Many different products are extracted from a barrel of crude oil, including gasoline, diesel, jet fuels, and petroleum coke. Petroleum coke, or pet coke, has been produced since the 1930s. It serves as a valuable and essential commercial product that is used directly in a wide range of applications, including the manufacturing of aluminum, steel, glass, paint, and fertilizers. It is also used as a fuel in power generation, cement kilns, and other industries.

Pet coke can be used as a fuel, and as a feedstock by manufacturers for a wide range of products such as aluminum, paints, coatings and colorings which are used by millions of people.

**INDUSTRIAL USES OF PETCOKE**

**Fuel:** About 80 percent of worldwide pet coke production is “fuel-grade” pet coke, used for electricity generation and in cement kilns.

**Aluminum:** Pet coke is necessary to make anodes for smelting and is the only commercially viable method to do so. It boasts a superior combination of electrical conductivity and resistance to chemical and physical degradation in the smelting pot, which contains lower levels of contaminants (i.e. ash).

**Paint and Colorings:** Pet coke is used in the production of titanium dioxide (TiO₂), a mineral that is used as a substitute for lead in paint. It is also a pigment in sunscreen, plastic and food coloring.

**Steel:** Pet coke is a partial replacement for metallurgical coal as a feedstock for coke oven batteries, and as a partial substitute for pulverized coal directly injected into blast furnaces. Pet coke that is specially produced to have a needle-like crystal structure is called needle coke. Needle coke is used to produce the electrodes used in electric arc furnace (EAF) steel production. No other material has needle coke’s combination of electrical conductivity and physical properties required for EAF electrodes.

**Brick and Glass:** Pet coke is used by brick and glass manufacturers because it has a significantly lower ash content compared to other fuels.

**Paper:** Pet coke is used to produce pulp and paper. Pet coke is also used to whiten paper.

**Fertilizer:** Pet coke is gasified to produce ammonia and urea ammonium nitrate, which is then used in fertilizer production.
Petroleum Coke: Essential to Manufacturing

Storage and Transportation

Petcoke is safely stored and handled by refineries, intermediaries, and end-users. It is transported by ocean freight, barges, rail, and truck. Petcoke is stored in 32 states.

- A majority of refineries that produce petcoke store and manage it in an uncovered venue.
- 87 percent of intermediaries store petcoke in an uncovered venue.
- 78 percent of customers and end-users store petcoke in an uncovered venue.
- All employ dust/control management practices to limit fugitive dust.

Regulations Governing Petroleum Coke

Petcoke storage and handling facilities are governed by a wide range of environmental and safety regulations. These include:

- Petcoke storage and handling facilities are or can be required to obtain approval of Fugitive Dust Control Plans. These plans are mandated either through the Clean Air Act or state law.
  - State agencies issue permits to storage facilities with conditions that ensure fugitive dust does not become a nuisance.
- Petcoke storage facilities are subject to the Clean Water Act and are often required to obtain industrial storm water permits and submit a Storm Water Pollution Prevention Plan. These plans also address:
  - Employee training
  - Preventative maintenance
  - Risk identification
  - Spill prevention and response procedures
  - Recordkeeping and internal reporting
- The International Fire Code, adopted by most states, requires facilities producing combustible dust to obtain permits for their operations. Facilities must obtain combustible dust or building permits, which must adhere to National Fire Protection Association standards.

The Environmental Protection Agency and Petroleum Coke

EPA defines petcoke as having a “low health hazard potential” with no observed carcinogenic, reproductive, or developmental effects. Petroleum coke is chemically inert, does not react chemically in water, does not dissolve in water, is not bioavailable by organisms (organisms cannot absorb it) and does not bio accumulate (does not concentrate harmful substances) in organisms.