LRV Guidelines

Stair Edgings

Colour & Contrast / Light Reflectance Values

Colour and contrast within the built environment affects accessibility of all building users, in particular those with a visual impairment.

Project Rainbow

A research project carried out by Reading University in conjunction with the Royal National Institute of Blind People (RNIB), The Guide Dogs for the Blind Association (GDBA) and ICI Paints first examined the use of colour contrast to aid navigation around the building and identified that highlighting critical surfaces and special features can provide the basis for wayfinding for visually impaired people.

The 'Colour Contrast & Perception' document produced by Reading University uses light reflectance values (LRVs) to measure colour and contrast in products/surfaces and determines whether or not a suitable contrast has been achieved between surfaces.

The findings from Project Rainbow identified the following:

Special Features

Identified as areas that need to be highlighted to allow a building to be used effectively by visually impaired people, i.e. stair edgings, handrails and door opening furniture.

'Special features are additional areas, smaller than critical features, that need to be highlighted to allow the building to be used more easily by visually impaired people. Such features include sanitary ware, handrails, door handles, finger plates, switches, socket outlets, and stair nosings etc, all of which should be contrasted against the background against which they will be seen. Smaller items such as these will need a greater colour difference from their surroundings in order to be identified.'

✗ **Critical surface:**
Patterned carpet and no stair edgings - staircase looks like a ramp

✓ **Special features:**
Stair edgings are a different colour and luminance to the flooring to define step edges

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BS 8300-2:2018 and The Building Regulations 2010: Approved Document M

British Standard BS 8300-2:2018 states that light reflectance values (LRVs) are used to assess visual contrast using the method of measurement detailed in BS 8493:2008+A1:2010. Approved Documents M (ADM) & K (ADK) directly refers to colour and contrast in the definitions section, stating:

'Contrast visually, when used to indicate the visual perception of one element of the building, or fitting within the building, against another means that the difference in light reflectance value between the two surfaces is greater than 30 points.'

ADM then refers to Colour, Contrast & Perception - Design Guidance for Internal Built Environments, Reading University (Project Rainbow).

Light Reflectance Values (LRVs) explained

Reflectance is the proportion of light that a surface reflects compared to the amount of light that falls on the surface. An LRV is a value given to a surface to denote the amount of light reflected. Therefore, as many people with a visual impairment can perceive light and dark, LRVs are a suitable method to measure contrast.

LRVs are marked on a scale of 1 to 100 depending on the percentage of light reflected. Dark, matt and/or textured surfaces absorb a large amount of light and, therefore, have low reflectance values. On the other hand, light, glossy and/or smooth surfaces reflect the majority of light that falls on them and have high reflectance values.

Light Reflectance Scale

In order to achieve a suitable contrast between different surfaces, Project Rainbow and ADM recommend that there is at least a 30 point (not 30%) difference in the LRVs of the two surfaces.

Black 0 White 100

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30 Points

There should be at least 30 points of light reflectance value LRV between the stair edging and the surrounding floorcovering on the tread and the riser.

How to Measure LRVs

The British Standard BS 8493:2008+A1:2010 specifies the method of test to determine the light reflectance value (LRV) of different surfaces of materials, including preparation of specimens in standardised conditions and results put into a test report.

All relevant Gradus products have been measured using the CIE Y value and a test report is available upon request.

Previous to this standard being published, two widely used methods of measurement had been used - the CIE L value (fluorescent light) and the CIE Y value (natural daylight), causing confusion and potentially dangerous specifications.

This standard has adopted the CIE Y value as the single consistent method of measurement for LRVs that is to be used across all industries.

What the colour & contrast guidelines mean for Gradus flooring accessories:

Stair Edgings

BS 8300-2:2018:

'Each step nosing should incorporate a durable permanently contrasting continuous material for the full width of the stair on both the tread and the riser to help people who are blind or partially sighted appreciate the extent of the stair and identify individual treads. The contrasting material should extend 50mm to 65mm in width from the front edge of the tread and 30mm to 55mm from the top of the riser, and should contrast visually with the remainder of the tread and riser.'

ADM:

All nosings are made apparent by means of a permanently contrasting material 55mm wide on both the tread and the riser.'

Colour, Contrast & Perception (Project Rainbow):

'The nosing of every step in a flight of stairs should be adequately colour or luminance contrasted with the remainder of the step and the floor coverings adjacent to the top and bottom of the flight.

Skirtings

BS 8300-2:2018:

'To avoid giving the wrong impression about the size of a room, skirtings should have the same LRV as the wall so that the junction between the skirting and the floor marks the extent of the room.'

Colour, Contrast & Perception (Project Rainbow):

'Skirting should be either decorated the same colour as the wall, the same colour as the floor or, if different to one or the other or both, must be decorated in a colour which highlights even further the junction.

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dsdc
Dementia Design
Accredited Product

A guide to inclusive design for independent living

People with dementia may see the world differently. What may look 'normal' to us could potentially disorientate a person living with dementia, causing distress or even injury. As a result, the buildings we create must be designed with a deep understanding of the ways in which those with dementia will experience them – from the types of materials used to the interplay of different colours and tones. Furthermore, designing to support people living with dementia is also supportive of an ageing population, which has never been more important.

Why is designing for independent living important

The ONS in 2018 highlighted that the UK has an aging population.

Age UK estimate that:

- There are currently 12 million people aged 65 and over
- 5.5 million aged 75+
- 1.6 million aged 85+
- By 2030 it is anticipated that over 21% of the population will be over 65

The number of years of life expected to be spent without a disability or in good health is commonly referred to as disability-free life expectancy or healthy life expectancy (ONS, 2018). The likelihood of being disabled and / or experiencing multiple chronic and complex health conditions increases with age (ONS, 2018).

In general, a person living with dementia tends to be older - age is the biggest risk factor for developing a disease that causes dementia. It is important therefore that designers consider the needs of the older generation and start to plan and design for independent living for today, tomorrow and the future.

We teamed up with the Dementia Services Development Centre (DSDC) at the University of Stirling, an international organisation with more than 30 years' experience in improving the lives of people with dementia through the development of research-led design principles.

As a result of this work, the DSDC has certified an extensive range of our products as suitable for use in buildings used by people living with dementia.

Scan the QR code to see all Gradus DSDC accredited references

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