

Shadow play

The influence light and darkness wield on your paint colours and how to use both to your advantage.

Light is instrumental in how we perceive paint colours, both indoors and outdoors. After all, without light, we wouldn't be able to see colour at all. However, darkness also plays a pivotal role in how our projects look and feel. The interplay between light sources and shadows can dramatically alter the appearance of colours, affecting mood, ambience and visual perception. By mastering this relationship, you can leverage light and darkness to manipulate the emotions and atmosphere that your design evokes and decide which elements get concealed, and which get revealed.

Plan to succeed

If your project involves the design of an interior space, dreaming up which Resene paint colours you want to use to bring it to life is likely among your favourite tasks. However, before you start solidifying your colour specifications, it's imperative to have finalised – or at least put some serious thought into – your lighting plan.

Unfortunately, many treat lighting design as an afterthought, once the lion's share of the budget has already been spent on premium finishes, furnishings and features. Other times, attention is only paid to the aesthetic appeal of the light fixtures themselves without taking into account how the light they give off will impact every other aspect in the space. A thoughtful lighting plan that takes brightness, direction, colour temperature and glare into account across all light sources will pay dividends in making each of your design's elements look their best in your finished project.

Indoor spaces are generally illuminated by a combination of natural and artificial light



top tip

The colours we perceive are the result of the colour of the lightwaves that are reflected back at us. For example, we see a yellow object not because it is actually yellow but because it is absorbing all the different coloured lightwaves except yellow and only the yellow lightwaves are reflected back at us. This is why spaces painted in a dark colours often require more lighting than those painted in pale colours, as paler hues reflect back more light.

sources, with each casting its own unique hue and intensity. Natural light streaming through windows changes throughout the day, shifting in colour temperature from warm to cool. This evolution of light has a major impact on how your paint colours will appear and change throughout the day and into the night, influencing each hue's saturation and undertones.

Artificial lighting sources are essential for providing ambient light where adequate natural light is lacking and to make sure occupants can still see what they need to after the sun goes down. Different varieties of incandescent, fluorescent and LED bulbs each emit different colour temperatures, ranging from warm yellows to cool blues to full spectrum options. The type of lighting chosen can drastically alter the perceived colour of painted surfaces. For example, warmer light temperatures tend to enhance red and

left: By leveraging light and shadow in combination with your Resene paint colour choices, you can create immersive and emotionally-resonant experiences. Wall in Resene Double Canterbury Clay. Design by Spacecraft Architects, www.spacecraftarchitects.co.nz. Build by Southcoast Construction, www.southcoast.co.nz. Image by David Straight, www.davidstraight.net.



orange tones while cooler lighting can make blues and greens appear more vibrant.

In the same way that different sources and temperatures of light can vary, it's worth noting that diversity exists in shadows as well. Deep shadows can obscure colours, making them appear darker or muted, while diffused shadows can soften hues. Shadows cast by furniture, architectural elements and other objects further complicate the perception of paint colours - so it's essential to consider the placement of light sources as well as objects within the space to strategically manage the role of shadows in colour visibility.

With new builds, you might be able to control the placement of windows and what cardinal direction natural light flows in from - which can have its advantages. But even when you're designing from scratch, structural, budget and privacy constraints could prevent you from

placing windows in optimal locations. And because your building won't exist during the initial design stages, you and your client might also be limited by the ability to visualise how the lighting in the completed build will look at key milestones when decisions have to get made. In these circumstances, you'll ideally want an opportunity to revisit your palette once the walls, windows and lighting are in place and make adjustments to your paint colour selections as required.

When renovating existing buildings, you'll likely have less control over where windows are located and may have certain constraints related to where you can run power or hang light fixtures, but there is a huge advantage in being able to do walkthroughs of the space before you finalise your lighting plan and paint specifications. Whenever possible, you'll want to view actual samples of your shortlisted Resene paint colours



in situ prior to sign-off and, ideally, under the real lighting conditions that they'll be exposed to.

From day to night

The changes in natural light that occur as the day progresses are influenced by the sun's position, weather conditions and landscape surrounding your project. Sunlight also interacts with atmospheric elements, creating variations in brightness, contrast and colour temperature throughout the day - which is why it's important that you view samples of your preferred Resene paint colours at different times of the day and night before you and your client make your final selections.

At midday, when the sun is directly overhead, shadows become shorter and colours appear more saturated. Harsh sunlight can create

	Resene Double Black White		Resene Awaken
	Resene Triple Sea Fog		Resene Pioneer Red

far left: Softly diffused light and shadows bring an entirely different energy to a space than hard light and crisp shadows do. In spaces where there is not much to be done to increase the natural light available, lean into low lighting circumstances by selecting moody or dramatic colours. Saturated hues that might feel overwhelming in a bright room, like bold pinks and fiery reds, can become velvety and sumptuous in darker spaces. Right wall painted in Resene Awaken, left wall in Resene Pioneer Red and floor finished in Resene Colorwood Bask. Sofa, console table and rug from Ligne Roset, artworks by Katherine Throne and Simone Rosenbauer from Sanderson Contemporary, armchair from Good Form, lamp from Matisse, bowl, sculpture and tall vase from Smith & Caughey's, glass and candlestick from Tessuti. Project by Amber Armitage, image by Wendy Fenwick.

left: Increase comfort in rooms that are exposed to an excess of harsh natural light by avoiding bright whites on surfaces that reflect back a lot of sunlight. Instead, opt for more pigmented, mid-range colours with a greyed edge - which will absorb more light and reduce glare. If you do choose white, look to blackened whites like Resene Merino, Resene Double Black White and Resene Triple Sea Fog in a flat or low sheen finish like Resene SpaceCote Low Sheen to keep glare at a minimum. Walls painted in Resene Half Merino with feature wall in Resene Green Meets Blue. Design by Spacecraft Architects, www.spacecraftarchitects.co.nz. Build by Southcoast Construction, www.southcoast.co.nz. Image by David Straight, www.davidstraight.net.

top tip

Because the surface texture between different products varies, getting a colour match that looks seamless from one surface to another can be tricky. Often, it is best to select a half tone darker or lighter to make surfaces look purposefully different but still coordinated than try for an exact match.

top tip

Always view samples of your Resene paint colours before finalising your specifications. Specifiers can order free A4 drawdown paint swatches by visiting www.resene.com/drawdowns and logging into your account. Testpots can be ordered online at shop.resene.com/testpots or visit your local Resene ColorShop or reseller.

stark contrasts between light and shadow, intensifying colour variations and highlighting textures and details. However, excessive glare and strong shadows can also wash out paint colours and obscure their finer nuances.

During sunrise and sunset, sunlight travels through more atmosphere, resulting in warm tones that bathe surfaces in a soft, diffused glow. This phenomenon, known as the 'golden hour', can enhance warm hues like pinks, reds, oranges and yellows, imparting a sense of warmth and intimacy to spaces where these colours are used.

As the day progresses into evening, natural light diminishes, giving way to artificial lighting and the cool, bluish hues of twilight – which is sometimes referred to as the 'blue hour'. Artificial lighting indoors and outdoor light fixtures, such as street lamps and architectural lighting, introduce new colour temperatures and intensities, further altering the perception of paint colours once darkness settles in for the night.

Tricks of the eye

Most of us will have experienced the navy sock/black sock scenario. You take a pair of apparently black socks out of the drawer only to realise later that one of them is actually dark blue. This phenomenon is known as sample metamerism.

The reason for the optical illusion is that the wavelength emission between various light sources, such as incandescent and fluorescent light, differs. Incandescent light bulbs emit very



left: Direct sunlight has a tendency to wash out exterior paint colours, so it is often a good idea to select more pigmented hues for outdoor surfaces. In this image, it's immediately apparent how different even a saturated colour can look in the sun versus the shade. Weatherboards painted in Resene Lumbersider Low Sheen CoolColour tinted to Resene Casal. Pair it with window frames, doorframes and fascia painted in Resene Element and decking stained in Resene Woodsman Cedar. Design and build by Box, www.box.co.nz. Painting by Advanced Plasterboard Solutions Ltd. Image by Sophie Heyworth, www.sophieh.co.nz.

	Resene Kinship		Resene Element
	Resene Infused		Resene Blackjack
	Resene Casal		Resene FilmPro Black
	Resene Forty Six		Resene Woodsman Cedar

few short blue wavelengths, which makes it hard to tell whether the colour we see in such light is dark blue or black. Fluorescent light, on the other hand, emits more short wavelength light, and so it's easier to distinguish the two colours.

Paint colours, when viewed under different light sources, are also affected by metamerism, which is why it is so important to view real Resene paint colour samples in the space you plan to use them whenever possible. Sometimes, you might have two identical colour samples that look markedly different when viewed under different lights. This phenomenon is called illuminant metamerism. Clever retailers can leverage this principle to help present their product in the most flattering light.

There are other types of metamerism, too. One is observer metamerism, which recognises that different individuals perceive colour slightly differently. Another is geometric metamerism, which explains the different appearance of colours when seen from different angles, distances and light positions. Gloss level and textured surfaces can also throw off your colour perception since

they affect how light is reflected back at the viewer. Flatter finishes can make a colour look darker and muddier while a glossier finish can make the same hue seem brighter and cleaner.

Speaking of geometric metamerism, when using Resene A4 drawdown paint swatches and testpots to sample colours, always remember to view the colour in the same orientation that you will use it. If it is for a wall, hold the colour sample vertically; for a ceiling, hold it above your head; and if it's for a floor, place it on the floor and view it from standing height. The same colour tested this way will usually look darkest on the ceiling because of the reduced amount of light falling on the colour.

Colour chameleons

While many paint colours fall into broad chromatic families like red, orange, yellow, green, blue, purple, white, black, grey and brown, not every paint colour is as easy to categorise as others. Colours with subtle and complex undertones that are difficult to define within

a single colour family tend to change more drastically than others when exposed to different lighting circumstances and what other colours they're used with – to chameleon-like effect.

Colour perception can be greatly affected by the size of the sample viewed. Generally, the bigger the sample, the easier it is to distinguish the colour. When you only view a small paint swatch, it can be very difficult to pick up on a colour's nuances. The more you experience different Resene colours used at scale, the more you'll discover the subtleties and opportunities that complex greiges like Resene Kinship, deep grey greens like Resene Forty Six, eucalyptus blues like Resene Infused, mauve taupes like Resene Otter and blush beiges like Resene Bone can offer when leveraged in the right places on the right projects and under the right lighting conditions.

Using tools like Resene testpots and A4 drawdown paint swatches, which offer a larger swathe of colour for viewing, can help reveal how complex hues will be affected by your project's lighting and how they will interact with other

top tip

If your project is yet to be constructed, it is still strongly recommended to view actual paint swatches of your colour selections together – under full spectrum lighting, where possible – before finalising your specifications as digital representations often fail to capture the complexities and undertones of most paint colours.

colours in your proposed palette. Paint colours are hugely influenced by adjacent colours and their appearance changes depending on what other hues are alongside them. Other painted surfaces, textiles and soft furnishings like rugs, carpet and curtains can significantly affect the tone and colour temperature of the paint you have chosen if used in close proximity. Whites and beiges, in particular, tend to take on the tint of adjacent colours – which is why extra care needs to be taken when selecting these colours for use on trims, joinery, doors and ceilings.

Looking at all the colours together on a colour chart or fandeck will also affect your colour perception and won't give you a true idea of any one individual colour. Resene fandecks include grey paint colour isolators that can be helpful to seclude the colour on the paint chart you are viewing so that it isn't affected by the appearance of ones you aren't planning to use in your palette. Additional free isolators are available from your local Resene ColorShop or reseller if your fandeck or colour chart does not have an isolator included.

Harnessing the power of light and shadow

The manipulation of light and shadow is a powerful tool in achieving the desired aesthetic outcomes of your project. By understanding the nuances of how lighting conditions affect your Resene paint colours, you can create dynamic

and visually engaging spaces that evoke specific emotions and atmospheres while highlighting certain elements and masking others.

Through your interior lighting plan, you can strategically position light sources to accentuate focal points and enhance the vibrancy of your paint colours. Task lighting can be used to illuminate work surfaces, accent lighting can highlight areas of focus such as architectural features or artwork, while ambient lighting sets the overall mood and ambience of a space. By carefully managing shadows, designers can sculpt and define spatial volumes, creating depth and visual interest.

The specific paint colours you choose add a different element of control. You've likely realised that the same colour will look different when used on a wall compared with a ceiling because the light from those surfaces is being reflected back at you from different angles. A wall that's shadowed will also look different from a well-lit wall because it's reflecting back less light. There are a number of clever ways that these principles can be used to your advantage.

Instead of taking a single colour across an entire space, you could choose a different paint colour for certain walls to imitate the effect of shadowing – effectively hiding or camouflaging any parts of the room that you don't want to be seen. Or perhaps your project is in a converted structure or a tenancy that has exposed piping, ductwork or cable trays that are detracting from the overall effect and, for a host of potential

did you know?

The brightness of a light is measured in units called lumens – the more lumens, the brighter the light. One lumen is equivalent to one lux, which is the brightness of four full moons. Humans need a quarter of a lux to be able to see at all.

top tip

If you are looking to implement a light neutral palette, choose a half or quarter strength of your Resene wall colour if you'd like your ceiling to look the same or lighter than your walls, or take your wall colour up onto your ceiling for a cocooning effect.

reasons, you're not able to add a suspended ceiling to cover them up. Painting the existing ceiling and mechanical components in a deep inky hue like Resene Blackjack or Resene FilmPro Black can help mask them from view as the optical illusion that dark colours recede is amplified by geometric metamerism due to the ceiling's angle because minimal light gets reflected back. Using a matte or lower sheen finish also aids with this masking and helps the colour appear to recede further.

Gloss paint finishes have a smooth surface so light reflected from these surfaces bounces straight back. The light being reflected back is what makes your glossy colour seem brighter and lighter. Lower sheen and matte finishes have a micro rough surface that reflects the light back at different angles for a more diffused lighting effect. This leads to a soft shadow effect which is why your low sheen or matte finish appears moodier and receding compared to a higher gloss finish. You can manipulate the gloss of an already painted surface with a clear finish, such as Resene Concrete Clear. This can be applied over paint or concrete to raise or lower the sheen level.

In low light areas, Resene FX Metallic paint finishes can help amplify the lighting in your space. The small metallic flakes catch light and help to make a dull space feel lighter. Resene FX Metallic colours are available as paint and wallpaper, making it easy to take these sparkling colours across all kinds of surfaces – large, small,



Put your best FACE forward

A handy way to keep the goals your lighting plan needs to achieve in mind is to remember the acronym FACE:

F stands for function. What are you trying to achieve through lighting? How do you want to bring out the best in your architectural design, paint colours, finishes, furnishings or artwork? What tasks need to be accomplished within the space? Does the light have to be practical or pointed in a particular direction?

A is for ambience. This is particularly important for certain project typologies. In hotels or restaurants, you may want to create a certain atmosphere to draw in customers. In a retail setting, you'll need to make merchandise look appealing and expensive. Or, perhaps you want to create a relaxed mood in a casual living area. Cool, blue light will enhance an indoor pool, while warm pinks will set the scene in your meditation room.

C stands for comfort. Does your lighting create a glare or feel too hot or cold?

E is for economy. In other words, what is the most fiscally responsible lighting solution for your project's needs?



far left and left: Lighting and shadows exert profound influences on how paint colours are perceived. By harnessing them, you can transform ordinary spaces into extraordinary environments imbued with ambience and character. Resene Morning Haze, painted on these bedroom walls, looks cheerful and fresh in morning light but gentle and relaxing in the evening. Built-in headboard painted in Resene Time Traveller, floor in Resene White Noise and artwork in Resene White Noise, Resene Morning Haze and Resene Time Traveller. Bedding from Foxtrot Home, vase, sculpture and cushion from Smith & Caughey's. Project by Amber Armitage, images by Wendy Fenwick.



top tip

Beware of glare outdoors. All-white finishes on sloped residential roofs can cause visual pollution, in the form of glare, that shines into backyards or neighbours' homes. Consider using a darker colour hue with a Resene CoolColour finish instead to help reflect more heat but less glare.

did you know?

While red, yellow and blue are considered primary colours when mixing together pigments like paint, the primary colours of light are red, green and blue. The screens of our digital devices use these three colours to display different hues in what's known as additive colour. When we perceive light from a screen, the red, green and blue cone cells in our eyes work together to translate those three colours of light into millions of different colours. When all of the red, green and blue light are reflected back (RGB 255 255 255), the brain perceives the result as white. When none is reflected back (RGB 0 0 0), we get black.

flat, rounded or textured. Resene FX Metallic paint colours can be applied over different basecoat colours. To get the same look as what you see on the swatch, be sure to specify the Resene colour name that appears in brackets on the colour chart next to your chosen Resene FX Metallic hue.

Take it outside

Outdoors, you can capitalise on the changing dynamics of natural light and leverage the high contrast that harsh sunlight creates. Landscape features such as trees, foliage and water bodies can cast captivating shadows that animate surfaces and enhance the interplay of light and colour. Architectural elements can be designed to manipulate sunlight, casting

intricate patterns and textures that enrich the visual experience. And the same principle of using dark colours to conceal things that detract from your design indoors can be useful outdoors, too. Painting a fence in a black like Resene Element can help it fade from view in a garden while plantings and greenery will appear more pronounced by contrast.

When specifying dark paint and wood stain colours outdoors, it's recommended to choose a Resene CoolColour formula – which can be used on all sorts of exterior materials and applications, from weatherboards and concrete to windowsills. Resene CoolColours look like normal Resene colours, but thanks to special pigment technology, they help reflect more infrared waves to keep your substrate and coating cooler. A quick way to

tell if a particular colour is available in a Resene CoolColour formula is to look to the name on your colour chart. You'll see a 'cc' symbol if it can be tinted into a Resene CoolColour.

It's also important to note that not every type of exterior material can accommodate mid to dark coating colours. If too deep of a hue gets used, your selection may cause irreparable damage to the substrate, such as warping, checking and premature failure. If you want to specify a darker colour to an exterior material that's under warranty, your Resene representative can help you determine colour options that will work within the manufacturer's guidelines and the best formulas for your specific job so that your coatings and building materials continue to look great and perform properly. **BW**