

OLDHAM APE9 / APE16 (M1) Li-Ion Safety Lamp

(AE9 / AE16) TECHNICAL DATASHEET

AE9 / AE16 CAPLAMP – FEATURES & BENEFITS:

Increased safety “M1” hazard certification:

Certified for use in M1 recognised hazard environments.

Extreme lightweight of the Lithium-ion battery:

Reduced weight for user to carry, less fatigue.

Lithium-ion battery does not suffer from “memory effect”:

Full capacity available every time after recharge.

Lithium-ion battery has low self-discharge rate:

Long shelf life if stored during mine down-time.

Rugged battery and headpiece design:

Longer life expectancy, even in the harshest environments.

Maintenance-free battery design:

Reduced lamproom maintenance requirements.

Maintenance-free “A-type” headpiece:

No downtime due to maintenance or failed light source.

53 lumen output focussed over 4.5 degrees angle:

High intensity light concentrated in the operator's field of vision.

Dual reflector technology:

Optimum focus of LED for precise and intense illumination.

Genuine 3 Watt LED main light source:

Greater light output intensity, superior to any competitor.

Inter-modular battery and lamptop design:

Fully compatible & interchangeable with other Oldham products.



M1 Certification:

ATEX Certification:	TS09ATEX2613
Certification Type Code:	I M 1 Ex ia I Tamb = 0°C to +40°C
Temperature Class:	T2

BATTERY & CAP LAMP PART NUMBERS

E9 Lithium-ion battery	M456823
E16 Lithium-ion battery	M456523
AE9 Lamp (M1 certified safety lamp)	M262851
AE16 Lamp (M1 certified safety lamp)	M262751
Single Lamp Charger	M656501
10-Lamp Charger	M656601

Charging:

Care should be taken to recharge the AE16 lamp with Oldham approved multi-stage micro-processor chargers in order to achieve maximum life and performance.

“A-type” HEADPIECE AND LAMP SPECIFICATION

Number of LEDs	2 (1 main, 1 auxiliary)
Main LED rating	4.1V-3W 53 lumens ~12 hour shift
Auxiliary LED rating	0.08 watts
Type of cable	Flexible twin core short lay polychloroprene sheath
Max. beam intensity over 4.5°	10,000cd
Angle over which intensity is not less than 1 candela	120°
Burning time with auxiliary light	500 hours
Fuse rating	3A
Length of battery (at base / at lid)	111 / 152 mm
Height of battery terminals / cover	95 / 125 mm
Width of battery	55 mm
Battery case & cover material	Polycarbonate
Nominal battery voltage	4.20 v
Number of cells	8
Capacity to 3.3 volts	E9 = 9Ah / E16 = 16 Ah
Total Lamp Weight	AE9 = 0.806kg / AE16 = 0.960kg
Maintenance	NONE – maintenance free



OLDHAM
Lion Battery



THORNE &
DERRICK
INTERNATIONAL

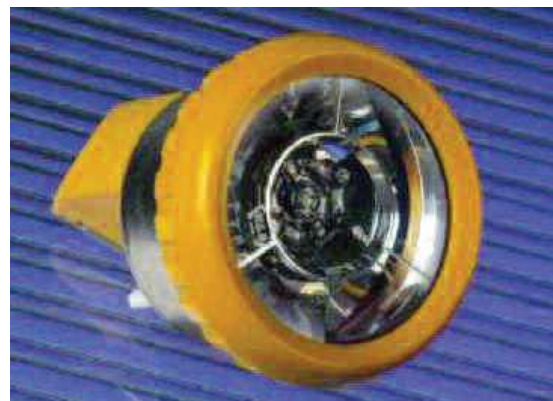
Thorne & Derrick
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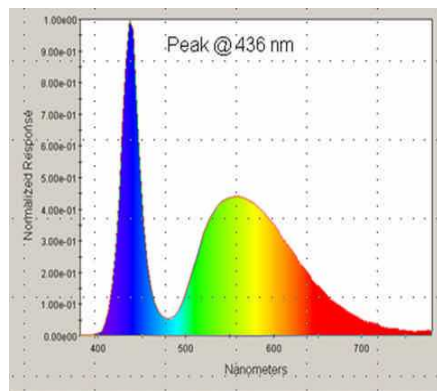
Research was undertaken by the University of New South Wales (Australia) in the late 1980's to study the behaviour of the human eye in different lighting and working conditions. The light distribution of the Oldham main light source was engineered using this research to provide the optimal working light. The Oldham A-type caplamp achieves a spot of 10,000 Cd over 4.5 degrees (this is the normal area of focused sight for the human eye) and 10 Cd over 120 degrees.

The retina of the human eye plays a critical role in how we see. The retina, located at the back of the eyeball, contains photoreceptors that convert light into electrical impulses that travel through the optic nerve to the brain. There are two types of photoreceptors: cones and rods; rods have greater short-wavelength spectral sensitivity than cones and are more sensitive to light. The cones work in the longer light wavelengths and are more sensitive to colour.

The unique feature of the Oldham A-type led lamp is the 2-part reflector. Because of the nature of light emission from an LED, Oldham has developed this unique reflector to specifically direct the light in a way that matches the industry standards set by the Oldham G-type headpiece.



SPECTRAL POWER DISTRIBUTION

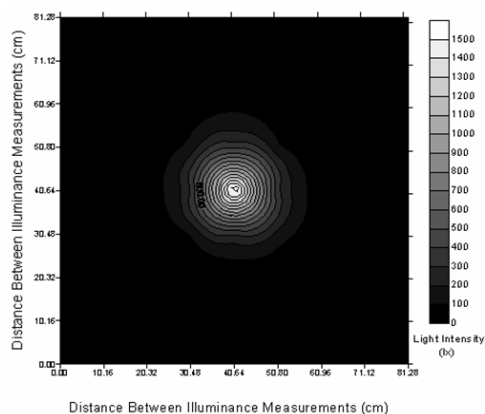


At daytime light levels (photopic conditions), the eye's cone photoreceptors dominate vision. As light levels decrease the rod receptors of the eye, which have greater short-wavelength spectral sensitivity than cones, play an increasing role in vision. The spectral content of visible light can be characterised by the spectral power distribution. Lighting research indicates that at low-light conditions where rods and cones both contribute to vision, a short-wavelength spectral content can improve visual performance. The spectral analysis clearly indicates the short-wavelength content of the Oldham "A" caplamp, demonstrating clearly that the lamp is conducive to improving visual performance in typical mining / tunnelling conditions.

E9 and E16 Li-Ion BATTERY PERFORMANCE:

A measured 12-hour discharge of the battery shows the high performance characteristics of the lithium-ion technology. Cycle performance tests indicate that even after 1000 shifts, the lamp will still achieve more than 85% of the original rated capacity, ensuring that the operator has excellent lighting performance from the lamp even at the end of its operational life.

ISOCANDELA BEAM PROFILE



Photometric testing was conducted in order to identify illuminance and uniformity. Hot spots or uneven light distribution can cause excessive discomfort glare and disability glare, and can be detrimental to peripheral visual performance. The Oldham "A" caplamp lighting intensity profile is depicted in the isocandela plot. The tight spot profile shows the precise nature of the "A" caplamp focus, making it ideal for viewing distant objects or for conducting fine detail work tasks that require high illuminance.

