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DuPont Electronic Technologies

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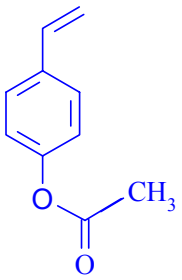
ASM

p-Acetoxystyrene Monomer



CAS Name: 4-ethenylphenol acetate
CAS Number: 2628-16-2

ASM is a high purity reactive monomer which readily undergoes free radical polymerization to give poly(p-acetoxystyrene) (PAS) polymers in a wide range of molecular weights. ASM behaves much like styrene in free radical polymerizations and can be used as a direct replacement for styrene in most formulations.

PAS is easily hydrolyzed to give the corresponding poly(p-hydroxystyrene) (PHS) homopolymer. Once formed, PHS is readily derivatized through standard phenol and ring substitution reactions.

ASM monomer can replace some or all of the styrene monomer in homopolymers, impact resistant polymers, acrylonitrile-butadiene terpolymers, specialty copolymers, elastomers and thermosetting polyesters. The use of ASM as a co-monomer directly incorporates chemical functionality into the polymer backbone. Relative reactivities are provided in Table I.

ASM / PAS homopolymers and copolymers are effective film forming resins with excellent adhesive and thermal properties. PAS can be selectively hydrolyzed in copolymers with aliphatic esters such as acrylates and methacrylates without hydrolysis of the acrylate moiety.

ASM's reactivity similarity to other unsaturated monomers allows creation of polymeric co/ter polymers with high monomer yield efficiencies. Many of the resulting resins find wide use in 248 nm Deep Ultraviolet (DUV) photolithography for semiconductor chip manufacturing.

ASM Physical Properties:

Appearance:	Colorless Liquid, APHA<50
Boiling Point:	260 ºC at 760 mm Hg
Chemical Family:	Aromatic Ester
Chemical Formula:	$C_{10}H_{10}O_2$
Density:	1.056 g/mL at 25 ºC
Flash Point:	>212 ºF (Tag Closed Cup)
Freezing Point:	7 ºC
Molecular Weight:	162.19
Odor:	Sweet Aromatic
Purity:	96.5 wt. % minimum
Refractive Index:	1.5366 at 25 ºC
Viscosity:	4.2 cps (Brookfield, 25 ºC)
Inhibitors:	15-25 ppm phenothiazine or 200 - 300 ppm MEHQ

For additional information on deliveries, order placement and pricing, write or call us at our offices in Raleigh, NC at 919 248-5135, or by FAX at 919 248-5571

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p-Acetoxystyrene Monomer Reactivity

The monomer reactivity ratios (r) are useful to determine the ease with which different monomers may be combined, to predict the composition of copolymers, and to compare the rate of reaction of two monomers with a specific co-monomer. The following table shows a comparison of reactivity ratios for several systems.

Table I
A comparison of Reactivity Ratios

M_2	M_1 ASM	M_1 Styrene
Styrene	$r_1 = 1.02$ $r_2 = 0.80$	
Methyl Methacrylate	$r_1 = 0.76$ $r_2 = 0.88$	$r_1 = 0.52$ $r_2 = 0.46$
Methyl Acrylate	$r_1 = 0.81$ $r_2 = 0.15$	$r_1 = 0.75$ $r_2 = 0.20$
n-Butyl Acrylate	$r_1 = 0.41$ $r_2 = 0.30$	$r_1 = 0.76$ $r_2 = 0.20$
Acrylonitrile	$r_1 = 0.43$ $r_2 = 0.03$	$r_1 = 0.40$ $r_2 = 0.04$
Maleic Anhydride	$r_1 = 0$ $r_2 = 0$	$r_1 = 0$ $r_2 = 0$
1,3-Butadiene	$r_1 = 0.5$ $r_2 = 1.5$	$r_1 = 0.78$ $r_2 = 1.39$