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SINCE 1996

MPC BLACK



Carbon Black

AMCOM GROUP of companies

AMCOM GROUP is an international innovative manufacturing enterprise, specialized in the design, development, and implementation of 'turnkey' solutions for the metallurgical and mining industries. With fully owned production facilities, the company manufactures and supplies high-efficiency equipment for slag processing, ore and coal enrichment, as well as briquetting of fine by-products. In the Chemical business unit, AMCOM GROUP introduced their pure Channel Black in 1997 in USA, which has been marketed by distribution partners and expanded in 2009 the business to Europe.



Locations AMCOM GROUP of companies

In 2022, Chemacor International LLC became part of the group, taking on responsibility for distributing Channel Black across the Americas. The following year, 2023, AMCOM Group s.r.o. in Slovakia commenced support operations for Channel Black in the EMEA region, focusing on distribution, global regulatory compliance and technical applications.

With a presence across key global markets and a consistent track record of performance, AMCOM GROUP has earned the trust of customers worldwide. The company's commitment to quality, support and reliable supply has made MPC Channel Black a preferred choice across diverse industries. Whether in North America, Europe, or emerging markets, long-standing customer relationships reflect AMCOM GROUP's focus on delivering dependable solutions where consistency and reliability are critical to success.

Introduction to Carbon Black

History of Carbon Black

The use of Carbon Black dates back to ancient civilizations. Both the Chinese and Egyptians produced black pigments and inks by mixing soot with natural substances such as resins, vegetable oils, or tar. The soot itself was collected through an early impingement method, where the flame of an oil lamp was directed onto a cooled surface to generate deposits. This primitive technique later inspired the modern lamp black process and paved the way for the channel and gas black methods, both of which relied on gas flames against cooled surfaces.

With the invention of the letterpress, the demand for Carbon Black grew rapidly, as thicker, more viscous inks were essential for printing. Carbon Black manufacturing evolved into a specialized trade, with pine resin serving as a primary raw material. Germany's Black Forest became a key production center. The Industrial Revolution further accelerated output by making coal tar widely available and improving the lamp black process through the introduction of labyrinth-style collection chambers. Although yields increased, complete soot precipitation remained challenging. Lamp black chambers remained common until the mid-19th century, when more efficient filter systems replaced them.

By the late 19th century, the U.S. Carbon Black industry embraced natural gas as a new feedstock. Its abundance and low cost enabled the development of the American channel black process, which yielded extremely fine particles with excellent rubber-reinforcing properties. This breakthrough significantly enhanced tire strength and durability, fueling the rapid rise of the automobile industry.

In Europe, however, the scarcity of natural gas led to alternative innovations. A coal tar-based process was developed, and by the late 1920s, the furnace black process emerged and became widely adopted in the 1930s. In 1935, Degussa introduced the gas black system, offering a strong alternative to the American method. During the same period, between 1922 and 1938, the industry also saw the development and industrial application of the thermal black process and the acetylene black process, both of which further expanded Carbon Black production capabilities.

Carbon Black: Production Methods and Industrial Applications

Carbon Black is generally produced through the controlled combustion or thermal decomposition of hydrocarbons like oil and/or natural gas. Carbon Black consists of more than 95 % pure carbon particles and minute quantities of oxygen, hydrogen, nitrogen and sulfur. Carbon Black is obtained through the following production processes:

Thermal-Oxidative Decomposition

- Furnace Black process
- Gas Black process
- Lamp Black process
- Channel Black process

Thermal Decomposition

- Thermal Black process
- Acetylene Black process

Thermal decomposition in the absence of oxygen

- Bone Black process

Carbon Black is widely utilized across various industries due to its unique physical and chemical properties, serving essential functions in both performance enhancement and cost efficiency:

Reinforcement in Rubber Products

One of the most common uses of Carbon Black is as a reinforcing agent in rubber products. It enhances the mechanical properties of rubber, making it stronger, more durable, and resistant to wear and tear. This is particularly important in products like tires, hoses, gaskets and conveyor belts.

Pigment

Carbon Black serves as a high-performance pigment in a variety of applications. Its intense black color, high tinting strength and excellent stability make it an ideal choice for producing deep black hues in inks, coatings, and plastics. Its fine particle size and dispersion properties contribute to uniform coloration and surface quality in finished products.

Conductive Agent

In applications requiring electrical conductivity, Carbon Black is used as a conductive filler. Specific grades are formulated to ensure optimal conductivity in materials such as batteries, antistatic plastics, and conductive coatings. This property is crucial in electronics and other fields where controlling electrical resistance is essential.

UV Protection

Certain grades of Carbon Black are highly effective in providing UV protection, particularly in plastics. By absorbing UV light and converting it into heat, Carbon Black shields the material from degradation caused by prolonged exposure to sunlight. This property is critical in outdoor applications, such as in agricultural films, plastic piping, and automotive parts, where long-term durability is required.

Carbon Black's diverse applications make it an indispensable material in industries ranging from automotive and construction to electronics and consumer goods. Its ability to enhance material performance and extend product life ensures its continued importance in modern manufacturing.

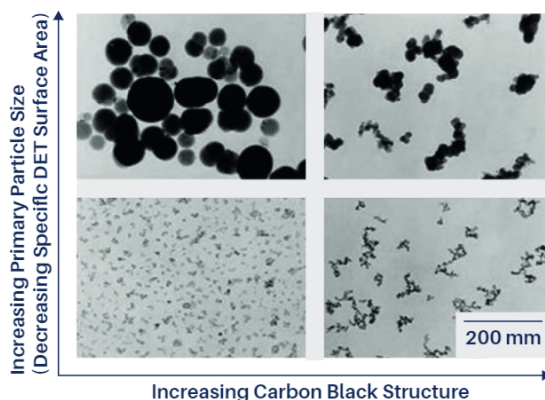
Carbon Black grades are tailored to meet the diverse requirements of various applications. The primary distinctions between grades lie in their physical and chemical properties, which influence their performance. Below are the key properties that differentiate Carbon Black grades:

Particle Size (Distribution)

The size and distribution of Carbon Black particles significantly affect its properties. Smaller particles typically provide higher surface area, enhancing tinting strength and UV absorption. Conversely, larger particles may offer better dispersibility and lower surface energy, which can be beneficial in some applications.

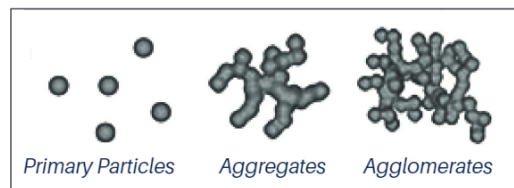
Surface Area

Surface area, measured in terms of specific area per unit mass, is directly linked to particle size. Higher surface area grades are associated with smaller particle sizes and are often used when strong pigmentation or electrical conductivity is required. Lower surface area grades are preferred for reinforcement and durability in rubber products.



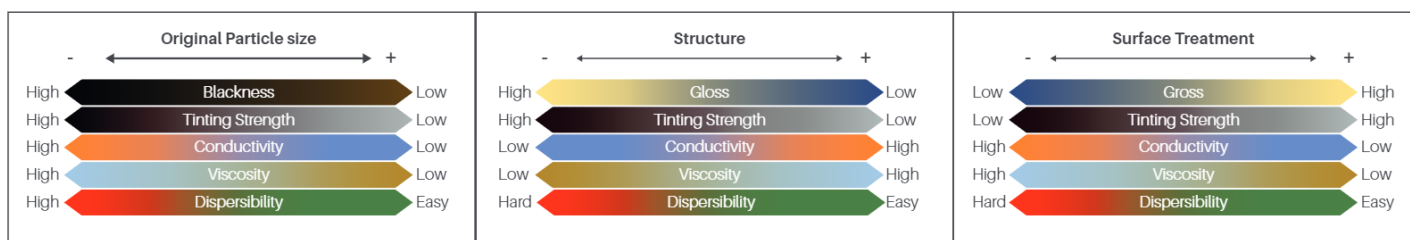
Structure

Structure refers to the degree of branching and aggregation of Carbon Black particles. High-structure grades consist of more complex, interconnected aggregates, which contribute to better conductivity and improved dispersion in some formulations. Low-structure grades are denser and often used where smoothness and reduced viscosity are priorities, such as in certain coatings.



Surface (Treatment)

Some Carbon Black grades undergo surface treatment or modification to enhance compatibility with specific matrices or improve certain properties, such as dispersibility, conductivity, or chemical resistance. Surface treatment can tailor the grade for specialized applications like high-performance coatings.

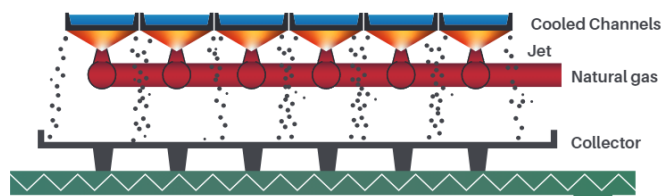


Jetness

Jetness refers to the depth and intensity of the black color produced by Carbon Black. High-Jetness grades provide deep black tones for applications like automotive finishes, printing inks, and high-end coatings.

MPC BLACK Manufacturing

MPC Black NG01 is made 100% from purified natural gas, without the use of petroleum products, which are completely excluded. Purified natural gas is obtained by separation all other fractions (C₅H₁₂ and heavier hydrocarbons) from the natural gas. The MPC Black is being obtained by burning the purified natural gas in a controlled manner, where the flames impinge directly on a cooled surface (Channels). The carbon particles are collected the cooled surface being mechanically palletized in line, dried and packaged.



MPC stands for Manufacturing Process on Channels, originally referenced as Medium Processing Channel (Black).

Due to the process, the MPC Black NG01 has minimal impurities and very low PAH values and a rich oxidized surface with acidic oxygen-functional groups. Therefore, it is particularly suitable for all kind of food contact applications.

Note: A common misconception about “Gas Blacks” among Industrial Users of Carbon Black arises from the term “Gas Black”, which may imply that natural gas is the sole feedstock—similar to the Channel Black process. However, the (Degussa) Gas Black process utilizes heavy aromatic oils combined with hydrogen-rich gas. This combination produces impurity profiles comparable to those found in Carbon Black grades made from petroleum-derived feedstocks.

MPC BLACK Main Applications

Plastics	Rubber/TPU/TPE	Inks	Coatings
All Polymers	Multi Rubber Polymers	Flexo inks	Water Flexo based
Casting	Seals & Sealants	Water based	Solvent based
Injection Molding	Medical hoses	Solvent based	Solvent-alkyd based
Rotational Molding		NC Inks	Wood Stains
Extrusion Molding		PU inks	
Compression Molding		Digital inks	

MPC BLACK Typical Properties

MPC Black can be categorized as a Regular (Gas) Color Carbon Black.

TYPICAL PROPERTIES		
Specific apparent surface	m ² /g	90 - 100
Nitrogen absorption (NSA)	m ² /g	≤ 150
pH		3.7 - 4.5
Heating Loss at 105 °C	%	2
Volatiles at 950 °C	%	5
Ash Content	%	≤ 0.05
Sieve Residue		
0045 K	%	≤ 0.08
05 K	%	≤ 0.0010
014 K	%	≤ 0.004
Particle Size, D[v,0.90]	µm	384

The data in the table above are typical test values intended as guidance only; they are not product specifications.

Polycyclic Aromatic Hydrocarbons (PAHs)

Polycyclic Aromatic Hydrocarbons (PAHs) are a group of chemical compounds composed of multiple aromatic (benzene-like) rings fused together. These compounds are primarily formed during the incomplete combustion of organic materials such as coal, oil, gas, wood, garbage, and tobacco. They are also naturally present in crude oil and can be released into the environment through industrial processes.

As a result of and depending on the manufacturing process, trace quantities of PAHs are in general present in carbon blacks. These contaminants are tightly bound to the surface of manufactured carbon black and can only be removed after vigorous solvent extraction in a laboratory. Some PAHs are carcinogenic and can cause respiratory issues, skin irritation, and other health problems, but can also result in process issues in specific formulations.

PAHs are toxic to aquatic organisms and can accumulate in the food chain. PAHs degrade slowly, making them a long-term environmental contaminant. Although hundreds of PAHs exist, some individual PAHs get more attention because of possibility of exposure and harmful health affects. In different market regulations, some applications (household, tools, inks, plastics, selected rubber parts and food contact applications) require a limited concentration of PAHs.

Substance	CAS RN	(EU) No 1272/2013	AfPS GS 2019-01	US EPA Priority List	AMCOM Screening Set	MPC Channel Black/MPC Black NG01 Typical Values (ppm)
Benzo[a]anthracene	56-55-3	●	●	●	●	ND: < 0.01
Chrysene	218-01-9	●	●	●	●	ND: < 0.01
Benzo[b]fluoranthene	205-99-2	●	●	●	●	ND: < 0.01
Benzo[j]fluoranthene	205-82-3	●	●	●	●	ND: < 0.01
Benzo[k]fluoranthene	207-08-9	●	●	●	●	ND: < 0.01
Benzo[a]pyrene	50-32-8	●	●	●	●	ND: < 0.01
Benzo[e]pyrene	192-97-2	●	●	●	●	ND: < 0.01
Dibenzo[a,h]anthracene	53-70-3	●	●	●	●	ND: < 0.01
Benzo[g,h,i]perylene	191-24-2		●	●	●	< 0.03
Indeno[1,2,3-cd]pyrene	193-39-5		●	●	●	ND: < 0.01
Phenanthrene	85-01-8		●		●	< 0.01
Pyrene	129-00-0		●	●	●	< 0.04
Anthracene	120-12-7		●	●	●	ND: < 0.01
Fluoranthene	206-44-0		●	●	●	< 0.03
Naphthalene	91-20-3		●	●	●	ND: < 0.01
Acenaphthene	83-32-9			●	●	ND: < 0.01
Acenaphthylene	208-96-8			●	●	ND: < 0.01
Phenanthrene	85-01-8			●	●	ND: < 0.01
Fluorene	86-73-7				●	ND: < 0.01
Benzo[c]fluorene	205-12-9				●	ND: < 0.01
Cylopenta[cd]pyrene	27208-37-3				●	ND: < 0.01
5-Methylchrysene	3697-24-3				●	ND: < 0.01
Dibenzo[a,h]pyrene	189-64-0				●	ND: < 0.01
Dibenzo[a,i]pyrene	189-55-9				●	ND: < 0.01
Dibenzo[a,l]pyrene	191-30-0				●	ND: < 0.01
Total of 8 PAHs (according to PAH-list of (EU) No 1272/2013)						< 0.08
Total of Phenanthrene, Pyrene, Anthracene, Fluoranthene (according to PAH-list of AfPS GS 2019-01 for GS-Mark certification, Category 1)			< 1			< 0.08
Total of 15 PAHs (according to PAH-list of AfPS GS 2019-01 for GS-Mark certification, Category 1)			< 1			< 0.3
Total of 25 PAHs (according to AMCOM Screening Set)						< 0.25

PAH moieties of concern given the different applications of interest. The typical values mentioned are obtained by GC-MS Analysis through Soxhlet extraction. For the 21 moieties with Non Detect results the LoD is 10 ppb, which has been taken as maximum for summation, where applicable.

Extractables

To fulfill various regulatory requirements, main extractables have limitations. Carbon Black is listed on the Union List of the EC 10/2011, with requirements which cover various other regulatory compliances:

- Toluene extractables: maximum 0,1 %, determined according to ISO method 6209.
MPC Channel Black typical test result: 0,025%
- UV absorption of cyclohexane extract at 386 nm: < 0,02 AU for a 1 cm cell or < 0,1 AU for a 5 cm cell, determined according to a generally recognized method of analysis.
MPC Channel Black typical test result: 0,053 AU for a 5 cm cell A_{386} (1cm equivalent) ~ 0.0106 AU

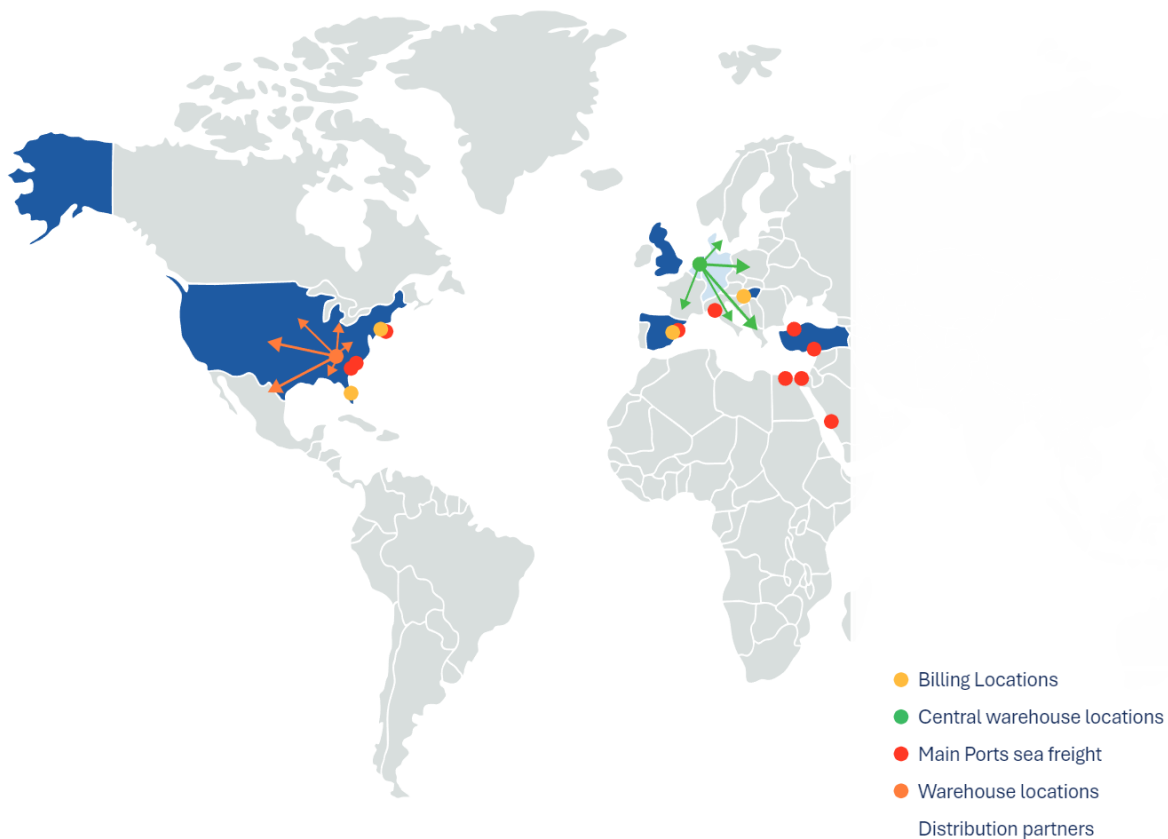


Main Regulatory aspects

- Chemical Inventories: USA (TSCA), EU (REACH), Taiwan (ECN), Canada (DSL), New Zealand (NZIoC), Korea (ECL), Australia (AICS), China (IECS), Philippines (PICCS)
- Food Contact compliances:
 - USA, FDA, 21 CFR: 175.105, 175.300, 176.170, 176.180, 177.2400, 177.2600 (c)(4)(v), 177.2600 (c)(4)(vi), 178.3297 (No restrictions);
 - Europe: (EC) No 1935/2004, (EC) No 2023/2006, (EU) 10/2011, AP(89)1;
 - Mercosur: GMC Resolution No. 15/10, GMC Resolution No. 39/19;
 - Germany: BfR IX, BfR XIV, BfR XXI;
 - France: Code de la Consommation, Arrêté du 2 janvier 2003, Arrêté du 5 août 2020, Arrêté du 25 novembre 1992, Arrêté du 4 novembre 1993;
 - Switzerland: SR 817.023.21 (Amended 2023);
 - China: GB4806.1, GB9685-2016;
 - Australia: AS 2070 —1999
- Toy compliances:
 - USA: ASTM F963-95;
 - Canada: SOR/2011-17;
 - Europe: EN71-3:2019, Directive 2009/48/EC;
 - Mercosur: NM 300-3;
 - Turkey: Regulation No. 29847;
 - China: GB 6675-2014.
- EU-REACH: AMCOM Group s.r.o. has registered MPC Black

Supply Chain

The AMCOM Group benefits from a robust and reliable supply chain, ensuring consistent product availability and timely delivery across global markets. With strategically located warehousing facilities in both the United States and Europe, the company is well-positioned to respond quickly to customer demands while minimizing lead times. This infrastructure not only enhances logistical efficiency but also supports AMCOM's commitment to maintaining high service levels and uninterrupted supply, even in the face of market fluctuations or regional disruptions.



The AMCOM Group owns the packaging line at the manufacturer to ensure the quality of the product and can support soluble packaging, depending on temperature and mixing conditions.

North America

Chemacor International LLC

sales@chemacor-intl.com

EMEA

AMCOM Group s.r.o.

amcom@amcom-intl.com



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SINCE 1996