Graphitized Petroleum Coke (GPC) – Technical Datasheet

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(Insert Graphitized Petroleum Coke fines photo here, centered)

Graphitized Petroleum Coke (GPC) – Typical Appearance

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2. Product Overview

Graphitized Petroleum Coke (GPC) is a high-ppurity carbon additive manufactured through the meticulous thermal treatment of green petroleum coke at extremely high temperatures. This graphitization process fundamentally transforms the amorphous carbon structure into a highly ordered, crystalline graphite structure.

The resulting product is characterized by exceptional purity, notably exhibiting very low levels of sulfur and high fixed carbon content. This stability and purity make GPC an essential material for precise carbon management in high-specification metallurgical processes, including electric arc furnace (EAF) steelmaking and high-quality iron foundry operations where minimizing tramp elements is critical.

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3. Chemical & Physical Characteristics

The following table summarizes the typical specifications for the standard grade of Graphitized Petroleum Coke:

Parameter	Value
Fixed Carbon	99.25%

Parameter	Value
Sulfur (S)	0.03%
Moisture (H_2O)	0.41%
Ash (SiO_2 / Insolubles)	0.35%
Volatile Matter (VM)	0.40%
Size Distribution	1–5 mm

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4. Carbon Dissolution Mechanism

The effectiveness of GPC as a carbon donor is directly linked to its high graphitic nature and controlled particle size.

Carbon dissolution in molten iron can be represented as:

$$C(\text{solid}) \rightleftharpoons C(\text{dissolved})$$

The kinetics of this reaction are influenced by two primary factors:

1. Graphitic Structure: The highly crystalline, graphitic structure of GPC provides enhanced thermal stability and promotes predictable dissolution rates compared to amorphous carbon sources.
2. Particle Size: A smaller particle size distribution (within the specified range) increases the effective surface area available for contact with the molten bath, thereby accelerating the rate of dissolution and improving overall carbon recovery efficiency.

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5. Application Areas

GPC is utilized across several demanding metallurgical sectors requiring predictable carbon inputs:

- Steelmaking: Primarily employed for precise carbon adjustment in molten steel baths. Its low sulfur content ensures that recarburization can be achieved without negatively impacting the sulfur specifications of the final steel grade.

- Foundry Iron: Serves as a clean carbon input source for various cast iron alloys. It facilitates controlled carbon additions while minimizing the introduction of undesirable elements into the melt.
- Alloy Metallurgy: Functions as a reliable supplemental carbon source used in conjunction with various ferroalloys to achieve specific alloy chemistries where high carbon purity is mandatory.

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6. Handling, Packing & Logistics

Proper handling procedures are essential to maintain the integrity and quality specifications of the GPC product:

- Typical Packing: GPC is routinely supplied in 1 MT bulk bags (FIBCs) for high-volume users or in 25 kg bags palletized and shrink-wrapped for more granular handling requirements.
- Moisture Control: As specified in the chemical analysis, moisture content must be maintained. The product should be protected from direct exposure to rain or excessive humidity during transport and storage.
- Segregation Prevention: Care should be taken during unloading and storage to prevent mixing with other raw materials to ensure traceability and chemical consistency during use.
- Storage Considerations: Store in a dry, covered facility. While GPC is thermally stable, protection from environmental moisture is necessary to preserve the indicated moisture content specification.

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7. Technical Notes & Disclaimer

The data presented within this technical datasheet is indicative, representative of typical production batches, and based on historical Certificate of Analysis (COA) references. This information is provided strictly for technical evaluation, process design, and reference purposes within metallurgical operations. This document does not constitute a commercial offer, guarantee of specific lot performance, or contractual specification unless explicitly defined in a separate purchase agreement.

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8. References

For further technical documentation, material safety data sheets (MSDS), or inquiries regarding quality control methodologies, please consult the technical sourcing hub:

Ferrosilicon.co