



A Guide to Sustainable Lighting Solutions

GENERAL LIGHTING



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A photograph of a lush forest. The scene is dominated by tall, slender trees with textured bark, some of which are covered in moss. The forest floor is a dense carpet of vibrant green ferns and other undergrowth. Sunlight filters through the canopy, creating a dappled light effect. The overall atmosphere is serene and natural.

Let's leave a
greener footprint.

Sustainability — meeting our needs today without compromising the resources future generations will need — touches everything we do as a company. It's all about reducing environmental impact, a commitment that goes beyond our products to include how the products are manufactured, how they are used and how they are distributed and disposed. It even extends to the design of "greener" buildings.

Sustainability is everybody's business.

When we can do more with less, everyone wins. Businesses need to find ways to grow without adding to our environmental footprint — and the good news is, we're making steady progress. Advanced technologies are helping us to be more efficient. We're using less energy and fewer resources, and generating less waste.

At a personal, corporate or national level, lighting plays an important role in any sustainability strategy. Whether you're interested in lowering your energy consumption, avoiding unnecessary maintenance, identifying options for lamp and ballast recycling, or finding products with fewer hazardous materials, OSRAM SYLVANIA can help.



Global Care:

Global Care represents our commitment to corporate responsibility. This initiative is designed to drive positive results to the triple bottom line addressing social, economic and environmental needs. Furthermore, we are dedicated to meeting our customers' lighting needs with a sustainable approach to product design, development, manufacturing and distribution.

We integrate environmental responsibility into every area of our company. As a result, we are using fewer natural resources, saving energy for our customers, reducing power plant emissions, and recycling lamps and other materials to avoid millions of pounds of waste in landfills.



Lighting the Way to a Greener



one

It all starts with **energy efficiency.**

According to the U.S. Department of Energy, we consume about one-quarter of our electricity for lighting, at a cost of more than \$37 billion annually. Lighting accounts for the single largest portion of electric bills for commercial users, as much as 30% — and it can be a prime opportunity for reducing energy costs.

Advances in lighting technology have improved the energy efficiency of lighting by 30-60%, improvements that reduce environmental impacts while increasing the bottom line. Energy-efficient lighting requires less energy, which lowers electricity demand. With less demand, power plants burn less fossil fuel, reducing emissions of mercury and other air pollutants. So everybody profits.

Energy-efficient systems

An important direction in lighting technology is the move toward systems. OSRAM SYLVANIA started the trend with THE SYSTEM SOLUTION®, a family of optimally balanced

energy-saving lamps and electronic ballast combinations. By bringing lamp and ballast development under an integrated system concept, we have been able to design innovative SYLVANIA lighting systems that optimize energy savings without sacrificing other elements of performance.

OSRAM SYLVANIA has the competitive advantage, with years of experience in designing, developing and supporting integrated systems — both in ballasts and lamps. Our global network of design and manufacturing brings ballast and lamp knowledge together to produce innovative, cost-effective, energy saving systems.

Saving energy, saving money

Energy costs represent your biggest and best opportunity for savings. Even seemingly minor energy efficiency improvements can have a major positive impact on operating expenses — long-term savings that can quickly repay the minimal capital investment.

Future.

For example, here are some things you can do right now:

- Upgrade to SYLVANIA Energy Saving lighting products to significantly reduce total energy usage and operating costs.
- Replace traditional T12 fluorescent systems with SYLVANIA OCTRON® T8 fluorescent lamps and SYLVANIA QUICK-TRONIC® electronic ballasts for up to 50% energy savings.* You'll also get the added assurance of QUICK 60+®, the industry's first and most comprehensive lighting system warranty.
- Implement a lighting maintenance and retrofit strategy to maintain safety, security, aesthetics and productivity, as well as to reduce labor costs. Our own SYLVANIA Lighting Services can help.
- Install dimmers and lighting control systems to save additional energy and add lighting design flexibility.

OCTRON T8 fluorescent lamps—savings the world can live with

In 1981, OSRAM SYLVANIA invented the OCTRON T8 fluorescent lamp, ushering in a new era of energy efficiency in lighting. Since we introduced the SYLVANIA OCTRON family, we've saved our customers more than \$27 billion in electricity costs*. We've avoided 4 tons of airborne mercury discharged from power plants**, and saved enough electricity to run the Las Vegas Strip for 156 years!

Rebates and tax benefits

As a way to reduce overall electricity demand, many utilities offer rebates to commercial customers who upgrade the efficiency of their lighting systems. Check with your local utility or ESCO to learn more about these additional savings opportunities. In addition, the Federal Energy Policy Act of 2005 (EPA 2005) offers tax benefits for energy-efficiency upgrades in commercial buildings undertaken in 2006 and 2007. (For more information, please visit www.sylvania.com/EPACT)

* Based on \$.10/kWh

** U.S. Department of Energy emissions conversion calculations

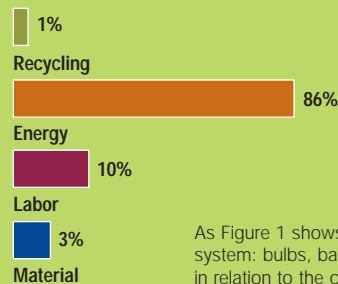
The Cost of Light

Where does the cost of the average lighting system come from?

- Materials — the initial investment in fixtures, lamps, wires and ballasts
- Labor — the cost to install the lighting and maintain it day-to-day
- Electricity — the energy consumed to illuminate the lamps
- Recycling — removing and disposing of spent lamps in a way that does not negatively impact the environment

Figure 1

Cost of Maintaining the Average Lighting System



As Figure 1 shows, the material cost of a lighting system: bulbs, ballasts and wiring, is small in relation to the cost of the energy to light it.












Energy Saver Certification



The SYLVANIA Energy Saver Certification program is part of our commitment to develop and promote high quality, energy-efficient products. Participants receive recognition for using efficient SYLVANIA lamps or systems to conserve energy and reduce energy costs.

Upgrade to SYLVANIA Energy Saving lighting products to significantly reduce total energy usage and operating costs.

Figure 2

Lighting Type	Potential Energy Savings*	Lighting Type	Potential Energy Savings*
High Intensity Discharge (HID) Opportunities		Fluorescent Opportunities	
 <p>Upgrade from a magnetic HID ballast to a QUICKTRONIC® electronic HID ballast</p>	Up to 15%	 <p>Retrofit magnetically ballasted T12 fixtures with QUICKTRONIC electronic ballasts and OCTRON® T8 lamps</p>	Up to 30-45%
 <p>Use METALARC® PULSE START or METALARC Ceramic lamps instead of probe start lamps</p>	Up to 36%	 <p>Upgrade from electronically ballasted OCTRON 700 series T8s to electronically ballasted OCTRON FO30, FO28 or FO25 SUPERSAVER® T8s</p>	Up to 12%
Incandescent and Halogen Opportunities		 <p>Upgrade from standard IS electronic ballasts to QUICKTRONIC QHE (High Efficiency) IS electronic ballasts</p>	Up to 6%
 <p>Convert all standard incandescent lamps to CAPSYLITE® Halogen or DULUX® EL Compact Fluorescent Lamps (CFLs)</p>	Up to 75%	 <p>Where feasible, higher BF (e.g., 1.2 BF) electronic ballasts with high lumen lamps (e.g., OCTRON FO32W XP) can reduce number of lamps needed</p>	E.g., use 2 vs. 3 T8 lamps for 10% energy savings
 <p>Change to a fixture using pin-based DULUX compact fluorescent systems such as DULUX T/E 26W with a QUICKTRONIC CF universal ballast</p>	Up to 75%	 <p>Substitute with PENTRON® T5 HO or OCTRON T8 for hi-bay installations, taking advantage of electronic ballasts with lamp switching capability and suitable occupancy sensors</p>	Varies
 <p>Substitute with METALARC POWERBALL® for track or recessed-can applications operating on QUICKTRONIC HID electronic ballasts for optimal HID performance</p>	Up to 75%	 <p>Use DULUX L 28 Watt SUPERSAVER lamps operating on QUICKTRONIC DL40 ballasts to replace standard FT40DL lamps operating on IS ballasts</p>	Up to 14%

* Individual results may vary

two

Lower maintenance, lower environmental impact.

Combining energy-efficient lamps with efficient electronic ballasts not only reduces the amount of overall energy consumed, but can also reduce the number of lamps needed for a particular application. Reducing the number of lamps in use and extending the amount of time between replacements, by using longer-lasting lamps, reduces the number of lamps in the waste stream. It also reduces the demand for raw materials and significantly lowers maintenance and recycling costs.

Using SYLVANIA Long Life products results in less frequent lamp replacements, and additional savings in maintenance will yield considerable reductions in operating costs.



The Advanced Illumination Technology of SYLVANIA DURA-ONE™ electrodeless compact fluorescent lamps raises the standard of lighting performance to new heights. The DURA-ONE lamp has a rated life of 15,000 hours or 13 years*. Longer life means fewer lamp replacements and lower maintenance costs, making them perfect for applications where re-lamping is difficult.



The SYLVANIA OCTRON® 800 XP® ECOLOGIC® fluorescent lamps provide 20% longer life, higher initial and maintained lumens, improved color rendition and longer relamp periods compared to conventional T8 lamps. Because of their longer life, OSRAM SYLVANIA offers an extended system warranty with the use of OCTRON 800 XP ECOLOGIC lamps on our QUICKTRONIC® electronic ballasts.



LED systems are quickly becoming the light source of choice for signage applications due to their ruggedness, reliability, long life, energy efficiency and low maintenance requirements. They offer unique capabilities for architectural enhancements and decorative lighting due to their small sizes and system flexibility. OSRAM SYLVANIA has the competitive advantage in the arena of LED systems with years of experience in designing and developing LED systems, covered by our comprehensive warranty.

* Lamp life is based on usage 3 hours per day, 7 days per week.



three

Building Greener.

“Green building” incorporates environmentally responsible practices into the design of new construction and renovation of commercial and residential structures.

Among them:

- Improving energy performance
- Reducing waste by increased recycling
- Reducing energy and water consumption
- Increasing the use of local and/or recycled materials
- Promoting “smart growth” strategies
- Improving economic performance of these buildings
- Improving indoor air quality

Today’s ecologically conscious building and design movement recognizes that lighting can play a leading role in reducing energy use, improving work conditions, and reducing environmental impacts. The numbers speak for themselves: In the United States, buildings account for 65% of the total electricity consumption and 30% of the associated greenhouse gas emissions from power plants.

The cornerstone of any green building initiative is to increase energy efficiency in order to reduce energy consumption and cost. SYLVANIA’s innovative energy-efficient and long-life products and systems help maximize the energy performance of the lighting within a building. To achieve the sustainability goals of green building, a number of whole building rating systems have evolved to guide designers, architects and builders who incorporate green building strategies. These include: ENERGY STAR® for buildings, Green Globes® and Leadership in Energy and Environmental Design (LEED®).

A building can receive recognition under more than one rating system. SYLVANIA lighting system solutions can help you achieve and exceed many of the criteria in each of these rating systems, including energy efficiency, controllability of systems, and low mercury content.

U.S. Green Building Council and LEED

The mission of the U.S. Green Building Council (USGBC) is to “promote buildings that are environmentally responsible, profitable and healthy places to live and work.” Founded in 1993 as a non-profit coalition representing the entire building industry, it has grown to include nearly 6,000 members, including architects, engineers, interior designers, product manufacturers like OSRAM SYLVANIA, contractors, utilities, government agencies, and professional societies.

One of the major initiatives of the USGBC is its Leadership in Energy and Environmental Design (LEED) program, which was created to define “green buildings” by establishing a common standard of measurement, promoting integrated, whole-building design practices.

LEED is emerging as a dominant standard in the green building market, and covers new construction as well as renovations and commercial interiors. Points are awarded towards building certification for implementing sustainable strategies. If you are considering LEED certification for your building, please refer to OSRAM SYLVANIA’s “Lighting in LEED” fact sheets, available on our website at www.sylvania.com/AboutUs/EnergyandEnvironment.

In addition to points for increased energy performance, there are other categories of green design in which lighting plays a part, and for which SYLVANIA offers unique solutions, including lighting controls and mercury reduction.

Today's **ecologically-conscious** building and design movement recognizes that lighting can play a **leading role in reducing energy use**, improving work conditions, and reducing environmental impact.



Controllability

To maximize energy savings, increase energy performance, and help contractors achieve the “Controllability of Lighting” point in LEED®, SYLVANIA offers a selection of ballasts that provide excellent compatibility with lighting systems control, as well as superior reliability in a system design. These include QUICKTRONIC® PROStart® ballasts, POWERSENSE® T8 Dimming ballasts, and DALI ballasts that are compatible with occupancy sensors. For even higher levels of control and comfort, the QUICKTRONIC POWERSENSE T8 Dimming and DALI dimming ballasts can be integrated with daylight harvesting and building management systems.

Reduced mercury

The LEED rating system for existing buildings (LEED-EB) contains a mandatory prerequisite that all mercury-containing lamps (linear fluorescent, compact fluorescent, and HID) must achieve a total maximum mercury level of 100 picograms per lumen hour, calculated on a weighted average based on lumen output, lamp life and mercury content.

It is important to remember that only buildings can be LEED-qualified, not individual products. This calculation requires input of ALL mercury-containing lamps and is not designed as a lamp-by-lamp comparison. Each individual lamp does not have to meet the 100 picogram per lumen hour level; rather, the total level of all lamp types and quantities must achieve that measurement.

Within our TCLP-passing ECOLOGIC® line, SYLVANIA offers a wide range of low-mercury, long-life, high performance lamps — including the industry's only mercury-free, high-pressure sodium lamp.



Convenient Online LEED-EB Calculator

To help project managers with their calculations for the LEED application, we have posted an online calculator for Materials and Resources/MR Prerequisite #2, “Toxic Material Source Reduction-Reduced Mercury in Light Bulbs.” This simple tool allows you to input NAED codes and quantities of all lamps in a project and determine whether your project meets the prerequisite and/or achieves the additional point for MR Credit #6. This tool is available in the Energy and Environment section within www.sylvania.com and www.mysylvania.com.

Why can't we eliminate mercury altogether?

The lighting industry has long used mercury in the production of energy-efficient lighting products. All fluorescent lamps and almost all HID lamps require a small amount of mercury to generate light efficiently. The mercury is essential to achieving the lamps' higher level of operating efficiency.

Fluorescent lamps begin life with pure mercury. As the lamp operates and ages, the pure mercury is "consumed" and combines with the glass, the phosphor, the deposits on the bulb wall around the filament, and with any other impurities in the lamp. Some of the remaining mercury becomes mercuric oxide, which can be released if the lamp is broken. Mercuric oxide can bioaccumulate in fish under the proper conditions, posing a potential health concern.

If mercury dosing of fluorescent lamps is too low, lamp life, number of starts, color, and light output can be dramatically affected. Lamps may consume all the pure mercury before reaching rated life, requiring additional lamp replacements—and actually increasing total mercury usage. In metal halide lamps, mercury is used as a starting aid and to set lamp operating voltage; high-pressure sodium lamps use mercury as a buffer gas to help set lamp operating voltage. If mercury dosing is too low in metal halide and mercury vapor lamps, light output can be dramatically affected.

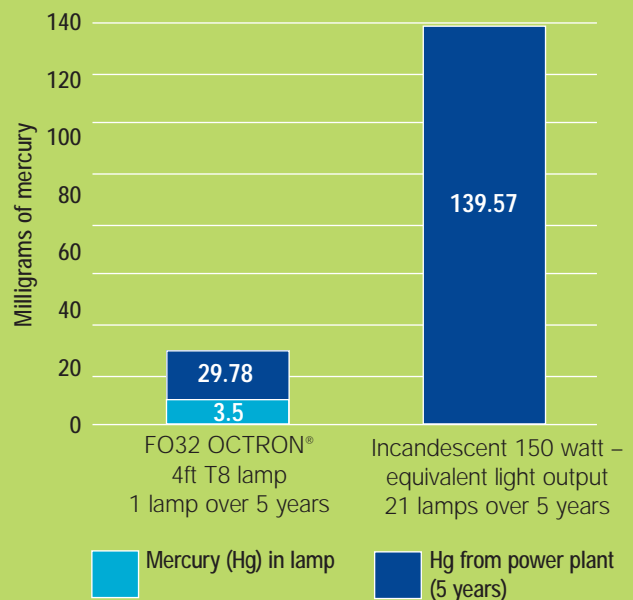
Light sources that do not use mercury, such as incandescent and halogen lamps, produce 70%-80% less light per watt input. There is no known substitute for mercury in energy-efficient light sources, and by using lamps that contain tiny amounts of mercury we can greatly reduce the need for power generation, thereby reducing emissions from power plants—including mercury emissions—by at least 4 times!

So focusing solely on the mercury within a lamp obscures the bigger picture. By analyzing *total* mercury contribution associated with energy-efficient lamps—which requires taking into account lamp life and number of lamp replacements as well as performance factors—we can clearly see the significant net gain from energy-efficient lighting.



Figure 3
Mercury and Lighting

This chart shows the trade-off between energy efficiency and overall mercury contribution over a 5-year period of time from mercury-containing fluorescent bulbs as compared with incandescent bulbs, which are mercury-free. Incandescent bulbs contain no mercury themselves, but contribute vastly higher amounts of mercury to the environment because of their demands on power output.



Lamp life — 20,000 hrs fluorescent, 750 hrs incandescent

Number of lamps = 1 fluorescent, 21 incandescent

Hg per lamp = 3.5 mg fluorescent

Based on fossil fuel power generation and 12 hour per day usage

Emissions factors: U.S. EPA's Emissions & Generation Resource

Integrated Database's (eGRID) [1] State Data MS-Excel tables — eGRID [1] 2003

State-Level Average All (Total) Generation Electricity Emission Factors



four

Reduce heavy metals.

Both lead and mercury are heavy metals that can bioaccumulate and have an adverse effect on human health. However, lead is widely used in many lighting manufacturing processes. And, as we saw in the previous section, mercury is required for the efficient operation of products such as fluorescent lamps and most HID lamps.

OSRAM SYLVANIA has been steadily and proactively working to reduce the use of both lead and mercury in our products and in our manufacturing operations. Specifically:

- We pioneered the use of lead-free solders and welded lamp bases
- Beginning in 1992, we eliminated lead solder in the majority of SYLVANIA general purpose incandescent A-19, B-10, BR30, BR40, and globe-shaped lamp products, and most of our halogen lamp types are lead-free
- We are using lead-free glass in our HID light sources and fluorescent tubes
- We use only recycled mercury in our fluorescent and HID lamps
- We offer the only lead-free, mercury-free, high-pressure sodium lamp on the market

Since 1990, OSRAM SYLVANIA has reduced mercury content by over 92% in many of our fluorescent lamps; we're continuing to find ways to further lower the mercury content in these lamps. And beginning in 2005, we began manufacturing our PENTRON® four-foot T5 products using 40% less mercury. We have also redesigned the manufacturing process for our OCTRON® T8 800 series to reduce their mercury content by 50%, while extending lamp life and maintaining and enhancing quality and performance.

With more than 800 products meeting our strict ECOLOGIC® guidelines and bearing the distinct "ECO®" designation, **we offer more environmentally preferable lamp types than any other manufacturer.**

www.mysylvania.com

In 10 years, we've avoided the use of over **580 tons of lead** from our soldering production, and we've **reduced** the amount of **mercury used** in many of our lamps **by up to 92%**.



Environmentally preferable ECOLOGIC® products

Our lamps designated as ECOLOGIC pass the U.S. EPA's Toxic Characteristic Leaching Procedure (TCLP) test for hazardous waste determination. Products meeting the TCLP test may be declared "universal waste" in many states, easing the administrative, storage and transportation burdens for these products. (Check your state and local governments for the most accurate regulations.)

ECOLOGIC lamps have little or no lead in their glass or bases, and little or no mercury in the HID and fluorescent lamp types. Many of these products also offer additional "green" features such as energy efficiency and long life, and are packaged using recycled and/or recyclable materials. With more than 800 products meeting our strict ECOLOGIC guidelines and bearing the distinct "ECO" designation, we offer more environmentally preferable lamp types than any other manufacturer.



ECOLOGIC lamps are identified by the "ECO" icon in our product catalog, online, and on our packaging.

In 2006, the ECOLOGIC program celebrates its 10-year anniversary. In those 10 years, we've avoided the use of over 580 tons of lead from our soldering production, and we've reduced the amount of mercury used in many of our lamps by up to 92%.

SYLVANIA 25 Watt OTRON® FO25 XP® SUPERSAVER® ECOLOGIC fluorescent lamps operate on standard T8 instant start systems and provide 22.5% energy savings over standard 32 Watt OTRON lamps. At \$.10/kWh and 4000 hours of operation per year, the 22.5% savings translates to a savings of approximately \$11.00 per fixture per year for a 4-lamp fixture with a normal ballast factor, instant start ballast. The 94% lumen maintenance of the OTRON FO25/800XP/SS/ECO lamp assures that light levels are maintained while energy is saved. These lamps pass the Federal TCLP test, classifying them as non-hazardous waste in most states. Group relamp to realize the benefits of these OTRON lamps in your facility.



SYLVANIA PENTRON® ECOLOGIC® and PENTRON HO ECOLOGIC — A new product line of slender, 5/8" diameter, T5 linear fluorescent lamps with improved system performance characteristics compared to T8 & T12 technology. Engineered with thermal characteristics which provide improved lumen output in luminaires. PENTRON ECO brings increased design opportunities for unique, highly efficient, low profile lighting.



SYLVANIA's ECOLOGIC Certification program

encourages businesses to use environmentally preferable materials in their facilities. Recognition is given for demonstrating a commitment to the environment by installing ECOLOGIC products.



five

Recycling and the Universal Waste Rule.

In 1999, the U.S. Environmental Protection Agency declared fluorescent lamps “universal waste,” easing the regulatory burdens of storage, administration, and transportation. However, many states and local municipalities have adopted more stringent guidelines, so it’s best to check local regulations.

Fluorescent and HID lamps contain small amounts of mercury, and electronic ballasts are made with small amounts of lead. So what is the best way to dispose of these products without harming the environment? Recycling!

Mercury does not get into the air directly from an operating lamp. It may bind with the glass or the phosphors or other coatings, but it stays in the lamp. Even when lamps are manufactured, mercury is contained by manufacturing processes or captured by filters. That leaves only one opportunity for direct mercury release from lamps into the air—breakage at the end of the lamp’s life.

This occurs when lamps are thrown into dumpsters or garbage trucks, typically prior to disposal. Because the amount of mercury content in an individual lamp is so low, breaking a small number of lamps does not present a health threat to workers. The improper disposal of large numbers of lamps, however, as well as the incineration of hazardous wastes can also release mercury into the atmosphere.

Lamp and mercury recycling has become a mature, professional industry in the United States. The number of lamps recycled annually has risen from 70 million in 1997 to 156 million in 2003. SYLVANIA has made lamp and ballast recycling even easier for our customers. Here’s how. Visit www.sylvania.com/recycle and purchase pre-labeled and pre-paid return ship lamp recycling boxes. Simply fill the boxes with your unbroken, spent lamps and ship them directly to Veolia Environmental Services, our recycling partner. Similar services are available for ballast recycling.

Our own SYLVANIA Lighting Services (SLS) includes recycling as part of their maintenance and service contracts, making it easy for customers to dispose of lamps responsibly. SLS sends 8.5 million lamps to recycling facilities annually, avoiding 112 pounds of mercury from landfills.

Over the life cycle of a fluorescent lamp, the cost to recycle today is less than 1% of the cost of ownership.

Environmentally responsible companies and consumers who put lamp recycling in their budgets can maintain energy efficient lighting, and still stay on the path to sustainability.



ECOLOGIC® Products — Environmentally Preferable Lighting Solutions

OCTRON® ECOLOGIC®

T8 Fluorescent Lamps

SYLVANIA OCTRON ECO® lamps are energy saving, longer life alternatives to standard T12 fluorescent lamps.



ECOLOGIC Benefits:

- TCLP passing
- Low mercury – 800 series has lowest mercury content of all OCTRON lamps
- Energy efficient
- Long life

Additional Benefits:

- 700 Series with 75 CRI, 800 Series with 82 CRI, 800XP and 800XPS Series with 85 CRI
- Multiple lengths – 2-foot, 3-foot, 4-foot, 5-foot and 8-foot
- OCTRON ECO XP® SUPERSAVER® lamps operate on standard T8 instant start systems and provide significant energy savings over standard OCTRON lamps while maintaining lumen maintenance

- OCTRON EXTENDED Performance lamps provide 20% longer life with higher initial and mean lumens and higher CRI
- OCTRON EXTENDED Performance Super ECOLOGIC lamps and dedicated ballast
- Pair with QUICKTRONIC® High Efficiency (QHE) ballasts to save an additional 6-7% in energy
- QUICKTRONIC programmed start electronic ballasts form a lighting system that provides up to 22% energy savings and comparable light output with twice the lamp life of standard instant start T8 systems
- QUICKTRONIC dimming ballasts available with range of 5% to 100% light output
- Multitude of possible OCTRON lamp and QUICKTRONIC ballast system combinations allow specification of the best system solution for the application



FO	28	8	35	XPS	SS	ECO
Fluorescent	Wattage	CRI = 85	Color	XP = EXTENDED Performance	SUPERSAVER	ECOLOGIC
OCTRON	28 watts		Temperature	XPS = EXTENDED Performance Super		
			30 = 3000K			
			35 = 3500K			
			41 = 4100K			



ECOLOGIC is our most comprehensive line of environmentally preferable lighting products

OCTRON® CURVALUME® ECOLOGIC®

T8 Fluorescent Lamps



When paired with QUICKTRONIC® high frequency electronic ballasts, SYLVANIA OCTRON FBO32 CURVALUME ECO® lamps with 6" and 1 5/8" leg spacing, provide an energy-efficient system for 2 x 2 luminaires.

ECOLOGIC Benefits:

- TCLP passing
- Low mercury
- Energy efficient
- Long life

Additional Benefits:

- High CRI and lumen output
- Additional energy savings
- OCTRON 800XP EXTended Performance CURVALUME ECO
- OCTRON XP SUPERSAVER 30W CURVALUME ECO

- OCTRON 800XPS EXTended Performance Super CURVALUME ECO
- Pair with QUICKTRONIC High Efficiency (QHE) ballasts to save an additional 6-7% in energy
- QUICKTRONIC programmed start electronic ballasts form a lighting system that provides up to 22% energy savings and comparable light output with twice the lamp life of standard instant start T8 systems
- Multitude of possible OCTRON lamp and QUICKTRONIC ballast system combinations allow specification of the best system solution for the application

6" Leg Spacing CURVALUME

FBO	30	8	35	XP	6	SS	ECO
Fluorescent	Wattage	CRI = 85	Color Temp.	EXTended	6" leg	SUPERSAVER	ECOLOGIC
Bent	30 Watts		30 = 3000K	Performance	spacing		
OCTRON			35 = 3500K				
			41 = 4100K				

1 5/8" Leg Spacing CURVALUME

FBO	29	8	35	XP	1 5/8	SS	ECO
Fluorescent	Wattage	CRI = 85	Color Temp.	EXTended	1 5/8" leg	SUPERSAVER	ECOLOGIC
Bent	29 Watts		30 = 3000K	Performance	spacing		
OCTRON			35 = 3500K				
			41 = 4100K				

PENTRON® ECOLOGIC® & PENTRON HO ECOLOGIC

T5 Fluorescent Lamps



SYLVANIA PENTRON ECO and PENTRON HO ECO® are slender, 5/8" diameter linear fluorescent lamps with improved system performance characteristics compared to T8 & T12 technology.

ECOLOGIC Benefits:

- TCLP passing
- Long life
- Energy efficient

Additional Benefits:

- High efficacy
- Designed for high frequency electronic ballasts
- Multiple lengths – 2-foot, 3-foot, 4-foot and 5-foot
- Approximately 2" shorter than T8 & T12 lengths – Lamp installation and removal easier due to shorter lengths

- Greater luminaire design flexibility
- Allows use of fewer lamps per luminaire – One T5 HO lamp can replace two T8 lamps
- QUICKTRONIC® dimming ballasts available with range of 1% to 100% light output
- QUICKTRONIC High Ambient Temperature ballasts available – 90°C maximum case temperature
- Lamps used worldwide



PENTRON FP28/835/ECO

FP	28	8	35	ECO
Fluorescent	Wattage:	CRI = 85	Color Temperature	ECOLOGIC
PENTRON T5	14, 21, 28 or 35 watts		30 = 3000K, 35 = 3500K, 41 = 4100K, 50 = 5000K, 65 = 6500K	

PENTRON HO FP54/841/HO/ECO

FP	80	8	41	HO	ECO
Fluorescent	Wattage:	CRI = 85	Color Temperature	High Output	ECOLOGIC
PENTRON T5	24, 39, 54 or 80 watts		30 = 3000K, 35 = 3500K, 41 = 4100K, 50 = 5000K, 65 = 6500K		

T12 ECOLOGIC & T12 SLIMLINE ECOLOGIC

TCLP-passing T12 Fluorescent Lamps



SYLVANIA T12 DESIGNER 700 and 800 series lamps utilize rare earth phosphors which provide higher initial lumens, better lumen maintenance and improved CRI over standard T12 lamps.

ECOLOGIC Benefits:

- TCLP passing
- Low mercury
- Energy-efficient SUPERSAVER® lamps available

F	96	T12	D835	SS	ECO
Fluorescent	96 = 96" lamp	T = tubular 12 = 12 eighths of an inch diameter	D = Designer Series 8 = 80 CRI 30 = 3000K 35 = 3500K 41 = 4100K CW = Cool White WW = Warm White	SS = SUPERSAVER 60 Watts	ECOLOGIC

FB34 CURVALUME® SUPERSAVER® ECOLOGIC®

T12 Fluorescent Lamps

34 Watt T12 U-Shaped lamps with 6" leg spacing



ECOLOGIC® Benefits:

- TCLP passing
- Low mercury
- Energy efficient

Additional Benefits:

- Available with Cool White (CW) and Warm White (WW) phosphors

FB	34	CW	6	SS	ECO
Fluorescent Bent	Wattage: 34 Watts	CW = Cool White	6 inch leg spacing	SS = SUPERSAVER	ECOLOGIC

DULUX® S, D, D/E, T, T/E, T/E/IN & L

Pin-based Compact Fluorescent Lamps

SYLVANIA DULUX lamps provide even light distribution and are long-life, energy-saving alternatives for incandescent lamps. Use of high efficiency, long-life compact fluorescent lamps will reduce power consumption up to 75%; dramatically reduce re-lamping requirements and associated costs, while providing comparable light levels to standard incandescent light sources.



ECOLOGIC Benefits:

- TCLP passing
- Long life
- Low mercury and lead
- Energy efficient

Additional Benefits:

- Improved high temperature performance (DULUX T/E/IN)
- Fast warm-up time
- Flicker-free start
- End-of-life (EOL) shutdown protection (DULUX T/E/IN/EOL and D/E/EOL)
- Compatible with dimming and electronic ballasts (DULUX L, T/E, T/E/IN, & D/E)



CF	26	DT	E	IN	8	35	EOL
Compact Fluorescent	Wattage 26 watts	DULUX DD = Double DT = Triple DS = Single DL = Long	for electronic and dimming ballasts	amalgam	CRI	Color Temp.	End of Life

LUMALUX® ECOLOGIC®

High Pressure Sodium Lamps



SYLVANIA standard LUMALUX lamps have always been known for high efficacy, long life, and reliability. In addition to these attributes, LUMALUX/ECO® lamps have sufficiently low mercury and lead content to pass the Federal TCLP test. These TCLP-passing ECOLOGIC lamps include some of the most popular LUMALUX HPS lamps available.

LUMALUX HgF ECO lamps feature innovative technology that eliminates both mercury and lead content in the lamp. Using an exclusive ceramic arc tube, a reformulated mercury-free fill, and a lead-free welded base, these lamps operate on standard HPS ballasts with comparable performance to standard HPS lamps.

LUMALUX PLUS® ECO lamps feature pioneering technology to eliminate the end-of-life cycling of HPS lamps. Lamps remain off at end-of-life.



ECOLOGIC Benefits:

- TCLP passing
- Lead-free glass jacket
- Welded, lead-free base
- Low mercury content
- Mercury-free arc tube (LUMALUX HgF/ECO)
- Up to 90% less mercury than standard HPS lamps (LUMALUX PLUS)
- "ECOLOGIC" stamped on the base making identification easier at end-of-life

Additional Benefits:

- High efficacy: up to 125 LPW
- Equivalent performance to standard HPS
- Universal operating position
- Lamps use welded bases that have a maximum base temperature of 250°C, 40°C higher than ANSI specification for soldered bases
- LUMALUX PLUS/ECO lamps also have:
 - Long rated lamp life of 30,000 hours that reduces maintenance costs
 - 80% lamp survival at 24,000 hours
 - 65% lamp survival at 30,000 hours
 - Positive end-of-life indicator means quicker identification of outages and fewer repeat trips

LU	70	HgF	Plus	ECO
LUMALUX High Pressure Sodium	Wattage	Mercury Free	Non-cycling	ECOLOGIC

METALARC® POWERBALL® CERAMIC & METALARC PRO-TECH® ECOLOGIC® PAR

Metal Halide PAR Lamps



METALARC POWERBALL CERAMIC lamps feature innovative ceramic technology that provides high CRI and improved lamp-to-lamp color consistency. POWERBALL lamps use a patented round arc tube shape that allows for more uniform arc tube temperature and improved color consistency.

ECOLOGIC Benefits:

- TCLP passing
- Lead-free glass
- Low mercury content
- Lead-free base

Additional Benefits:

- METALARC PRO-TECH
 - Operate in open or enclosed fixtures
 - Quartz METALARC PRO-TECH design for containment
- POWERBALL
 - Excellent CRI to yield more natural colors
 - Long life
 - Improved lamp to lamp color consistency
 - Contains METALARC PRO-TECH technology
 - Incorporates UV Stop technology that reduces UV output to minimize discoloration and fading of materials

MP, MCP	70	PAR38	U	FL35	ECO
METALARC PRO-TECH	Wattage	Parabolic Reflector 38 = 38/8"	Universal operating position	Beam Type and Beam Angle SP = Spot FL = Flood VWFL = Very Wide Flood	ECOLOGIC
METALARC POWERBALL CERAMIC					



CAPSYLITE®

Halogen PAR Lamps



SYLVANIA CAPSYLITE PAR lamps are the industry standard for halogen accent and display lighting. CAPSYLITE PAR lamps achieve their extraordinary performance by combining a tungsten halogen capsule with a unique spiral lens/reflector system.

ECOLOGIC® Benefits:

- TCLP passing (except 80 and 100W IR)
- Lead-free soldered bases
- Mercury-free halogen technology
- Higher energy efficiency than incandescent lamps
- Long life
- CAPSYLITE IR PAR lamps have all of these attributes as well as a special capsule that produces more light with fewer watts than conventional halogen lamps by recycling the heat produced by the capsule; this reduces energy consumption and heat generation

Additional Benefits:

- Bright, crisp light throughout lamp life
- SPL® optics for superior beam performance on all PAR20, PAR30 and PAR38 lamps

50	PAR	30	CAP	IR	FL	30
Wattage	Parabolic Reflector	Bulb Diameter 30 = 30/8" 38 = 38/8"	CAPSYLITE	Type IR Infrared Reflecting SPL = Spiral	Beam Spread: FL = Flood NFL = Narrow Flood WFL = Wide Flood SP = Spot NSP = Narrow Spot	Beam Angle



TRU-AIM® MR11, MR16 & MR16 IR

Low Voltage Reflector Lamps

SYLVANIA's TRU-AIM® family of halogen MR16 and MR11 reflector lamps provides a wide variety of extremely compact and highly directional light sources.



ECOLOGIC® Benefits:

- TCLP passing
- Mercury and lead free
- 4,000 hour average rated lamp life
- Reduced energy consumption
- UV-filter control capsule reduces UV-energy up to 90%
- TRU-AIM IR lamps have all of these attributes as well as a special capsule that produces more light with fewer watts than conventional halogen lamps by recycling the heat produced by the capsule; this reduces energy consumption and heat generation

Other Features:

- Bright, crisp light throughout lamp life
- Axial filament for exceptionally smooth beam pattern
- GU 5.3 base for a solid socket connection



37	MR	16	IR	FL	40	C
Wattage	Multi-faceted Reflector	Bulb Diameter 16 = 16/8"	Type IR Infrared conserving B = Aluminized Reflector T = Hard Dichroic Reflector ___ = Semi Dichroic Reflector	Beam Spread: FL= Flood NFL= Narrow Flood WVFL = Very Wide Flood SP = Spot NSP = Narrow Spot	Beam Angle	Covered

CAPSYLITE® G9

Line Voltage Halogen Lamps

SYLVANIA CAPSYLITE G9 lamps are the first line voltage halogen capsules that are suitable for use in unshielded fixtures.

This innovative lamp structure allows for reduced fixture costs by eliminating expensive transformers and heavy glass shields. In addition, their long life and energy efficiency make CAPSYLITE G9 lamps ideal for use in residential, commercial, and industrial buildings.



ECOLOGIC Benefits:

- TCLP passing
- 2,000 hour average rated life
- Mercury and lead free

Additional Benefits:

- UV-filter quartz glass
- Bright white, high quality halogen light
- 120 Volt operation
- Can be operated in open fixtures
- Available with either clear or frosted finish

40	CAP	G9	CL	BL
Wattage	SYLVANIA CAPSYLITE Capsule	Base Type G9	Finish CL = Clear Finish F = Frosted	Packaging ___ = Carton BL = Blister Card

MINISTAR™ & Bi-pin Lamps

Low Voltage Halogen Lamps

The SYLVANIA family of bi-pin lamps represents an outstanding collection of compact, low voltage halogen light sources ideal for a wide range of applications.



ECOLOGIC® Benefits:

- TCLP passing
- Long lamp life
- Mercury and lead free

Additional Benefits:

- UV-filter quartz capsule
- Directional light (MINISTAR)
- Low pressure

50	T4	Q	CL	AX	24V
Wattage	Tubular lamp	Quartz	Finish	AX = Axial Filament	Voltage
	T4 = Diameter Glass (4/8")		CL = Clear		___ = 12V
	BT4= Bulbous		___ = Transverse		24V
	Tube (4/8")		F = Frosted		6V
			IR = Infrared Conserving		



CAPSYLITE® A-Line

Halogen Lamps

SYLVANIA CAPSYLITE A-Line lamps have a long life of up to 3500 hours, three times that of conventional incandescent bulbs.

SYLVANIA Halogen A-Line and halogen crystal style lamps combine decorative appearance with the brilliant white light of halogen to give customers excellent output for lighting almost any setting. Halogen Crystal with its unique faceted design adds sparkle to any fixture, indoors and out.



ECOLOGIC Benefits:

- TCLP passing
- Lead and mercury free
- Superior lamp life – up to 3500 hours – three times that of conventional incandescent bulbs

Additional Benefits:

- Replacement for standard A-line incandescent
- Heavy wall glass allows use in open fixtures
- Higher color temperature than standard incandescent lamps

60	A	HAL	DAY	CRYSTAL	CLAM
Wattage	Bulb Shape	Family	Daylight	Finish	Package
60	A19	HAL =	Plus	_ = Frosted	CLAM =
75		Halogen		CL = Clear	Clamshell
100				CRYSTAL	

Halogen Double Ended

Halogen Lamps

SYLVANIA halogen double ended lamps represent a wide range of available wattages and sizes for different lighting applications.

ECOLOGIC® Benefits:

- TCLP passing
- Lead and mercury free

Additional Benefits:

- UV filter quartz



300	T3	Q	CL	(EHM)
Wattage	Tubular Diameter = 3/8"	Quartz	Finish CL = Clear ___ = Frosted	ANSI Designation

Incandescent ECOLOGIC

OSRAM SYLVANIA pioneered the development of lead-free solders used in the ECO versions of many of our most popular incandescent lamps. Representing over 125 distinct types, and over 90% of our incandescent shipping volume, this segment of our ECO lineup clearly positions SYLVANIA as the leader in lead reduction technology.

ECOLOGIC Benefits:

- TCLP passing
- Lead-free solder
- Mercury free

Additional Benefits:

- Standard (A19) types from 40W to 135W in clear, frosted, and soft white finishes; Globe-shaped (G16 and G25); BR30 and BR40; Bent-tip (B10) décor types in clear, frosted and faceted finishes; night lights in clear and white finishes





ENERGY STAR® Compact Fluorescent Lamps Deliver Everyday Sustainability

ENERGY STAR is a government-backed program that helps businesses and individuals save money and protect the environment through superior energy efficiency.

ENERGY STAR is a government-backed program that helps businesses and individuals save money and protect the environment through superior energy efficiency. OSRAM SYLVANIA is proud to manufacture a comprehensive line of DULUX® EL compact fluorescent lamps all bearing the familiar ENERGY STAR logo.

With more than 50 DULUX EL CFLs to choose from, it's easy for customers to find energy-efficient replacements for their standard incandescent lamps — reducing lighting energy consumption by up to 75%. And because CFLs last up to 10 times longer than incandescent lamps, they're saving on replacement costs, too.



SUSTAINED EXCELLENCE

In addition, manufacturers of residential light fixtures can refer to a matrix of lamp and ballast combinations designed to meet certain ENERGY STAR performance requirements in residential lighting fixtures. OSRAM SYLVANIA offers 268 lamps and 46 ballasts on these matrices — giving fixture manufacturers a wide variety of options to meet the ENERGY STAR criteria.



ECOLOGIC at a Glance

Environmentally Preferable Lighting

Our lamps designated as ECOLOGIC pass the U.S. EPA's Toxic Characteristic Leaching Procedure (TCLP) test for hazardous waste determination.

ECOLOGIC lamps have little or no lead or mercury, and many offer additional "green" features such as energy efficiency and long life.

With more than 800 products meeting our strict ECOLOGIC guidelines, we offer more environmentally preferable lamps than any other manufacturer.

Products	ECO etch	Reduced lead	Reduced mercury	TCLP compliant	ENERGY STAR®
Incandescent Lamps					
A19 (34W to 135W)		X	NA	X	NA
B10		X	NA	X	NA
BR30 and BR40		X	NA	X	NA
Globe-shaped		X	NA	X	NA
Halogen Lamps					
CAPSYLITE PAR	X	X	NA	X	NA
CAPSYLITE A19				X	
CAPSYLITE Halogen PAR		X	NA	X	NA
TRU-AIM MR11 & MR16		X	NA	X	NA
HID Lamps					
LUMALUX ECO	X	X	X	X	NA
LUMALUX PLUS ECO	X	X	X	X	NA
LUMALUX HgF ECO	X	X	X	X	NA
METALARC PAR	X	X	X	X	NA
Pin-Based Compact Fluorescent Lamps					
DULUX S, DULUX D, D/E, DULUX L, DULUX T, T/E, T/E/IN	X	X	X	X	X*
Linear Fluorescent Lamps					
ALL OCTRON	X	X	X	X	X*
OCTRON 800, 800XP, 800XPS	X	X	X	X	X*
PENTRON/ECO, PENTRON HO/ECO	X	X	X	X	X*
FB34/SS/ECO	X	X	X	X	X*
F40/ECO & F34/SS/ECO	X	X	X	X	X*
F96T12ECO & F96T12/SS/ECO	X	X	X	X	X*
CURVALUME T12 FB34/SS/ECO	X	X	X	X	
F48T12/ECO and F72T12/HO/ECO	X	X	X	X	
ICETRON ECO	X	X	X	X	

* Lamps listed in this table meet some of the performance requirements in the ENERGY STAR Program Requirements for Residential Light Fixtures, version 4.0.

About OSRAM SYLVANIA.

OSRAM SYLVANIA is the North American lighting operation of OSRAM GmbH, one of the world's largest and best-recognized lighting manufacturers. Serving customers in more than 40 countries, we manufacture and market a wide range of lighting products and precision materials and components under the SYLVANIA and OSRAM brand names. OSRAM SYLVANIA also offers complete, energy-conscious lighting systems, as well as expert installation and maintenance services.

General Lighting Division.

The OSRAM SYLVANIA General Lighting Division manufactures incandescent, halogen, fluorescent and high-intensity discharge lamps at seven plants in the United States, Canada and Mexico. It provides general and specialty lighting sales, marketing and distribution services throughout the U.S. to industrial, commercial and retail customers. SYLVANIA Lighting Services provides preventative maintenance and energy management programs for indoor and outdoor lighting systems in stores, office buildings, warehouses, factories and other locations.

Sustainability saves more than money.

We can show you how. For more information about the OSRAM SYLVANIA commitment to environmental sustainability, or about any of our energy-saving and environmentally preferable lighting solutions, please visit our Energy and Environment web page at www.sylvania.com/AboutUs/EnergyandEnvironment.

For simple lamp and ballast recycling solutions, visit www.sylvania.com/recycle.



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High Intensity Discharge Lamps

WARNING: This lamp can cause serious skin burn and eye inflammation from shortwave Ultraviolet radiation if the outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available.

OSRAM SYLVANIA
National Customer
Support Sales
18725 N. Union Street
Westfield, IN 46074

Industrial Commercial

Phone: 1-800-255-5042
Fax: 1-800-255-5043

Consumer Products

Phone: 1-800-842-7010
Fax: 1-800-842-7011

SYLVANIA Lighting Services

Phone: 1-800-323-0572
Fax: 1-877-537-0784

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