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## Sugar Alcohols

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### Abstract

Sugar alcohols, or polyols, are carbohydrates. They bear a close relationship to the saccharides from which they are formed by reduction and from which their names are often derived; glucitol (sorbitol), mannitol, isomalt, maltitol, lactitol, xylitol, and erythritol are the most common commercially available polyols. Some occur in nature in small amounts. They are generally produced by hydrogenation or fermentation of saccharides from renewable raw materials. Worldwide consumption of polyols is estimated to be about 1.8 million metric tons in 2020. More than half of that volume is used in foods where polyols are used at high levels as sugar-free bulk sweeteners (sugar content less than 0.5% based on dry solids) replacing sugars on a weight-for-weight basis and at lower levels to perform very specific technical functionalities. Also, more than half of the global polyols consumption relates to sorbitol only, of which about three-quarters is used in nonfood applications such as in oral and personal care (ie, toothpaste) and as a starting material in the production of, for example, vitamin C, polymers, and surfactants. Polyols are used in pharmaceutical and cosmetic applications mainly for technical functionality such as filler, binder, anticaking agent, stabilizer, texturizer, moisturizer, and humectant.

This article provides an overview of the most common polyols; how they are produced; their physical, chemical, sensorial, biological, and nutritional characteristics; properties in food and nonfood applications; and legal aspects associated with their use.