



**TO WHOMSOEVER IT MAY CONCERN**

**Respirators for protection against PM2.5**

This is to certify that for any airborne particulate contamination such as an outbreak of PM2.5 / PM 10/ Severe Acute Respiratory Syndrome (SARS), Avian Flu, Ebola Virus etc. only respirators and not Masks, should be used to safeguard oneself from getting any kind of respiratory diseases.

The biggest difference between a respirator and a surgical mask is the intended use. Respirators are designed to help reduce the **wearer's** respiratory exposure to airborne contaminants such as particles that are small enough to be inhaled - particles less than 100 microns (µm) in size. This includes airborne particles that may contain biological material, e.g. mold, *Bacillus anthracis*, *Mycobacterium tuberculosis*, the virus that causes Severe Acute Respiratory Syndrome (SARS), Avian Flu, Ebola Virus etc. or even PM2.5 / PM10.

Surgical masks on the other hand do not have either adequate filtering or fitting attributes to provide respiratory protection for the wearer. They are designed to help prevent contamination of the work **environment or sterile field** from large particles generated by the wearer (e.g. spit, mucous). Surgical masks may also be used to help reduce the risk of splashes or sprays of blood, body fluids, secretions and excretions from reaching the wearer's mouth and nose.

**Respirator types and standards**

For protection against volcanic ash, high-efficiency, light-weight disposable respirators are appropriate. The respirator must provide protection at the highest concentration the person will experience. Suitable disposable respirators are 'CE' marked to show that the design has been tested to a recognized standard. They will also be marked with the standard (e.g. EN 149:2001 in the EU or N95 in the US) and an additional code such as FFP2 (medium efficiency) or FFP3 (high efficiency) (FFP = Filtering Face Piece) is shown on EU respirators. The US N95 standard is roughly equivalent to FFP2 or 3 as it is efficient up to 10 x the local occupational exposure limit (see Table below). The higher the FFP number, the more protection the respirator can provide if it is used properly. Disposable respirators cover the nose, mouth and part of the chin. Some of them contain exhaling valves. An elastic band around the head and neck keeps them in place. Valved respirators are more comfortable, especially for those wearing spectacles which might otherwise mist up. They are appropriate for hot and humid climates.

<p><b>NIOSH Standard</b>                  NIOSH 42 CFR 84                  Particle Filter Classifications</p>	<table border="1"> <thead> <tr> <th>Minimum Efficiency</th> <th>N-Series</th> <th>R-Series</th> <th>P-Series</th> </tr> </thead> <tbody> <tr> <td>95%</td> <td>N95</td> <td>R95</td> <td>P95</td> </tr> <tr> <td>99%</td> <td>N99</td> <td>R99</td> <td>P99</td> </tr> <tr> <td>99.97%</td> <td>N100</td> <td>R100</td> <td>P100</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>▪ <b>N-Series: <i>Not for oil</i></b> <ul style="list-style-type: none"> <li>✓ <i>Approved for all particulate contaminants but not for oil mist</i></li> <li>✓ <i>Use until increased breathing resistance or damaged</i></li> </ul> </li> <li>▪ <b>R-Series: <i>Resistant to oil</i></b> <ul style="list-style-type: none"> <li>✓ <i>Approved for all particulate contaminants including oil mist</i></li> <li>✓ <i>Time restriction of 8 hours when oils are present</i></li> </ul> </li> <li>▪ <b>P-Series: <i>Oil Proof</i></b> <ul style="list-style-type: none"> <li>✓ <i>Approved for all particulate contaminants including oil mist</i></li> <li>✓ <i>Manufacturer's time use restrictions apply</i></li> </ul> </li> </ul>	Minimum Efficiency	N-Series	R-Series	P-Series	95%	N95	R95	P95	99%	N99	R99	P99	99.97%	N100	R100	P100				
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<p><b>European Standard</b>                  EN 149 standards                  Particle Filter Classifications</p> <p><b>**BIS (Indian Standard) also follows the same classification</b></p>	<table border="1"> <thead> <tr> <th>Filter Type</th> <th>Filter Class</th> <th>Protection against</th> <th>Efficiency</th> </tr> </thead> <tbody> <tr> <td>Particle filter</td> <td></td> <td>Particles</td> <td></td> </tr> <tr> <td></td> <td>FFP1</td> <td></td> <td>80%</td> </tr> <tr> <td></td> <td>FFP2</td> <td></td> <td>94%</td> </tr> <tr> <td></td> <td>FFP3</td> <td></td> <td>99%</td> </tr> </tbody> </table>	Filter Type	Filter Class	Protection against	Efficiency	Particle filter		Particles			FFP1		80%		FFP2		94%		FFP3		99%
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In conclusion, surgical masks in effect put a barrier between the wearer and the work environment or sterile field. They may help keep spit and mucous generated by the wearer from reaching a patient or medical equipment. They can also be used as a fluid barrier to help keep blood splatter from reaching the wearer’s mouth and nose. However, surgical masks cannot provide respiratory protection unless they are also designed, tested and NIOSH approved as a respirator. If a wearer wants to reduce inhalation of smaller, inhalable particles (those smaller than 100 microns), they need to obtain and properly use a NIOSH-certified respirator. If the wearer needs a combination surgical mask and a particulate respirator, they should use a product that is both cleared by FDA as a surgical mask and tested by NIOSH as a particulate respirator. An in-depth comparison of surgical masks and respirators is outlined below.

**Key Differences between Masks and Respirators**

Particulate Respirators	Surgical Masks	Comfort Masks
		
<ul style="list-style-type: none"> <li>• Filter particles from the air when properly fitted, helping reduce the number of particles or germs the wearer breathes in.</li> <li>• <b>Ideal for protection from PM 2.5</b></li> <li>• Have the word NIOSH / EN / ISI and the approval type (i.e. N95; FFP2 etc.) printed on the product.</li> <li>• Are secured tightly to the face, with 2 head straps and a nose adjustable clip over the nose to allow for a more custom fit.</li> </ul>	<ul style="list-style-type: none"> <li>• Are cleared by the FDA for use as a surgical mask and are <b>NOT</b> designed to protect your lungs from airborne hazards like PM 2.5.</li> <li>• Do not have the word NIOSH / EN / ISI and the approval type (i.e. N95; FFP2 etc) printed on the product.</li> <li>• Are typically donned for a specific procedure (eg surgery by a surgeon) and disposed of afterward.</li> <li>• Help prevent large particles expelled by the wearer, such as spit or mucous, from entering the environment. If the wearer coughs or sneezes, the surgical mask will help collect the larger particles expelled.</li> <li>• Usually do not fit tightly to the face as there might be gaps around the edges.</li> </ul>	<ul style="list-style-type: none"> <li>• Are not cleared by the FDA for use as a surgical mask and are <b>NOT</b> designed to protect your lungs from airborne hazards like PM 2.5.</li> <li>• Do not have the word NIOSH and the approval type (i.e. N95) printed on the product.</li> <li>• Have not been tested to any government performance standards for filtration.</li> <li>• Usually have only 1 head strap.</li> <li>• Do not fit tightly to the face as there might be gaps around the edges.</li> </ul>

**A guide to 3M™ Respirators for protection against PM2.5 and PM10**

Category	Model Number	Picture	Features
N95 Cup shaped with Valve	8511		<p>The 3M™ 8511 Particulate Respirators provide effective respiratory protection for use in places where people will be exposed to dust particles and/or nonvolatile liquid particles.</p> <p>Tested and certified to NIOSH N95 Category having a convex shape, with nose clip and twin strap design.</p> <p>It has durable, collapse resistant inner shell with reliable, effective protection against fine particles due to 3M™ Advanced Electret Filter Material that gives effective filtration with low breathing resistance for consistent high quality performance.</p> <p>It also has a 3M™ Cool Flow™ exhalation valve that offers improved comfort in hot humid environments and/or where work is hard and physical</p>
N95 Cup shaped	8210		<p>The 3M™ 8210 Particulate Respirators provide effective respiratory protection for use in places where people will be exposed to dust particles and/or nonvolatile liquid particles.</p> <p>Tested and certified to NIOSH N95 Category having a convex shape, with nose clip and twin strap design.</p> <p>It has durable, collapse resistant inner shell with reliable, effective protection against fine particles due to 3M™ Advanced Electret Filter Material that gives effective filtration with low breathing resistance for consistent high quality performance.</p>
EN149:2001 FFP2 FFP3 Triple fold	9322+ 9332+		<p>The 3M™ Aura™ Particulate Respirator 9322+ provides effective respiratory protection for users who will be exposed to dust particles and/or non-volatile liquid particles.</p> <p>It is Tested and CE Approved to EN 149:2001+A1:2009 and is foldable, easy to store, with a unique 3-panel design that accommodates facial movement for wearer comfort.</p> <p>Its low breathing resistance filter technology gives effective filtration with low breathing resistance for consistent high quality performance with a sculpted nose panel that conforms to the nose and contours of the face and an innovative chin tab designed for ease of donning and adjustment to help achieve a comfortable fit.</p> <p>The 3M™ Cool Flow™ exhalation valve offers improved comfort in hot humid environments and/or where work is hard and physical</p> <p>Coloured headbands for easy identification: yellow for FFP1, blue for FFP2 and red for FFP3</p>
EN149:2001 FFP2 Cup shaped with Valve	8822		<p>The 3M 8822 respirator provides lightweight, effective, comfortable and hygienic respiratory protection against dusts and mists.</p> <p>The convex shape, twin strap design, foam nose seal and steel nose clip ensure a good face seal over a range of face sizes.</p> <p>3M Cool Flow Valve enhances wearer comfort by maintaining a cool atmosphere within the respirator.</p> <p>The unique valve and collapse resistant shell offer durable, comfortable protection particularly in hot and humid conditions.</p> <p>The product has been tested to the NEW European Norm EN149:2001 and has met the requirements of category FFP2 in this standard.</p>

For 3M India Ltd.,



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