PLAINTIFF'S EXHIBIT
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CALIDRIA ASBESTOS R-G244 AS A THIXOTROPE FOR POLYESTER RESINS

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I. Basic Product Information and Comparative Performance

The literature in this section provides the basic physical properties and typical performance characteristics of Calidria R-G244 Asbestos in polyester resins. A comparison with pyrogenic silica in a variety of resins is also shown.

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III. Filtration

Calidria R-G244 is a fibrous material with a nominal diameter of about 0.025μ and a length of about 5μ. In spite of this small size, experience has shown that it will almost without exception plug a 100-mesh (~150 micron) screen very rapidly. On the other hand, screens of about 30 mesh have been used with no problems reported. Recently, a successful test was made with a standard Cuno cartridge filter with a nominal average opening of 350μ. This falls about midway between 40 and 50 mesh.

Filter performance will depend on the amount of R-G244 present, the viscosity of the thickened system, and the flow rate of the resin through the openings in the filter. High local flow velocities will tend to align the fibers in the direction of flow and reduce viscosity. Both of these effects will contribute to making filtration easier.

As an added point of information, we have been told by the spray gun manufacturers that the 100-mesh filter frequently used in polyester spray-up equipment is a holdover from the times when this type of gun was used to spray aqueous systems. Due to the tendency of such systems to flocculate, a "rule-of-thumb" of a factor of at least three between the filter and the hole in the gun came into use. Polyesters are basically non-flocculating systems and a 20-30 mesh screen is adequate to protect most guns.

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V. Gel Time Stability

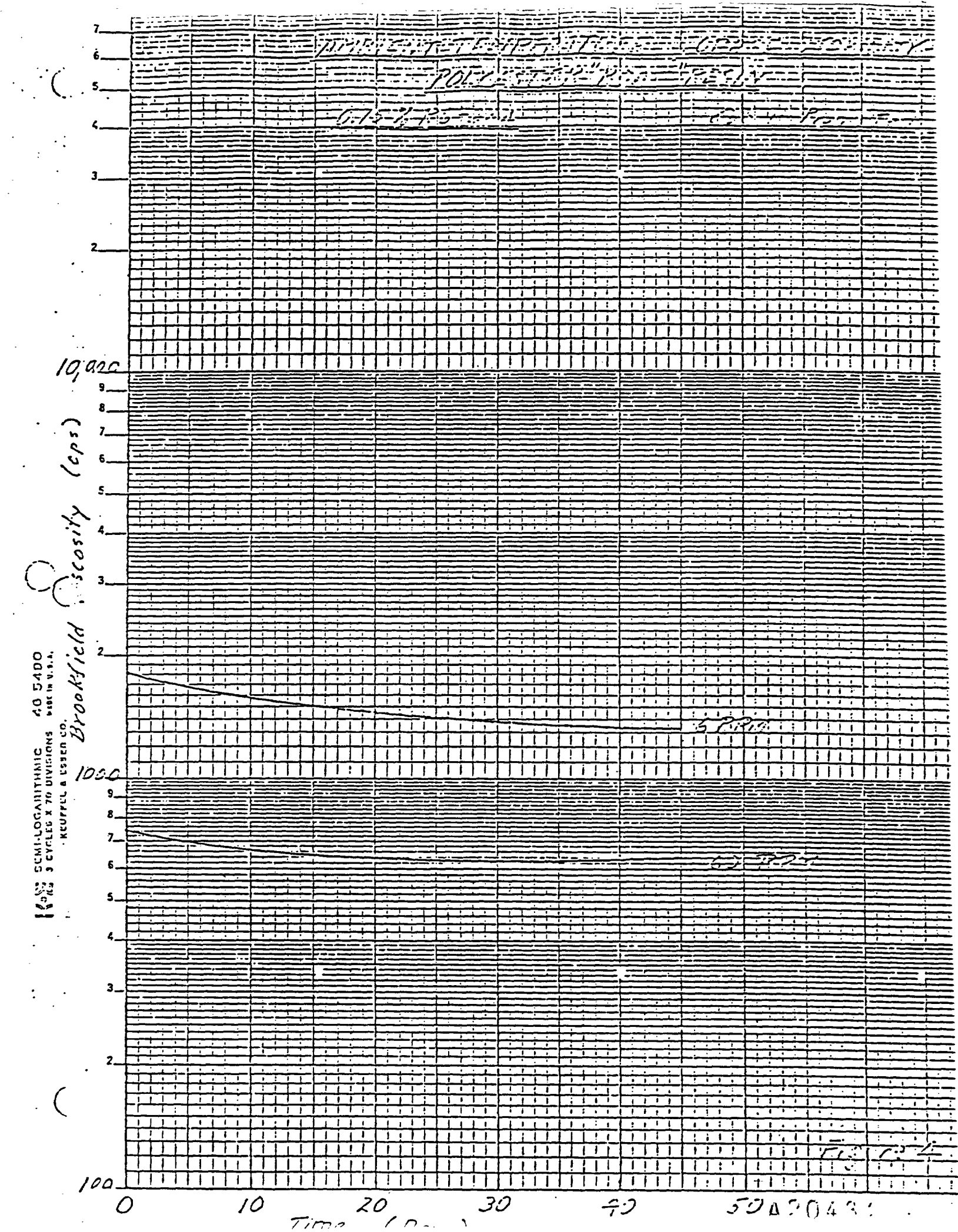
The change in gel time as a function of the age of the resin was measured for a typical promoted polyester "boat" resin and for an amine-modified boat resin. Both resins were initially diluted to 60% solids by the addition of styrene. 0.3% by weight of 6% cobalt naphthenate was then added, followed by the thixotrope and each complete mix was blended for about 15 minutes with a Cowles dissolver. Finally each mix was partioned into small sample jars and stored in a constant temperature room at 70 ± 5°F.

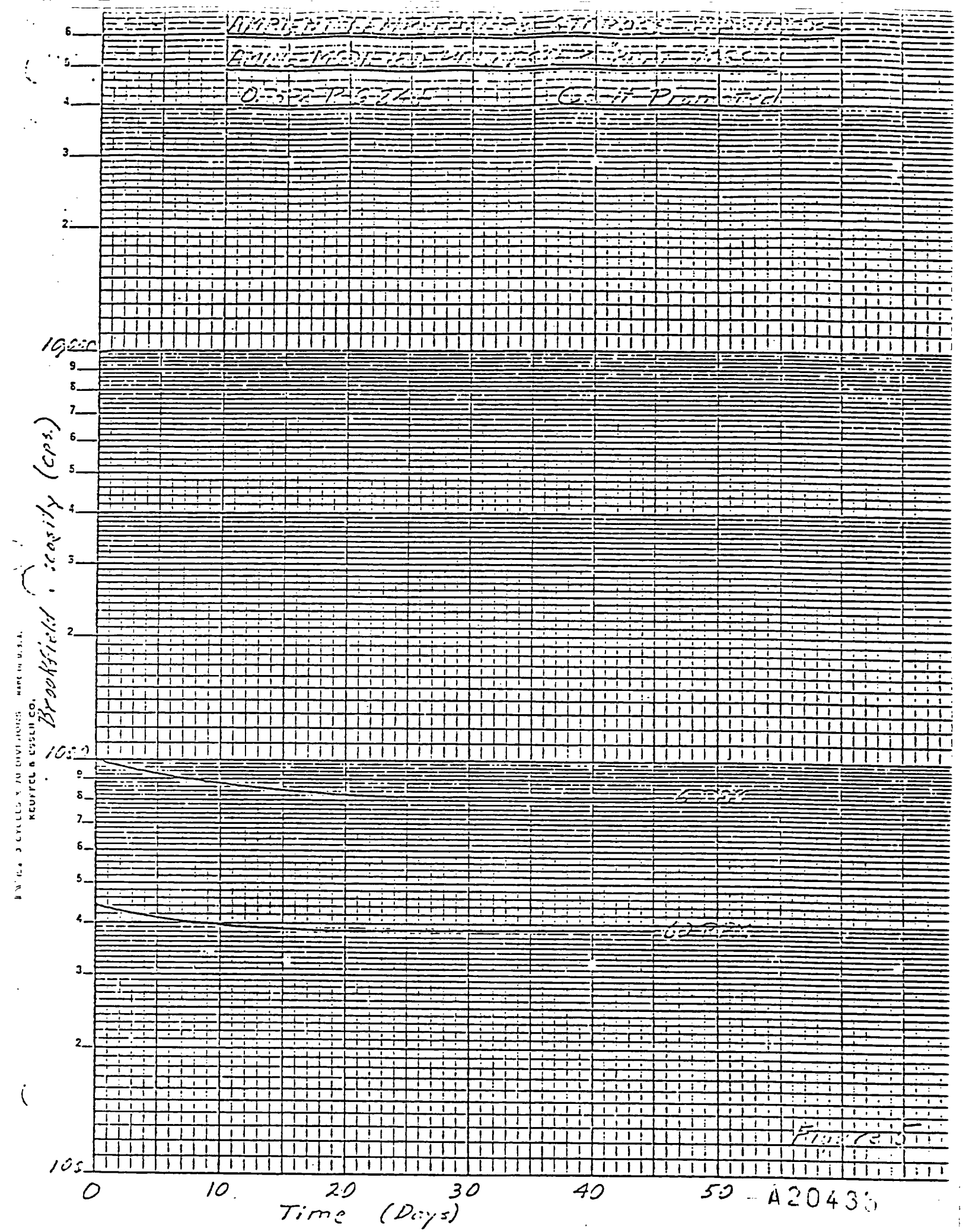
Gel time was determined at periodic intervals with a Randolph gel timer. Lupersol DDM was used as the catalyst. An initial dosage of catalyst was selected for each system to give a gel time of about twenty minutes and this dosage was then kept the same throughout the study.

The results of this study are shown in Figures 2 and 3. Although there is considerable "cobalt drift" there does not appear to be any significant difference between either of the thixotropes and the base resin.

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Brookfield Viscosity (cps)
10,000
1000
100
0
10
20
30
40
50
Time
SEMI-LOGARITHMIC
3 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO.



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VII. Use in Gel Coats

Polyester resins thickened with R-G244 will generally have a Hegman rating of 4-4.5. This reading is quite reasonable for a material having some particles in the 325 mesh size range. Contrary to what might be expected from such a low Hegman rating, R-G244 has been found to yield smooth gel coats with no protrusion of fiber ends. Sag resistance is excellent.

Also, as mentioned previously in the section on Settling, the refractive index of the R-G244 is close to that of polyester so an essentially clear gel coat results. This is in contrast to the "creamy" appearance typical of pyrogenic silica. The clarity is a significant advantage in applications where a pattern or decoration must show through the gel coat.

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