

## Respiratory Filter Class Comparison EN vs AS/NZS Standards – Explained

Both EN and AS/NZS Standards set out specific test requirements for Respiratory Gas Filters. Both standards refer to different “Classes” of filtration:

- Class 1 – low levels of concentration
- Class 2 – medium levels of concentration
- Class 3 – high levels of concentration

For negative pressure gas filters, the concentration amounts are the same for both standards:

	EN	AS/NZS
Class 1	1,000ppm (0.1 vol.%)	1,000ppm (0.1 vol.%)
Class 2	5,000ppm (0.5 vol.%)	5,000ppm (0.5 vol.%)
Class 3	10,000ppm (1.0 vol.%)	10,000ppm (1.0 vol.%)

Where things get a little complicated is with gas filters used with powered air purifying respirators. In the EN standards Class 1 filters are tested to a concentration of 500ppm, where as the AS/NZS filters are are tested to to 1,000ppm

	EN	AS/NZS
Class 1	500ppm (0.05 vol.%)	1,000ppm (0.1 vol.%)
Class 2	1,000ppm (0.1 vol.%)	5,000ppm (0.5 vol.%)
Class 3	5,000ppm (0.5 vol.%)	10,000ppm (1.0 vol.%)

The table below shows the test chemicals and the test concentration that each test standard required the filter to pass to be classified as Class 1, 2 or 3.

What this means in that a PAPR Gas Filter that has achieved the EN standard to be considered a Class 2 filter in Europe, will only be considered a Class 1 filter in Asutralia and New Zealand.

For example:



This CleanAIR® Combination A2B2E2K2P3 filter has assessed the EN standard in Europe is considered a “Class 2” filter for us in environments with up to 1,000ppm (0.1 vol.%).

However in the AS/NZS standard to achieve a “Class 2” designation the filter would need to be able to operate in environment with up to 5,000ppm (0.5 vol.%). In the AS/NZS standard this filter would be considered a A1B1E1K1P3.

Type	Class	Test Gas	EN			AS/NZS			
			Temperature for test: 20 ± 1°C			Temperature for test: 23 ± 3°C			
			Test concentration (ppm)	Breakthrough concentration (ppm)	Breakthrough time (min)	Class	Test concentration (ppm)	Breakthrough concentration (ppm)	Breakthrough time (min)
A	1		500	10	70	AUS	1000	5	20
	2	Cyclohexane	1000	10	70	1	1000	10	70
	3		5000	10	35	2	5000	10	35
B	1	Chlorine	-	-	-	AUS	1000	0.5	20
		Chlorine	500	0.5	20				
		Hydrogen sulfide	500	10	40				
	2	Hydrogen cyanide	500	10	25				
		Chlorine	1000	0.5	20	1	1000	0.5	20
		Hydrogen sulfide	1000	10	40		1000	10	40
	3	Hydrogen cyanide	1000	10	25		1000	10	25
		Chlorine	5000	0.5	20		5000	0.5	20
		Hydrogen sulfide	5000	10	40	2	5000	10	40
							5000	10	25
							10000	0.5	20
						3	10000	10	40
						10000	10	25	
E	1		500	5	20				
	2	Sulfurous acid	1000	5	20	1	1000	5	20
	3		5000	5	20	2	5000	5	20
					3	10000	5	30	
K	1		500	25	50				
	2	Ammonia	1000	25	50	1	500	25	50
	3		5000	25	40	2	1000	25	50
					3	5000	25	40	
NO	-	Nitric oxide	2500	5	( <sup>1</sup> )	20	2500	5	( <sup>1</sup> )
	-	Nitrogen dioxide	2500			20	2500		
Hg	-	Mercury vapor	13mg/m <sup>3</sup>	0.1mg/m <sup>3</sup>	100 h	-	-	-	-
AX	-	Dimethyl ether	500	5	50	-	500	2	50
	-	Isobutane	2500	5	50	-	2500	5	50
MB	-	Methyl bromide	-	-	-	2	5000	5	30
	-		-	-	-	3	10000	5	30

Note (<sup>1</sup>) Total of Nitric oxide and Nitrogen dioxide

Here are some common questions we get regarding the difference in the standards.

Q.	Can I use a respirator and filters that only have the EN Standards and not the AS/NZS standards?
A.	Yes, WorkSafe are concerned about the effectiveness of control you have put in place. As long as you understand the limitations of your PPE and are ensuring the filters used are appropriate for the concentration of contamination you expect, then you are free to use filters with a recognised international standard.

Q.	How do I find out what the concentration of contaminants is in our workplace?
A.	You need to conduct air quality monitoring to get an understanding of what contaminants and in what concentrations they are at your workplace. You will need to engage a reputable company with experience in air quality testing.

Q.	Can an EN Class 1 PAPR filter be used in New Zealand?
A.	Yes, as long as you know that the concentration of contaminants in your workplace does not exceed 500ppm then you can use an EN Class 1 filter.