

Filtration for cement testing



Cytiva has a wide range of Whatman quantitative ashless filter papers for multiple uses that are specific to the cement industry, including sulfur analysis and gravimetric analysis.

Sulfur content (SO₃) tests for cement applications

Whatman™ Grade 41 and 42 filter papers are used for sulfur content analysis, a standard cement quality test. As the sulfur content of cement increases, the cement will solidify more quickly, but the strength will begin to decrease.

The second filtration, using the Grade 42 filter paper, captures the BaSO₄ precipitate.



Dissolve the sample in hydrochloric acid. The first filtration takes place using the Grade 41 filter, which removes the gelatin.



Barium chloride solution is then added to form a BaSO₄ precipitate.

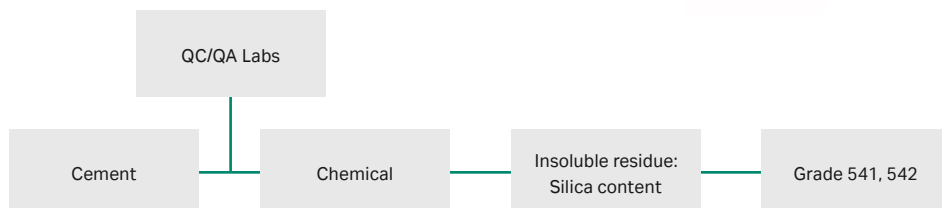


The filter paper with the precipitate is then ashed in a muffle oven at 800 to 950°C for at least 30 min, and the resulting ash is weighed and the sulfur content is calculated using the formula:




$$SO_3 = \frac{\text{Weight of precipitate} \times 0.343}{\text{Sample weight}} \times 100\%$$

Gravimetric analysis tests for cement applications

Use Whatman Grade 540, 541 and 542 filter papers for gravimetric analysis tests for silica content.



Which Whatman paper grade to use for your cement tests:

What are you testing for?	Products	Characteristics and benefits
Un-dissolved solids, SiO ₂	Grade 40 	<ul style="list-style-type: none"> • Good separation performance with particle retention 8 µm • Low ash content < 0.007%, background interferences
SO ₃	Grade 41 Grade 42 Grade 541 	<ul style="list-style-type: none"> • Good levels of separation performance with particle retention of 2.5 µm • Low ash content, < 0.007% background interferences, which is ideal for gravimetric analysis
Insoluble residue; Silica content	Grade 540 Grade 541 Grade 542 	<ul style="list-style-type: none"> • Acid hardened to reduce the amount of ash to an extremely low level • Extremely pure and strong with a hard surface • Has chemical resistance to strong acid and alkali • Medium retention and flow rate

Ordering information

Product name	Dimensions	Product code
Grade 40	42.5 mm (variety of dimensions available)	1440-042
Grade 41	42.5 mm (variety of dimensions available)	1441-042
Grade 42	42.5 mm (variety of dimensions available)	1442-042
Grade 540	42.5 mm (variety of dimensions available)	1540-042
Grade 541	42.5 mm (variety of dimensions available)	1541-042
Grade 542	55 mm (variety of dimensions available)	1542-055

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