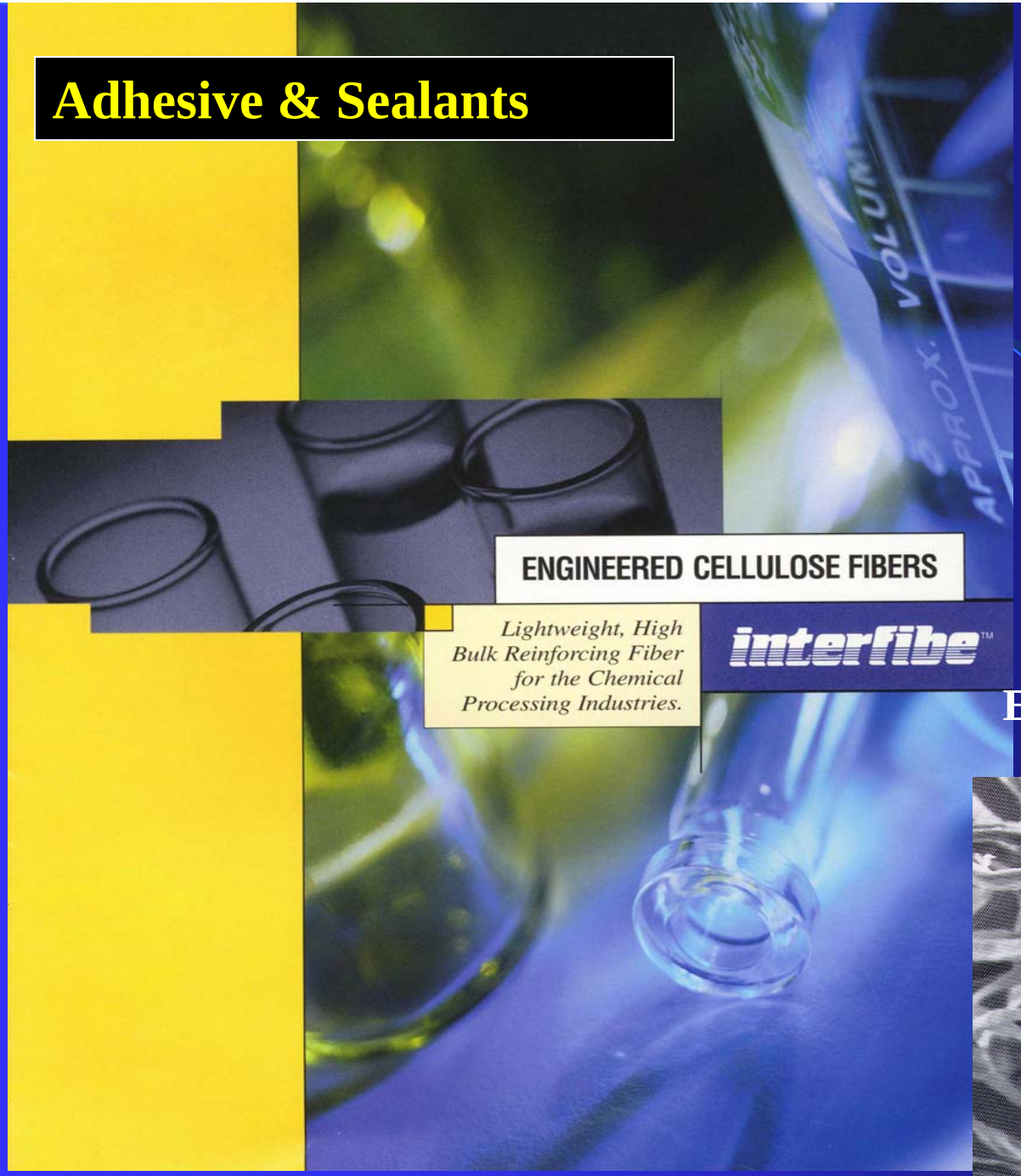
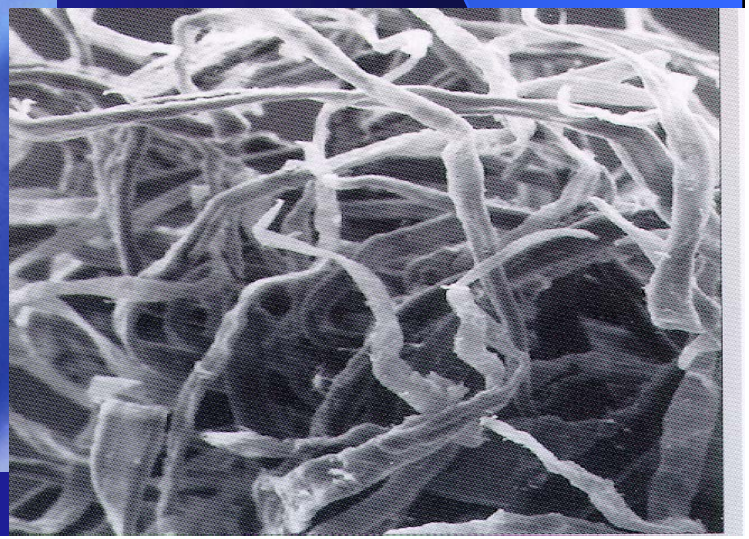
Adhesive & Sealants



Engineered Cellulose Fibers



interfibe™

Properly formulated Interfibe cellulose fibers are one of the most cost effective and unique fillers available to the Adhesive and Sealant industry

The Challenge

Typical Formulating PROBLEMS in the adhesive and sealant industry

- **High PVC**
- **Mud Cracking**
- **Oil Exudation/Plasticizer Retention**
- **High Weight per Gallon**
- **Profile and Sag Retention**
- **High Resin demand from Conventional Fillers**

The Solution

Engineered Cellulose Fibers

Testing

Interfibe Cellulose Fibers were Evaluated to provide these enhancements for a typical Sealant Formulation

Fiber Benefits

- **Lightweight**
- **Easy Dispersion**
- **Low Resin Demand**
- **Little Effect on Color**
- **Excellent Tensile Properties**
- **Anti Sag Properties**
- **Unique Products**

Testing

The following ASTM test were performed

- **ASTM D 2453**
  - **This test method describes a laboratory procedure for determining the shrinkage of oil- and resin-base caulking compounds, as well as the evaluation of the tenacity property of such compounds.**
- **ASTM D 2452**
  - **This test method describes the laboratory procedure for determining the rate of extrusion of oil- and resin-base caulking compounds.**
- **ASTM D 722**
  - **This test method describes the laboratory procedure for determining the rate of extrusion of oil- and resin-base caulking compounds.**
- **ASTM D 412**
  - **These test methods describe procedures used to evaluate the tensile (tension) properties of vulcanized rubbers and thermoplastic rubbers and thermoplastic elastomers.**

Sealants Tested

ADCO Sealant AD-33

ADCO Sealant AD-50

ADCO Sealant AD-60

These typical sealant formulations were tested at the following levels*:

100 % (Control)

99.5% Sealant + 0.5% Interfibe Gel Cel 10

99% Sealant + 1% Interfibe Gel Cel 10

98.5% Sealant + 1.5% Interfibe Gel Cel 10

***percent's by total weight**

Testing Results

Sealant AD-33 (Low Viscosity)	100	99.5	99	98.5
Gel Cel 10 Content, % by Wt	0.0	0.5	1.0	1.5
Press Flow Viscosity (ASTM D2524)	5.11	7.28	7.63	7.44
Tensil Strength (ASTM D412), psi	17.90	26.30	27.60	28.70
Elongation (ASTM D412), %	387.00	473.00	436.00	400.00
Color (Hunter), Dark/ Lighter vs. Control	Control	-13.05	-22.99	-31.76
Shrinkage (ASTM D2453), psi	65.10	39.60	47.70	42.60
Oil Migration (ASTM D722, 100 C)	1.40	2.41	1.53	0.00
Sealant AD-50 (Low Viscosity)	100	99.5	99	98.5
Gel Cel 10 Content, % by Wt	0.0	0.5	1.0	1.5
Press Flow Viscosity (ASTM D2524)	90.00	179.50	126.30	177.30
Tensil Strength (ASTM D412), psi	19.80	20.40	19.10	22.70
Elongation (ASTM D412), %	449.00	460.00	369.00	385.00
Color (Hunter), Dark/ Lighter vs. Control	Control	-22.82	-29.65	-33.75
Shrinkage (ASTM D2453), psi	65.10	39.60	47.70	42.60
Oil Migration (ASTM D722, 100 C)	2.20	2.41	1.53	0.00
Sealant AD-60 (Low Viscosity)	100	99.5	99	98.5
Gel Cel 10 Content, % by Wt	0.0	0.5	1.0	1.5
Press Flow Viscosity (ASTM D2524)	60.30	83.60	87.10	115.10
Tensil Strength (ASTM D412), psi	11.30	11.30	11.20	11.20
Elongation (ASTM D412), %	595.00	569.00	422.00	359.00
Color (Hunter), Dark/ Lighter vs. Control	Control	-16.54	-25.09	-30.99
Shrinkage (ASTM D2453), psi	20.80	15.80	10.90	13.80
Oil Migration (ASTM D722, 100 C)	2.60	2.84	0.00	0.00

Testing Conclusions

- **Oil Migration was the major improvement found during the test run**
- **Dramatic improvements were found with small additions of Gel-Cel 10 in ALL compounds**
- **Total reduction was realized in ALL compounds at a 1.5% loading level**

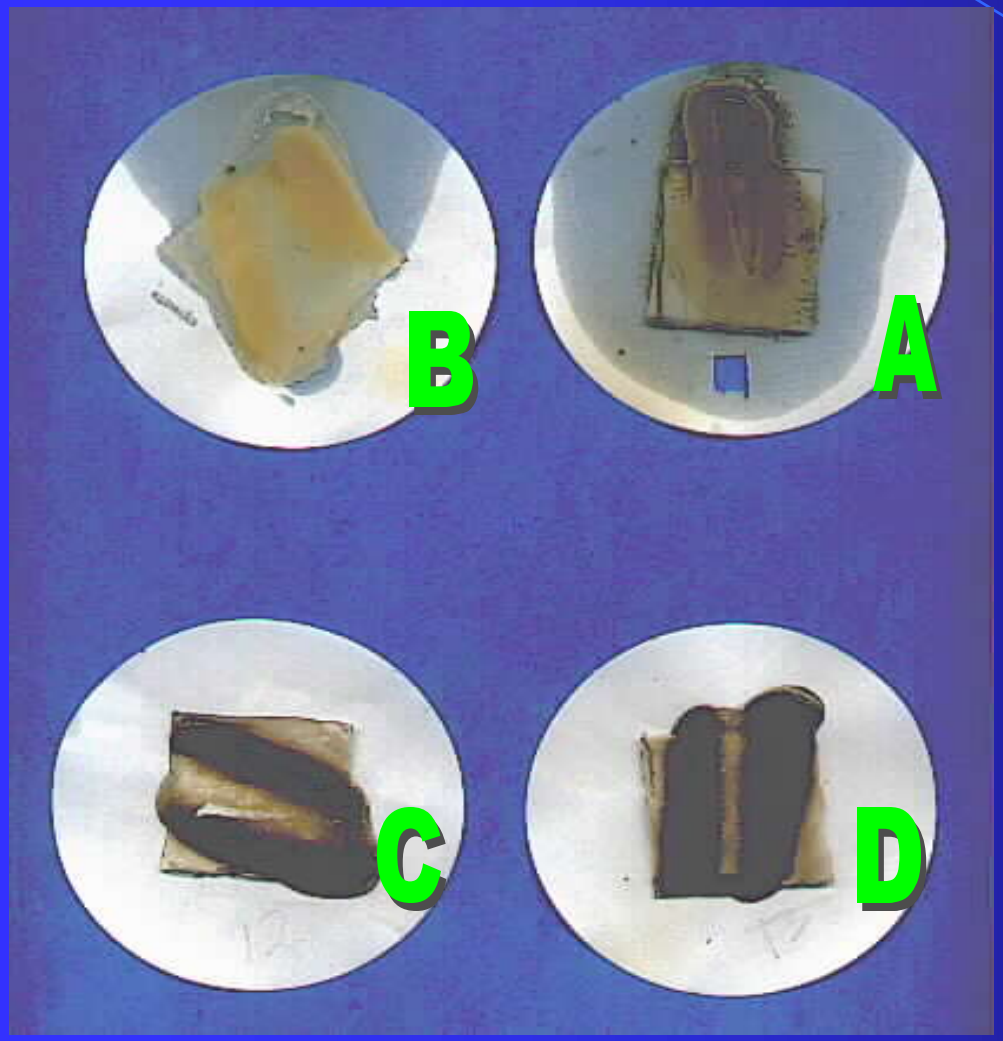
Testing Conclusions

- **Shrinkage was reduced dramatically**
- **The addition of cellulose fibers reduced the compound shrinkage at a much higher rate than the solids level increase**
- **This was the second most noticeable effect next to the reduction in exudation**

Testing Conclusions

- **Additions of low levels of cellulose fibers did not negatively affect the extrudability of the compounds**
- **Tensile strength and elongation of the cured compounds were not dramatically effected.**

Oil Bleed Test Result



Oil Bleed Tests

ASTM D-722 @ 100c

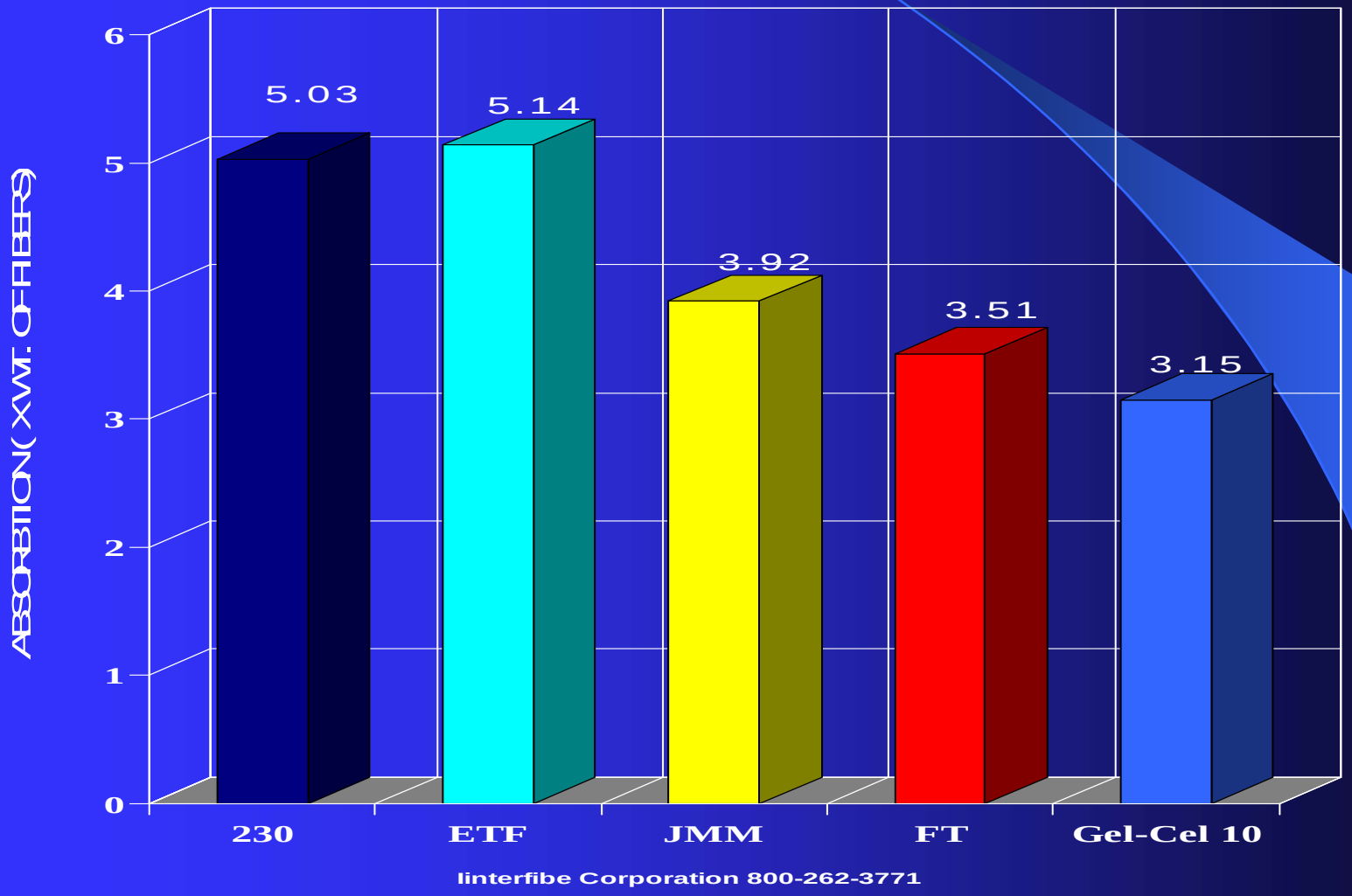
A. Control

B. 0.5% Cellulose

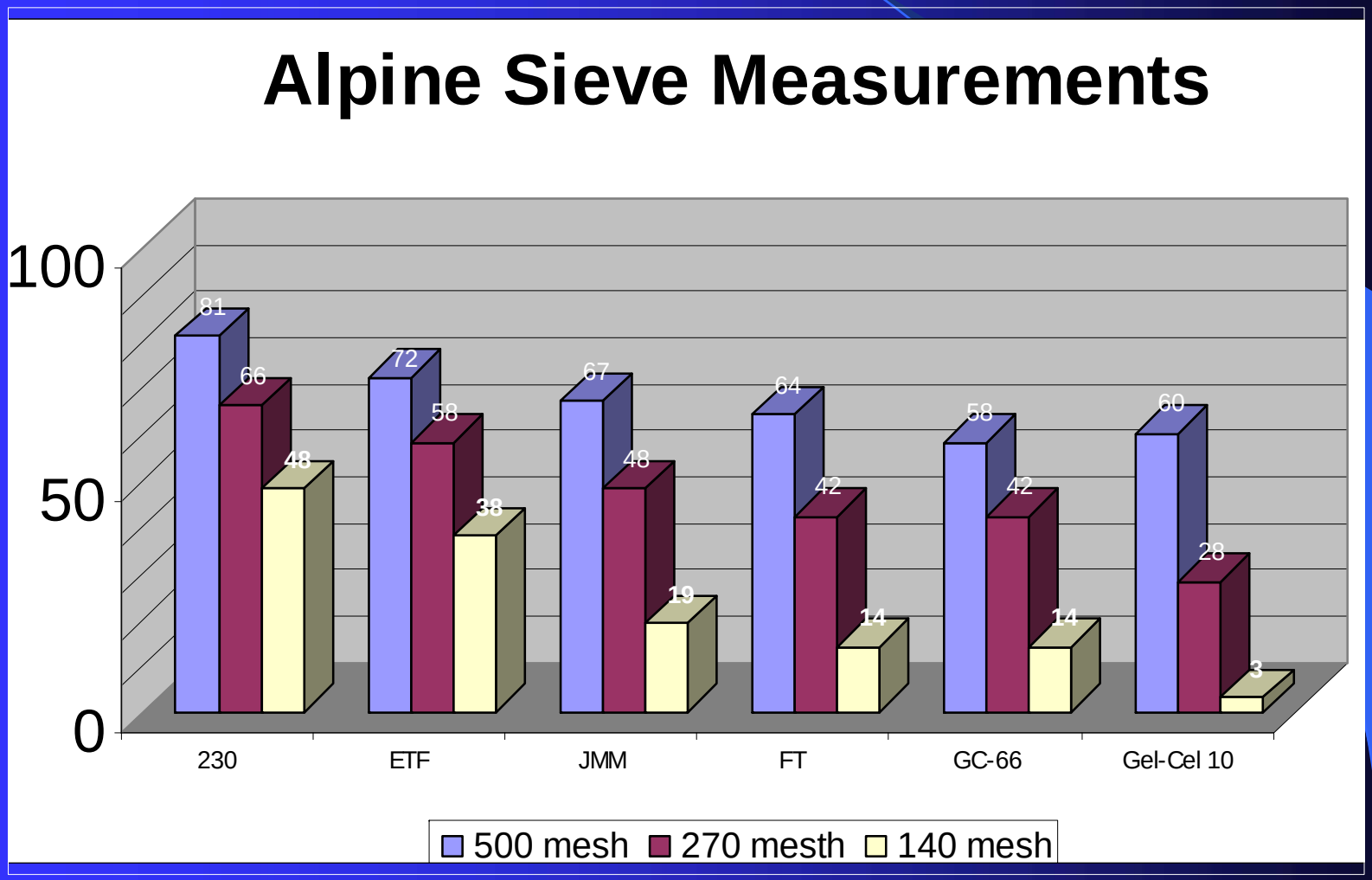
C. 1.0% Cellulose

D. 1.5% Cellulose

Oil Absorption by Grade



Fiber Lengths for Every Application



Fiber's for Sealants

- **With a LOW 3% average MOISTURE content, INTERFIBE can be used in most any Sealant or Adhesive formula**
- **INTERFIBE Cellulose Fibers are available in Grey or White**

Fiber's for Sealants

- **INTERFIBE needs no special equipment**
- **INTERFIBE requires no additional dispersant unless added directly into water**
- **When added directly into water or emulsions, and only low shear is available, INTERFIBE FTP is available with a surfactant treatment.**

Commitment to the Adhesive and Sealant Industry

- **Interfibe has been providing the Adhesive and Sealant industry with innovative products and technical support since 1987**
- **Interfibe is committed to providing the industry with products that conform to the highest quality standards**
- **Interfibe is committed to providing a stable source of cellulose fiber with 100% ON-TIME/ON-SPEC material**

Commitment to the Adhesive and Sealant Industry

- **Interfibe is approved for use in over 50 ASC member manufacturing plants worldwide**
- **Interfibe maintains relationships with independent formulators in the industry**
- **Interfibe has established relationships with independent testing facilities in the industry**
- **Interfibe provides formulations and testing services for customers**

Commitment to Quality

- **Interfibe Corp manufactures the highest quality post-consumer cellulose available anywhere in the world.**
- **Our proprietary *JET PROCESS* technology allows us to provide you with a tightly controlled material, with consistent fiber length, moisture level, and process properties.**

Commitment to Quality

INTERFIBE Corp. **is a self-certified vendor with many of our QS-9000 customers, providing material that is**

100% ON-TIME / ON-SPEC.

Interfibe Corp.

For more information call

Toll Free: 1-800-262-3771

PH: 1-440-248-2266

or visit us at

WWW.INTERFIBE.COM