THE DISCOVERY COMPANY

PERFORMANCE DATA

Calidria ASBESTOS

PLAINTIFF'S EXHIBIT

UC-3954

CALIDRIA ASBESTOS T-135 FOR VISCOSITY CONTROL AND PIGMENTATION

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F-42699

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UCC 014800

CALIDRIA ASBESTOS T-135 FOR VISCOSITY CONTROL AND PIGMENTATION

CALIDRIA Asbestos T-135 is a specialty asbestos product consisting of UNION CARBIDE's high purity asbestos co-flocculated with anatase TiO_2. The titanium dioxide particles are uniformly dispersed along the asbestos fibers, and are firmly fixed to the fiber surface by electrostatic attraction.



Figure 1 – Electron photomicrograph (5,600 X) of CALIDRIA Asbestos T-135 showing uniform distribution of TiO_2 on asbestos fiber.

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TYPICAL PHYSICAL PROPERTIES OF T-135

Specific Gravity	2.45
Moisture Content, % by wt.	2
Brightness, G. E. Photovolt, %	86
Magnetite Content, %	0.4
pH (5% aqueous slurry)	9.0
Bulking Value, lb./100 gallons	4.8
Water Demand, %	400, approx.
Surface Area, sq. meters per gram	60, approx.

YOU PROFIT BY USING *CALIDRIA* ASBESTOS T-135

- Substantial cost savings are realized by replacing TiO_2 on a pound-for-pound basis.
- Improved hide, superior bridging and viscosity control, and better handling and workability characteristics in the finished product are obtained.
- Because of the effective thickening ability of CALIDRIA T-135, partial or complete removal of other asbestos and/or thickening additives is achieved.

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CALIDRIA ASBESTOS T-135 FOR VISCOSITY CONTROL AND PIGMENTATION

VISCOSITY CONTROL

CALIDRIA Asbestos T-135 provides superior viscosity control without the use of an additional thickener. Figures 2 through 7 present viscosity data illustrating this characteristic. This is particularly true in ester or polyester media. In epoxy and water systems, at least partial replacement of the thickener is possible.

Data on the viscosity effects of CALIDRIA T-135 in amine-type epoxy hardeners (Figures 6 and 7) indicate its usefulness in pigmented epoxy systems. Results are similar to those reported for the bisphenol-type epoxy resin that allows the preparation of a two-component, equal viscosity system of exceptional whiteness with thixotropic indexes from 3 to 6.

Figure 2 compares the relative viscosities of CALIDRIA Asbestos T-135 and CALIDRIA Asbestos R-G 144 in water. Figures 3, 4, and 5 compare relative viscosities of CALIDRIA T-135, CALIDRIA R-G 144, and pyrogenic silica in FLEXOL Plasticizer DOP, in a general purpose polyester ("Paraplex" P-43), and in a liquid epoxy resin (BAKELITE ERL-2774).

Figures 6 and 7 give a comparison of the relative viscosities of CALIDRIA T-135 in two amine-type epoxy hardeners (BAKELITE ZZL-0814 and ZZL-0822).

FIGURE 2
CALIDRIA® ASBESTOS T-135 IN WATER

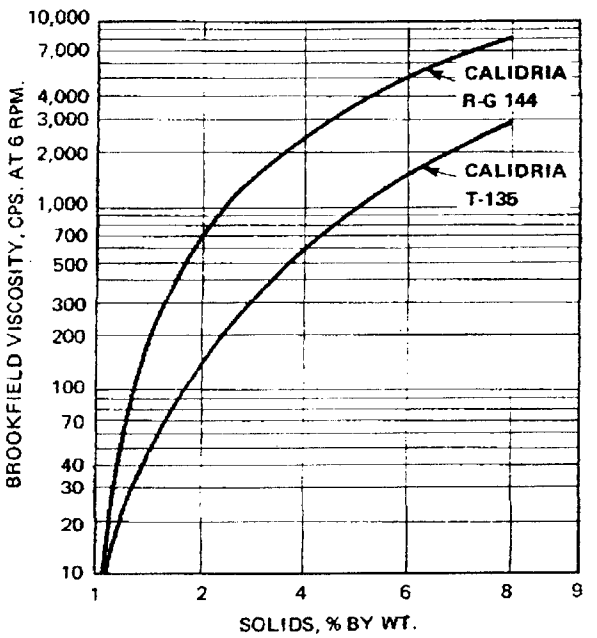
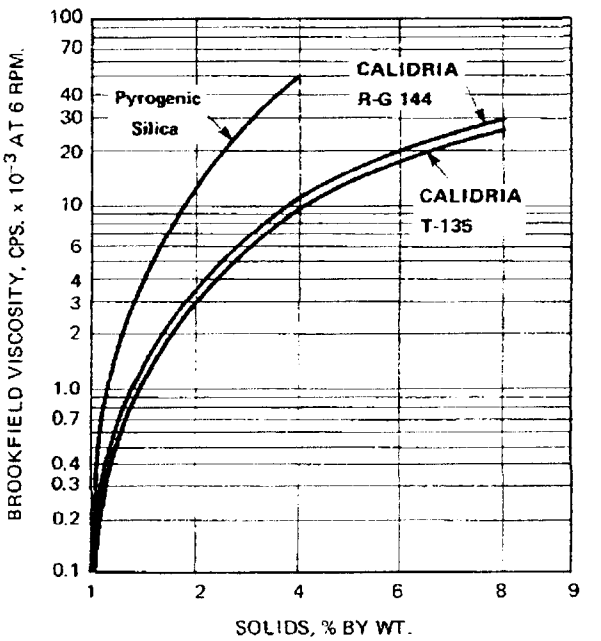


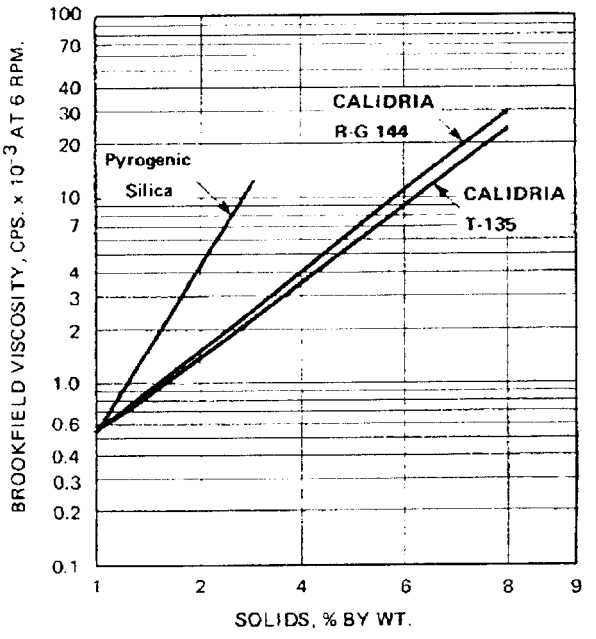
FIGURE 3
CALIDRIA® ASBESTOS T-135 IN FLEXOL® DOP PLASTICIZER



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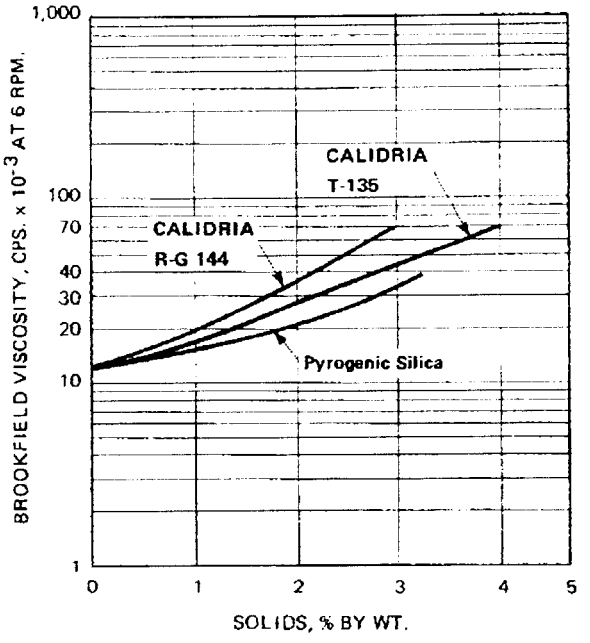
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FIGURE 4
CALIDRIA® ASBESTOS T-135
IN POLYESTER RESIN(1)



(1) Rohm and Haas "Paraplex" P-43

FIGURE 5
CALIDRIA® ASBESTOS T-135
IN EPOXY RESIN(2)



(2) Union Carbide BAKELITE ERL-2774

NOTES:

In the polyester and plasticizer, viscosities are obtained that are higher than anticipated on the basis of the asbestos content of CALIDRIA Asbestos T-135. In the epoxy resin, the viscosities are about 65 per cent of those for CALIDRIA Asbestos R-G 144, as expected, while in water, viscosities are about 50 per cent of the R-G 144 values.

Viscosity Test Method Used in Determining Data for Figures 2 through 5

CALIDRIA Asbestos T-135 was incorporated into each of the liquid vehicles by hand stirring followed by mechanical mixing. Water samples were mixed for 10 minutes on a "Lightnin' " Mixer with a 3-blade propeller at 1,750 rpm. The FLEXOL Plasticizer DOP mixtures were prepared on a "Cowles" Dissolver with a 3-inch impeller for 15 minutes at 3,000 rpm. A laboratory Eberbach "Homo-Mixer" was used for the polyester and epoxy samples. It utilizes a 2-inch enclosed impeller at 5,000 rpm. In each case, the degree of shear was selected to approximate that encountered in the particular applications area.

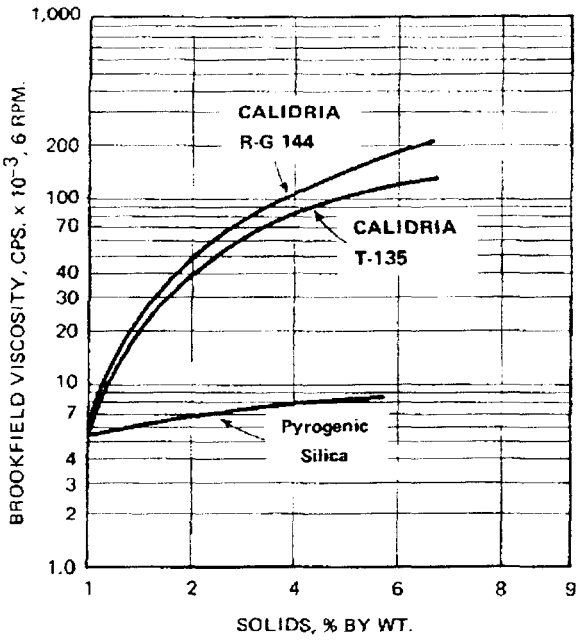
After mixing, the samples were cooled to room temperature, 25°C., and their viscosities measured on a Brookfield Viscometer. During mixing, temperature rises of from 10 to 15°C. were noted. Viscometer spindles were selected to obtain mid-scale readings.

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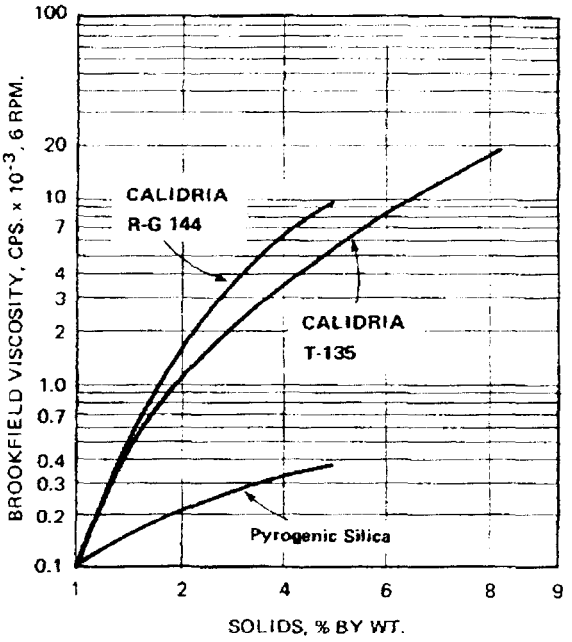
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FIGURE 6
CALIDRIA® ASBESTOS T-135
IN EPOXY HARDENER[1]



[1] Union Carbide BAKELITE ZZL-0814

FIGURE 7
CALIDRIA® ASBESTOS T-135
IN EPOXY HARDENER[2]



[2] Union Carbide BAKELITE ZZL-0822

NOTE:

Viscosity Test Method Used in Determining Data for Figures 6 and 7

CALIDRIA Asbestos T-135 was incorporated into the liquid vehicles by hand stirring, followed by mechanical mixing. A laboratory Eberbach "Homo-Mixer" was used for the samples. It utilizes a 2-inch enclosed impeller at 5,000 rpm. After mixing, the samples were cooled to room temperature, 25°C., and their viscosities measured on a Brookfield Viscometer. Viscometer spindles were selected to obtain mid-scale readings.

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CALIDRIA ASBESTOS AS AN OPACIFYING PIGMENT

As an opacifying pigment, CALIDRIA Asbestos T-135 replaces TiO_2, in most cases, on a pound-for-pound basis. This is made possible by the efficient distribution of the TiO_2 along the asbestos fibers which prevents particle agglomeration, thus permitting a more optimum utilization of the TiO_2 light scattering properties. (See Figure 1).

CALIDRIA Asbestos T-135 has been used by the paper industry for several years as an opacifying agent in cellulosic paper. Recently, however, CALIDRIA T-135 has found acceptance as a pigment extender in ~

- spray-on acoustical ceiling compounds
- latex coatings
- epoxy resins and hardeners
- polyesters
- rubber products
- plastisols

Recent joint development work with major tape joint compounders has resulted in the use of CALIDRIA Asbestos T-135 as a replacement for TiO_2 in several lines of spray-on acoustic and textured ceiling and wall finishes. Formulations for these compounds vary widely, but usually contain all or part of the raw materials given below.

RAW MATERIALS FOR SPRAY-ON ACOUSTIC AND TEXTURE COMPOUNDS

- Binder: casein, latex, vinyl
- TiO_2: rutile, anatase
- Perlite
- Polystyrene
- Vermiculite
- Cellulosic Thickener
- Asbestos

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For complete information on properties, applications and prices, or technical assistance in utilizing

Calidria ASBESTOS

contact the nearest UNION CARBIDE Sales Office or CALIDRIA Asbestos Representatives:

270 Park Avenue • New York, N.Y. 10017
P.O. Box K • King City, Ca. 93930; (408) 385-5961

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