

Comparison of Respiratory Protective Equipment Standards—Non-powered Air-purifying Particle Respirator

Respiratory protective equipment—non-powered air-purifying particle respirator is mainly used in all kinds of places where aerosol particles exist, including all kinds of occupational places and daily places. The main function of the mask is to block liquid and solid particles into the wearer's respiratory tract through the filter material of the mask and the tightness design of the mask body. Key core indicators mainly include filtration efficiency, leakage rate, respiratory resistance, etc. Non-powered air-purifying particle respirator shall meet the standard GB 2626 in China, and meet the standard EN149 in European Union.

For penetration of filter material/ filtration efficiency:

In GB 2626-2006, KN classes test NaCl only, KP classes test Paraffin oil only. Requirements of filtration efficiency: KN90 \geq 90%, KN95 \geq 95%, KN100 \geq 99.97%; KP90 \geq 90%, KP95 \geq 95%, KP100 \geq 99.97%.

In EN 149:2001+A1:2009, both Nacl and Parrafin oil tests are required. Requirements of filtration efficiency: FFP1 \geq 80%, FFP2 \geq 94%, FFP3 \geq 99%. In general, the penetration/ filtration efficiency requirements are similar in both standards.

For Inward leakage:

Both standards are setting out same level of requirements for the Total Inward Leakage (TIL). In both GB 2626-2006 and EN 149:2001+A1:2009 at least 46 out of 50 individual TIL results and at least 8 out of 10 individual wearer TIL means are required.

The requirements are as follows:

KN90/KP90/FFP1: At least 46 out of 50 individual results \leq 25%, at least 8 out of 10 individual wearer means \leq 22%;

KN95/KP95/FFP2: At least 46 out of 50 individual results \leq 11%, at least 8 out of 10 individual wearer means \leq 8%;

KN100/KP100/FFP3: At least 46 out of 50 individual results \leq 5%, at least 8 out of 10 individual wearer means \leq 2%.

For breathing resistance:

In GB 2626-2006, all classes: Inhalation resistance \leq 350Pa at continuous flow, 85LPM; all classes: exhalation resistance \leq 250Pa; at continuous flow, 85LPM.

In EN 149:2001+A1:2009: Inhalation resistance, at continuous flow, 95LPM, FFP1 \leq 210Pa, FFP2 \leq 240Pa, FFP3 \leq 300Pa; Exhalation resistance, at continuous flow, 160LPM, all classes: \leq 300Pa.

Comparison of key requirements from two standards is listed in table 2-1:

Table2-1 Comparison of key requirements between two standards

Country	China			European Union		
Product	Particle filtering half masks			Particle filtering half masks		
Standard	GB 2626-2006 Respiratory protective equipment— Non-powered air-purifying particle respirator			EN 149:2001+A1:2009 Respiratory protective devices - Filtering half masks to protect against particles – Requirements, testing, marking (Incorporates Amendment A1: 2009)		
Scope	Non-powered air-purifying particle respirator against various particles			Non-powered air-purifying particle half mask against various particles		
Inward Leakage	TIL	At least 46 out of 50 individual results	At least 8 out of 10 individual wearer means	TIL	At least 46 out of 50 individual results	At least 8 out of 10 individual wearer means
	KN90/KP90	$\leq 25\%$	$\leq 22\%$	FFP1	$\leq 25\%$	$\leq 22\%$
	KN95/KP95	$\leq 11\%$	$\leq 8\%$	FFP2	$\leq 11\%$	$\leq 8\%$
	KN100/KP100	$\leq 5\%$	$\leq 2\%$	FFP3	$\leq 5\%$	$\leq 2\%$
Filtration Efficiency	KN Test NaCl only	KN90 $\geq 90\%$		FFP1: NaCl and paraffin oil filtration efficiency $\geq 80\%$		
		KN95 $\geq 95\%$				
		KN100 $\geq 99.97\%$		FFP2: NaCl and paraffin oil filtration efficiency $\geq 94\%$		
	KP Test Paraffin oil only	KP90 $\geq 90\%$				
		KP95 $\geq 95\%$				
KP100 $\geq 99.97\%$						
Breathing	All classes:			Inhalation resistance:		

Resistance	Inhalation resistance \leq 350Pa; Continuous flow, 85LPM	FFP1 \leq 210Pa; FFP2 \leq 240Pa; FFP3 \leq 300Pa; 95LPM
	All classes: Exhalation resistance \leq 250Pa; Continuous flow, 85LPM	Exhalation resistance : All classes \leq 300Pa; 160LPM
Flammability	√ Not continue to burn more than 5s after removal from fire.	√ Not continue to burn more than 5s after removal from fire.
Exhalation valve	Allow	Allow
Marking	<p>On the product :</p> <p>The name, trademark or other means of identification of the manufacturer or supplier ; Type-identifying marking ; Number and year of the standard and class of product:GB 2626-2006 KN95 ;</p> <p>On the smallest commercially available packaging : The name, trademark or other means of identification of the manufacturer or supplier ; Type-identifying marking ;</p> <p>Number and year of the standard and class of product:GB 2626-2006 KN95 ; Production date (at least the year) or batch number, Storage life (at least the year) ; “see information supplied by the manufacturer” ; manufacturer’s recommended storage condition(at least temperature and humidity)</p>	<p>On the product :</p> <p>The name, trademark or other means of identification of the manufacturer or supplier ; Type-identifying marking ; Number and year of the standard and class of product: e.g. EN 149:2001+A1:2009 FFP2 NR</p> <p>On the smallest commercially available packaging; The name, trademark or other means of identification of the manufacturer or supplier; Type-identifying marking ;</p> <p>Number and year of the standard and level of product: e.g. EN 149:2001+A1:2009 FFP2 NR;</p> <p>Production date (at least the year) or batch number, Storage life (at least the year); “see information supplied by the manufacturer”; manufacturer’s recommended storage condition(at least temperature and humidity)</p>

Note: The comparison provided is only technical information based on text comparison and cannot be used as a legal basis for the foreign party to choose Chinese products.