Resene Construction Systems

Altex Yacht & Boat Paint

carboline® Coatings - Linings - Fireproofing

Resene Automotive & Light Industrial

Introduction

- Light Reflectance Value (LRV) is the total quantity of visible and useable light reflected by a surface in all directions (ie the colour)
- Visible light is only 44% of the energy from the Sun

- LRV scale is a percentage scale range:
    - Darkest 0% – Lightest 100%

- Resene Black = LRV 4%
- Resene White = LRV 92%

- In our industry LRV's relate to paint not semi-transparent stains

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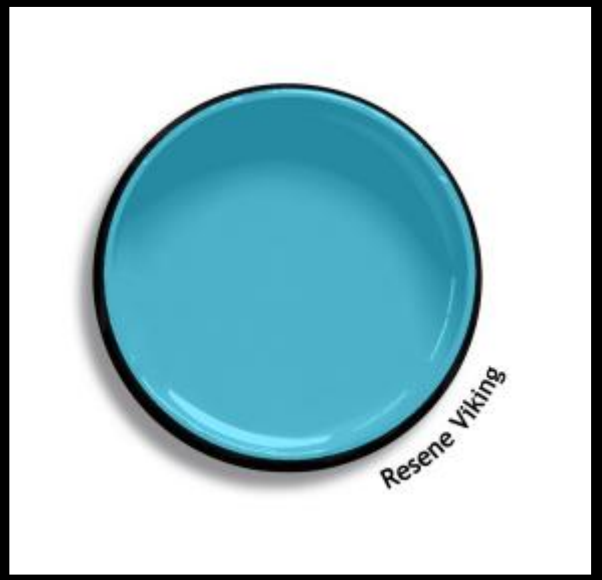
Introduction

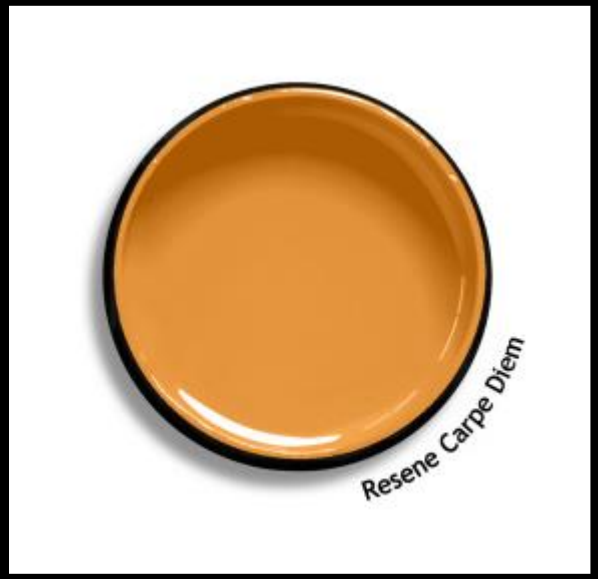
- LRV's generally relate to paint colour selections for timber, fibre cement, cement renders and not solid concrete or metals (with exception of where intumescent coatings are being used)

- Timber suppliers typically require an LRV of 45% or greater (some suppliers recommend 50% or higher) to minimise the amount of heat build up in the timber and resultant thermal movement

- Some newer timber substrate suppliers that treat timber using modern processes (ie thermal modification, acetylation etc) and have greater thermal stability and can accept colours with lower LRV's.

Examples of colours with LRV 45%





Key Points

- Much of the cladding industry use LRV to restrict the paint colours applied to their substrates and will give not any substrate durability guarantees if the LRV of the colour does not meet or exceed their minimum value

- While LRV provides a measure of visible light heat reflectance measurement is provided by Total Solar Reflectance (TSR's).
- TSR is a measurement of the amount of near infrared radiation reflected by a colour

- TSR's are not yet used widely by substrate manufacturers/suppliers or local authorities

- There is no direct correlation between LRV and TSR

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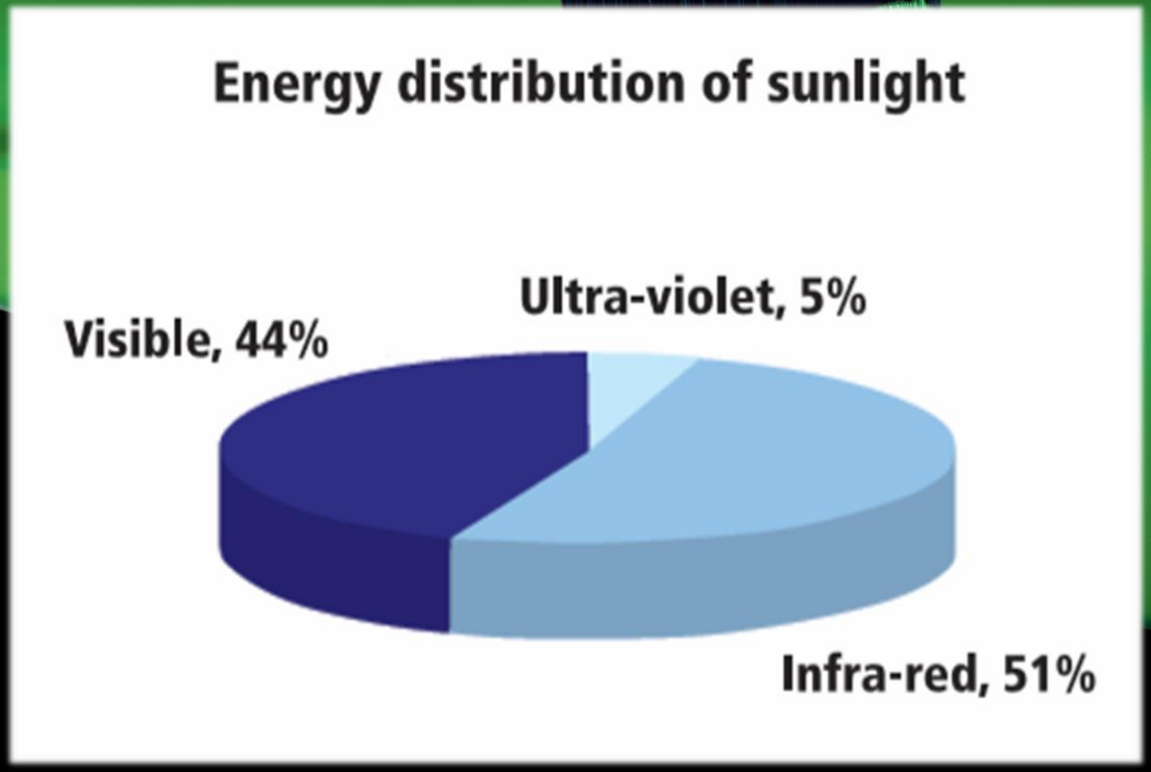
LRV’s are measured in the visible region of energy from sunlight



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Key Points

- LRV level recommendations are set by substrate manufacturers, suppliers and often local councils, not by paint manufacturers
- The LRV of a given colour does not change when using Resene Cool Colour version of a colour.
- TSR's do change and will always be greater when using Resene Cool Colour version of a colour as it will reduce the amount of Infrared Heat transferred thru the coating.
- Resene Cool Colour version will significantly reduce but not eliminate heat stress on the substrate.

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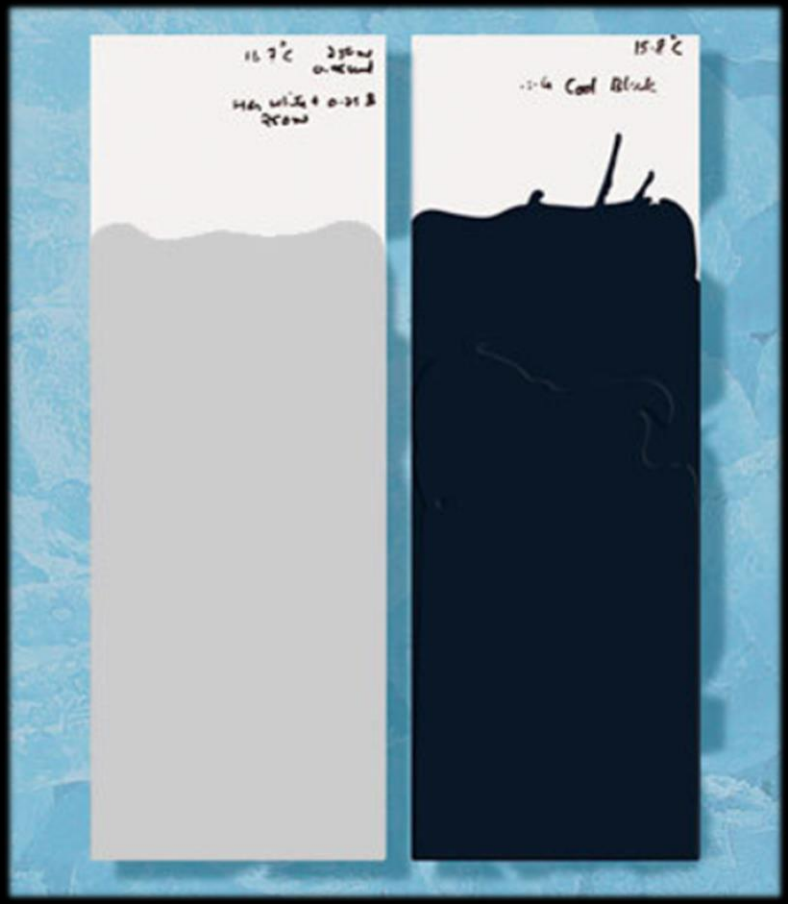
Resene CoolColour technology

- Resene Cool Colour technology will reflect more heat than the same colour made using non-cool colour pigment and reduce the amount of infrared heat transferred into the substrate
- Resene Black in Cool Colour will perform like a light/ mid Grey colour
- It <u>does not</u> render the surface cool to touch



Standard paint (similar performance) **Cool Colour**

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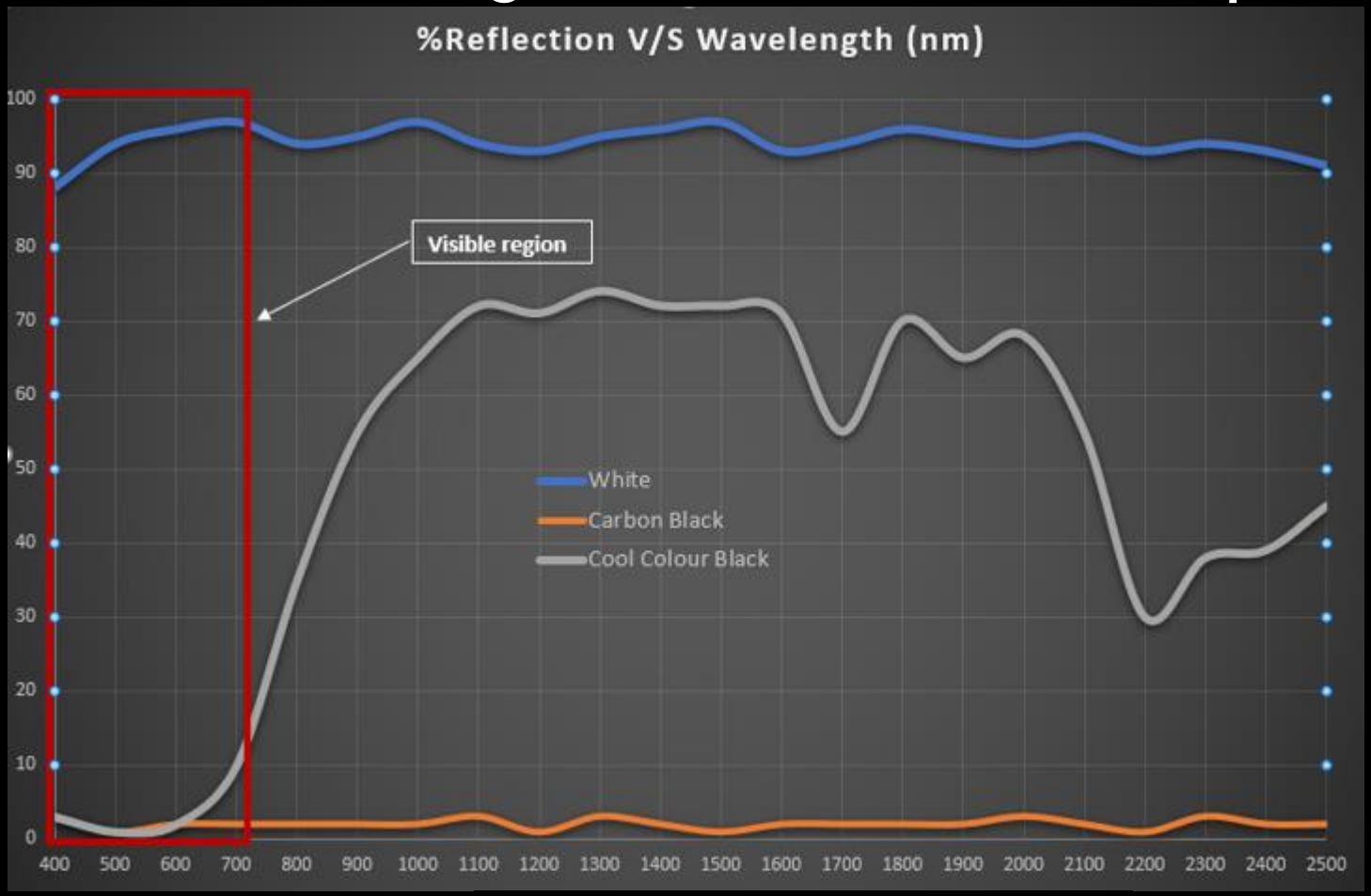
Reflectance Curve
Visible region is where LRV's are measured.
Non visible region is where Cool Colour performs.



Standard White

Resene Cool Colour Black

Standard Black

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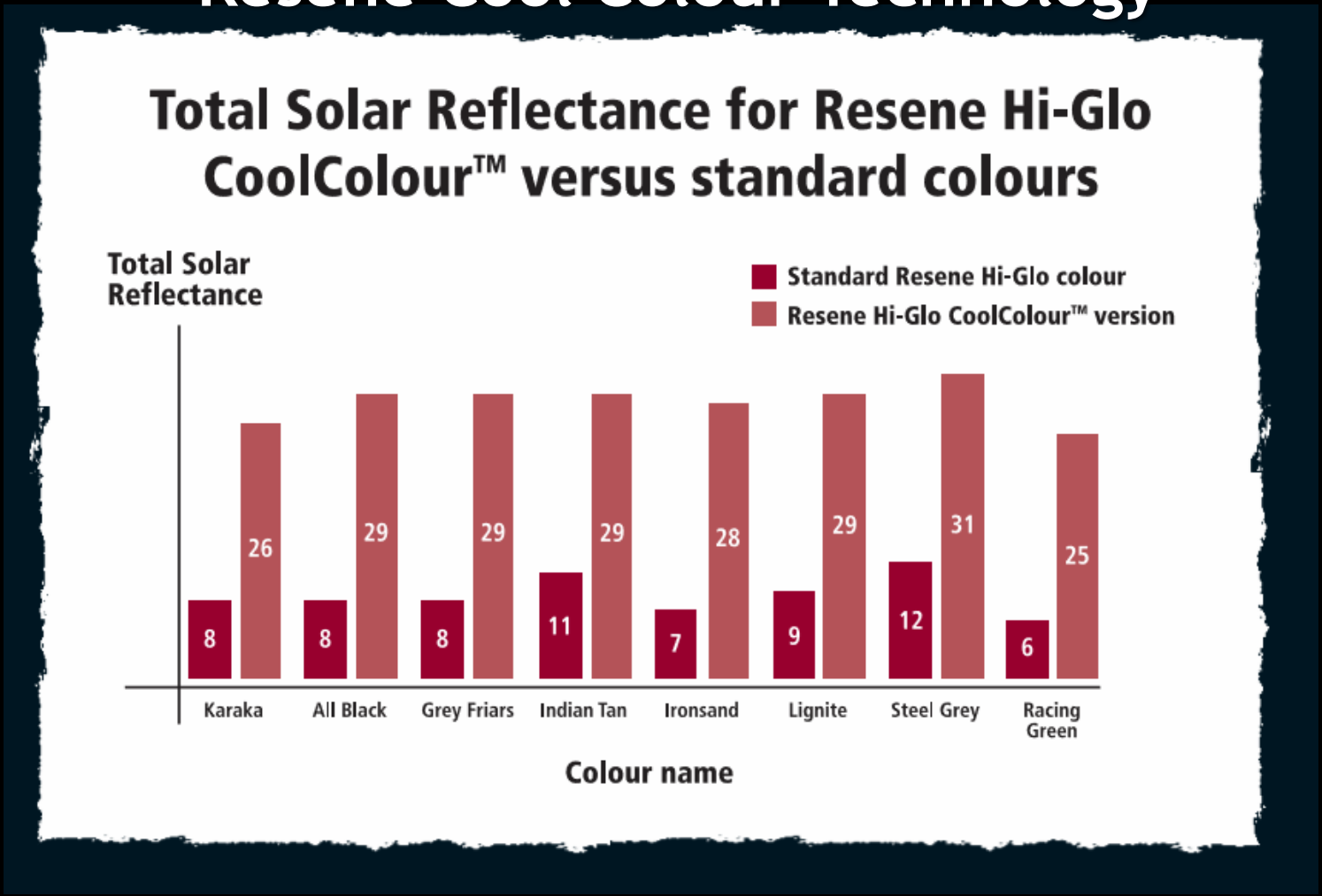
Chart showing improvement in TSR when using Resene Cool Colour Technology



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Estimating LRV for stain colours

- Penetrating stains are semi-transparent and the colour seen will vary with underlying timber colour. For this reason determination of LRV cannot be made.

- An estimation of the LRV of a stain can be made by selecting the closest solid colour match to the stain and using the LRV of the solid colour

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Key Points

- Before selecting colours you should understand what LRV limits are in place for the substrate and also the local authority
- Many Councils, Local authorities and substrate suppliers will consider the use of Resene Cool Colour technology in a submission for an Alternative Solution.
- Colour choice and use of Resene Cool Colour should be discussed at design stage and directly with the local authority and/or substrate supplier

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