

## REFERENCE 1

## Preparation of Homopolymer

Into a 5 ml glass tube, 2(2-hydroxy-5-methylphenyl)5-vinyl-2H-benzotriazole (0.75 g, 3 mmole), toluene (1.80 ml) and azobisisobutyronitrile (2.5 mg, 0.015 mmole) were charged. The homogeneous mixture was degassed by three freeze-thaw cycles with nitrogen sweep, sealed at 0.005 mmHg and the tube was placed in a constant temperature bath of 50° C. for 14 days.

After the polymerization, the content was taken out from the tube and dissolved in 5 ml chloroform and precipitated into 50 ml methanol. The resulting precipitate was collected by filtration and dried under reduced pressure for a few days. A 76 wt.% yield (0.39 g) was obtained with a  $\eta_{inh}$  viscosity of 0.05 dl/g (0.5 g/dl solution of chloroform at 30° C.).

## REFERENCE 2

## Copolymerization with Methyl Methacrylate

In a 5 ml polymerization tube were placed 2(2-acetoxy-5-methylphenyl)5-vinyl-2H-benzotriazole (0.40 g, 1.6 mmole), MMA (0.91 g, 9.1 mmole), AIBN (3.3 mg, 0.02 mmole), and toluene (1.3 g). The homogeneous mixture was degassed by three freeze-thaw cycles with a nitrogen sweep, sealed at 0.005 mmHg and the tube was placed in a constant temperature bath of 50° C. After 8 days it was opened, the viscous contents dissolved in 5 ml of dichloromethane and filtered. The solution was poured into 400 ml of methanol, the solid collected by filtration, washed with methanol (50 ml) and dried under reduced pressure for a few days; a 30 wt. % yield (0.39 g) of copolymer with a  $\eta_{inh}$  viscosity of 0.1 dL/g (0.5 g/dl solution of chloroform at 30° C.) was obtained. The copolymer composition was about 16 mole % as judged by NMR spectroscopy where the aliphatic protons adjacent to the ester oxygen of the acrylate were compared to the aromatic protons.

(0.25 g, 1 mmole), acetone (0.20 ml) styrene (0.59 g, 5.7 ml) and azobisisobutyronitrile (5.5 mg, 0.033 mmole). The homogenous mixture were degassed by three freeze-thaw cycles with nitrogen sweep, sealed at 0.005 mmHg and the tube was placed in a constant temperature bath of 50° C. for 2 weeks.

After the polymerization was judged complete the content of the tube was dissolved in 10 ml of chloroform and the polymer precipitated into 100 ml of methanol. The resulting precipitate was collected by filtration and dried under reduced pressure for a few days. A yield of 42 wt.% (0.35 g) of copolymer was obtained with an  $\eta_{inh}$  viscosity of 0.07 dL/g (0.5 g/dl solution of chloroform at 30° C.). The copolymer composition was about 15 mole % of benzotriazole monomer as judged by elemental analysis for nitrogen.

## REFERENCE 4

## Copolymerization with Butyl Acrylate

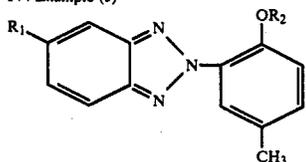
In a 5 ml polymerization tube were placed 2(2-hydroxy-5-methylphenyl)5-vinyl-2H-benzotriazole (0.4 g, 1.6 mmole), toluene (1.56 ml), butyl acrylate (1.16 g, 9.1 mmole) and azobisisobutyronitrile (3.5 mg, 0.021 mmole). The homogenous mixture was degassed by three freeze-thaw cycles with nitrogen sweep, sealed at 0.005 mmHg and the tube was placed in a constant temperature bath of 50° C. for 11 days.

After the polymerization was judged complete the content of the tube was dissolved in 5 ml of chloroform and precipitated into 50 ml methanol. The resulting viscous precipitate was taken out by a decantation, dissolved in 2 ml of benzene and dried in a vacuum under freezing point of the solution. A 9 wt.% of yield (0.14 g) of the copolymer was obtained with an inherent viscosity  $\eta_{inh}$  of 0.10 dL/g (0.5 g/dl solution of chloroform at 30° C.). The copolymer composition was ap. 22 mole % of benzotriazole monomer as judged by nitrogen analysis of the copolymer.

TABLE 1

Chemical Shift Data of $^1\text{H}$ NMR Spectra of 2(2-Hydroxy-5-Methyl)-5-Vinyl-2H-Benzotriazole (2H5M5V) and Intermediates									
$-\text{CH}_2-\text{CH}_3$	$-\text{CH}-\text{CH}_3$	$\text{CHBr}-\text{CH}_3$	$-\text{CHB}-\text{CH}_3$	$\text{Ar}-\text{CH}_3$	$\text{cH}$	$\text{Ha}$	$\text{Hb}$	$\text{H}$	Aromatic protons
1.30(T)	2.82(D)			2.30(S)				11.0(S)	7.0 to 8.3
1.30(T)	2.82(D)			2.30(s)					7.0 to 8.3
		5.17(D)	1.98(D)	2.33(s)					6.8 to 7.9
				2.28(s)	5.3(D)	5.56(D)	6.33(DD)		7.0 to 8.0
				2.35(s)	5.35(D)	5.80(D)	6.84(DD)	11.0(s)	7.0 to 8.1

Note:  
Product of  
I: Example (2)  
II: Example (1)  
III: Example (3)  
IV: Example (4)  
IV: Example (5)



## REFERENCE 3

## Copolymerization with Styrene

In a 3 ml polymerization tube were placed 2(2-hydroxy-5-methylphenyl)5-vinyl-2H-benzotriazole

We claim:

1. A benzotriazole compound of the formula: