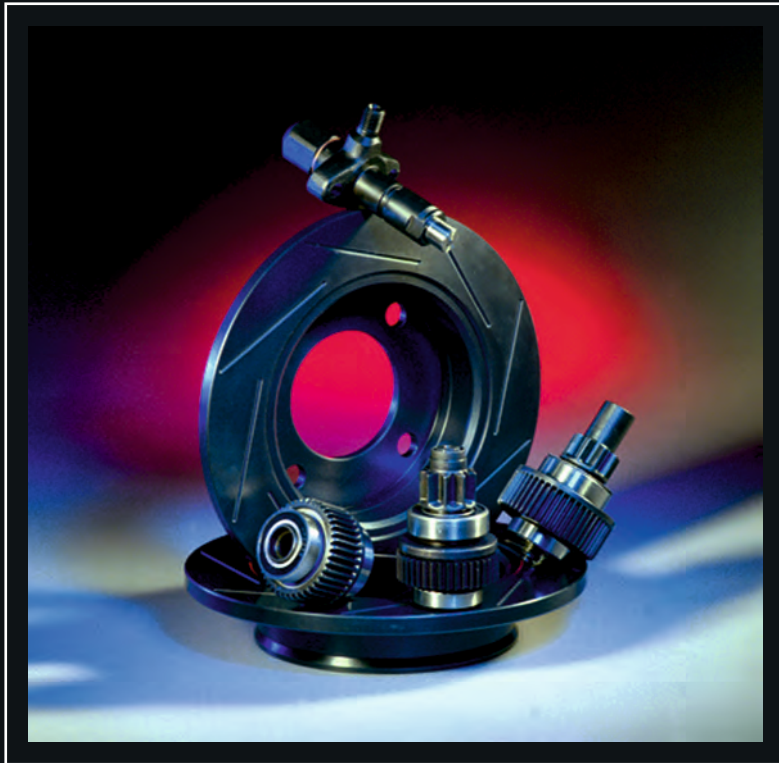


IRON AND STEEL BLACKING



BLACKFAST CHEMICALS LTD



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THE PROCESS

The Blackfast process is a surface conversion process.

When metal components are immersed in the Blackfast blacking solution four essential elements of the solution, acid, copper, selenium and water react in sequence with the iron in the components surface to form a chemically bonded conversion coating. The chemical reaction commences as the surface is etched by the acid in the solution.

The removed iron is precipitated as iron phosphate and is either deposited in the tank as a sludge or passed through a filter.

Copper is then plated on the etched surface within an iron phosphate lattice and subsequently converted to a black colour by the selenium.

The porous crystal lattice has been measured on a hard steel substrate as having an average thickness of between 0.1 and 0.2 microns. The porosity of the crystal framework provides the structure into which oil and waxes are subsequently absorbed.

The process equipment required is a simple arrangement of polythene tanks and, ideally, running water rinses.

Processing entails degreasing, conditioning or pickling if hardened steel, blacking and immersion in a dewatering oil, all with intermediate water rinses.

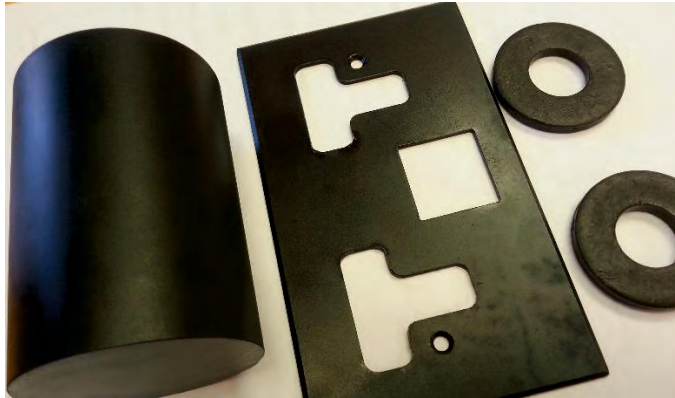
Any form of steel from mild through cast to hardened tool steel can be blacked. The end user can expect to black, on average, one kilogram of steel for approximately 12 pence. One litre of concentrated blacking solution will cover between 4 and 8 square metres of steel depending on the substrate to be blacked.

If the material surface has slight red rust, mill scale or prismatic colour distortion caused by heat treating, this should be mechanically or chemically removed before processing.



Step 1.	DEGREASING 15-20 MINUTES AT 20 DEGREES C
Step 2.	WATER RINSE 30 SECONDS AT AMBIENT TEMP.
Step 3.	CONDITIONING 1 MINUTE AT AMBIENT TEMP.
Step 4.	WATER RINSE 30 SECONDS AT AMBIENT TEMP.
Step 5.	BLACKING 1 MINUTE AT 20 DEGREES C
Step 6.	WATER RINSE 30 SECONDS AT AMBIENT TEMP.
Step 7.	DEWATERING 10 MINUTES AT AMBIENT TEMP.

Allow to air dry for, at least, 45 minutes before handling.



ADVANTAGES OF IN-HOUSE BLACKING

Cost Effective:

Compared to sending your components out for blacking there will be significant cost saving.

Most blackers will charge pounds per kilo whereas the cost of the chemicals is only around 12 pence per kilo. Frequently blackers will also impose a minimum charge and then there is the cost involved in getting the component to and from the blacker.

Quick turn round:

Take the lids off the tanks and you are practically ready to black.

No waiting for sub-contractors to do a batch run.

No waiting for carriers to collect and deliver.

Quality:

The components finished to the standard you want resulting in less rejects.

Simple to do:

Practically anyone will be capable of running the blacking process.

CAN I SEE THE PROCESS BEFORE BUYING?

Absolutely you can. We offer three options for you to see if the process is right for you:

1. You can send your own sample components to Blackfast for processing.
2. Our technical manager can visit you with a small demo kit and process your sample components while you watch.
3. You can visit our demo facility in Surrey, bring a few components and we will black them for you.

We also have various demo/training videos on YouTube:

From our Canadian Distributor

Small system - <https://www.youtube.com/watch?v=qFTYc8Bonl0>

Larger systems - https://www.youtube.com/watch?v=C5B_C71afYk

Blackfast training video

<https://www.youtube.com/watch?v=3YXt5qaFhvo>

Blackfast promotional video

<https://www.youtube.com/watch?v=eGKQhE7GL50>

Independent gunsmith

<https://www.youtube.com/watch?v=d9QNzCbSCsk>



WHAT WILL IT COST?

This will depend on what you would like. There is no obligation to buy tanks or equipment from Blackfast so you can simply buy the chemicals and source your own tanks.

We offer various “off the shelf” systems:

Small basic system



This includes 7 tanks and lids, 2 small heat mats (plug not supplied) training manual and enough chemicals to fill tanks to 20 litres.

Tank size: Approx. 410mm x 262mm x 300mm

Total price delivered to any UK address £636.12 + VAT

Small system with frame and baskets



This includes 7 tanks and lids, 2 small heat mats (plug not supplied) training manual, 2 stainless steel baskets, 1 frame (in 2 sections for various layout options) and enough chemicals to fill tanks to 20 litres.

Tank size: Approx. 410mm x 262mm x 300mm

Total price delivered to any UK address £1389.52 + VAT



Medium basic system



This includes 7 tanks and lids, 2 large heat mats (plug not supplied) training manual and enough chemicals to fill tanks to 50 litres.

Tank size: Approx. 610mm x 420mm x 420mm

Total price delivered to any UK address £1123.85 + VAT

Medium system with frame and baskets



This includes 7 tanks and lids, 2 large heat mats (plug not supplied) training manual, 2 stainless steel baskets, 1 frame (in 2 sections for various layout options) and enough chemicals to fill tanks to 50 litres.

Tank size: Approx. 610mm x 420mm x 420mm

Total price delivered to any UK address £2227.85 + VAT



Bespoke systems

There is no limit on the size of tanks that you can use for the process, our customers tanks range in size from 5 litres to 2000 litres.

Larger systems are usually semi or fully automatic incorporating a hoist system.

These will be quoted on an individual basis.





ONGOING CHEMICAL COST

PRODUCT	5 LITRES	25 LITRES
Blackfast 181 Blackening solution	£16.91 per litre (1 litre will black 6-8 sq. m)	£11.97 per litre (1 litre will black 6-8 sq. m)
Blackfast 551 Conditioner	£14.47 per litre	£9.64 per litre
Blackfast 716 Degreaser	Only available in 25 litres	£4.83 per litre
Blackfast 833 Dewatering oil	Only available in 25 litres	£5.04 per litre

+ Delivery and VAT



PRODUCT SUPPORT

When you have purchased a system, we are more than happy to offer you help with setting up the system.
We will also train the staff who will be using the blacking line if required.

This is free of charge and the training will be certificated.

The operation manual, supplied with the system, has a useful trouble shooting guide.

We are always on the end of the phone and/or email and if we can't solve your blacking issues this way we will, of course, visit you.



HEALTH & SAFETY

Yes, it is chemicals and appropriate PPE should be worn. Mostly just gloves, goggles and an apron.

Once the chemicals have been diluted to their working tank strength the conditioner (Blackfast 551) is not classed as hazardous, the degreaser (Blackfast 716) is classed as an irritant and the dewatering oil (Blackfast 833) is classed as “fatal if swallowed and enters airways”.

The only issue may be the blacking solution as this contains nickel sulphate and is therefore classed as “may cause cancer by inhalation”. However, nickel sulphate needs to be in the form of dust particles to be inhalable and as the nickel sulphate is dissolved in a solution this is not an issue unless the solution is agitated, sprayed or heated above boiling.

For those that are still a little worried about the blacking solution we can also provide a nickel free blacking solution which is only classed as corrosive.

DISPOSAL

The chemicals:

The solutions are designed to be 'topped up' with neat chemicals when the solutions become weak through use.

Disposal of solutions usually only occurs when tanks have been contaminated.

The conditioner (Blackfast 551), the degreaser (Blackfast 716) and the dewatering oil (Blackfast 833) can all be disposed of with coolants and cutting oil.

The blacking solution (Blackfast 181) contains heavy metals and should be disposed of by a specialist waste company.





The rinse waters:

Our experience suggests that at normal rinse water rates, dilution of 2 – 3,000 times takes place of any carried over content of tanks.

Normally these are fine to dispose of to foul sewer but if you want to check with your local water authority we can provide a list of what chemicals and in what quantity is likely to be found in the rinse waters.

If the discharge does become an issue we have water recycle systems available from stock.



WHERE TO BUY

You can call us on: 020 8339 7370

You can fax us on: 020 8339 7371

You can email us:
 or sales@blackfast.com
 tina@blackfast.com

You can use our online shop:

www.blackfast.com

Direct link <http://www.blackfast.com/store/>



WHO WE ARE

Blackfast Chemicals has been established for over 30 years.

Blackfast Chemicals manufactures a unique product for the Blacking of iron and steel at room temperature.

Customers include well known tooling manufacturers, OEMS and hundreds of smaller independent engineers around the world.

Chemical blacking can be done by anyone. It is simple, fast and inexpensive.





Contact Us

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