

Undercabinet Lighting Is Better Than Ever



Fluorescent
With modest improvement in color rendering, 5/8-in.-dia. T5 tubes remain an economical undercabinet option.



Halogen
A reputation for burning hot and having a relatively short life compared to other lamps cost halogens their popularity.



Xenon
Low-voltage xenon lamps offer warm (not hot) operation, last about 10,000 hours, and provide adequate light at a moderate price.



LED
Forget that blinding blue light. Today's long-lasting LEDs offer variable color temperatures and are vastly more efficient than incandescents.

LEDs set a high bar for kitchen-workspace illumination

BY DEBRA JUDGE SILBER

There may be no place where advances in home lighting are more apparent than under kitchen cabinets. White-hot halogens and temperamental fluorescents are making way for a new crop of LEDs that are not just super-efficient—they're as aesthetically pleasing as the long-dominant incandescent. "Undercabinet lighting is one of the areas where LED is really ideal," says Joe Rey-Barreau, an architect and spokesman for the American Lighting Association who teaches at the University of Kentucky's College of Design. "There's nothing else I would even vaguely recommend." Improvements in color rendering, color temperature, and longevity are behind LEDs' seemingly universal acceptance by lighting designers. Their energy efficiency is remarkable, and they provide more lumens per

Color temperature

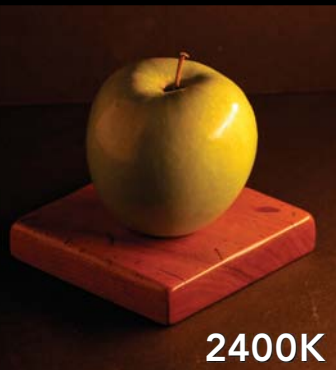
How we see food—and everything else



5000K

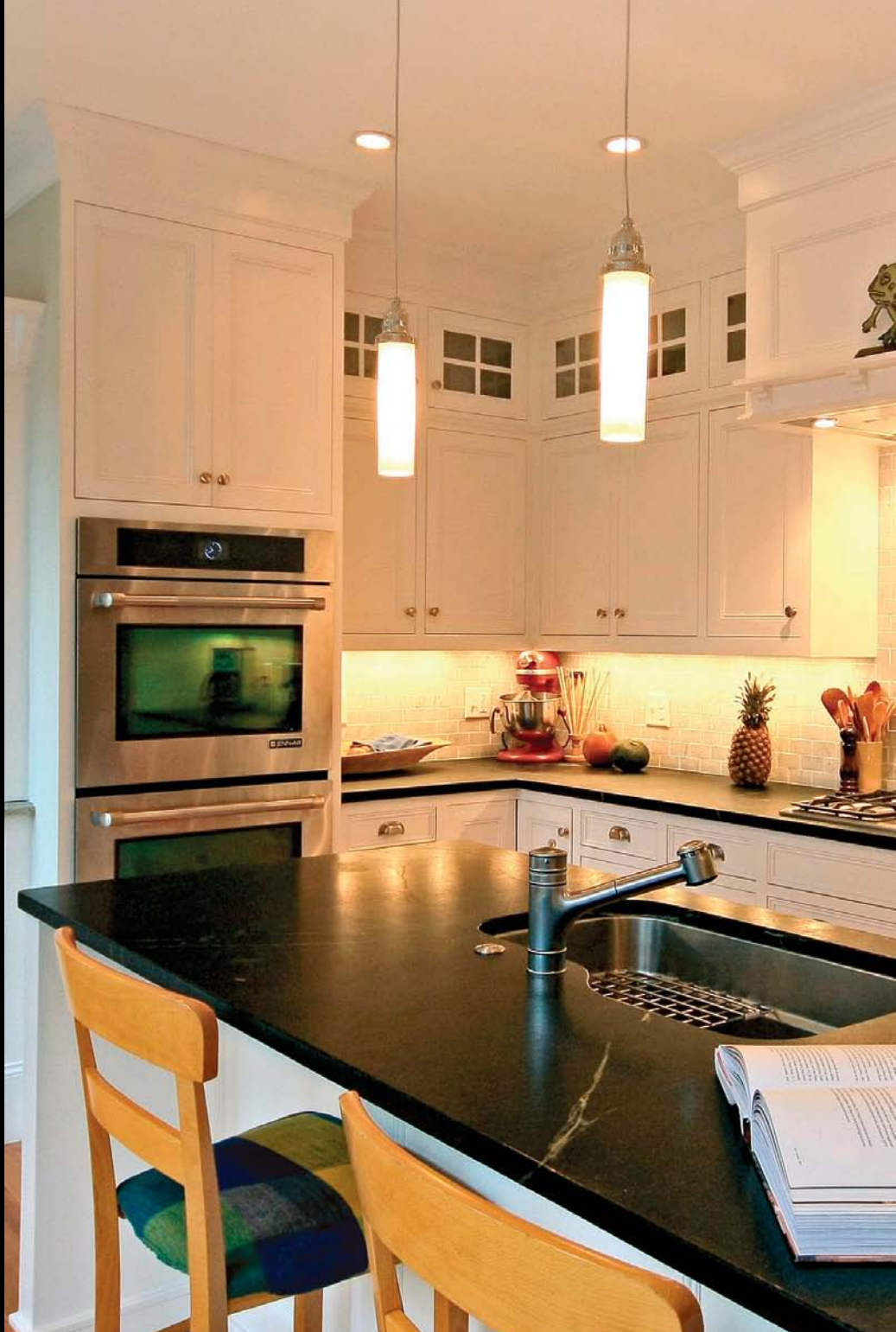


3000K



2400K

Whether your chicken soup appears golden yellow or simply pale may be a reflection of your cooking skills—or it may depend on the light source you're viewing it under. Old-school fluorescents—and more recently, inexpensive LEDs—had a reputation for casting an unflattering light on people and some foods because of their high (5000K) color temperature. This has all changed with the new generation of lamps, which offer a wide range of color temperatures. The difference can be seen in these apples photographed under LED lights of different color temperatures. While cool, crisp light enhances the green of the apple, warmer light brightens the wooden base.



watt than incandescent bulbs (or lamps, as they're called in the industry). Their life of 50,000 or more hours makes lamp replacement obsolete. Instead, in the case of many LED products, the presumption is that the fixture itself will be replaced after 15 to 20 years with a better and presumably less expensive version.

For all their benefits, high-quality LEDs remain expensive, in part due to the phosphor coatings used to enhance the quality of

their light. Until that changes, alternatives such as xenon, halogen, and even fluorescent lamps will continue to be used in undercabinet fixtures.

This emphasis on the light source has overshadowed what used to be the decision in choosing undercabinet lighting: the fixture. Still, this choice remains important. Different types of fixtures not only install differently, but they cast light differently and create different architectural effects. This combination

of light source and fixture has complicated the undercabinet-lighting decision.

Remember what it's there for

Make no mistake when specifying undercabinet fixtures: The primary reason to have light shining on your countertop is to aid in food preparation. In the practice known as light layering—that is, illuminating a space using different types of light with different functions—this is called task lighting.



Warm light in a white kitchen. Architect Eric Gjerde from Essex, Mass., chose LED lighting with a color temperature of 3200K for this kitchen remodel.

the lamps you choose will determine whether your undercabinet lighting evokes a warm, traditional feel or a bright, modern one. Color temperature also impacts how food appears—worth remembering if you use your countertop for an impromptu buffet.

Color temperature is measured in kelvins (K). Residential lamps typically have a color temperature that ranges from about 2700K (the light cast from an old-fashioned incandescent) to 5000K (the color of daylight). The higher the color temperature, the harsher and “colder” the light. In North America, where incandescent lighting has been the rule, designers tend to recommend warmer temperatures, edging a bit higher for contemporary kitchens. “The color of the light should match the color of the environment,” says Dross, who recommends 2700K lamps for wood-tone kitchens and 3000K for white or steel kitchens.

One reason the new LEDs have taken undercabinet culture by storm is that manufacturers have discovered how to tame the cold, blue light of the LED with phosphor coatings that cast a warm, pleasant light. San Francisco-based lighting designer Randall Whitehead especially likes new LEDs that allow homeowners a range of temperatures. “This allows you to have a cooler color to show off your modern kitchen and a warmer color to show off your buffet,” he says.

Color temperatures for halogens and xenons hover around 3000K. While large fluorescents are available in many color temperatures, Rey-Barreau points out that the smaller T5 tubes used in undercabinet fixtures haven’t quite got the range. “For undercabinet lighting, it’s hard to get fluorescent bulbs that have good color,” he says.

In addition to temperature, you should look for a high color-rendering index (CRI) for your undercabinet lighting. CRI represents how well light interprets color and is rated on a scale of 0 to 100, with 100 being the best. Undercabinet lighting should have a minimum CRI of 85; for LEDs, Whitehead recommends 90. In general, the higher the CRI, the more expensive the lamp. If you

Because undercabinet lighting often plays a secondary role in accenting a backsplash or providing subtle illumination after hours (especially when dimmed), it’s often regarded as accent lighting. This misconception can lead to choosing undercabinet lighting that does not provide enough illumination for countertop work.

With that understanding, the next step is to consider how the kitchen is used and who its occupants are. Jeffrey R. Dross, director

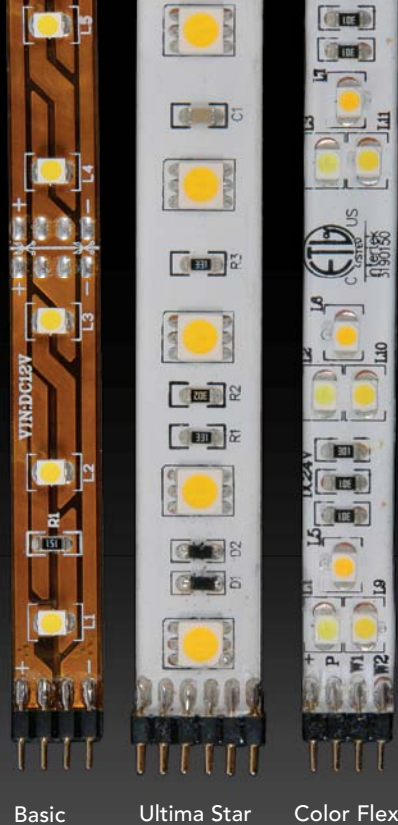
for education and industry trends at Kichler Lighting, points out that older occupants want more illumination in the task area, as do avid cooks. “If you do a lot of home cooking, you’re going to want more light than someone who uses the countertop to look at the Yellow Pages for carryout,” he says.

Color temperature matters

Other factors to consider are the surfaces and style of the kitchen. The color temperature of

WHAT'S GOING UNDER CABINETS NOW

With improvements in both lamps and the fixtures that house them, there have never been more choices in undercabinet lighting. Here are some popular options.



Basic Ultima Star Color Flex

LED tape: Output is everything

LED tapes are all the rage, but most are better as accent lighting—under toe kicks or coves—than undercabinet task lights. Some manufacturers, however, have introduced high-output tapes that provide satisfactory undercabinet light. These include Maxim Lighting's Ultima Star 24v (center left) with an output of 254 lumens per ft., more than twice the 77-lumen output of its Basic tape (far left). Both have a set color temperature of 3500K. The Color Flex tape (near left) ups the ante with a color temperature that adjusts from 2900K to 5000K. The key to getting a good LED tape is to test the product at a reputable lighting showroom that deals with established manufacturers. Complaints include adhesive failure and finicky connections, particularly among the many low-quality imports on the market.

Pucks: Improving a spotty reputation

Once-standard halogen and xenon puck lights are rapidly being pushed aside by LED versions, which not only are highly energy efficient but run much cooler. (Halogen pucks have been known to melt items stored in cabinets above them.) Some are so thin they're barely noticeable even under flat-bottomed European-style cabinets, such as Kichler's LED disk (left). DASAL Lighting's puck (far left), challenges the warm cast of incandescents with a color temperature of 2700K. Regardless of lamping, pucks, disks, and buttons intended for undercabinet tasks should be weighed carefully with regard to beam spread and intensity to ensure sufficient illumination on the countertop. While some designers like the rhythmic pattern pucks produce under a cabinet, others dislike the spots of light or feel they interfere with functionality.



can't find the CRI listed in the product literature of a lamp, don't buy it, Dross says.

The right light in the right place

The best task lighting puts light where you need it. Experts recommend placing undercabinet light sources toward the front of the cabinet, where they can illuminate the section of countertop where most prep work takes place. They shy away from direct-wire fixtures, which, because they tap directly into 120v stub-outs beneath the cabinets, are mounted against the backsplash. (Some manufacturers make up for this by aiming

the lamps forward, a situation that can leave the backsplash in shadow.) Though wired to a direct current, many direct-wire products have a built-in transformer allowing the use of brighter, longer-life 12v or 24v halogen or xenon lamps. On the plus side, direct-wire fixtures are generally inexpensive, and their installation is familiar to most electricians.

The better choice, designers say, is modular low-voltage fixtures that can be mounted in a forward position and linked together to create a continuous line of light across the worksurface. Typically more expensive than direct-wire options, they also require

more planning to determine what type of transformer will be used and where it will be mounted. One light per cabinet is typically recommended to ensure adequate illumination across the countertop.

An opaque lens guards against one of the major crimes of undercabinet lights, particularly LEDs: the annoying dots of light and multiple shadows produced by multiple light sources. "A lot of LED products have a clear or stippled lens," observes Whitehead. "On a shiny countertop, you'll see the individual diodes. You want to make sure it has a frosted lens to diffuse the light."

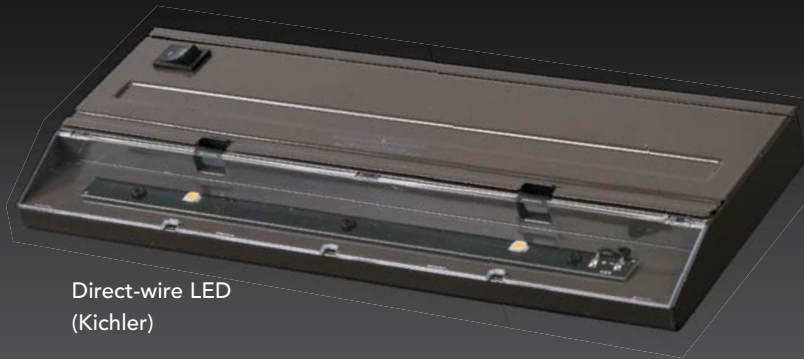
Low-voltage modular: Choose your location and your lamp

Low-voltage modular lighting is the undercabinet choice for many designers because fixtures can be mounted toward the front of the cabinets, where they deliver the most light. Modular LED units can be exceptionally slim but costly, which has allowed modulars outfitted with incandescent (typically xenon) lamps to remain popular. The 12v, 18w xenon lamps used in the Kichler model at right have a color temperature of 2700K and a CRI of 100, but their efficacy of 6 lumens per watt can't match the 41 lumens per watt of their LED counterpart (far right).



Modular
xenon (Kichler)

Modular
LED (Kichler)



Direct-wire LED
(Kichler)

Direct-wire LED: Better light in an imperfect place

Lighting designers typically caution against direct-wire undercabinet fixtures, because by necessity they're mounted against the backsplash—not near the cabinet front where their light is needed. But if the electrician has already stubbed out a line under each cabinet, or if you're hoping to upgrade the fluorescents you've had for years, direct-wire LED units may be the answer. A built-in driver steps down the current to power the LED chips.

Remote-phosphor lens LEDs: Better yet



If LEDs have one remaining drawback, it's this: It takes multiple LEDs to light a countertop, and those tiny multiple points of light create annoying multiple shadows on the workspace (left). That's been eliminated in LED fixtures where the yellow phosphor coating required to create white light from blue LEDs is applied to the lens rather than the individual chips. Commanding the category is Tech Lighting's Unilume line, which includes both modular and light-bar type fixtures (right).



Unilume
LED (Tech
Lighting)

Puck or disk lighting is a mixed bag. Disks can create dramatic dots of light on a backsplash—but that's not ideal if the goal is useful task lighting. Halogen pucks in particular are notorious for damaging foodstuffs stored above them with their intense heat. New LED versions eliminate that concern, and some offer a much thinner profile, not to mention longer life and more efficient operation.

For all their hype, LED tapes present challenges in undercabinet applications because the light they provide is often not bright enough. Some manufacturers offer LED tapes in several intensities, including super-

bright tapes that provide just enough power for adequate task lighting. Carefully chosen, these can work in applications where intensity is not a concern. Another option is to double up the tape for more light, but that means doubling the cost as well.

Trading up is part of the process

An important truth about LED tapes and most LED fixtures is that when the diodes die out, the entire unit, not the individual chips, will need to be replaced. This is a fundamental shift in lighting that few professionals and even fewer consumers have

managed to get their heads around, says Rey-Barreau. Add to that the expense of LED lights and the rapid pace at which LED technology is progressing, and the potential for buyer's remorse becomes staggering.

Still, Rey-Barreau is upbeat. "The nice thing is that they have gotten to the point where the quality of the product and the efficacy is so good that even the thing you're stuck with is not bad," he says. "And 10 years from now, you'll replace it with a better product at a better price." □

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