Corporate Standard of TESTEX
TS M001-2020

Quality Control Standard of Meltblown Nonwovens for Face Mask

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# Catalog

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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)

<table>
<thead>
<tr>
<th>Project</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same batch color difference/level</td>
<td>4~5</td>
</tr>
<tr>
<td>Holes、sundries、foreign matter</td>
<td>Not allowed</td>
</tr>
<tr>
<td>Pinhole</td>
<td></td>
</tr>
<tr>
<td>Diameter 0.1-0.3mm</td>
<td>≤10 units /100 cm²</td>
</tr>
<tr>
<td>Diameter &gt; 0.3mm</td>
<td>Not allowed</td>
</tr>
<tr>
<td>Crystal point</td>
<td></td>
</tr>
<tr>
<td>Area &lt; 1mm</td>
<td>≤10 units /100 cm²</td>
</tr>
<tr>
<td>Area ≥ 1mm</td>
<td>Not allowed</td>
</tr>
</tbody>
</table>

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)

<table>
<thead>
<tr>
<th>Project</th>
<th>Specification (g/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width deviation (mm)</td>
<td>-1~3</td>
</tr>
<tr>
<td>Mass deviation rate per unit area (%)</td>
<td>±8</td>
</tr>
<tr>
<td>Coefficient of variation per unit area (%)</td>
<td>≤7</td>
</tr>
<tr>
<td>Breaking strength (N)</td>
<td></td>
</tr>
<tr>
<td>Horizontal</td>
<td>≥2</td>
</tr>
<tr>
<td>Vertical</td>
<td>≥4</td>
</tr>
<tr>
<td>Horizontal/Vertical elongation at break (%)</td>
<td>≥20</td>
</tr>
</tbody>
</table>

Company meltblown cloth specifications (Table 3)

<table>
<thead>
<tr>
<th>Width 175mm</th>
<th>Diameter 550/600mm</th>
<th>Weight 25g</th>
<th>Weight per roll 10kg</th>
<th>Paper tube core</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width 260mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 ($\Delta p$) should be $\leq 49$ Pa/cm$^2$.

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: 49cm²), 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.