QUALITY ELECTRODES FOR TODAY AND TOMORROW

MARUTI
ELECTRO CARBON

Manufacturer of High Quality Carbon Electrode Paste and Tamping Paste - CPC and ECA Base





About Maruti Electro Carbon

Maruti Electro Carbon, based in Korba, Chhattisgarh having present **Production Capacity of 36000 tons p.a.** was founded by a highly qualified technical team to provide right products to serve the needs of the Ferro Alloys and Allied industries and also in the production of Carbide.

The founding members constitute a team of highly skilled technicians and richly experienced management professionals in the various functional areas such as manufacturing, maintenance, quality, finance and productivity etc. in the field of carbon.

Maruti Electro's primary business is the manufacture and supply of high quality Carbon Electrode Paste of CPC and ECA base and Tamping paste (CPC & ECA Base) used widely in the Ferro Alloys and Allied industries. Both the Electrode Carbon Paste as well as the Tamping Paste are produced from a mixture of different carbonaceous material (CPC, ECA etc) and Hard/Soft Pitch which is used as a binder.

The company is constantly undertaking activities with a view on Research & Development, thus enabling itself to maintain its position on the leading edge of technology. A unique combination of experience, technology and team work goes into every ton production of Carbon Paste that meet the most demanding requirements of the customers.

Maruti Electro Carbon is one of the few Companies which has been instituted to go beyond the required norms for the betterment of the environment. Conservation of energy and water resources has forever been a key objective for the Company.

The organisation has been created with a vision to provide quality materials to our pan-India based customers. Our greatest strength lies in our highly skilled, experienced and committed work force. The experts involved in carbon paste manufacturing have experiences of working in Norwegian carbon paste industry which is considered as origin and epitome for Electrode manufacturing.

Our Vision

To attain leadership in supply of superior quality of Carbon Electrode & tamping paste for furnaces at the most competitive prices. For this we employ latest & modern machines. Our customers must not just be satisfied but delighted with our products.

State-of-the-art Norwegian Technology

We provide a leading edge to cater the needs of the present Ferro Alloy Industry

- **Double-layer Preheating Kneader**
  - High Preheating Quality Of Dry Materials
  - High Kneading Quality
- **Extrusion Briquetting Machine**
  - High Quality Dense Material
  - Uniform Size with No Wastage

Our Strengths

- An uncompromising quality policy.
- Manufacturing process is keenly monitored by experienced engineers and supervisors.
- We are associated with only premium suppliers of our raw material who are best in quality worldwide to maintain consistency of final product.
- Consistently devising new ways to make addition to the ever widening product range.
- Stringent quality checks at various stage of the manufacturing process.

OUR RANGE OF PRODUCTS

Carbon Electrode Paste
(CPC & ECA Base)

Carbon Tamping Paste
(CPC & ECA Base)

Cold Ramming Paste

Carbon Block

Carbon Electrode Paste (CPC & ECA Base)

Electrode Carbon Paste is a Soderberge paste processed from a mix of a specific fraction and / or Electrically Calcined Anthracite Coal – ECA, impregnated with selective Coal Tar Pitch. It is used in submerged Arc Furnaces for production of Ferro Alloys and Calcium Carbide.

Manufacturing Process

The first step in the manufacture of Electrode Carbon Paste is crushing and screening the Calcined Petroleum Coke (CPC) and / or Electrically Calcined Anthracite (ECA) to different fractions and milling and storing it separately. Following this, pre-determined quantities of different fractions are weighed and transferred to a Sigma Mixer which is heated to about 160oC by thermic fluid. The required quantity of binder is also weighed separately and added to the mixer. The mixing is continued for a pre-determined period known as the mixing cycle. At the end of the mixing cycle, the mixed material is dumped in a hopper for extruding, cooling, packing and as for final shipment.

Quality Specification

At the customer's end the paste is fed in the upper part of the electrode. As the paste moves downwards in the electrode it softens and melts forming the shape of the electrode casing. Flowability of Carbon Paste is essential for proper operation of the electrode. It is important that the paste flows at a reasonable temperate and fills the casing of the Electrode, maintaining a consistent mixture of components. The paste then gets baked to a solid mass as it moves down and is capable of passing the required current to the furnace charge. The plasticity of Paste, the measure of its Flowability is controlled in the mixer by adjusting the Binder content. The lower baked part of the electrode is the final Electrode Product. The physical properties of this paste are of vital importance to ensure proper electrode operation without breakages.

A Typical Characteristics of CPC base Carbon Electrode Paste

GREEN PASTE:		BAKED PASTE AT 1000°C	
Volatile Matter	15% max	Apparent Density	1.35 gms/cc min.
Fixed Carbon	84% min	Electrical Resistivity	90 ohm M max
Ash	1.0 % max	Compressive Strength	200 kg/cm²min.
Plasticity	30 – 40%	Porosity	35% max.
ApparentDensity	1.55 gms/cc min		
Binder Content	22 – 25%		

A Typical Characteristics of ECA base Carbon Electrode Paste

GREEN PASTE:		BAKED PASTE AT 1000°C	
Volatile Matter	13% max	Apparent Density	1.38 gms/cc min.
Ash	5.0 % max	Electrical Resistivity	70 ohm M max
Plasticity	30 – 40%	Compressive Strength	235 kg/cm²min.
Apparent Density	1.55 gms/cc min.		
Binder Content	20 – 22%		

Carbon Tamping Paste (CPC & ECA Base)

Tamping Paste, also known as Thermal Paste is used in the Ferro Alloys & Allied Industries. This paste is produced from a mixture of different carbonaceous material like CPC/ECA and Soft Pitch as binder.

Manufacturing Process

The first step in the manufacture of Tamping / Thermal paste is screening the Calcined Petroleum Coke (CPC) and or the Electrically Calcined Anthracite (ECA) to different fractions and milling and storing it separately. Following this, pre-determined quantities of different fractions are weighed and transferred to the Sigma Mixer which is heated to a predefined temperature by the thermic fluid. The required quantity of binder is also weighed and added into the mixer. The mixing is continued for a specific period known as the mixing cycle. At the end of the mixing cycle, the mixed material is dumped onto the mould box and cast into blocks which are then ready for dispatch.

Quality Specification

The thermal insulation of the furnace pots is essential. It is important that the Tamping paste does not have any excess binder and fills the wall of the furnace, maintaining proper insulation and minimizing the heat loss.

A Typical Characteristics of CPC base Carbon Tamping Paste

GREEN PASTE:		BAKED PASTE AT 1000°C	
Volatile Matter	12% max	Apparent Density	1.35 gms/cc min.
Fixed Carbon	87% min	Electrical Resistivity	90 ohm M max
Ash	1.0 % max	CompressiveStrength	200 kg/cm²min.
Plasticity	5 – 15%	Porosity	35% max.
Apparent Density	1.55 gms/cc min.		
Binder Content	19 – 21%		

A Typical Characteristics of ECA base Carbon Tamping Paste

GREEN PASTE:		BAKED PASTE AT 1000°C	
VolatileMatter	11% max	Apparent Density	1.38 gms/cc min.
Fixed Carbon	84% min	Electrical Resistivity	70 ohm M max
Ash	5.5 % max	Compressive Strength	235 kg/cm²min.
Plasticity	5 – 12%		
Apparent Density	1.58 gms/cc min.		
Binder Content	15 – 17%		

Cold Ramming Paste

Cold Ramming Paste (CRP) is a water free carbon ramming based on calcined anthracite and a special binder. The major advantage of CRP is that it can be installed at ambient temperatures as low as 25º C.

Applications

Cold Ramming Paste has been successfully introduced for the following applications:

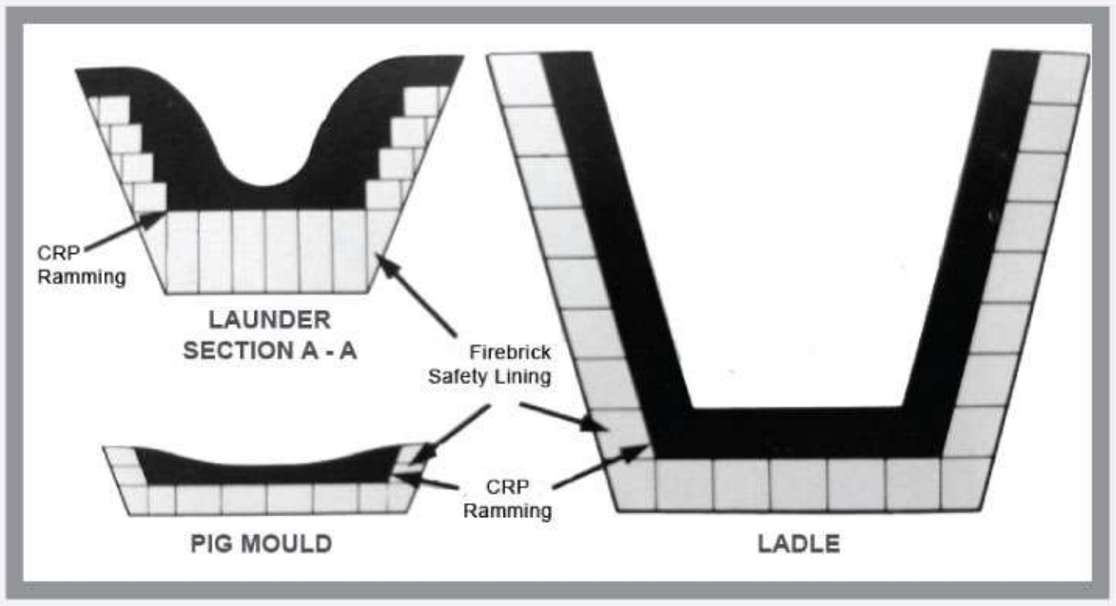
Submerged Arc Furnaces For Ferro Alloys
CRP ramming is used in the walls and base of ferro alloys furnaces.

Ladles For Handling Molten Ferro Alloys
The cold ramming character of CRP simplifies the problems associated with achieving a good rammed density and thereby ensures good ladle life.

An additional advantage is that the fuming problem associated with hot ramming is minimized.

Pans Or Mould For Ferro Alloys
CRP is suitable for forming the shallow pans or moulds for casting pigs or ingots of ferro alloys.

Launders
CRP may be used for lining launders used for the pouring of molten metals or slag.



Iron Making Cupolas Using The Basic Process

CRP ramming can used to line the well walls and siphon box.

Aluminium Reduction Cell

Cold Ramming Paste (CRP) is being used successfully by many aluminum companies as an alternative to the conventional hot ramming materials.

CRP is designed to be installed at normal ambient temperatures thus eliminating the fuming problems encountered with normal pitch bonded ramming which need installing at 100-150o C (212-302o F).

CRP is easy to install and high densities are easily achievable.

Other Applications

There will doubtless be other applications unknown to us at present so if you have problem which you think could solve, do not hesitate to contact us. Up to date reference lists are available on request.

Quality Control

For controlling the quality of the Carbon Paste/Tamping Paste, well experienced personnel having long experience in the field of Carbon Products is in charge. For controlling the Carbon fines quality the operating parameters will be fixed and maintained. The quality of Carbon fines will depend mainly on screen analysis and raw material quality. However the laboratory results will ensure the final product quality.

Equipment	Property Measured	Usage
X-Ray Diffractometer	Lc,La,D etc.	Carbon Material
Ring & Ball apparatus	Softening Point	Pitch, Tar
Universal Testing Machine	Cold crushing strength	Baked Carbon Material
X-ray Fluorescence Apparatus	Elemental analysis - Fe,Si,Ni,V	Coke, Carbon Material
Plasticity Furnace	Plasticity	Paste/ Green Block
Density apparatus	Apparent density	Paste/ Green Block
Baking Furnace	Test baking of green paste	Baked Properties
Measuring of electrical property	Resistivity	Testing of Baked Carbon

Research / Testing Facilities

Maruti Research and Development Centre has sophisticated equipment and extensive testing facilities to ensure world - class products. The Centre carries out the following activities:

- Analysis of various raw materials for manufacture of Carbon Electrode Paste and Blocks.
- Simulation analysis of electrode under industrial baking condition.
- Determination of physical and chemical properties of the Electrode Paste test samples.
- Analytical work on Carbon Block test samples to determine their physical and chemical properties.

MARUTI
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Address: Khasra, No. 1254/7 & 11, Urga Korba Champa Road, Dist. Korba, Chhattisgarh - 495 674.
Phone: +91 6261896909, +91 9406482057
Email: maruticarbon17@gmail.com, marketing@maruticarbon.com
Website: www.maruticarbon.com