

SETHNESS PRODUCTS COMPANY

SULFITE IN SETHNESS CARAMEL COLORS

Sethness Caramel Colors are 100% Caramel Color. Sethness Caramel Colors do not contain any post manufacturing "sulfiting agents" typically added to food products as oxygen scavengers. These sulfiting agents are used to enhance the stability of the final product. Sulfiting agents used for stabilization are readily determined by both digestive and non-digestive methods.

Sethness Caramel Colors do not contain any stabilizing sulfites. The sulfite found in Sethness Caramel Colors comes from one of two sources:

1. When Caramel Color is tested to contain above 50 ppm of sulfite, then sulfite is used as a necessary and allowed process reactant (as defined by 21 CFR 73.85) to assist in the formation of the color bodies generated in the process of manufacturing Caramel Colors. These are Class II (E150b) and Class IV (E150d) Caramel Colors. This sulfite is incorporated into the Caramel Color as a part of the polymer chains. When a Sethness Caramel Color is analyzed for free sulfite using a non-digestive method, the result is nil.
2. When Caramel Color is tested to contain less than 50 ppm of sulfite, then the sulfite result is assumed to be from residual levels in the carbohydrate source. Also, the test for sulfite is such that it will not give a result that is conclusively free of sulfites. Therefore, we have set our sulfite limits to be within the limit of detection and accuracy of the test and possible residual sulfites from the carbohydrate source. These are Class I (E150a) and Class III (E150c) Caramel Colors.

Of the four types of Caramel Colors (as defined by JECFA), two are manufactured using sulfite (sulfur dioxide, SO₂) as a reactant. The Class II (E150b) Caramels, such as RT80, are Sulfite Process Caramel Colors. The Class IV (E150d) Caramels, such as DS400, are Sulfite Ammonia Process Caramel Colors. Class I (E150a) and III (E150c) Caramel Colors do not use sulfite as a reactant and only have trace levels of sulfite.

As required by FDA, the sulfite content in Sethness Caramel Color is determined by the official FDA Modified/AOAC method (a digestive method) where the test material sample is heated in hydrochloric acid solution for 120 minutes under controlled conditions. The acid and heat used in this method break down (digest) the polymers, releasing the sulfite. The limit is listed on the Sethness Caramel Color nutritional sheets.

The FDA requires the labeling of sulfite on finished products ready for consumer use. The labeling requirement is only for finished products that contain 10 ppm of sulfite or more (as defined by 21 CFR 101.100 (a)(4)). Caramel Color is not a finished product. It is a color additive. The usage level of Caramel Color must be taken in account to determine the possible final amount of sulfite in a finished product. The following example gives an indication of how to predict possible sulfite contribution from a Caramel Color in a final product.

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| 1347 Beaver Channel Parkway, Clinton, IA 52732 | Original: 05/29/08 | Revised: 11/09/18 |

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Example:

Producer A uses a Caramel Color that listed < 650 ppm sulfite on the nutritional sheet. They use 0.25% of Caramel Color in their proposed formulary. Use this value for the sulfite content to calculate the highest possible value of sulfite contributed from the Caramel Color to the final product.

$$0.0025 \times 650 = 1.63 \text{ ppm sulfite}$$

So Producer A, for their product, would use 1.63 ppm sulfite from Caramel Color. If this was the only source of sulfite, then Producer A would not have to list sulfite on the label as per FDA rules.

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