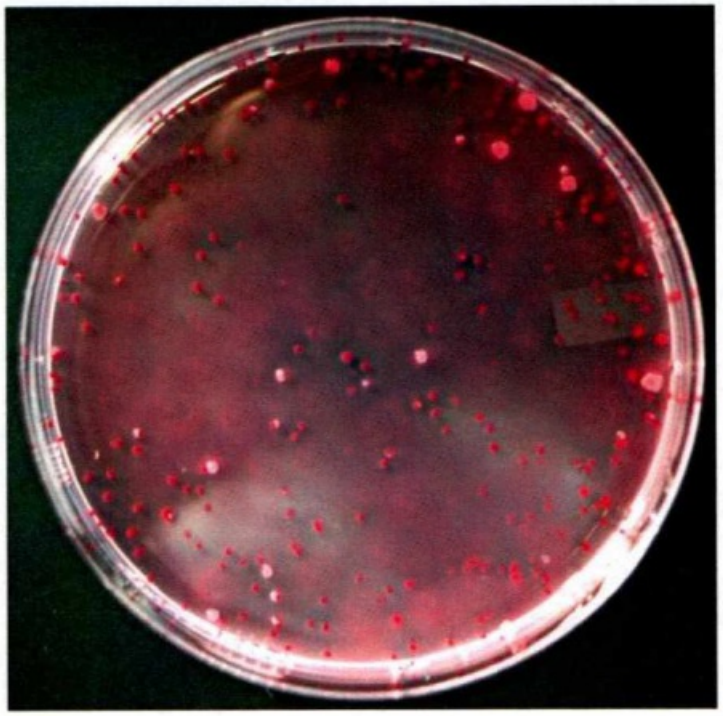
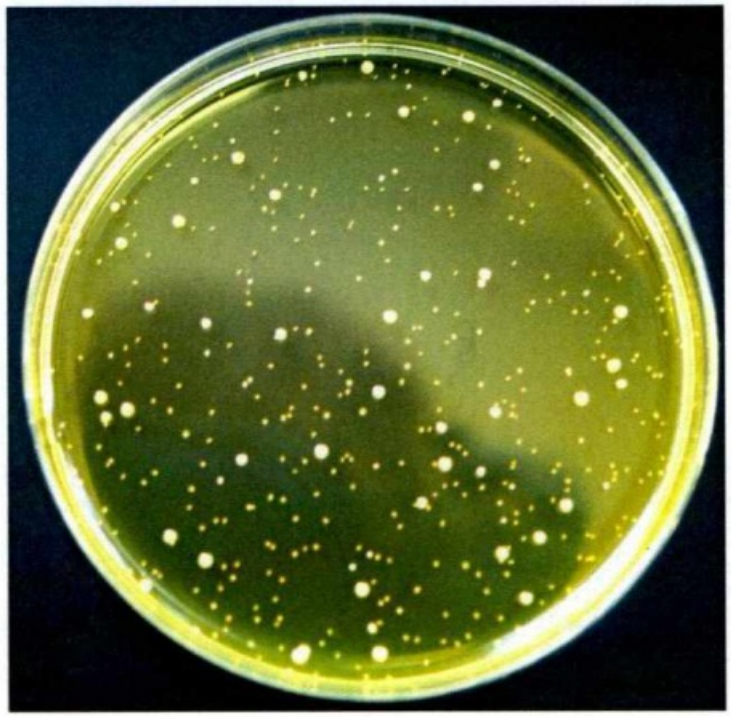
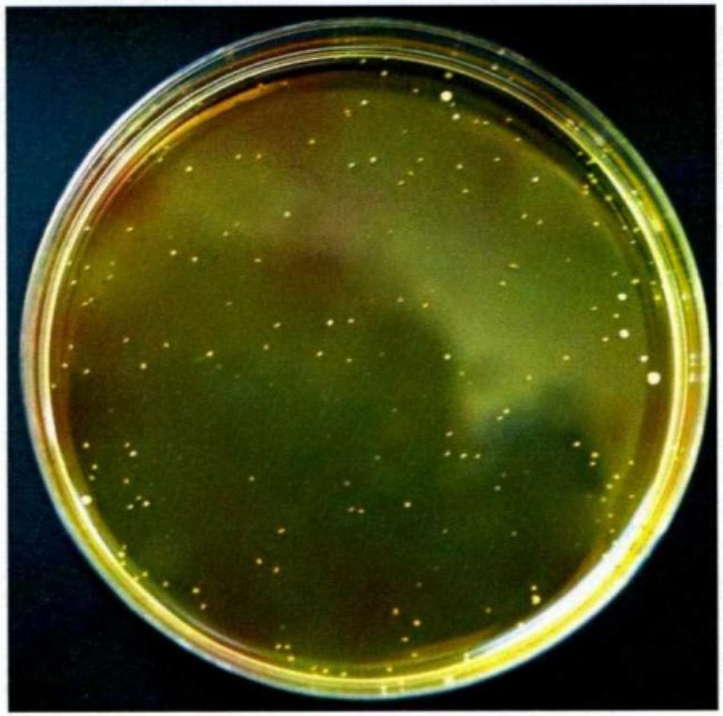


Photo. B – the photograph of reduction of cells of the Staphylococcus aureus (ATCC 6538) strain on the Mannitol Salt Agar substrate.

Control sample
(10^{-4} dilution)

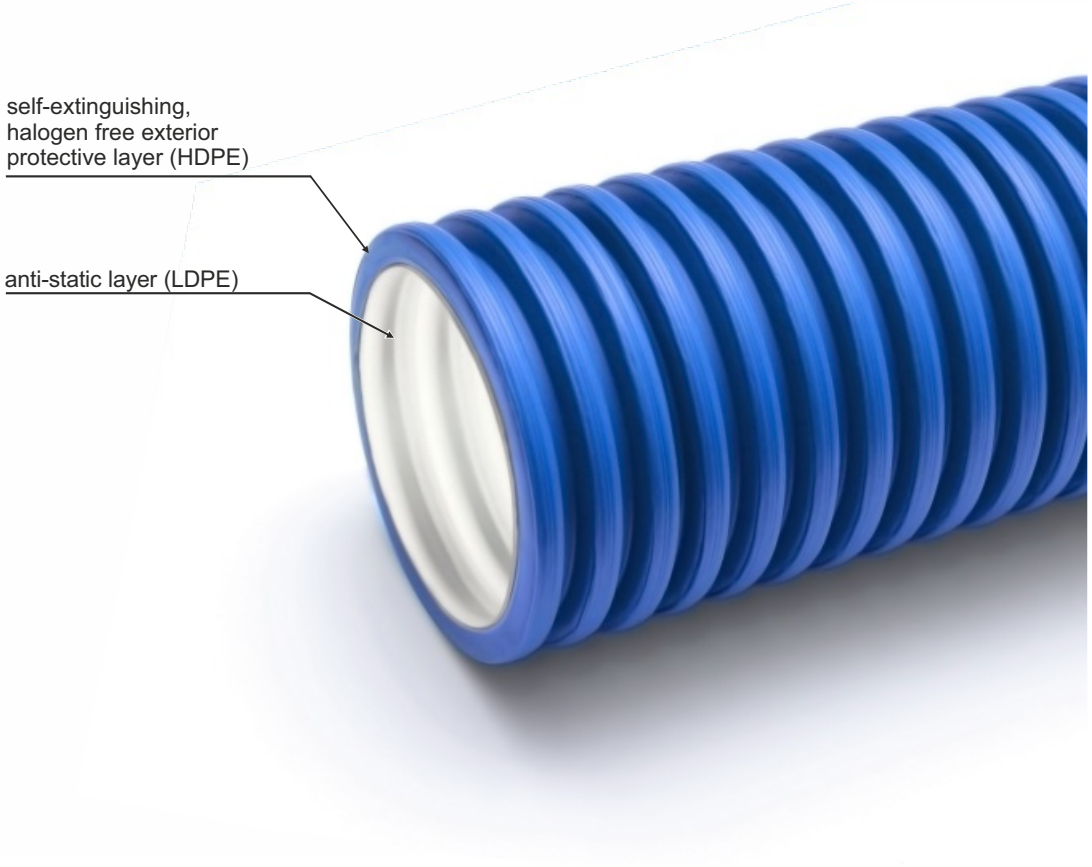


Tested sample
(10^{-4} dilution)



AIRFLEX Blue

- It has been designed for the purposes of **"recovery"**.
- Recommended wherever anti-bacterial protection is not required.
- Pipes have a smooth, anti-static interior coat which significantly limits settling and accumulation of dust in pipes and makes it possible to achieve high air flows at low pressure losses, contributing to the low energy, consumption of the entire system, easy to clean.



strengthened mechanical protection

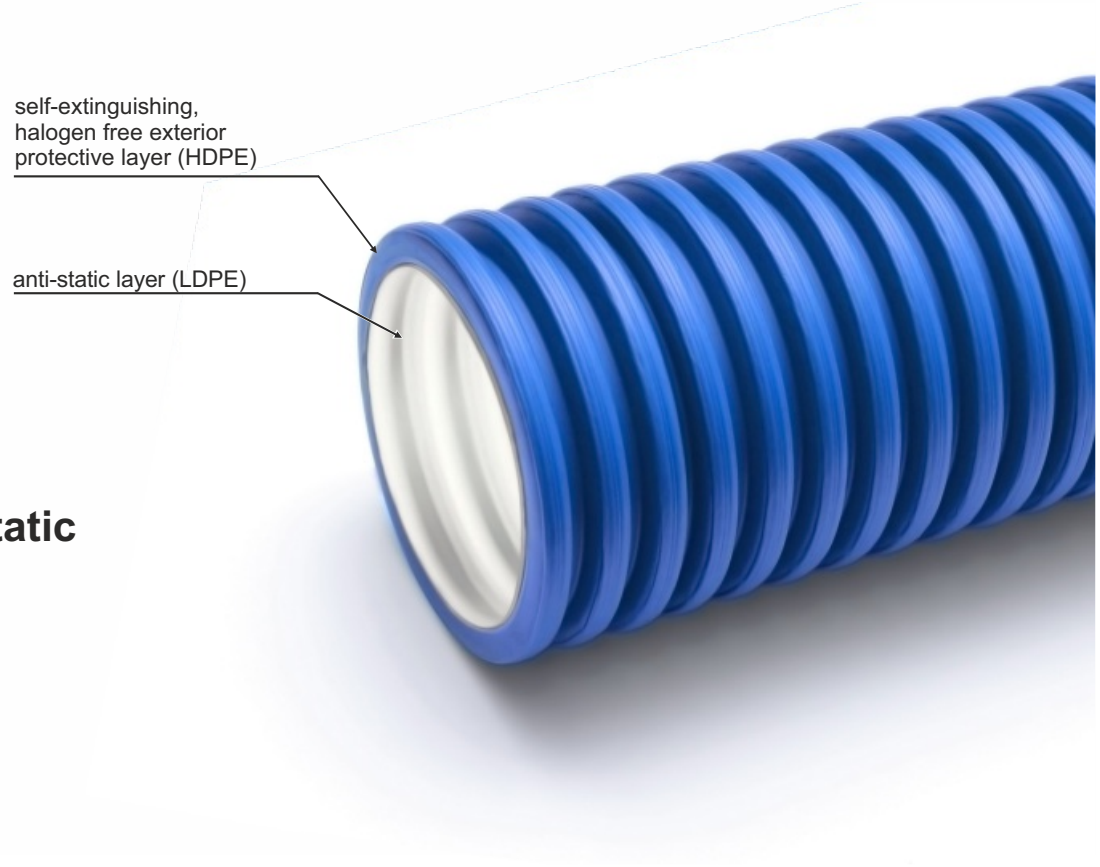
ANTISTATIC

AIRFLEX Blue

Mechanical strength (PN-EN 61386-24): **450N**
Impact resistance (PN-EN 61386-24): **Normal (N)**
Bending resistance: **pliable**
Flammability: **flammable**

Exterior layer:
Material: **polyethylene mod. (HDPE-mod.)**
Color: **blue**

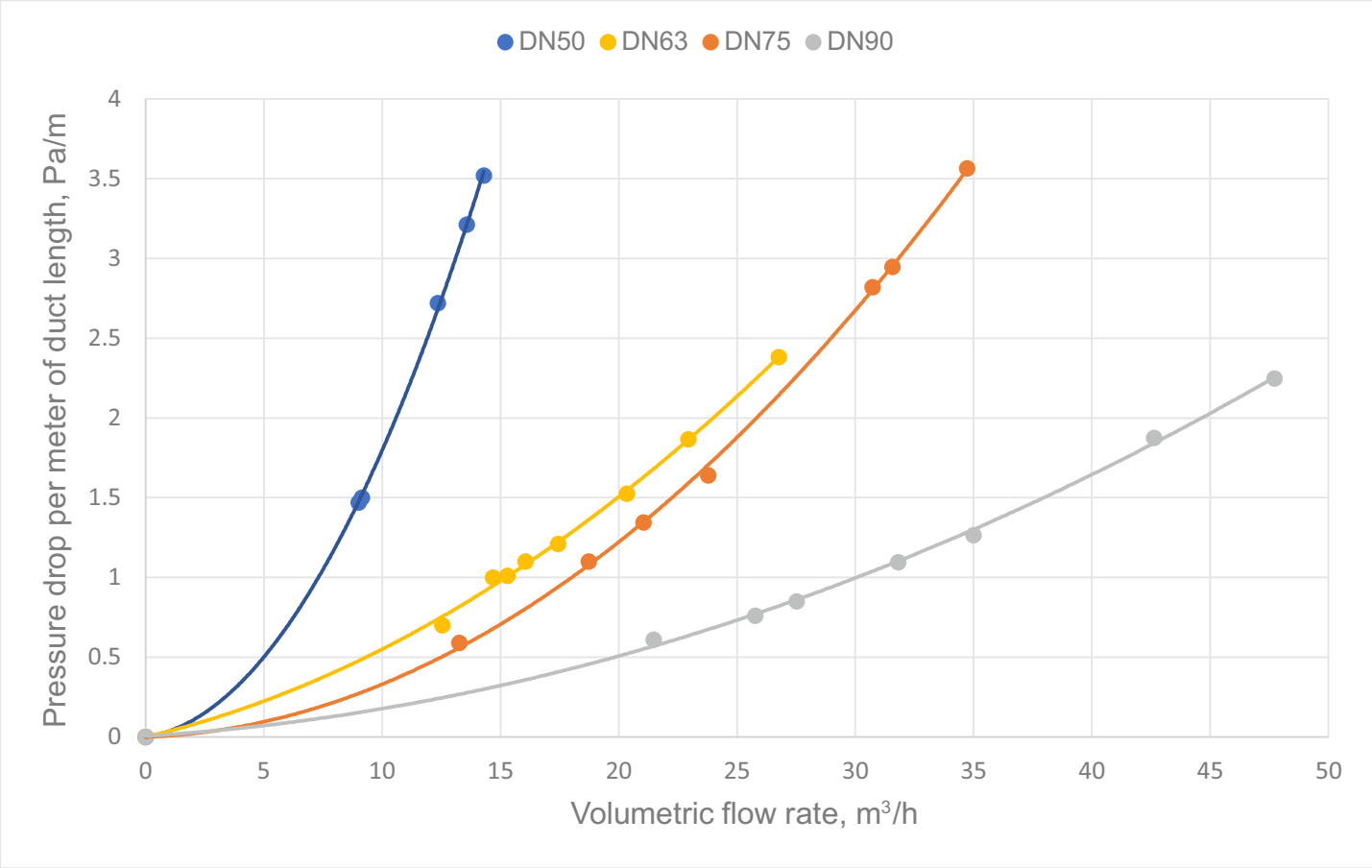
Interior layer:
Material: **polyethylene mod. (LDPE-mod.), antistatic**
Color: **white**



Available diameters for all types of ventilation pipes

Nominal diameter DN (mm)	Inside diameter (mm)	Outside diameter (mm)	Minimum bending radius (m)	Length (m)
50	40	50,5	0,11	50
63	52	63,2	0,15	50
75	61	76,2	0,17	50
90	75	90,6	0,25	50
110	93	110,7	0,33	50
160	136	161	0,4	25
200	176	201,5	0,55	25

Pressure drop chart



The pressure drop depending on air velocity and volumetric flow rate in Airflex DN50

DN50			
Number of test	Pressure drop per meter of the duct length	Air velocity in the duct	Volumetric flow rate
	Pa/m	m/s	m^3/h
0	0	0	0
1	1.5	1.99	9.0
2	1.5	2.02	9.1
3	2.7	2.73	12.4
4	3.2	3	13.6
5	3.5	3.16	14.3

The pressure drop depending on air velocity and volumetric flow rate in Airflex DN63

DN63			
Number of test	Pressure drop per meter of the duct length	Air velocity in the duct	Volumetric flow rate
	Pa/m	m/s	m^3/h
0	0	0	0
1	0.7	1.64	12.5
2	1.0	1.92	14.7
3	1.0	2	15.3
4	1.1	2.1	16.1
5	1.2	2.28	17.4
6	1.5	2.66	20.3
7	1.9	3	22.9
8	2.4	3.5	26.8

The pressure drop depending on air velocity and volumetric flow rate in Airflex DN75

DN75			
Number of test	Pressure drop per meter of the duct length	Air velocity in the duct	Volumetric flow rate
	Pa/m	m/s	m^3/h
0	0	0	0
1	0.6	1.26	13.3
2	1.1	1.78	18.7
3	1.3	2	21.0
4	1.6	2.26	23.8
5	2.8	2.92	30.7
6	2.9	3	31.6
7	3.6	3.3	34.7

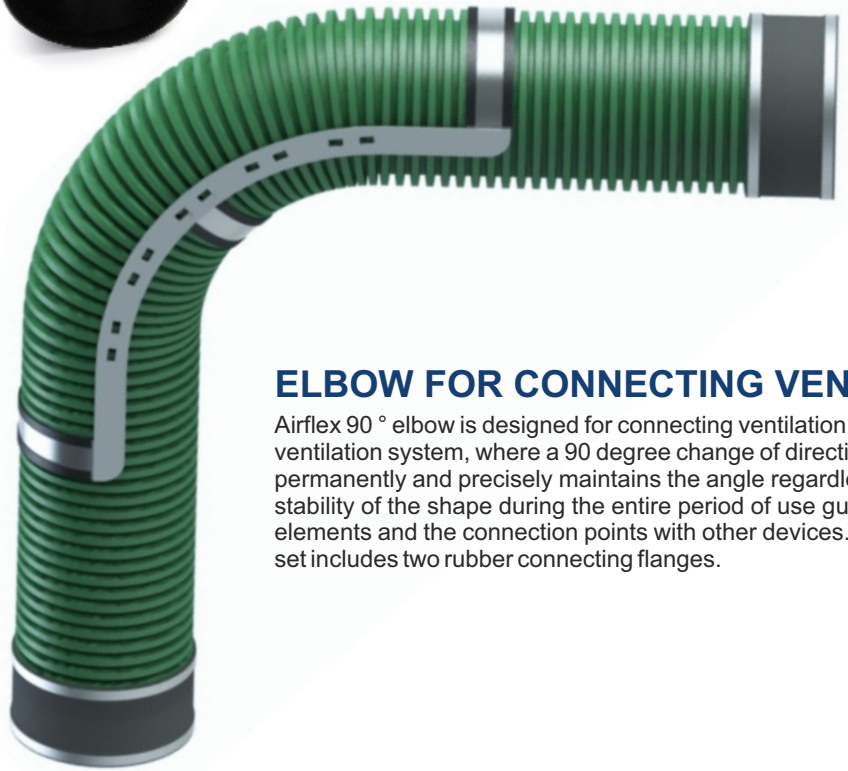
The pressure drop depending on air velocity and volumetric flow rate in Airflex DN90

DN90			
Number of test	Pressure drop per meter of the duct length	Air velocity in the duct	Volumetric flow rate
	Pa/m	m/s	m^3/h
0	0	0	0
1	0.6	1.35	21.5
2	0.8	1.62	25.8
3	0.9	1.73	27.5
4	1.1	2	31.8
5	1.3	2.2	35.0
6	1.9	2.68	42.6
7	2.2	3	47.7

Accessories

MUFFS- MKD

Mufffs made from black HDPE are available for every dimension of Airflex pipe. Muffs ensure fast, durable and break-resistant connection of pipes.



SEALS - UKD

Specially designed seals guarantee tight joining of pipes and low energy consumption of the system.

RUBBER MUFFS - GKD

Rubber mufffs are available for every dimension of Airflex pipe. Muffs ensure fast, durable and break-resistant connection of pipes.

PIPE CAPS - EKD

Caps protect pipes against any contaminants during transport, storage and installation.

ELBOW FOR CONNECTING VENTILATION DUCTS

Airflex 90 ° elbow is designed for connecting ventilation ducts with large diameters with other elements of the ventilation system, where a 90 degree change of direction is required over a short distance. The metal frame permanently and precisely maintains the angle regardless of changes in ambient temperatures. The overall stability of the shape during the entire period of use guarantees that no forces are exerted on the fastening elements and the connection points with other devices. Elbow comes in two sizes: DN 160 and DN200. The set includes two rubber connecting flanges.

Implementations

Implementations

Implementations

Implementations

Implementations

Implementations


Implementations

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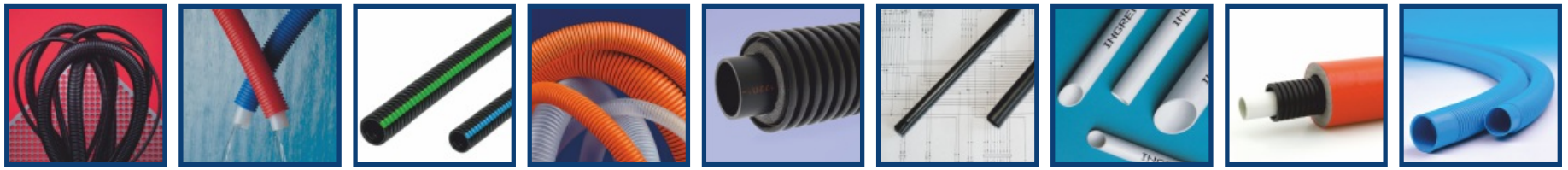
Implementations

Thank you



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