

Cabot's High Purity Furnace Blacks: The Right Choice for Quality, Environmental Responsibility, & Purity!



Consider the following, then select a responsible and superior colorant.

The U.S. Food & Drug Administration (FDA) has listed two types of carbon black for use as a food-contact colorant for polymers

- Carbon black manufactured by the channel process; prepared by the impingement process from stripped natural gas; neither purity specifications nor any other specifications related to safety for food contact, are defined by the FDA, and
- **High purity furnace black containing total polynuclear aromatic hydrocarbons (PAHs) not to exceed 0.5 parts per million (ppm), and benzo[a]pyrene not to exceed 5.0 parts per billion (ppb)**

². The high purity furnace blacks may be used at levels not to exceed 2.5 % by weight of the polymer.

Responsibility

In keeping with the principles of Responsible Care[®],

Cabot spearheaded the promulgation of the stringent purity and use standards for high purity furnace blacks. As a result, the FDA has listed high purity furnace blacks for the safe use as a colorant in the manufacture of articles or components of articles intended for use in producing, manufacturing, packing, processing, preparing, treating, packaging, transporting, or holding food.



Cabot manufactures three FDA high purity furnace blacks

Cabot produces three FDA high purity furnace blacks manufactured on special production lines: BLACK PEARLS[®] 4350, MONARCH[®] 4750 and BLACK PEARLS 4750. Precise control of the manufacturing process ensures consistently reproducible manufacturing conditions that

produce high quality, highly pure furnace blacks. It is this tightly controlled manufacturing process that produces the highest purity carbon blacks that contain substantially lower levels of PAH impurities than the typical PAH impurity levels of channel blacks.

Table 1 compares samples of channel black to Cabot's high purity furnace blacks. The channel blacks contain significantly higher and inconsistent concentrations of PAHs impurities.

Table 2 summarizes the significant differences between the two colorants.

State and Federal U.S. Clean Air Act Regulations

High purity furnace black provides superior alternative colorant to channel black that is of suitable purity for food contact use in polymers. In addition, Cabot's high purity furnace blacks are manufactured in compliance with the strict State and Federal U.S. Clean Air Act regulations.

This responsible manufacturing and testing adds to our costs. Cabot knows that channel blacks cost less than BLACK PEARLS 4350, MONARCH 4750 and BLACK PEARLS 4750, but we are committed to reliably delivering a high quality, highly safe product.

We care and you should too.

For questions, please contact the Corporate "Safety Health & Environment" Product Support at: +1 978 670 6977

¹ Chapter 21 of the Code of Federal Regulations Section 178.3297 addresses colorants for polymers

² As determined by the analytical method developed by Cabot and adopted by the FDA

Table 1

Typical and Specified Polynuclear Aromatic Hydrocarbon (PAH) Content (ppm)

A Comparison of Channel Blacks with Cabot's High Purity Furnace Blacks

PAH Type	Channel Black	Channel Black	Channel Black	BLACK PEARLS	BLACK PEARLS
	Sample 1	Sample 2	Sample 3	4350	MONARCH 4750
Cyclopenta (cd) pyrene	0.019	0.015	0.007	0.006	0.002
Benanthracene	0.057	0.070	0.020	< 0.001	< 0.001
Chrysene	0.040	0.110	0.027	0.001	< 0.001
Benzo(e)pyrene	0.048	0.077	0.020	0.002	< 0.001
Benzo(b) fluoranthene	0.066	0.135	0.020	0.001	< 0.001
Benzo(k)fluoranthene	0.400	0.055	0.018	0.001	< 0.001
Dibenzanthracene	0.008	0.009	0.003	< 0.001	< 0.001
1,12-Benzperylene	0.160	1.100	0.130	0.001	< 0.001
Indenopyrene	0.150	0.540	0.066	< 0.001	< 0.001
Anthanthrene	0.055	0.165	0.014	< 0.001	< 0.001
Coronene	0.140	1.650	0.140	< 0.001	0.002
Naphthalene	0.460	1.650	0.280	0.086	0.024
Acenaphthylene	0.028	0.064	0.014	0.023	0.009
Acenaphthene	0.002	<0.002	<0.01	0.001	< 0.001
Fluorene	0.003	0.002	<0.01	0.002	0.001
Phenanthrene	0.400	1.200	0.190	0.020	0.004
Anthracene	0.095	0.110	0.170	0.002	0.001
Fluoranthene	0.310	0.735	0.120	0.016	0.005
Pyrene	0.330	0.930	0.130	0.082	0.036
Benzo(ghi)fluoranthene	0.130	0.310	0.051	0.006	0.002
Perylene	0.007	0.040	0.011	< 0.001	< 0.001
Benzo(a)pyrene	0.110	0.220	0.028	0.001	< 0.001
Total Typical PAH	3.018	9.189	1.480	0.257	
specification?	NO	NO	NO	YES	YES
Meets FDA Total PAH Purity Specification?	NO	NO	NO	YES	YES

Table 2

	CHANNEL BLACKS	HIGH PURITY FURNACE BLACKS
Quality Control	Quality control procedures and process unknown to Cabot	Statistically sound, quality control practices employed during manufacturing. In addition, Cabot's is ISO 9001/2000 certified
Environmental Impact	The channel process was eliminated in North America in mid 1970 due to air quality concerns	Manufactured in compliance with the strict and Federal U.S. Clean Air Act statutes and regulations
Manufacturing Location	Eastern European countries	No longer produced in North America; imported
Purity	Do not consistently meet the stringent purity standard required of high purity furnace blacks – see Table 1	Consistently meet FDA's stringent purity standard- not to exceed 0.5 ppm, and benzo[a]pyrene not to exceed 5.0 ppb

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**HIGH PURITY FURNACE BLACK
FOR FDA APPLICATIONS**



BLACK PEARLS[®] 4750



The U.S. Food & Drug Administration (FDA) has listed high purity furnace blacks for use as colorant for polymers in contact with food ¹. The purity requirements are:

- Total polynuclear aromatic hydrocarbons (PAHs) not to exceed 0.5 parts per million (ppm)
- Benzo[a]pyrene not to exceed 5.0 parts per billion (ppb) ² The high purity furnace blacks may be used at levels not to exceed 2.5% by weight of the polymer.

To ensure BLACK PEARLS[®] 4750 meets the FDA's purity standards, Cabot employs stringent, statistically sound, quality control practices during manufacturing.

Typical Applications and Performance Features

Cabot has developed BLACK PEARLS 4750 as part of the company's commitment to meet the demands of the plastics industry and providing solutions to previously unsolvable

Standard Packaging Options

Bag	20 kg poly
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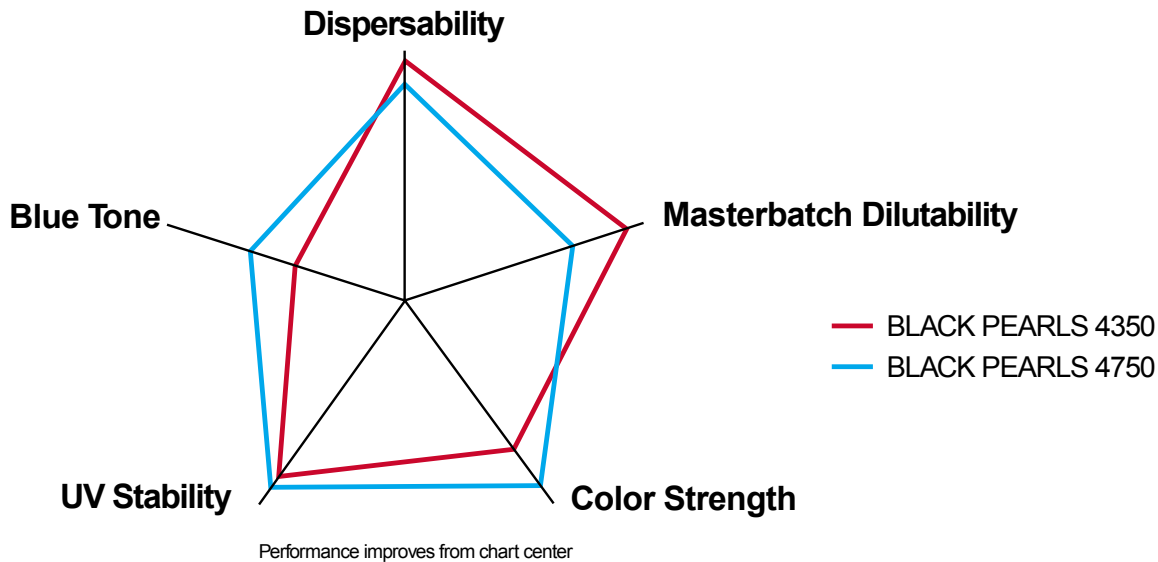
BLACK PEARLS 4750 exhibits a higher jetness and blue undertone over BLACK PEARLS 4350. BLACK PEARLS 4750 is a pelleted pigment. It is also available in an easier to disperse powdered form as MONARCH[®] 4750.

Typical Properties

I2No (mg/g)	258
OAN (ml/100g)	117
Moisture (%)	<3.0
Total PAH (ppm)	<0.5
Pyrene (ppb)	<5.0

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MSDS

Material Safety Data Sheet is available from the Regional Sales Office. The location of the nearest Sales Office can be found at the foot of this document.

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