

## ACRYLIC ELASTOMER COMPOSITION

### RELATED APPLICATION

[0001] This application is a divisional application of U.S. patent application Ser. No. 11/061,461, filed Feb. 18, 2005 to which priority is claimed under 35 U.S.C. §120.

### BACKGROUND OF THE INVENTION

#### [0002] 1. FIELD OF THE INVENTION

[0003] The present invention relates to an acrylic elastomer composition and more particularly to an acrylic elastomer composition having distinguished vulcanization characteristics and scorch stability.

#### [0004] 2. DESCRIPTION OF RELATED ART

[0005] JP-A-50-132057 discloses a vulcanizable composition comprising a halogen-containing acrylic elastomer, a polyfunctional carboxylic acid, a quaternary ammonium salt and a halide ion acceptor, where it is stated that the halide ion acceptor includes well known metal oxy compounds as acid acceptors, such as alkali metal salts or non-alkali metal salts of monocarboxylic acid or organophosphoric acid; oxides, hydroxides or carbonates of non-alkali metals; metal; salts of inorganic acids; molecular sieves, etc.

[0006] The polyfunctional carboxylic acid includes, so far as its Examples are concerned, disodium azelate, dipotassium azelate, disodium sebacate, disodium trimethyladipate, bis(benzyltrimethylammonium) trimethyladipate, dipotassium dodecenylsuccinate, disodium or dipotassium of high molecular weight fatty acid dimer, etc., all of which are used in the form of disalt.

[0007] However, in case of using disodium azelate, both of the resulting primary vulcanization product and the secondary vulcanization product have considerably poor compression set characteristics, as shown in the results of Comparative Example 6 mentioned below in contrast to Example 4 using azelaic acid, and furthermore much prolonged vulcanization time is required with poor vulcanization characteristics. More particularly, secondary vulcanization is indispensable due to the relatively low crosslinking speed.

### SUMMARY OF THE INVENTION

[0008] An object of the present invention is to provide a halogen-containing acrylic elastomer composition, which can be vulcanized within a much shorter vulcanization time and can give vulcanization products having distinguished normal state physical properties and compression set characteristics even without any secondary vulcanization.

[0009] The object of the present invention can be attained by an acrylic elastomer composition, which comprises (A) a halogen-containing acrylic elastomer, (B) a polyvalent carboxylic acid, (C) a quaternary onium salt and (D) a hydro-talcite.

### DETAILED DESCRIPTION OF THE INVENTION

[0010] The halogen-containing acrylic elastomer for use as Component (A) is copolymers of at least one of alkyl acrylate, alkoxyalkyl acrylate, alkylthioalkyl acrylate, cyanoalkyl acrylate, etc. as the main component (about 60 to 99.8% by weight), copolymerized with about 0.1 to about

10% by weight, preferably about 1 to about 5% by weight of (1) 2-chloroethyl vinyl ether, 2-chloroethyl acrylate or vinylbenzyl chloride, (2) vinyl chloroacetate or allyl chloroacetate, (3) an addition reaction product of a glycidyl compound such as glycidyl acrylate, glycidyl methacrylate, allyl glycidyl ether, etc. and monochloroacetic acid, or (4) a crosslinking site halogen-containing monomer such as alkenyl ester of  $\alpha$ - or  $\beta$ -halogen-substituted aliphatic monocarboxylic acid, haloalkyl ester of (meth)acrylic acid, haloalkyl alkenyl ester, haloalkyl alkenyl ketone, or halo-acetoxyalkyl ester, haloacetyl group-containing unsaturated compound, etc. The copolymers can be further copolymerized with not more than about 30% by weight of other ordinary vinyl compound. Furthermore, acrylic copolymers copolymerized with lactone-modified acrylate (JP-A-63-264612) or terminal cyanolactone-modified acrylate (JP-A-1-123809), or the like can be used.

[0011] Furthermore, the halogen-containing acrylic elastomer includes halogen and carboxyl group-containing acrylic elastomers, for example, the above-mentioned halogen-containing acrylic elastomers copolymerized with about 0.1 to about 10% by weight, preferably about 1 to about 5% by weight, of an unsaturated monocarboxylic acid such as acrylic acid, methacrylic acid, maleic acid, etc. or an unsaturated dicarboxylate monoester such as mono-lower alkyl maleate, etc.

[0012] The polyvalent carboxylic acid for use as Component (B) includes aliphatic polyvalent acids having 4 to 30 carbon atoms, alicyclic polyvalent acids or aromatic polyvalent carboxylic acids. Aliphatic dicarboxylic acids are preferable. Polyvalent carboxylic acids can be used as acid anhydrides.

[0013] More particularly, the dicarboxylic acid includes saturated aliphatic dicarboxylic acids such as succinic acid, glutaric acid, adipic acid, pimelic acid, suberic acid, azelaic acid, sebacic acid, undecanedion acid, 1,10-decane-dicarboxylic acid, 1,11-undecanedicarboxylic acid, 1,12-dodecanedicarboxylic acid, 1,14-tetradecanedicarboxylic acid, hexadecanedion acid,  $\beta,\beta$ -dimethylsuccinic acid,  $\beta,\beta$ -diethylglutaric acid,  $\beta$ -ethylglutaric acid,  $\alpha$ -ethyladipic acid, trimethyladipic acid, n-hexylsuccinic acid, n-octylsuccinic acid, n-decylsuccinic acid, n-decenylsuccinic acid, n-tetradecylsuccinic acid, n-octadecylsuccinic acid, isooctadecenylsuccinic acid, n-eicosenylsuccinic acid, n-dodecenylsuccinic acid, etc.; unsaturated aliphatic dicarboxylic acids such as maleic acid, fumaric acid, etc.; alicyclic dicarboxylic acids such as 1,2-cyclohexanedicarboxylic acid, 1,3-cyclohexanedicarboxylic acid, 1,4-cyclohexanedicarboxylic acid, phthalic acid etc.; and aromatic dicarboxylic acids such as isophthalic acid, terephthalic acid, etc.

[0014] About 0.1 to about 10 parts by weight, preferably about 0.1 to about 5 parts by weight, of the polyvalent carboxylic acid is used on the basis of 100 parts by weight of the halogen-containing acrylic elastomer. Below about 0.1 part by weight, physical characteristics of the vulcanization products will be considerably deteriorated due to unsatisfactory crosslinking, whereas above about 10 parts by weight physical characteristics of the vulcanization products will be also considerably deteriorated due to the destroying of crosslinking sites of the elastomer by a crosslinking agent in excess.