THORNE & DERRICK INTERNATIONAL
Thorne & Derrick
+44 (0) 191 410 4292
www.heatingandprocess.com

OLDHAM

DL9 Li-Ion Safety Lamp
TECHNICAL DATASHEET

DL9 CAPLAMP – FEATURES & BENEFITS:

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 "D" 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.

Mixed charging versatility:
Although micro-processor type chargers always give the best performance, the L9 battery is fully suited to recharge on conventional constant-current chargers

Certification:
The DL9 is not certified against mining safety standards and is therefore only recommended for use in hard-rock mining and tunnelling or other non-hazardous mining applications.

Charging:
Care should be taken to recharge the DL9 at a maximum of 4.2-volt. Charging at higher voltages will invalidate warranty and may lead to permanent damage to the battery.

OLDHAM Lion Battery

BATTERY & CAP LAMP PART NUMBERS	
L9 Lithium-Ion Battery	M456623
DL9 Lamp (53 Lumen main LED)	M271351
Single Lamp Charger	M656501
10-Lamp Charger	M656601

"D" HEADPIECE AND CABLE SPECIFICATION	
Number of LEDs	2 (1 main, 1 auxiliary)
Main LED rating	4.1V-3W 53 lumens ~10 hour shift
Auxiliary LED rating	0.08 watts
Type of cable	Flexible twin core short lay polychloroprene sheath
Light Output	2500 lux at 1.0m
Max. beam intensity over 4.5^{O}	10,000cd
Angle over which intensity is not less than 1 candela	120^{O}
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	4
Capacity to 3.3 volts	9 Ah
Total Lamp Weight	0.850 kg
Maintenance	NONE – maintenance free

EnerSys
Power/Full Solutions

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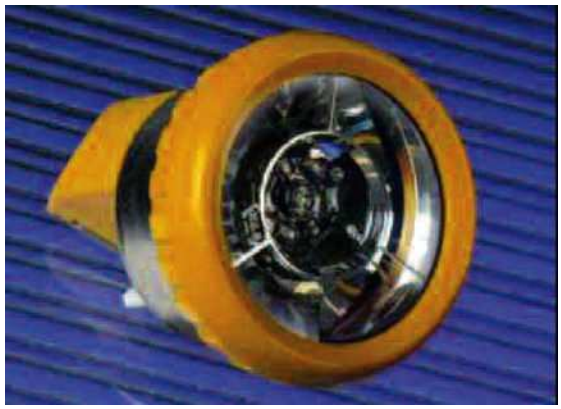
DL9 Li-Ion Safety Lamp

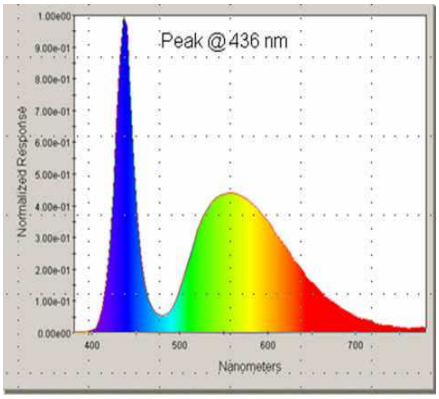
Research was undertaken by the University of New South Wales (Australia) in the late1980's to study the behaviour of the human eye in different lighting and working conditions. The light distribution of the Oldham main light source was engineered using this research to provide the optimal working light. The Oldham D 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.



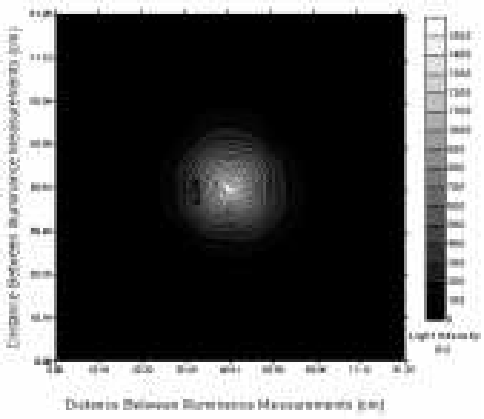
The retina of the human eye plays a critical role in how we see. The retina, located at the back of the eyeball, contains photoreceptors that convert light into electrical impulses that travel through the optic nerve to the brain. There are two types of photoreceptors: cones and rods; rods have greater 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 D-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



ISOCANDELA BEAM PROFILE



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 "D" caplamp, demonstrating clearly that the lamp is conducive to improving visual performance in typical mining / tunnelling conditions.

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 "D" caplamp lighting intensity profile is depicted in the isocandela plot. The tight spot profile shows the precise nature of the "D" caplamp focus, making it ideal for viewing distant objects or for conducting fine detail work tasks that require high illuminance.

L9 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.