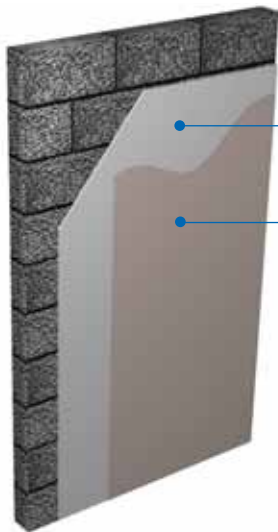


# Plaster systems

Thistle plaster systems are available for two / three-coat hand application, one-coat hand application and one-coat machine application. Thistle plasters have been formulated to suit a wide variety of background types including concrete, brick, blockwork, sand / cement, expanded metal lath and plasterboard. The Thistle range also includes associated beads, reinforcing tapes and bonding agents. These have been manufactured, selected and tested to work reliably with Thistle plasters.











- 1 Undercoat plaster
- 2 Finish plaster

### Key facts

- One, two / three - coat options
- Hand or machine application
- Free from inherent shrinkage cracking
- Controlled setting times
- Resilient and scuff-resistant for general purposes, and excellent resistance to accidental damage provided by Thistle Durafinish
- Grades to suit most internal solid backgrounds
- Proven products






## Components

Thistle undercoat plasters	Nominal bag weight (kg)	Shelf life (months) <sup>2</sup>	Quantities <sup>1</sup>	Nominal bag weight (kg)	Shelf life (months) <sup>2</sup>	Quantities <sup>1</sup>	
 <b>Thistle Bonding Coat</b> An undercoat plaster for smooth or low suction backgrounds (e.g. concrete, plasterboard or surfaces treated with bonding agents).	25	4	2.75m <sup>2</sup> per bag at 11mm	 <b>Thistle Browning</b> An undercoat plaster for solid backgrounds of moderate suction with an adequate mechanical key.	25	4	3.5m <sup>2</sup> per bag at 11mm
 <b>Thistle Hardwall</b> An undercoat plaster with high impact resistance and quick drying surface for masonry backgrounds. Suitable for application by hand or mechanical plastering machine.	25	4	3.0m <sup>2</sup> <sup>3</sup> per bag at 11mm	 <b>Thistle Dri-Coat</b> A cement-based undercoat plaster for application after installation of a damp proof course.	25	6	3.25m <sup>2</sup> per bag at 11mm
 <b>Thistle Tough Coat</b> An undercoat plaster with high coverage, good impact resistance and a quicker drying surface for masonry backgrounds.	25	4	3.5m <sup>2</sup> <sup>3</sup> per bag at 11mm	 <b>Thistle X-Ray</b> An undercoat plaster giving protection from x-rays in medical and dental installations.	25	4	0.4m <sup>2</sup> per bag at 25mm

<sup>1</sup> Quantities are approximate and for guidance only, no allowance has been made for waste.

<sup>2</sup> Use by date is printed on each bag.

<sup>3</sup> Approx. 10% less if sprayed.

Thistle finish plasters	Nominal bag weight (kg)	Shelf life (months) <sup>2</sup>	Quantities <sup>1</sup>
 <p><b>Thistle Board Finish</b> 25 4 A final coat plaster for low-medium suction backgrounds (e.g. plasterboards and Thistle Dri-Coat).</p>			10m <sup>2</sup> per bag at 2mm
 <p><b>Thistle Multi-Finish</b> 25 4 A versatile final coat plaster.</p>			10m <sup>2</sup> per bag at 2mm
 <p><b>Thistle Durafinish</b> 25 4 To provide improved resistance to accidental damage.</p>			10m <sup>2</sup> per bag at 2mm
<b>Thistle one-coat plasters</b>			
 <p><b>Thistle Universal One Coat</b> 25 4 A one-coat plaster for a variety of backgrounds. Suitable for application by hand or mechanical plastering machine.</p>			2.25m <sup>2</sup> per bag at 13mm
 <p><b>Thistle Projection</b> 25 4 A one-coat plaster for application by a mechanical plastering machine.</p>			2.0m <sup>2</sup> per bag at 13mm

### Thistle plaster accessories






	Quantities <sup>1</sup>
 <p><b>ThistleBond-it</b> For pre-treatment of smooth backgrounds Tub contents 10 litre</p>	4.5m <sup>2</sup> / litre
 <p><b>Thistle GypPrime</b> Suction control primer for high suction backgrounds Tub contents 11 litre</p>	9m <sup>2</sup> / litre undiluted. 27m <sup>2</sup> / litre diluted 1:2. 54m <sup>2</sup> / litre diluted 1:5.
 <p><b>Thistle Plaster Angle Bead</b> For reinforcing external angles Length 2400, 3000mm</p>	as required
 <p><b>Thistle Plaster Stop Bead</b> For finishing and reinforcing plaster edges Length 2400, 3000mm</p>	as required
 <p><b>Gyproc plaster tools</b> A complete range of plastering tools and equipment.</p>	as required

Table 1 – plaster selection

		UNDERCOAT PLASTERS					
Background (listed from high to low suction)		Pre-treatment	Thistle Bonding Coat	Thistle Browning	Thistle Hardwall	Thistle Tough Coat	
Aircrete blocks		Thistle Gyphime in extreme cases		Suction control usually needed	✓	✓	
Common bricks				✓	✓	✓	
Medium-density blocks			✓	✓	✓	✓	
Dense blocks	Keyed		✓		✓	✓	
	Smooth - mid suction		✓		✓	✓	
Dense blocks	Smooth - low suction	ThistleBond-it	✓				
	Smooth - low suction						
Engineering bricks with raked joints			✓				
			✓				
Plasterboard & Glasroc Multiboard	All except MR		✓				
	MR		✓				
Cast in-situ & pre-cast concrete	Normal ballast	ThistleBond-it usually required (unless keyed)	✓				
	Other aggregates (limestone, granite, etc)	ThistleBond-it	✓				
Painted / glazed surfaces		ThistleBond-it	✓				
Metal lathing			✓		Only when bridging columns, lintels, etc	Only when bridging columns, lintels, etc	
		<b>Normal thickness</b>	11mm to walls, up to 8mm to ceilings, plus 2mm of finish plaster				
		<b>Setting time</b>	1.5 - 2hrs	1.5 - 2hrs	1.5 - 2hrs	1.5 - 2hrs	
		<b>Approx. water requirement</b>	14 litres per bag	17.5 litres per bag	15 litres per bag	17.5 litres per bag	
		<b>Dry set weight</b>	12.1kg/m <sup>2</sup> @ 11mm plus 3.4kg/m <sup>2</sup> finish plaster	8.4kg/m <sup>2</sup> @ 11mm plus 3.4kg/m <sup>2</sup> finish plaster	9.3kg/m <sup>2</sup> @ 11mm plus 3.4kg/m <sup>2</sup> finish plaster	8.5kg/m <sup>2</sup> @ 11mm plus 3.4kg/m <sup>2</sup> finish plaster	

Table 2 – plaster selection

ONE-COAT PLASTERS			
Background (listed from high to low suction)	Pre-treatment	Thistle Universal One Coat	Thistle Projection
	Image	For hand application to most backgrounds.	For spray application to most backgrounds.
Aircrete blocks	Thistle GypPrime in extreme cases	✓	✓
Common bricks		✓	✓
Medium-density blocks		✓	✓
Dense blocks	Keyed	✓	✓
	Smooth - mid suction	✓	✓
Engineering bricks with raked joints	ThistleBond-it	✓	✓
	Smooth - low suction	✓	✓
Plasterboard & Glasroc MultiBoard		✓	✓
	All except MR	✓	✓
Cast in-situ & pre-cast concrete	MR	✓	✓
	Normal ballast	ThistleBond-it usually required (unless keyed)	✓
Painted / glazed surfaces	Other aggregates (limestone, granite, etc)	ThistleBond-it	✓
		ThistleBond-it	✓
Metal lathing		✓	Use Spraylath (by others)
	Normal thickness	13mm to wall, up to 10mm to ceilings	
	Setting time	1.5 - 2hrs	1.5 - 2hrs
	Approx. water requirement	15 litres per bag	Depends on machine settings
	Dry set weight	15kg/m <sup>2</sup> @ 13mm	Depends on machine settings

## Installation – background preparation

### General

All surfaces should be reasonably dry and protected from the weather. The suitability of a particular background for plastering should be considered in relation to its strength, suction, bonding properties, shrinkage or thermal movement characteristics, water and soluble salt content. Very high or low suction substrates should be pre-treated. The use of ThistleBond-it is recommended for smooth backgrounds, whilst Thistle GypPrime is recommended for very high suction backgrounds. The high suction of certain backgrounds can be suitably adjusted by sprinkling with water.

### Brickwork / blockwork

The surface must be clean, dry and suitable to receive gypsum plaster. Control suction with water if necessary. If suction is severe the background should be pre-treated with Thistle GypPrime.

On high suction brick / blockwork the use of Thistle Hardwall or Thistle Tough Coat is recommended.

Low suction backgrounds such as some concrete

blocks and engineering bricks provide minimal absorption. The joints should be raked thoroughly to give an adequate mechanical key. Smooth backgrounds should be pre-treated with ThistleBond-it.

Dense aggregate concrete blocks do not require wetting prior to plastering, but the plaster should be applied with very firm pressure to ensure intimate contact with the background.

### Concrete

The surface must be clean, dry and suitable to receive gypsum plaster. Any mould oils or other agents present should be removed from the surface.

No-fines concrete does not require wetting prior to plastering.

Normal ballast concrete should be given sufficient time to mature before applying plaster. The plaster should not be applied onto a green background or when any free water is visible. Mature concrete will require wetting to displace the air before plastering. Clean water should be applied 5 - 10 minutes before plaster application.

In-situ or pre-cast concrete which is exceptionally smooth, or which is made from limestone, brick, granite and certain lightweight aggregates, always requires pre-treatment with ThistleBond-it.

In order to reduce the risk of cracking to a minimum, the floating coat should be applied with sufficient pressure to fill all gaps between the units.

With composite ceilings, the concrete beams should be pre-treated with ThistleBond-it. If required, the suction of the infill panels can also be controlled.

Composite wall structures, consisting of concrete columns with brick or block infills, can cause plaster cracking due to differential movement. To overcome this, a heavy duty building paper should be applied over the concrete columns, lapping over the brick or blockwork by a minimum of 25mm. Expanded metal lath is then fixed over the building paper and the edges secured to the brick or blockwork. By this means the reinforced plaster is isolated from the concrete allowing it to move independently.

Where the width of a column exceeds 300mm an additional row of fixings should be provided to secure

the metal lath centrally down the column. Where there are concrete beams above the infill bricks or blocks, the metal lath should also be fixed to the concrete using suitable fixings.

### **Pre-treatment of very high or low suction backgrounds**

Backgrounds such as ceramic tiles, glazed bricks, exceptionally smooth concrete or concrete made from limestone, brick, granite and certain lightweight aggregates, will require preparation and pre-treatment with ThistleBond-it bonding agent prior to plastering. The surface should be thoroughly cleaned and allowed to dry before pre-treatment.

Thistle GypPrime bonding agent should be used to pre-treat surfaces where suction is extremely high. With some very porous surfaces, wetting alone may be insufficient as the water is almost immediately absorbed.

If there is any doubt about the suitability of a background for direct plastering, a trial panel should be plastered and tested for adhesion once dry. If adhesion is inadequate, the appropriate bonding agent must be applied to the background prior to plastering.

ThistleBond-it bonding agent is specially formulated for use on smooth backgrounds. It has many advantages over PVA and is the only product recommended by British Gypsum for use with Thistle plasters. Benefits include :

- Contains fine aggregates for better mechanical adhesion.
- Plaster is applied when dry, allowing flexible timing of application.
- Plaster can be applied at normal thickness (i.e. up to 13mm). Maximum 10mm on soffits.
- No dilution, so no confusion on site.
- Green coloured for ease of identification in application.

Thistle GypPrime bonding agent is specially formulated for the pre-treatment of very high suction backgrounds. It is the only product recommended for use with Thistle plasters. It can be diluted as required giving total flexibility, for different levels of suction control, and is yellow coloured for ease of identification.

ThistleBond-it and Thistle GypPrime should be applied strictly according to the user instructions. Care should be taken **not to exceed** the recommended plaster thickness, otherwise bond failure may result. Where a greater thickness of plasterwork is required, due to an uneven background for example, an alternative carrier for the plaster should be specified, such as metal lath.

### Sand / cement undercoats

This method of plastering is now largely superseded by gypsum plastering. Obtaining the correct grade of sand and allowing sufficient time for drying shrinkage of the sand / cement are essential to reduce the risk of subsequent possible defects.

If sand / cement or sand / lime undercoats are used, the following points should be considered:

- Sand and cement will shrink on drying.
- Retarded ready-mixed sand / cement renders may delay shrinkage and may be incompatible with gypsum finish plasters.
- If finish coat plaster is applied too early, differential movement resulting from sand / cement shrinkage may cause cracking in the finish coat. This may not be detected when using retarded mortars for extended periods of time.
- Shelling of finish coat plaster from all types of sand / cement backgrounds can occur due to incomplete shrinkage, over-sanded undercoat and / or lack of mechanical key.
- The key provided to sand / cement by scratching needs to be much better than that to a gypsum undercoat.
- Suction should be adjusted by sprinkling with clean water just prior to plastering.

#### **Expanded metal lath / beads**

Plaster should only be applied to galvanised steel or

epoxy coated stainless steel. Before plastering, all cut edges, damaged metal lath, staples, nail heads and ends of tying wire should be bent inwards and adequately protected by galvanising, painting or by applying a thick coat of lacquer. Machine applied plaster requires the use of spray lath.

#### **Replastering walls - general**

Thistle Dri-Coat is recommended for application following installation of a damp proof course. In other replastering situations, the Thistle plaster designed for the equivalent new background should be used (normally Thistle Bonding Coat or Thistle Hardwall). The following general points should be noted:

- No plaster should be used below ground level as hydrostatic pressure can give rise to direct water penetration. A suitable tanking treatment must be specified in this situation.
- Heavy salt contamination in the background can cause persistent damp problems. Buildings such as old farmhouses, stables and barns not originally built with a damp proof course, or buildings that have been exposed to storage of chemicals, are particularly at risk from this problem.

Thistle Dri-Coat should **not** be used in these situations unless a proper survey shows that the risk from salts is minimal. An independent wall lining may be a better solution. Chimney breasts are another area where salt deposits may be heavy.

### Replastering walls - following damp proof course treatment

Thistle Dri-Coat is the only British Gypsum plaster recommended for this application. The source of penetrating or rising dampness must be identified and eliminated. The existing plasterwork should be hacked off to a height at least 0.5m above either the new damp proof course or the last detectable sign of dampness. Where the old plaster is gypsum based, it must be completely removed from the area to be replastered. Ideally, replastering with Thistle Dri-Coat should be delayed as long as possible to allow the background to dry out. After chemical damp proof injection, old mortar joints which are the site of the higher salt concentrations should be thoroughly raked out and the face of the brickwork brushed with a wire brush. Before replastering work is carried out, any salts brought to the surface of the background during drying should be carefully removed.

Angle beads must **not** be fixed with gypsum based materials, use Thistle Dri-Coat.

The background must be clean, sound, and free from dust and efflorescence. Where only residual moisture is present, Thistle Dri-Coat can then be applied. Low suction or smooth backgrounds, such as engineering bricks, should be treated prior to plastering with a water-resisting bonding aid which should be plastered in accordance with the manufacturers' recommendations.

Where the background is dry, it is important to control suction with the application of water. This prevents rapid drying of the plaster which would impair its strength.

### Replastering walls - general application

Where the wall to be replastered is damp, replastering should be delayed as long as possible to allow the background to dry out. Any source of penetrating dampness must be identified and eliminated. Before replastering, any salts brought to the surface of the background during drying should be carefully removed.

The background must be clean, sound, and free from dust and efflorescence. Where only residual moisture is present, Thistle undercoats can then be applied.

## Construction tips

- For specialist applications, ensure the appropriate product is specified e.g. Thistle Dri-Coat for replastering after damp proof course installation, Thistle X-Ray for x-ray protection work or Thistle Durafinish for improved resistance to accidental damage
- Identify the type of background to be plastered. Refer to **Table 1** to determine the appropriate Thistle undercoat plaster and its recommended thickness
- Determine thickness required. Influencing factors include:
  - Finished dimensions of rooms
  - Thickness of grounds
  - Dimensions and positioning of joinery
  - Positioning of heating appliances and other fittings
  - Accommodation of services (minimum 5mm undercoat cover over conduits)
  - Fire resistance requirements
  - Where a bonding agent is required, the quoted thicknesses are the maximum
- Consider background preparation (see **Installation details**)
- Choose preferred method of application (one-coat or two / three-coat, hand or machine)

## Construction tips (cont'd)

- Approximate coverages are given in **Table 1** and **Table 2**
- Check background for dampness. Thistle plasters should not be used to isolate dampness or be subjected to continuously moist or humid conditions
- Determine the routing of services. Conduits should be chased into the background if possible, should be of the minimum permissible dimensions and should avoid high spots in the background
- Install movement joints as required, corresponding with joints in the background
- In cold conditions, do not apply plasters to frozen backgrounds or allow them to freeze before fully set and dry. Remember that setting times of finishing plasters will be extended. Dry bagged plaster is not affected by cold temperatures. When using Thistle Durafinish ambient and background temperature must be maintained above 5°C until fully dry to obtain the full damage resistance
- In hot conditions, take precautions to avoid rapid 'dry-out' of the plaster, by dampening the background or, on very high suction backgrounds, using Thistle GypPrime prior to plastering. Once set and dry, Thistle plasters are suitable for use in temperatures up to 49°C
- Never apply plaster where a damp background is a recurring problem

## Installation



### Mixing

Undercoat plasters are pre-mixed with aggregate. Add **only** clean water to prepare them for use.

- Mix by hand or mechanical whisk (avoid excessive mechanical mixing).
- Use **only** clean water and clean mixing equipment.

**NB** Contamination from previous mixes can shorten the setting time and reduce the strength of the plaster when set.

- Use plaster projection machines where appropriate.

**NB** Thistle Hardwall, Thistle Tough Coat, Thistle Projection and Thistle Universal One Coat plasters can be mixed / applied using plaster projection machines.



### Solid backgrounds

- Apply undercoat plaster with firm pressure.
- Build out to the required thickness in successive coats of approx. 8mm.
- Wire scratch each coat and allow to set before applying the next.
- Rule the final coat to an even surface and lightly scratch to form a key for Thistle Multi-Finish or Thistle Durafinish.

**NB** The maximum thickness of undercoat is 25mm. Greater thickness normally requires the use of a support for the plaster (e.g. metal lathing), spaced away from the background if necessary.



### Backgrounds following dpc treatment

Thistle Dri-Coat is the only British Gypsum plaster recommended for this application.

- Allow initial curing and shrinkage of the scratched undercoat to take place prior to application of finish plaster.

**NB** In good drying conditions, a **minimum** delay of 24 hours is required. In cold / damp conditions or where background suction is low, a longer delay will be necessary. If sufficient delay is not allowed, cracking or shelling of the finish coat may result.

- Where the floor is solid, leave a 50mm gap between the plasterwork and the floor level. Under **no circumstances** should the damp proof course be bridged.

### Metal lath

- Using Thistle Bonding Coat, apply a pricking-up coat, forcing it through the metal lath in order to provide a good key to the background.
- Wire scratch the surface of the pricking-up coat to provide a good key for the floating coat.
- Allow to set but not dry, before applying a floating coat.

**NB** Floating coats should be applied at a coat thickness not exceeding 25mm, and deep wire-scratched between each coat.

- Rule the final floating coat to an even surface and lightly scratch to form a key for Thistle Multi-Finish or Thistle Durafinish.
- Apply finish plaster once undercoat is set but not dry.

#### **Plasterboard (except skimming)**

Where Thistle Bonding Coat and finish plaster are applied to plasterboards, Gyproc Joint Tape should be used to reinforce joints and angles.

- Pre-fill any gap between boards exceeding 3mm with finish plaster and spread along each joint.
- Press Gyproc Joint Tape firmly into the finish plaster, and immediately cover with a further application.
- Allow the joints to stiffen, but not dry, before applying undercoat plaster.

- Apply Thistle Bonding Coat with firm pressure.
- Build out to the recommended thickness, rule to an even surface and lightly scratch to form a key for Thistle Multi-Finish or Thistle Durafinish.
- Apply finish plaster once undercoat is set but not dry.



### One-coat hand plastering

- Apply Thistle Universal One Coat with firm pressure.
- Build out to the recommended thickness, rule to an even surface and fill in any slacks or hollows.
- As the plaster stiffens, carry out further flattening and paring.
- When the plaster is sufficiently firm, scour the surface with a sponge float and water as required, to raise 'fat' to the surface.
- When sufficiently firm, progressively trowel the plaster to a smooth matt finish.



### Projection machine

- Spray Thistle Projection, Thistle Hardwall, Thistle Universal One Coat or Thistle Tough Coat on to the background in the form of a ribbon.
  - The consistency should allow the ribbons to run together.
  - When a substantial area has been covered, work the plaster and rule as in hand plastering.
- NB** It is easier to attain the required thickness of plaster in one application by machine, but the total thickness should not normally exceed 25mm, subject to background suitability.

### X-ray protection

- Use Thistle X-Ray plaster and apply to the thickness specified by the specifier. For further guidance, please contact the British Gypsum Drywall Academy Advice Centre.

### Replacing plasterwork

Damaged, insecure or defective plaster can be renewed as follows:

- Strip off existing plaster from the affected area.
- Clean the exposed background and remove any dust.
- Apply ThistleBond-it to smooth, low suction backgrounds, Thistle GypPrime to extremely high suction backgrounds.

- Apply appropriate Thistle undercoat plaster, build to the required thickness and scratch the surface.
- Apply 2mm of Thistle Multi-Finish once undercoat is set but not dry.
- To avoid downgrading the surface and system performance, Thistle Durafinish should be used where originally specified.

**NB** Always identify the cause of the problem and rectify before replastering.

### Decoration

- Apply decorative treatment once plasterwork is thoroughly dry. Thistle finish plasters can be decorated with most proprietary paint finishes, and will accept most wallcovering adhesives.

**NB** Although gypsum based plasterwork must be dry before decorating, a coat of permeable paint can be applied in the interim.