

The following recipe for **chocolate chip cookies** recently appeared in Chemical & Engineering News (C&EN, Jun 19, 1995, p. 100). It was attributed to Jeannene Ackerman of Witco Corp.

Ingredients:

- 1- 532.35 cm<sup>3</sup> gluten
- 2- 4.9 cm<sup>3</sup> NaHCO<sub>3</sub>
- 3- 4.9 cm<sup>3</sup> refined halite
- 4- 236.6 cm<sup>3</sup> partially hydrogenated tallow triglyceride
- 5- 177.45 cm<sup>3</sup> crystalline C<sub>12</sub>H<sub>22</sub>O<sub>11</sub>
- 6- 177.45 cm<sup>3</sup> unrefined C<sub>12</sub>H<sub>22</sub>O<sub>11</sub>
- 7- 4.9 cm<sup>3</sup> methyl ether of protocatechuic aldehyde
- 8- Two calcium carbonate-encapsulated avain albumen-coated protein
- 9- 473.2 cm<sup>3</sup> theobroma cacao
- 10- 236.6 cm<sup>3</sup> de-encapsulated legume meats (sieve size #10)

To a 2-L jacketed round reactor vessel (reactor #1) with an overall heat-transfer coefficient of about 100 Btu/F-ft<sup>2</sup>-hr add #one, two, and three with constant agitation.

In a second 2-L reactor vessel with a radial flow impeller operating at 100 rpm add # four, five, six, and seven until the mixture is homogeneous.

To reactor #2 add # eight followed by three equal portions of the homogeneous mixture in reactor #1. Additionally, add # nine and ten slowly with constant agitation. Care must be taken at this point in the reaction to control any temperature rise that may be the result of an exothermic reaction.

Using a screw extrude attached to a #4 nodulizer place the mixture piece-meal on a 316SS sheet (300 x 600 mm). Heat in a 460K oven for a period of time that is in agreement with Frank & Johnston's first order rate expression (see JACOS, 21, 55), or until golden brown.

Once the reaction is complete, place the sheet on a 25 deg. C heat-transfer table allowing the product to come to equilibrium.

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