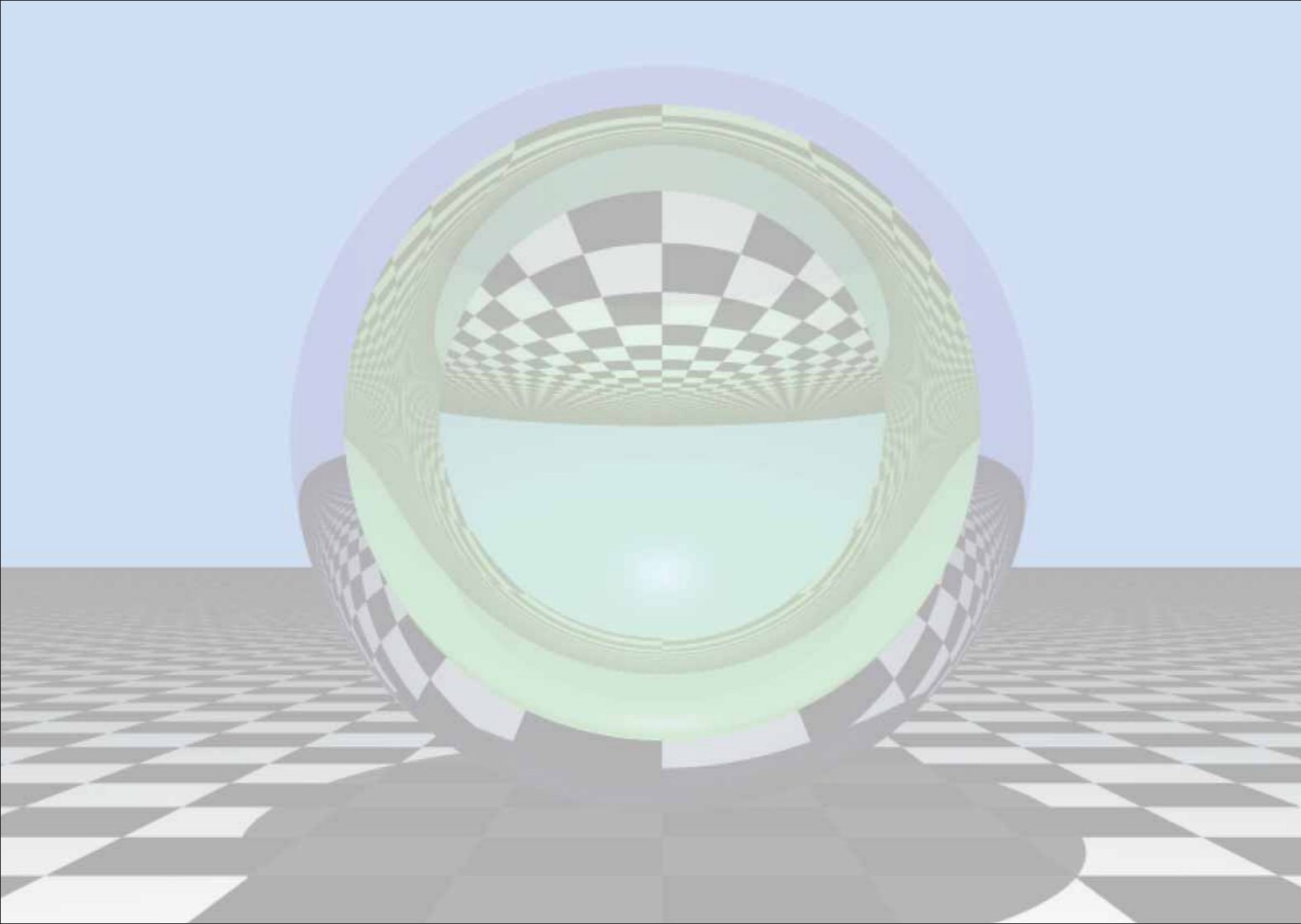




# Reflecting colour

**Resene**

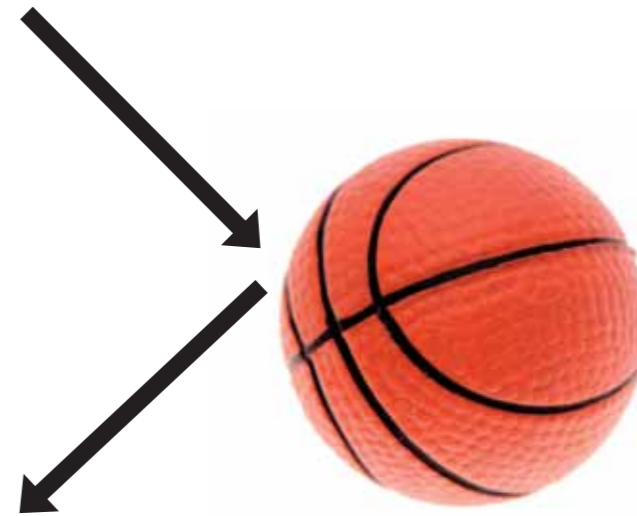
the paint the professionals use



## Reflecting colour

Tiny particles of colour called pigments are what gives plants, animals, humans and minerals their colouring. They are also used to colour paints and dyes made by humans. Pigments absorb colours but reflect their own colour.

When we see something that is green, such as grass, we think that the reason it appears green is because it is green. However the colour we see on the surface of an object is not actually the colour in that surface. If a surface looks green, this means that it absorbs all colours in the spectrum except green. The reason it appears to be green is because the green light is reflected off the surface and that is what we see. If an object is black, this means it absorbs all colours of light. It looks black to our eyes because no colour is being reflected. If an object is white it reflects all light.



Reflection is like a ball hitting a wall and bouncing off. The ball cannot be absorbed into the wall, so once it hits the wall it will bounce off at an angle depending on the angle it hit the wall.

Reflection of light works the same way. When light hits a surface some colour may be absorbed and the colour that is not absorbed will be bounced back off the surface for us to see.

Light from the sun is made up of both visible light that we see but also heat, which is why you can get sunburnt if you stay outside during summer.

If something is black, this generally means it absorbs all light and heat. This will make the surface very hot. If you have ever worn a black t-shirt on a sunny day you will know how hot black can get.

If you wore white clothing instead, the light and heat would be reflected, which would keep you much cooler. This is why most summer sports uniforms are light coloured rather than dark coloured clothing.

Many countries have very hot weather over summer. People will often wear light coloured loose fitting clothing to keep themselves cool.





Too much heat can cause damage. For humans too much direct heat from the sun can cause sunburn.

If wood is painted in black, the large amount of heat absorbed can make the timber warp or bend out of shape.

Black plastic toys left in the direct sunshine can soften or melt as they absorb too much heat. White objects are more resistant to the heat of the sun as they will reflect more of the heat, however they can still be damaged if they are not designed to be left in direct sunshine.

Even different hair colours will absorb the heat differently. Black or dark brown hair will absorb much more heat than blonde hair. Find a friend or family member with very differently coloured hair and sit outside in the direct sunshine for five minutes. Make sure you put on some sunscreen before you go outside. Then go inside and place your hand on your own hair and then the other person's hair. The darker hair should feel warmer.



You can also try this using paint. Paint one piece of cardboard with black paint and one piece with white paint. Leave the cards in the direct sunshine for 10 minutes. Check them after 10 minutes and record which feels the hottest when you touch it. Put the cards back into the direct sunshine for another 30 minutes and test again which feels the hottest. Keep a record of your results.

**Try this!**



Resene have developed a range of paints called Resene Cool Colours. These colours are designed using pigments that absorb and reflect light differently to normal paint pigments.

A dark paint colour made normally will absorb most light and heat that lands on it. However a dark paint colour made using the Resene Cool Colour technology will absorb the visible part of the light the same as normal but will reflect most of the heat that lands on it. This means the colour will look the same as a normal colour but will stay much cooler because the heat is reflected. This is very useful for the exteriors of houses and buildings as it reduces the amount of heat that is absorbed. Heat can be very damaging to paint and house and building materials so the less heat absorbed, the better it is.



If an object is multi-coloured (made up of more than one colour), this means that different areas of the object absorb and reflect different colours.

If you put two red objects side by side, the colour of each will normally look a little different. This is because there are so many different variations for each colour. A red that has a hint of blue in it is reflecting red light and a little blue light. A red that has a hint of green in it is reflecting red light, absorbing blue light and reflecting a little green light. It is these differences in the light that is being reflected that makes the colour look different.

The same colour can look very different depending on whether it is inside or outside and whether you have the lights turned on inside. This is because artificial (man-made) lighting is different to sunlight.

When you are choosing colours for interior rooms and furnishings it is important that you look at them under the artificial lighting that will be in the room. If you look at them under different lighting they may look very different when you get them home.

This is why Resene encourages people buying paint to try out their colours using testpots. When choosing paint, testpots are the best way to check that the colours being chosen look right in the area being painted.



Colours can also look different depending on how they are made. Years ago all paint colour charts were made using printer's ink. This printer ink was coloured to match the colour standards of the paint company. Specialised colour staff would check each colour match and adjust them so they matched the company colour standards. All colours were matched under natural daylight. However, some customers would view colours inside and they would look very different. This is called metamerism and means that two colours may look the same in one light but can look different when compared to each other under other lights.

For example, two colours may look identical outside but one may look greener when compared inside with the lights on. Some colours are more prone to this effect than others. When colours were colour matched under natural daylight the printer ink would sometimes be a perfect match under natural daylight but look quite different under other lighting.

Resene now uses its own paint for most of its colour paint chips and samples. The paint is much more accurate than the printer ink under different lighting as it acts like the paint in the can does. This means that customers can get a truer idea of the colour from the colour chart.



Colours can be measured to see how much light they reflect. This is called their reflective or reflectance value and tells us how much of the visible light (the light we can see) that the surface is reflecting. The darker the colour the less light is reflected. A colour that is close to white will reflect nearly 100% of the visible light. A colour close to black will reflect almost none of the visible light. This is because dark colours absorb most light. If you look at Resene paint colour charts you can see the reflectance values for different colours.



Colour	Colour code	Tone	Approx LRV %	Colour	Colour code	Tone	Approx LRV %
Ballerina	V78-058-342	W	54	Pink Panther	R53-084-002	D	21
Balloon	O58-156-046	Y	26	Pretty in Pink	R90-016-359	W	76
Banana Split	Y84-081-255	SA	7	Princess	R84-034-358	W	62
Bedazzle	V53-068-285	U	22	Rocket	R41-126-033	R	57
Blast Off	V53-068-283	L	21	Rubber Duck	Y80-171-077	Y	74
Blue Jeans	R53-068-263	L	61	Sherbert	G99-051-110	W	76
Bright Spark	Y83-168-082	P	34	Shooting Star	G99-165-091	M	76
Bubblegum	V85-017-289	W	34	Sing Song	Y91-055-064	W	84
Butterfly	G92-140-093	L	80	Smiles	G94-108-095	P	41
Chairs	R46-121-022	U	15	Snap	B70-088-235	W	84
Candy Floss	R44-148-034	R	14	So Cool	Y94-028-083	W	85
Chaos	V34-085-300	D	8	Soft Whisper	M69-066-078	SA	39
Clothing Around	G46-082-190	D	15	Solid Gold	R84-042-243	W	65
Cowabunga!	R50-141-025	R	19	Splat	B48-102-250	D	17
Crash Hot	V84-080-301	P	33	Splash Splash	R62-098-238	L	31
Dancing Girl	G76-163-118	Y	50	Sports Star	B77-030-264	W	52
Disco Lizzy	B91-019-237	W	79	Squirt	M67-062-236	SA	21
Dreamer	M48-073-286	SA	16	Sugar And Spice	R53-084-264	SA	18
Fairground	V87-030-296	W	69	Super Dupet	M49-055-264	SA	18
Fairylight	V53-093-293	L	21	Super Sonic	R46-093-269	M	15
Ferris Wheel	Y84-198-087	Y	64	Superhero	B29-058-284	U	6
Fitz	V83-035-265	W	52	Surf Up	Y88-064-085	P	71
Flower Power	Y71-180-072	Y	52	Sweet Dreams	B89-022-268	W	74
France	V41-091-332	MG	17	Three Wishes	G70-153-114	Y	28
Fun Fair	R49-160-036	S	18	Tickled Pink	R45-092-001	MG	41
Get Reddy	V42-081-321	U	12	Top Secret	G70-153-114	Y	28
Giggly	M49-100-022	SA	18	Topsy Turvy	R37-091-284	D	9
Gitterbug	M73-080-131	SA	45	Traffic Light	O61-153-051	Y	28
Go Go Go	G44-089-153	Y	14	Tutti Frutti	G82-077-130	P	60
Gobstopper	V44-095-303	M	14	Twentyfourseven	Y87-145-086	M	44
Grass Stain cc	O69-171-062	Y	41	Unicorn	V72-063-292	W	70
Hi Jinx	V67-072-354	Y	36	Unicom	B49-093-279	D	11
Hopkotch	V42-096-285	M	13	Unicom	B49-093-279	D	11
Jack In The Box	R50-124-038	Y	18	Unicom	B49-093-279	D	11
Kachow	M55-122-138	Y	23	Unicom	B49-093-279	D	11
Kermie	G82-173-113	Y	60	Unicom	B49-093-279	D	11
Lucky Dip	G91-067-117	W	79	Unicom	B49-093-279	D	11
Magic Carpet	B72-064-275	W	43	Unicom	B49-093-279	D	11
Neva	G80-187-101	Y	58	Unicom	B49-093-279	D	11

\* HD order only  
**COLOUR MATCH**  
 D = Deep    G = Green    L = Light    M = Mid  
 MG = Magnets    O = Olive    P = Pantal    R = Red  
 SA = Silver aluminium    U = Ultra deep    W = White    Y = Yellow 2  
 CC = Also available as a Cool Colour

Note 1: The approximate light reflectance value (LRV) of a colour indicates the amount of visible light that a colour will reflect. Black has a light reflectance value of 0% and absorbs all light. The surface of a colour will reflect. Black has a light reflectance value of 100% and consequently very dark and cool grey has a low LRV. In contrast, white has a light reflectance value of 100% and consequently very light and cool grey has a high LRV. In other words, the darker the colour, the less light it reflects. Resene Cool Colours have the same LRV as standard colours but are formulated to reflect the sun's energy and have better heat and total solar reflectance (TSR) properties. They reflect the same visible light as a standard colour but reflect significantly more heat, keeping the coating, substrate and building cooler.

Note 2: Mid to dark colours are not suitable for some exterior substrates and if used may cause damage to the substrate, such as cracking, checking and premature failure. Always check with the substrate supplier to determine any work to ensure colour is suitable for the substrate. Resene also manufactures Resene Cool Colour Resinology and this may increase the colour range that can be suitable over some heat sensitive substrates - like Resene's Ultra Deep.

Note 3: Some listed colours are subject to change if colours are reformulated.

Note 4: Colours may be available in selected products or some only. Check with Resene ColourShop or Resene staff to ensure your preferred colour is available in the product and/or size you require.

Note 5: This colour chart is finished with Resene SpaceCoat Low Sheen waterborne enamel, a product ideally suited to kitchens, bathrooms, broadwall areas and trim and joinery inside and out. Metallic chips are included in Resene Emerald Metallic.



Resene Bubblegum  
approx LRV 34%

Resene Lickety Split  
approx LRV 60%

Resene Rocket  
approx LRV 12%



the paint the professionals use



## Learn more about colour with the Resene Everywhere colour series. Modules include:

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Dotted colour  
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Illusion and tricks with colour  
Making colour - Dye  
Mixing colour  
Reflecting colour  
Safety colour  
Seeing colour - Animals  
Seeing colour - Humans

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