PyroGenesis Improves Fumed Silica Quality, Purity, and Consistency Across Multiple Production Cycles

July8, 2025

Results verified by leading global fumed silica supplier

MONTREAL, July 08, 2025 (GLOBE NEWSWIRE) -- PyroGenesis Inc. (“PyroGenesis”) (http://pyrogenesis.com) (TSX: PYR) (OTCQX: PYRGF) (FRA: 8PY1), a high-tech company that designs, develops, manufactures and commercializes all-electric plasma processes and sustainable solutions to support heavy industry in their energy transition, emission reduction, commodity security, and waste remediation efforts, announces today that further to its news release dated June 12, 2025, and further to a recent press release from PyroGenesis’ client HPQ Silicon Inc. (“HPQ”), the latest upgrades to the fumed silica reactor (“FSR”) project have resulted in increased material quality, purity, and improved product consistency across multiple production cycles. These results were verified by a leading global fumed silica manufacturer, who had previously requested, tested, and verified first stage material samples produced in the FSR pilot plant under the terms of a letter of intent. PyroGenesis has been engaged to develop and build the FSR pilot plant for HPQ Polvere Inc. (“Polvere”), a subsidiary of HPQ. PyroGenesis has: (i) a 50% interest in Polvere, and (ii) an exclusive arrangement to be the sole supplier of equipment relating to any commercialization of this new process.

As previously reported, a series of FSR modifications and associated test phases are being conducted to help ensure that the scale-up from lab scale to pilot scale results in the successful replication of product quality in larger batch sizes. The focus now is on process optimization and gradually refining the quality of the product.

The results announced today come from the latest in a planned phase of optimization testing, during which the FSR was able to achieve several notable gains towards commercial targeting. These results include (i) a further reduction in impurities by up to 86%, (ii) a reduction in the presence of carbon by an additional 85%, (iii) operating a semi-continuous raw material feed, (iv) maintaining consistent product properties across multiple batch production cycles, and (v) increasing the surface area of the fumed silica by 57%. Increasing the surface area of the fumed silica is significant, as a larger material surface area is required for fumed silica to be graded as viable for various applications, including for food and pharmaceutical use.

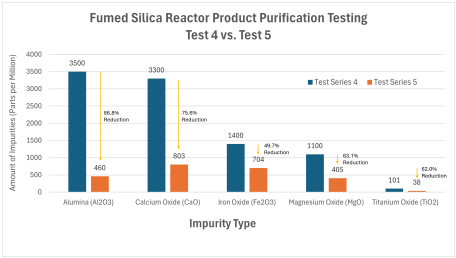
“Fumed silica exists across a range of product grades, with the grade primarily determined by the surface area size and the amount of impurities. There are applications and markets for fumed silica at virtually all grades,” said P. Peter Pascali, President and CEO of PyroGenesis. “As an example, the smaller surface area grades can be used in more industrial applications such as rubber or paint, while the larger surface area grades can be used in food and pharmaceuticals. PyroGenesis’ goal for the initial phase which created samples for testing by the end client, was first to create a material that could be identified as fumed silica, and which was acceptable to the client for further modification. This was achieved. In these latest results and for future phase testing, the FSR system and its various inputs and settings are being adjusted to gradually increase the number of grades of fumed silica that the system can produce. This is a natural next step as we focus perfecting the grades towards specific markets. The upgrades and modifications made to the FSR pilot plant since the previous round of tests have led to tremendous gains across a number of targeted data points. We continue to optimize the system over future planned tests, as we target market specific segments for commercial applications.”

Image 1



Packaged fumed silica produced by the FSR ready for shipping to the client’s test facility.

Image 2



A comparison between test series 4 and 5 measuring the presence of impurities in the fumed silica produced by the FSR pilot plant. Test series 5 was conducted after system and process modifications to the FSR.



Image 1: Packaged fumed silica produced by the FSR ready for shipping to the client's test facility.

Fumed silica is one of the most widely used industrial materials, and can be found in thousands of products used every day, including personal care, cosmetics, toothpaste, pet litter, powdered food, milkshakes, instant coffee, pharmaceuticals, agriculture (food & feed), adhesives, paints, inks, photocopy toner, sealants, fiber optic cables, thermal insulation, construction materials, and batteries, just to name a few. It is often used in these products as a thickening/anti-caking agent, used to stabilize and improve the texture and consistency of the end-product.

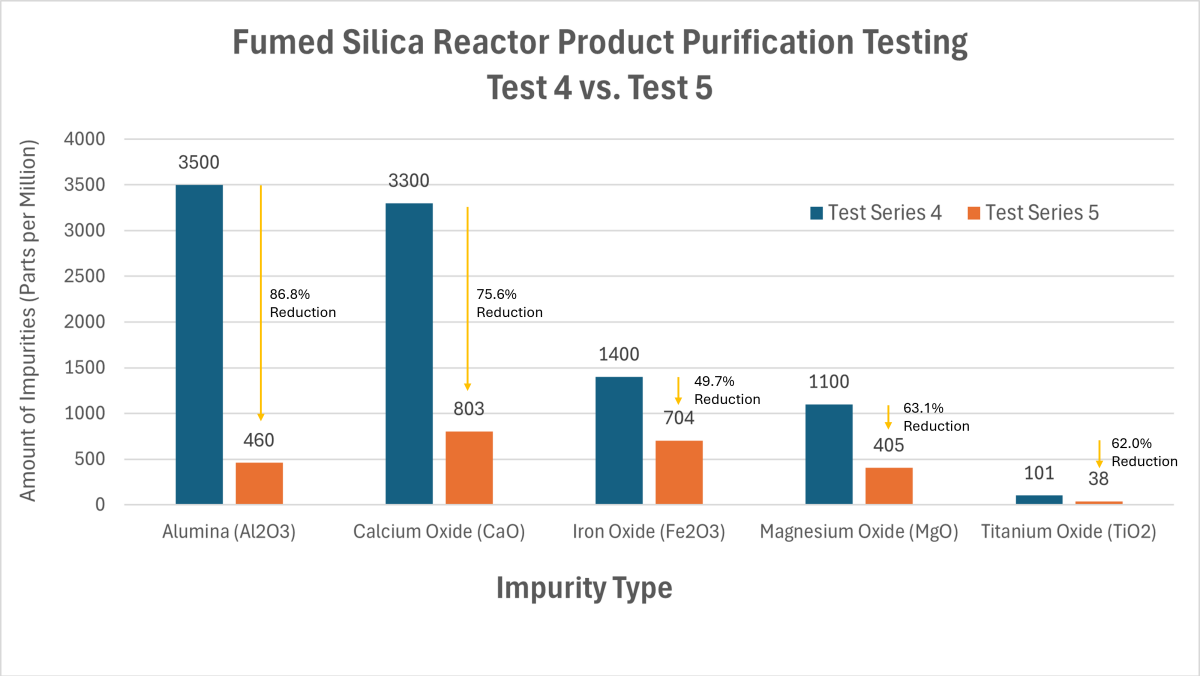


Image 2: A comparison between test series 4 and 5 measuring the presence of impurities in the fumed silica produced by the FSR pilot plant. Test series 5 was conducted after system and process modifications to the FSR.

Of note, impurities are inherent in any fumed silica feedstock and are acceptable in fumed silica at various levels. Each type of impurity has its own

maximum acceptable level depending on the fumed silica grade. Reduction of impurities to final desired levels is within the scope of the next phases of FSR testing as part of the process optimization and product refinement steps.

A final unique aspect of PyroGenesis' FSR is the total absence of hydrochloric acid (HCl) in the samples from tests 4 and 5 that were assessed by the end client. This is a unique signature to the FSR process. Other conventional fumed silica production methods produce HCl as a byproduct, which then has to be removed as part of the multi-step conventional process. This step is not required as part of the FSR process, resulting in additional cost savings.

PyroGenesis' involvement in developing fumed silica from quartz is part of its three-vertical solution ecosystem that aligns with economic drivers that are key to global heavy industry. Fumed powders are part of PyroGenesis' **Commodity Security & Optimization** vertical, where the development of advanced material production techniques, and the use of technology such as plasma to recover viable metals, chemicals, and minerals from industrial waste, helps to maximize raw materials and improve the availability of critical minerals. The Company's other verticals are **Energy Transition and Emission Reduction** and **Waste Remediation**.

About PyroGenesis Inc.

PyroGenesis, a high-tech company, is a proud leader in the design, development, manufacture and commercialization of advanced plasma processes and sustainable solutions which reduce greenhouse gases (GHG) and are economically attractive alternatives to conventional "dirty" processes. PyroGenesis has created proprietary, patented and advanced plasma technologies that are being vetted and adopted by multiple multibillion dollar industry leaders in four massive markets: iron ore pelletization, aluminum, waste management, and additive manufacturing. With a team of experienced engineers, scientists and technicians working out of its Montreal office, and its 3,800 m^2 and 2,940 m^2 manufacturing facilities, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. The operations are ISO 9001:2015 and AS9100D certified, having been ISO certified since 1997. PyroGenesis' shares are publicly traded on the TSX in Canada (TSX: PYR), the OTCQX in the US (OTCQX: PYRGF), and the Frankfurt Stock Exchange in Germany (FRA: 8PY1).

Cautionary and Forward-Looking Statements

This press release contains "forward-looking information" and "forward-looking statements" (collectively, "forward-looking statements") within the meaning of applicable securities laws. In some cases, but not necessarily in all cases, forward-looking statements can be identified by the use of forward-looking terminology such as "plans", "targets", "expects" or "does not expect", "is expected", "an opportunity exists", "is positioned", "estimates", "intends", "assumes", "anticipates" or "does not anticipate" or "believes", or variations of such words and phrases or state that certain actions, events or results "may", "could", "would", "might", "will" or "will be taken", "occur" or "be achieved". In addition, any statements that refer to expectations, projections or other characterizations of future events or circumstances contain forward-looking statements. Forward-looking statements are not historical facts, nor guarantees or assurances of future performance but instead represent management's current beliefs, expectations, estimates and projections regarding future events and operating performance.

Forward-looking statements are necessarily based on a number of opinions, assumptions and estimates that, while considered reasonable by PyroGenesis as of the date of this release, are subject to inherent uncertainties, risks and changes in circumstances that may differ materially from those contemplated by the forward-looking statements. Important factors that could cause actual results to differ, possibly materially, from those indicated by the forward-looking statements include, but are not limited to, the risk factors identified under "Risk Factors" in PyroGenesis' latest annual information form, and in other periodic filings that it has made and may make in the future with the securities commissions or similar regulatory authorities, all of which are available under PyroGenesis' profile on SEDAR+ at www.sedarplus.ca. These factors are not intended to represent a complete list of the factors that could affect PyroGenesis. However, such risk factors should be considered carefully. There can be no assurance that such estimates and assumptions will prove to be correct. You should not place undue reliance on forward-looking statements, which speak only as of the date of this release. PyroGenesis undertakes no obligation to publicly update or revise any forward-looking statement, except as required by applicable securities laws.

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