

INFORMATION BULLETIN 3a:

BAST FIBER - High-Value Bast Fiber

Products Manufactured by CGT

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NOTE: This is Information Bulletin Part 1 of 3 (3a) and will only discuss bast fiber products. The following Information Bulletins will discuss products made from hurd and green microfiber (3b and 3c, respectively).

It has long been an adage that there are 20,000-50,000 products that can be made from hemp. This is arguable, but the real question is “**How many are REALLY being made by the hemp industry world-wide AND SHOULD practically be made from hemp?**” More specifically, for the purpose of this Information Bulletin, “**How many from hemp bast fiber?**”

Interestingly, while mention of hemp traditionally brings out the notion of hemp fiber, it is the hemp fiber whose “gainful” use – besides textile – often involves the longest discussion, especially in North America. It is already well established that a **commodity hemp fiber for textile, supplied from lower labor cost countries, is inexpensive and plentiful in the marketplace. The North American hemp industry needs innovative, value-added hemp products to compete.**

Canadian Greenfield Technologies Corp. is currently the **ONLY** continuously and commercially operating hemp processing facility in North America, producing high-value, high-volume products from industrial hemp. **Canadian Greenfield is also the only hemp processor in North America who manufactures (amongst its hemp fiber-based product lines) a very high value AND fully commercialized engineered product – market tested and in high demand – NForce-Fiber®, made from the hemp bast fiber.**

This Information Bulletin offers an insight, from our perspective and based on our real-life experience, on the subject of the **commercial manufacture and sales of high value products made from hemp bast fiber.**

HempTrain™

All products manufactured by Canadian Greenfield Technologies Corp. are first processed using a HempTrain™ Advanced Processing Plant. To learn more about how a HempTrain separates industrial hemp bales into high-value streams in a non-destructive manner, please visit www.canadiangreenfield.com/hemptrain/. This website includes purchasing information, as well as specifications, videos, pictures, and whitepapers. For information on **Licensing HempTrain™** production and distribution, please visit www.canadiangreenfield.com/hemptrain/#licensing.

Process Streams

A HempTrain™ separates industrial hemp straw bales (round or square) into three streams - bast fiber, hurd, and green microfiber.

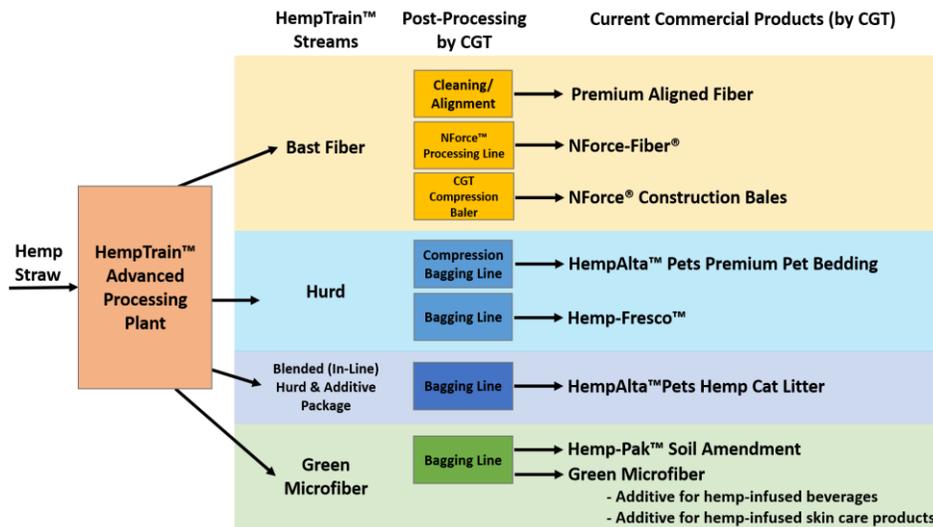


Figure 1 - Current Commercial Products (by CGT)

Bast Fiber & Products

The bast fiber separated/decorticated by a HempTrain™ is substantially different from that using a hammer/roller-mill/scutching. HempTrain™ fiber is strong, intact, long, and structural, whereas traditional fiber is short and broken down.



Figure 2 – Comparison of hammer-milled bast fiber to that separated using a HempTrain™ Advanced Processing Plant

As strength is of primary importance, the fiber is NOT retted, as this would sacrifice fiber integrity, significantly reduce available hurd quantity and quality, and eliminate green microfibrer.

CGT then processes this bast fiber into three separate products: NForce-Fiber®, Premium Aligned Fiber, and NForce® Construction Bales.

NForce-Fiber® - USD\$25/lb

NForce-Fiber® is the world's only ASTM/CSA-compliant hemp fiber reinforcement for concrete, and as such is a truly disruptive technology. To the best of our knowledge, NForce-Fiber® is the highest-value product manufactured using hemp bast fiber. NForce-Fiber® replaces environmentally problematic, non-sustainable, and poor performing glass and plastic fiber reinforcements, and has been used in everything from countertops and skateparks, to parts of an **Olympic** bobsled track and Toronto LRT tunnel.



Figure 3 –NForce-Fiber® and a few projects using it!

NForce-Fiber® constantly sells out and has now transitioned almost entirely to selling on Amazon.com for USD\$25/lb. As CGT are only capable of production using our pilot plant (see **NForce-Fiber® Business Offering** [here](#)), below is a list of the complete pilot projects:



Figure 4 – Map of North American NForce-Fiber® Projects

Table 1 – Pilot Project Locations and Quantities of NForce-Fiber® Used

Location	Quantity (lbs)	Location	Quantity (lbs)
Sherwood Park, AB	60	Boisbriand, QC	10
Beamsville, ON	360	San Jose, CA	600
Calgary, AB	360	Richmond, BC	200
Calgary, AB	3200	Okotoks, AB	7
Sherwood Park, AB	320	Winchester, VA	60
Durham, NC	3	Winchester, VA	155
Moose Jaw, SK	3	Henderson, NV	6
Chuncheon, Korea	406	Lubbock, TX	410
Toronto, ON	360	Stratford, ON	225
Toronto, ON	360	Niagara Falls, ON	240
Toronto, ON	1200	Edmonton, AB	240
Toronto, ON	800	Westbank, BC	265
Lorton, VA	25	Beaumont, AB	70
Burlington, NC	9	West Lincoln, ON	430
Burlington, NC	225	Fernie, BC	482
Bluffdale, UT	60	Kelowna, BC	265
Edmonton, AB	10	Grande Prairie, AB	335
Sherwood Park, AB	42	Revelstoke, BC	800
Sherwood Park, AB	528	Calgary, AB	344



Sherwood Park, AB	250	Genelle, BC	456
Beijing, CHINA	360	Georgetown, ON	400
Philadelphia, PA	20	Summerland, BC	532
Seaside, OR	2	Windsor, ON	120
Calgary, AB	370	Calgary, AB	19
Guelph, ON	300	Calgary, AB	16
Lethbridge, AB	660	Calgary, AB	60
Exshaw, AB	800	Winnipeg, MB	8
Exshaw, AB	800	Winnipeg, MB	8
Collingwood, ON	320	Winnipeg, MB	4
Saskatoon, SK	400	Winnipeg, MB	6
Melfort, SK	690	Washington, DC	200
Saskatoon, SK	230	Galiano Island, BC	2
Henderson, NV	20	Coquitlam, BC	20
Amazon - USA (502 Projects)	1295	Amazon - CANADA (398 Projects)	735
		TOTAL:	22,578 lbs

*22,578 lbs is enough NForce-Fiber® to reinforce ~11,289 cubic yards of concrete...
that is enough concrete to require OVER 2,258 concrete trucks to move it!*

Premium Aligned Fiber - USD\$15/lb

Conventional cleaning degrades the fiber, leading to low-value, significant material loss, excessive and problematic dust generation, and fiber lengths too short to align. Premium Aligned Fiber goes through a proprietary cleaning and alignment system, resulting in fiber with ~2% hurd content while preserving the length (~3 feet) and integrity of the HempTrain™-separated bast fibers.

CGT sells Premium Aligned Fiber in small quantities for research and development of reinforced composites, fiberglass replacement, high-value textiles (long staple processes), and bioplastics. Due to its aligned format, it is possible either use it for directional reinforcement, or to cut a specific size with a narrow size distribution, ensuring reproducible properties for engineered materials that are subject to **rigid** testing requirements. As this uses portions of the NForce-Fiber® production line, and the demand is much lower than for NForce-Fiber®, it is not produced in large quantities.



To the best of our knowledge, this is the strongest and longest hemp bast fiber available that is aligned using commercial equipment (i.e., not hand-made). It is also the only structural hemp bast fiber that can be cut to a desired length with a narrow size distribution - something that is of the highest importance for any extrusion process.

NForce® Construction Bales - USD\$9.50/bale

NForce® Construction Bales use decorticated hemp bast fiber and specialty fiber compression equipment to form incredibly dense and structural bales. As they are made almost entirely of structural hemp bast fiber, they are therefore much denser than hemp straw.



NForce® Construction Bales are used for load-bearing green construction applications where insulation is required, and straw is weak and degrades.

Independently tested by experts, the load capacity of NForce® bales is up to **3.5x higher** (i.e., 250% higher) than conventional straw bales, which are normally suited for insulation only. NForce® Construction Bale dimensions are 14"x18"x36".

Conclusion

It is our wish that, by describing the hemp bast fiber products manufactured by CGT using a HempTrain™ Advanced Processing Plant, we provide data and insight into actual, commercial products that are both high-value, and high-volume. We wish to eventually steer conversation in the hemp industry away from theoretical products with theoretical market demand, to **actual products being produced, market-proven and profitable**, made from industrial hemp straw.