



**ENGINEERED
FIBERS
TECHNOLOGY, LLC**

**RECENTLY DEVELOPED
KURARAY FIBERS
NOW AVAILABLE FROM EFT**

Engineered Fibers Technology is pleased to be able to introduce and supply several fibers recently developed by Kuraray. These fibers offer significant new opportunities for the development or modification of specialty papers and nonwovens.

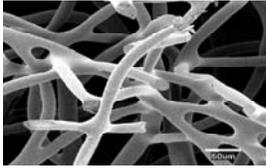
We are presenting both new chemistry, in the form of EVOH fibers, specialty polyamide, and high modulus PVA fibers, as well as new fiber architectures in the form of “striped” bicomponent polyester/ nylon splittable fiber, in addition to both flat (ribbon shaped) and fibrillatable PVA fibers. These fibers are now available for your evaluations.

These new fibers offer several advantages, including high thermal binding efficiency, high mechanical performance and FDA approval.

The attached summary sheet describes these fibers, and individual data sheets can be provided upon request. If you have interest in these new fibers, or the other PVA and polyester specialty fibers available from Kuraray through EFT, please call David Merrill, Marketing Director, at 860 253-9790, or e-mail him at dcmerrill_crv@yahoo.com

Recently Developed Fibers from Kuraray America / EFT for Specialty Papers and Nonwoven Applications

Synthetic Fiber Spun from Ethylene Vinyl Alcohol (EVOH) Polymer



EVOH fiber is the first synthetic fiber containing hydrophilic radicals. It can be used as a thermal binder fiber for both dry laid and wet-laid applications without the need for calendaring, and is available in short-cut fiber form both as a homopolymer, or as a sheath /core bicomponent fiber. Binding efficiency is higher in wet-laid applications than PVA binder fibers, and significantly superior to PET and other thermal binder fibers in all production methods. The melting points under dry and wet conditions are 170°/100° C respectively. Due to the presence of hydrophilic radicals, water is absorbed on the surface of EVOH fiber. EVOH polymer is FDA approved, and FDA approved fiber finishes are being evaluated.

Applications of papers /nonwovens made from EVOH include air and liquid filtration media, heat sealable paper, food wrapping papers, wipes and various kinds of paper for cosmetics, hygiene, medical and electrical uses.

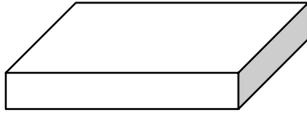
Polyester/ Nylon Splittable Fiber (WRAMP)



WRAMP fiber is a bicomponent fiber with a stacked structure consisting of eleven alternating layers or “stripes” of polyester and nylon. Mild refining of this fiber causes it to split into approximately 0.3 micro denier ribbon shaped fibers. Papers made from WRAMP fiber, or blends with wood pulp, exhibit very high tear factor, low air permeability, smaller pore size, high luster, good printability and high fold endurance.

Applications of WRAMP fibers include wipes, decorative printed papers for high pressure laminates and wall coverings.

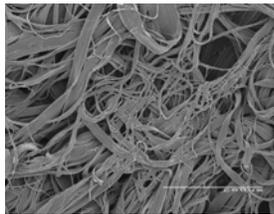
Ribbon Shaped PVA Fibers (BFH)



New PVA fibers have a flat cross section with cross-sectional aspect ratios (thickness / width) of from 1/6 to 1/20, with an equivalent denier of about 1 to 5. They are available both as thermal binder fibers, with dissolution temperatures of 60 ° C, and as conventional short-cut fibers, which do not dissolve below 100° C. Because of the flat cross section of these fibers, binding efficiency is much higher than with round PVA fibers resulting in higher strength, or requiring a lower percentage to achieve equivalent strength. Lower air permeability papers can also be produced.

Applications of ribbon shaped PVA fibers include all the applications of conventional circular cross-section PVA fibers where strength improvements are desirable, as well as new applications utilizing the ribbon shape.

Fibrillatable PVA Fiber (VMH)



A fibrillatable PVA fiber is now available that can be supplied as a long staple fiber for hydroentanglement, or as a short-cut fiber for conventional refining into a synthetic pulp. These fibers have a dissolving temperature above 100° C. Applications being investigated include filter media and low lint wipes, among others.

High Modulus PVA (REC) Fibers

Specialty PVA fibers that have specific strength and specific modulus higher than fiberglass are now being produced using Kuralon K-2 spinning technology. These fibers are available in deniers of 15 and 90 for additional reinforcement.

Specialty Polyamide Fibers (A-590)

New nylon chemistry has been employed to produce a unique half-aromatic polyamide fiber that has excellent chemical resistance and a melting temperature of 265 °C. In addition to being available in deniers of 0.6 and 1.5, a 0.07 microdenier fiber can be supplied.

<u>KURARAY's short cut fiber for WET-LAID PAPERS and NONWOVENS (Recent Developments)</u>									
Description	Type	Item	Cross Section		Polymer Chemistry	Denier	Cut Length (mm)	Charisteristics	Status
	Subject & Binder		Sheath-Core		PET/EVOH	1.5	5	good binding, high chemical resistance, biocompatibility	commercial
EVOH Fiber		S-030	○		EVOH	0.5	5		commercial
			○		EVOH	1.5	5		semi-commercial
Splittable Fiber	Subject	W101	multilayer		Polyamide/ PET	3.0/10	5	easy splittability	commercial
□WRAMP)						0.3 (Split)		high density, low air-permeability paper, high tear resistance	
Flat Cross- Section Vinylon	Binder	BFH145-2	flat □□□□□		PVA	1.3	4	good binding, suitable for multicylinder, air-thru dryer	commercial
	Subject	BFH103	flat □□□□□		PVA	0.9 1.5 1.8	5	high strength and high density paper	semi-commercial
	Subject	VMH 123	flat □□□□□□		PVA	1.6 2.0	2, 6	fibrillatable	semi-commercial
K-2	Subject	REC17	○		PVA	15	12	high modulus	commercial
	Subject	REC100	○		PVA	90	6,12		commercial
Special Polyamide Fiber	Subject	A-590	○		Special Polyamide	0.6	5	chemical resistance	commercial
						1.5	5	heat resistance	