

Relatively speaking

Why perception plays a major role in how your Resene paint colours appear.



Colour may be indispensable when it comes to shaping the aesthetic and emotional experience of our built forms and interior spaces, but our perception of colour is far from absolute. Thanks to the principle of relativity, the appearance of a paint colour is greatly influenced by adjacent hues, lighting, texture and context – and understanding these interactions is crucial for creating harmonious, dynamic and visually-compelling environments.

Perception and relativity

Colour perception is a complex process involving the interplay of light, our eyes and our brains. Our eyes contain two types of photoreceptors (cells that respond to light), which are known as rods and cones. Rods, which detect dim light, are used for night vision whereas cones respond to bright light. These photoreceptors send messages to our brain, which interprets different wavelengths into our personal perceptions of colour. In addition to physiological factors like colour blindness and age-related macular degeneration, how we perceive colours can also be significantly influenced by phenomena such as simultaneous contrast.

Simultaneous contrast occurs when the appearance of a colour is affected by the colours surrounding

it. This effect causes colours to look dramatically different depending on their context. Most colours have a tendency to induce its opposite in hue, value and intensity upon an adjacent colour and will be mutually affected in return. A light, dull red will make an adjacent dark, bright yellow seem darker, brighter and greener; in turn, the red will appear lighter, duller and bluer. In practice, this means that selecting paint colours for a project involves more than just choosing hues that look good in isolation. Instead, the key is to consider how the Resene paint colours will interact with the other colours and materials used in the palette and the lighting circumstances within the finished space.

The effect of lighting

When considering relativity, it's crucial to remember that different types of lighting can significantly alter the appearance of paint colours, too. Natural light, incandescent bulbs, fluorescent lighting and LED lights each have unique colour temperatures that can affect how your project's colours are perceived. Our natural lighting tends to have a blueish hue, especially at midday, which can make cool colours appear more vibrant while warm colours can appear more subdued. This effect is amplified in circumstances where more

above: In this project, Resene Spanish Green has been painted on both a vertical surface (the wall) and a horizontal surface (the tabletop). However, as the surface of the table is much smoother than the wall and the table is reflecting more direct light, the colour appears to be lighter. Most walls have at least some level of texture to them, which could be more pronounced depending on the materials they're constructed from and if the surface is older and has been painted many times before. The same paint colour may appear darker on walls that are more textured because the surface diffuses light and reflects it off into many different directions. Higher sheen paints also reflect back more light than flatter or lower sheen formulas, so despite being tinted with identical pigments, they appear different in situ. This effect is further amplified when the two surfaces being perceived are at different angles in relation to the light source. Wall painted in Resene SpaceCote Low Sheen tinted to Resene Spanish Green, table painted in Resene Lustacryl semi-gloss waterborne enamel and chair seat in Resene Lustacryl semi-gloss waterborne enamel tinted to Resene Tom Thumb.

natural light is present, such as outdoors and in rooms that have lots of windows. Traditional incandescent lighting, on the other hand, generally has a warm, yellowish tone that can enhance warm colours while muting cooler shades and fluorescent and LED lighting can vary widely in colour temperature.

The direction of lighting in relation to your painted surfaces also plays a role in how your Resene paint colours will ultimately look on your project. Depending on the angle and intensity of light, the same colour can appear dramatically different. When light hits a surface directly, your colour may appear more vibrant and intense. A wall bathed in direct sunlight might appear significantly different than it does under artificial lighting, and the same hue applied to surfaces that are in shadow or indirect light might look darker or more muted.

A paint colour applied to a horizontal surface will also look different than it does on a vertical surface. When a colour is used on flooring, it often appears lighter or more vibrant than it does on vertical walls because it is often viewed in direct light from above. A ceiling colour can look very different when it's lit from the sides, such as in a room with lots of windows, compared to how the same hue will be perceived in reflected lighting from recessed fixtures or pendant lamps. Directional lighting can also cause reflections and glare, especially on glossy finishes, altering the perceived colour and texture.

These factors underscore just how essential it is to test the shortlisted Resene paint colours in situ whenever possible in order to understand how each hue will be impacted by the specific lighting conditions in the space and how they change throughout the day and night. This will allow an opportunity to account for these visual effects when selecting colours and finishes to ensure the space maintains its intended look and feel.

It's also well worth the effort of testing larger swathes of your Resene paint colour using Resene A4 drawdown paint swatches or testpots. A small sample can't capture the full impact of light, shadow and the interaction with surrounding elements through relativity – which can lead to potential surprises once your project is painted. Rather than painting a sample directly on to a wall, it's recommended to paint the entire contents of a Resene testpot onto an A2 card



in two coats. Not only will this larger swatch make it easier to judge the paint colour, you will be able to move this sample around the area being painted and view it at different times of the day and night and under different lighting conditions. You will also want to leave a 2cm unpainted border around your colour sample, as the principle of relativity means that the existing wall colour can influence how the new colour is perceived. The contrast between the test swatch and the surrounding colour can distort the appearance, making the new colour look lighter, darker or even different in hue. By isolating the sample, designers and homeowners can evaluate the true colour, ensuring it aligns with their vision for the space. You can achieve the same isolation with a Resene A4 drawdown paint swatch by placing a piece of white paper under the edge to create a border.

top tip

Some colours are strongly affected by the hardware they're paired with, particularly if they sit halfway between two colours on the colour wheel. A colour like Resene Green Meets Blue generally appears greener in combination with gold and brass accents but bluer with silver-toned accents. So be sure that you show your client larger swathes of colour when choosing colours or creating mood boards for kitchens and bathrooms alongside drawer pulls or knobs and test it next to fixtures before signing-off on your final specifications.

above left: When looking at a side-by-side comparison of these two palettes, it's easy to understand just how great an impact relativity of colour perception can have on your work. Resene Half Duck Egg Blue appears greyer when used as the base colour in a palette which has large quantities of bold red and rust-coloured accents like Resene Bright Red and Resene Alert Tan. Resene Half Duck Egg Blue often appears bluer when used in combination with brighter and stronger blues, like Resene Jet Stream and Resene St Kilda. Background painted in Resene Half Duck Egg Blue with A4 drawdown paint swatches in Resene Alert Tan (left) and Resene Bright Red (right), testpots in Resene Bright Red (left) and Resene Alert Tan (right) and vase painted in Resene Coconut Cream. Marble from Italian Stone Ltd.

above right: Background painted in Resene Half Duck Egg Blue with A4 drawdown paint swatches in Resene Jet Stream (left) and Resene St Kilda (right), testpots in Resene St Kilda (left) and Resene Jet Stream (right) and vase painted in Resene Dune. Marble from Italian Stone Ltd.






- Resene Coconut Cream
- Resene Half Duck Egg Blue
- Resene Jet Stream
- Resene Bright Red
- Resene Alert Tan
- Resene Dune





above: When selecting exterior paint and stain colours, keep in mind that elevations viewed under direct sunlight will appear washed out in comparison to elevations that are shadowed. It can be advantageous to pick a slightly more pigmented hue outdoors, as the character of subtler colours is often lost under bright conditions. Weatherboard cladding painted in Resene Lumbersider Low Sheen tinted to Resene Raindance, trims in Resene Lustacryl semi-gloss tinted to Resene Half Black White, door in Resene Enamacryl gloss tinted to Resene Galliano and roof in Resene Summit Roof tinted to Resene Half Tuna. Colour selection and image by Houndstooth Interiors, www.houndstooth-interiors.com. Painting by Zenith Coatings Ltd, www.zenithcoatings.co.nz.

right: A pale green like Resene Coconut Cream can appear more neutral when used next to strong reds and rusty oranges like Resene Bright Red and Resene Alert Tan. But when used alongside other colours that have stronger green or acidic yellow undertones, such as Resene Illuminate and Resene Yuma, Resene Coconut Cream's green undertones become more pronounced. Wall painted in Resene Coconut Cream, floor stained in Resene Colorwood Dark Ebony, shelf and bottle vase in Resene Alert Tan, circle vase in Resene Coconut Cream, fluted bud vase in Resene Dune, rectilinear vase in Resene Jet Stream, box in Resene Digeridoo and painted books (on floor, from top) in Resene Alert Tan, Resene St Kilda, Resene Bright Red, Resene Ayers Rock, Resene Dune, Resene Coconut Cream and Resene Digeridoo. Artwork by Kinfolk from Slow Store.

	Resene Half Black White		Resene Clockwork Orange		Resene Bright Red
	Resene Coconut Cream		Resene Ayers Rock		Resene Digeridoo
	Resene Sante Fe		Resene Alert Tan		Resene Colorwood Dark Ebony
			Resene Mexican Red		Resene FilmPro Black

top tip

In circumstances where an exact colour match isn't possible or desirable, using a different strength of the same colour can still achieve a camouflaging effect. Selecting a slightly lighter or darker version of your wall or ceiling colour can help mechanical elements blend in without drawing attention. This approach ensures that these elements don't stand out while maintaining a cohesive colour palette.

Exterior considerations

The principles of colour relativity extend beyond interior spaces. The colours chosen for a building's exterior façade can significantly influence its visual impact and whether it will blend harmoniously with its surroundings or stand out as a striking landmark. This interaction between a building's colours and its environment—whether natural or manmade—requires careful consideration to achieve your desired aesthetic and functional outcomes.

When a building is situated in a natural landscape, the main goal of many architectural designers and owners is to ensure that the building does not disrupt the natural beauty of its surroundings. In these cases, specific exterior colour selections need to account for the immediate surrounding environment in order to create a cohesive and appealing appearance. The specific characteristics of your project's natural context can guide your Resene colour choices. Muted blues and greys might blend seamlessly with a coastal environment, warm sandy or golden hues could complement a desert landscape while greens may suit a bushy mountain area.



In some locations, natural environments change colour as the seasons shift. A colour scheme that complements lush greens in the spring and summer may need to also harmonise with the oranges and browns of autumn and the stark whites of winter in places where it snows. Earthy hues like browns, greens and beiges are timeless options for natural settings that go through more pronounced seasonal shifts as they often adapt better to these changing contexts.

One of the easiest ways to ensure your exterior colour palette has a direct connection to its surroundings is to snap a photo of the site and upload the image to the free online Resene Colour Palette Generator (www.resene.com/palettegenerator) or Resene ColourMatch Online (www.resene.com/colourmatchonline). These handy tools can help you identify the nearest Resene colour matches to specific hues in the image or create a starting colour palette. Using the same colours that appear in the image to paint or stain your project's façade, roof, fascia, trims, flashing, decking or fencing can make these surfaces virtually disappear into the landscape.

In urban or suburban environments, your approach might be a bit different depending on the type of project you're working on. Often designers and owners will still want their building's exterior colours to relate to nearby structures and streetscapes, which could feature grey or white concrete and asphalt, bluish steel structures or window glazing or ruddy brick tones. While there are certainly instances where you might want the building to directly match adjacent structures, it's more likely you'll want your palette to complement its context. In a historic district with predominantly brick buildings, a new structure might incorporate similar hues or materials to maintain the area's character. Once again, the Resene Colour Palette Generator and Resene ColourMatch Online can be especially helpful in identifying the hues that exist in the site's surroundings – which can then be applied to thoughtfully highlight different elements of your design while maintaining the cohesiveness and character of the streetscape.

There are, of course, circumstances where standing out is more important than blending in. Since colour plays a practical role in wayfinding and safety, brightly coloured details and high-contrast schemes can help make entrances, exits and key features more visible, aiding

Colour chameleons

Certain Resene colours have especially complex undertones and change more dramatically in relation to the other colours they are used in a palette with and when they are exposed to different lighting circumstances. Some examples include:

Resene Green Meets Blue often appears bluer when situated next to stronger blues with violet undertones like Resene Governor Bay while it often looks greener when used in a palette with pale greyed-off greens like Resene Pumice, bitter oranges like Resene Clockwork Orange or acidic yellows like Resene Funk.

Resene Bubble White appears nearly neutral when used in small quantities, but the hue's green undertones become more pronounced when larger swathes are used on vertical surfaces such as interior walls.

Resene Cashmere can look quite beige when used in smaller quantities adjacent to deep blues like Resene Indian Ink but this pale coral's pink undertones become more visible when the hue is used in larger quantities and when it's in close proximity to yellow-toned beiges, pinks, terracotta or reds such as Resene Athena, Resene Sakura, Resene Mexican Red and Resene Sante Fe.

Resene Otter may appear very brown in certain circumstances, such as when it's used adjacent to blues like Resene Awash, whereas other times it can take on purplish or mauve qualities.



top tip

Colours used inside will intensify the more you use them. If in doubt, select a lighter colour or use bolder colours on smaller feature areas. Conversely, on an exterior, colours will tend to look lighter on larger areas once they are in the bright sun. If in doubt, select a darker colour and allow for more contrast between adjacent colours. When you choose darker paint or stain colours outside, remember to consider a Resene CoolColour version of your colour to help reflect more heat and keep the coating and substrate cooler.



right: Wall and tall vase in Resene Meringue, table in Resene Illuminate, small vase in Resene Yuma and tealight holder in Resene Coconut Cream. Projects by Amber Armitage and Vanessa Nouwens, images by Bryce Carleton and Wendy Fenwick.



navigation and enhancing the building's accessibility. This is particularly important in public and commercial buildings where clear signage and pathways are crucial, and the relativity of surrounding colours can determine how much these elements draw attention or blend in.

Using relativity to your advantage

Achieving a harmonious colour scheme involves balancing hues that complement and enhance one another. Using a colour wheel can help in selecting analogous colours (those next to one another on the wheel) for a serene and cohesive look or complementary colours (those opposite each other on the wheel) for a vibrant and dynamic effect. By understanding and applying principles such as simultaneous contrast and colour constancy, you can create spaces that are not only aesthetically pleasing but also emotionally and psychologically engaging – and, at the same time, avoid combinations that might clash or create unwanted visual tension. Whether designing a serene retreat, a vibrant social hub or a sophisticated commercial workspace, the strategic use of colour can make it more functional, inviting and memorable.

Though colour can be used strategically to highlight architectural features, it can also be used to downplay other aspects. While you will likely want beautiful elements to stand out, there are often functional components that do not contribute positively to your project's aesthetic but must be included regardless. Using the principles of colour relativity, these unappealing details can be effectively camouflaged to make them less obtrusive. Mechanical, electrical and fire suppression components can be eyesores, but the right



Resene paint colours can help to mask them. Painting exposed ductwork, pipes and cable trays the same colour as your ceiling can minimise their visual impact while painting large ventilation units like air conditioners in a colour that blends in with the adjacent surroundings can make them appear less prominent. Using Resene FilmPro Set Black, a matte black finish, is a popular way to make a ceiling 'disappear'. Columns that are structurally necessary but aesthetically detractive can be painted to match the walls, but for some projects, a complementary shade might be preferable to help integrate them into the design more harmoniously without creating a safety hazard.

Finally, it's important to keep in mind that the finish you choose can also play a role in relativity – especially when a mix of formulas and finishes are used within the same area. Matte and low sheen finishes like Resene SpaceCote Low Sheen and Resene SpaceCote Flat are less reflective and therefore less likely to catch the eye, making them a great choice for elements that need to be hidden. These finishes scatter light more, so a colour might appear darker or less vibrant than the same colour would in a glossier finish. Glossy finishes tend to draw attention due to their reflective qualities and glossy colours appear lighter or whiter due to glare. **BW**