



# White Earthenware Terra Cotta Slip Recipe January 2011

Clays Glazes Colours

	minimum	maximum
Slip	10 L	10 L
Terra Cotta Concentrate	1.125 kg	1.125 kg
water	0.6 litres	0.6 litres
N40 Dispex	32 gm (24mL)	53 gm (40mL)

litres of slip produced	11
aim litre weight / grams per litre	1750
biscuit (minimum)	1000°C / Orton Cone 06
glost	1080-1120°C Orton Cone 31/2 - 4

## Recommended Method

1. Add water to slip and mix
2. "sift" Terra Cotta Concentrate onto surface of slip while stirring
3. Mix Dispex 50/50 with water and add as required as slip thickens
4. Mix thoroughly to break up any lumps of Terra Cotta Concentrate
5. allow slip to mature for 24 hours
6. re blend
7. sieve through an 80 mesh screen before use

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## TECHNICAL INFORMATION

### Deflocculants

The amounts of Sodium Silicate or Dispex added to a casting slip are very critical and too much or too little may each result in the slip being too thick. If this happens, take a 1 litre sample of the slip and add one or two drops of Dispex. If the slip becomes thinner after stirring then this shows that more is required to achieve good fluidity. If the slip becomes thicker then this shows that too much has been added already. Therefore more clay and water needs to be mixed into the slip in the same proportion as given in the casting recipe – no more Sodium Silicate or Dispex. The recipe can depend on the quality of the water supply, which may vary from one location to another and also may be affected by minor variations in the body's raw materials.

#### Maturing the slip

On standing overnight the slip may thicken up slightly. This will easily reblend when mixing is resumed, even by hand. We recommend that a film of water, approximately 2mm deep, is placed on top of the slip after mixing. This will reduce water evaporation from the mix, especially in warmer weather.

#### Litre Weight Checks

The most important part of successfully mixing casting slips is getting the correct litre weight. For accurate and easy litre weight measurement contact **Walker Ceramics** for a **Litre Weight Bottle and Chart**.

#### Recycling Scrap

Great care is needed to avoid contamination, particularly from plaster moulds. Scrap should be kept in sealed containers in a plastic condition. Dry scrap will promote air inclusion in the slip. Recycle by adding a maximum of 20% of scrap. More than 20% can effect the quality of the slip. We recommend adding Barium Carbonate ( $BaCO_3$ ) to the slip to remove sulphates, which may cause peeling faults. The amount of Barium Carbonate to add should be 0.1% (25gm per 25 kg bag) of the total dry weight of clay and scrap.

#### Faults and Remedies

Everybody who casts suffers from time to time from some form of casting trouble. Experience throughout the industry, combined with the extensive work done on casting slips in our laboratory has enabled us to connect the various faults with measurable properties of the slip. Of course, other factors besides slip properties can cause casting faults, but usually they can be easily noticed; for example, wet moulds causing slow casting, careless filling causing 'pinholes' or 'casting-spot', etc.

The table shown gives a brief description of each of the common troubles and the suggested remedies. This only gives the direction in which to move and it is up to the individual to determine how far they need to go.

Say you were suffering from flabbiness and you increased the dispex addition to correct this then found that you began to get brittle ware with casting spot, then you would know you had gone too far.

The following table will help you in recognizing and fixing common problems.

***In all our slip recipes we recommend a maximum of Sodium Silicate - adjustment should only be made to Dispex.***

***Before making any adjustments make sure the litre weight is within the stated limits for the body .  
Use our easy Litre Weight Bottle and chart***

<b>Fault</b>	<b>Description</b>	<b>Cause</b>	<b>Remedy</b> <b><i>Always check Litre weight first!</i></b>
<b>bad draining</b>	<i>slip failing to drain from narrow sections uneven surface on slip side of cast piece</i>	<i>fluidity too low or thixotropy too high (slip thickens too quickly)</i>	<i>increase water addition (if litre weight is too high) or increase dispex addition</i>
<b>brittleness</b>	<i>difficult to fettle or cut – giving jagged edges</i>	<i>thixotropy too low (slip too fluid)</i>	<i>decrease dispex addition</i>
<b>Casting spots scumming</b>	<i>discoloured patch appearing on the mould side of the article after firing, scum on surface of slip</i>	<i>thixotropy too low (slip too fluid)</i>	<i>decrease dispex addition or decrease water addition</i>
<b>cracking</b>	<i>small cracks on edges or where handles join the body of the article</i>	<i>thixotropy too low (slip too fluid)</i>	<i>decrease dispex addition</i>
<b>flabbiness</b>	<i>soft casts difficult to handle without distortion</i>	<i>thixotropy too high (slip thickens too quickly)</i>	<i>increase dispex addition</i>
<b>pin holing</b>	<i>small holes just beneath the surface on the mould side of the article</i>	<i>fluidity too low – air in slip</i>	<i>increase water addition (if litre weight is too high) or increase dispex addition</i>
<b>slow casting</b>	<i>casting time too long</i>	<i>fluidity too high or thixotropy too low (slip too fluid)</i>	<i>decrease water addition or decrease dispex addition</i>
<b>wreathing</b>	<i>small uneven ridges on the slip side of the article</i>	<i>thixotropy too low (slip too fluid)</i>	<i>decrease dispex addition</i>

Thixotropy is the property of slips becoming thicker when they are at rest i.e. "thixotropy too high" means that the slip thickens up very quickly!