

Comparison of International Disposable Respirator Standards

Disposable respirators are required to meet different standards around the world. Each standard has different requirements that the product must pass before being able to claim compliance. This document compares standards in Australia/New Zealand, United States and China for what Australians refer to as P2 respirators.

Based on the results below, P2, N95 and KN95 respirators can be considered “equivalent” in the filtration of particles such as bushfire smoke, PM 2.5 air pollution and bio aerosols/viruses. However, ATOM Safety recommend that you check with your local public health authority for selection guidance and read user instructions before using any respirators.

Definitions:

Total inward leakage (TIL) – Measures the amount of the test agent that enters the respirator via both filter penetration and face seal leakage, while a wearer performs a series of exercises in a test chamber.

Inward leakage (IL) – Measures the amount of the test agent that enters the respirator while a wearer breathes normally for 3 minutes in a test chamber. The test agent size (count median diameter) is about 0.5 micro meter.

Pressure drop – the resistance air is subjected to as it moves through a medium, such as a respirator filter.

Certification/Class (Standard)	Australia/New Zealand P2 (AS/NZA 1716:2012)	United States N95 (NIOSH-42CFR84)	China KN95 (GB2626-2006)
Filter performance – filter is assessed to see the reduction in concentration of the test agent in the air that has passed through the filter. (must be \geq X% efficient to pass)	$\geq 94\%$	$\geq 95\%$	$\geq 95\%$
Test agent – Aerosol used for the filter performance testing	NaCl – Sodium Chloride	NaCl – Sodium Chloride	NaCl – Sodium Chloride
Flow rate	95L/min	85L/min	85L/min
Total inward leakage (TIL) – tested on human subjects each performing exercises	$\leq 8\%$ leakage (individual and arithmetic mean)	N/A	$\leq 8\%$ leakage (arithmetic mean)
Inhalation resistance – max pressure drop	$\leq 70\text{Pa}$ (at 30L/min) $\leq 240\text{Pa}$ (at 95L/min)	$\leq 343\text{Pa}$	$\leq 350\text{Pa}$
Flow rate	30 – 90L/min (as above)	85L/min	85L/min
Exhalation resistance - max pressure drop	$\leq 120\text{Pa}$	$\leq 245\text{Pa}$	$\leq 250\text{Pa}$
Flow rate	85L/min	85L/min	85L/min
Exhalation valve leakage requirement	Leak rate $\leq 30\text{mL/min}$	Leak rate $\leq 30\text{mL/min}$	Depressurisation to $0\text{Pa} \geq 20\text{sec}$
Force applied	-250Pa	-245Pa	-1180Pa
CO2 clearance requirement	$\leq 1\%$	N/A	$\leq 1\%$