



DAFA

Room 601-B, Building 20, No.8633, Zhongchun Road, Minhang District
Shanghai 201101, China

Certification body for the certification of products

issues

to the producer: PRIHODA s.r.o., Za Radnici 476, 539 01 Hlinsko, EU- Czechia

CERTIFICATE

No.: 170850

product:

Fabric Air Ducting & Diffuser

**variants: PMS, PLI, PLS, NMS, NLI, NLS, NMF, NLF, PMI, NMI, NMR,
PMSre, NMSre, NMT**

fabrics declared for making of air line to cleanrooms and associated controlled environments

variants: air-permeable fabrics, fabrics with coating (impermeable), fabrics with
antibacterial finish, antistatic fabrics

material composition: 1) 100% polyester

2) 100% polyester with carbon fibre (< 1%)

colour: white, yellow, grey, blue, green, red, black and the other colour tones

This certificate shows the conformity of the product with the following technical specification:

- **EN ISO 14644-1 Cleanrooms and associated controlled environments – Part 1:
Classification of air cleanliness** (Table No. 1, cleanliness class No.4).

The base for the Certificate is Final Protocol No. DAFA-OQP-170850 issued by Certification body DAFA Measuring & Testing Technology Co., Ltd. Shanghai dated 01.08.2017. Final protocol is an inseparable part of the Certificate.

Certificate was issued: 01.08.2017

Validity up to: 01.08.2018



Head of the certification body



DAFA

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Shanghai 201101, China

TEST REPORT

DAFA-OQR-170850

CUSTOMER: PRIHODA s.r.o.
Za Radnici 476
539 01 Hlinsko
EU- Czechia

SAMPLE: Fabric PMI
(according to the customer order) Fibre composition: 100% polyester
Fabric NMI
Fibre composition: 100% polyester + polyurethane coating

SUBJECT OF ASSESSMENT: Lint and other particles generation in the dry state
CONDITIONS OF Test Report contains result of the test related to the submitted
APPLICATION OF THE TEST sample only. Sampling has been done by customer. The Report
REPORT: may not be reproduced in any way other than as a complete set.
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approval of the test laboratory, which has issued it.

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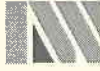
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PROCEDURE OF ASSESSMENT:**Lint and other particles generation in the dry state**

- particles counter: Met One 3413
- number of tested samples: 2
- laminar box: ADS Laminaire - Optimale 12
- air velocity: 28.3LPM

Results: The number of released particles of size 0.3 μ m and 0.5 μ m per m³ of air immediately after the installation of the sample, after 60 minutes and after 120 minutes of air flow.

TEST RESULTS:

Fabric PMI (100% polyester)		
Time/min	The number of 0.3 μm /m³ air	The number of 0.5 μm /m³ air
0	236.4	47.3
60	130.0	70.9
120	212.9	165.6

Fabric NMI (100% polyester + polyurethane coating)		
Time/min	The number of 0.3 μm /m³ air	The number of 0.5 μm /m³ air
0	360.5	118.2
60	455.1	65.0
120	283.7	53.2

Si Xiong

Head of Verification Test Department



DAFA

Certification body for the certification of products

**Room 601-B, Building 20, No.8633, Zhongchun Road, Minhang District
Shanghai 201101, China**

FINAL PROTOCOL

No: DAFA-OQP-170850

Client: PRIHODA s.r.o., Za Radnici 476, 539 01 Hlinsko, EU- Czechia

Product: Fabric Air Ducting & Diffuser
Variants: **PMS, PLI, PLS, NMS, NLI, NLS, NMF, NLF, PMI, NMI, NMR, PMSre, NMSre, NMT**
Variants: air-permeable fabrics, fabrics with coating (impermeable), fabrics with antibacterial finish, antistatic fabrics
Material composition: 1) 100% polyester
2) 100% polyester with carbon fibre (< 1%)
Colour: white, yellow, grey, blue, green, red, black and the other colour tones

Evaluated according to: EN ISO 14644-1 cleanrooms and associated controlled environments-Part 1:
Classification of air cleanliness (Table No.1, cleanliness class No.4)

Conclusion: **Evaluated product complies with the requirements of technical specification mentioned above.**

Terms of protocol

application: This protocol applies to the product. The protocol must only be published in unshortened form. The Client can publish a part of the protocol only if approved by the certification body for the Certification of products.

Number of pages: 3 pages

Date of protocol
issue: 01.08.2017

Protocol issue by:
Si Xiong
Verification Test Department





1. General Data

1.1 Data pertaining to the client

Client is a producer-company PRIHODA s.r.o., Za Radnici 476, 539 01 Hlinsko, EU- Czechia

1.2 Data pertaining to the product

Fabric Air Ducting & Diffuser are declared for products intended for the air hydraulic transport and distribution. They are made from polyester fabrics in the following variant:

- permeable (PMS, PMI, PLS, PLI)
- impermeable - with the polyurethane coating (MNS, NMI, NLS, NLI, NMR)
- impermeable - with the polyvinyl chloride coating + Sb₂O₃ (NMF)
- antistatic - with the woven-in carbon fibres (PMI, NMI, NMR)
- antibacterial (PMI, NMI, NMR)

The diffusers are produced having typically the following cross sections: circular, semi-circular and quadrantal ones. Upon a special request, sections of a circle can be manufactured. The air outlet rate from the diffusers is controlled by perforation or microperforation of the fabric. Textile air ducting and diffuser are produced in the following colour variants: white, yellow, grey, blue, green, red, black or another one, upon the customer request. The installation is carried out Using the installation materials, such as expandable plugs, hooks or screws, namely fixing on the wire strand, or into the sections. The constituent elements of the products are connected Using slide fasteners. The products provide ventilation, cooling and other heating of offices, building operations food, textile, electrical, chemical and other branches of industries, sports halls, swimming-pools, cultural facilities and so on. Maintenance of products is carried out by washing according to the care symbols on the particular products.

1.3 Description of the group representative sample

For conformity assessment of selective properties, a sample of permeable fabric PMI and a sample of fabric coated with polyurethane NMI were supplied (both samples were antistatic).

2. Verification of product conformity with requirements of the technical standard

2.1 Parameters assessed

A number of particles being released from the textile air conduits during their usage was evaluated according to *EN ISO 14644-1* Cleanrooms and associated controlled environments - Part 1: Classification of air cleanliness.

The test method used for appraisal of the particular parameter is shown in Table 1.

Table No.1: assessed parameter and test method

Parameter	Test method
Number of released particles/m ³	ISO/DIS 9073-10



The test method used for appraisal of the released particles according to ISO/DIS 9073-10 is applied to the following items: surgical drapes, gowns, and clean air suits. This is why this particular method was employed for assessing the textile materials intended for usage as the air conduits in the cleanrooms.

2.2 Results obtained and their evaluation

The test results of the selected properties as compared with requirement of EN ISO 14644-1 are shown in Table 2. The tests employed checked the amount of released particles sized $0.3\mu\text{m}$ and $0.5\mu\text{m}$ per m^3 of air measured immediately after the installation and after one hour and two hours of its usage.

Table No.2: Assessment of test results

Parameter	Measuring unite	Value required	Value identified		Assessment
			Fabric PMI	Fabric NMI	
Number of released particles - size $0.3\mu\text{m}$ 0min 60min 120min		Cleanliness class no.4	236.4	360.5	S
		Max. 1020	130.0	455.1	S
		Particles/ m^{-3}	212.9	283.7	S
Number of released particles - size $0.5\mu\text{m}$ 0min 60min 120min		Cleanliness class no.4	47.3	118.2	S
		Max. 352	70.9	65.0	S
		Particles/ m^{-3}	165.6	53.2	S

Legend: S – requirements of mentioned technical specification are satisfied

2.3 Assessment of test result obtained

The product under testing, i.e. polyester fabric intended for manufacturing the air conduits comply with the requirements of technical specification EN ISO 14644-1 Cleanrooms and associated controlled environments - Part 1: classification of air cleanliness (Table 1, cleanliness class No.4).

3. Overall evaluation

Based on results obtained, it can be declared that the assessed samples of polyester fabric correspond to requirements of EN ISO 14644-1, as for evaluation of released particles in the airflow. The material employed for manufacture of the textile air ducting and diffuser for the air distribution corresponds with the quoted technical specification and conforms to the requirements for cleanrooms, Class 4.

4. Documents applied for this final protocol

1. Application for certification No. 170850 from 01.08.2017.
2. Technical specification mentioned in the page No 1 of this protocol.
3. Test Report No. DAFA-OQR-170850 from 01.08.2017 issued by testing laboratory of DAFA.