

equivalent weight as stated above. Examples of these include, for example, glycerin, ethylene glycol, propylene glycol, dipropylene glycol, diethylene glycol, sorbitol, volemitol, threitol, ribitol, mannitol, maltitol, iditol, fucitol, galactitol, arabitol, erythritol, pentaerythritol, trimethylolpropane, triisopropanolamine, triethanol amine and bis(hydroxymethyl)piperazine, as well as alkoxylates thereof having equivalent weights of no greater than 250. Such other b-2) polyols preferably do not contain any amine groups. Amine groups for purposes of this invention are groups that contain a basic nitrogen atom with a lone electron pair.

Component b-2), and the alkoxylated Mannich base in particular, may constitute, for example, 5 to 60% of the total combined weight of components a), b-1) and b-2). In some embodiments the alkoxylated Mannich base constitutes 7.5 to 50% or 10 to 50% or 20 to 50% of the combined weights of components a), b-1) and b-2).

The reactants that produce the polyurethane of the invention may include (in addition to polyols b-1) and b-2)) one or more other isocyanate-reactive materials, such as, for example, compounds having molecular weights of greater than 350 which contain one or more primary and/or secondary amino groups, and compounds having two or more epoxide groups. If present at all, such other isocyanate-reactive materials preferably constitute no more than 10 weight percent, more preferably no more than 5 weight percent or no more than 2 weight percent of the total combined weight of all organic polyisocyanates and isocyanate-reactive ingredients. Such other isocyanate-reactive materials may be absent.

The polyurethane of the invention can be produced by reacting the organic polyisocyanate with the isocyanate-reactive compounds in one or more steps.

Thus, in one embodiment of the invention, the reaction is performed in a single step in which the organic isocyanate and all isocyanate-reactive compounds (including polyols b-1) and b-2) as described above) are all combined to form a reaction mixture that is then cured to form the polyurethane. In such an embodiment, the single step is the “final” curing step of the process, and the isocyanate index is from 90 to 150. “Isocyanate index” is 100 times the numerical ratio of isocyanate groups to isocyanate-reactive groups provided to the reaction mixture. The isocyanate index may be at least 95 or at least 98 and may be at most 135, at most 110, at most 105 or at most 102.