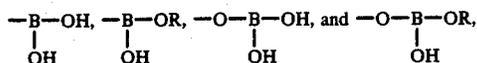


3



of boric acids wherein R is alkyl, aryl, or vinyl.

Cationic acid radicals such as  $\text{---NR}_2\text{H}^+$  or  $\text{---PR}_2\text{H}^+$  (wherein R is H or alkyl) are also appropriate.

It is, however, especially practical to graft the carboxylate, phosphate, sulfonate, and borate radicals or their reactive derivatives to the oligomeric or polymeric backbone. With derivatives of multibasic acids in the presence of one readily hydrolyzing group will be sufficient, and the others can be stable-substituted.

The reactive acid derivatives of the compounds in accordance with the invention can be substituted with acid halides, with acid anhydrides, and with acid amides, nitriles, and esters that readily hydrolyze into acid, like silyl or tert.-butyl for instance.

The oligomeric or polymeric backbones can be linear, branched, or cyclic.

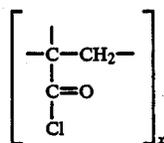
They can be polymers of ethylenically unsaturated monomers or they can be oligomeric or polymeric compounds, like polyesters, polyamides, polyethers, polyphosphazenes, polysaccharides, etc. for instance, if their backbone is sufficiently hydrolysis-stable, if they can be supplied with the desired polymerizable groups, and if they include or can be supplied with the desired acid groups.

The desired groups can be grafted if the backbone contains a number of bound functional groups, like alcohols, halogens, acid halides, amines, epoxides, or isocyanates, that allow such a grafting reaction.

This means that the aforesaid backbones can, no matter what components they are constructed out of, be present in the form of polyalcohols, polyhalides, polyacid halides, polyamines, polyepoxides, or polyisocyanates or of mixtures thereof.

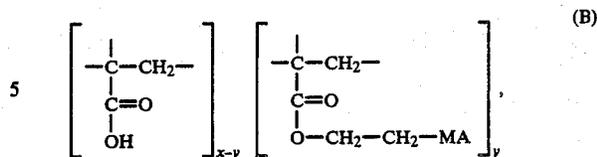
Preferred backbones are the polymers of ethylenically unsaturated monomers.

A group of monomers that results in homo-oligomers or homo-polymers is appropriate on the one hand, and, on the other, a group that results in co-oligomers or co-polymers by means of a combination of different monomers. Oligomers or polymers of unsaturated acids employed in the acid-chloride form,

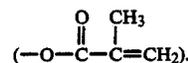


are the appropriate examples from the homopolymer group. They can be converted to a desired level with hydroxyethyl methacrylate for example in a first step if the free acid group is desired, with the acid-chloride radical being hydrolyzed in a second step. The statistical distribution of the groups is for example

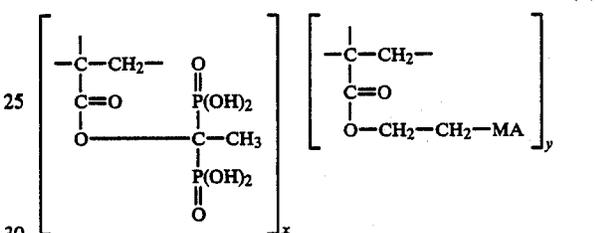
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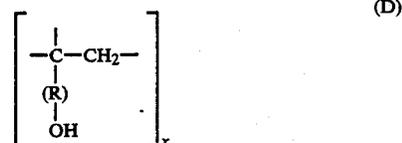
whereby MA is a methacryl radical



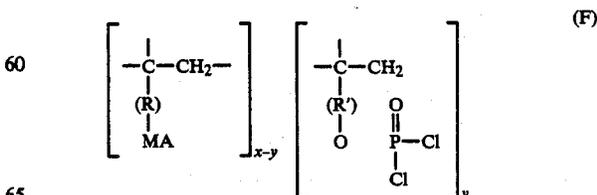
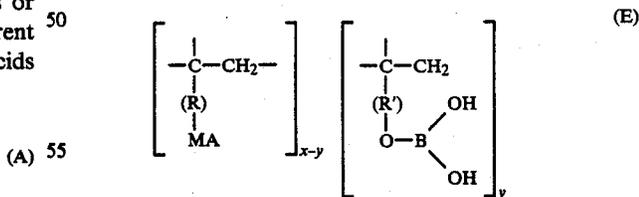
The second stage (hydrolysis) can, however, be replaced by means of alcoholysis with alcohols, such as 1-hydroxyethane-1,1-diphosphonic acid, that contain acid groups to obtain products such as



Another good backbone for compounds in accordance with the invention is provided by homopolymers of unsaturated alcohols:



wherein R is absent or is an inert radical. Some of the hydroxy groups can be provided with polymerizable groups by for example esterification with an unsaturated acid or with an unsaturated acid chloride. Others can be converted into corresponding compounds



in accordance with the invention, wherein R and R' are absent or are inert radicals, by means of acids or acid