FILE NAME: WR Grace (WRG)

DATE: Unknown

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CONSTRUCTION PRODUCTS DIVISION

DMT

II. Steel Surface Characteristics (R. Bragg)

Beyond deflection potential and magnitude as reported in Section III, the chemical, physical characteristics of fireproofed surfaces are of deep concern. No problems of adhesion of Mono-Kote to vertical columns or beams exist for two reasons:

a) Columns and beams are rough surface, generally being somewhat rusty and pitted at time of fireproofing. They are not galvanized.

b) Because of contour, sprayed fireproofing mechanically is locked to these shapes.

Also no problems of adhesion exist on fluted galvanized deck surfaces, probably because there are no large plane areas of fireproofing to accumulate dimensional changes of the fireproofing.

A serious problem of adhesion exists with standard Mono-Kote on "flat plate" sections of galvanized steel. Such sections (as the Inland NF portions of the UL Blend Deck coated with MK-4) are large in unbroken area, being 24" wide by the length of deck between supporting beams.

Chemically, there appears no reason for a gypsum bound plaster product to adhere to such zinc coated surfaces. As a matter of record, steel is zinc coated by either of two processes. It may be hot-dipped on a batch basis, or continuously run through Zn plating solutions. The continuous process was used on the Inland deck tested at UL on 9-18-70, and it provides the smoothest of Zn surfaces.

Standard Mono-Kote and MK-4 can adhere to smooth galvanized flat plate by physical means only, ie growth of hydrated $CaSO_4.2H_2O$ into the minute imperfections of the Zn treated surface.

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PLAINTIFF'S EXHIBIT 280
ALL-STATE LEGAL SUPPLY CO.

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Attached find two summary charts showing MK-3 performance @UL on 20 full scale fire tests. The first chart lists all-fluted sections with only one drop-out, caused by excess thickness of MK-3. The second chart shows fire test constructions containing significant areas of flat plate, with drop-out of MK-3 experienced on all such tests. These charts are prefaced by my 2-19-70 memo protesting selection of a 100% flat plate construction for a U.L. specimen.

Also attached find a table reporting MK-3 bond performance to a variety of surfaces at ambient temperatures. Indicated in the right hand column is the site of failure. The word cohesive means failure occurred within the Mono-Kote. Such valves can be considered a measure of tensile strength.

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