Luminaires

Luminaires, commonly called "lighting fixtures" or "fittings," hold one or more lamps and usually house the ballasts that operate fluorescent or high-intensity discharge lamps. When choosing luminaires for a lighting design, the most important feature is the luminaire's capacity to direct and distribute light to particular areas or objects. The style of the luminaire is an aesthetic consideration that of course is critical to the overall interior design of the home. The types of luminaires described in this chapter are available in many styles. Popular styles change with time, context, and the resident's taste; style is not discussed because this book focuses on generic and functional aspects of lighting. Luminaires are grouped by mounting type and location: Ceiling-Mounted, Suspended, Recessed, Architectural, Wall-Mounted, Furniture- or Cabinet-Integrated, Plug-In, and Exterior. Each mounting type is further grouped into two or more generic types of luminaires utilizing that mounting type. For any type of luminaire, read the introduction to the mounting type as well as the description of the luminaire. Luminaire descriptions include:

Techniques: Certain types of luminaires are best suited for each lighting technique. Consult the Techniques chapter for more details.

Price: Some typical price ranges for luminaires are listed in Table 6 of the Economics chapter; however, the price of luminaires varies widely, and depends on the cost of the materials used to construct the luminaire, the quality of construction, and the style. Both residential- and commercial-grade products are available; commercial-grade products will cost more, but will be made of higher-quality materials. Also, price varies greatly with both the number of luminaires purchased in one order and the source from which they are purchased. Durability of materials and quality of construction are important to consider for luminaires that receive frequent use in the home. Check the quality of any moving parts, such as switches, hinges, and springs. Make sure that any finishes, such as paint, reflective surfaces, and fabrics, will withstand wear and cleaning. For long-term use and for energy savings, consider the purchase of a luminaire as an investment in an appliance, rather than the purchase of a decorative item. Remember that most decorative items do not consume energy, but luminaires and the lamps within them do!

Where to buy: Luminaires can be purchased through retail or wholesale businesses. Purchase common luminaires at hardware, building supply, and discount department stores. For a larger variety, look in lighting stores or mail-order catalogs. For more-specialized luminaires, or luminaires most commonly found in commercial applications, contact electrical suppliers. Due to local variations in price, consumers and contractors should check several sources before buying a luminaire.

Luminaire characteristics are listed as follows:

Energy and Lamps

Lamps consume most of the energy that is used by luminaires; some energy is consumed by ballasts and transformers. Select the most efficacious lamp for the particular lighting need. Select fluorescent lamps with 2700 to 3000 K color temperature for best compatibility with incandescent lamps. Use rare-earth phosphor fluorescent lamps where good color is important. Consult the Lamps chapter for more details.

The efficiency of a luminaire indicates what percentage of the light that is emitted from the lamps actually leaves the luminaire. In an inefficient luminaire, lighting energy is wasted because the light is absorbed by the
luminaire or is emitted into the ceiling cavity, or plenum. An efficient luminaire directs most of the light emitted by the lamp out of the luminaire, so it is very important to choose a lamp that is compatible with the luminaire. For example, the efficiency of a downlight luminaire designed for the optics of an incandescent lamp may be significantly decreased if a compact fluorescent lamp is used in place of the incandescent lamp. To maintain luminaire efficiency, globes, diffusers, reflectors, or shades require periodic cleaning because dust and insects can accumulate in or on them.

**Installation**

Locating a luminaire appropriately saves energy because light is directed only where it is needed. Also, proper location helps to achieve the technique(s) intended in the lighting design. See the Designs and Techniques chapters for examples of proper location of luminaires. Except for plug-in luminaires, installation usually involves wiring a luminaire to one or more controls and mounting the luminaire in or on a wall or ceiling. The room's structure and function must be considered before laying out the location of the luminaires.

**Controls**

The electricity that is supplied to the lamps and ballast in a luminaire must be controlled to permit switching on and off, and in some cases, dimming. Use dimming controls, especially for luminaires that contain incandescent lamps. Controls options include switches, dimmers, and automatic controls; consult the Controls chapter for more details.

The location of a control relative to the luminaire should be part of the lighting design. They should be logically related for the resident, so that the resident has easy access to the control, and can switch on the luminaires that are needed for particular activities. Easy access to controls also facilitates the energy-efficient behavior of switching lamps off when they are not needed. Locate switches near doorways, and consider three-way switches for rooms with more than one entrance.

**Cautions**

Some cautions must be noted for luminaires, particularly for safety and for compatibility with lamps and controls. Always read the manufacturer's instructions concerning installation and maximum lamp wattage.

**For more information refer to**

**Techniques:** Many luminaires can be used to achieve several of the techniques described in the Techniques chapter. Refer to the listed techniques for more information.

**Lamps:** Many luminaires can accommodate different types of lamps. Use the list of lamps as a general guide, and consult the manufacturer's information for the specific lamp types that a particular luminaire can accommodate. Refer to the Lamps chapter for more information about specific lamp types.

**Designs:** Most luminaire types are used in several of the designs in this book. Refer to the listed designs in the Designs chapter to see applications of the particular luminaire type.

**Other Luminaires:** If the luminaire described does not seem to be appropriate for a particular need or design, consider one of the other types in this chapter.