PLAINTIFF'S EXHIBIT
UC-2879

Floor Tile

1973 domestic production of vinyl-asbestos (VA) floor tile consumed about 105,000 tons[9] of asbestos. A conservative 3% growth rate is estimated through 1980 to a total of about 129,000 tons. World usage of asbestos, other than the U.S. is estimated at 48,500 tons in 1973[15]. Assuming a 5% growth rate thru 1980 this amounts to 70,000 tons. A total world wide market of about 200,000 is, therefore, available by 1980.

Our present sales to the domestic VA tile industry[12] are limited by our ability to produce standard grade products. With little sales effort and assuming that we want to provide material we have, at least verbally, been assured of a domestic market of about 44 M tons. This would include our present customers with expanded usage at GAF, Kentile and American Biltrite. We currently do not export material for the VA tile market abroad, but it is reasonable to assume that we could attain about 9 M tons by 1977. We, therefore, predict that in 1977 we could sell 53 M tons if product were available. This market would be an excellent base for a modest plant expansion through a plant designed to be expandible to the 1980 market projections.

The conservative growth rate for domestic VA tile, is a compromise between the 5% estimated by the VA tile industry and 2% predicted by resin manufacturers. Our estimate is tempered by a resurgence of residential carpet flooring, a decline in housing starts, acceptance of commercial carpeting, a trend toward smaller residences and gradual replacement of asphalt tile by VA tile[11]. Another cautionary factor is the recent development of a non-asbestos tile. This could be a significant factor in reducing VA tile growth. Several new, substitute fibers for asbestos will probably not have a serious effect on asbestos sales. Since many of these factors do not exist or have differing degrees of influence in the export market, the 5% industry growth rate has been used.

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There are principally two factors possitively affecting the future of the floor tile market. VA tile manufacturers do not seem to be a particular target of OSHA and, in fact, run fairly "clean" operations. The end-use does not seem to be particularly vulnerable to health hazard objections. Secondly, there is a trend toward the use of VA tile for wall covering[15] which could greatly increase the demand for tile in the "do it yourself" trade.

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Elastomers

Calidria HPP is used as a low cost, modest reinforcement in natural and synthetic rubbers. Its principle utility is ~~believed to exist~~ in mechanical goods such as rubber rolls, shock mounts and belting with some consumption probable in rubber floor tile. Other types of asbestos are not suitable for these same applications. Although our sales in 1973 were negligibly small, this domestic market should grow to 4000 tons by 1977 and 6000 tons by 1980[25]. Newly developed activity in this field by W. R. Grace and Harrisons & Crosfield in Europe should develop sales of 2000 and 4000 tons in 1977 and 1980. The overall potential by 1980 is thus about 10,000 tons, all of which should be HPP. Projected HPP sales in this market are summarized in Table I.

Due to the shortage and increasing price of high styrene extender resins, an additional market could develop for shoe heel and sole compounds. This domestic market is currently estimated at 5000 tons[25] and could grow much larger by 1980. There is also undoubtedly a large export market for the ~~sample~~ applications. Since this market is rather speculative and may be in a sensitive environmental area, these tonnages are not included in this forecast.

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Adhesives and Sealants

The current domestic demand for asbestos in adhesives and sealants is about 5000 tons[19]. Of this total, UCC enjoys about 2000 tons or 40%. The overall domestic market should grow to about 7300 tons by 1980[9] with our participation amounting to 3-4000 tons. It is anticipated that our export sales should grow to 1.5 - 2000 as a minimum. Our sales in 1980 should be about 4000 tons in 1977 and 5000 tons in 1980.

Several Calidria products are sold in ~~their~~ applications including SG-130, RG-110, RG-144 and SX-14. The tonnage breakdown by product is shown in the attached Table 1.

Growth in adhesives and sealants is expected to be large; 5-6% per year is probably conservative and does not reflect new construction technology. However, product usage is quickly affected by slow downs in the construction, automotive and appliance industries. For this reason a conservative estimate is probably advisable and has been used in these projections.

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Reinforced Plastics

RG-600 has the potential to become a significant factor in the reinforced thermoplastic market. This application consumed 16,000 tons of fiber glass in 1973[27]. It is the principal competition and offers an advantage only in providing impact strength. At the same time it possesses distinct disadvantages in cost, abrasiveness and sensitivity to fiber degradation and consequent reduction in attainable physical properties.

The domestic reinforced thermoplastics market has been predicted by the Stanford Research Institute and others to consume 150,000 tons of reinforcement by 1980. The perferred fiber will probably continue to be glass, but real opportunities exist for other fibrous material, especially where they can overcome some of the deficiencies of glass. We have projected a market of 5000 tons of RG-600 by 1977 and 10,000 tons in 1980. This represents a conservative 7% market penetration which should be ~~easily~~ attainable. The export market will undoubtedly be very large also and we are predicting a total market in 1980 of 14,000 tons. This market could be much larger.

There are several sobering aspects to this new market, however. One such factor is the entrenched position of glass fibers and another is the health hazard stigma of asbestos. Many companies have just completed programs eliminating all forms of asbestos from their product lines. It will be necessary to overcome the negative publicity which has ~~occured~~ accrued to asbestos and to sell at a price which makes RG-600 attractive to conventional glass users. Then too, in some applications the impact strength obtainable principally by use of glass fibers is of paramount importance. Because of these factors, the limited market penetration outlined in Table I is probably justified.

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Filled Phenolic Molding Compounds

Asbestos is used primarily in appliance and automotive phenolic applications which accounts for about 40% of the phenolic molding material market(22). Some additional asbestos is used in electrical and industrial devices, but the usage is relatively small. There were about 11,000 tons of asbestos used in phenolic molding compositions in 1973 with a 3% annual growth rate to 14,000 tons in 1980. With sales effort, and if SG-100 were available, we project a market for SG-100 in this application of 3000 tons in 1977 and 6000 tons in 1980. About half of this tonnage would be export.

Our standard grade product could replace the conventional short fiber now used, but at a cost disadvantage. We have tried to promote the use of our pelletized material as a dust reduction measure. Although this requires installation of grinding equipment, SG-100 could be cost competitive.

There is a trend in the industry to reduce the asbestos content of the molding materials. GE has, in fact, attempted to make ecological "hay" by offering an asbestos-free material. This has met with poor success (after about 1 1/2 years of effort). It is an area, however, where asbestos health hazards could be a large negative factor. For this reason, the tonnages shown in Table 1 are quite small.

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Tape Joint Compounds (TJC)

U.S. production of gypsum wall board during 1973 was about 14 billion square feet. Based on 5 gallons of TJC per 900 square feet of wall, at an asbestos content of 3%, this corresponds to a market of 9000 tons of asbestos in this application[18]. Our sales of SG-210 in this area were 4000 tons in 1973.

Growth of wall board sales depends on housing starts as well as business and commercial construction. An annual growth of 3% is forecast to 1980. Projected, this means a market for 11,000 tons of asbestos in 1980.

Our sales to this industry have been "controlled" by our ability to supply. While we currently enjoy about 50% of the market, we could easily assume a larger role if material were available. We, therefore, project a market of 7,000 tons in 1977 and 8,000 tons in 1980 of SG-210 as shown in Table 1.

There is a potential hazard in the use of asbestos in this application due to sanding of the semi-finished job. This has recently been exploited by Selikoff et al and could result in a crash program to "eliminate asbestos." While there is little basis in fact to the various allegations, this is a sensitive area. It is possible that we could be forced out of this application where we have a clear cut advantage over the conventional Canadian product.

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Ceiling Tile

Conwed Corporation, Cloquet, Minn, was the only U.S. ceiling tile manufacturer known to be using asbestos. They have recently stopped using HPP mainly because of the adverse decision in the Reserve Mining litigation on the pollution of Lake Superior. Our projection of domestic sales to zero by 1977 has, therefore, already been reached. There is slight chance of regaining this business. Overseas sales continue strong at 4000 tons and are growing. We should sell about 8000 tons In 1977 and 10,000 tons in 1980. This should be mainly HPP, with some AS-200 due to erosion by competition. Our projected breakdown is shown in Tables I and II.

In general, asbestos improves tensile strength and clay retention during board formation. The strength improvement is probably due to better retention of the starch binder. Most major manufacturers obtain satisfactory product using organic products and do not require asbestos. Asbestos seems to be necessary mainly on older types of equipment.

This, obviously, is an application area which is sensitive to ecological considerations. This could eventually effect our export business.

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Paper

The 1973 domestic demand for asbestos in paper was about 2000 tons[21]. Foreign markets probably consumed an additional 2-3000 tons. Our total sales in 1973 were about 1500 tons, both export and domestic. This is projected to increase to 4000 tons in 1977 and 6000 tons in 1980. Of this total, about 1/3 will be sold in domestic markets as shown in Table I. High Purity will account for 75-80% of this market with the balance being T-135.

Asbestos has been used in paper primarily to control pitch, retain other additives such as clay and to extend TiO_2. Asbestos use has been reported to be more satisfactory in older mills whereas some of the new systems have problems with dispersion. While there are some new developments, such as tissue for electrical applications, it is unlikely that the use of asbestos in paper will grow very large.

In most applications, with the exception of industrial uses, the inclusion of asbestos in paper products is very sensitive to "health hazard" criticism. It is an application where the asbestos function can be performed by other materials and the market could disappear very quickly.

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R. E. Byrne, Jr.
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TABLE I

SALES PROJECTIONS BY APPLICATION AREA (M TONS)
(1976 - 1980)

Application Area	Product	1974	1975	1976	1978	1980	
Floor Tile							
Domestic	SG-10X	8.6	11.0	13.2	25.3	29.7	
Export		0	1.0	1.5	4.7	5.3	
Total		8.6	12.0	14.7	30.0	35.0	
Drilling	SSG	4.0	5.0	6.0	8.0	10.0	
Elastomers	HP	0.3	0.3	0.5	1.0	2.0	✗
Adhesives & Sealants	RG-110	0.5	1.0	1.2	2.0	3.0	✗
	RG-144 (SX-14)	1.0	1.0	0.8	2.0	3.0	
Reinforced Plastics							
Domestic		0.1	0.3	0.7	3.0	6.0	✗
Export		0	0	0.3	1.0	4.0	
Total		0.1	0.3	1.0	4.0	10.0	
Filled Phenolics		0	0	0	0	0	✗
TJC's (Domestic)	SG-210	4.0	5.0	3.0	3.0	0	
Ceiling Tile (Export)	AS-200	1.4	1.0	1.2	2.0	3.0	
	HPP	3.4	2.5	2.5	4.0	6.0	
Paper (Export)	HP	1.0	0.3	0.4	2.0	3.0	
	T-135	0.3	0.2	0.5	1.0	1.0	
Thixotrope							
Domestic	RG-244 (SX-24)	0.7	0.4	0.6	1.1	1.6	
Export		0.3	0.3	0.4	0.9	1.4	
Total		1.0	0.7	1.0	2.0	3.0	✗
Roofing (Domestic)	HP	0	1.0	2.0	3.0	5.0	
"Celotex" (Domestic)	SG-225	0	0.5	2.0	6.0	12.0	
Paving (Domestic)	SG-225	0	0	0.2	2.0	4.0	
Coatings	T-135	0.2	0.2	0.3	0.5	1.0	
TOTAL		25.8	31.0	37.3	72.5	101.0	

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TABLE II

SALES PROJECTIONS BY PRODUCT (M TONS)
(1976 - 1980)

PRODUCT	1974	1975	1976	1978		1980	Last Year 1	
SG (Floor Tile)	9.0	12.0	14.7	30.0	20	35	20	0
AS-200	1.4	1.0	1.2	2.0	2	3	2	2
SSG (Drilling)	4.0	5.0	6.0	8.0	4	10	5	6
SG-210	4.0	5.0	3.0	3.0	6	0	6	8
SG-225	0.0	0.0	3.0	8.0	–	16	–	0
HP	4.3	4.3	4.8	10.0	12	16	14	20
T-135	0.8	1.0	0.8	1.5	1	2	1	1
RG-110	0.5	1.0	1.2	2.0	1	3	1	4
RG-144 (SX-14)	0.7	0.7	0.6	2.0	2	3	2	2
RG-244 (SX-24)	1.0	0.7	1.0	2.0	2	3	2	2
RG-600	0.1	0.3	1.0	4.0	4	10	6	14
TOTAL	25.8	31.0	37.3	72.5	54	101	59	59

6.1 →

→ 14% ROA

55%

60 Tons in 1980

REB, JLM:pcr
8/5/75

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TABLE I

PROJECTED SALES THRU 1980 BY MARKETS

Application Area	Product	M Tons 1973	1974	1977	1980
Floor Tile					
Domestic (D)	SG-10X	13.7	11	44	60
Export (E)	"	0	0	9	40
Total (T)	"	13.7	11	53	100
Oil Well Drilling					
D	SSG	1.8	2.5	4	6
E	SG	1.2	2.5	3	4
T		3	5	7	10
Elastomers					
D	HPP	0	1	4	6
E	"	0	0	2	4
T	"	0	1	6	10
Adhesives & Sealants					
	SG-130	.3	.3	0	0
D&E	RG-110	1	1.2	2	3
	RG-144 (SX-14)	.7	1.5	2	2
T		2	3	4	5
Reinforced Plastics					
D	RG-600	0	0.1	5	10
E	"	0	0	2	4
T	"	0	0.1	7	14
Filled Phenolics					
D	SG	0	0	2	4
E	"	0	0	1	2
T		0	0	3	6
Tape Joint Chds.					
D (&T)	SG-210	4	5	7	8
Ceiling Tile					
D	HPP	1	1	0	0
E	HPP	4	4	6	8
	AS 200	0	1	2	2
T		5	6	8	10
Paper					
D	HPP	.5	.5	1	2
E	HPP	.5	1.0	2	3
	T-135	.5	.5	1	1
T		1.5	2	4	6
GRAND TOTAL		29.2	33	99	169

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TABLE II

SALES SUMMATION THRU 1980 BY PRODUCT M TONS

Product	1973	1974	1977	1980
SG	15.2	13	59	109
AS-200	0	1	2	2
SSG	1.8	3	4	6
SG-210	4	5	7	8
HP	6	8	15	23
T-135	0.5	0.5	1	1
RG-110	1	1.4	2	4
RG-144 (SX-14)	0.7	2	2	2
RG-600	0	0.1	7	14
TOTAL	29.2	33	99	169

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