

MINIFIBERS, INC.

Fybel™ Synthetic Pulp for Vinyon Replacement

I. BACKGROUND

Vinyon is made from a copolymer based on 85% vinyl chloride and 15% vinyl acetate, and has been used as a heat-sealable fiber for the tea bag industry. Two types of fibrillated fiber based on polyolefin polymers have been developed for the replacement of vinyon fiber.

II. FIBER PROPERTIES

Properties	Comparison		
	E-type	UL-type	Vinyon
Density (g/cm ³)	0.96	0.93	1.30
Melt Flow Rate (g/10min)	28	8	-
Average Fiber Length (mm)	0.8	1.1	5
Drainage Factor (sec/g)	0.3	1.5	0.1

III. THERMAL PROPERTIES

Properties	Comparison (see Figures 1-3)		
	E-type	UL-type	Vinyon
Glass Transition Temperature (T _g)	-	-	73oC
Crystalizing Temperature (T _c)	117oC	112oC	-
Melting Point (T _{m1})	133	116	-
(T _{m2})	-	125	-

III. HEAT SEAL STRENGTH

A. Sample Preparation

1. Composition

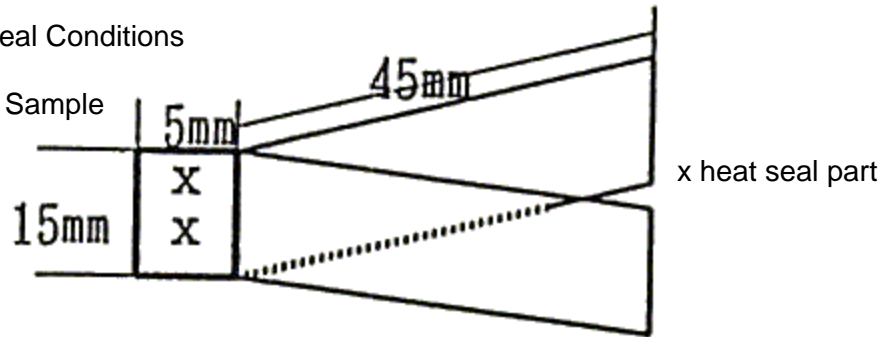
100% synthetic fiber: 4g/m²
Tea bag paper: 12g/m²

2. Pre-Treatment

The samples were heated at 190°C for 60 seconds.

B. Heat Seal Conditions

1. Sample



2. Heat Seal Temperature

Upper Bar/Lower Bar = 140°C/140°C and 200°C/200°C

3. Heat Seal Pressure = 1 kg/cm²

4. Heat Seal Time = 0.5 seconds

C. Measurement of Heat Seal Strength

a. Temperature at Measuring = 23°C

b. Number of Samples(n) = 5

Heat Seal Temperature	Heat Seal Strength - g/15mm (see Figure 4)		
	E-type	UL-type	Vinyon
70~120°C	Not sealable	Not sealable	Not sealable
140°C	29	113	37
200°C	190	165	113

Fig. 1 VR-A

DSC

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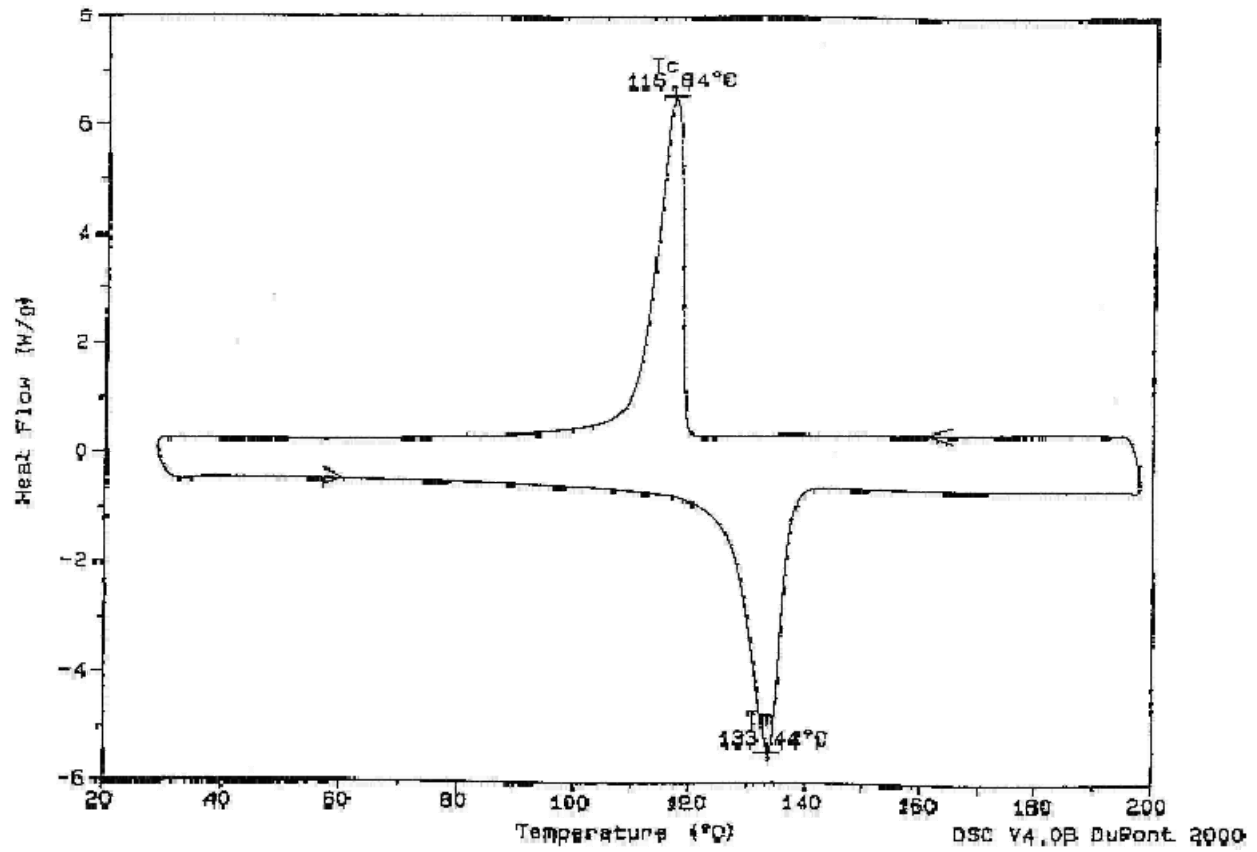


Fig. 2 VR-B

DSC

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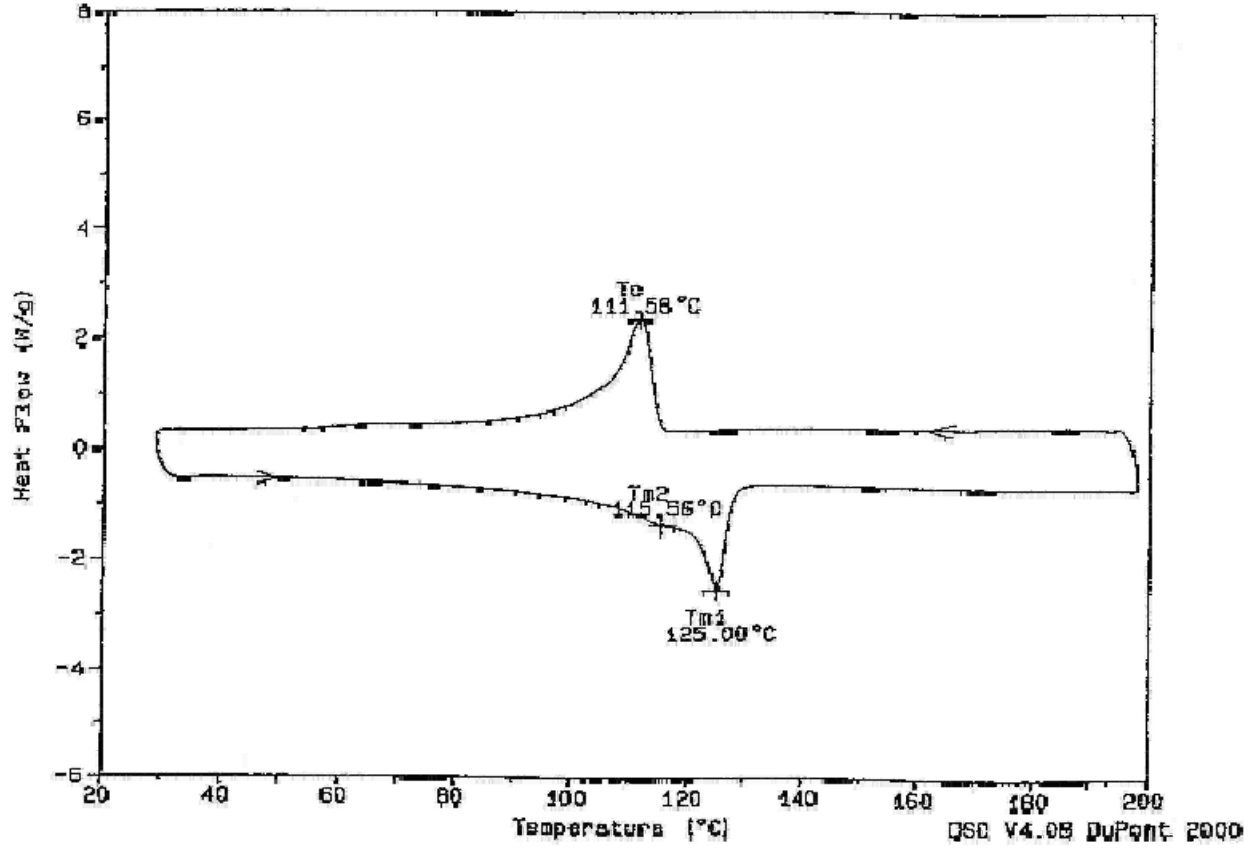


Fig. 3 Vinyon

DSC

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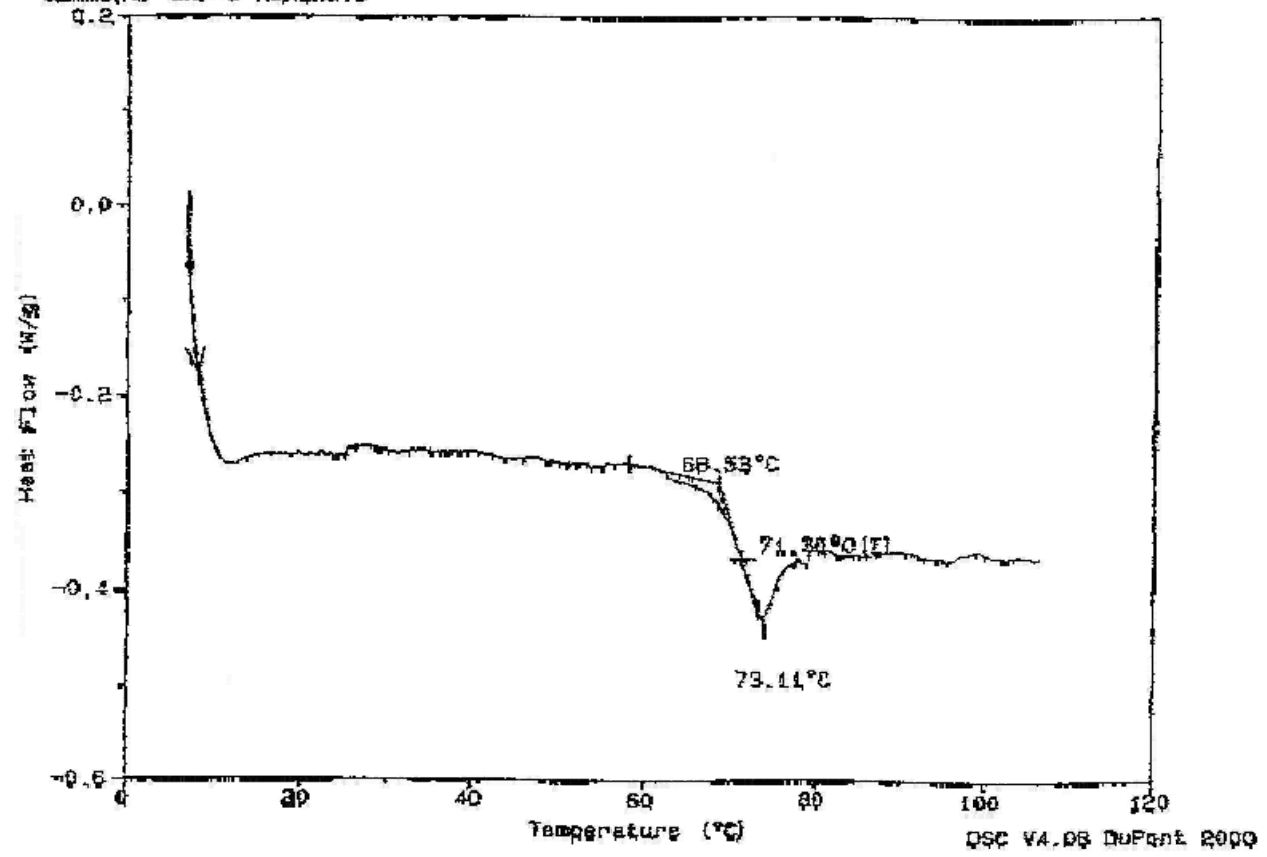


Fig. 4 Heat Seal Strength of Various Fibers

