



BLACKFAST

ROOM TEMPERATURE BLACKING OF IRON AND STEEL

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BLACKFAST



HERITAGE OF BLACK OXIDE

Throughout history, weapon manufacturers have explored different metal finishing processes to protect their carefully crafted products from oxidation. Their solution to the problem was to oxidise the metal's surface and render it inactive from further attack.

The secrets of the chemical blacking processes known to the ancient alchemists are nearly all lost. There are a few artisans who still practice some of the traditional methods of blueing. Their metal-blackening process involves dissolving copper nails in acid into which the item to be cold blacked is immersed, followed by burial in the soil for a number of weeks. The result is a deep blue black colour which when oiled has a lustrous appearance.

THE FUTURE

With the growth in popularity of the Blackfast process during the last 10 years, and its ubiquitous use throughout Europe there has been the development of yet one more name for the process...

BLACKFASTING!!!

1

BLACKING

INTRODUCING BLACKFAST CHEMICALS

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.

SIMPLE because the solutions are designed to be topped up and not replaced when they become weak.

FAST because it is on-site and ready for use at any time. There is no preparation required, the tank lids are taken off and the components are blacked without delay.

INEXPENSIVE because the Blackfast solution coverage per litre is high and the resultant cost per unit of blacking is markedly less than the conventional method.

VISIT OUR SAMPLE PROCESSING FACILITY/DEMO ROOM

Blackfast Chemicals has a sample processing facility/demonstration room in Leicestershire where anyone who wishes to see the processes in operation is welcome.



ROOM TEMPERATURE BLACKING PROCESS FOR ALUMINIUM, ZINC, IRON AND STEEL

THE BLACKFAST PROCESS IS SUITABLE FOR BOTH SMALL BLACKING LINES
AND AUTOMATIC PRODUCTION LINES

APPLICATIONS

- Industrial Machinery Parts
- Cutting Tools
- Tool Holders
- Chains and Sprockets
- Springs
- Machine Tools
- Clutch Drive
- Drill Bits
- Hand Tools
- Jigs and Fixtures
- Ball Screws
- Fasteners
- Gears
- Hydraulic Machinery
- Hydraulic Block
- and many more...



1

BLACKING

BLACKFAST 20 LITRES

BLACKFAST 50 LITRES

25 litres Blackfast 716 Degreaser

25 litres Blackfast 716 Degreaser

5 litres Blackfast 551 Conditioner

10 litres Blackfast 551 Conditioner

10 litres Blackfast 181 Blacking

25 litres Blackfast 181 Blacking

25 litres Blackfast 833 Dewatering oil

50 litres Blackfast 833 Dewatering Oil

7 Plastic tank and lids
(442mm x 296mm x 305mm)
2 Small heat mats

7 Plastic tank and lids
(600mm x 425mm x 425mm)
2 Small heat mats

1 Steel frame (in two sections)

1 Steel frame (in two sections)

2 Stainless steel baskets

2 Stainless steel baskets

BLACKFAST OVERVIEW

INTRODUCTION

Blackfast is a specialist finish for colouring iron and steel components black. It is a safe and easy-to-use chemical immersion process operated at room temperature. The product's unique quality is that the finish does not result in an alteration to the dimension of the component. Any manufacturer of precision engineered components requiring a decorative finish is a potential customer. These are commonly found within the tooling and machinery manufacturing industry.

THE MARKET

Blackfast Chemicals, the UK leader and specialist in room temperature blacking, is successfully selling the Blackfast range of products to light engineering companies and machinery companies domestically and overseas. The customers of this product are companies that manufacture components from iron and steel with critical dimensions. A uniform black finish to such components is today extremely popular and adds considerably to the perceived value of that product. Blackfast Chemicals' UK customers range in size from the largest, who purchase 10,000 litres/annum, to the smallest, who purchase 25 litres/annum. The product is sold in 5 and 25 litre containers. 25% of the customers manufacture machine tool related products, 5% hydraulic blocks and components, 60% machinery including those for woodworking, metalworking, shoemaking, book binding, printing, numbering, can making etc. 5% fasteners and miscellaneous items, 5% contract plating companies and jobbers.

THE PROCESS

The Blackfast process is grouped within the category of chemical blacking (not to be confused with parkerising or phosphating processes!). The uniform black finish obtained is in the order of 0.2 to 3 microns thick and has a greater decorative than protective value. Since the process does not materially affect dimensions, and a uniform colouring is obtained over threads, blind holes etc., even when components are basketed, it is eminently suitable for small machined components. Processing entails degreasing and, if necessary, derusting before immersion in a bath at room temperature. Corrosion protection is afforded by a final immersion in a dewatering oil.

The process equipment required is a simple arrangement of polythene tanks and running water rinses and does not require expensive extraction equipment. It is usually located in or adjacent to the manufacturing line. In most cases it is operated by workers with no technical expertise in this field. The product is shown by a short demonstration using the potential customer's own steel component. Any form of steel from mild through cast, to hardened tool steel, but not stainless steel, can be blacked. At a purchase price of £12/litre of concentrated solution, the end user can expect to black, on average, one kilogram of steel for 12 pence. One litre of concentrated solution will cover between 4 and 8 square metres of steel depending upon the substrate to be blacked.

ENVIRONMENTAL CONSIDERATION

The operator seldom finds it necessary to dispose of a working solution because during use, as the solution becomes weaker, the strength and balance of the solution is re-established by the addition of concentrated solution. In the event of a full tank being discarded, the services of an authorised waste contractor will be required. The Blackfast process is successfully operated even in countries with the most rigorous environment legislation including Scandinavia, Germany, Japan and the USA.

1

BLACKING

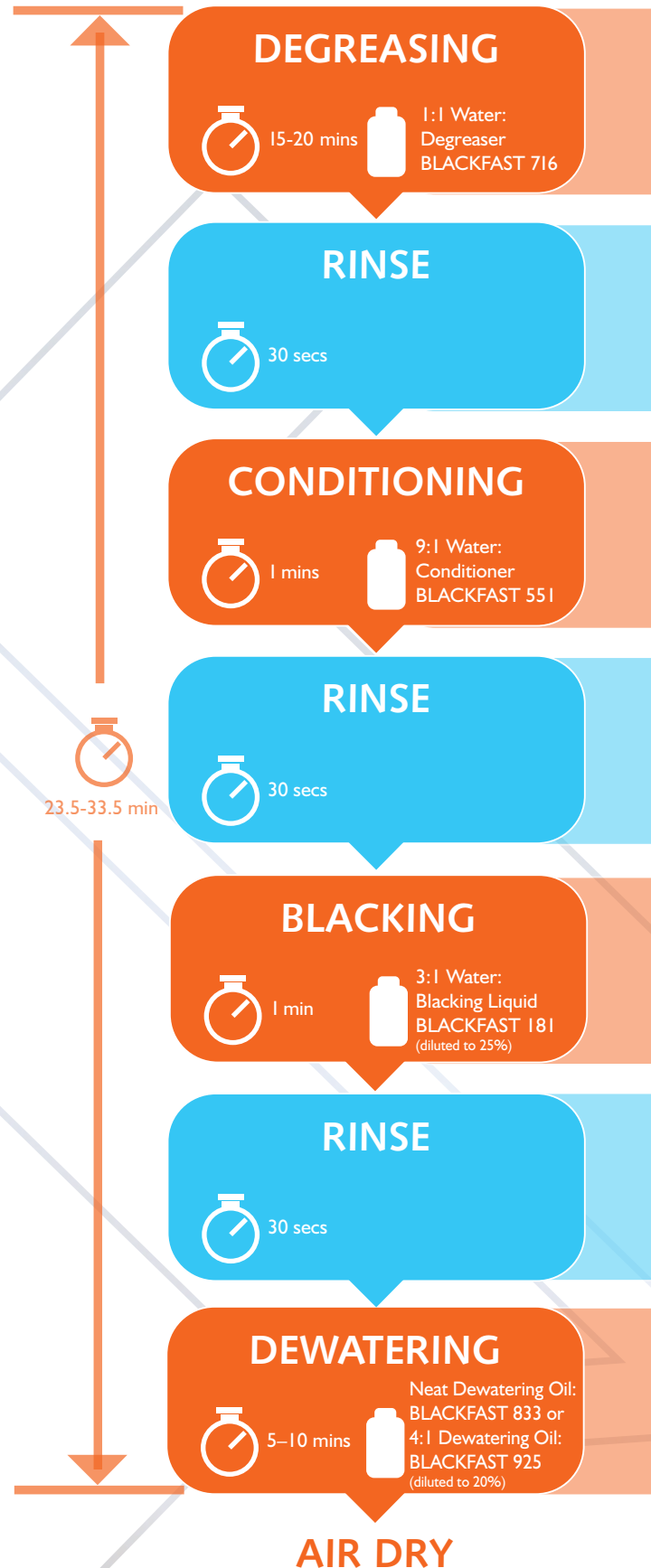
ROOM TEMPERATURE BLACKING OF IRON AND STEEL

Blackfasts' room temperature blacking process is a simple dip operation specifically designed for use in factories.

The process does not materially affect dimensions and a uniform colouring is obtained over machined surfaces, threads and blind holes. Blacking is achieved by chemical conversion of the metal surface. The process entails degreasing, immersion in a surface conditioner, and blacking solution. Corrosion protection is afforded by a final immersion in a dewatering oil.

THE BLACKFAST PROCEDURE

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 conditioning.



Parts should be as clean as possible, even before placing into degreaser!



> 20°C

- Load the “oil free” basket, jig or hook (Rack) with component(s) and place in tub
- Agitate the rack periodically to ensure even contact
- Leave 15- 20 minutes until cleaned (Leave longer for heavily soiled parts)
- Lift rack out, DRAIN WELL to prevent carryover contamination and product wastage
- Place rack in rinse tub

1

Rinse - Clean Running Tap Water

- Leave for one minute with gentle agitation or aeration
- Lift rack out, DRAIN WELL to prevent carryover

2

Note: For EN3B, O1, A2, 1020-1021, 4140, 1018, High Speed Steel, Ground Surfaces or Hard Metals Omit Step 3.

- Place rack in Conditioner tub
- Soak for 15 – 30 seconds (NO LONGER)
Note: Tank label says 1–2 minutes; this time would be required only when the solution is old and weak
- Agitate the rack to ensure even contact with liquid
- Lift rack out, DRAIN WELL to prevent carryover and product wastage
- Place rack in rinse tub

3

Rinse - Clean Running Tap Water

- Leave for one minute with gentle agitation or aeration
- Lift rack out, DRAIN WELL to prevent carryover

4

Blacken – Blackfast 181 Blackener



> 20°C

- Place rack in Blackener tub
- Soak for 10 seconds, remove and examine for even colour change *
- Agitate the rack gently to ensure even blacking
- Soak for another 5 – 50 seconds until blacking is complete (NO LONGER)**
- Lift rack out immediately, DRAIN WELL to prevent carryover and product wastage
- Place rack in rinse tub

5

Rinse - Clean Running Tap Water

- Leave for 1 minute with gentle agitation or aeration
- Lift rack out, DRAIN WELL to prevent carryover

6

- Place rack in dewatering tub
- Soak for 10 minutes
- Lift rack out, DRAIN WELL, place on draining rack
- Allow to air dry for 45 minutes before handling

7

MAINTENANCE

- Keep levels of the four main products topped up with fresh diluted working solution
- Skim oil & scum from top of Degreasing tub number 1 if visible
- Filter the 181 Blacking solutions upon notice of grey deposit in bottom of tub, either through a paper coffee filter (small system) or by pumping through a 50-micron filter cartridge with a fountain pump

NOTES

* If colour change is patchy, rinse and return to tub 1 for further degreasing. A patchy black is usually due to oil contamination, solution not up to temperature or contaminated rinse water.

** Items left in 181 too long will smut. If smutting has occurred, wipe excess smut off with a rag after rinsing then rinse again in step 6.

*** Procedure for chemically removing rust, mill scale or heat caused colour distortion is: Soak parts for 5 – 10 minutes in a 15% Hydrochloric (Muriatic) Acid Bath. Mechanical removal of above would involve sandblasting, wire brush, or other slight abrasive.

ACCELERATED CORROSION TESTS

(SOLVENT/MINERAL OIL CORROSION PREVENTATIVE)

Standard test procedure

Salt spray - ASTM B117 (days to 5% rust by area)

Humidity Cabinet DIN 50017 SK (days to 4 rust spots or any rust spot > 1mm diameter)

Steel panels were dipped in Blackfast 833 and 841 and left to dry naturally overnight.

Test 1 Salt Spray Cabinet ASTM B117 (5% NaCl @ 35 °C)

Sample 1 - Blackfast 181 and 833 oil showed slight edge corrosion after 48 hours and a marked increase in corrosion after 72 hours.

Sample 2 - Blackfast 181 and 841 oil showed signs of corrosion after 120 hours.

Test 2 Humidity Cabinet Test (100% Water @ 40 °C)

Both samples showed no signs of corrosion after 400 hours.

This represents very good corrosion protection properties for components in normal storage conditions, or working environments.

ACCELERATED CORROSION TESTS

BLACKFAST 925

Standard test procedure

Salt spray - ASTM B117 (days to 5% rust by area)

Humidity Cabinet DIN 50017 SK (days to 4 rust spots or any rust spot > 1 mm diameter)

Steel panels were dipped in Blackfast 925 and left to dry naturally overnight.

Test 1 The solution was operated at a 13.8% strength and at a working temperature of 50 °C
Tests in a humidity cabinet showed no rust after 144 hours (6 days) when it was completed.

Test 2 Tests were conducted operating the solution at 20% strength and the panels were placed in both a humidity and salt spray cabinet.

Humidity cabinet tests averaged 244 hours (10 days).

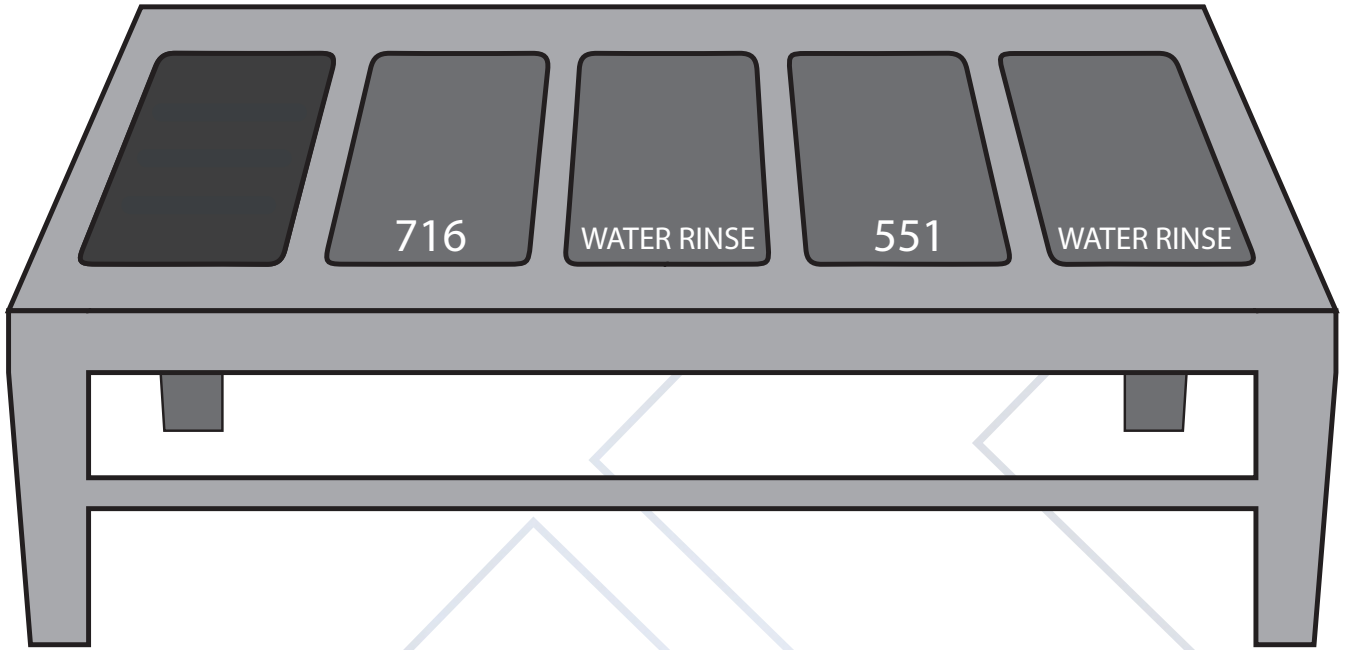
Salt spray test averaged 24 hours.

This represents very good corrosion protection properties for components in normal storage conditions, or working environments. It should also be noted that even better corrosion protection can be achieved if components are dried quickly at elevated temperatures.

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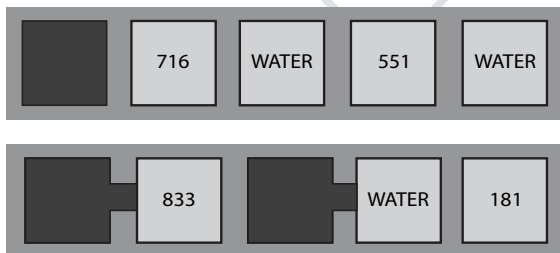
BLACKING

20 LITRE BLACKFAST BLACKING LINE

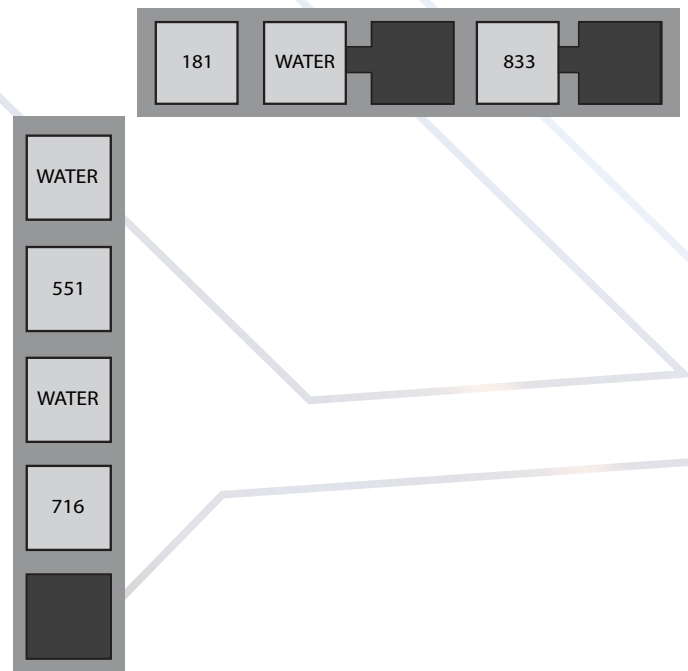


LAYOUT OPTIONS

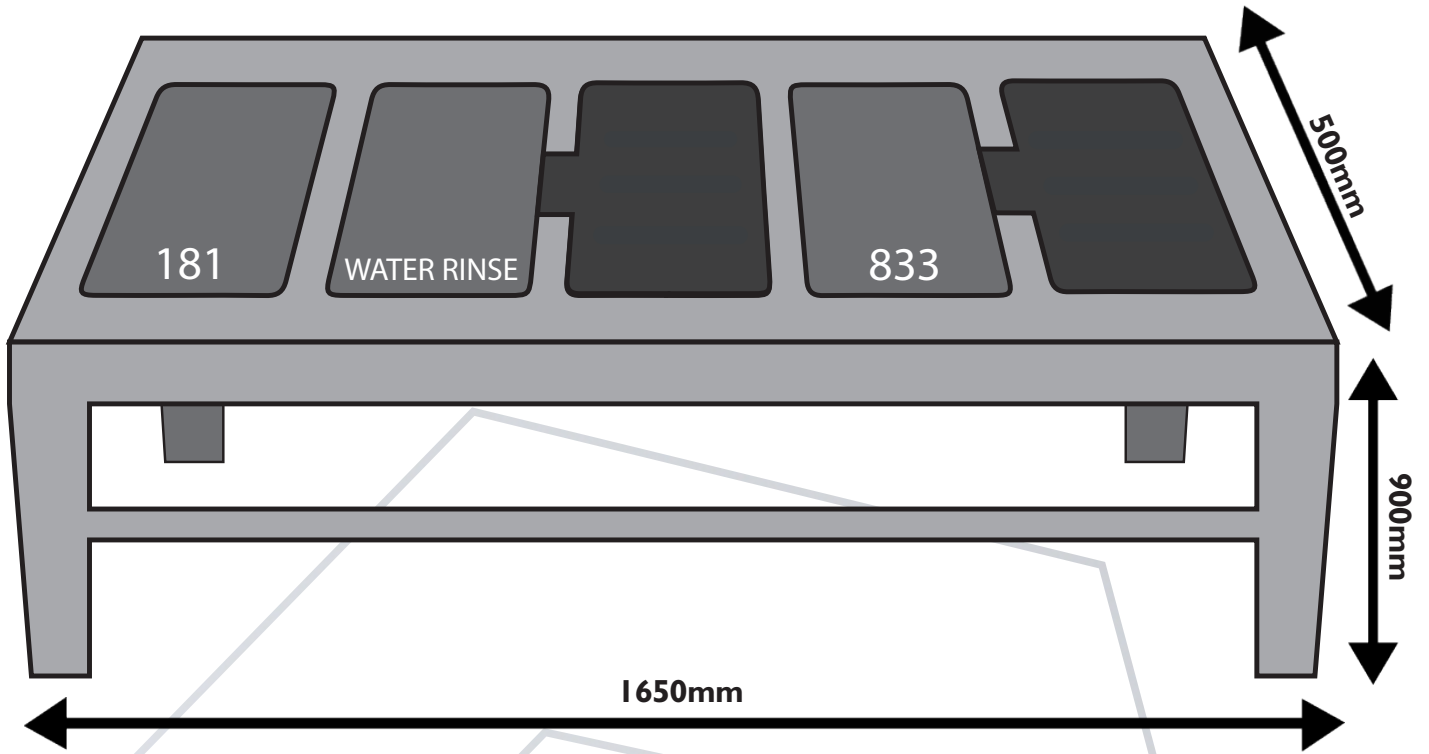
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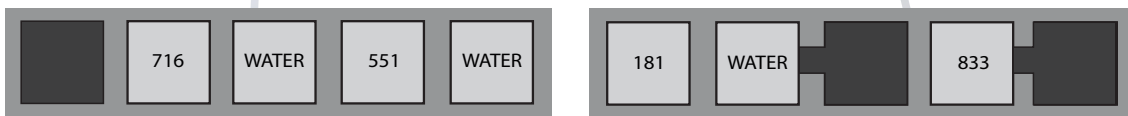
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FRAMES AVAILABLE FROM STOCK



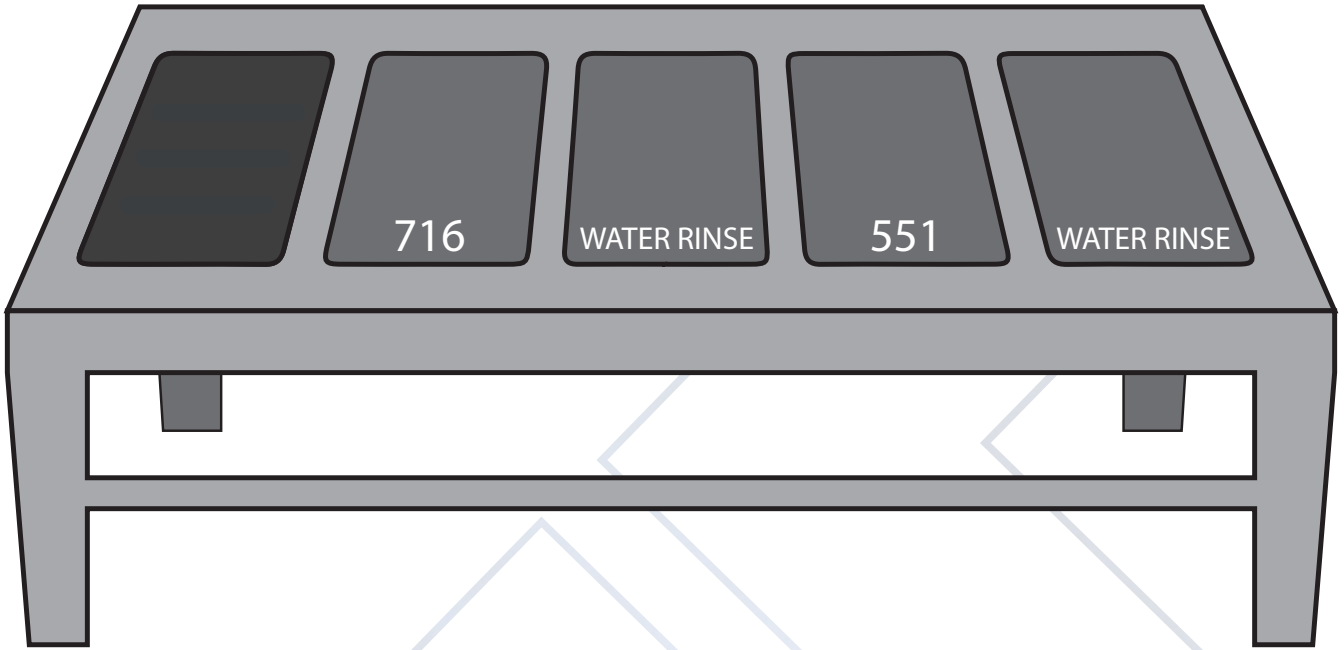
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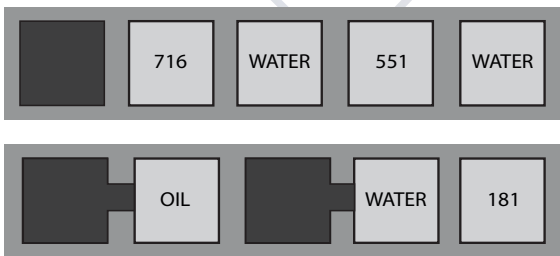
BLACKING

50-100 LITRE BLACKFAST BLACKING LINE



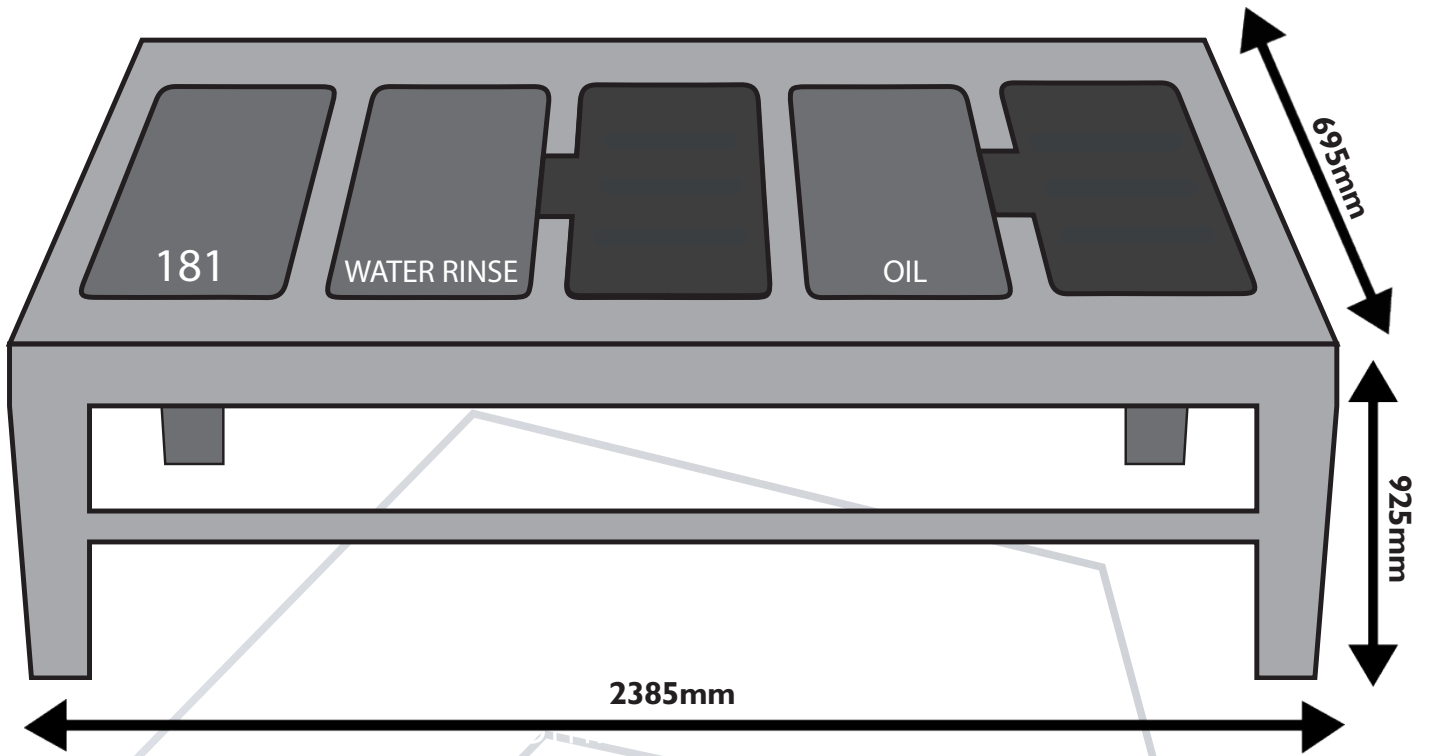
LAYOUT OPTIONS

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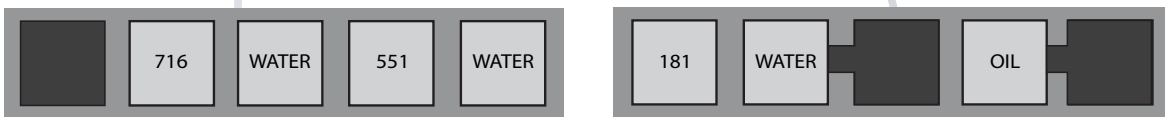


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1

BLACKING

APPLICATION DATA SHEET

BLACKFAST 181 IRON/STEEL BLACKING SOLUTION

USE

25% solution in water.

APPLICATION

Blackfast 181 will chemically black cast iron and steels containing 12% chromium or less at room temperature (20 °C). Blacking performance may be adversely affected by temperatures lower than 16 °C. Preparation of the surface of the item to be blacked is carried out using one or more steps involving degreasing, pickling and conditioning using the appropriate Blackfast products with intermediate flowing water rinses. Once the surface is chemically clean and, if necessary, conditioned, the item is immersed in the Blackfast solution for 1 minute.

Components are normally jugged or barrelled with agitation if necessary to ensure all parts of the metal surface are in contact with the liquid. Following blacking, the item is rinsed in a flowing water bath and finally dipped in a dewatering oil such as Blackfast 925, 833 or 841 depending on the type of finish required. Thus a typical blacking line can involve 7 tanks (degreasing - rinse - conditioning - rinse - blacking - rinse - oiling).

TESTING & CONTROL

When in regular use, the performance of Blackfast 181 can be monitored readily by the appearance of the blacked components and the time taken to achieve the correct result. In addition, a simple test can be undertaken to check the strength of the tank solution.

10ml of tank solution is placed in a transparent conical flask and a few drops of bromocresol green indicator added. The contents of the flask are titrated with a test solution (N/25 NaOH) until the original green colour has changed to blue. Consumption of 20ml of the test solution indicates a tank of the correct strength. For each 1 ml shortfall from the reading of 20ml, it is necessary to add 1.25% Blackfast 181 (i.e. for a 100 litre bath add 1.25 litres of Blackfast 181).

TANK MATERIAL

Tanks should be of plastic, rubber-lined steel or stainless steel.

PRODUCT SAFETY DATA SHEET

A safety data sheet is available.

Blackfast 181 is part of the Blackfast range of products for the treatment of iron, steel and aluminium at low temperatures.

Blackfast Chemicals continues to improve the quality and performance of its range of products and reserves the right to modify product formulations without prior notice.

APPLICATION DATA SHEET

BLACKFAST 551 CONDITIONER

USE 10% solution in water.

APPLICATION Hardened steels and cast iron may not require conditioning but for the majority, and especially mild steels, the use of Blackfast 551 results in a homogenous surface ready for blacking. After degreasing (and pickling if necessary) steels are clean but usually exhibit surface variations which, if not treated, can result in uneven blacked surfaces. Immersion for 1-2 minutes in a 10% solution of Blackfast 551 in water, prepares the surface so that consistent blacking is achieved.

Immersion for a longer period is not recommended since over-conditioning leads to inconsistent blacking and patchy results.

TANK MATERIAL Tanks should be made of a suitable polypropylene.

PRODUCTS SAFETY DATA SHEET A safety data sheet is available.

Blackfast 551 is part of the Blackfast range of products for the treatment of iron, steel and aluminium at low temperatures.

Blackfast Chemicals continues to improve the quality and performance of its range of products and reserves the right to modify product formulations without prior notice.

APPLICATION DATA SHEET

BLACKFAST 716 LIGHT ALKALINE DEGREASER

USE	As supplied or 50% solution in water.
APPLICATION	Blackfast 716 is a light alkaline degreaser used in the preparation of clean metal surfaces prior to the blacking process. Used in a dilution of 50% in water for 15-20 minutes, Blackfast 716 will degrease iron and steels at room temperature. However, immersion times will vary according to the condition of the component. More heavily oiled and greased parts can be treated first using Blackfast 250, a solvent degreaser, and finished off effectively with Blackfast 716.
TANK MAINTENANCE	It is important to maintain the strength of Blackfast 716 by removing 10% of the tank content every 1-2 weeks and replenishing with fresh material. The effectiveness of a Blackfast 716 tank can be checked regularly by examining the water rinsed components after degreasing. If water rinse drains unevenly showing dry patches, the surface is still contaminated with oil or grease and requires further degreasing through a fresh Blackfast 716 tank.
TANK MATERIAL	Tanks should be made of mild steel or suitable grade of polypropylene.
PRODUCT SAFETY DATA SHEET	A safety data sheet is available.

Blackfast 716 is part of the Blackfast range of products for the treatment of iron, steel and aluminium at low temperatures.

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APPLICATION DATA SHEET

BLACKFAST 833 DEWATERING OIL MEDIUM

USE Use as supplied

APPLICATION Following the water rinse immediately after the blacking operation, the blacked component is immersed in a tank of dewatering oil for 10 minutes. Remove and allow 45 minutes to air dry. This procedure ensures that the water is removed from the surface of the component and establishes a protective anticorrosive layer within the black coating. Ensure that the immersed component is suspended above any water which may accumulate in the bottom of the tank. This water should be drained periodically. Components, particularly those with blind holes, threads or porous surfaces should be rotated or agitated within the dewatering oil to ensure all the water is displaced and removed. Larger flat surfaces must be suspended vertically to facilitate run off of water.

TANK MAINTENANCE To ensure that the dewatering oil is maintaining its efficiency, check treated components for streaks, discolouration or rust development all of which indicate that the product requires replenishment.

Keep the tank covered when not in use to prevent evaporation of white spirit. A tank in continuous use will require vapour extraction.

PRODUCT SAFETY DATA SHEET A safety data sheet is available.

Blackfast 833 is part of the Blackfast range of products for the treatment of iron, steel and aluminium at low temperatures.

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APPLICATION DATA SHEET

BLACKFAST 925 WATER-BASED CORROSION PREVENTATIVE - MEDIUM

USE

Operate at a dilution of 15 - 20% depending upon the degree of corrosion protection required. Fill the mild/stainless steel tank 3/4 full with warm water and add Blackfast 925 slowly whilst mixing vigorously.

APPLICATION

Following the water rinse immediately after the blacking operation, the components are immersed in the tank of Blackfast 925 either in a basket or suspended individually for 5 minutes. Agitate small items and rotate those with complicated shapes. They are then placed on a draining board.

To accelerate the drying time and improve the quality of the corrosion preventative film, operate the bath at 35 - 40 °C. Allow 45 minutes drying time before handling the components.

The solution should be agitated during use.

TANK MAINTENANCE

The bath level needs to be topped up every day to replace water losses due to evaporation. In hard water areas the life of the bath will be extended by using demineralised water. Viscous scum will need to be removed regularly.

The operating life of the bath will be determined by the amount of work processed and can be dramatically shortened if a quantity of blacking solution is carried over into the bath.

Addition of new Blackfast 925 should be made by pre-mixing a concentrated solution of equal parts of 925 and warm water. This emulsion is added to the tank whilst mixing.

Shelf life of the concentrate solution at ambient temperature: 1 year.

PRODUCT SAFETY DATA SHEET

A safety data sheet is available.

Blackfast 925 is part of the Blackfast range of products for the treatment of iron, steel and aluminium at low temperatures.

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ROOM TEMPERATURE BLACKING FOR ALUMINIUM



BLACKFAST

ROOM TEMPERATURE BLACKING OF ALUMINIUM

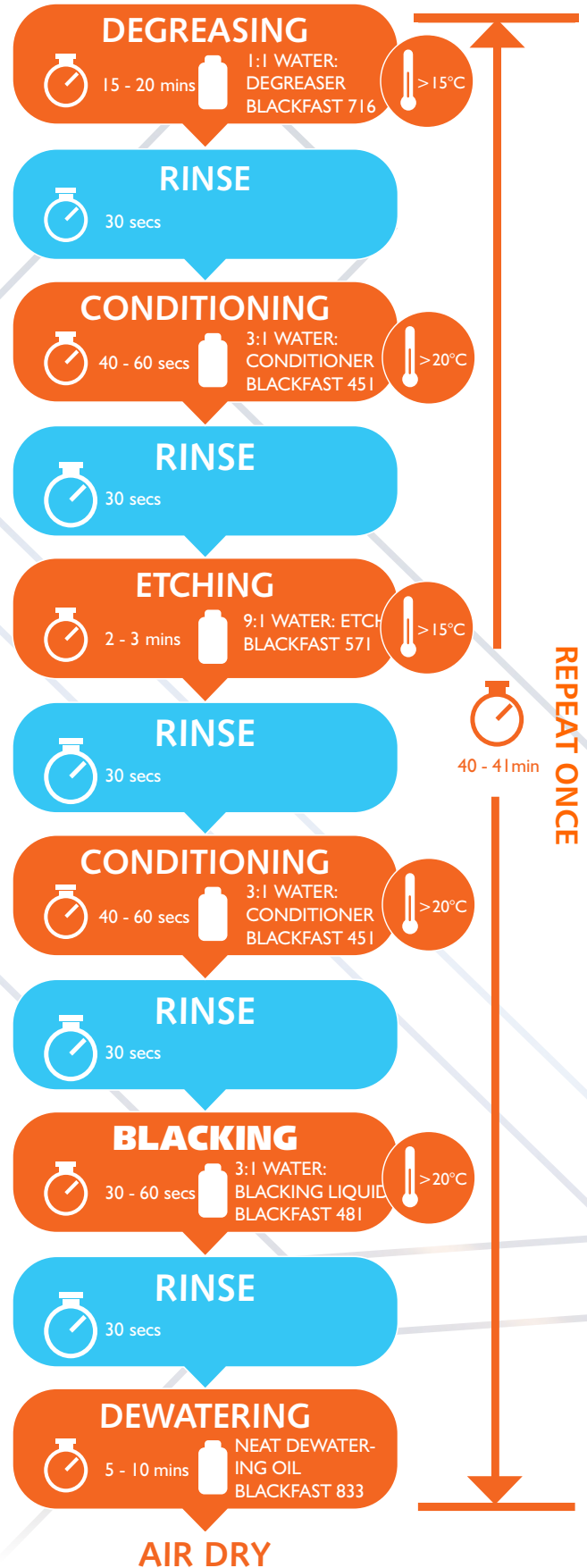
Blackfast's room temperature blacking process is a simple dip operation specifically designed for use in factories.

A uniform colouring is obtained over machined surfaces, threads and blind holes. Blacking is achieved by chemical conversion of the metal surface.

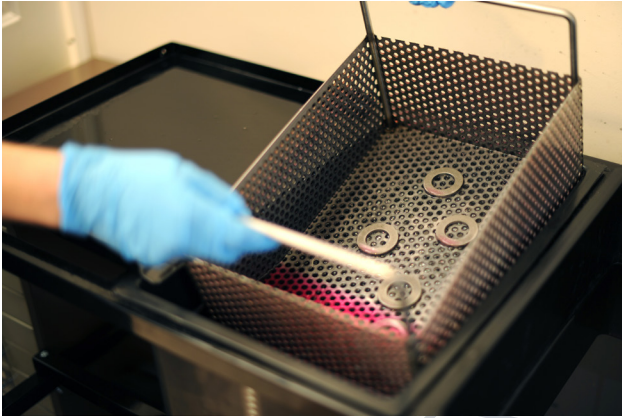
The process entails degreasing, etching, immersion in a surface conditioner, and blacking solution. Corrosion protection is afforded by a final immersion in a dewatering oil.

- Make sure the aluminium is really clean
- Keep solutions up to strength and temperature
- Hydrogen gas is produced, which can form an explosive mixture in air
Make sure that the extraction and ventilation is working correctly
- Do not over-condition. You are looking for an even, grey coating
- For different alloy grades you may be required to repeat the conditioner - etch / conditioner steps more than twice to obtain the desired finish
- Do not over-black. If this happens the surface will be smutty
- Keep a separate basket for the oil tank or degrease the basket after oiling
- Keep the rinse waters clean. This will extend the life of the tanks and prevent cross contamination
- Components can be force dried at elevated temperatures

A TYPICAL LINE WOULD BE CONFIGURED AS FOLLOWS:



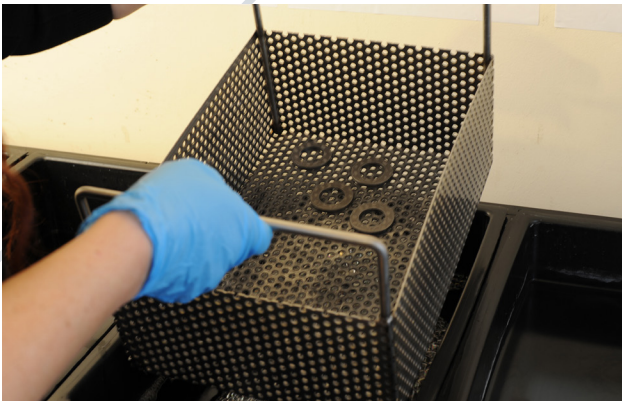
PROCESS IN PICTURES



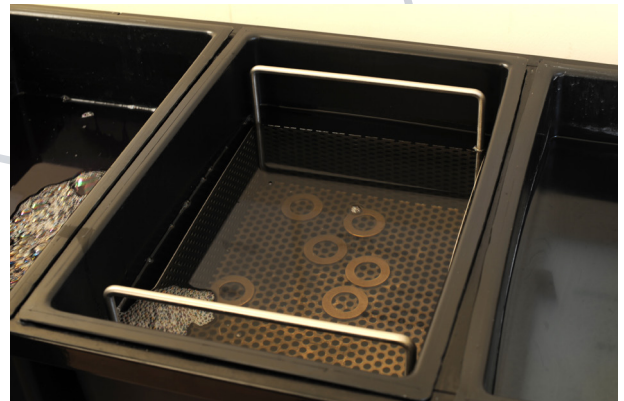
1. DEGREASING



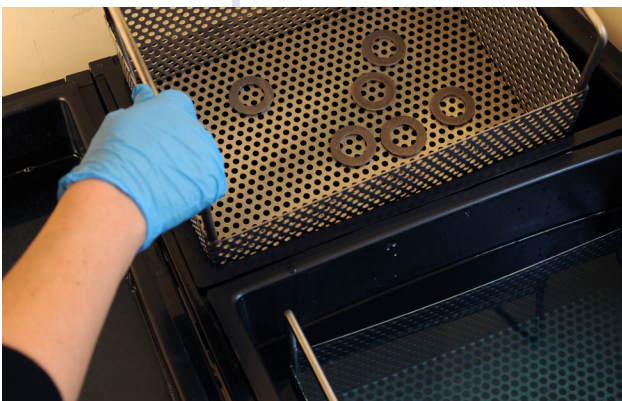
2. CONDITIONING



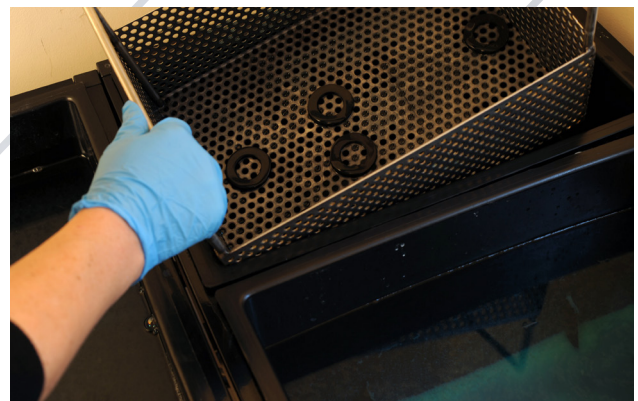
3. ETCHING



4. CONDITIONING



5. BLACKING



6. DEWATERING

APPLICATION DATA SHEET

BLACKFAST 716 LIGHT ALKALINE DEGREASER

USE	As supplied or 50% solution in water.
APPLICATION	Blackfast 716 is a light alkaline degreaser used in the preparation of clean metal surfaces prior to the blacking process. Used in a dilution of 50% in water for 15 - 20 minutes, Blackfast 716 will degrease iron and steels at room temperature. However, immersion times will vary according to the condition of the component. More heavily oiled and greased parts can be treated first using Blackfast 250, a solvent degreaser, and finished off effectively with Blackfast 716.
TANK MAINTENANCE	It is important to maintain the strength of Blackfast 716 by removing 10% of the tank content every 1 - 2 weeks and replenishing with fresh material. The effectiveness of a Blackfast 716 tank can be checked regularly by examining the water rinsed components after degreasing. If water rinse drains unevenly showing dry patches, the surface is still contaminated with oil or grease and requires further degreasing through a fresh Blackfast 716 tank.
TANK MATERIAL	Tanks should be made of mild steel or suitable grade of polypropylene.
PRODUCT SAFETY DATA SHEET	A safety data sheet is available.

Blackfast 716 is part of the Blackfast range of products for the treatment of iron, steel and aluminium at low temperatures.

Blackfast Chemicals continues to improve the quality and performance of its range of products and reserves the right to modify product formulations without prior notice.

APPLICATION DATA SHEET

BLACKFAST 517 ACID PICKLE HEAVY

USE

Use diluted 9:1

APPLICATION

All aluminium surfaces will require conditioning before blacking. After treatment in Blackfast 451, the workpiece is immersed in Blackfast 517 for 2 - 3 minutes, rinsed and returned to Blackfast 451 until an even, grey colour is developed.

Repeat as necessary followed by immersion in Blackfast 481 for 60 seconds.

TANK MATERIAL

Tanks should be made of a suitable polypropylene.

PRODUCT SAFETY DATA SHEET

A safety data sheet is available.

Blackfast 517 is part of the Blackfast range of products for the treatment of iron, steel and aluminium at low temperatures.

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APPLICATION DATA SHEET

BLACKFAST 451 ALUMINIUM CONDITIONER

USE	25% solution in water.
APPLICATION	<p>All aluminium surfaces will require conditioning before blacking. Immerse the prepared aluminium component for between 30 seconds and 1 minute into a 25% solution of Blackfast 451 in water.</p> <p>When an even, grey colour is achieved remove the component. Wash all traces of the conditioning solution from the aluminium surface prior to immersion in the blacking solution.</p> <p>Local exhaust ventilation is recommended. The etching and conditioning solutions contain Sodium Hydroxide which reacts with aluminium, producing Hydrogen gas.</p> <p>Hydrogen can form explosive mixtures in air.</p>
TANK MATERIAL	Tanks should be of polypropylene.
SOLUTION STRENGTH CONTROL	<p>Take a 10ml sample of blackfast 451 from the tank. Add a few drops of phenolphthalein indicator solution and the colour changes to a deep pink.</p> <p>Titrate without delay with a normal solution of Hydrochloric acid. The colour change is from pink to milky white. An addition of 30ml of Hydrochloric acid indicates the working solution is satisfactory. For each 1ml shortfall it is necessary to top up the bath with 1% Blackfast 451 concentrate.</p>
PRODUCT SAFETY DATA SHEET	<p>A safety data sheet is available.</p> <p>This solution is corrosive and contains Sodium Hydroxide. Refer to data sheet before use.</p> <p>Blackfast 451 is part of the Blackfast range of products for the treatment of iron, steel and aluminium at low temperatures.</p> <p>Blackfast Chemicals continues to improve the quality and performance of its range of products and reserves the right to modify product formulations without prior notice.</p>

APPLICATION DATA SHEET

BLACKFAST 481 ALUMINIUM BLACKING SOLUTION

USE 25% solution in water.

APPLICATION Blackfast 481, when used with the other Blackfast aluminium blacking products, will chemically black aluminium at room temperature (20 °C). Blacking performance may be adversely affected by temperatures lower than 16 °C. Preparation of the surface of the item to be blacked is carried out using Blackfast degreasing, etching and conditioning products with intermediate flowing water rinses. Once the surface is chemically clean and conditioned, the item is immersed in Blackfast 481 solution for 30 seconds to 1 minute. Components are normally jigged or placed in a basket and agitated if necessary to ensure all parts of the metal surface are in contact with the liquid. Following blacking, the item is rinsed in a flowing water bath and finally dipped in a dewatering oil such as Blackfast 833 or 933 depending on the type of finish required. Thus a typical blacking line can involve 9 tanks (degreasing - rinse - etching - rinse - conditioning - rinse - blacking - rinse - oiling).

Local exhaust ventilation is recommended. The etching and conditioning solutions contain Sodium Hydroxide which react with aluminium producing Hydrogen gas. Hydrogen can form explosive mixtures in air.

TANK MATERIAL Tanks should be of polypropylene, rubber lined steel or stainless steel.

SOLUTION STRENGTH CONTROL The test is carried out by taking 10ml of Blackfast 481 blacking solution from the working tank and adding a few drops of bromocresol green. The solution becomes green/yellow in colour. 0.04M (N/25) Sodium Hydroxide is added until the solution turns blue. An addition of 8 ml indicates the working solution is satisfactory. For each 1 ml shortfall, it is necessary to top up the working tank with 3% Blackfast 481 concentrated solution.

PRODUCT SAFETY DATA SHEET A safety data sheet is available.

Blackfast 481 is part of the Blackfast range of products for the treatment of iron, steel and aluminium at low temperatures.

Blackfast Chemicals continues to improve the quality and performance of its range of products and reserves the right to modify product formulations without prior notice.

APPLICATION DATA SHEET

BLACKFAST 833 DEWATERING OIL - MEDIUM

USE

Use as supplied.

APPLICATION

Following the water rinse immediately after the blacking operation, the blacked component is immersed in a tank of dewatering oil for 10 minutes. Remove and allow 45 minutes to air dry. This procedure ensures that the water is removed from the surface of the component and establishes a protective anticorrosive layer within the black coating. Ensure that the immersed component is suspended above any water which may accumulate in the bottom of the tank. This water should be drained periodically. Components, particularly those with blind holes, threads or porous surfaces should be rotated or agitated within the dewatering oil to ensure all the water is displaced and removed. Larger flat surfaces must be suspended vertically to facilitate run off of water.

TANK MAINTENANCE

To ensure that the dewatering oil is maintaining its effectiveness, check treated components for streaks, discolouration or rust development all of which indicate that the product requires replenishment.

Keep the tank covered when not in use to prevent evaporation of white spirit. A tank in continuous use will require vapour extraction.

PRODUCT SAFETY DATA SHEET

A safety data sheet is available.

Blackfast 833 is part of the Blackfast range of products for the treatment of iron, steel and aluminium at low temperatures.

Blackfast Chemicals continues to improve the quality and performance of its range of products and reserves the right to modify product formulations without prior notice.

ANTIQUING PROCESS



BLACKFAST

ANTIQUING PROCESS FOR PEWTER, COPPER, BRASS, NICKEL AND SILVER



APPLICATIONS

- Furniture fittings
- Window & door fittings
- Buckles
- Suitcase fittings
- Figurines
- Jewellery
- Badges
- Buttons
- Plates
- Mugs
- Models
- Coins
- Clocks
- and many more...



Blackfast 183 will darken bright brass surfaces to a dark brown. The bath should be maintained at a temperature range 35 - 40 °C for the best results. At lower temperatures, the process is slower and the recommended immersion time of 5 minutes is exceeded.

On removal from the solution, the brass is allowed to dry then lightly abraded to remove some of the coating on proud surfaces. What remains will be within the crevices and surface of the brass revealing an antiqued surface.

PEWTER

- 1 Components must be free from grease.
- 2 Water wash to obtain a wetting condition.
- 3 Immerse in Blackfast 181 until pewter darkens to required colour (dilution 4 - 5: 1 water to Blackfast 181).
Average dwell time 3 - 4 minutes.
- 4 Water rinse.
- 5 Dry components. Methods available:
 - i maize
 - ii oven dry
 - iii hot air
- 6 Relieve components if a contrasting effect is required. Methods available:
 - i rotary vibrating machine
 - ii typhoon barrel
 - iii manual clean with abrasive paper/cloth
 - iv polish using a rotary bench polishing machine
- 7 Lacquer finish if required.

NB. If Blackfast 181 is too strong, certain grades of pewter may turn brown.
To rectify, weaken the 181 solution.

COPPER

- 1 Components must be free from grease.
- 2 Water wash to obtain a wetting condition.
- 3 Immerse in Blackfast 183 until copper reaches required colour.
Dilution 8:2 water
Blackfast 183. Average dwell time 1 minute.
- 4 Water rinse.
- 5 Dry components. Methods available:
 - i maize
 - ii oven dry
 - iii hot air
- 6 Relieve components if a contrasting effect is required. Methods available:
 - i rotary vibrating machine
 - ii typhoon barrel
 - iii manual clean with abrasive paper/cloth
 - iv polish using a rotary bench polishing machine
- 7 Lacquer finish if required.

BRASS

- 1 Components must be free from grease.
- 2 Water wash to obtain a wetting condition.
- 3 Immerse in Blackfast 183 until brass reaches the required shade of brown. Dilution 8:2 water to Blackfast 183.

Average dwell times:
Brass plated items:
3 minutes
Brass: 5 - 10 minutes
- 4 Water rinse.
- 5 Dry components. Methods available:
 - i maize
 - ii oven dry
 - iii hot air
- 6 Relieve components if a contrasting effect is required. Methods available:
 - i rotary vibrating machine
 - ii typhoon barrel
 - iii manual clean with abrasive paper/cloth
 - iv polish using a rotary bench polishing machine
- 7 Lacquer finish if required. Blackfast 183 will darken bright brass surfaces to a dark brown.

The bath should be maintained at a temperature range 35 - 40 °C for the best results. At lower temperatures, the process is slower and the recommended immersion time of 5 minutes is exceeded.

NICKEL PLATE

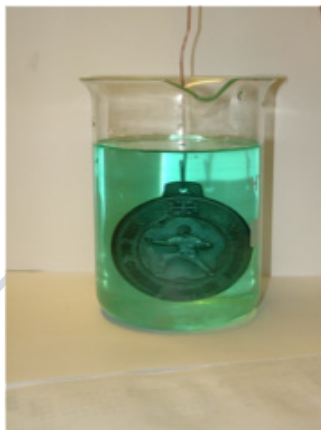
- 1 Components must be free from grease.
- 2 Water wash to obtain a wetting condition.
- 3 Immerse in Blackfast 181 (as supplied solution). Dwell time 5 minutes or until the components are coloured satisfactorily. NB. Rumbling the components is an advantage.
- 4 Water rinse.
- 5 Dry components. Methods available:
 - i maize
 - ii oven dry
 - iii hot air
- 6 Relieve components if a contrasting effect is required. Methods available:
 - i rotary vibrating machine
 - ii typhoon barrel
 - iii manual clean with abrasive paper/cloth
 - iv polish using a rotary bench polishing machine
- 7 Lacquer finish if required.

SILVER PLATE

- 1 Components must be free from grease.
- 2 Water wash to obtain a wetting condition.
- 3 Immerse in Blackfast 183 (as supplied solution). Dwell time 5 - 10 minutes. If speed is important, heat the solution up to 50 °C.
- 4 Water rinse.
- 5 Dry components. Methods available:
 - i maize
 - ii oven dry
 - iii hot air
- 6 Relieve components if a contrasting effect is required. Methods available:
 - i rotary vibrating machine
 - ii typhoon barrel
 - iii manual clean with abrasive paper/cloth
 - iv polish using a rotary bench polishing machine
- 7 Lacquer finish if required.

PROCESS FROM VIBRO FINISH DIECASTING

BLACKFAST 133



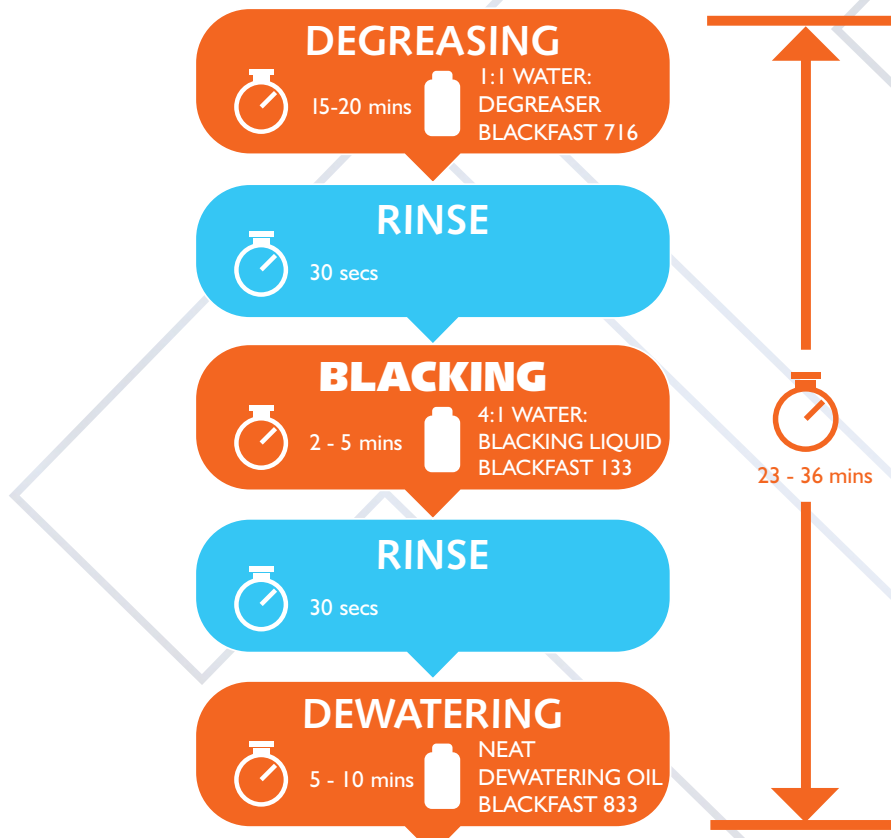
RELIEVE WITH SCOTCH-BRITE CLOTH



ROOM TEMPERATURE BLACKING OF ZINC

Blackfast's room temperature blacking process is a simple dip operation specifically designed for use in factories. The process does not materially affect dimensions and a uniform colouring is obtained over machined surfaces, threads and blind holes. Blacking is achieved by chemical conversion of the metal surface. The process entails degreasing, immersion in a surface conditioner, and blacking solution. Corrosion protection is afforded by a final immersion in a dewatering oil.

A TYPICAL LINE WOULD BE CONFIGURED AS FOLLOWS:



APPLICATION DATA SHEET

BLACKFAST 133 ZINC BLACKING SOLUTION

USE

10 - 20% solution in water.

APPLICATION

Blackfast 133 will chemically black plated zinc and cadmium, zinc diecast and galvanised surfaces.

Preparation of the surface of the item to be blacked is carried out using one or more steps involving degreasing and conditioning using the appropriate Blackfast products with intermediate flowing water rinses.

Once the surface is chemically clean and conditioned, the item is immersed in the Blackfast 133 solution for 2 - 5 minutes at 24 °C. ensuring that all parts of the metal surface are in contact with the liquid, for which purpose a plastic basket or tree is normally used.

Avoid vigorous air agitation which may produce water vapour in the form of atmospheric mist.

Following blacking, the item is rinsed in a flowing water tank and finally dipped in a dewatering oil such as Blackfast 833 or 841 depending on the thickness of oil deposit required.

If the Blackfast 925 water based oil is in use, restrict immersion to 5 minutes only and operate at room temperature.

PRODUCT SAFETY DATA SHEET

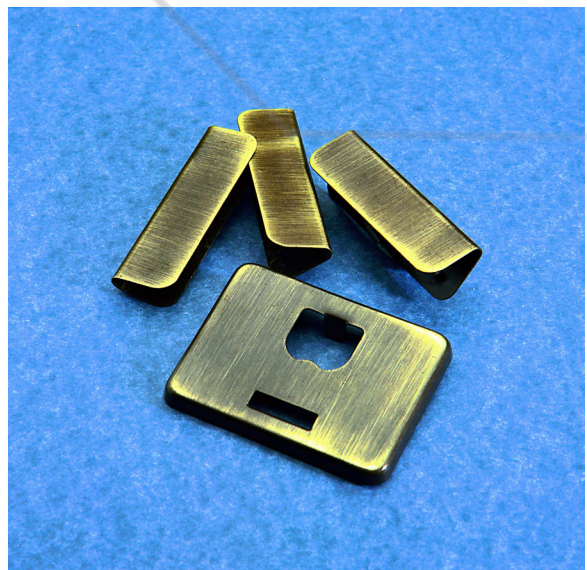
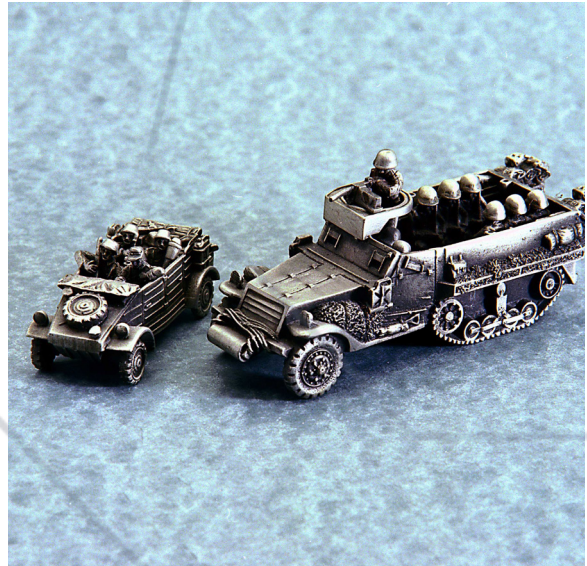
A safety data sheet is available.

Blackfast 133 is part of the Blackfast range of products for the treatment of iron, steel and aluminium at low temperatures.

Please note that the Blackfast 133 solution contain Nickel compounds. As some Nickel compounds can cause skin irritation, skin contact should be prevented as far as is reasonably practicable.

Nickel sulphide is present in the lower layers of the black coating. Treated Zinc items should not be included for use with costume jewellery and articles which may come into everyday contact with the skin.

Blackfast Chemicals continues to improve the quality and performance of its range of products and reserves the right to modify product formulations without prior notice.



ELECTROCOAT BLACK OR CLEAR FINISH



BLACKFAST

BLACKFAST LP PROCESS FOR ALUMINIUM, STAINLESS STEEL AND NON-FERROUS METAL



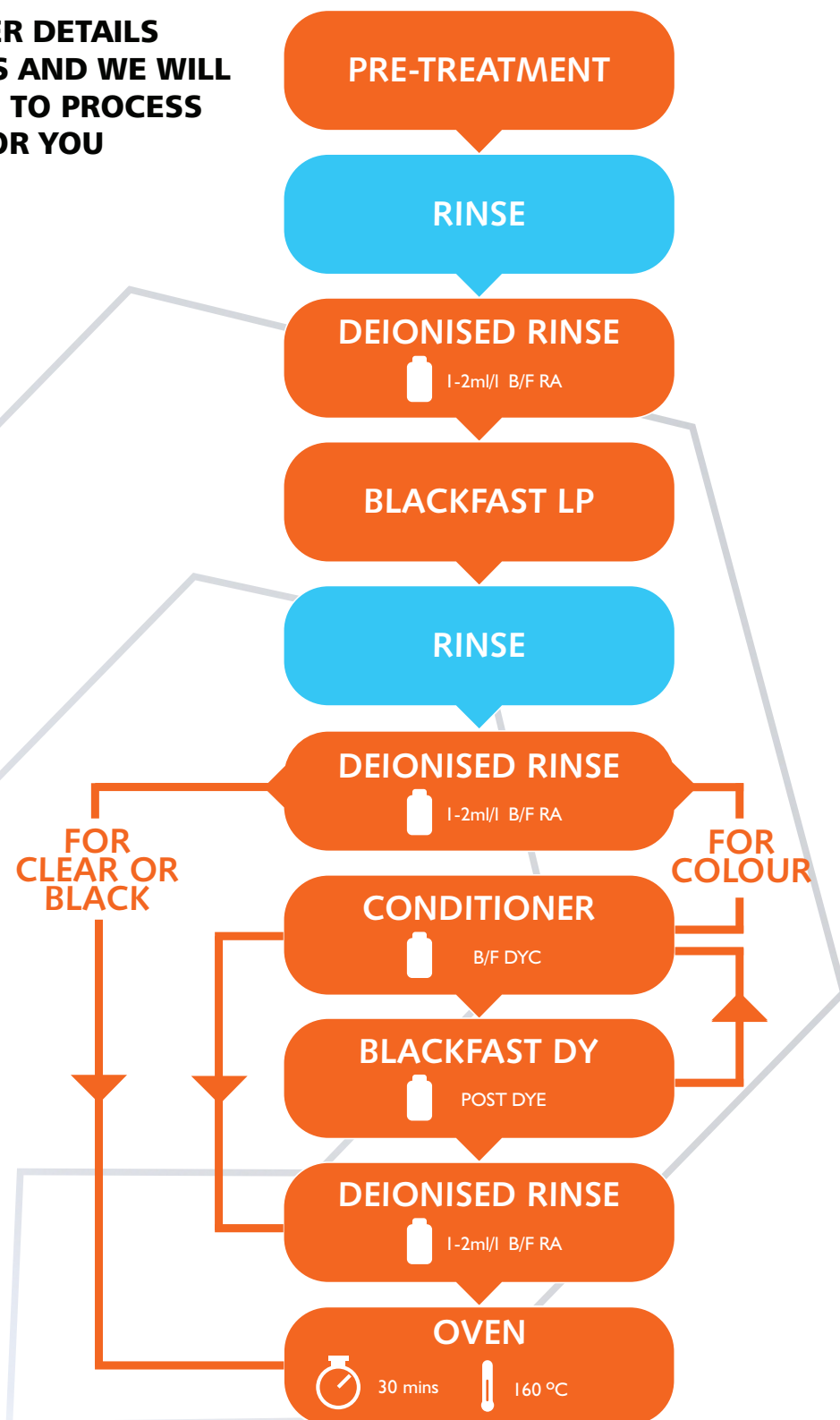
ADVANTAGES

- Cut your rejects on coating Zinc diecast
- Brass, Gold, Bronze etc without Electroplating
- Direct coating on polished or vibro castings
- Improved corrosion resistance
- Lower costs
- Non-hazardous processing
- Low-cost equipment

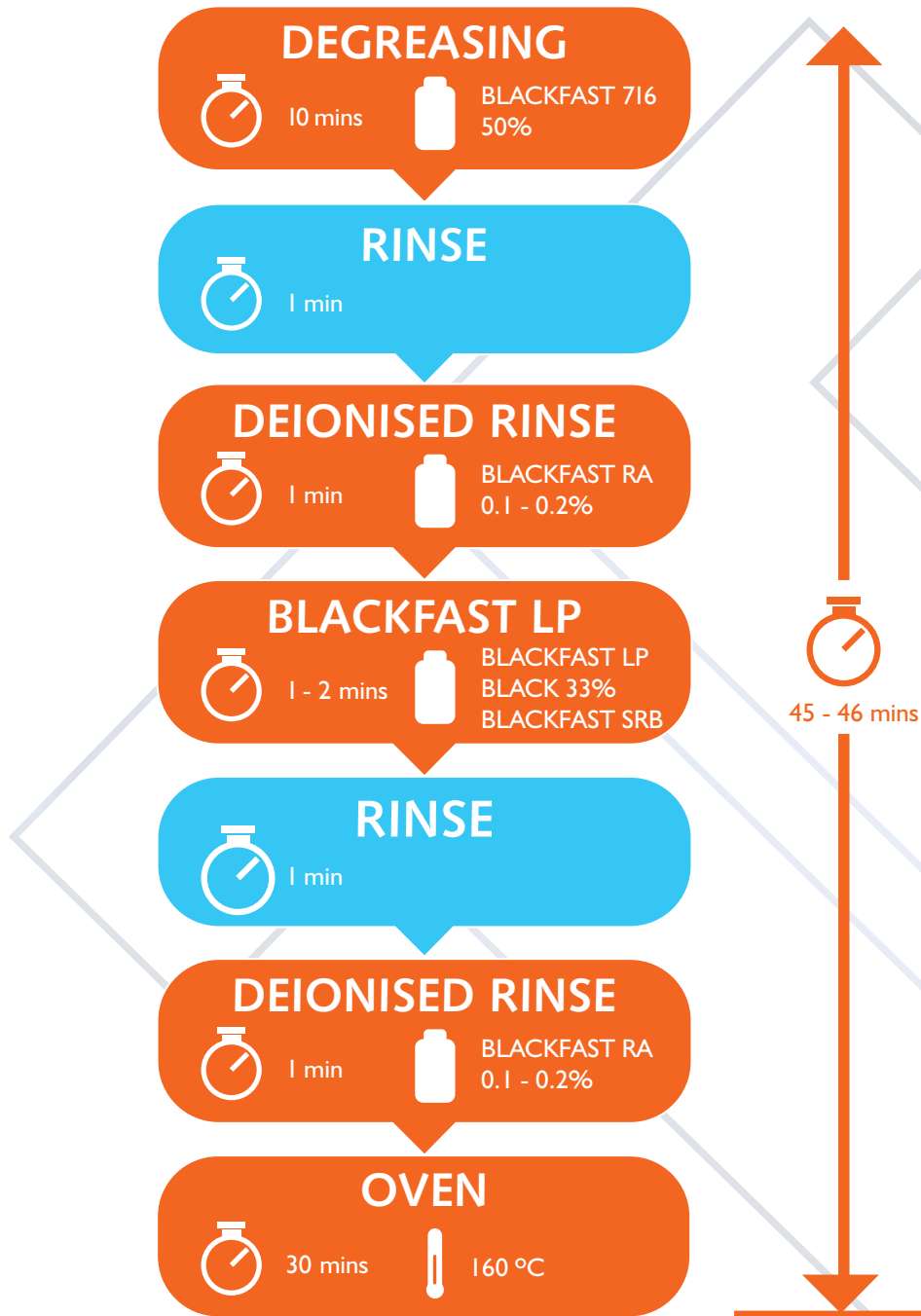
PROCESS SEQUENCE

FROM POLISHED, VIBRO AND CHEMICAL BLACKING

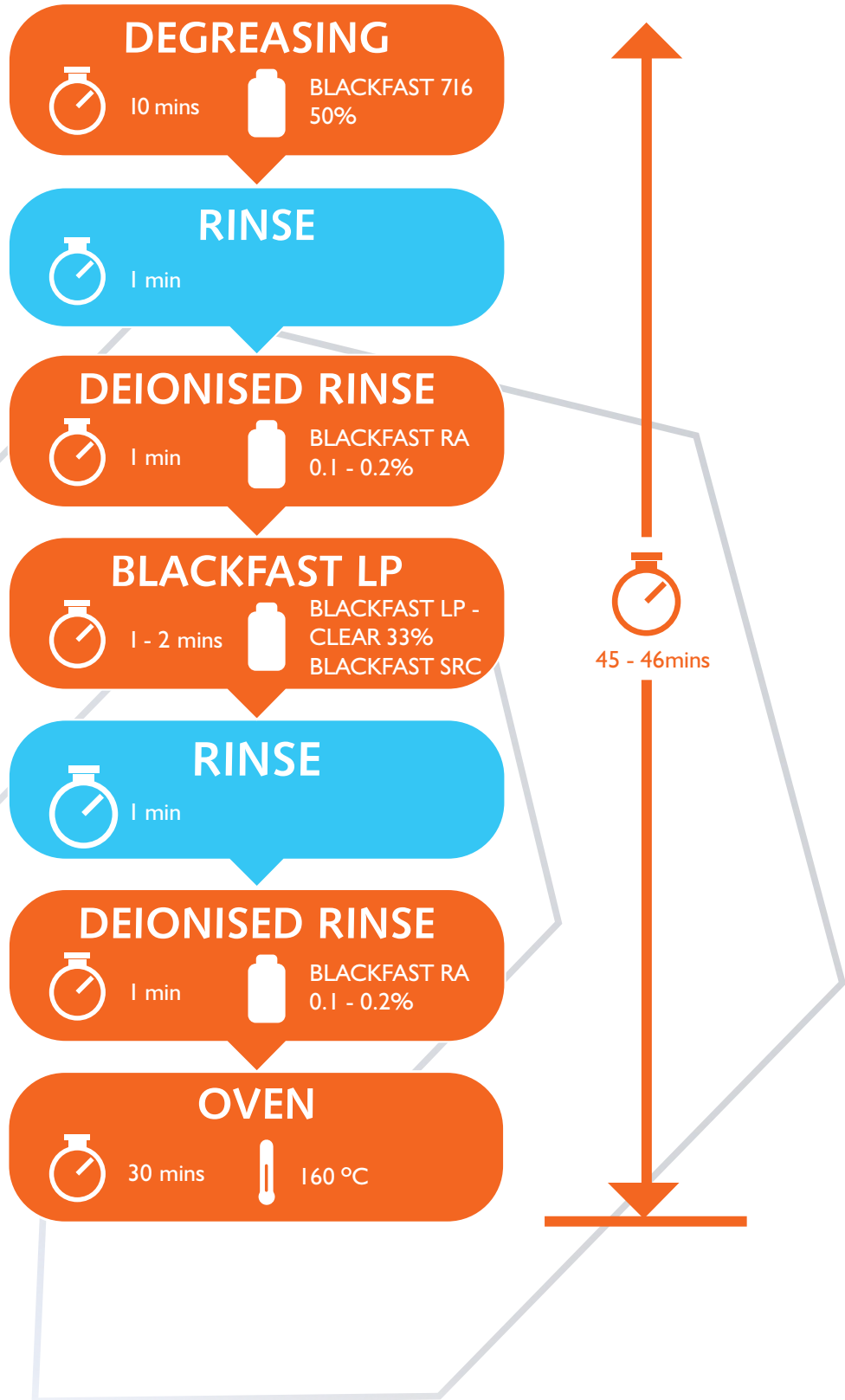
**FOR FURTHER DETAILS
CONTACT US AND WE WILL
BE PLEASED TO PROCESS
SAMPLES FOR YOU**



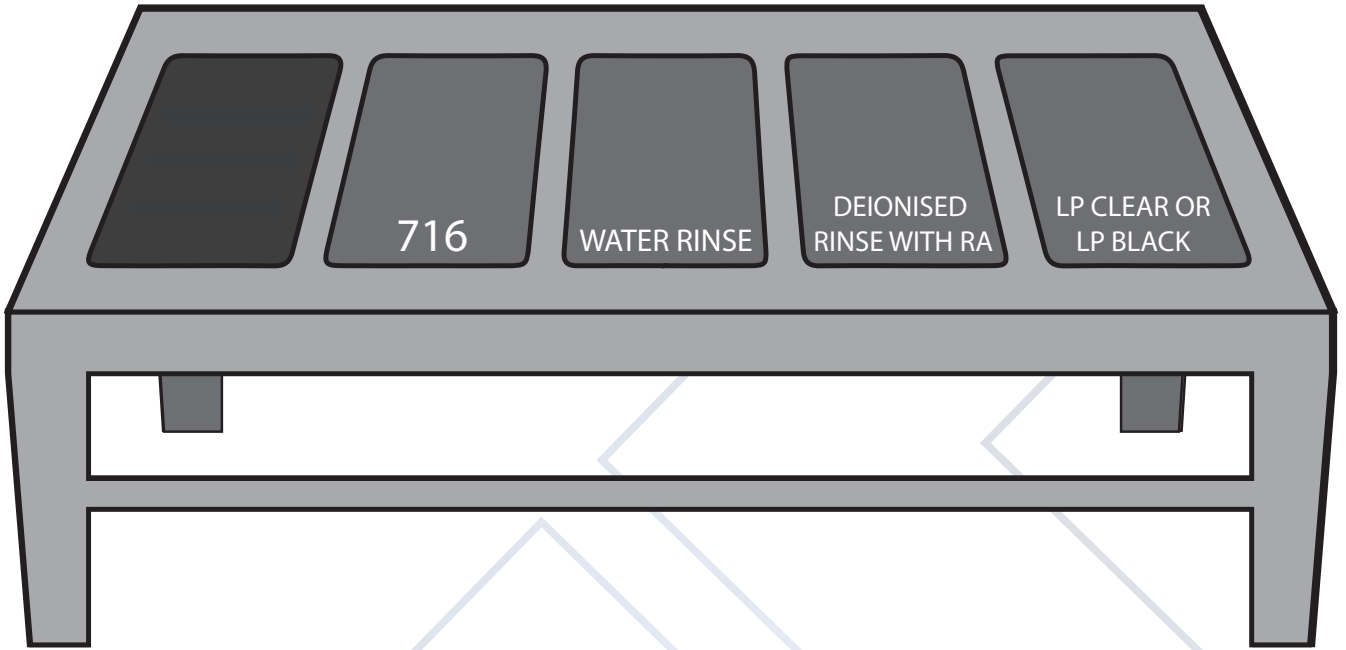
PROCESS FOR BLACKFAST LP BLACK



PROCESS FOR BLACKFAST LP CLEAR

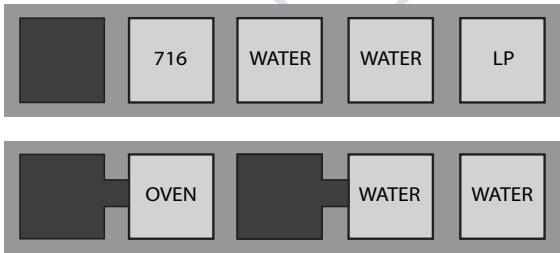


BLACKFAST 20 LITRE LP SYSTEM

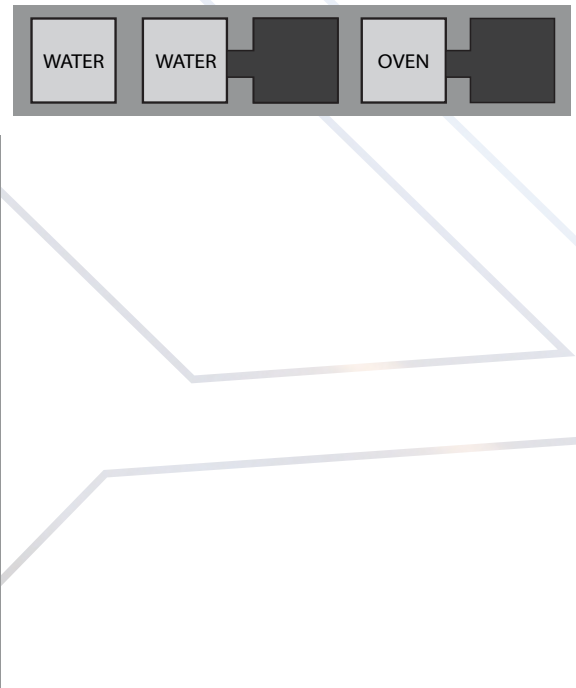


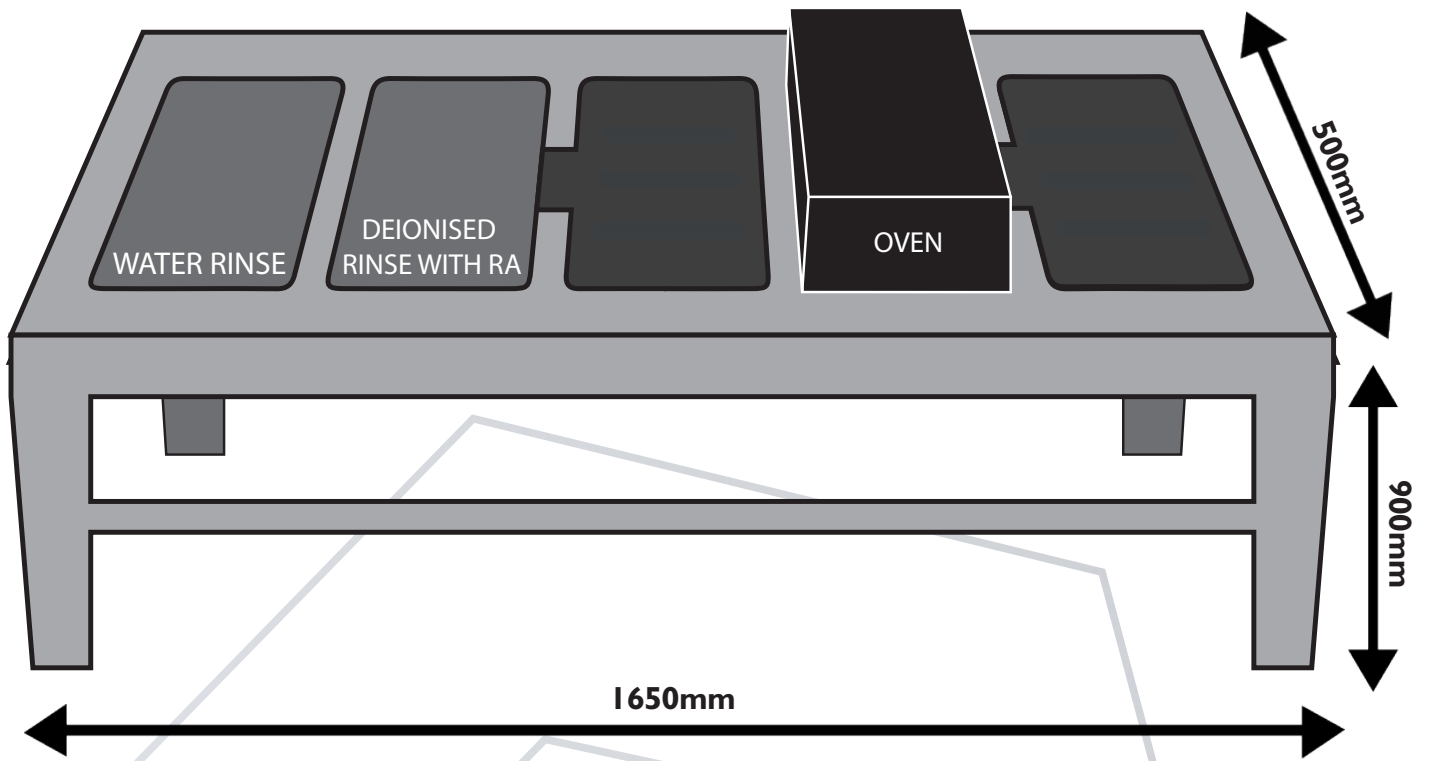
LAYOUT OPTIONS

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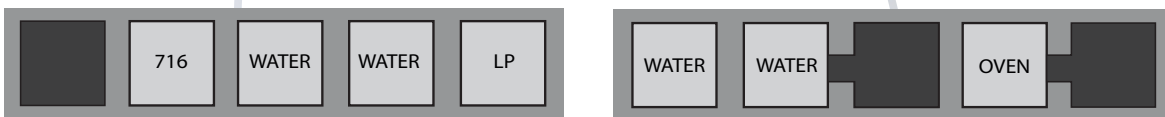


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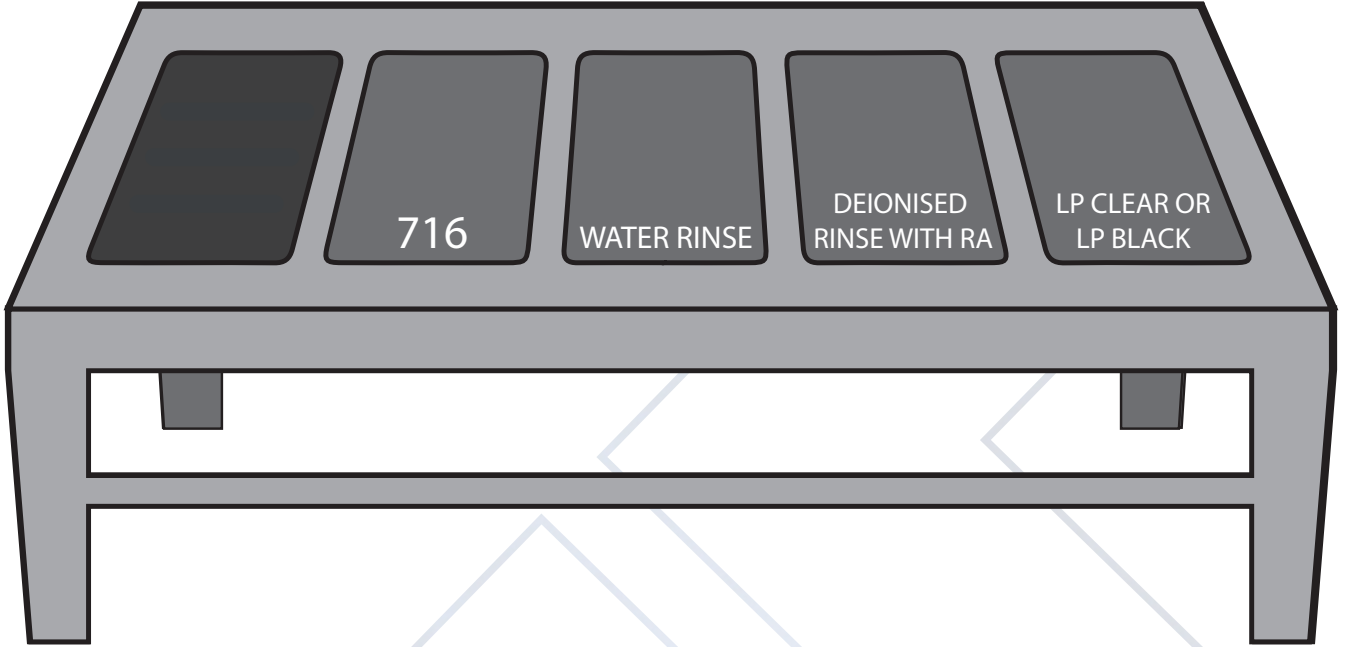




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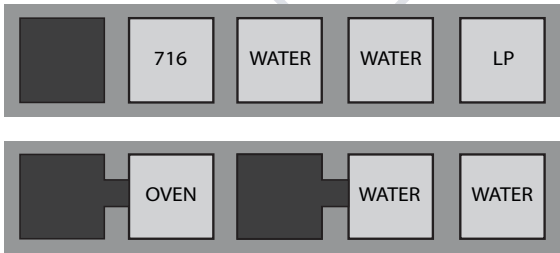


BLACKFAST 50 LITRE LP SYSTEM

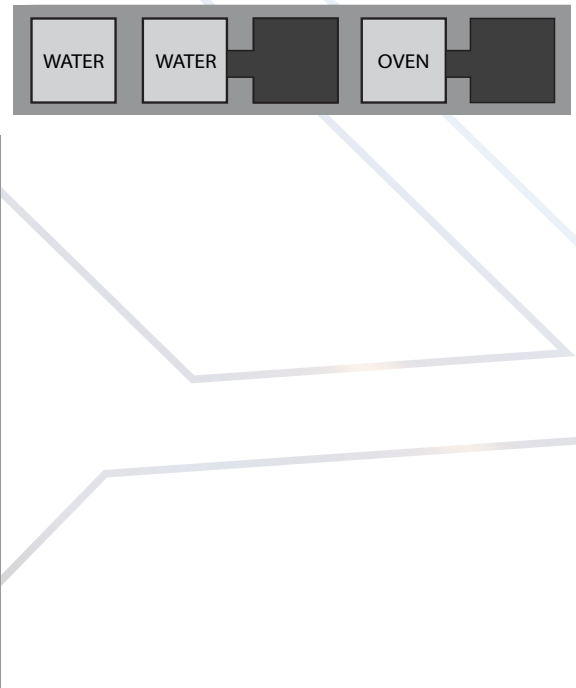


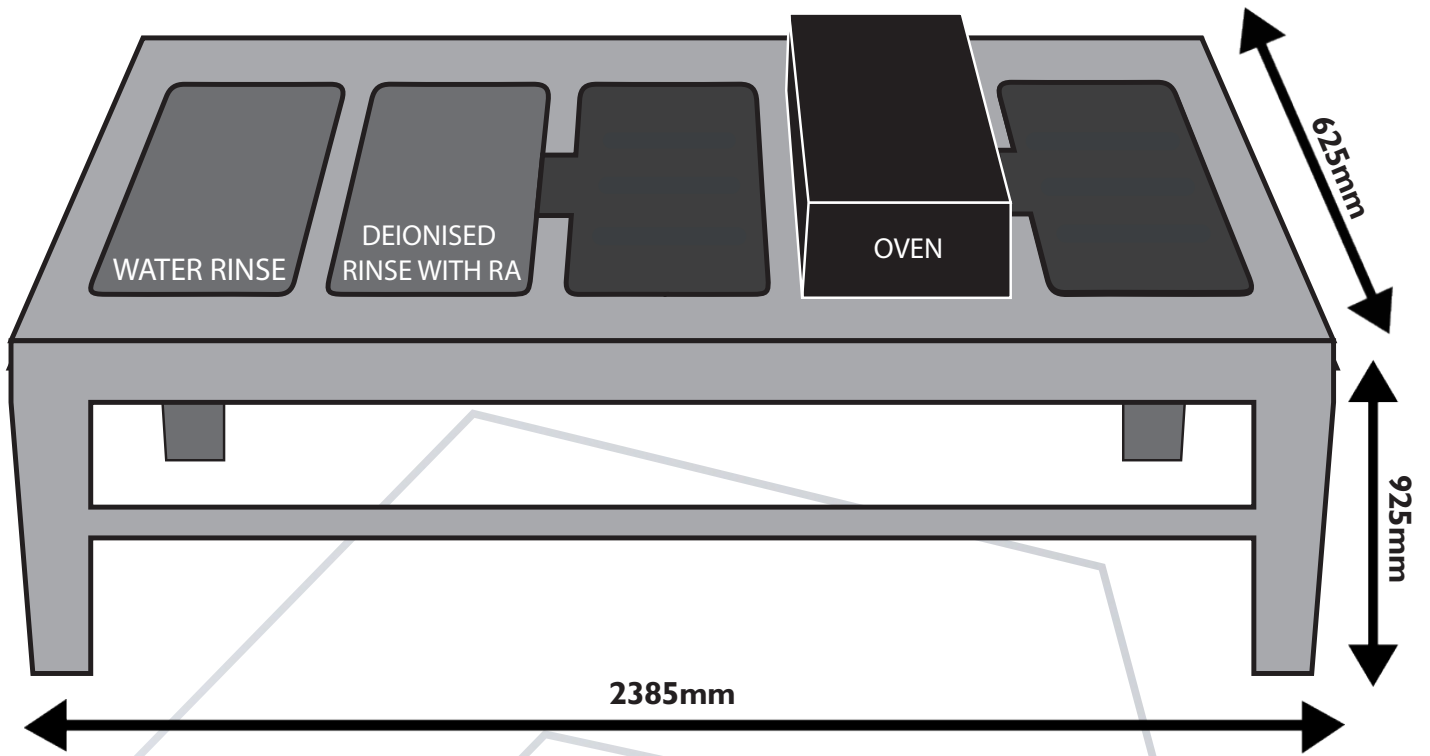
LAYOUT OPTIONS

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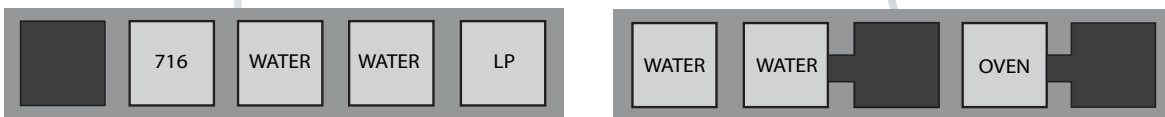


2





3



EQUIPMENT REQUIRED FOR SETTING UP BLACKFAST 20 LITRE LACQUER SYSTEM

5 tanks and lids
(442mm x 296mm x 305mm)

1 tank to include the following:
Anodes, particulate filter,
Ultra filter unit, low density wattage heater
Rectifier

1 Frame

2 off water recycle (demineralised) systems
(inc. resin MB400)

Allowance for workholding jigs.

Oven (120 litre) to cure parts at 160 °C

Chemical to fill to 20 ltrs working volume

25 litres Blackfast 716

25 kilos Blackfast LP (Black or Clear)

5 kilos Blackfast SR

5 kilos Blackfast RA

Test kit for LP solution

Refractometer, conductivity meter and calibration kit

EQUIPMENT REQUIRED FOR SETTING UP BLACKFAST 50 LITRE CLEAR OR BLACK LACQUER SYSTEM

5 tanks and lids
(600mm x 425mm x 425mm)

1 tank to include the following:
Anodes, particulate filter,
Ultra filter unit, low density wattage heater
Rectifier

1 Frame

2 off water recycle (demineralised) systems
(inc. resin MB400)

Allowance for workholding jigs.

Oven (120 litre) to cure parts at 160 °C

Chemical to fill to 20 ltrs working volume

25 litres Blackfast 716

25 kilos Blackfast LP (Black or Clear)

5 kilos Blackfast SR

5 kilos Blackfast RA

Test kit for LP solution

Refractometer, conductivity meter and calibration kit

APPLICATION DATA SHEET

BLACKFAST 716 LIGHT ALKALINE DEGREASER

USE As supplied or 50% solution in water.

APPLICATION Blackfast 716 is a light alkaline degreaser used in the preparation of clean metal surfaces prior to the blacking process. Used in a dilution of 50% in water for 15-20 minutes, Blackfast 716 will degrease iron and steels at room temperature. However, immersion times will vary according to the condition of the component. More heavily oiled and greased parts can be treated first using Blackfast 250, a solvent degreaser, and finished off effectively with Blackfast 716.

TANK MAINTENANCE It is important to maintain the strength of Blackfast 716 by removing 10% of the tank content every 1 - 2 weeks and replenishing with fresh material. The effectiveness of a Blackfast 716 tank can be checked regularly by examining the water rinsed components after degreasing. If water rinse drains unevenly showing dry patches, the surface is still contaminated with oil or grease and requires further degreasing through a fresh Blackfast 716 tank.

TANK MATERIAL Tanks should be made of mild steel or suitable grade of polypropylene.

PRODUCT SAFETY DATA SHEET A safety data sheet is available.

Blackfast 716 is part of the Blackfast range of products for the treatment of iron, steel and aluminium at low temperatures.

Blackfast Chemicals continues to improve the quality and performance of its range of products and reserves the right to modify product formulations without prior notice.

APPLICATION DATA SHEET

BLACKFAST 716 LIGHT ALKALINE DEGREASER

USE

33% solution in water.

APPLICATION

Blackfast LP Clear 110 is a cathodic electrophoretic process for depositing a clear coating on solid brass, zinc based diecastings and most electroplated substrates to protect them from oxidation and to enhance wear resistance.

Blackfast LP Clear 110 overcomes some of the problems with plated diecasting blistering at higher stoving temperatures. Other advantages of low temperature cure are a minimising colour change on silver and brass.

Excellent film properties can be achieved after curing at 120 °C.

The coating uses advanced acrylic-urethane technology.

CURED FILM PROPERTIES

Hardness: Cured @ 120 °C 3H - 4H pencil.
Cured @ 140 °C 4H - 5H pencil.

Acetone resistance: Cured @ 120 °C > 200 double rubs.
Cured @ 140 °C > 500 double rubs.

Wet adhesion: Cured @ 120 °C no removal.
(boiling water 1hr) Cured @ 140 °C no removal.

Scratch resistance: 2000 gms.

Perspiration resistance: Up to 48 hours on nickel-plated spectacle frames.
(ISO 12870) Clarity:

Corrosion resistance: Polished brass: at least 500 hours.
(ASTM B117)

TANK MAKE UP

Rinse tank and all pipework including ultra-filtration unit with deionised water containing 2% v/v Blackfast SRC and 1ml/litre of Blackfast RA.

Drain tank and fill as follows (for a 1000 litre tank):
Blackfast LP Clear 110 concentrate: 330 kg
Demineralised water: 670 litres

Maintain circulation through filter for 12 - 16 hours and remove permeate equivalent to 10% of volume of the bath before commencing depositions. It may be necessary to adjust the solvent content with an addition of Blackfast SR-Clear. The standard addition following 10% Ultra filtration is 1 - 2ml/L of Blackfast SR-Clear and the optimum permeate RI is 1.8.

It is important that 0.5 micron pleated glass fibre absolute filters are used.

BATH DATA

Concentration: 30 - 35% vol/vol.
Conductivity: 500 - 700 μ S.
Temperature: 25 - 30 °C (27 °C optimum)

THEORETICAL COVERAGE

5 microns dry film thickness: 50m² per kg
 10 microns dry film thickness: 25m² per kg

TYPICAL DEPOSITION

30 volts for 30 seconds gives 4-6 microns dry film thickness.
 40 volts for 60 seconds gives 9-15 microns dry film thickness.
 The above are typical for a fresh bath (voltages required may be higher as bath ages) at optimum temperature.

CURING CYCLE

Curing begins at approximately 110 °C , with properties of the coating improving further with increased temperature. Typical curing conditions are 20 minutes @ 120 - 140 °C at metal temperature.

Curing can be tested by rubbing with cotton wool soaked in Acetone.

REPLENISHMENT

Refractive index of permeate:

Take a sample of the permeate and measure with a refractometer. Reading for LP Clear should be 1.7 -2 .2. If less than 1.7, add SR Clear in small quantities until the refractive index is 1.7. For example, if refractive index is 1, add 7 ml per litre of tank volume of SRC.

Refractive index of LP working solution:

Take a sample of the LP tank solution and measure the refractive index with a refractometer. For every litre of LP required to top up, remove the same quantity of permeate before adding the LP. Maintain refractive index of LP Clear 110 at 9.5 - 12.5. For example, for every point the refractive index deviates from the optimum remove 2% (of the the tank volume) of permeate and add 2% (of the tank volume) of LP solution.

Please note that it is preferable to maintain the bath concentration with regular additions of Blackfast LP Clear rather than large infrequent additions.

Conductivity of LP working solution:

Measure the conductivity of the LP working solution. Conductivity should be maintained at 450 - 800, if it is too high, remove the permeate at a rate of 10% of the tank volume.

Replace the removed permeate with demineralised water and Blackfast SRC as follows:
 For every 100 litres of permeate removed, add 98 litres demineralised water/2 litre of Blackfast SRC.

TANK MATERIAL

Tanks should be made of mild steel or suitable grade of polypropylene.

PRODUCT SAFETY DATA SHEET

A safety data sheet is available.

Blackfast LP Clear is part of the Blackfast range of products for the treatment of iron, steel and aluminium at low temperatures.

Blackfast Chemicals continues to improve the quality and performance of its range of products and reserves the right to modify product formulations without prior notice.

APPLICATION DATA SHEET

BLACKFAST LP BLACK

USE 33% solution in water.

APPLICATION Blackfast LP Black is a cathodic electrophoretic process for depositing a black pigmented coating on solid brass, zinc-based diecastings, aluminium, steel and most electroplated substrates.

CURED FILM PROPERTIES

Hardness: 5H - 6H pencil hardness (ASTM D3363 - 74).

Solvent resistance: A minimum of 300 double rubs with acetone on a fully cured film over brass or zinc diecasting aged for 24 hours at room temperature.

Dry adhesion: No removal of squares (1 mm crosshatch, adhesive tape pull-off).

Ultraviolet resistance: Excellent.

Scratch resistance: 2000 gms (BS 3900 part E2).

Wet adhesion: No removal of squares (1mm crosshatch, 1 hour in boiling water, 1 hour wait, adhesive tape pull-off)

Handling: Excellent mar resistance as soon as stoved items are cool enough to handle.

Corrosion resistance: Polished brass: at least 250 hours. Brass-plated articles including zinc diecastings: at least 150 hours (subject to the quality of the base metal and electrodeposits). All tests performed on substrates coated with a 10 micron film of Blackfast LP Black (Neutral salt spray ASTM B117; BS 7479:1991; ISO 9227:1990).

TANK MAKE UP

Rinse tank and all pipework including ultra-filtration unit with deionised water containing 2% v/v Blackfast SRB and 1ml/litre of Blackfast RA.

Drain tank and fill as follows (for a 1000 litre tank):
Blackfast LP Black concentrate: 330 kg
Demineralised water: 670 litres

Maintain circulation through filter for 12 - 16 hours before commencing depositions.

BATH DATA

Concentration: 33%
Conductivity: 450 - 900 micro/siemens
Temperature: 25 - 30 °C (28 °C optimum)
Peak current: 27 amps/m²
Mean current: 6 amps/m²

THEORETICAL COVERAGE

5 microns dry film thickness: 40m² per kg
 10 microns dry film thickness: 20m² per kg

TYPICAL DEPOSITION

25 volts for 60 seconds gives 5 - 6 microns dry film thickness.

30 volts for 60 seconds gives 8 - 9 microns dry film thickness.

40 volts for 60 seconds gives 10 - 12 microns dry film thickness.

The above are typical for a fresh bath (voltages required may be higher as bath ages) at optimum temperature.

CURING CYCLE

20 minutes at 160 °C at metal temperature.

Cure can be tested by rubbing with cotton wool soaked in acetone.

Blackfast LP Black when fully cured can achieve in excess of 300 double rubs.

FILTRATION

Filtration and Ultrafiltration of Blackfast LP Clear and Black system. Blackfast LP requires two types of filtration, achieved by combining conventional particulate 5 - 10 micron filter and ultrafiltration.

Ultrafiltration is required when the conductivity reading of Blackfast LP (Black/Clear) is at the high reading.

Ultrafiltration is used to remove soluble impurities from the Blackfast LP solution by passing the Blackfast LP across a membrane which permits water and soluble impurities to pass through it, but not the Blackfast LP itself.

The soluble impurity is known as a Permeate.

REPLENISHMENT

Refractive index of permeate:

Take a sample of the permeate and measure with a refractometer. Reading for LP Black should be 3 - 4, If less than 3, add SRB in small quantities until the refractive index is 3.

For example: if refractive index is 2 add 10 ml per litre of tank volume of SRB.

Refractive index of LP working solution:

Take a sample of the LP tank solution and measure the refractive index with a refractometer.

For every litre of LP required to top up, remove the same quantity of permeate before adding the LP.

Maintain refractive index of LP Black at 14 - 17 (30 - 36% concentration).

For example: for every point the refractive index deviates from the optimum remove 2% (of the the tank volume) of permeate and add 2% (of the tank volume) of LP solution.

Please note that it is preferable to maintain the bath concentration with regular additions of Blackfast LP Black rather than large infrequent additions.

Conductivity of LP working solution:

Measure the conductivity of the LP working solution.

Conductivity should be maintained at 450 - 900, if it is too high remove the permeate at a rate of 10% of the tank volume.

Replace the removed permeate with demineralised water and Blackfast SRB as follows:

For every 100 litres of permeate removed add:
97 litres demineralised water/3 litre of Blackfast SRB.

PRODUCT SAFETY DATA SHEET

A safety data sheet is available.

Blackfast LP Black is part of the Blackfast range of products for the treatment of iron, steel and aluminium at low temperatures.

Blackfast Chemicals continues to improve the quality and performance of its range of products and reserves the right to modify product formulations without prior notice.

APPLICATION DATA SHEET

BLACKFAST RA

USE

0.1% solution in water.

APPLICATION

Blackfast RA is a specially selected surfactant blend suitable to aid rinsing before and after any of the Blackfast electrocoat and Post Dye systems.

TO AID RINSING

Add 1 - 2 ml/litre of Blackfast RA to the rinse tank (demineralised water is usually used for rinsing prior to and after electrocoat).

TO AID TANK CLEANING

Follow the instructions on the Application Data sheet for the product in the tank.

PRODUCT SAFETY DATA SHEET

A safety data sheet is available.

Blackfast RA is part of the Blackfast range of products for the treatment of iron, steel and aluminium at low temperatures.

Blackfast Chemicals continues to improve the quality and performance of its range of products and reserves the right to modify product formulations without prior notice.



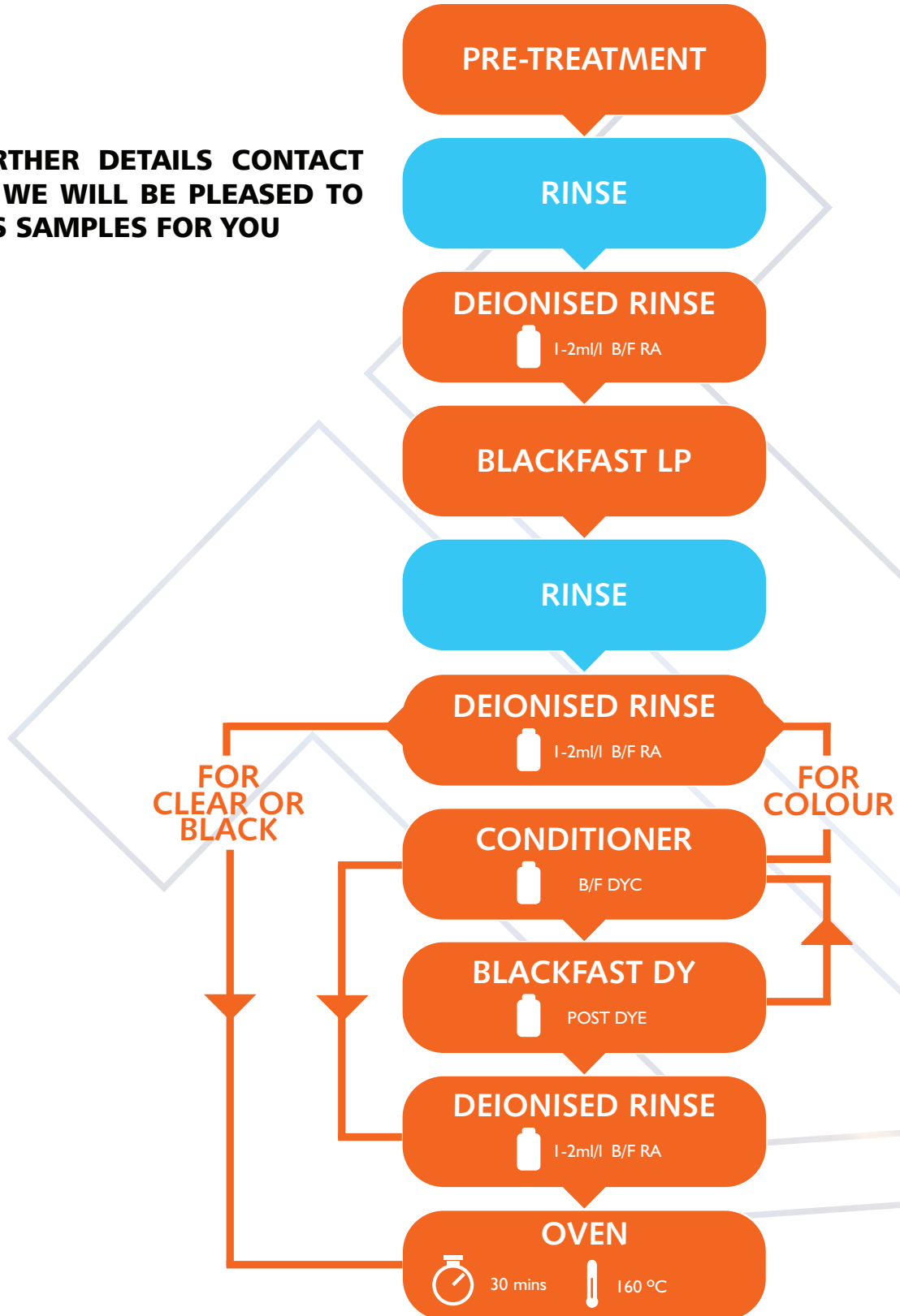
ELECTROCOAT OTHER COLOURS



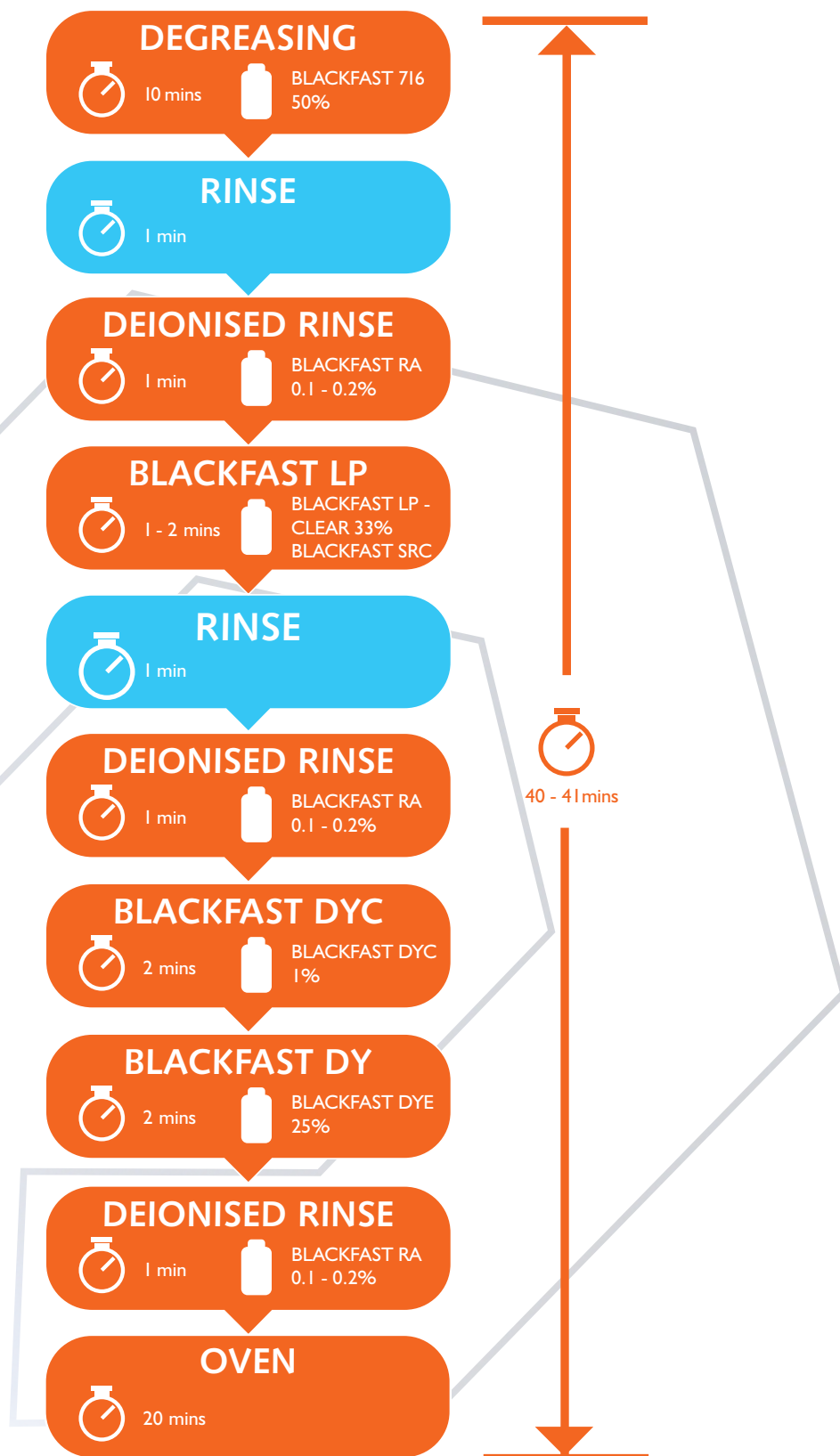
BLACKFAST

PROCESS SEQUENCE

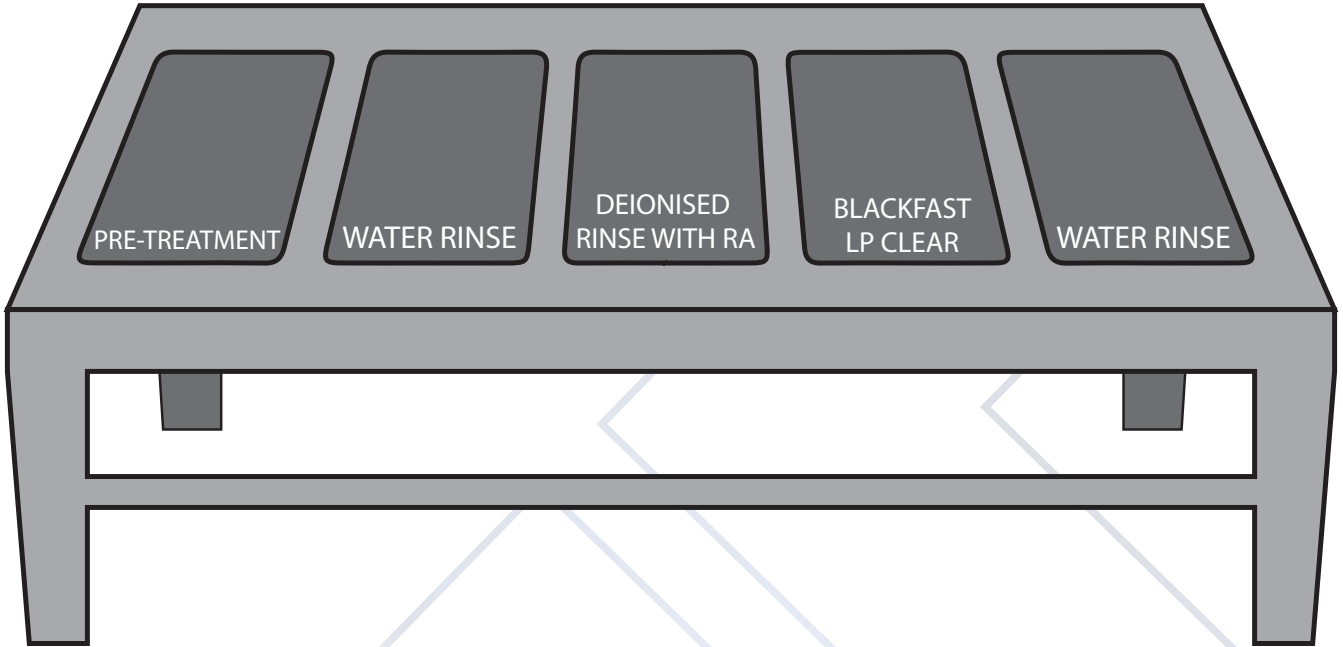
FOR FURTHER DETAILS CONTACT
US AND WE WILL BE PLEASED TO
PROCESS SAMPLES FOR YOU



PROCESS FOR BLACKFAST LP OTHER COLOURS

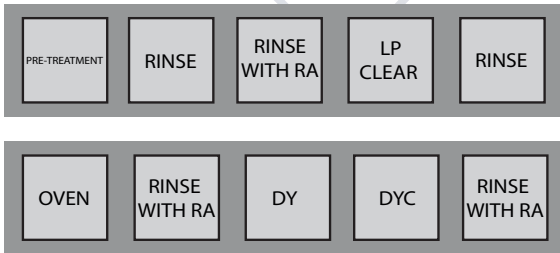


BLACKFAST 20 LITRE LP SYSTEM WITH DYE OPTION



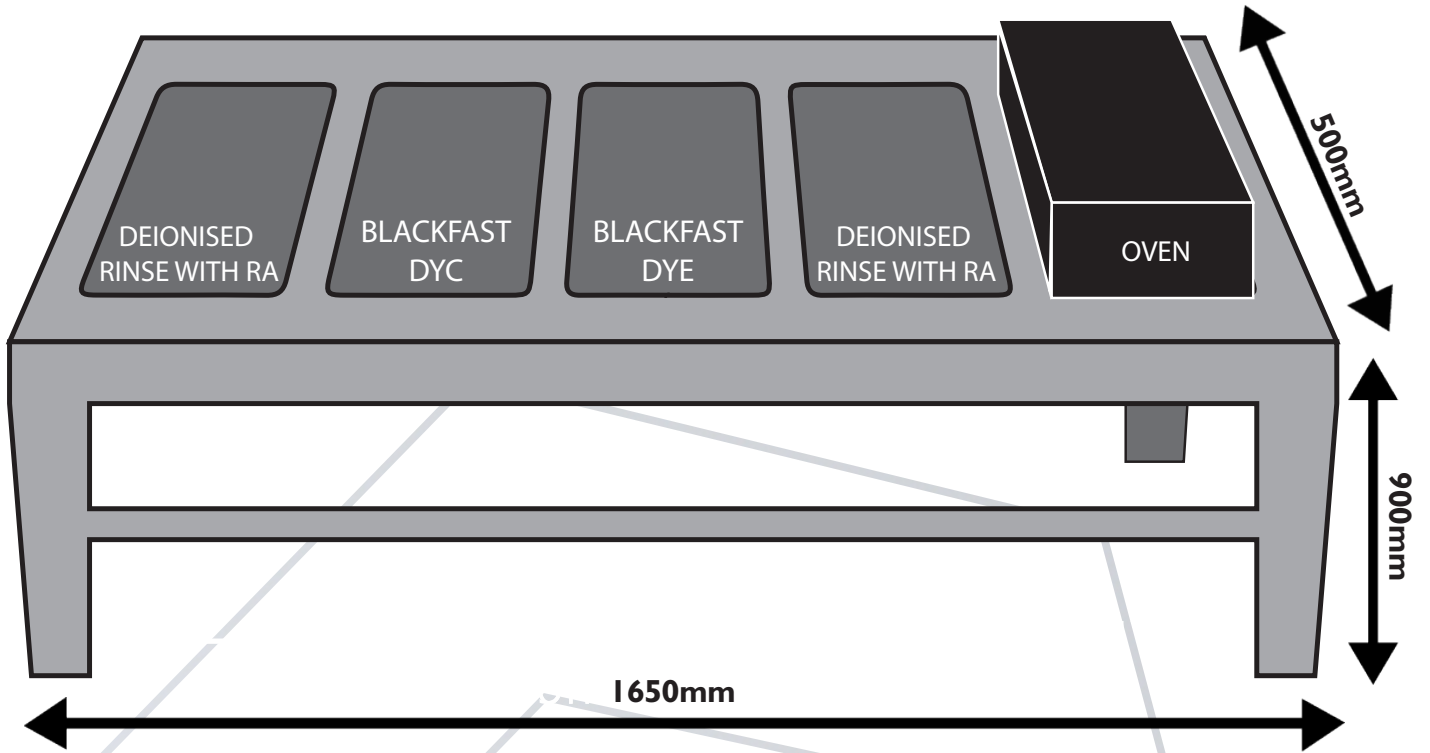
LAYOUT OPTIONS

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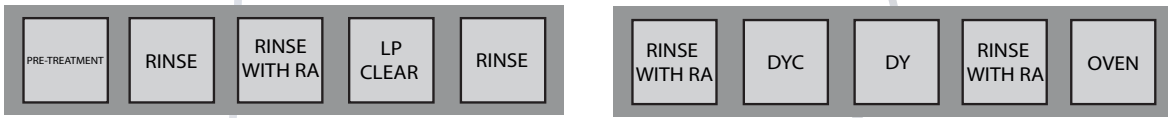


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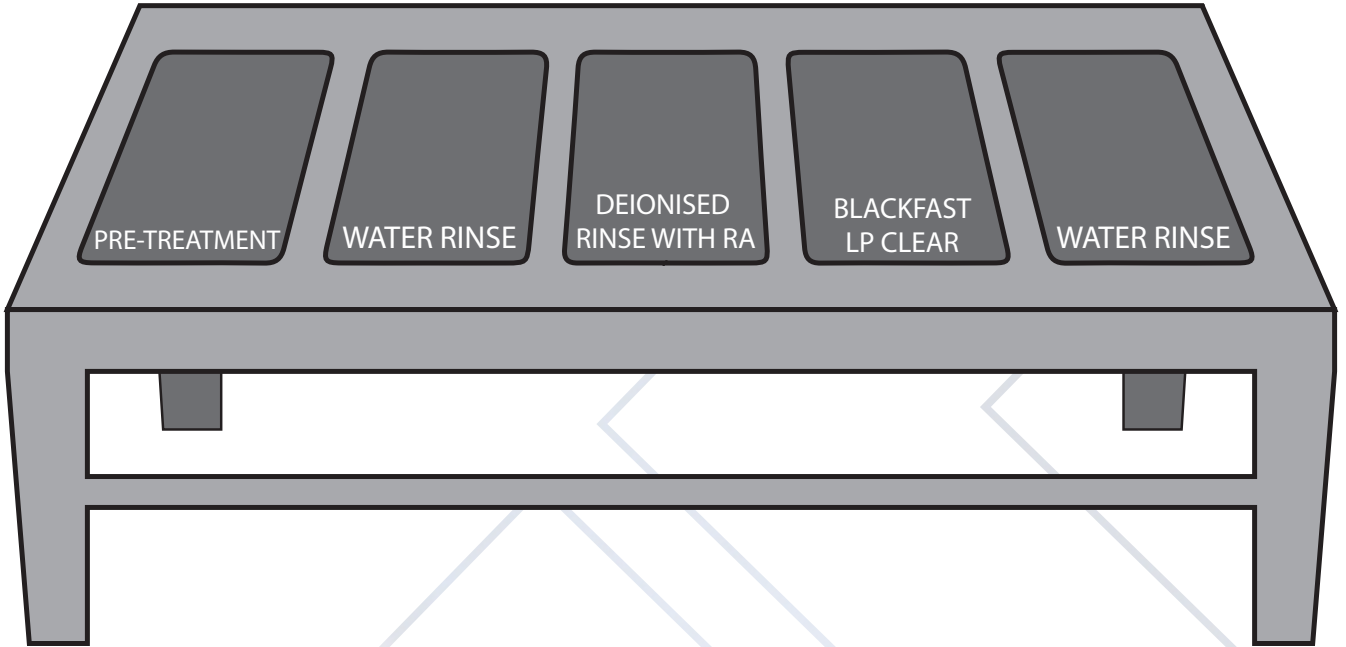




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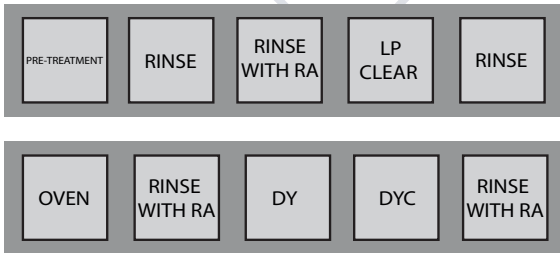


BLACKFAST 50 LITRE LP SYSTEM WITH DYE OPTION

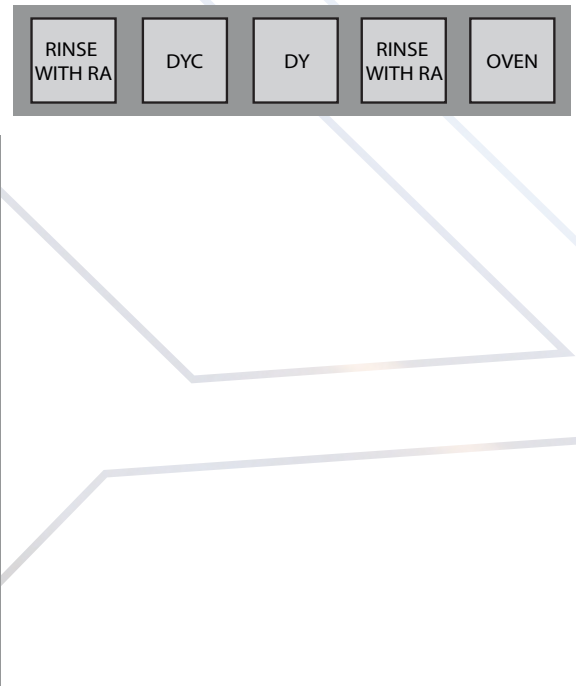


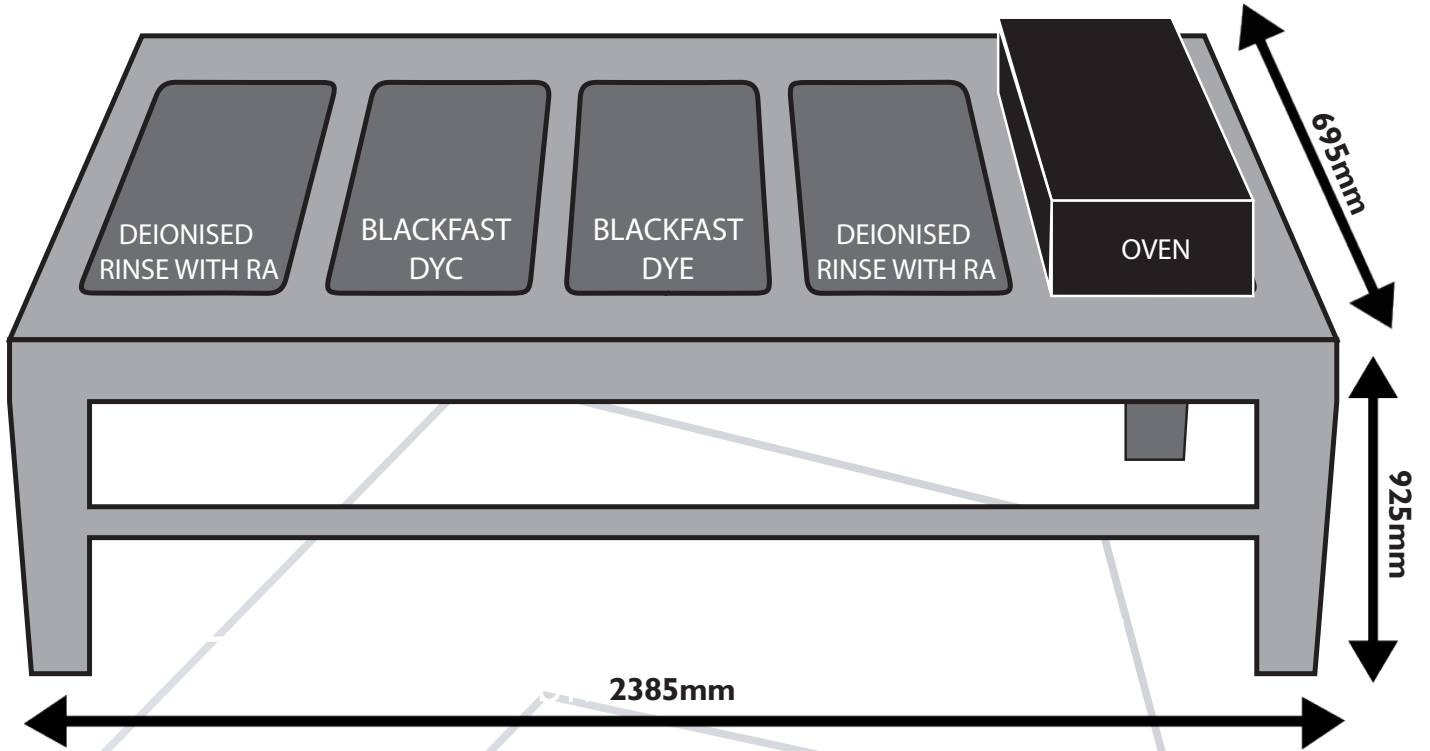
LAYOUT OPTIONS

1



2





3



EQUIPMENT REQUIRED FOR SETTING UP BLACKFAST 20 LITRE LACQUER SYSTEM WITH POST DYE OPTION

8 tanks and lids
(442mm x 296mm x 305mm)

1 tank to include the following:
Anodes, particulate filter,
Ultra filter unit, low density wattage heater
Rectifier

1 Frame

3 off water recycle (demineralised) systems
(inc. resin MB400)

1 off thermo pump for Dye solution

Allowance for workholding jigs

Oven (120 litre) to cure parts at 160 °C

Chemical to fill to 20 litres working volume

- 25 litres Blackfast 716
- 25 kilos Blackfast LP Clear
- 5 kilos Blackfast SRC
- 5 kilos Blackfast DYE - (colours)
- 5 kilos Blackfast DYC
- 5 kilos Blackfast RA

For additional colours you will require:

- 1 extra tank & lid
- 1 thermo pump
- DYE

Test kit for LP solution
Refractometer, conductivity meter and calibration kit

EQUIPMENT REQUIRED FOR SETTING UP BLACKFAST 50 LITRE LACQUER SYSTEM WITH POST DYE OPTION

8 tanks and lids
(600mm x 425mm x 425mm)

1 tank to include the following:

Anodes, particulate filter,

Ultra filter unit, low density wattage heater

Rectifier

1 Frame

3 off water recycle (demineralised) systems
(inc. resin MB400)

1 off thermo pump for Dye solution

Allowance for workholding jigs

Oven (120 litre) to cure parts at 160 °C

Chemical to fill to 50 litres working volume

25 litres Blackfast 716

25 kilos Blackfast LP Clear

5 kilos Blackfast SRC

20 kilos Blackfast DYE - (colours)

5 kilos Blackfast DYC

5 kilos Blackfast RA

For additional colours you will require 1 extra tank & lid

1 thermo pump

DYE

Test kit for LP solution

Refractometer, conductivity meter and calibration kit

APPLICATION DATA SHEET

BLACKFAST 716 LIGHT ALKALINE DEGREASER

USE

As supplied or 50% solution in water.

APPLICATION

Blackfast 716 is a light alkaline degreaser used in the preparation of clean metal surfaces prior to the blacking process. Used in a dilution of 50% in water for 15 - 20 minutes, Blackfast 716 will degrease iron and steels at room temperature. However, immersion times will vary according to the condition of the component. More heavily oiled and greased parts can be treated first using Blackfast 250, a solvent degreaser, and finished off effectively with Blackfast 716.

TANK MAINTENANCE

It is important to maintain the strength of Blackfast 716 by removing 10% of the tank content every 1 - 2 weeks and replenishing with fresh material. The effectiveness of a Blackfast 716 tank can be checked regularly by examining the water rinsed components after degreasing. If water rinse drains unevenly showing dry patches, the surface is still contaminated with oil or grease and requires further degreasing through a fresh Blackfast 716 tank.

TANK MATERIAL

Tanks should be made of mild steel or suitable grade of polypropylene.

PRODUCT SAFETY DATA SHEET

A safety data sheet is available.

Blackfast 716 is part of the Blackfast range of products for the treatment of iron, steel and aluminium at low temperatures.

Blackfast Chemicals continues to improve the quality and performance of its range of products and reserves the right to modify product formulations without prior notice

APPLICATION DATA SHEET

BLACKFAST LP CLEAR

USE

33% solution in water.

APPLICATION

Blackfast LP Clear is a cathodic electrophoretic process for depositing a clear coating on solid brass, zinc based diecastings and most electroplated substrates to protect them from oxidation and to enhance wear resistance. The coating is a urethane modified acrylic co-polymer.

CURED FILM PROPERTIES

Hardness: 4H - 5H pencil hardness (ASTM D3363 - 74).

Solvent resistance: A minimum of 200 rubs with acetone on a fully cured film over brass or zinc diecasting aged for 24 hours at room temperature.

Dry adhesion: No removal of squares (1mm crosshatch, adhesive tape pull-off).

Ultraviolet resistance: Excellent.

Scratch resistance: 2000 gms (BS 3900 part E2).

Resistance to toiletries: Excellent.

Clarity: Excellent.

Wet adhesion: No removal of squares (1mm crosshatch, 1 hour in boiling water, 1 hour wait, adhesive tape pull-off)

Handling: Excellent mar resistance as soon as stoved items are cool enough to handle.

Corrosion resistance: Polished brass: at least 250 hours. Brass plated articles including zinc diecastings: at least 150 hours (subject to the quality of the base metal and electrodeposits). All tests performed on substrates coated with a 10 micron film of Blackfast LP Clear (Neutral salt spray ASTM B117; BS 7479:1991; ISO 9227:1990).

TANK MAKE UP

Rinse tank and all pipework including ultra-filtration unit with deionised water containing 2% v/v Blackfast SRC and 1ml/litre of Blackfast RA.

Drain tank and fill as follows (for a 1000 litre tank):

Blackfast LP Clear concentrate: 330 kg

Demineralised water: 670 litres

Maintain circulation through filter for 12 - 16 hours before commencing depositions.

BATH DATA

Concentration: 33%

Conductivity: 600 - 800 micro/siemens

Temperature: 25 - 29 °C (27 °C optimum)

Peak current: 27 amps/m²

Mean current: 6 amps/m²

**THEORETICAL
COVERAGE**

5 microns dry film thickness: 50m² per kg
 10 microns dry film thickness: 25m² per kg

TYPICAL DEPOSITION

25 volts for 60 seconds gives 4 - 6 microns dry film thickness.

30 volts for 60 seconds gives 5 - 8 microns dry film thickness.

40 volts for 60 seconds gives 8 - 12 microns dry film thickness.

The above are typical for a fresh bath (voltages required may be higher as bath ages) at optimum temperature.

CURING CYCLE

20 minutes @ 160 °C at metal temperature.

Cure can be tested by rubbing with cotton wool soaked in acetone.

Blackfast LP Clear when fully cured can achieve in excess of 200 double rubs.

FILTRATION

Filtration and Ultrafiltration of Blackfast LP Clear and Black system. Blackfast LP requires two types of filtration, achieved by combining conventional particulate 5 - 10 micron filter and ultrafiltration.

Ultrafiltration is required when the conductivity reading of Blackfast LP (Black/Clear) is at the high reading.

Ultrafiltration is used to remove soluble impurities from the Blackfast LP solution by passing the Blackfast LP across a membrane which permits water and soluble impurities to pass through it, but not the Blackfast LP itself.

The soluble impurity is known as a Permeate.

REPLENISHMENT

Refractive index of permeate:

Take a sample of the permeate and measure with a refractometer. Reading for LP Clear should be 2 - 3, If less than 2, add SRC in small quantities until the refractive index is 2.

For example: if refractive index is 1 add 5 ml per litre of tank volume of SRC.

Refractive index of LP working solution:

Take a sample of the LP tank solution and measure the refractive index with a refractometer.

For every litre of LP required to top up, remove the same quantity of permeate before adding the LP.

Maintain refractive index of LP Clear at 9 - 11 (30 - 36% concentration).

For example: for every point the refractive index deviates from the optimum remove 2% (of the the tank volume) of permeate and add 2% (of the tank volume) of LP solution

Please note that it is preferable to maintain the bath concentration with regular additions of Blackfast LP Clear rather than large infrequent additions.

Conductivity of LP working solution:

Measure the conductivity of the LP working solution.

Conductivity should be maintained at 600 - 850, if it is too high remove the permeate at a rate of 10% of the tank volume.

Replace the removed permeate with demineralised water and Blackfast SRC as follows:

For every 100 litres of permeate removed add:
98 litres demineralised water/2 litre of Blackfast SRC.

A safety data sheet is available.

PRODUCT SAFETY DATA SHEET

Blackfast LP Clear is part of the Blackfast range of products for the treatment of iron, steel and aluminium at low temperatures.

Blackfast Chemicals continues to improve the quality and performance of its range of products and reserves the right to modify product formulations without prior notice.

APPLICATION DATA SHEET

BLACKFAST RA

USE

0.2% solution in water.

APPLICATION

Blackfast RA is a specially selected surfactant blend suitable to aid rinsing before and after any of the Blackfast electrocoat and post dye systems.

TO AID RINSING

Add 1 - 2ml/litre of Blackfast RA to the rinse tank (demineralised water is usually used for rinsing prior to and after electrocoat).

TO AID TANK CLEANING

Follow the instructions on the Application Data sheet for the product in the tank.

PRODUCT SAFETY DATA SHEET

A safety data sheet is available.

Blackfast RA is part of the Blackfast range of products for the treatment of iron, steel and aluminium at low temperatures.

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APPLICATION DATA SHEET

BLACKFAST DYE

USE Blackfast DYE 25%
Demineralised Water 74.5%

APPLICATION Blackfast Dyes provide a means of converting a standard clear coating to a tinted coating. The series contains dyes to simulate a range of finishes, including, Brass, Copper, Gold and Bronze.

OPERATING CONDITONS	PROPERTY	VALUE	CONTROL MEASURE
	Conductivity of Post Dye	100 to 800m/s	Dilute with de-ionised water to reduce conductivity.
	Refractive index Post Dye	2 to 5 brix	Add Post Dye concentrate if low.
	Temperature	25 to 30 °C	Heating/Cooling
	Immersion Time	30 to 180 seconds	

PROCESS GUIDELINES	TEMPERATURE	IMMERSION TIME (SECONDS)	DYE INTENSITY
	25 °C	60 to 180	Light to Medium
	30 °C	60 to 180	Medium to Strong

CURING CYCLE 20 minutes @ 160 °C at metal temperature

REPLENISHMENT Maintain tank volume by addition of demineralised water to replace dragout and evaporation loss.
Maintain refractive index of bath to a set value between 2.5 and 4.5 by addition of concentrate (BF Dye).

NOTE **The Refractive index value that is used to control replenishments will be the value of the bath when it is set and adjusted to give first good result.**

PLANT REQUIREMENTS Corrosion and solvent-resistant tank and equipment:
Temperature 30 °C +/- 5 °C (Consistent temperature recommended).
Filtration 1 Micron Filter (Capability 0.5 tank volume/Hour).

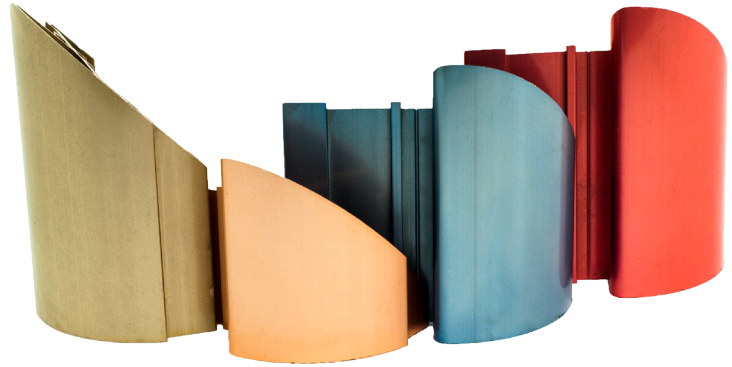
PRODUCT SAFETY DATA SHEET A safety data sheet is available.

Blackfast DYE is part of the Blackfast range of products for the treatment of iron, steel and aluminium at low temperatures.

Blackfast Chemicals continues to improve the quality and performance of its range of products and reserves the right to modify product formulations without prior notice

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ELECTROCOAT COLOURS



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