PLAINTIFF'S EXHIBIT
UC-942

Dr. A. E. Pufahl
Union Carbide Nuclear Company
Building

June 15, 1959 (Dictated 6/12/59)

Sales Development

Mr. R. M. Austin
Mr. H. F. Reichard
Mr. L. P. Twitchell
Mr. T. S. Ary - Mr. W. H. Kohler

ASBESTOS MARKETS

From June 1 to June 9, calls were made on West Coast asbestos consumers to determine the size of the markets and the types of asbestos used in that area. These calls indicate the large potential asbestos markets available on the West Coast to a local producer of suitable quality asbestos. A summary of the customers and their respective required volumes follows:

COMPANY	TYPE	TONS/YEAR
Armstrong Cork Company	7R	2,000
Celotex	7D	30
Certain-Teed	7M & 7D	40
Fibreboard Paper Products Corp.	5K	800
	6D	300
	7K	50
	4K	25
	7M	400
	Shorter than 7 - Arizona material	500-1000
The Flintkote Company	7R	4,400
	7M for tiles	1,000
	5K	240
	7D	120
	7M for roofing	2,900
The W. W. Henry Company	7M	500
Lasko Brake Products Corporation	7K & 7D	480
	5K	200
Mastic Tile Corp. of America	7R06	1,440
Standard Oil of California	7R05	120
U. S. Gypsum Company	7RF-1	400

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The total estimated uses by these customers by grade are:

No. 4	Approximately 100 tons
No. 5	Approximately 1,200 tons
No. 6	300 tons
No. 7	Over 14,000 tons

Not included in these overall totals are uses of 500 to 1,000 tons of smaller than No. 7 Grade derived from Arizona asbestos and the Japanese uses of 40-50,000 tons of No. 5 and No. 6 Grades.

Individual comments on each customer follow:

ARMSTRONG CORK COMPANY
5037 Patata Street
South Gate, California

Interviewed: Mr. William Lowe, Purchasing Agent

Armstrong uses several carloads per week of Grade 7R asbestos. It is purchased mainly from one supplier. Their requirements are up about 25% over 1958, which was not a depression year in their business. They would be glad to purchase at least part of their requirements from us if our quality were equal and if some price advantage could be shown on a delivered basis.

Mr. Lowe will not give us purchase specifications and methods until we have material for them to look at. They would need about 5 lbs. for initial testing and would test any material we submit as long as we told them it was representative of commercial production. The testing would be done at their South Gate plant.

Mr. Lowe felt that the Canadian Government exercised considerable control over the asbestos price and probably would not allow the Canadian asbestos producers to freight equalize with a West Coast asbestos producer - at least on the lower priced items. Such freight equalization would bring the selling price down so low that the Canadian producers would be only exchanging dollars.

If Mr. Lowe's feelings are substantiated, we could probably obtain essentially all of the West Coast asbestos business for at least the cheaper grades. We will further explore the Canadian Government control over asbestos pricing.

6/15/59: Today, I asked Mr. H. J. Scarth, Manager of Purchases, Union Carbide Limited in Toronto, to determine whether the Canadian Government exercises any control over the sales prices on Quebec asbestos. Mr. Scarth checked a source in the Canadian Govern-

ment and finds that there is no Government control.
(R. M. Austin)

FIBREBOARD PAPER PRODUCTS CORPORATION
475 Brannan Street
San Francisco 19, California

Interviewed: Mr. B. A. Wilson, Director of Purchasing
Mr. J. G. Genet, Purchasing Agent, Raw Materials
Mr. Harry Hoopes, Sales Manager, Insulation Division

Fibreboard uses asbestos in insulation and in vinyl asbestos floor covering (not tile at this time). They are now using 800 tons per year of 5K and 300 tons per year of 6D in asbestos siding; this phase of their business is greatly depressed because of competitive factors but should grow in the near future. They use 50 to 60 tons per year of 7K in asbestos paint. They use 25 tons per year of 4K in insulation and also 4T in magnesium oxide insulation. 400 tons per year of 7M are used in asbestos cement insulation. If a cheaper source were available, they could use an additional carload per month in this field. Long-fiber, South African (Amosite) is used in blocks and pipe covering.

500 to 1,000 tons per year of very short fiber is used in floor covering. This material is shorter fiber than any of the 7 grades and is priced under the 7 grades (under $40). It comes from the Arizona mines, probably via Western Chemical Company in Los Angeles, on a special freight rate.

Fibreboard would be very interested in buying asbestos from a Western source, even if we would "split" the freight savings with them. They gave us their test methods and specifications for all of their requirements. They now buy in pressure-packed, 100 lbs. bags and feel that the Asbestos Corporation has the best packaging system. They would start their testing with 5 lbs. quantities. If satisfactory, they would then go to about 10 tons for a plant run. Mr. Hoopes feels that the total market for short-fiber asbestos on the West Coast is about 50,000 tons per year. This number was confirmed by the California Bureau of Mines.

THE FLINTKOTE COMPANY
Pioneer Division
5500 South Alameda Street
Los Angeles, California

Interviewed: Mr. Arthur R. Hooker, Jr., Director of Purchases

Flintkote uses asbestos primarily for floor tile but it is also used in asbestos shingles and cementing. In 1958, they used 4,400 tons of 7R Grade and 1,000 tons of 7M Grade for tiles. In addition, they used 6 cars per month of 7M and 2 to 3 cars per year of 7D in liquid asphalt and 1 car every 1 to 2 months of 5K.

Flintkote would be interested in a West Coast producer of asbestos even though the problem of buying asbestos from us instead of using their own material would be a top-level decision. Mr. Hooker gave us copies of their specifications and their grading methods. He examined our material and felt that it was a very high-quality with no apparent "tale" or "grit." Uniformity of color is very important for their uses.

They would be glad to test our material when representative product is available. Would want 5 lbs. initially and the next step would be a plant run using about 1,000 lbs. Mr. Hooker felt that a profitable operation of an asbestos mill would require processing at least 1,000 tons of ore per day with yield of 12-15% fiber from the ore. He said that the large producers have done away with the manufacturer's discount. Within the last year, at least two ocean shipments of asbestos have been made to the West Coast. This competition has brought about a reduction in rail freight rates for asbestos.

THE W. W. HENRY COMPANY
5731 Bickett Street
Huntington Park, California

Interviewed: Mr. Dale Stutzman, Technical Director

The W. W. Henry Company uses asbestos in adhesives for all building trades, coatings for roof applications, and sealers of the caulking type. The asbestos is used primarily as a filler for viscosity control. This company uses about 500 tons per year of No. 7M Grade. In addition to the Canadian grade specification, they have their own screening test used for each batch of material. We have a copy of their method. They cannot use fiber longer than 7D because of need to separate and brush their end products. Asbestos is purchased in carload quantities in 100 lbs. pressure-packed bags. Henry, like all of the users, buys asbestos on a "spot" basis and does not contract for it. This company would welcome our entry into the market and would be glad to test our material when representative quality is available. Would want a few pounds for initial testing and then go to a full batch requirement of 1/2 to 1 ton. Mr. Stutzman remarked that our material appeared to be very pure asbestos but that it was not well fiberized.

JAPANESE ASBESTOS USES

Interviewed: Consul Nishi Waki - Japanese Consulate

Mr. R. H. Tibbits and
Mr. Takeshi Moricka of Mitsubishi International Corporation, San Francisco Branch
206 Sansome Street
San Francisco 4, California

Consul Nishi Waki indicated that about 40-50,000 tons per year of asbestos were imported into Japan from Canada but he was unaware of the exact amount and the grades used. He said that, because of several small mines in Japan, imports were limited by quota restrictions.

We were referred to the Mitsubishi International Corporation for further information. Mr. Tibbits was not sure of the Japanese use pattern but wrote to Japan that day requesting full information on size of requirements and the grades required, as well as asking for an indication of the Japanese interest in purchasing asbestos from us. Mr. Tibbits indicated that they would have a strong interest in buying from Union Carbide Nuclear Company because of our stability and proven ability to supply quality products. He indicated that they might be interested in a long-range contract. If so, they would undoubtedly want to examine the extent of our property. Subsequently, we received a letter from Mr. Tibbits indicating that he has asked Japan for the full story on requirements for asbestos and that we should hear from them by the end of June.

LASKO BRAKE PRODUCTS CORPORATION
26th and Magnolia Streets
Oakland, California

Interviewed: Mr. Harry Hunt, Purchasing Agent, and
Mr. Maurice Ridker, Director of Research & Production

Asbestos is used in brake lining and is most important part of their operation. They use about a carload per month of 7KO5 and 7D24 Grades and a carload every 2 to 3 months of 5K Grade. They buy from both Johns-Manville and Asbestos Corporation.

Mr. Ridker has had previous troubles with Arizona asbestos and is very hesitant to change to some unknown quality. However, he would be glad to test our material when good quality is available and, after full evaluation, would probably permit us to share in their business.

MASTIC TILE CORPORATION OF AMERICA
2340 East Artesia Street
Long Beach, California

Interviewed: Mr. Walter Boyd, Plant Manager

Mastic uses asbestos for floor tiling. They buy several carloads (40 tons per carload) per months of Johns-Manville 7RO6. This use is expanding. They would welcome our entry into the field and would be willing to give us an order for a carload immediately. If we enter the market, we can obtain a large share of their business because of our "reputation" and because of our initiation of a price drop. We could never obtain all of their business because of their need for a second source. They have no other buying specification for material.

When we have representative material, they will be glad to look at a 5 lb. quantity and then go to a ton and then carloads. They would welcome a West Coast asbestos producer. Within the last two months, three groups - including Jefferson Lake Sulfur Company - have approached Mastic concerning their interest in West Coast asbestos.

STANDARD OIL OF CALIFORNIA
Western Operations, Inc.
San Francisco, California

Interviewed: Mr. P. J. Byrne, Buyer, Central Division
Purchase & Stores Department

Standard Oil, as well as many other petroleum producers, purchases asbestos for incorporation into asphalt roofing. They buy 2 to 3 carloads per year of Johns-Manville 7RO5. Their standard purchasing requirements were obtained along with specifications. They would be glad to look at our material when available and would be most interested in our supplying them from the West Coast.

U. S. GYPSUM COMPANY
4500 Ardine Street
South Gate, California

Interviewed: Mr. C. V. Shoek, Purchasing Agent

Asbestos is used by U. S. Gypsum Company as a filler for other products but is not used in roofing material. They use 6-10 carloads per year of 7RF-1 Grade from Johns-Manville. Small quantities of 7K and 7E are used. All purchasing and evaluation would be done in Chicago after initial examination in Los Angeles. With the apparent freight saving, they would be very interested in our supplying asbestos and feel that we could get a large share of the business. They will send us their specifications and test methods.

T. J. Hall/dk

PLAINTIFF'S EXHIBIT
UC-933

REPORT OF CALL

Calidria asbestos

Save

RECEIVED
MAY 2 1975
UCC-CALIDRIA
NIAGARA FALLS, N.Y.

cc for: R. E. Byrne - Niagara Falls
T. P. Norris - Chicago
W. C. Thurber - NY 38
KC Files
NF Files ✓

UNION CARBIDE CORPORATION
P.O. Box 579 Niagara Falls, N.Y. 14302

By J. E. Walsh

Date 4-21-75

Full Name	Reichold Chemicals	Interviewed	
Address	Jacksonville, Florida	Homer Dunnmon, Plant Manager	
Mfrs. of	Polyester Resins	Gene Ramsey, Production	

Call made on large potential RG-244 account.

Homer asked Ramsey to join us, being as it has been awhile since he has gotten the scoop on what is going on with 244. Homer was out on my swing through Florida two cycles ago, and stood Bob Byrne and I up on my last swing back in February, thereby creating the unique travel route of flying from Atlanta to Jacksonville so that we could be chauffeur driven by our technology department to Orlando. Added a little polish to the continuing success story, our growing penetration of both polyester and the coatings market, the SPI suite in Washington, and my management's continued befuddlement on why I can't sell Reichold any 244. The product is not a problem, as both Homer and Gene know they can use it, and claim they would like to. Worked on the price angle and the dollars they could save, but was shot down quite a bit when Homer pulled out and showed me an invoice from Cabot on a carload they received last month. The price was 80¢/lb F. O. B. Tuscola. According to Homer the Brand X people were choking on PTG2 at both their plant and warehouses, and resorted to price to move it. Based on my conversations with the other polyester producers in the South, I think Reichold is the only one who got the concession, and it may be of a temporary nature. Homer did say he could order another carload today at that price, but unfortunately, he also was filled up. Asked about DeGussa and their Alabama plant, and Homer advised that the last contact he had with them, they said they were at least a year away from making any Aerosil at the new location. They are still pouring concrete with nothing vertical. Also the Aerosil unit is the last of the three units going in with the chicken feed operation first, amines second, and Brand Y last. Went over point by point with Homer the OSHA regs, Reichold regs, and HBR's suggestions on how to work with each of them. Homer commented that they were well laid out, especially the comments, as he had never seen them in this form, and suggested we ought to send a copy to Morrow and Madden to see if we could get any response. With nothing to lose, not even a negative answer, I asked Homer straight out if I was ever going to sell him 244 and was surprised by the "yes" answer, qualified by

the "it will probably be awhile though." The new approach tried here for the first time was not the cost or product advantages of 244, or the chance to be the first one to use it, but the opportunity for Homer as a responsible manager to take the initiative and provide medical exams and protective clothing to his employees prior to OSHA or his own management requiring it shortly down the road on another raw material they use. It must have hit some kind of spot as I left Homer mulling over the pros and cons of what it could do for him as manager of the Jacksonville plant.

JEW Continue to call on each Florida trip.

REPORT OF CALL

Save

CC for
R. E. Byrne
B. L. Ingalls
J. E. Klein - Atlanta
J. F. Luther
J. L. Myers
J. A. Riddle
F. J. Shortsleeve
J. R. Stickney
Niagara Falls - File ✓

Calidria

UNION CARBIDE CORPORATION

P.O. Box 579 Niagara Falls, N.Y. 14302

By J. E. Klein and H. B. Rhodes

BUSINESS CONFIDENTIAL

Date 9/18/70

Full Name Reichhold Chemical West Beaver St. Address Jacksonville, Fla. Mfrs. of Polyester Resin	Interviewed Homer Dunman - Gen. Mgr. Russ Newell - Tech. Service Bill Edwards - Tech. Service Gene Ramsey - Prod. Mgr.

OBJECTIVE

Provide technical assistance to Reichhold (at their request) while they mixed the RG-244 into a second 10,000 batch of resin.

OBSERVATIONS

The customer for the last batch (Atlanta Boat) reported quite favorably on the 20 drums and ordered 20 more. The only objection was the resin was dark which made it hard to see the bubbles. This run had the dual purpose of providing the material to fill the order and to determine proper mixing conditions in their Vortex mixer to avoid over-shearing.

An incremental mixing and thix agent addition procedure was used to produce a successful batch but made it difficult to draw firm conclusions on the optimum mix time. Apparently 1 to 1-1/2 hours with the Vortex mixer is adequate for RG-244 vs. 1-1/2-2-1/2 hours for Cab-O-Sil. This lot required 0.9% RG-244 vs. 1.1-1.2% for comparable performance using Cab-O-Sil. The problems with the previous batch appear to be due to overshearing.

This batch has been shipped to the same customer. If the response continues to be favorable, he will order a tank truck lot (40,000 lb.).

ACTION

JEK/HBR - Continue close coverage

Typed 9/25/70
bsn

R. E. Byrne
B. L. Ingalls
File

CONFIDENTIAL

MIXING TESTS AT REICHHOLD, JACKSONVILLE, FLA. 9/16/70

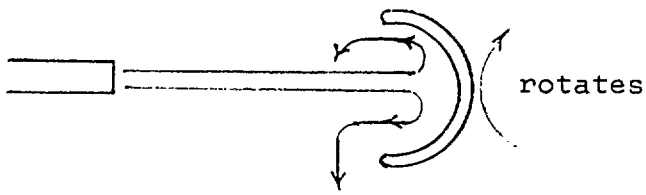
Resin Type

This resin is a general purpose boat resin base specifically formulated for a 40,000 lb. a month customer. It contained only stabilizers and 0.05% cobalt octoate (12%) to give it a slight pink color. Solids content was specified as 57-59%. Viscosity (60) had an allowable range of 600-800 but the customer adds 8% by weight styrene so it was most desirable to be on the high side of the solids and viscosity range. The final resin was puffed with 0.5% EG. (Added note: It is a low reactivity 1/2 maleic/phthalic resin.)

Vortex Mixer and Tank

The Reichhold blending tank is about 4500 gal. capacity equipped with baffles set about 6" from the wall. It has two sets of four-bladed propellers that clear the baffles by about two inches. The propellers are driven by a 60 HP motor and are arranged so the bottom one pumps up and the top pumps down. Mixing is quite intense.

The Vortex mixer appeared to be a cylindrical device about 3" in diameter and 8" long. In operation a high velocity stream of resin is driven against the inner side of a machined piece that looks very much like a pipe cap. This piece is free to rotate. Apparently the mixing shear is generated by a combination of the 180° change in direction and the rotation. (See below)



Liquid discharge

This particular mixer was operated with an inlet pressure of ~50 psig that gave a flow of ~90 gpm (~800 lb./min.). For a 10,000-lb. batch this would give a turnover time of ~15 minutes while a full 40,000-lb. batch requires about an hour. It was reported that a mixing time of 1-1/2-2 hours was required for Cab-O-Sil and this did not change over the entire range of batch sizes.

Preparation of Commercial Batch

The blend tank was charged with a total of 10,000 lb. of styrenated resin. Reichhold wanted to check the possibility of using only the mixer so an incremental approach using the mixer alone and then the Vortex and mixer together was adopted. The RG-244 was also added in increments. A summary of the operations is shown in Table I.

The combination of incremental addition of RG-244 and incremental use of the agitator alone makes it difficult to draw quantitative conclusions. Some trends are apparent, however.

At the low addition level (0.5% RG-244), neither the agitator nor the Vortex develop much thixotropy. They seem to be equally ineffective although in the previous run 2 hours with the Vortex gave a viscosity of 700/362.

At the 0.8% level, the agitator seems to peak out after 30 minutes. It did provide significant mixing since about 2/3 of a pass through the Vortex combined with agitation showed very little further change in viscosity.

Further improvements with the Vortex mixer peaked out after about an hour although some gradual drift upward in the E.G. treated samples continued over the next half hour.

Upon reviewing these results, it appeared that if all of the thixotropic agent is added at the start, somewhere between 1 and 1-1/2 hours with the Vortex mixer should be about right. It is our understanding that Reichhold will try this approach on the next batch. It will also be interesting to see how a 40,000 lb. full batch turns out.

A follow-up check on the resin was made on 9/25/70. It was reported that the resin had been shipped on 9/23. At that time a check on the drums showed no settling and no problems with viscosity or gel times. The resin was also clear. The unpuffed retain taken from the thin tank just prior to the addition of glycol was also clear and showed no settling. No problems were experienced with drum out through a 60-mesh screen.

Comparison with Previous RG-244 Run

The previous batch was made at 0.5% RG-244 sheared in the Vortex for 2 hours, followed by 0.2% RG-244 addition and 1-1/2 hours more shearing. The RG-244 settled badly so the resin was agitated for four hours followed by the addition of 0.5% E.G. and 30 minutes more agitation. A check on a drum of the final product after one month showed a settling of about 6 inches. A bad phthalic acid fallout also occurred with this resin.

Union Carbide trial exhibit UC-942: Union Carbide Sales Memo on West Coast Asbestos Markets (1959) with Cali...
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TABLE I

SUMMARY OF MIXING

UC-244 Cum. Wt. %	Mixing Time - Minutes: Agitator Only Increment	Agitator Only Cumulative	Vortex + Agitator Increment	Vortex + Agitator Cumulative	Viscosity (6/60) cps: Cooled to 25°C	T.I.	15 Minutes Later	T.I.	Puffed	2.5% E.G.
0.5	15	15	-	-	280/280	1.0	-	-		
	15	30	-	-	280/280	1.0	-	-		
(92°F in Tank)	-	30	15	15	290/280	1.0	-	-		
0.8	15	45	-	15	560/390	1.43	-	-		
	15	60	-	15	600/405	1.50	780/430	1.8		
	-	60	10	25	600/405	1.50	840/440	1.9		
	-	60	20	45	720/430	1.67	-	-		
	-	60	30	75	800/440	1.8	-	-	1500/540(1)	2.7
(92°F in Tank)	-	60	30	105	800/470	1.7	-	-	1700/576(2)	2.95
0.9	-	60	30	135	1120/540	2.1	-	-	1900/614(1)	
56 lb. E.G. added	-	60	15	150	-	-	-	-	1800/610(2)	
	-	60	15	165	-	-	-	-	2320/710(2)	

(1) Samples from tank with E.G. added in laboratory

(2) Sample from tank containing E.G.

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A check was made on the properties of the base resins used to prepare these two formulations. No significant difference was found in the physical properties. The first lot, however, was made from an older resin that had been in storage for an unspecified period of time while the second was from a recent batch produced with their new continuous reactor. These are both 1/2 maleic/ phthalic low reactivity resins.

The most reasonable explanation for the difference in settling properties is a serious overshearing of the first batch. There are still some things about it, however, such as additional agitation putting the thix agent back in suspension quite well that look odd. Close contact with Reichhold for the next couple of batches is desirable.

The need for 0.9% RG-244 vs. an oversheared 0.7% is hard to explain. Both lots of RG-244 showed the same Q.C. results of 39M viscosity. pH of the first was 8.9, of the second 9.1. We will also have to keep in touch discretely on this subject, particularly when they get to full 40,000 batches. A 30% variation is too much.

The phthalic acid fallout picture seems quite clear. Based on our other recent observations, the addition of styrene and thix agent (either RG-244 or pyrogenic silica) will tend to trigger the crystallization of the acid if it is present. Old, low reactivity resins are particularly prone to this problem. The old resin (1st batch) got cloudy; the new resin (2nd batch) didn't.