



2022

AIR XS INDEPENDENT LAB TESTING

Independent testing carried out
by polymer chemistry scientist

PRODUCT TESTING: PT-01-22



THE TESTS

We conducted our first fully independent testing of the AIR XS Silica Monitor to demonstrate that it can accurately detect the quantity of respirable crystalline silica (RCS) in a given sample.

The tests were carried out by a senior independent scientist and project manager, with over 20 years' worth of experience in polymer chemistry and sensor technologies who has worked for over 10 years at one of the world's leading particulate sensor development companies.

The challenge was simple.

2 samples of dust containing RCS were XRD analysed* multiple times to obtain a percentage RCS content. The samples were then introduced to 2 AIR XS units for sampling across a 4-hour period at both ambient temperatures and high temperatures.

We then repeated similar tests with an independent regulator in their low-flow particulate chamber.

The AIR XS was exposed to 2 different test dusts which had been XRD analysed to give a crystalline quartz percentage.

*Whilst XRD analysis is considered the gold standard of particulate analysis, it does not give a fully accurate percentage content of RCS in a sample, so a built-in inaccuracy in the region of $\pm 15\%$ can be assumed.

SUMMARY OF RESULTS

Test 1. Independent scientist

- » The silica content of 'Sample A' was analysed by XRD to be 25%
- » The silica content of 'Sample B' was analysed by XRD to be 50%

Sample	Ambient temperatures	At 35 °C
A	22.1%	24.1%
B	29.6%	25.6%

- » An AIR XS unit was set up in the chamber with 'Sample B' present (50% RCS); 'Sample A' (25% RCS) was added after 30 minutes.

Starting RCS	First 30 minutes	Sample A introduced
50%	49%	39%



Test 2. Independent laboratory

» The silica content of 'Sample C' was analysed by XRD to be 47.5%

Hours	Silica content
1	59.8%
2	57.4%
4	54.1%

» The silica content of 'Sample D' was analysed by XRD to be 40.7%

Hours	Silica content
1	57.1%
2	54.5%
4	51.7%

Please see product user manual (TX8100-UM-EN · P5633.1601) for testing and product specificities which should be considered relevant to application.

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