

## Premier Paint

A good paint finish is vital to the performance and longevity of a cast iron rainwater and soil drainage system. Primers and finished coatings protect the underlying substrate by providing a barrier between the cast iron and corroding elements. The coating film protects the underlying substrate in two ways:

- Coatings can slow the rate of diffusion of water and oxygen from the environment to the metal surface, thus slowing the corrosion process;
- Coatings can also slow the rate of diffusion of corrosion products from the metal surface through the paint film.

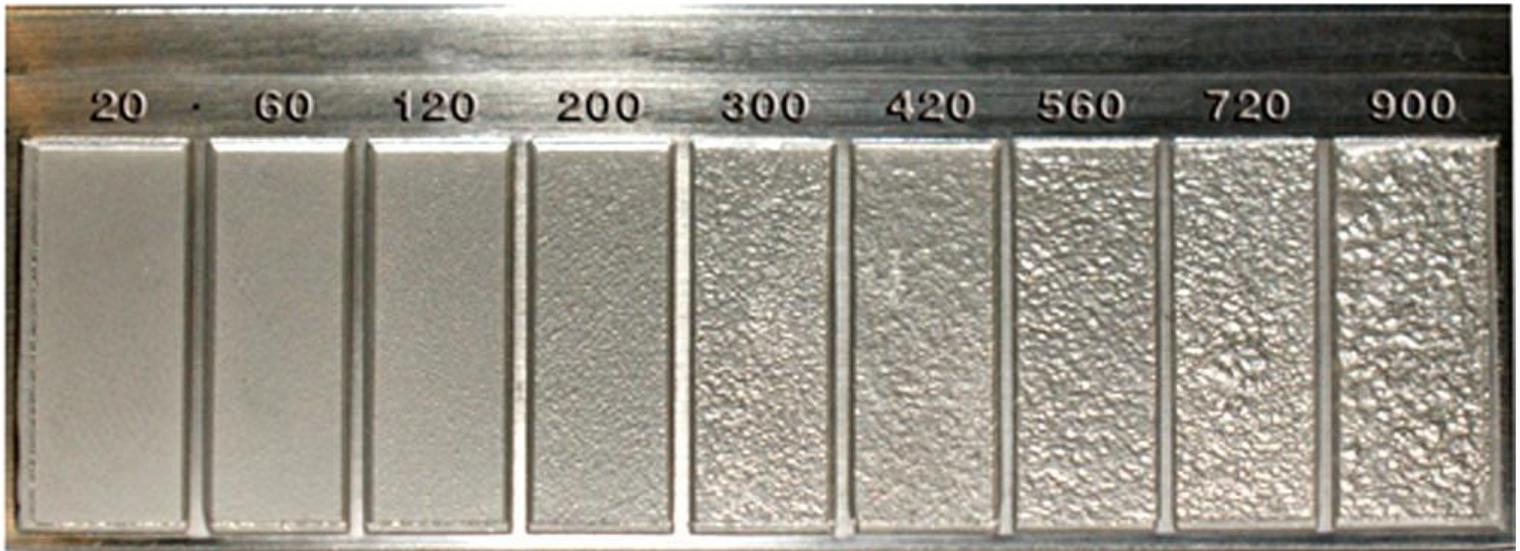
At Hargreaves Foundry we have over 125 years of experience manufacturing cast iron and over 25 years manufacturing cast iron rainwater and drainage systems. We know about surface preparation and paint application because it's part of our process, it's our business. And although we aren't specialists in the development and manufacture of paints and coatings, we work with people who are.

Hargreaves Premier Rainwater and Soil drainage range is a premium, quality product. All our processes are tried and tested to ensure that customers get the best product available. Understanding what makes a good and effective paint finish is an important part of delivering quality products.



# Surface Texture of Cast Iron Products

Hargreaves use two casting processes – centrifugal casting for round rainwater pipes and half round gutters (plain and beaded), almost all other products are cast in sand molds. The chart below shows the different surface textures, centrifugal being 90 - 200 and smooth, and resin sand cast which is a bit more textured at 150 - 600. These textured finishes will be obvious on the final painted product and are perfectly normal, but you need to be aware of the difference in surface finishes from product to product to ensure the best paint finish.



## Primer Coating

The main functions of primers are to;

- Provide a surface that subsequent coats of paint can easily adhere to
- Provide short term protection to the surface until it can be top coated

At Hargreaves the primer paints used are RAL 7024 dark grey in colour and have been specifically formulated to create a barrier to corrosion. This is applied in factory conditions to a minimum Dry Film Thickness (DFT) of 40 microns. The primers can be overcoated with Epoxy, Polyurethane or Acrylic paints.

Products are coated internally and externally. The primer coated supplied products are classed as a transit coating and provide **short term** protection during delivery and undercover storage. These products should not be left outside, exposed to damp, wet conditions or marine coastal environments. The end user – contactor / installer - should ensure that our primed products are over coated as soon as possible after delivery.



## Standard Topcoat

All Hargreaves Foundry Drainage paint finishes are “Full Gloss” unless specifically requested by the customer. Where a coating with a reduced gloss level is used, our experience has shown that products will experience a shorter period before re-painting is required. (See note below)

Hargreaves Premier Extra is a high solids, black gloss paint. This is our standard painted product and available off the shelf on a standard 3 to 5-day delivery. High solids gloss paints offer greater durability than paints with a lower solids content. All Premier Extra products are delivered with a matching tin of touch up paint to make good on any exposure of bare iron as a result of transit and installation.



### **NOTE:**

From past experience, we know that castings painted in a matt finish tend to have a shorter duration before re-painting is required. This is due to reducing the levels of resin and increased levels of matting agents within the paint. In terms of aesthetics, we consider a gloss finish superior to a matt type finish, but this is down to customer preferences.

In addition, Matt finishes tend to have a slightly rougher surface, which can allow water to permeate more readily through the painted finish to the underlying substrate than a higher gloss level finish. If the customer still wishes to proceed using a Matt finish, confirmation must be provided in writing after this notice has been issued. Finally, because there is a bespoke paint requirement on the black finish, which is not our standard finished product, then there will be a paint surcharge if you require this lower level of gloss on our products.

# Terminology

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One manufacturer measures gloss as percentages (at an unspecified angle) and gives:

- Matt / Velvet (5–10% gloss) – A paint with a flat, non-glossy appearance.
- Eggshell (10–25% gloss) – A paint with a low sheen and gloss reminiscent of an eggshell
- Pearl / Satin (25-35% gloss) – Paint with a smooth, velvety gloss texture
- Semi-Gloss (35–70% gloss) – Paint with a semi-gloss finish has a nice sheen without being too dramatic
- Gloss (70–85% gloss)
- High Solids Gloss (85% nominal gloss) – This highly luminous sheen has the greatest gloss level and looks almost like plastic. This finish offers the highest durability and is our standard PX finish

## Non-Standard Topcoats

### RAL Colours

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We can supply any RAL or BS colour reference, we are also able to offer a colour match service taken from an existing sample. All RAL coloured products are delivered with a matching tin of touch up paint to make good on any exposure of bare iron as a result of transit and or installation damage. Due to the bespoke paint requirements, these products are not available on our standard 3 to 5-day delivery.



## **NOTE:**

From past experience, we know that castings painted in a lighter (and in particular “white”) RAL colour tend to highlight the textured finish of cast iron gutters, which may not provide the aesthetic finish you may be expecting; it is recommended that you request a sample of a “white” finished gutter to give you some idea of the painted textured finish you could expect to see

# **Durability**

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The Durability of paint systems is not an exact science, neither is the predictability of atmospheric conditions to which a product will be exposed. Hence, we are unable to be very specific regarding the number of years the paint finish will last. Clearly the end user can significantly extend the paint coatings lifespan with regular cleaning and maintenance. This consists of cleaning using warm water, a mild detergent and applied using a soft cloth. Painted surfaces should never be cleaned using any form of abrasive and/or solvent-based cleaners. Any product showing signs of light rusting should be gently rubbed down and at least two coats of a good quality paint applied.

There are 3 designations of durability:

- Low - L = 2 to 5 years
- Medium - M = 5 to 10 years
- High - H = More than 10 years

These need to be considered in relation to the environment the building is in: -

## **Examples of Typical Environments in a Temperate Climate**

### **Corrosive Category & Risk**

#### **Interior**

#### **Exterior**

C1 (Very Low)

Heated buildings with clean atmospheres, e.g. offices, shops, schools, hotels

C2 (Low)

Atmospheres with low level of pollution Mostly rural areas

Unheated buildings where condensation may occur, e.g. depots, sports halls

C3 (Medium)

Urban and industrial atmospheres, moderate sulphur dioxide pollution

Production rooms with high humidity and some air pollution e.g. food-processing plants,

## Corrosive Category & Risk

## Interior

## Exterior

C4 (High)

Industrial areas and coastal areas with moderate salinity

Chemical plants, swimming pools, coastal, ship and boatyards

C5 (Very High)

Industrial areas with high humidity and aggressive atmosphere

Buildings or areas with almost permanent condensation and high pollution

Our **Premier Extra (PX) Black** paint system is designed to meet the Medium designation when used in an environment with corrosive category C3 Medium (ISO 12944), that is 5 to 10 years. However, if these products are used in an environment with corrosive category C4 High (ISO 12944), e.g. coastal areas, the life span can be less.

**It is recommended for coastal regions that our Premier Extra Coastal be used, see next section.**

## Premier Extra Coastal

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Coastal regions are difficult to define, however for the purpose of this document and Hargreaves guidelines, they are described as those areas within 5km of the coast. The conditions in these areas are more aggressive than those experienced in many other areas due to prevailing winds which will carry airborne contaminants and high levels of chlorides from sea spray. If sea spray and salt particles (chlorides) can form an electrolyte on areas of damage to the topcoat, then a path can be created to the underlying substrate and corrosion will occur. It is therefore very important that any paint chips or impact / installation damage is rectified straight away. Failure to rectify damage at an early stage, will lead to corrosion of the product progressing at an increased rate above what would be seen at an inland location.

To combat this aggressive environment, the overall coating thickness on the Premier Coastal products is much greater. As standard, Premier Extra coatings have a combined, Dry Film Thickness (DFT) of 110 - 150 $\mu$ . Premier Coastal however has a DFT of at least 250 $\mu$ . This increased coating thickness forms a longer-lasting barrier between the environment and the substrate thus delaying the onset of corrosion.

It is imperative that a robust maintenance regime is put in place to ensure that no salt or other contaminants are able to build up on the surface of the coating. Irrespective of the volume and quality of coating applied, regular maintenance and repainting will be required to ensure your Cast iron products can continue to combat the harsh environments that coastal conditions present.

**Due to the bespoke paint requirements, these products are not available on our standard 3 to 5-day delivery.**

## Traditional LCC Soil

**Traditional LCC Soil (BS469) is coated in a bitumen paint. The main components of Bitumen paint are naphtha (petroleum) based.**

In the past Bitumen was the main choice for traditional soil drainage due to its resistance to moisture and good coverage of uneven surfaces. **Normally this type of finish can't be over painted with other paint types, because not only will harder materials used for over coating tend to crack or craze, but there is also the possibility that the Bitumen will bleed through. We cannot, therefore, recommend overpainting as a viable option.**



If the colour is important to your project, we can recommend our Traditional Express (TX) system. (Traditional Express (TX) is a cast iron above ground soil system that uses modern push fit connections which do not require caulking. In appearance, however, it has been designed to look like a traditional, socketed, soil system. **The paint finish for TX is not Bitumen based and can be supplied in the RAL colour of your choice).**

With both the LCC and Traditional Express systems, the same provisions regarding coastal locations apply as with the Premier rainwater system. If you require this for use in a coastal area, please speak to our technical sales team for advice.

## Inspection & Testing of Painted Products

### What is a Paint Coating Thickness Gauge?

A coating thickness gauge (also referred to as a paint meter) is used to measure dry film thickness (DFT). Dry film thickness is probably the most critical measurement in the coatings industry because of its impact on the coating process, quality and cost. Dry film thickness measurements can be used to evaluate the product's appearance and performance.



Dry film thickness (DFT) is a non-destructive coating thickness measurement, using techniques which do not damage the coating or the substrate such as magnetic, magnetic induction and eddy current thickness measurement methods.

# Adhesion Tests

## Paint thickness

Using the paint thickness meter, establish average paint thickness of the surface area to be tested. Using the table below in conjunction with the average paint thickness found, determine the cut spacing to be used for the cross-hatch test.

AVERAGE PAINT THICKNESS (MICRONS)	61-120	121 - 250	251+
SPACING BETWEEN CUTS	2mm	3mm	Single crosscut only*

## Cross Cuts

Using a sharp single blade knife fitted with Stanley blade product code 311911 or a blade of equivalent thickness perform six\* cuts in each direction of the lattice at the identified spacing. It is important that as even a pressure as possible is applied whilst making the cuts which must penetrate the full paint thickness down to the metal substrate.

Failure of the cut to reach the substrate will invalidate the test.

\*One cut in each direction

## Examination of Cross Cut Lattice

Using a soft brush, lightly brush back and forwards across the lattice diagonals in both directions. Apply the specific test tape over the lattice and at least 20mm beyond, firming down with finger tips until the tape is well adhered to paint surface. Pull off the tape steadily within 0.5 – 1 second at an angle of approximately 60°. Visually compare the test lattice to the classifications shown on Table 1 of ISO2409:2013 and determine which classification the test lattice meets.

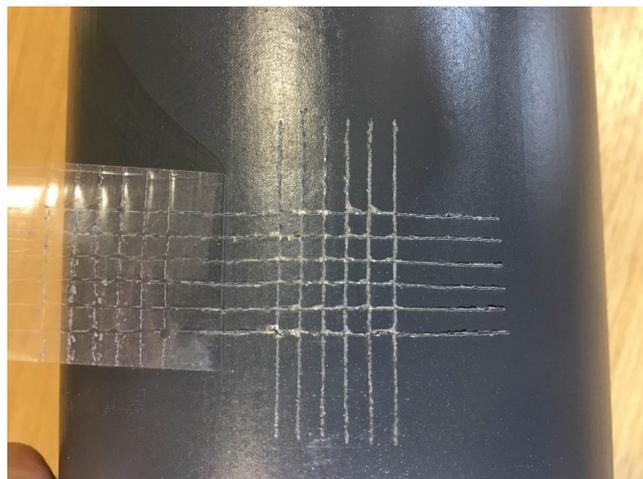
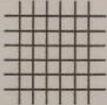
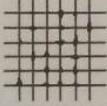
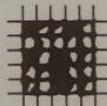


Table 1 — Classification of test results

Classification	Description	Appearance of surface of cross-cut area from which flaking has occurred <sup>a</sup> (Example for six parallel cuts)
0	The edges of the cuts are completely smooth; none of the squares of the lattice is detached.	
1	Detachment of small flakes of the coating at the intersections of the cuts. A cross-cut area not greater than 5 % is affected.	
2	The coating has flaked along the edges and/or at the intersections of the cuts. A cross-cut area greater than 5 %, but not greater than 15 %, is affected.	
3	The coating has flaked along the edges of the cuts partly or wholly in large ribbons, and/or it has flaked partly or wholly on different parts of the squares. A cross-cut area greater than 15 %, but not greater than 35 %, is affected.	
4	The coating has flaked along the edges of the cuts in large ribbons and/or some squares have detached partly or wholly. A cross-cut area greater than 35 %, but not greater than 65 %, is affected.	
5	Any degree of flaking that cannot even be classified by classification 4.	—

<sup>a</sup> The figures are examples for a cross-cut within each step of the classification. The percentages stated are based on the visual impression given by the pictures and the same percentages will not necessarily be reproduced with digital imaging.

## Care of Painted Finishes during / after Installation

Correct installation and maintenance are vital to ensure the effectiveness and longevity of your system. Any products delivered Primed only should be top coated as soon as possible. Products should always be top coated before installation to ensure all the surfaces have been coated.

- During installation and assembly of the product, any handling, scuffing or impact damage to the coating must be made good to maintain the integrity of the finished paint coating. Likewise, any cutting or drilling operations must be protected with paint immediately to prevent the onset of the rusting process.

- Following any cutting or drilling of the painted product, then cutting dust **MUST** be removed from the painted surface, otherwise any areas holding this dust will start to rust when exposed to moisture. This can give the impression that the gutter / pipe etc. is rusting, when in fact this is not the case.
- Mechanical Damage, gutters are particularly susceptible to edge damage if objects are placed against them.
- When components such as drainpipes or gutters misalign, they are no longer effective.
- Badly sealed and/or leaky joints are prone to further corrosion, freezing and deterioration.

After installation, the product(s) should be inspected to ensure that any scuffing or chipping of the painted surface that has occurred during the assembly operations is rectified prior to passing the job off.

## **Maintenance of Painted Surfaces**

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- Regular annual inspections / maintenance is recommended for all HF painted cast iron finishes, to ensure the protective properties of the coating are maintained.
- Vegetation growth can cause blockages in gullies, drains, downpipes and gutters eventually leading to flooding and potentially rising damp.
- Where excessive contamination is found then the frequency of inspections needs to be increased.
- During these inspections the painted surface should be cleared of any film or contaminant build and any areas of damage to the painted surface made good.

The best method of cleaning is by regular washing of the coating using a solution of warm water and mild detergent. All surfaces should be cleaned using a soft cloth or sponge, using nothing harsher than natural bristle brushes.

**Note, under no circumstances should any of the following chemicals be used for cleaning purposes:**

- **Strong solvent solutions**
- **Chlorinated Hydrocarbons**
- **Abrasive cleaners**

The frequency of cleaning is dependant on several factors, these include:

- Within a given local environment corrosion rates can vary markedly, parts of the building may be in the shade and so remains wet for longer periods.
- Prevailing winds may carry airborne contaminants (e.g. sea spray from the coast) predominantly on to one face of a structure.

**Annual inspections should also check for:**

- Corrosion to components fixed into masonry
- Corrosion to underside surfaces of cast ironwork
- Corrosion to joints, fixings and other potential water accumulation points

The end user can significantly extend the paint coatings lifespan by appropriate over coating, with a good quality exterior paint once any signs of paint deterioration is observed.

**Please note;**

**Once Hargreaves drainage products have been delivered, it is the responsibility of the end user to ensure their correct storage and installation to prevent any damage or degradation of the coatings.**

## Summary

- The cast iron surface should be both clean and dry before the application of any coating.
- Primer coats are to help prepare the surface for top coating and for transit purposes only.
- Primed castings should be top coated as soon as possible.
- Premier Extra is a full gloss and our standard range is available in 3 to 5 days of receipt of order

- Colours in the RAL range are available but are not standard. The costs and delivery times are not the same as for our standard Premier Extra.
- For white and very pale colours we recommend a sample of the painted finish.
- Coastal regions require extra coatings, which takes longer. They are available on request but not subject to our standard deliveries and costs.
- All painted surfaces, whatever the material, require ongoing maintenance and possible touch up.
- Coastal regions require an especially robust maintenance programme
- Do not attempt to overpaint traditional soil, bitumen coated products with anything other than bitumen paint.