

*High purity
pelletized*
Calidria ASBESTOS

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**PLAINTIFF'S
EXHIBIT**

UC-377

**UNION
CARBIDE**

THE DISCOVERY COMPANY

A NEW APPROACH FOR SHOE SOLES AND HEELS

The recent petroleum crude crisis has had its effect on the rubber industry with the diminished availability of high styrene SBR resin (85/15 mol%). This material has been a standard additive to shoe sole and heel formulations for many years and its shortage has created a severe hardship for formulators. The formulation below has been developed by Union Carbide in cooperation with other raw material suppliers. It features the following:

- Calidria HPP Asbestos
- LDPE reinforcing resin
- An increased loading of precipitated silica
- Resorcinol/hexamethylenetetramine additions
- Necessary accelerator adjustments

By this means one can obtain an optimum cost/performance product without high styrene resin. The use of the HPP/LDPE system has been under investigation on an R & D basis for approximately two years in the USA. The synergistic effect of the system has been verified by many investigators.

SUGGESTED STARTING FORMULATION

<u>Ingredients</u>	<u>pphr</u>
SBR	100
Hi Sil 233 (ppt. silica)	50-60
Velsicol XL-30	5-7
Naphthenic Process Oil	5
*CARBOWAX 6000, Polyethylene Glycol	1.5-2.5
Resorcinol	2.5
Hexamethylenetetramine	1.6
Stearic Acid	1.0
Zinc Oxide	2-4
Sulfur	3.5
TMTDS	0.25
MBTS	1.5
DPG	0.6

ADDITIONS TO ABOVE TO INCREASE HARDNESS, FLEX-LIFE AND ABRASION RESISTANCE

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| *Low Density P.E., Polyethylene DNPA-3130 | 25-35 pphr |
| *Calidria HPP, High Purity Pelletized Asbestos | 20-30 pphr |

*Union Carbide Corporation

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