

## **FACT SHEET**

## **CRAiLAR® Flax**

### **Why did NAT switch its primary feedstock from hemp to flax?**

Our technology was developed to work on all bast fiber crops. Hemp was the initial focus as it is an emerging industry in Canada. Flax is a bast fiber crop so the CRAiLAR® process works very well without any modification. CRAiLAR® is a versatile technology and also performs well on jute, kenaf, and other similar crops. At the end of April of 2010, we announced that we had successfully spun not only a hemp-cotton combination but we'd also successfully spun a flax-cotton combination. We found the CRAiLAR® flax to be of very high quality and ideally suited for fine knit items such as T-shirts. While hemp is also well suited for knit garments, the legal issues surrounding the crop in the USA combined with the farming learning curve that will be necessary to begin the agricultural supply chain, make commercialization of this fiber more difficult than flax.

Our recent spinning trials with CRAiLAR® flax have been highly successful, which further validates the feasibility of flax as a practical, economically viable complement to cotton. Therefore a strategic shift of focus from hemp to flax was announced earlier this year.

### **How does the cost of CRAiLAR® Flax compare to Cotton?**

With cotton prices currently over a \$1.50 per pound, flax is a cost-effective raw material for fiber production. We estimate that in 2011 we will be able to provide CRAiLAR® Flax for between \$0.90 and \$1.25 per pound, making it an economically viable complement to cotton.

### **What are the differences between hemp and flax?**

Hemp and flax are both bast fibers. Hemp grows larger and its fibers are coarser. Hemp is currently not able to be grown in the US while flax has no such restrictions. Flax has very similar properties to hemp but produces finer fibers and is well suited to be grown in the US. The environmental sustainability of flax is virtually identical to hemp with the exception that hemp produces more biomass per acre than flax. However, the flax plant generates a higher percentage of bast fiber per plant than hemp. Our testing on CRAiLAR® Flax has shown that performance benefits are the same or similar to CRAiLAR® Hemp.

### **Will the switch to flax postpone commercialization opportunities?**

No, in fact CRAiLAR® Flax can be commercialized sooner than CRAiLAR® Hemp due to the abundance of raw material in North America and the ability to legally grow it in the USA. This presents some unique opportunities from a supply-chain perspective which can help accelerate the steps towards commercialization.

### **Are farmers familiar with flax?**

Yes, flax is an existing crop with nearly 2MM acres under cultivation in North America.

### **What is this existing flax used for?**

The flax currently being grown in Canada and the USA is harvested for grain, not fiber. Flax seed is used in industrial oils, livestock feed, and for human consumption. Fiber yield and quality from grain crops is typically low and while the fiber can be used in some textile applications, it is more desirable to grow flax specifically for fiber quality.

## **Why South Carolina?**

NAT is establishing a presence in South Carolina due to close proximity to yarn spinners and prime fiber flax growing agricultural land. Flax in South Carolina is a winter crop and rotates extremely well with cotton, soybeans, and tobacco. This allows farmers to double crop their land and exponentially increase their revenue.

## **Does this switch affect your licensing agreement with the National Research Council?**

No, it does not. The technology has been developed for use on a variety of bast fibers. As long as we are using the NRC CRAiLAR® Technology to produce CRAiLAR® Flax, there is no change to our world-wide exclusive license.

## **Is NAT giving up on hemp?**

No, we remain committed to developing hemp as part of the CRAiLAR® growth story. Our partners have expressed interest in developing flax first but we believe a large market still exists for CRAiLAR® Hemp.

## **What is CRAiLAR®?**

CRAiLAR® Fibers are the foundation of the first truly sustainable yarn in the apparel industry, and are poised to become the revolutionary next step in sustainable fibers, providing an economically sustainable complement to cotton.

## **How is CRAiLAR® used?**

The yarns made from CRAiLAR® Fibers can be used in knit, woven or nonwoven fabrics, alone, or blended with other natural fibers. CRAiLAR® can be used in both mainstream and alternative apparel and fashion fabrics, as well as industrial textiles.

## **What is CRAiLAR® made from?**

CRAiLAR® Fibers begin as the long, strong filaments found in the outermost part of the hemp or flax plant. CRAiLAR® Fibers are made from a portion of the plant stalk that, because of its stiff hand and rough texture, has been historically underused in the garment industry.

## **How is CRAiLAR® made?**

The all-natural CRAiLAR® process bathes these filaments in a proprietary enzyme wash that transforms them into soft, yet strong and durable, textile fibers. Every step of the CRAiLAR® process can be certified organic, making it eco-friendly from beginning to end.

## **How does CRAiLAR® Flax compare to cotton?**

CRAiLAR® Flax is soft like cotton, has a similar color, possesses similar performance traits and is cool and comfortable to wear year-round. CRAiLAR® Flax and cotton look the same, fit the same and wash the same. Still, CRAiLAR® Flax fibers shrink less than cotton fibers do, wick moisture better, and have increased dye uptake meaning they take less chemicals to reach the same color levels.

### **How does CRAiLAR® Flax compare to regular flax?**

Raw bast fibers—the strongest in the plant kingdom—contain glue-like lignin and pectin, so fabrics made from flax can feel stiff and rough against the skin. The CRAiLAR® process removes these glues—along with other naturally occurring impurities—while preserving flax’s strength and durability and dramatically improving its texture, color and performance capabilities. CRAiLAR® yarns and fabrics can be produced on existing cotton machines.

### **What makes bast fibers an eco-friendly raw material?**

Bast fibers have always been among the most sustainable, renewable and environmentally sound crops in existence. They require no irrigation and little to no chemical fertilizers and pesticides to thrive. Industrial hemp absorbs carbon dioxide—the most prominent greenhouse gas in the Earth’s atmosphere—at five times the rate of the same acreage of forest.

### **How does the CRAiLAR® process benefit the environment?**

The revolutionary all-natural CRAiLAR® process is non-polluting and consumes a lot less energy and water than it takes to produce other natural fibers. While CRAiLAR® Fibers are strong and durable like petroleum-based synthetics, they’re made from earth-friendly flax or hemp. The processing chemicals used within the CRAiLAR® process have been approved for use as textile auxiliary agents according to the Global Organic Textile Standards (GOTS). GOTS approved inputs are screened for prohibited toxic chemicals such as aromatic solvents, heavy metals or fluorocarbons as well as Genetically Modified Organisms (GMO). All substances must also comply with strict toxicity and eliminability standards.

### **Who makes CRAiLAR® Fibers?**

**CRAiLAR®** technology was developed by Naturally Advanced Technologies in collaboration with the National Research Council of Canada.

### **Where can I learn more about CRAiLAR® Fibers?**

For more information, visit [www.CRAiLAR.com](http://www.CRAiLAR.com) or email [IR@naturallyadvanced.com](mailto:IR@naturallyadvanced.com).