

# COMPANY PROFILE



+27 83 363 2603



info@charbyproducts.co.za



www.charbyproducts.co.za

**CHAR**  
AND BY-PRODUCTS

A photograph of a green leafy branch, possibly a pea plant, lying on a surface of dark, cracked, and dry soil. The soil is heavily fissured, indicating a lack of moisture. The branch is positioned in the upper right quadrant of the frame.

**SAVING YOU MONEY**

**AN**

ND

HELPING YOU MAKE MORE

—CHAR—  
AND BY PRODUCTS


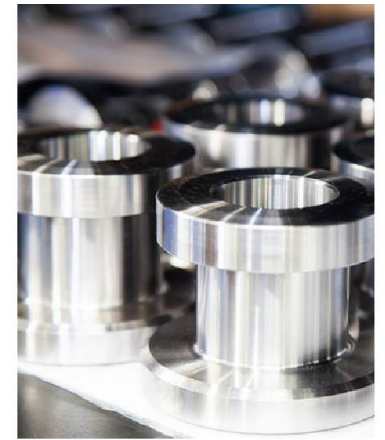


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# 01 ABOUT US



**C**har and By-products Pty Ltd (CBP) offers fully integrated environmental services to the industrial sector by providing innovative, sustainable solutions to managing and treating process by-products.

CBP is committed to ensuring maximum diversion of by-products from being classified as waste and disposed through landfilling.

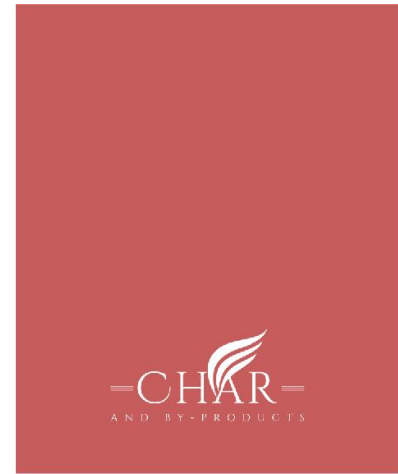
Value adding processes are designed to beneficiate by-products to produce secondary resources which can be used as input raw material in other industrial processes.

**We have the resources and expertise to develop and run cost effective processes, and to manufacture products that are environmentally friendly.**

**We believe that preserving mined mineral resources and avoiding landfilling is a way that our company can contribute to the future of mankind.**



## 02 COMPANY BACKGROUND



Char and By-products has been established to innovatively create and sustain excellence in process engineering for black industrialists in South Africa. The company is a 100% black women owned company.

The founders acquired their vast knowledge in manufacturing through steelmaking, foundry casting, coke and chemicals production while working for the largest steel manufacturers in the country. Together they have more than 16 years of experience in steel making process and its by-products.

CBP was established in 2013 and became operational in February 2018, with the objective of providing the South African market with a comprehensive approach to managing and upgrading process by-products to offer a more sustainable and viable alternative other than landfilling which is currently prevalent in the market.

Growing environmental concerns and increasing cost of fossil fuels have resulted in a sharp reduction of manufacturing competitive products in South Africa. CBP has embarked on a journey to increase local manufacturing activity by innovatively reducing cost of material inputs.

## 02 COMPANY BACKGROUND



The process by-products are beneficiated to become secondary or alternative input raw materials depending on the inherent properties. CBP designs customised beneficiation processes aimed to produce end products that are cost and quality competitive.

The range of services includes the collection, transfer, processing, and beneficiation of process by-products with the aim to manufacture competitive products.

The company is actively recovering by-products in the below listed industries,

- Iron making
- Steelmaking
- Power generation
- Ferrous and non-ferrous metal production

The company is currently performing research and development to upcycle more by-products in other industries such as aluminium production, mining and smelting, water treatment, pulp and paper.

# 03 GOALS AND ASPIRATIONS



The company aims to drive economic growth, uplift black women activity in this industry and provide cost effective solutions to sustain manufacturing activity in South Africa. Recycling and preserving the environment while reducing cost of production is vital to the sustainability of local manufacturing.

As engineers who are familiar with the challenges faced by South Africa when it comes to production output and manufacturing costs within this industry, our company aims to offer customised solutions and products to various clients based on their needs.





## **QUICK FACT**

**INDUSTRIAL AND AGRO  
INDUSTRIAL BY-PRODUCTS AND  
WASTE CAN BE PROCESSED TO  
OBTAIN NEW MATERIALS AND  
HIGH ADDED VALUE PRODUCTS.**



# 04 OUR BRAND

## Vision

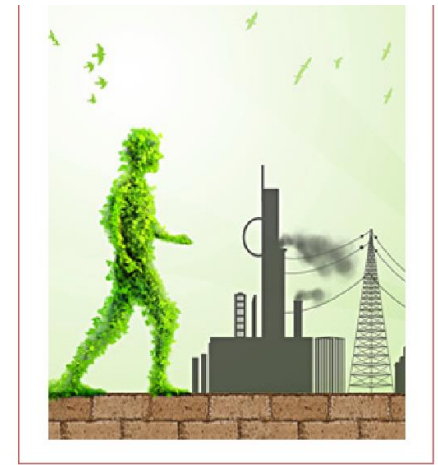
Our vision is to become a world-class leader in offering innovative solutions to beneficiate industrial waste as opposed to landfilling.

## Mission

Our mission is to continuously invest in the development of new methods and cutting-edge technology to allow production of competitive and environmentally friendly products derived from industrial waste.



# 05 OUR VALUES



## Safety

We believe in undertaking stringent Safety, Health and Environmental (SHE) policies to ensure that the company is complying with all legislation. We are committed to continually improve safety performance, taking heed of the design of the equipment, the application of simple and understandable safety management systems. We believe that all injuries are preventable and this will be achieved by ensuring that all employees are equipped to implement safety procedures at all times.

## Social responsibility

We aspire to make a positive and sustainable impact in this country. We will achieve this by working with local communities to improve and sustain the standard of living. Furthermore, we believe that education and exposure is key to uplifting communities and turning the economy around.



# 05 OUR VALUES



## **Innovation**

We believe that being open to new, creative and entrepreneurial ideas and technology solutions strengthens our work. We strive for innovative approaches and continuous improvement by sharing, accepting and promoting inventive ideas.

## **Service Excellence**

We believe excellence is when we demand more of ourselves than our clients do. We do not only offer better but every decision made is tailored around providing the best experience with our company.

## **Efficiency**

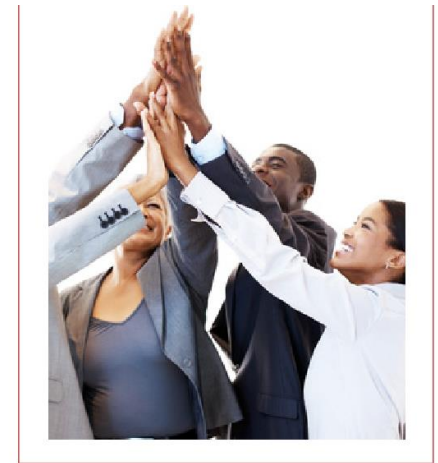
We are a quality workforce which obtains the best results in the least wasteful manner by maintaining dynamic, relevant policies and procedures.

## **Environment**

We invest in the environment by reinventing process by-products and giving them a new purpose.



# 06 RESEARCH AND DEVELOPMENT



Char and By-products has embarked on the implementation of amazing recycling projects which include iron slag from iron making process, fly ash from power generation process, silica fumes from ferro silicon production process, and aluminium salt slag from secondary aluminium production.

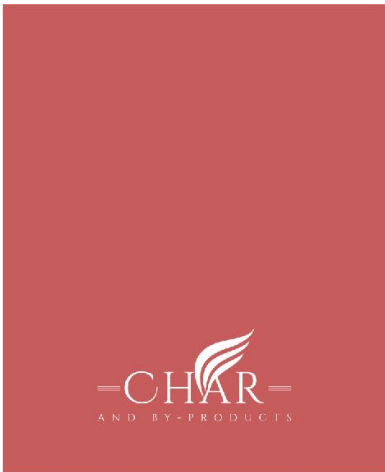
Research and development is essential to Char and By-products. We continuously invest in the development of new methods and cutting-edge technology to increase the efficiency, effectiveness and environmental sustainability of our products. Through R&D we also aim to achieve greater cost efficiency and precision throughout our operations.

Our focus is to solve current problems in the mining industry, for example, creating products that can combat corrosion for cable and bolts, as well as manufacturing ammonia-gas free thin spray-on liner (TSL) surface support material. We are also focusing our R&D activities on developing new cost effective solution for rock bolting.

Char and By-products operates in accordance with well established assurance systems.



# 07 CHARCEM



**C**harcem is a division of Char and By-products, which produces green cements and cementitious products for mining support. The products are manufactured by incorporating and optimising recycled materials, thereby reducing consumption of natural raw materials, water and energy, resulting in a more sustainable construction material with less CO2 emissions.

These by-products may include blast furnace slag, fly ash and/or silica fumes.

Our cement is currently undergoing SABS testing and approvals.

### TECHNICAL ADVANTAGES OF GREEN CEMENTS;

- It reduces water demand and therefore the water-cement ratio can be reduced.
- It improves workability for the same water content.
- The blended cements have a better particle size distribution (grading) as compared to CEM I, therefore the permeability of concrete is less which results in improved densities.
- Fly Ash, slag and silica fume have hydraulic properties creating secondary crystal growth which makes for more dense concrete and better durability.

### ENVIRONMENTAL ADVANTAGES OF GREEN CEMENTS;

- **Energy saving:** Blended cements are obtained by adding mineral admixtures with clinker. The energy, which would have otherwise been utilized for production of CEM I, is thus saved.
- **Conservation of natural resources:** The used mineral admixtures are the by-products of power generation and steel plants. By using these products, we are conserving the natural resources like limestone, clay and silica, etc.
- **Pollution control:** By reducing the production of clinker, pollution is also controlled as cement is an energy-intensive product.



# 07 CHARCEM



Cement Types		Compressive Strength
Super Sulphate Cement	CEM III C	32,5N
Composite Cement	CEM IV	32,5N

**S**uper Sulphated cement is made from well granulated blast furnace slag, calcium sulphate, and Ordinary Portland Cement (1 – 2 %) and is ground finer than the OPC. One of its most important properties is low total heat of hydration. It is, therefore very suitable for construction of dams and mass concreting work.

Concrete made from super sulphated cement may expand if cured in water, and may shrink if the concrete is cured in air. Another big advantage of super sulphated cement is it has comparatively high resistance to chemical attack.

**C**omposite Cement is a hydraulic binder, which is obtained by blending Ordinary Portland Cement (40%) with blast furnace slag and pulverised fly ash (PFA). Charcem composite cement is special blended cement with low heat of hydration characteristics for mass concreting.

Concrete produced using charcem composite has chloride and sulphate resisting properties with improved durability. Charcem composite cement complies with the requirement specified in the standard SANS 50196-1.

# 07 CHARCEM

## MINING SUPPORT PRODUCTS

Additional to the cement, Char and By-products also manufactures various products applied in the mining industry. CBP is cognisant of the pressures that the mining sector is facing such as the sustainability of the mining operations being heavily dependent on the ability to contain costs. The company prides itself in providing innovative solutions that not only meet requirements of the technical aspect of mining, but are also cost effective.

With safety being the centre focus, we have undertaken to produce products that can be trusted with lives. Our products are not only cost effective but supersede the strength requirements and time required to achieve the results.

Application	Product	Description
Tunnel Surface Support	RocGuard	<ul style="list-style-type: none"> <li><b>Thin spray-on-liner</b> A two-component high flexural strength cement-based liner providing rock support, and protection against weathering, gas penetration and moisture transfer.</li> </ul>
	CharCrete 50SHT and 30SHT	<ul style="list-style-type: none"> <li><b>Shotcrete wet &amp; dry</b> Roc-Crete is a pre-packed multi component cement based dry crete mix that also contains synthetic fibers - 50 MPa and 30 MPa</li> </ul>
	Char SponCom Seal	<ul style="list-style-type: none"> <li><b>Spontaneous Combustion Prevention</b> Char SponCom Seal is a high-performance alkali free set accelerator for spraying surfaces to prevent spontaneous combustion.</li> </ul>
Rock Bolting	Charcem RB120	<ul style="list-style-type: none"> <li><b>Pumpable grout</b> Charcem RB120 is used for fixing of rock bolts, anchor bolts, bonding of steel and GRP bolts with full column grout for strata-control in tunneling and mining to minimise the risk of roof fall.</li> </ul>
	Charcem RB60C Dual Component	<ul style="list-style-type: none"> <li><b>Pumpable capsule</b> Charcem RB60C Dual Component is a cementitious non-shrink grout designed for the anchoring of rebar or dowels in concrete, masonry, or rock. For fixing of rock bolt, anchor bolt with full column grout for strata control in tunneling and mining to minimise roof fall. Water must be added to each component before blending the components at a volume ratio of 1:1.</li> </ul>
Anchoring	CableLoc	<ul style="list-style-type: none"> <li><b>Cable grout</b> Cableloc is a single component high thixotropic pumpable cement grout designed for the anchoring of rebar and provides corrosion protection for steel cable.</li> </ul>
	Charcem Grout GP	<ul style="list-style-type: none"> <li><b>Non-shrink general purpose grout</b> Charcem Grout is a general-purpose non-shrink grout designed for anchoring and void filling in underground mining. It is also used in pre-cast concrete.</li> </ul>
	StrataLoc	<ul style="list-style-type: none"> <li><b>Pumpable grout</b> StrataLoc is free flowing or pumpable grout used for several applications such as sealing wet substrate, cracks and fissures. Also used during drilling operations and for under water concrete repair.</li> </ul>
Backfill & Cavity fill	GeoFill binder	<ul style="list-style-type: none"> <li><b>Backfill</b> Geofill binder is used for general backfilling, which is CEM III C CHARCEM, made from a mix of recycled materials.</li> </ul>
	Charcem Fill	<ul style="list-style-type: none"> <li><b>Cavity fill</b> Charcem Fill is a single component low density cement foam designed for cavity filling. This can either be fly ash or blast furnace slag based.</li> </ul>
	StrataFill	<ul style="list-style-type: none"> <li><b>Resin Foam</b> StrataFill is used for general void fill and construction of light weight barriers and bulkheads.</li> </ul>
Water and Roads	Charcem-Seal	<ul style="list-style-type: none"> <li><b>Crack and fissures sealing in mining and drilling</b></li> </ul>
	Roadfill	<ul style="list-style-type: none"> <li><b>Fast setting and durable repair of potholes on surface and underground roadways</b></li> </ul>
	Dust Suppressant	<ul style="list-style-type: none"> <li><b>Safe and eco-friendly dust suppression</b></li> </ul>
Mine closure & Rehabilitation	Blastbinder	<ul style="list-style-type: none"> <li><b>Recycling, reuse, and rehabilitation of mine wastes</b></li> </ul>
	Minesoil filler	<ul style="list-style-type: none"> <li><b>Used for mine soil improvement and amendment</b></li> </ul>



**QUICK FACT**

**GREEN CEMENTS REDUCE WATER DEMAND AND THEREFORE THE WATER-CEMENT RATIO CAN BE REDUCED.**



# 08

## CHAR PLATRE



We provide quality **gypsum solutions** for the construction and mining industries. Our gypsum raw materials and products fall under the brand Char Platre.

### Gypsum Construction Products

**Platre Lite Plus** - multipurpose finishing plaster for walls, surfaces and ceilings

**Platre Crete Plus** - multipurpose jointing compound plaster

**Char Wallcare Putty** - white cement-based powder finished coating applied on walls, surfaces and ceilings

**FlorCem Self Levelling Underlayment** - a one part cementitious, chloride and protein free levelling compound

**Platre Skim** - a finishing plaster for application to plasterboard, concrete or sand cement basecoats plaster

**Platre Bed Cornice** - a plaster-based mixture designed for fixing and bonding cornice to plasterboard, walls and ceiling

**Platre Bond Polymer** - used as a bonding agent with concrete and cement-based products in interior or exterior applications

### Gypsum Mining Products

**Char Platre Cab 30** – calcium sulphate anhydrite binder used as a fire inhibitor in the coal mines by minimising oxygen permeability (can also be used for underfloor heating in construction)

### Raw Materials

**Char Platre AHYD** – calcium sulphate anhydrite

**Char Platre 2H2O** – calcium sulphate dihydrate



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[tshepang@charbyproducts.co.za](mailto:tshepang@charbyproducts.co.za)

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