

Ceramalux® High Pressure Sodium Lamps

Energy efficiency and long life



***Ideal for roadway lighting,
warehouse lighting, security lighting,
and industrial applications***

► Comfort High Pressure Sodium

For improved color rendering.

► RetroLux High Pressure Sodium

Replace Mercury Vapor with energy efficient HPS; operates on mercury vapor ballast.

► Instant Restrike High Pressure Sodium

Dual arc-tube delivers 40,000 hours rated average life vs. 24,000 hours rated average life for standard HPS lamps. Extra arc-tube provides light instantly after momentary power interruption.

► ALTO® High Pressure Sodium

Passes EPA's TCLP¹ test for non-hazardous waste.

► MasterColor® HPS-Retro White™

Optimized to operate on a high pressure sodium ballast. Replace yellow light with crisp, bright white light with just a simple twist!

1) The TCLP is the US EPA's Toxicity Characteristic Leaching Procedure.



PHILIPS

Ceramalux® High Pressure Sodium Lamps

- Low total cost of ownership
- Long life—up to 24,000 hours
- High efficacy up to 140 LPW
- ALTO® Lamp Technology passes EPA's TCLP test for non-hazardous waste



Electrical, Technical and Ordering Data (Subject to change without notice)

| Product Number | Ordering Code | Nom. Watts | Bulb | Base | ANSI Code/ Ballast Ref. | Std. Pkg. Qty. | Description | LCL (In.) | MOL (In.) | Rated Avg. Life Hrs.¹ | Approx. Initial Lumens² | Approx. Mean Lumens³ | CRI | CCT (K) |
|----------------|----------------|------------|-----------|------|-------------------------|----------------|----------------------------|-----------|-----------|-----------------------|-------------------------|----------------------|-----|---------|
| 30632-4 | C35S76/M | 35 | BD-17 | Med. | S76 | 12 | G (4, 6, 9, 12) | 3 3/8 | 5 3/8 | 24,000+ | 2250 | 2025 | 21 | 2100 |
| 30633-2 | C35S76/D/M | 35 | BD-17 | Med. | S76 | 12 | G (4, 6, 9, 12) | — | 5 3/8 | 24,000+ | 2150 | 1935 | 21 | 2100 |
| 30336-2 | C50S68/M | 50 | BD-17 | Med. | S68 | 12 | G (4, 6, 9, 12) | 3 3/8 | 5 3/8 | 24,000+ | 4000 | 3600 | 21 | 2100 |
| 30337-0 | C50S68/D/M | 50 | BD-17 | Med. | S68 | 12 | G (4, 6, 9, 12) | — | 5 3/8 | 24,000+ | 3800 | 3420 | 21 | 2100 |
| 36867-0 | C50S68/ALTO | 50 | ED-23 1/2 | Mog. | S68 | 12 | G, S (4, 6, 9, 12) | 5 | 7 3/4 | 24,000+ | 4000 | 3600 | 21 | 2100 |
| 33154-6 | C50S68/D/ALTO | 50 | ED-23 1/2 | Mog. | S68 | 12 | G, S (4, 6, 9, 12) | — | 7 3/4 | 24,000+ | 3800 | 3420 | 21 | 2100 |
| 33192-6 | C70S62/M | 70 | BD-17 | Med. | S62 | 12 | G (4, 6, 9, 12) | 3 3/8 | 5 3/8 | 24,000+ | 6300 | 5850 | 21 | 2100 |
| 33214-8 | C70S62/D/M | 70 | BD-17 | Med. | S62 | 12 | G (4, 6, 9, 12) | — | 5 3/8 | 24,000+ | 5860 | 5270 | 21 | 2100 |
| 36869-6 | C70S62/ALTO | 70 | ED-23 1/2 | Mog. | S62 | 12 | G, S (4, 6, 9, 12) | 5 | 7 3/4 | 24,000+ | 6500 | 5670 | 21 | 2100 |
| 30620-9 | C70S62/RFL | 70 | PAR-38 | Med. | S62 | 12 | G, VV, 50 (4, 6, 12, 13) | — | 5 3/8 | 16,000 | 5000 | 3960 | 21 | 2100 |
| 34446-5 | C100S54/M | 100 | BD-17 | Med. | S54S | 12 | G (4, 6, 9, 12) | 3 3/8 | 5 3/8 | 24,000+ | 9500 | 8550 | 21 | 2100 |
| 34448-1 | C100S54/D/M | 100 | BD-17 | Med. | S54S | 12 | G (4, 6, 9, 12) | — | 5 3/8 | 24,000+ | 8800 | 7920 | 21 | 2100 |
| 36872-0 | C100S54/ALTO | 100 | ED-23 1/2 | Mog. | S54 | 12 | G, S (4, 6, 9, 12) | 5 | 7 3/4 | 24,000+ | 9400 | 8460 | 21 | 2100 |
| 33227-0 | C100S54/D/ALTO | 100 | ED-23 1/2 | Mog. | S54 | 12 | G, S (4, 6, 9, 12) | — | 7 3/4 | 24,000+ | 8610 | 7750 | 21 | 2100 |
| 30347-9 | C150S55/M | 150 | BD-17 | Med. | S55 | 12 | G (4, 6, 9, 12) | 3 3/8 | 5 3/8 | 24,000+ | 16,000 | 14,400 | 21 | 2100 |
| 30348-7 | C150S55/D/M | 150 | BD-17 | Med. | S55 | 12 | G (4, 6, 9, 12) | — | 5 3/8 | 24,000+ | 15,000 | 13,500 | 21 | 2100 |
| 36874-6 | C150S55/ALTO | 150 | ED-23 1/2 | Mog. | S55 | 12 | G, S (4, 6, 7, 9, 12) | 5 | 7 3/4 | 24,000+ | 15,800 | 14,220 | 21 | 2100 |
| 36876-1 | C150S56/ALTO | 150 | ED-28 | Mog. | S56 | 12 | G, S (4, 6, 7, 9, 12) | 5 | 8 3/8 | 24,000+ | 15,000 | 13,950 | 21 | 2100 |
| 36877-9 | C200S66/ALTO | 200 | ED-18 | Mog. | S66MN-200 | 12 | G, S (4, 6, 9, 12) | 5 3/8 | 9 3/8 | 24,000+ | 21,400 | 19,260 | 21 | 2100 |
| 32291-7 | C225S50/EW | 225 | ED-18 | Mog. | S50 | 12 | EW, G, S (4, 6, 9, 12, 14) | 5 3/8 | 9 3/8 | 24,000+ | 27,300 | 24,620 | 21 | 2100 |
| 36879-5 | C250S50/ALTO | 250 | ED-18 | Mog. | S50 | 12 | G, S (4, 6, 9, 12) | 5 3/8 | 9 3/8 | 24,000+ | 27,000 | 24,300 | 21 | 2100 |
| 13469-2 | C310S67 | 310 | ED-18 | Mog. | S67 | 12 | G (4, 6, 9) | 5 3/8 | 9 3/8 | 24,000+ | 38,000 | 34,200 | 21 | 2100 |
| 32292-5 | C360S51/EW | 360 | ED-18 | Mog. | S51 | 12 | EW, G, S (4, 6, 9, 12, 14) | 5 3/8 | 9 3/8 | 24,000+ | 46,000 | 41,450 | 21 | 2100 |
| 36881-1 | C400S51/ALTO | 400 | ED-18 | Mog. | S51 | 12 | G, S (4, 6, 9, 12) | 5 3/8 | 9 3/8 | 24,000+ | 50,000 | 45,000 | 21 | 2100 |
| 31710-7 | SON AGRO/430W | 430 | ED-18 | Mog. | S145/S51 | 12 | AGRO (4, 6, 10, 11, 12) | 5 3/8 | 9 3/8 | 16,000 | 54,000 | 48,600 | 21 | 2100 |
| 23982-2 | C600S106 | 600 | T-14 | Mog. | S106 | 12 | G (4, 6, 9, 12, 14) | 6 3/8 | 11 3/8 | 24,000+ | 90,000 | 81,000 | 21 | 2100 |
| 32386-5 | C1000S52/ED37 | 1000 | ED-37 | Mog. | S52 | 6 | G, S (4, 6, 9, 12, 14) | 7 | 11 1/2 | 24,000+ | 125,000 | 112,000 | 21 | 2100 |
| 36883-7 | C1000S52/ALTO | 1000 | E-25 | Mog. | S52XB-1000 | 6 | G, S (4, 5, 6, 8, 9, 12) | 8 3/8 | 15 1/8 | 24,000+ | 131,000 | 117,900 | 21 | 2100 |

Ceramalux® Comfort High Pressure Sodium Lamps

- Improved color rendition of 65 CRI
- High efficacy
- Warm white color appearance
- Operates on standard HPS ballasts



Electrical, Technical and Ordering Data (Subject to change without notice)

| Product Number | Ordering Code | Nom. Watts | Bulb | Base | ANSI Code/ Ballast Ref. | Std. Pkg. Qty. | Description | LCL (In.) | MOL (In.) | Rated Avg. Life Hrs.¹ | Approx. Initial Lumens² | Approx. Mean Lumens³ | CRI | CCT (K) |
|----------------|---------------|------------|-----------|------|-------------------------|----------------|-----------------|-----------|-----------|-----------------------|-------------------------|----------------------|-----|---------|
| 30617-5 | C70S62/C/M | 70 | BD-17 | Med. | S62 | 12 | G (4, 6, 9, 12) | 3 3/8 | 5 3/8 | 15,000 | 4400 | 3960 | 60 | 2200 |
| 30635-7 | C100S54/C/M | 100 | BD-17 | Med. | S54 | 12 | G (4, 6, 9, 12) | 3 3/8 | 5 3/8 | 15,000 | 7800 | 7020 | 60 | 2200 |
| 30637-3 | C100S54/C | 100 | ED-23 1/2 | Mog. | S54 | 12 | G (4, 6, 9, 12) | 5 | 7 3/4 | 15,000 | 7900 | 7110 | 60 | 2200 |
| 30647-2 | C150S55/C/M | 150 | BD-17 | Med. | S55 | 12 | G (4, 6, 9, 12) | 3 3/8 | 5 3/8 | 15,000 | 12,000 | 10,800 | 60 | 2200 |
| 30643-1 | C150S55/C | 150 | ED-23 1/2 | Mog. | S55 | 12 | G (4, 6, 9, 12) | 5 | 7 3/4 | 15,000 | 12,000 | 10,800 | 60 | 2200 |
| 30245-5 | C250S50/C | 250 | ED-18 | Mog. | S50 | 12 | G (4, 6, 9, 12) | 5 3/8 | 9 3/8 | 15,000 | 23,000 | 20,700 | 65 | 2200 |
| 30652-2 | C400S51/C | 400 | ED-18 | Mog. | S51 | 12 | G (4, 6, 9, 12) | 5 3/8 | 9 3/8 | 15,000 | 37,500 | 33,750 | 65 | 2200 |

WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS for Ceramalux® High Pressure Sodium Lamps

Warnings, Cautions and Operating Instructions

WARNING: These lamps must be operated in fixtures designed for use with High Pressure Sodium lamps. The fixture wattage rating must match the wattage indicated on the outer glass bulb. Do not scratch the outer bulb or subject it to pressure as this could cause the outer bulb to crack or shatter. A partial vacuum in the outer bulb may cause glass to fly if the glass is struck. Operating the lamp improperly may result in **PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.**

- If the outer glass bulb is broken, shut off power immediately and remove the lamp after it has cooled.
- Use only auxiliary equipment meeting Philips and/or ANSI standards. Use within voltage limits recommended by ballast manufacturer.
 - Operate lamp only within specified limits of operation.
 - For total supply load refer to ballast manufacturers electrical data.
- Protect lamp base, socket and wiring against moisture, corrosive atmospheres and excessive heat.
- Replace the lamp if the outer glass bulb has been scratched, cracked or damaged in any way.
- If a lamp bulb support is used, be sure to insulate the support electrically so as to avoid possible decomposition of the bulb glass.
- Do not use this lamp in a fixture which redirects a substantial portion of the energy toward the arc tube and its immediate vicinity, as this may lead to very early lamp failure.
- Take care in handling and disposing of lamps. If arc tube is broken, avoid skin contact with any of them contents or fragments.
- The arc tube of this lamp contains sodium and mercury. Dispose of in accordance with federal, state and local requirements.

Instant Restrike High Pressure Sodium Lamps

- ▶ Extra arc tube offers light instantly after momentary power interruption and will provide 80% light output within 1–2 minutes
- ▶ For applications where instant restrike is not required, rated average life is 40,000 hours
- ▶ Operates on standard HPS ballasts and auxiliary equipment



Electrical, Technical and Ordering Data (Subject to change without notice)

| Product Number | Ordering Code | Nom. Watts | Bulb | Base | ANSI Code/ Ballast Ref. | Std. Pkg. Qty. | Description | LCL (In.) | MOL (In.) | Rated Avg. Life Hrs. ¹ | Approx. Initial Lumens ² | Approx. Mean Lumens ³ | CRI | CCT (K) |
|----------------|---------------|------------|---------|------|-------------------------|----------------|------------------------|-----------|-----------|-----------------------------------|-------------------------------------|----------------------------------|-----|---------|
| 35467-0 | C50S68/2 | 50 | ED-23 ½ | Mog. | S68 | 12 | G, S (4, 6, 9, 12, 14) | 5 | 7 ¾ | 24,000+ | 3800 | 3450 | 21 | 2100 |
| 26541-3 | C70S62/2 | 70 | ED-23 ½ | Mog. | S62 | 12 | G, S (4, 6, 9, 12, 14) | 5 | 7 ¾ | 24,000+ | 5600 | 5050 | 21 | 2100 |
| 26560-3 | C100S54/2 | 100 | ED-23 ½ | Mog. | S54 | 12 | G, S (4, 6, 9, 12, 14) | 5 | 7 ¾ | 24,000+ | 9100 | 8190 | 21 | 2100 |
| 26561-1 | C150S55/2 | 150 | ED-23 ½ | Mog. | S55 | 12 | G, S (4, 6, 9, 12, 14) | 5 | 7 ¾ | 24,000+ | 15,600 | 14,000 | 21 | 2100 |
| 37717-6 | C250S50/2 | 250 | ED-18 | Mog. | S50 | 12 | G, S (4, 6, 9, 12, 14) | 5 ¾ | 9 ¾ | 24,000+ | 27,500 | 24,750 | 21 | 2100 |
| 37688-9 | C400S51/2 | 400 | ED-18 | Mog. | S51 | 12 | G, S (4, 6, 9, 12, 14) | 5 ¾ | 9 ¾ | 24,000+ | 49,000 | 44,000 | 21 | 2100 |
| 20412-3 | C1000S52/2 | 1000 | E-25 | Mog. | S52 | 6 | G, S (4, 6, 9, 12, 14) | 8 ¾ | 15 ¾ | 24,000+ | 140,000 | 126,000 | 21 | 2100 |

See previous page for Warnings, Cautions and Operating Instructions

Ceramalux® RetroLux High Pressure Sodium Lamps

- ▶ For operation on all mercury vapor and metal halide ballasts of similar wattage
- ▶ 150W retrofits 175 watt mercury vapor or metal halide
- ▶ 220W retrofits 250 watt mercury vapor or metal halide
- ▶ 360W retrofits 400 watt mercury vapor or metal halide

Electrical, Technical and Ordering Data (Subject to change without notice)

| Product Number | Ordering Code | Nom. Watts | Bulb | Base | ANSI Code/ Ballast Ref. | Std. Pkg. Qty. | Description | LCL (In.) | MOL (In.) | Rated Avg. Life Hrs. ¹ | Approx. Initial Lumens ² | Approx. Mean Lumens ³ | CRI | CCT (K) |
|----------------|------------------|------------|-------|------|-------------------------|----------------|---------------|-----------|-----------|-----------------------------------|-------------------------------------|----------------------------------|-----|---------|
| 39194-6 | C150S63/RetroLux | 150 | BT-28 | Mog. | S63 | 12 | G, S (12, \$) | 5 ¾ | 8 ¾ | 24,000 | 15,000 | 13,500 | 25 | 2100 |
| 39195-3 | C220S65/RetroLux | 220 | BT-28 | Mog. | S65 | 12 | G, S (12, \$) | 5 ¾ | 8 ¾ | 24,000 | 25,000 | 22,500 | 25 | 2100 |
| 39196-1 | C360S64/RetroLux | 360 | BT-37 | Mog. | S64 | 6 | G, S (12, \$) | 7 ¾ | 11 ½ | 24,000 | 45,000 | 40,500 | 25 | 2100 |

WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS for Ceramalux® RetroLux High Pressure Sodium Lamps

Warnings, Cautions and Operating Instructions

CAUTION: Electric discharge lamp—Use only with proper circuits and auxiliary equipment designed to produce established electrical values for this lamp. Operating the lamp improperly may result in damage to equipment or personal injury, for which the lamp manufacturer does not assume any responsibility.

If a lamp bulb support is used, be sure to insulate the support electrically to avoid possible decomposition of the bulb glass. Do not scratch the bulb or subject it to pressure, as it could fail violently. If the outer bulb is broken, turn off the lamp and replace it promptly.

The arc tube of this lamp contains sodium and mercury. Use appropriate care in disposal. Protect lamp base, socket and wiring against moisture, corrosive atmospheres and excessive heat.

Do not use this lamp in a fixture which redirects a substantial portion of the energy toward the arc tube and its immediate vicinity, as this may lead to very early lamp failure.

NOTICE: For total supply load, add auxiliary (ballast) watts to lamp watts.

FOOTNOTES for Ceramalux® High Pressure Sodium Lamps

- 1) Rated average life is the life obtained, on the average, from large representative groups of lamps in laboratory tests under controlled conditions at 10 or more operating hours per start. It is based on survival of at least 50% of the lamps and allows for individual lamps or groups of lamps to vary considerably from the average. For lamps with a rated average life of 24,000 hours, life is based on survival of 67% of the lamps.
 - 2) Approximate lumen values listed are for vertical operation of the lamp.
 - 3) Approximate lumen output at 40% of lamp rated average life.
 - 4) Follow fixture manufacturer' recommendations regarding proximity of ballast to bulb.
 - 5) Electrically insulated support for bulb may be required, especially in horizontal and nearly horizontal operating positions.
 - 6) Fixtures should be designed so that sockets and wiring withstand starting pulse up to 5000 volts for 1000 watts and WHITE SON® types and 4000 volts for other sizes.
 - 7) C150S55 and C150S56 lamps are not electrically interchangeable. Different ballasts are required for the proper operation of each lamp type. ANSI type S55 ballast is for the 55-volt (normal) lamp and the ANSI type S56 ballast is for the 100 volt (nominal) lamp.
 - 8) This lamp should be shielded from moisture to prevent breakage.
 - 9) For use in fixtures which do not redirect a substantial portion of the energy toward the arc tube; otherwise very early failure is anticipated.
 - 10) Operates at rated output on ANSI 400W S145 ballasts.
 - 11) UV filtered design (FadeBlock™).
 - 12) Heat resisting glass bulb.
 - 13) PAR-38 (one piece)
 - 14) Nickel plated brass base.
- This product utilizes ALTO® Lamp Technology. ALTO products pass the US EPA's Toxicity Characteristic Leaching Procedure (TCLP) for non-hazardous waste status.

MasterColor® Ceramic Metal Halide HPS-Retro White™

- ▶ MasterColor technology optimized to operate in existing HPS fixtures, which means a simple, twist-of-the-wrist conversion
- ▶ Improved work environment (crisp white light vs. yellow light)
- ▶ Better for the environment: TCLP-compliant
- ▶ Replace yellow light with white light with just a simple twist!
- ▶ For operation on HPS ballasts; 85% lumen maintenance
- ▶ No shut off required in 24-hour-a-day/7-day-a-week operations (relamp fixtures at or before the end of rated life)



Electrical, Technical and Ordering Data (Subject to change without notice)

| Product Number | Ordering Code | Nom. Watts | Bulb | Base | Ballast Ref. | ANSI Code/ Qty. | Std. Pkg. Description | LCL (In.) | MOL (In.) | Rated Avg. Life Hrs. ¹ | Approx. Initial Lumens ² | Approx. Mean Lumens ³ | CRI | CCT (K) |
|----------------|-----------------------|------------|-------|------|--------------|-----------------|-----------------------------------|-----------|-----------|-----------------------------------|-------------------------------------|----------------------------------|-----|---------|
| ● 13093-0 | CDM250S50/V/O/4K/ALTO | 250 | ED-18 | Mog. | M1 68/O | 12 | G, Clear; Vertical ±15° (4, 5, 6) | 5 ¾ | 9 ¾ | 20,000 | 22,500 | 19,125 | 85 | 4000 |
| ● 13094-8 | CDM400S51/V/O/4K/ALTO | 400 | ED-18 | Mog. | M1 69/O | 12 | G, Clear; Vertical ±15° (4, 5, 6) | 5 ¾ | 9 ¾ | 20,000 | 34,000 | 28,900 | 85 | 4000 |

WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS for Protected MasterColor® Ceramic Metal Halide HPS-Retro White™ Lamps ED-18 (Vertical Burn ± 15°, Open or Enclosed Fixtures)

Warnings, Cautions and Operating Instructions

R **WARNING:** These lamps can cause serious skin burn and eye inflammation from short wave ultraviolet radiation if 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. Certain lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. This lamp complies with FDA radiation performance standard 21 CFR subchapter J. (USA: 21 CFR 1040.30 Canada: SOR/DORS/80-381)

If the outer bulb is broken or punctured, turn off at once and replace the lamp to avoid possible injury from hazardous short wave ultraviolet radiation. Do not scratch the outer bulb or subject it to pressure as this could cause the outer bulb to crack or shatter. A partial vacuum in the outer bulb may cause glass to fly if the envelope is struck.

WARNING: The arc-tube of metal halide lamps are designed to operate under high pressure and at temperatures up to 1000° C and can unexpectedly rupture due to internal or external factors such as a ballast failure or misapplication. If the arc-tube ruptures for any reason, the outer bulb may break and pieces of extremely hot glass might be discharged into the surrounding environment. If such a rupture were to happen, **THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.**

These lamps are designed to retain all the glass particles should an arc tube rupture occur. The following operating instructions are recommended to minimize these occurrences.

RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE. Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

This lamp contains an arc tube with a filling gas containing Kr-85 and is distributed by Philips Lighting Company, a division of Philips Electronics North America Corporation, Somerset, New Jersey, 08875.

CAUTION: TO REDUCE THE RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE RESULTING FROM AN ARC-TUBE RUPTURE THE FOLLOWING **LAMP OPERATING INSTRUCTIONS** MUST BE FOLLOWED:

LAMP OPERATING INSTRUCTIONS:

1. RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE. Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.
2. Before lamp installation/replacement, shut power off and allow lamp and fixture to cool to avoid electrical shock and potential burn hazards.

3. Use only auxiliary equipment meeting Philips and/or ANSI standards. Use within voltage limits recommended by ballast manufacturer.
 - A. Operate lamp only within specified limits of operation.
 - B. For total supply load refer to ballast manufacturers electrical data.
4. Periodically inspect the outer envelope. Replace any lamps that show scratches, cracks or damage.
5. If a lamp bulb support is used, be sure to insulate the support electrically to avoid possible decomposition of the bulb glass.
6. Protect lamp base, socket and wiring against moisture, corrosive atmospheres and excessive heat.
7. Time should be allowed for lamps to stabilize in color when turned on for the first time. This may require several hours of operation, with more than one start. Lamp color is also subject to change under conditions of excess vibration or shock and color appearance may vary between individual lamps.
8. Lamps may require 10 to 20 minutes to re-light if there is a power interruption.
9. Take care in handling and disposing of lamps. If an arc tube is broken, avoid skin contact with any of the contents or fragments.

FOOTNOTES for MasterColor® Ceramic Metal Halide HPS-Retro White® Lamps

- 1) Rated average life is the life obtained, on the average, from large representative groups of lamps in laboratory tests under controlled conditions at 10 or more operating hours per start. It is based on survival of at least 50% of the lamps and allows for individual lamps or groups of lamps to vary considerably from the average.
- 2) Approximate lumen values listed are for vertical operation of the lamp.
- 3) Approximate lumen output at 40% of lamp rated average life.
- 4) Performance may not be satisfactory unless operated within specified operating positions.
- 5) Heat resisting glass bulb.
- 6) MasterColor® Metal Halide Lamps are not recommended for use on dimmers and are not warranted if used on dimmer systems.
- This product utilizes ALTO® Lamp Technology. ALTO products pass the US EPA's Toxicity Characteristic Leaching Procedure (TCLP) for non-hazardous waste status.

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