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UNION CARBIDE AND CARBON CORPORATION

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IND. TOXICOLOGY DEPT.

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Mr. J. R. Price-1101

May 25, 1950

*File
Burning Vinylite*Mr. Leopold A. Halperin
420 Lexington Avenue
New York, N. Y.

Dear Mr. Halperin:

In accordance with your recent request we are writing you to discuss the behavior of "Vinylite" plastic sheeting in case of fire. The particular sheeting used by Plastic Innovations, Inc. is .012 inches thick and is composed essentially of a vinyl chloride-acetate copolymer resin and a plasticizer which is added to impart flexibility. Such sheeting in this thickness is difficult to ignite. When once ignited it is slow burning and usually stops burning just as soon as the source of ignition originating or perpetuating a fire is removed.

We have attempted to ignite, with a cigarette lighter, an inflated toy manufactured by Plastic Innovations and designated "Cep". We found that it was difficult to do so. A small area directly in contact with the flame of the lighter burned but ceased burning just as soon as the flame from the lighter was removed. This is in accordance with our own and our customers' experience with sheetings of this type. We have manufactured and sold many millions of pounds of these general types of materials without any instance having been brought to our attention that they contributed either to the magnitude or to the hazard of a fire.

There are various hazards to health or life involved in the case of any fire of any magnitude. These include:

- 1) Danger from burning due to flame or heat - It is apparent that any material such as "Vinylite" sheeting which ignites with difficulty is less hazardous than more readily ignited materials such as textiles, paper, etc. especially with respect to initiating a fire.
- 2) Danger from asphyxiation due to the lack of an adequate concentration of oxygen being present and caused both by the burning materials themselves consuming oxygen and by the dilution of the oxygen present with such decomposition products as carbon dioxide - The disappearance of oxygen and the formation of carbon dioxide are associated with the combustion of any organic materials such as cotton, wool, paper, wood, plastics, etc.
- 3) Danger from carbon monoxide - In the presence of insufficient amounts of air, some of the carbon present in organic compounds can yield carbon monoxide rather than inert carbon dioxide. Other highly toxic gases can be

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liberated from wool and other materials containing nitrogen. The "Vinylite" sheeting contains no nitrogen. The amount of carbon monoxide produced by relatively small quantities of any organic material including toys made from "Vinylite" sheeting would be so small as to constitute no hazard.

4) Danger from smoke and other decomposition products - In case of fire various decomposition products are formed by the partial combustion of all organic materials. Many of these are irritating to the body membranes. When the "Vinylite" sheeting is decomposed by flame or heat from another source some vapors are liberated. These are acidic in nature and can be irritating to body membranes if present in sufficient concentration. Smoke from burning paper, cotton or wood can have substantially the same physiological effect. In view of the fact that there is less than an ounce of vinyl chloride-acetate resin in an inflatable toy "Cop", the quantity of all decomposition products evolved from this amount of material would be very small, and insignificant if a greater weight of other materials such as bed linen, blankets, etc. were burning concurrently.

The information which we have on the accident which prompted your inquiry is very meagre. Should it develop that you obtain more information, we would be very glad to receive it.

Yours very truly,



Manager of Development
Thermoplastics Department

HRobertson:MEM

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