

ALBERTA BIO FUTURE PROGRAM HIGHLIGHTS

CONCRETE HEMP FIBRE REINFORCEMENT

Engineers can now specify a new additive for concrete when designing swimming pools, skateboard parks and even Olympic bobsled runs. Concrete used for these types of projects with non-conventional shapes must be sprayed in place, called shotcrete, and it often cracks.

Typically, plastic or glass fibres are used for reinforcement. Calgary-based company, Canadian Greenfield Technologies Corp. (CGT), has developed an alternative fibre choice that produces stronger concrete and is resistant to cracking. This reduces the need for costly repairs and production of replacement concrete, which results in emission of high volumes of greenhouse gases.



Source: Canadian Greenfield Technologies Corp.

The company's proprietary concrete fibre reinforcement product, NForce-Fiber®, mixes into concrete easily without clumping or need for other additives. It is derived from industrial hemp grown in southern Alberta on farms near Lethbridge and Mossleigh.

The company developed its manufacturing process with funding support from Alberta Innovates through its Alberta Bio Future program in Project BFP-16-002. "Getting the grant was difficult, as it should be for a competitive funding process," said Dr. Stephen Christensen, Vice President & General Manager, Canadian Greenfield Technologies Corp. "Afterward though, Alberta Innovates was very supportive and the obligation for record-keeping was reasonable."



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Dr. Stephen Christensen
Vice President & General Manager
Canadian Greenfield Technologies Corp.





Construction projects with non-conventional shapes, like bobsleigh tracks, can now use industrial hemp fibres for reinforcement

Source: Getty Images

The pilot plant upgrades went online in spring 2018 with 11 staff and quickly increased the orders filled, including to China. An international team of engineering and construction experts had specified NForce-Fiber® for the concrete construction of the Xiaohaituo bobsleigh and luge track for the 2022 Winter Olympics, to be held near Beijing. CGT won this contract after third-party testing confirmed no other product in the world could match its quality for such a high-performance application.

The pilot plant is producing another unique product from industrial hemp, NForce-Pro™ for use in decorative concrete. This high-end product is becoming a popular alternative to granite and marble for countertops and backsplashes in kitchens and bathrooms. Concrete countertops with NForce-Pro™ fibre are stronger, thinner and lighter than conventional concrete products made with glass or plastic fibres.

CGT also produces a variety of other hemp products, including cat litter, food preservation pads, potting mix, soil amendment, mulch and nutritional exfoliant.

“With the successes we have seen and our products selling on Amazon like crazy, a larger commercial plant is definitely in our future in the next year or two,” said Dr. Christensen.

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