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TS M001-2020

Corporate Standard of TESTEX

TS M001-2020

Quality Control Standard of Meltblown Nonwovens for Face Mask

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Foreword

This standard is set up to be referenced as a practical guide for meltblown manufacturer, suppliers and masks manufacturers to produce, supply and purchase the correct meltblown fabric for mask production use, based on the data we tested and gathered from our mask production experience.

1 Scope of application

This standard is used to regulate the meltblown cloth used in the production of masks, to guide the production process of masks, and to solve the following problems: deviations in the size of the mask, the filtration efficiency is not up to the standard, the filtration efficiency will be attenuated, and the respiratory resistance is too large.

2 References

GB19083-2010 Technical requirements for medical protective masks

YY0469-2011 Medical surgical mask

GB2626-2006 Respiratory protection mask

TCDAMEI 001-2020 Meltblown nonwoven fabric for mask

3 Terms and definitions

3.1 Particle

Particulate matter suspended in the air in solid, liquid or mixed solid and liquid, such as dust, smoke, mist and microorganisms.

3.2 Filter efficiency

Under specified conditions, the level of particles filtered by the meltblown cloth.

3.3 Bacterial filtration efficiency

Under the specified flow rate, the melt-blown cloth filters out the level of bacteria-containing suspended particles.

3.4 Airflow resistance

Under the same conditions, the resistance value of the air flow through the melt-blown cloth.

4 Technology requirement

4.1 Appearance quality requirements (Table 1)

Project		Requirement
Same batch color difference/level		4~5
Holes、 sundries、 foreign matter		Not allowed
Pinhole	Diameter 0.1-0.3mm	≤10 units /100 cm ²
	Diameter > 0.3mm	Not allowed
Crystal point	Area < 1mm	≤10 units /100 cm ²
	Area ≥ 1mm	Not allowed

Note 1: The crystal point refers to the dot-shaped polymer particles existing on the cloth surface.

Note 2: The sundries refer to the consolidated fiber block or fiber strip formed by the sundries existing on the cloth surface, and the surface has a raised feeling.

Note 3: The mask melt-blown cloth with the filtration efficiency level of KN95 and above is not allowed to exist pinholes and crystal points.

4.2 Basic product quality requirements (Table 2)

Project		Specification (g/m ²)
		25
Width deviation (mm)		-1~3
Mass deviation rate per unit area (%)		±8
Coefficient of variation per unit area (%)		≤7
Breaking strength (N)	Horizontal	≥2
	Vertical	≥4

Company meltblown cloth specifications (Table 3)

Width 175mm	Diameter 550/600mm	Weight 25g	Weight per roll 10kg		Paper tube core
Width 260mm					

4.3 Filtration efficiency

The requirements of the company's meltblown cloth: particle filtration $\geq 95\%$ (salty), particle filtration $\geq 90\%$ (salty)

Requirements of the company's meltblown cloth: bacterial filtration efficiency $\geq 95\%$, bacterial filtration efficiency $\geq 99\%$

4.4 Pressure difference (Δp) should be ≤ 49 Pa/cm².

4.5 Filtration efficiency change rate

The change rate of particle filtration efficiency within the effective period is $\leq 5\%$, and the change rate of bacterial filtration efficiency is $\leq 2\%$

4.6 There should be no odor.

4.7 Synthetic blood penetration

Spray 2 mL of synthetic blood at 10.7 kPa (80 mmHg) pressure on one side of the melt-blown cloth to which Table 5 applies. The other side of the melt-blown cloth should not penetrate.

5 Experiment method

5.1 Exterior

According to the method specified in 4.12 of FZ/T 64078-2019, the test shall meet the requirements of 5.1.

5.2 Basic product quality requirements

5.2.1 Width deviation: The test shall be carried out according to the method specified in GB/T 4666, and shall meet the requirements of Table 3.

5.2.2 The mass deviation rate per unit area and the coefficient of variation of mass per unit area: The test shall be carried out according to the method specified in GB/T 24218.1, and shall meet the requirements of Table 3.

5.2.3 Breaking strength and breaking elongation: tested according to the method specified in GB/T 24218.3, which should meet the requirements of Table 3. (Strip method: sample width 50mm, clamping distance 200mm, speed 100mm/min, the maximum force in the stretching process as the tensile strength)

5.3 Filtration efficiency

5.3.1 Particulate filtration efficiency: take 5 samples, test above KN90 level according to the method specified in YY 0469-2011 (gas flow rate: 30L/min, test area: 49c m²), KP class according to the method specified in 6.3 of GB 2626-2019 Testing

5.3.2 Bacterial filtration efficiency: tested in accordance with the provisions of Appendix B in YY 0469—2011

Note: The sample size should meet the test requirements without pretreatment.

5.4 Pressure difference (ΔP)

Test according to the method specified in 5.7 of YY 0469-2011

5.5 Odor

Test according to the method specified in 6.7 of GB 18401-2010

5.6 Synthetic blood penetration

Perform the test according to the method specified in YY 0469-2011 Section 5.5

5.7 Microbiological index

Test according to the method specified in Appendix B of GB 15979-2002

5.8 Biocompatibility

Perform the test according to the method specified in GB/T 16886

6 Marks, packaging, transportation and storage

6.1 Marks

6.1.1 The minimum information on the minimum packaging of the product should provide the following information:

- a) Production unit name, address, contact information;
- b) Product name, product category and level;
- c) Product implementation standard number;
- d) Product specifications (quality per unit area, width, roll length, etc.);
- e) Production lot number, limited use period (expiration year and month);

6.1.2 The following marks should be on the large packaging of the product:

- a) Production unit name, address, contact information;
- b) Product name, product category and level;
- c) Product implementation standard number;
- d) Product specifications (quality per unit area, width, roll length, etc.), quantity

e) Production lot number, limited use period (expiration year and month);

6.1.3 The following signs shall be on the inspection certificate:

a) production lot number; b) inspection date; c) inspector code; d) Inspection pass seal.

6.2 Package

Product packaging materials should ensure that the product quality is not damaged and easy to transport.

6.3 Transportation

The product should be protected from light, water, moisture, pollution, breakage and crushing during transportation. Transportation requirements are stipulated in the order contract.

6.4 Storage

The product should be stored in a dry, ventilated, dark and clean environment, away from fire and flammable materials.