

**SPECIALTY CARBON BLACKS**  
FOR FOOD CONTACT APPLICATIONS  
IN PLASTICS





## Performance and leadership in black plastics

Cabot Corporation is a global performance materials company and we strive to be our customers' commercial partner of choice. We have been a leading manufacturer of carbon black and other specialty chemicals for more than 130 years, and we have supplied additives to the plastics industry since its inception.

Our global reach enables us to work closely with customers to meet the highest standards for performance, quality and service. Our global production network and three applications development facilities provide our customers with global service capabilities as well as the latest technical innovations.

## Global reach

### We support customers around the world in our global production and applications development centers

#### ◆ North America

Canada  
Mexico  
United States

#### ◆ South America

Argentina  
Brazil  
Colombia

#### ◆ Europe, Middle East & Africa

Belgium  
Czech Republic  
France  
Germany  
Italy  
Latvia  
Norway  
Switzerland  
The Netherlands  
United Arab Emirates  
United Kingdom

#### ◆ Asia Pacific

China  
India  
Indonesia  
Japan  
Korea  
Malaysia  
Singapore

With approximately 4,500 employees worldwide, we continue to create a diverse environment rooted in values and sustainability.

We operate 44 manufacturing sites in 21 countries, all with local management teams. We have a global footprint in order to serve our customers throughout the world.

## Delivering high purity and superior color performance

Many national and regional laws restrict the additives that can be incorporated into plastic materials and articles intended for food contact. We have designed a range of specialty carbon blacks that meet strict food contact requirements, including those established by the U.S.

Food & Drug Administration (FDA) and the European Commission.

Customers requiring exceptional color and opacity performance for their food contact applications can turn to us for carbon black products that will meet performance and regulatory compliance needs.

### Our brands

We supply a diverse product range of specialty carbon black products to meet performance and processability requirements across many industries and end uses. Offered in pellet and fluffy form, our long-established products for plastics include VULCAN<sup>®</sup>, ELFT<sup>®</sup>, MONARCH<sup>®</sup> and BLACK PEARLS<sup>®</sup> specialty carbon blacks. While our products have performed successfully in plastic applications for more than 50 years and are top choices for the plastics industry, we continue to innovate and develop new products to drive our customers' product performance.

## Selection guide

We offer three specialty carbon blacks that offer superior color and opacity performance and have been specifically formulated to comply with stringent U.S. FDA regulations. Additionally, we offer an expanded portfolio of products that meet the requirements of the EU Plastics Regulation and food contact regulations in South America, Switzerland, Japan and China.

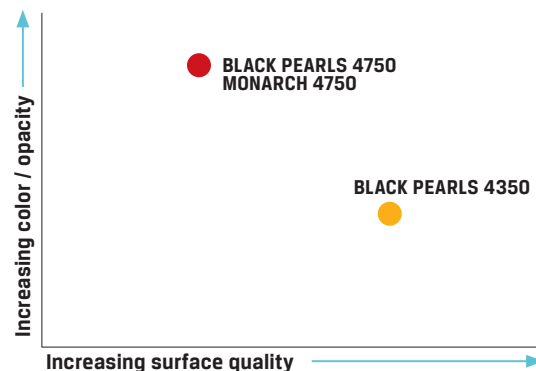
Relevant regional regulations and suitable products are outlined below. Our featured products for food contact applications are listed in the Technical Data section; your Cabot representative can assist in specific product selection.

### Compliance with U.S. FDA regulations

The applicable purity requirements for compliance with U.S. FDA regulations are<sup>1</sup>:

- ◆ Total PAHs not to exceed 0.5 ppm
- ◆ Benzo(a)pyrene not to exceed 5.0 ppb

Figure 1: Carbon blacks that meet U.S. food contact regulations



<sup>1</sup> As determined by the analytical method developed by Cabot and adopted by the FDA

As a result of a new Food Contact Notification (FCN) submitted by Cabot to FDA (FCN 1789), FDA-compliant specialty carbon blacks can be used as a colorant for polymers with no specified upper limit.

The U.S. FDA has updated 21 CFR 178.3297 removing the previous 2.5% weight loading limit for Cabot's FDA high purity specialty carbon blacks. Customers who use our FDA high purity blacks can use up to the loading needed to accomplish the intended technical effect. It is not for use in contact with infant formula and human milk. The FDA has granted this approved use only for Cabot Corporation's high purity blacks listed below.

We offer three high purity products – BLACK PEARLS® 4350 and 4750 specialty carbon blacks - both offered in pellet form, and MONARCH® 4750 specialty carbon black in fluffy form – that allow you to meet the above listed U.S. FDA requirements. These products can be utilized in all relevant polymer systems. Relative performance for these products is shown in Figure 1.

### Compliance with food contact regulations in the EU and other regions

We offer multiple specialty carbon blacks that meet the requirements of the current plastics regulations applicable in the EU, the Mercosur countries, Switzerland, Japan and China. All products are regularly tested to ensure compliance and lot-to-lot consistency. Please contact your local Cabot representative for the most up-to-date compliance information.

#### European Union

The Commission Regulation EU No 10/2011 is applicable in all the countries of the European Union. The purity requirements and specifications for compliance are:

- ◆ Toluene extract  $\leq 0.1\%^2$
- ◆ Cyclohexane extinction at 386 nm  $< 0.02$  for 1 cm cell  
or  $< 0.1$  for 5 cm cell
- ◆ Benzo(a)pyrene  $\leq 0.25$  mg/kg (250 ppb)
- ◆ Primary particles of 10-300nm, aggregates of 100-1200nm, agglomerates 300nm+
- ◆ In the final food contact item, a maximum of 2.5% carbon black by weight is allowed

<sup>2</sup> As determined by ISO 6209 method



**Mercosur<sup>3</sup>**

South American Mercosur has adopted the following purity requirements:

- ◆ Toluene extract  $\leq$  0.1%
- ◆ Cyclohexane extinction at 386 nm  $<$  0.02 for 1 cm cell or  $<$  0.1 for 5 cm cell
- ◆ Benzo(a)pyrene  $\leq$  0.25 mg/kg (250 ppb)
- ◆ In the final food contact item, a maximum of 2.5% carbon black by weight is allowed

**Switzerland<sup>4</sup>**

Switzerland has adopted the following purity requirements:

- ◆ Toluene extract  $\leq$  0.1%
- ◆ Cyclohexane extinction at 386 nm  $<$  0.02 for 1 cm cell or  $<$  0.1 for 5 cm cell
- ◆ Benzo(a)pyrene  $\leq$  0.25 mg/kg (250 ppb)
- ◆ In the final food contact item, a maximum of 2.5 % carbon black by weight is allowed

**Japan**

Japan has adopted the following purity requirements. Each product must be specifically approved by the Japan Hygienic Olefin and Styrene Plastics Association (JHOSPA), so please contact your Cabot representative for more information.

- ◆ Toluene extract  $\leq$  0.1%
- ◆ Benzo(a)pyrene  $\leq$  0.25 mg/kg (250 ppb)

**China<sup>5</sup>**

China has adopted the following requirements:

- ◆ Toluene extract  $\leq$  1%
- ◆ Benzo(a)pyrene  $\leq$  0.25 mg/kg (250 ppb)
- ◆ Colorant Purity requirements of China food contact material
- ◆ In the final food contact item, a maximum percentage of carbon black by weight is allowed, depending of the type of polymer:
  - In PMMA, PVC, PVDC, PU, UP, PF, PEI, PPE, PBT, PPS, POM and LCP: maximum 2.5%
  - In PE: maximum 3%
  - In PP, PS, AS, ABS, PA, PET and PC: dosage as necessary

**Types of food contact applications**

Our carbon blacks are used in a variety of food contact applications, including:

- ◆ Consumer molded parts      ◆ Pipes
- ◆ Film and sheet                ◆ Fiber and textiles

Typical products for these applications are listed in the Technical Data section of this brochure. Please refer to the respective application brochures or contact your Cabot representative for more information.



<sup>3</sup> *Reglamento Técnico Mercosur sobre "materiales plasticos destinados a la elaboracion de envases y equipamientos en contacto con alimentos".*

- MERCOSUR/GMC/RES. N°15/10 Colorants

- MERCOSUR/GMC/RES. N°32/07 Positive list of additives

<sup>4</sup> *"Ordonnance du DFI sur les objets et matériaux en matière plastique" - SR 817.023.21 of 23/11/2005 (Section 3, Annexe 1) updated version of April 2013.*

<sup>5</sup> *Standard GB9695-2008 Hygienic std for uses of additives in food containers and packaging materials*

## Technical data

Specialty carbon black product	Description	Application						Physical properties		Representative physical properties						
		Consumer molded parts	Film and sheet	Pipe	Fiber	Food contact <sup>6</sup>	US FDA <sup>6,7</sup>	Pellets	Fluffy	ASTM D-1510	ASTM D-2414	ASTM D-3265	ASTM D-1514	ASTM D-1509	ASTM D-1513	ASTM D-4527
										Iodine number (mg/g)	OAN (cc/100g)	Tint (%)	325 mesh residue (ppm)	Moisture as packed (%)	Pellet density (kg/m <sup>3</sup> )	Toluene extract (%)
<b>BLACK PEARLS 4350</b>	High purity furnace black offering medium jetness with excellent dispersibility & masterbatch dilutability.	•				•	•	•		116	70	121	<100	<1.0	443	<0.1
<b>BLACK PEARLS 4750 MONARCH 4750</b>	High purity furnace black offering very high jetness & blue undertone.	•				•	•	•	•	260	120	145	<200	<3.0	307	<0.1
<b>ELFTEX P100</b>	Specialty p-type carbon black meeting all ISO-standards for UV performance in fully-formulated pipe offering easy to disperse and premium moisture performance.			•		•		•		81	103	93	<20	<1.0	378	<0.03
<b>BLACK PEARLS 4040</b>	Specialty carbon black offering good UV protection and covering power in a variety of plastic film applications, especially in agricultural film.	•	•	•		•		•		82	101	102	<25	<1.0	389	<0.1
<b>ELFTEX 570</b>	Multi-purpose specialty black for coloration and UV / weatherability performance across plastic applications such including general purpose molding, agricultural film, and coarse staple fiber.	•	•	•		•		•		121	114	115	<50	<1.0	345	<0.1
<b>ELFTEX TP</b>	Standard p-type specialty black that meets all ISO-standards for fully-formulated pipe.		•	•		•		•		92	98	106	<25	<1.0	375	<0.03
<b>BLACK PEARLS 4560i</b>	High blue-tone specialty black offering superior cleanliness and processability (higher MB loadings) for fiber applications.				•	•		•		125	110	103	<10	<1.0	360	<0.1
<b>VULCAN 9A32</b>	Premium offering for UV protection in plastic applications such as cable jacketing and agricultural films.	•	•			•		•		142	118	120	<30	<1.0	352	<0.1
<b>BLACK PEARLS 800 MONARCH 800</b>	Offers an optimal balance of properties including high jetness, blue undertone, excellent UV protection and low viscosity in applications for plastics.	•				•		•	•	258	71	152	<200	<3.0	430	<0.1
<b>BLACK PEARLS 880 MONARCH 880</b>	Delivers high levels of jetness with excellent surface quality and retention of mechanical properties in high value, aesthetic plastics applications.	•				•		•	•	258	105	155	<100	<3.0	335	<0.1

**Note:** For specialty carbon black products offered in both pellet and fluffy form, the MONARCH product is the fluffy form.

<sup>6</sup> Information current at publication. For assurance that a carbon black product can be used in food contact applications, a Cabot issued food contact certification statement is required. Please contact your local Cabot representative.

<sup>7</sup> This product meets U.S. Food and Drug Administration (FDA) requirements for contact with food as specified in FCN 1789.

The data in the table above are typical test values intended as guidance only, and are not product specifications. Product specifications are available from your Cabot representative.

## Additional references

This Product Application Guide provides specific information about our specialty carbon blacks for use in food contact applications in plastics. For other application-specific product recommendations and broader product portfolio information, please visit [cabotcorp.com](http://cabotcorp.com) or contact your Cabot representative.

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