Carbonaceous backfills

Impressed current anodes are usually surrounded by a carbonaceous backfill. Types of materials use include metallurgical coke and calcined petroleum coke.

The dual purpose of the carbonaceous backfill is to reduce the groundbed resistance by increasing the effective size of the anode and to provide a surface on which oxidation reactions could occur. The latter function prolongs anode life. To ensure good electrical contact, the backfill must be tamped around the anode. Resistivity of carbonaceous backfills are in the range of 10 - 50 Ω cm.

Particle size and shape are also important when specifying a backfill. Both parameters determine the contact area between anode and surrounding soil whilst influencing the porosity of the column which is important for gas ventilation. A general purpose coke breeze is for use in shallow horizontal and vertical groundbeds. It has a resistivity of approx. 35 Ω cm. For deep well applications a special calcined petroleum coke breeze is available. It has a resistivity of approx. 15 Ω cm and can be pumped.

Metallurgical coke of high quality that gives optimum performance at a low cost is available in various size ranges..

Coke backfill, prepared from calcinated petroleum coke, has been properly developed to meet all the basic requirements for an earth contact backfill. The carbon content, very high in calcined coke assures a low consumption rate of the backfill material and therefore a longer system life.

The low resistivity of calcined coke and the small particle size allow the best possible contact between the anode surface and the surrounding soil. As a consequence, this increases the anode size and allow the majority of the current to be discharged electrolytically at the backfill to soil interface.

Shipping Data

Coke backfill is shipped in bags, each bag weighing 20 kg, 25 kg or 50 kg. Pallets are available with 20 bags, 40 bags or 50 bags. Other bag sizes are available on request.

Specification Metallurgical Coke

Ash	10.0 %	max. 12.0 %
Volatile	1.4 %	max. 1.8 %
Sulfur	0.6 %	max. 1.0 %
Moisture	0.6 %	max. 1.0 %
Fixed carbon	89.0 %	min. 86.0 %
Grading:	0-1 mm / 1-5 mm / 2-7 mm / 3-10 mm	
Resistivity:	50 Ω cm	
Bulk density:	approx. 700 kg/m^3 (compacted)	

Specification Calcined Petroleum Coke

Ash	0.1 %	max. 0.8 %
Volatile	0.6 %	max. 0.8 %
Moisture	0.1 %	max. 0.5 %
Fixed carbon	99.0 %	min. 98.0 %
Grading:	2 mm up to 8 mm	
Resistivity:	10 Ω cm	
Bulk density:	approx. 800-900 kg/m^3 (compacted)	