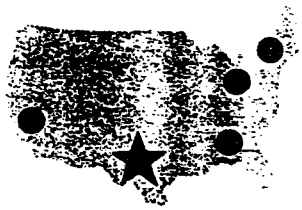
PLAINTIFF'S EXHIBIT
Union Carbide 413



JUL 14 1977
C. H. CARDER

# UNION CARBIDE CHEMICALS AND PLASTICS
# GARLAND WATER-BORNE COATINGS MATERIALS PLANT

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(214) 271-2451

TO: Mr. C. H. Carder

DATE: July 11, 1977

CC: Messrs:
T. R. Holliger
H. V. Hooper, Jr.
H. Mayfield
A. A. Mees
M. O. Robinson
A. E. Stafford

SUBJECT: Garland, Texas Tennis Court Coatings Projects (Nov. 1975 - June 1977)

As requested via phone on June 30, 1977, enclosed are pertinent sales correspondence (April 1976 - June 1977) and Garland lab project reports (Nov. 1975 - June 1977) concerning tennis court coatings technology.

A duplicate set has also been sent to Mr. A. A. Mees (NYO-33) to assist both of you in 1978 marketing and R&D planning for the subject specialty-coatings market.

It all started late November 1975 when Mr. J. A. Moore (NYO-33) called me about a need for UCC to establish a background in tennis court coatings technology, since several specialty coatings accounts were purchasing UCAR Latexes 153 and 163 for use in this field. He had Jerry Hufnagle (UCC Boston Account Representative) arrange for me to receive a gallon each of Allied Chemical's "TOP-KOTE BEIGE" and their "FILLER-KOTE BEIGE" plus one pint of Copeland's "Latex-ite Green Topcoat" latex-base tennis court coatings for general physicals evaluation. We later established that these were made with 100% acrylic copolymer latexes, and that UCAR Latexes 153 and 163 were being used as binders in resilient or "cushion" base coatings by several accounts. Samples of Allied's and Copeland's products were also sent to Jim Ruch (Tech Center) for analysis. He confirmed our findings that all contained asbestos fiber and that the binder was an MA/BA acrylic copolymer plus no coupling solvents. There was a 4-14% titanium dioxide pigment in the beige topcoat and filler-coat. No $TiO_2$ was present in the dark green topcoat. The pigment/binder ratio in both beige and green topcoats were nearly identical at 1.5:1 including fine sand for better traction. The filler coating employed chrome oxide green and coarse sand plus a total P/B ratio of 6.5:1. Our initial cursory evaluation showed good abrasion and water resistance with thixotropic consistencies. QUV weathering tests (1000 hours) showed excellent tint retention of Copeland's dark green topcoat and a moderate chalk fade for Allied's beige topcoat. The filler coat with high coarse sand content showed better tint retention than their beige topcoat. Work was started on a counter-match to the beige topcoat using a combination of UCAR Latexes 163 and 366 (100 parts to 37 parts on solids). UCAR Latex 163 was selected since it was being used in "cushion" base coatings and had excellent low temperature flexibility.

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The UCAR Latex 366 was included to upgrade tint retention and reduce surface tack and thermoplasticity. The combination offered an 82% acrylic monomer level and the coating could be sold as an "acrylic" coating to compete with Rohm and Haas resins in current use. These resins are AC-234, 235 and 707 in most cases.

About this time I started to get sales requests for starting formulations for the following accounts:

Jan 28, 1976 - to D. A. Hurwitz (Boston DSO) for California Products (Mass.)
Feb 18, 1976 - to Ron Irby (St. Louis DSO) for Dickey Clay Pipe Co. (Kansas)
Feb 24, 1976 - to Ken Wylie (Hackensack DSO) for Prospect Paint (New Jersey)
March, 1976 - to R. K. Redford (Houston DSO) for New Orleans Paint (La.)
April 19, 1976 - to A. Diaz (Dallas DSO) for Mohawk Labs (Texas)

These were JG4-122B (with pumice) or JG4-122C with fine sand in a tan or deep beige color. A paper formula JG4-124A to use chrome oxide green went to New Orleans Paint Co. These formulations were subsequently recoded E-1399 Tan and E-1400 Dark Green.

April 22, 23, 1976 a technical survey trip was made with J. A. Moore and Dave Hurwitz (Boston DSO) in Massachusetts and Connecticut to interview technical directors at key accounts: Copeland Inc.; Allied Chemical; Touraine Paint; and California Products Corporation. We were requested by Touraine Paint to evaluate their tennis court coatings as done by Skinner and Sherman Inc. Laboratories for a competitor. (We were given a copy of the test procedures and results). This was done along with other commercial coatings supplied by Allied Chemical and Flintkote Corporation. A summary of the test results are attached (February 22, 1977 report on tennis court coatings).

I no sooner returned when a rash of "cushion" coating failures started to come in for investigation as follows:

1. May 1976 - Allied Chemical (Conn.) reported a lifting failure of their latex based coating located in Waxahachie, Texas. I met with the local contractor (Bob Evans and Co., 11181 Harry Hines Blvd., Suite 141, Dallas, TX) to discuss the problem and examined loosened strips of the coating system. The bottom side became "slimy" when soaked in water. Lab 2% NaOH tests duplicated this condition within 18 hours. They were advised to double seal the concrete base in the future.

2. June 1976 - Flintkote Corporation (New Jersey) reported similar lifting on six courts (concrete based) at Texas Christian University (TCU), Fort Worth, Texas. We confirmed problem after flooding part of a court with water. The problem was traced to the alkali sensitive UCAR Latex 163 based cushion coating.

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I suggested that excess ground water may have aggravated the problem. Flintkote subsequently removed the entire coating on six courts and placed a $21,000 claim against Union Carbide Corporation. (See attached correspondence - Bruce Orr 6/6/76 and 7/9/76).

3. July 1976 - Allied Chemical Corporation (Conn.) continued to complain about their UCAR Latex 153 cushion coating (see 7/1/76 memo).

4. August 1976 - Copeland Inc. reported wet-adhesion problems with their UCAR Latex 153 cushion coating (see 8/24/76 memo)

5. October 1976 - New England Seal Coating (Mass.) complained about early water resistance of their UCAR Latex 153 cushion coating as well as spreadability with a squeegee. (See 10/8/76 memo from D. Hurwitz).

In October, 1976, I submitted California Products "Plexipave" cushion coating to J. Ruch for analysis, since it did not show sensitivity to 2% NaOH solutions. Due to other priorities, I didn't receive an answer on this until April 1977. By surprise, he reported the binder as an EVA type.

In June, 1977, I sent this analysis to UCC Sales Offices for discussion with Wikel, Inc. (Ohio), New England accounts, and Flintkote (N.J.).

Other U. S. accounts who received UCC tennis court formulation E-1400 dark green were:

Nov. 1976 - to Dave Hurwitz for Mainline Paints (R.I.)
Dec. 1976 - to Dave Hurwitz for Touraine Paints (Mass.)
Dec. 1976 - to Dave Tull for Allied Chemical (Conn.)
March 1977 - to Dave Hurwitz for Copeland, Inc. (N.Y.; Conn.)
March 1977 - to H. H. Medlock for Engineering Industries (Me.)
June 1977 - to R. Szymanski for Cosmicoat (Oh.)

We have expended 60 man days to date on tennis court application development and technical service at Garland, Texas. This is at a rate of 39 man days per year.

Current projects include evaluation of other UCAR Latexes for general performance in the E-1400 dark green formulation, physical characteristics of unpigmented films of UCAR Latexes 503, 508, 163, AX-1821 (EVA adhesive) and blends with UCAR Latex 366. Future work is planned on cushion coatings when 16-20 mesh scrap rubber arrives.

R&D project work at South Charleston could be of assistance in 1978 in the following areas:

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1. Develop superior flexible low-cost polymers having excellent alkali and early water resistance.

2. Develop solvent and water-borne sealers for concrete foundations to prevent alkali attack of vinyl/acrylic filler and topcoats.

Attached is a copy of Dan Neri's excellent West Coast tennis-court coatings market survey.

R. C. Pierrehumbert

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Enclosures:

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