

In addition to the practical performance of the luminaire, consideration must be given to its appearance. This can range from the totally discreet, such as a fully recessed, low brightness downlighter, to a highly decorative chandelier. The choice of luminaire style and degree of design expression will be strongly influenced by architectural and interior design considerations. Skill and care are required in the selection or specification of luminaires that satisfy aesthetic criteria whilst performing efficiently and safely.

3.6.3 Illuminance ratio charts

Illuminance ratio (IR) charts were published in CIBSE (IES) *TR15*. They enable the designer to examine the effects of room index, surface reflectances, luminaire direct ratio (DR) and flux fraction ratio (FFR) upon illuminance ratios and the directional aspects of lighting.

They were presented in pairs for different combinations of ceiling, wall and floor reflectance and for different room indices. The reflectances are given the symbols L, M and D, to signify light, medium and dark reflectances, respectively (see Table 3.2).

Table 3.2 Reflectances for room surfaces

	L	M	D
Ceiling cavity	0.70	0.50	0.30
Walls	0.50	0.30	0.10
Floor cavity	0.30	0.20	0.10

Figure 3.9 shows a typical pair of charts. The charts are identical for each room index except for the loci plotted on them. In each case the horizontal axis represents the DR of the installation and the vertical axis is the FFR fraction ratio (FFR) of the installation. Luminaires can therefore be plotted onto the charts according to their FFR and DR. The DR is calculated from the distribution factor, for the working plane or floor (DF_F), of the luminaire for an appropriate room index (RI) and the downward light output ratio (DLOR) of the luminaire.

$$DR = \frac{DF_F}{DLOR}$$

The value of DF_F is the same as the utilisation factor (UF) of the chosen luminaire at zero reflectance. Loci of constant illuminance ratio are plotted on the left-hand chart and loci of constant average vector/scalar ratio are plotted on the right-hand chart (Illuminance vector, and Scalar illuminance – see CD).

The charts may be used in two ways. Luminaires can be plotted onto the charts to determine the illuminance ratios and average vector/scalar ratios that will be achieved by a regular array of such luminaires. Alternatively, at the general planning stage, the charts may be used to identify the range of reflectances and luminaires that can achieve the desired conditions. The range of acceptable luminaires can be identified by DR and FFR. The process of selection will be aided if the