

PyroGenesis Announces That Lab Strength Tests Achieve 45% Above Target for Green Cement Additive Product

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Superior results of 7-day tests bode well for fly ash replacement in cement as 28-day test results approach

MONTREAL, April 11, 2024 (GLOBE NEWSWIRE) -- PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX: PYR) (OTCQX: PYRGF) (FRA: 8PY), a high-tech company (the "Company" or "PyroGenesis") that designs, develops, manufactures and commercializes advanced plasma processes and sustainable solutions which are geared to reduce greenhouse gases (GHG) and address environmental pollutants, is pleased to announce that it has received notice from its client, Progressive Planet, that the results from a series of tests reveal "superb" compressive strength for the PozPyro cement additive material produced by PyroGenesis' proprietary plasma process – a result that indicates a major step toward commercial feasibility. This plasma-based process – a collaboration with Progressive Planet – explores the feasibility of converting widely available, high-grade, crystalline silica into amorphous silica. The resulting amorphous silica can be used to enhance the strength of concrete as a replacement for fly ash.

As indicated in Progressive Planet's news release of April 11, over the last month Progressive Planet prepared four separate batches of cement mortar cubes to test, under the American Society for Testing and Materials ("ASTM") testing protocol, at both 7 and 28 days for compressive strength, for different particle sizes. The average Strength Activity Index (SAI) result for the four 7-day strength tests for PozPyro was 108.75%, a 45% gain against the minimum target value.

"Mortar cubes need to possess 75% of the strength of the control cube at 7 days to pass this ASTM test, so we are delighted that the average strength was 108.75%," stated Steve Harpur, CEO of Progressive Planet.

The tests were conducted as a key milestone in the PozPyro project which is geared to develop supplementary cementing material (SCM) as an alternative to fly ash. The expectation is that this SCM could then be used to partially replace Portland Cement while at the same time be derived from readily available materials which do not release CO₂. The material is produced using PyroGenesis' plasma torch reactor to convert quartz silica into a SCM.

"These results are impressive, and underscore yet again the transformative nature of plasma in producing materials, in both an economically and environmentally beneficial manner, key to heavy industry", said Mr. P. Peter Pascali, President and CEO of PyroGenesis. "Our experience over the past few years in developing new ways to use plasma to process silica quartz into valuable end products continues to lead to a variety of unique and interesting outputs, with PozPyro being the most recent example. The cement industry is a major target for us, and we have high expectations for the PozPyro green cement additive material we have developed with Progressive Planet."

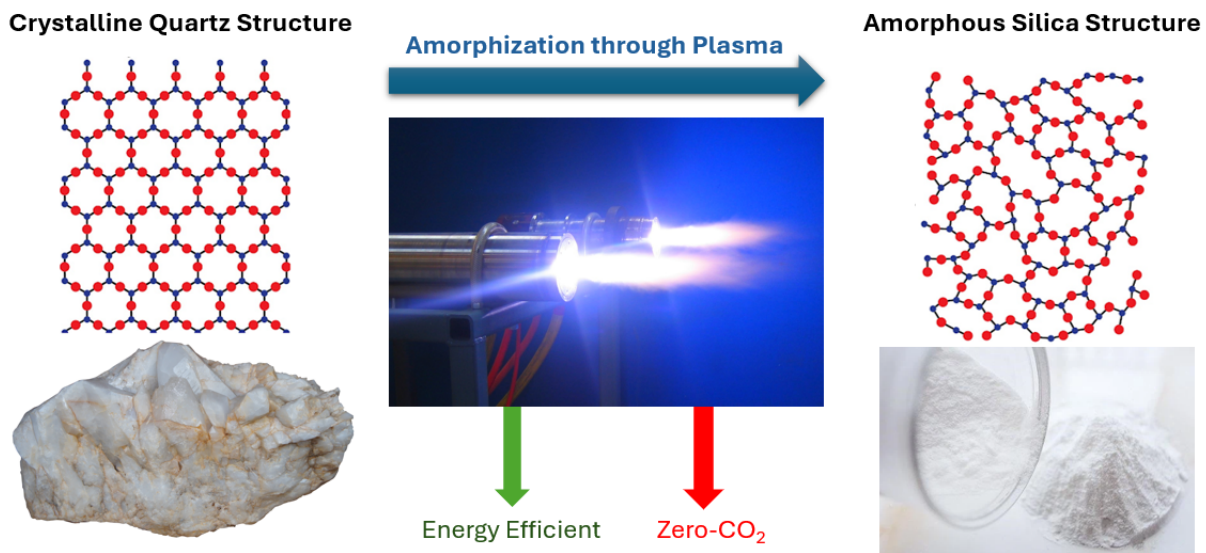


Image: A zero-CO₂, energy-efficient conversion of crystalline quartz to amorphous silica through PyroGenesis' plasma torch process.

All four batches of mortar cubes will also undergo 28-day SAI tests with the results being available sometime after April 29, 2024.

As further stated in Progressive Planet's news release, concrete producers want SCMs that (i) increase the compressive strength of their mix while (ii) lowering their carbon footprint without sacrificing workability. The workability of cement is measured by water demand. The water demand for PozPyro was between 99% and 109% with the average water demand being 103.75%.

The smaller the water demand number, the better the reading. A passing water demand number must be less than 115% of the water demand of the control mix. As such, all four of the test batches also passed the water demand test.

"It is uncommon to see SCMs exceed the 7-day strength of the control Portland, so we are excited to see better strength while concurrently possessing

excellent water demand numbers” said Steve Gurney, President of Progressive Planet.

Crystalline silica is one of the most abundant materials in the earth’s crust and the ability to economically convert it into amorphous silica would offer a new supply of material to compensate for the diminishing supply of fly ash, as coal fired power plants (which generate fly ash) are targeted for shut down in Canada by 2030.

PyroGenesis’ involvement in developing PozPyro from quartz is part of PyroGenesis’ [three-tiered solution ecosystem](#) that aligns with economic drivers that are key to global heavy industry. PozPyro is part of PyroGenesis’ Commodity Security & Optimization tier, where the recovery of viable metals and the optimization of production to increase output helps to maximize raw materials and improve the availability of critical minerals.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., 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 m² and 2,940 m² 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. For more information, please visit: www.pyrogenesis.com.

About Progressive Planet

Progressive Planet is a CleanTech and manufacturing company with proven product lines based in Kamloops, British Columbia. The company’s expertise lies in developing critical low-carbon and carbon sequestering solutions using our owned mineral assets and recycled materials to create planet-friendly products that fight climate change and protect our planet’s health.

Progressive Planet products are in 10,000+ retail stores across North America. Progressive Planet’s innovations, created at their C-Quester™ Centre of Sustainable Innovation, bring positive disruption to the cement, agricultural and animal-care sectors.

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 the Company 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 the Company’s latest annual information form, and in other periodic filings that the Company has made and may make in the future with the securities commissions or similar regulatory authorities, all of which are available under the Company’s profile on SEDAR+ at www.sedarplus.ca. These factors are not intended to represent a complete list of the factors that could affect the Company. 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. The Company undertakes no obligation to publicly update or revise any forward-looking statement, except as required by applicable securities laws.

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