

# Glass Transition of Foods and Excipients

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## ABSTRACT

Glass transition in food and other materials affect materials characteristics in processing as well as their performance and stability. The glass transition of carbohydrates and sugars appears often in thermal analysis of dehydrated and frozen materials. Much research has reported such glass transition data for simple sugars and also sugar containing foods, such as fruits and berries. The glass transition is strongly dependent on water content as water increases free volume and plasticizes noncrystalline food materials. Understanding glass transition has allowed the food industry to design food structures for innovative processing, attractive sensory properties as well as stability for nutrient delivery. Quantitative understanding of kinetics above glass transition is beneficial in various applications as relaxation times obtained from thermal analysis can be translated to desired time frames for processing and stability control. Examples include crispness but also crystallization of amorphous food components. Our approach has been to use a strength analysis to describe behaviour of simple and complex food materials for their performance and stability analysis.