



Wachuwannano

BY MICHAEL A. GARDNER,
A.K.A. MR. WACHUWANNANO

My former assistants decided to have some fun one day, and during one of their not-so-infrequent wrestling matches, they managed to knock about half a can of a sugar-sweetened soft drink into a fresh mix of stucco browncoat portland cement plaster. We think we were able to scoop all of the tainted material out of the mixing box, but later that night I began to wonder about the effect of the soda's sugar on the mix. What do you think? —N.F., California

Wachuwannano, to his dismay, couldn't find any tests or background information regarding the effect of sugar added to plaster. Therefore, he looked for similar situations concerning other comparable materials and found some interesting answers in the concrete industry, where a number of tests have been conducted to determine the effect of added sugar on the set times of concrete mixes. The situation is a concern for that industry because occasionally wooden set forms will bleed wood sugars into poured concrete, and absent-minded employees will sometimes dump sugary products into concrete mixes.

In the instance of concrete, it has been shown that the addition of a dose of sugar as tiny as one-quarter of 1 percent of the cement's weight in the concrete mix can cause a substantial reduction in the overall B-day strength of the concrete. Oddly enough, a very small dose of

pure sugar may actually increase the overall strength of the concrete, but the sugar has to be well dispersed throughout the mix and can't be more than 0.15 percent, by weight, of the portland cement.

A concrete mix is about 10 percent to 15 percent portland cement—the remainder being made up of water, air, sand and coarse aggregate. The chemical reaction that helps hold the concrete mix together is largely a function of the reaction between the portland cement and the water. Given that portland cement is a major component of concrete, it's probably safe to figure that the effect of a sugar dump on portland cement stucco, where portland cement makes up a greater percentage of the final mix than it does in concrete, would have an effect similar to that of concrete: A small dose of sugar will act as a set retarder and slightly increase long-term set strength, and a large dose will act as a set accelerant and decrease final set strength.

In your instance it's difficult to determine exactly how much sugar is in the drink and exactly how much sugar got into the mix. Therefore, you made a smart move when you scooped all the tainted material from the plaster mix, rather than trying to mix it in. A concentrated, poorly dispersed blast of sugar dumped into a stucco mix would probably cause spot retardation problems,

and tainted portions of the finished plaster might blotch and possibly fall off after the material has set. While your situation has some humor in it, it is possible to inadvertently sweeten the plaster mix by unintentionally placing the stucco next to a tree bleeding sap. The sweet sap runs off of the tree and drips into the freshly applied plaster, the mix becomes tainted and the finish becomes ruined.

I'm being told by one specific building code official that I cant add a layer of dywall to a fire-rated partition and make it thicker than the tested assembly. His opinion seems to defy all logic. Help! —M.K., Arkansas

Not only is his opinion illogical, it's wrong. Show him the latest edition of the Gypsum Association's Fire Resistance Design Manual. A new explanatory note was added to the text with the 15th edition of the document that was released this past summer. It specifically states, "additional layers of type X or regular gypsum board shall be permitted to be added to any system." Think about it: Why shouldn't you be able to add more gypsum board to a rated partition? Once you've achieved the rating, where's the harm in adding material?

About the Author

Michael Gardner is AWCI's director of technical services. Send your technical questions to **Construction Dimensions**.