



Philips MasterColor®
Protected Pulse Start
Ceramic Metal Halide
Lamps featuring ALTO®
Lamp Technology

*Ideal for use in high-ceiling
retail, distribution center or
industrial applications*

CERAMIC METAL HALIDE



† This lamp is better for the environment because of its reduced mercury content. All Philips ALTO® lamps give you end-of-life options which can simplify and reduce your lamp disposal costs depending on your state and local regulations.

Ceramic arc tube technology for outstanding color performance

Philips MasterColor® Protected Pulse Start Ceramic Metal Halide lamps offer a range of protected high-efficiency long life medium wattage lamps with a stable lumen maintenance over lifetime and provides crisp, sparkling light.

Higher lumen maintenance

- Improved lumen maintenance increases time between re-lamping
- 75% lumen maintenance at 24,000 hours*

Superior color stability over life

- Within $\pm 200\text{K}$ for consistent look and feel of the space
- Excellent color rendering—90 CRI

Operates on metal halide pulse start ballasts

Patented coil design offers protection for open fixture rating

No shut off required

- Ideal for 24-hours-a-day, 7-days-a-week operations
(relamp fixtures at or before the end of rated average life)

Patented dual frame construction for improved reliability and increased life

(* See back of page for footnotes)

PHILIPS

sense and simplicity

Philips MasterColor® Protected Pulse Start Ceramic Metal Halide Lamps

Ordering Data

Product Number	Ordering Code	Nom. Watts	Bulb	Base	Pkg. Qty.	ANSI Code	LCL (In.)	MOL (In.)	Color Temp. (Kelvin)	CRI	Rated Avg. Life (Hrs.)	Approx Initial Lumens ¹	Approx Mean Lumens ²
● 20583-1	CDM250/V/O/PS/4K/ALTO	250	ED-28	EX39	12	C153/M153/O	5"	8.5"	4200	90	24,000	22,500	18,000
● 20584-9	CDM250/C/V/O/PS/4K/ALTO	250	ED-28	EX39	12	C153/M153/O	5"	8.5"	4200	90	24,000	21,300	17,000
● 13291-0	CDM320/V/O/PS/4K/ALTO	320	ED-28	EX39	12	M170/M132/O	5"	8.5"	4200	90	24,000	28,800	23,000
● 13256-3	CDM320/C/V/O/PS/4K/ALTO	320	ED-28	EX39	12	M170/M132/O	—	8.5"	4200	90	24,000	28,000	22,400
● 13257-1	CDM350/V/O/PS/4K/ALTO	350	ED-37	EX39	6	M171/M131/O	7"	11.5"	4200	90	24,000	31,500	25,200
● 13292-8	CDM350/C/V/O/PS/4K/ALTO	350	ED-37	EX39	6	M171/M131/O	—	11.5"	4200	90	24,000	30,600	24,500
● 14598-6	CDM400/V/O/PS/4K/ED28/ALTO	400	ED-28	EX39	12	M172/M155/O	5"	8.5"	4200	90	20,000	36,000	28,800
● 13290-2	CDM400/V/O/PS/4K/ALTO	400	ED-37	EX39	6	M172/M155/O	7"	11.5"	4200	90	24,000	36,000	28,800
● 13293-6	CDM400/C/V/O/PS/4K/ALTO	400	ED-37	EX39	6	M172/M155/O	—	11.5"	4200	90	24,000	35,000	27,900

1) Approximate lumen values listed are for vertical operation of the lamp.

2) Approximate lumen output at 40% of lamp rated average life.

3) Measured at 100 hrs of life in vertical position.

4) Measured at rated lamp watts on a linear reactor. LPW does not include ballast losses.

5) 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.

6) Measured with the lamp operating at rated watts.

● This product utilizes ALTO® Lamp Technology. ALTO products pass the US EPA's Toxicity Characteristic Leaching Procedure (TCLP) and can be classified as non-hazardous waste. Check with state and local regulations.

* 75% lumen maintenance at 20,000 hours for product number 14598-6.

Above specifications subject to change without notice.

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:21CFR 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:

- 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.
- Before lamp installation/replacement, shut power off and allow lamp and fixture to cool to avoid electrical shock and potential burn hazards.
- 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 manufacturer's electrical data.
 - All Pulse Start mogul based lamps require a socket rated to withstand a 4000 volt pulse.
- Periodically inspect the outer envelope. Replace any lamps that show scratches, cracks or damage.
- If a lamp bulb support is used, be sure to insulate the support electrically to avoid possible decomposition of the bulb glass.
- Protect lamp base, socket and wiring against moisture, corrosive atmospheres and excessive heat.
- 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.
- Lamps may require 10 to 20 minutes to re-light if there is a power interruption.
- Take care in handling and disposing of lamps. If an arc tube is broken, avoid skin contact with any of the contents or fragments.
- Use this lamp only in fixtures that contain Pulse Start metal halide ballasts and are specifically designed for use with Pulse Start metal halide lamps.



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