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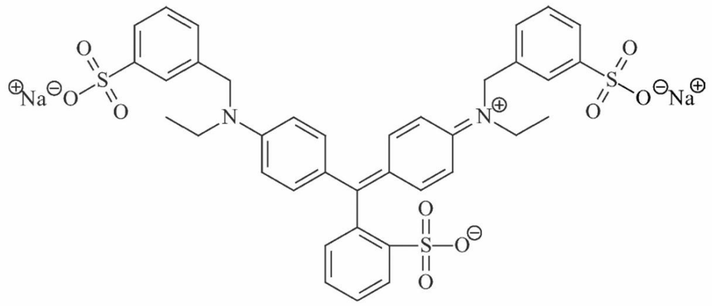
winnovent

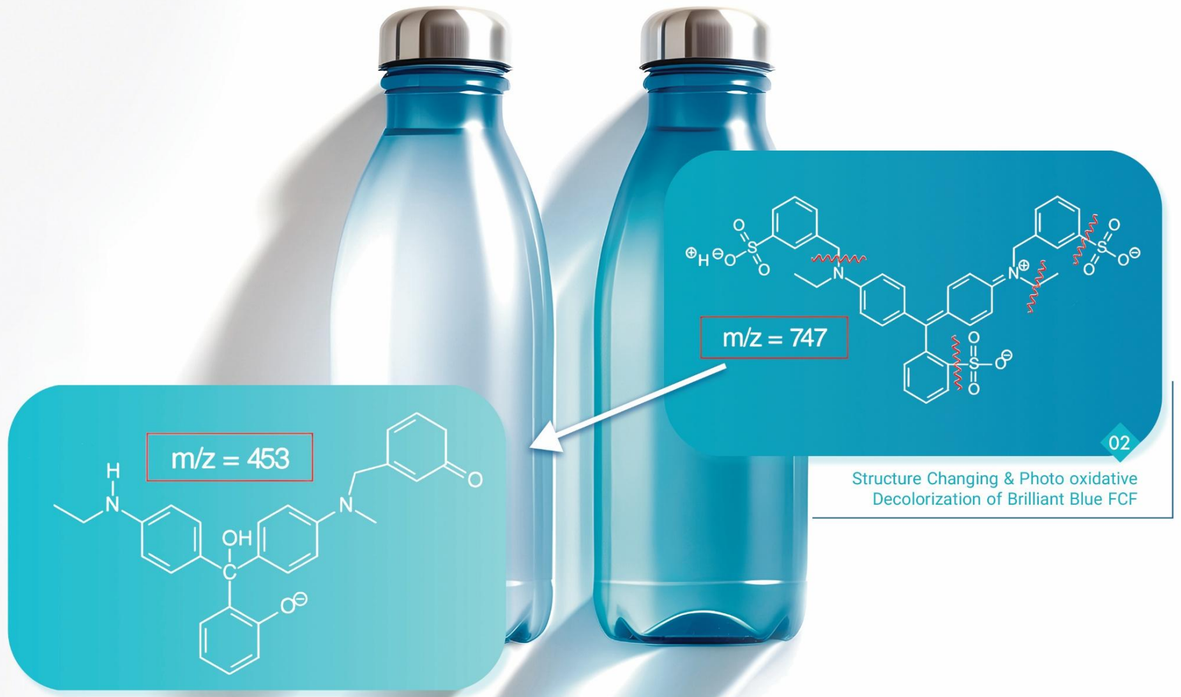
Brilliant Blue is one of the most widely used colors in the food industry, including in beverages, canned vegetables, confectioneries, and more.
It is classified within the group of triarylmethane colors. In this category of colors, three benzene rings surround a central atom (Figure 1).



01 Chemical Structure of Brilliant Blue FCF, E133

Brilliant Blue typically degrades under UV radiation, oxidizing radicals (like hydrogen peroxide, Fenton's reagent, potassium persulfate, potassium periodate, and potassium bromate), pH, and high temperatures; it decomposes and changes color following the removal of the sulfonate group (Figure 2).

In such conditions, Brilliant Blue still retains 70% of its carbon content and will be present as a heavy structure in the product. Since structural changes in colorants often result in the formation of toxic aromatic compounds, preventing these reactions is essential not only for maintaining the visual quality of products but also for the health of consumers.



02

Structure Changing & Photo oxidative Decolorization of Brilliant Blue FCF

WINNOVENT Color Stabilizer

The primary cause of color degradation in sodas and fruit juices is the exposure to sunlight. Experiments have shown that **factors such as carbonating the beverage with carbon dioxide or adding fruit concentrate significantly increase the rate of color fading when exposed to sunlight.**

The WINNOVENT color stabilizer plays a significant role in maintaining the stability of Brilliant Blue in beverages by intervening in the reactions associated with its degradation and neutralizing the factors that contribute to it.

The tables below demonstrate the effect of the presence of WINNOVENT color stabilizer and different concentrations of citric acid on the color retention percentage of two different carbonated beverages after 24 hours of exposure to artificial light similar to sunlight, measured using spectrophotometry.

The first and second tables correspond to carbonated beverages without fruit concentrate and carbonated beverages containing fruit concentrate, respectively.

In the formulation of these beverages, except for the concentration of WINNOVENT and citric acid, the concentration of other components remains constant. The results reported in Tables 1 and 2 clearly support the impact of fruit concentrate presence on reducing color retention and the importance of determining the optimal concentration of citric acid and WINNOVENT color stabilizer for achieving the best possible outcome.

WINNOVENT Concentration (gr/Lit)	Citric Acid Concentration (gr/Lit)					
	1.1	1.2	1.3	1.4	1.5	1.6
0	0	0	0	0	0	0
0.04	7	9	10	11	9	8
0.08	10	13	17	19	15	14
0.12	21	28	35	40	36	32
0.16	33	35	40	45	47	51
0.2	49	61	74	73	70	75
0.24	55	64	78	79	76	79
0.27	59	68	83	83	80	87
0.3	67	72	88	87	90	89
0.33	73	77	90	91	95	93
0.36	77	81	93	98	100	96
0.39	80	83	83	93	100	100
0.42	75	77	81	88	98	100
0.45	71	75	77	83	94	100
0.48	65	71	73	81	88	96
0.51	59	69	65	75	86	90

Table 1: Carbonated Beverage Without Fruit Concentrate

Key Benefits of WINNOVENT Color Stabilizer

- Increases the color retention duration of the product against sunlight exposure by up to 10 times.
- Prevents the formation of carcinogenic compounds resulting from color degradation.
- Improves the quality of the beverage and increases its shelf life.
- Ease of use.

It is worth mentioning that since Brilliant Blue is known as an indicator of photodegradation, WINNOVENT color stabilizer can be used to enhance the resistance of other food colors to light.

WINNOVENT Concentration (gr/Lit)	Citric Acid Concentration (gr/Lit)					
	1.1	1.2	1.3	1.4	1.5	1.6
0	0	0	0	0	0	0
0.04	5	6	7	8	7	5
0.08	7	10	12	13	11	10
0.12	14	21	25	29	25	21
0.16	24	25	30	32	33	37
0.2	38	45	50	53	50	52
0.24	41	49	55	55	53	56
0.27	42	49	59	60	59	61
0.3	48	50	63	62	60	67
0.33	51	56	63	67	68	61
0.36	55	60	66	71	71	70
0.39	54	60	57	66	71	69
0.42	55	56	56	64	67	68
0.45	52	54	51	59	67	69
0.48	48	49	47	59	63	67
0.51	44	48	46	51	60	63

Table 2: Carbonated Beverage Containing 20% Natural Fruit Juice

Usage Instructions

Using this product in beverage production is very simple and lacks specific technical complexities. However, it is usually recommended to observe the following conditions when producing a product containing WINNOVENT color stabilizer:

1- Remove sodium citrate or similar salts from the formulation.
2- Add the color stabilizer supplement to the syrup and ensure its complete dissolution in the product before adding the color.
3- It is suggested to evaluate the efficiency of the supplement at concentrations ranging from 0.35 to 0.5 grams per kilogram of beverage (final product).

Join the WINNOVENT Revolution

Experience the transformative potential of WINNOVENT & unlock new opportunities for your brand. Whether through improved sustainability, enhanced consumer satisfaction, or streamlined production processes, WINNOVENT offers a comprehensive solution to the challenges facing the CSD industry. Embrace the future of carbonated soft drinks with WINNOVENT today.