



# Paint coverage/opacity

(white's & off-whites with Resene Alabaster as the example)

# Resene

the paint the professionals use

**Resene**   
Construction Systems

  
**Altex**  
Yacht & Boat Paint

  
**carboline**<sup>®</sup>  
Coatings - Linings - Fireproofing

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*Automotive & Light Industrial*

# Introduction

- There are a number of areas that can contribute to paint coverage /opacity issues including over-spreading of paint, application methods & tools, contrasts/shadowing in coating due to textural differences, use of bright colours with Red, Yellow, Orange pigments, depth of colour ie white vs black, painting over dark base colours, the list goes on
- In this section we will be focussing only on the most common issue we see regularly in the field - Spreading rates of paint where whites & off-white colours are selected. (ie not the chemistry behind paint, pigments, coverage etc)

# Key Points

- In simple coverage terms “white colours” have far less hiding power than “dark colours” and thus are more challenging to achieve satisfactory coverage levels - therefore manufacturers application guidelines need to be followed
- Uniform application of all paint coatings with the correct tools and at the specified spreading rate is critical to achieving acceptable coverage/opacity levels
- Where whites & off-whites are selected it is essential to ensure the wallboard sealer provides a uniform white base coat
- Contractors can also use tinted undercoats that will assist in providing a solid uniform base coat

## Note on bright colours

- Bright colours (Red, Yellow, Orange) have less hiding power than others due to the organic pigments in tinters not being able to fully block their certain wavelengths of light. Often bright colours will need an additional top coat to achieve full opacity.
- Tinted basecoats (grey scale) assist with topcoat coverage
- Colour selection is important to understand when specifying paint systems to ensure correct system is used



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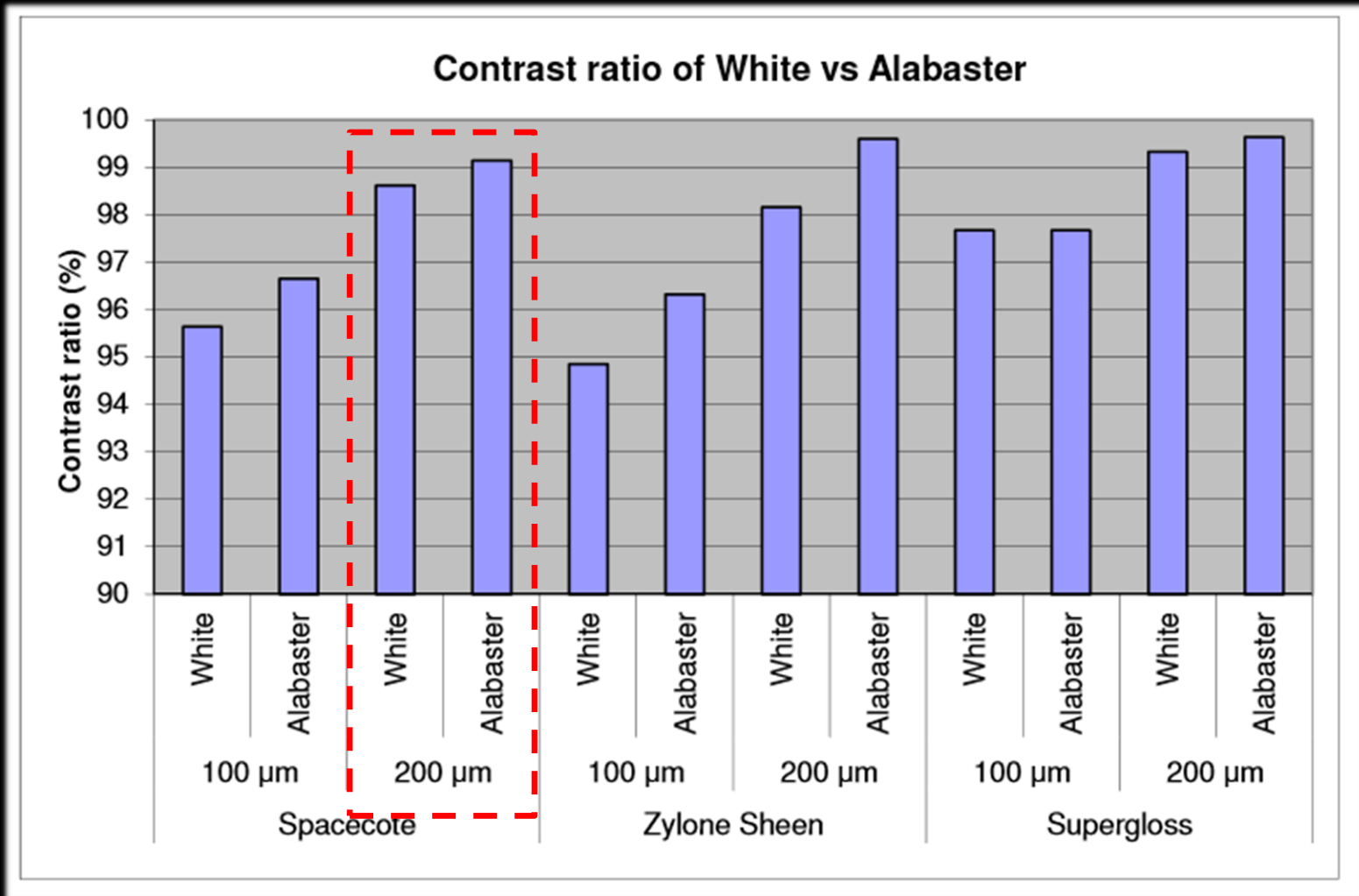
# The great Alabaster debate

- There is a misconception that Resene Alabaster doesn't cover as well as White - while our laboratory testing shows that Alabaster performs better than white
- The very small amount of tinter added to white paint to achieve Alabaster improves opacity as the organic pigments assist with hiding power by helping absorb most wavelengths of light.
- Why does Resene Alabaster get raised regularly? - It's simply one of the most popular colours selected in NZ every year

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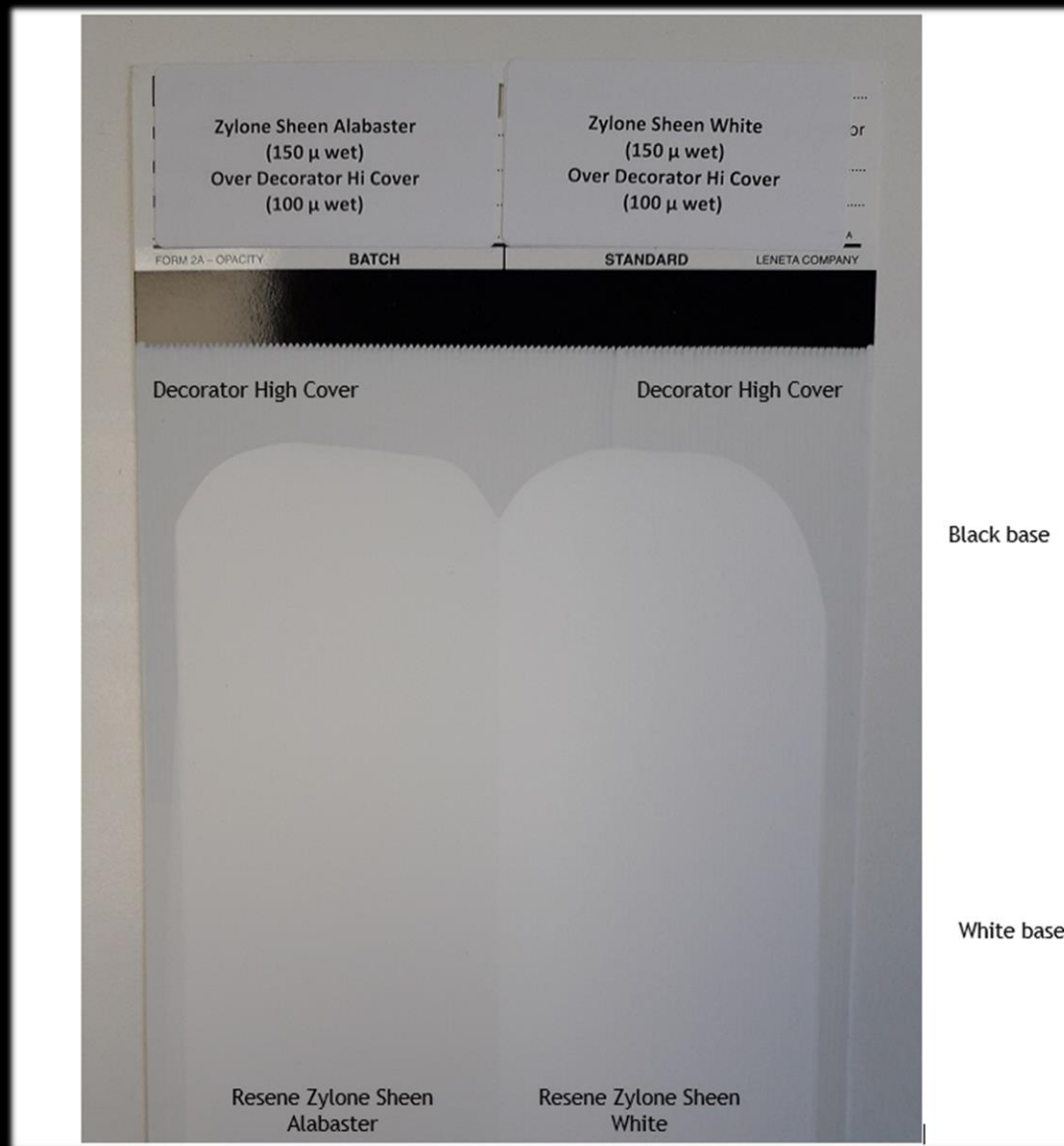
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We've Laboratory tested Resene Alabaster vs Resene White and results show Alabaster has the better contrast ratio (opacity)



200 microns WFT equates to approximately 80microns DFT which is the thickness of 2 coats of paint

Wet Film testing at correct spreading rates shows excellent opacity of both Resene High Cover Sealer & Resene Zylone over Black and White bases.

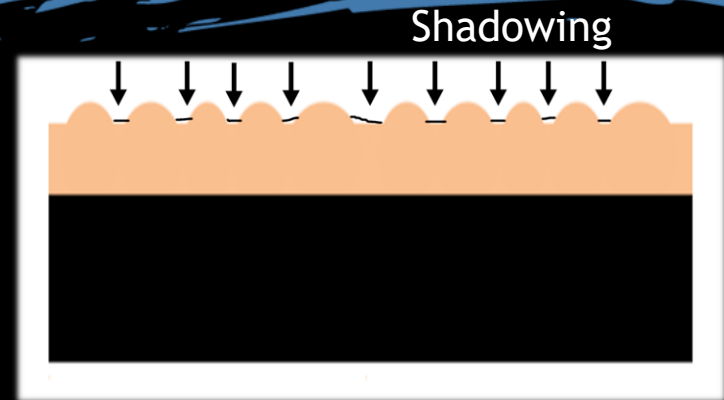




# Shadowing in whites (Peaks & valleys)



Moderate orange peel effect



Increased orange peel effect/stipple = more shadowing in valley's

The human brain is primed to spot contrasts and observers will consistently rate opacity as significantly lower where a side-by-side film thickness difference occurs within a paint film.

# Spreading rates

## Why are they important?

### Wet Film vs Dry Film Thickness

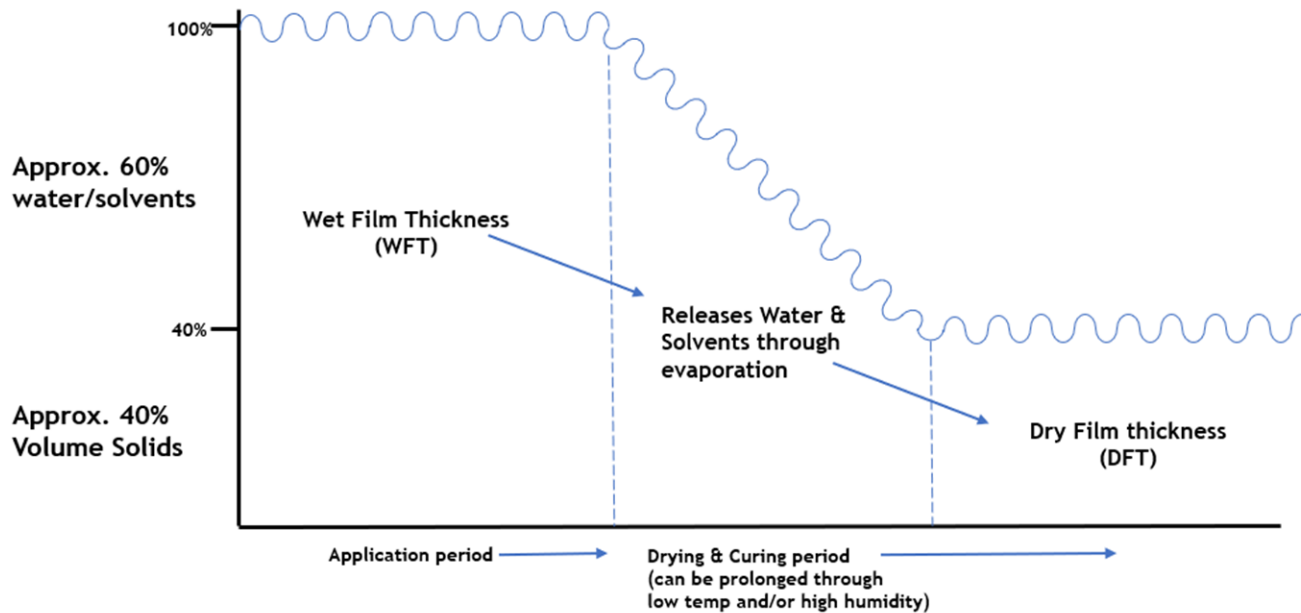
- Decorative waterborne paints typically consist of around 40% volume solids & 60% water & other solvents, give or take. When first applied and wet, coating is 100% = Wet Film thickness (WFT)
- As the coating dries the 60% water & solvents etc evaporate into the atmosphere leaving the Dry Film Thickness (DFT) at the volume solids level of around 40% of the starting WFT.
- Common problem - Paint that is over spread may appear to “cover” when wet but as it dries the lack of film build presents itself as perceived “poor coverage” due to the dry coating being less than half the thickness of the wet coating

# Spreading rates

## Why are they important?

### Wet Film vs Dry Film Thickness

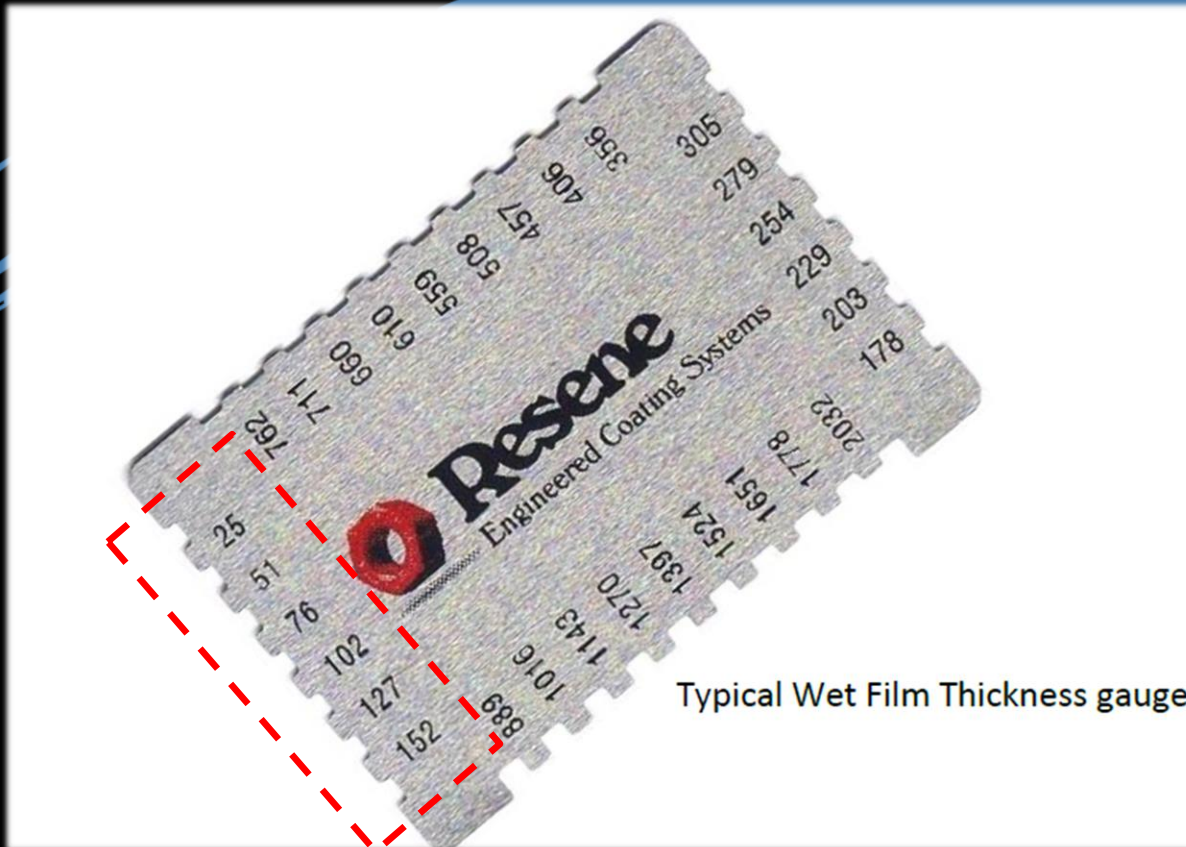
Waterborne paint coating at approx. 40% volume solids - WFT to DFT representation



# How can we educate on spreading rates?

- Advice - Correct sleeves and application methods
- Volume of paint used - Calculate litres used by Spreading rates to give expected SQM area
- Visually - Visual guides and experience
- Dry Film Thickness - with destructive testing only
- Wet Film Thickness - test at time of application

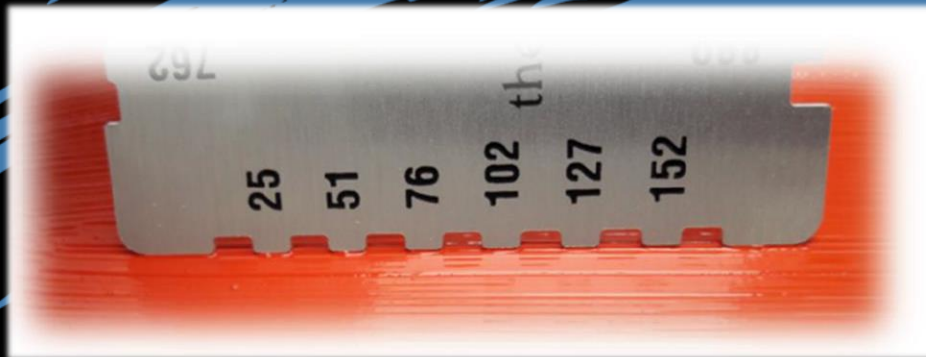
# Testing Wet Film Thickness



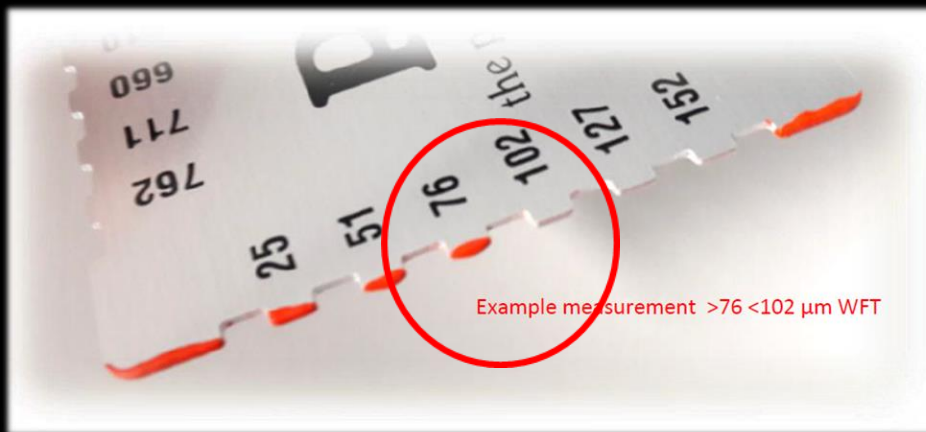
- Number ranges are in Microns and the estimated range side should be used.
- For acrylic paint we would typically use the range 25-152 microns
- 1000 microns = 1mm

Wet Film Gauges provide an immediate answer on whether the correct spreading rate/ wet film thickness is being achieved

# Checking spreading rates Testing Wet Film Thickness



Press side with expected micron range into the wet film



Wet Film thickness sits between last wet tooth and first dry tooth  
>76 - <102 microns

When dealing with site issues our field WFT testing often shows 50-67% of correct WFT is being applied

## Calculating Film Thickness, coverage, volume solids

$$\text{WFT} = \frac{\text{DFT}}{\text{VS}\%} \times 100$$

$$\text{VS}\% = \frac{\text{DFT} \times \text{Cov}}{10}$$

$$\text{DFT} = \frac{10 \times \text{VS}\%}{\text{Cov}}$$

$$\text{COV} = \frac{10 \times \text{VS}\%}{\text{DFT}}$$

$$\text{VS}_{\text{thin}} = \frac{\text{Vol}_{\text{initial}} \times \text{VS}\%}{\text{Vol}_{\text{final}}}$$

$$\text{DFT} = \frac{\text{WFT} \times \text{VS}\%}{100}$$

WFT calc. example 1:

40% Volume solids

40 micron DFT required

$40(\text{microns}) / 40 (\% \text{VS}) \times 100$   
**= 100microns WFT required**

WFT calc. example 2:

60% Volume solids

40 micron DFT required

$40(\text{microns}) / 60 (\% \text{VS}) \times 100$   
**= 67microns WFT required**

Most products have a difference in volume solids so simple calculations need to be undertaken to understand what film builds are required

## Tips for spreading at correct WFT's

- **CORRECT ROLLER SLEEVE** - 8mm Dacron for Plasterboard (waterborne)
- **CORRECT SPRAY APPLICATION** - Slow and methodical passes overlapping at recommended distance. Correct equipment/tips needed
- **CONTROLLED ROLLER APPLICATION** - Slower uniformed application. Loading up roller with paint more often
- **CORRECT EXTENSION HANDLES** - Shorter poles allow for application of more paint
- **GOOD ACCESS** - Mobile scaffold should be considered for high stud areas (not longer extension poles)
- **WET FILM GAUGE** - easy way to check film thickness



# Resene Alabaster hands on case study

(no wallboards painted but interesting none the less)



Entire house was existing polyurethaned natural timber trim, doors, balustrades etc along with all ceilings in existing Double Pearl Lusta

Resene products used

- Spacecote Low Sheen
- Spacecote Flat
- Lustacryl
- Lusta-Glo
- Hi Opacity Ceiling paint

All in Resene Alabaster without issue

# Resene Alabaster hands on case study



Lounge Room

2 coats of Resene Hi Opacity Ceiling paint over  
Double Pearl Lusta



Bathroom

2 coats of Resene Spacecote Flat over  
Double Pearl Lusta

## Test carried out on GIB Fyreline

- Purpose of test was to check coverage/opacity of Resene ½ Villa White over GIB Fyreline
- 1 coat Resene Decorator High Cover
- 2 coat Resene Spacecote Low Sheen
- WFT's were generally between 76-102 microns per coat using Wet Film Gauge
- Satisfactory coverage/opacity achieved without issue



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# Key Points

- Follow the Manufacturer's guidelines on spreading rates. Avoid over-spreading paint.
- Using the recommended Tools, Access & application methods
- If in doubt about spreading rates, contractors should check Wet Film thickness with gauge. Resene give them out for free
- Wallboard Sealer is the critical coat and should provide a uniform white base coat as platform for topcoats

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