OLDHAM

GL9 Li-Ion Safety Lamp
TECHNICAL DATASHEET

GL9 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 proven headpiece design:
Longer life expectancy, even in the harshest environments.

Maintenance-free battery design:
Reduced lamproom maintenance requirements.

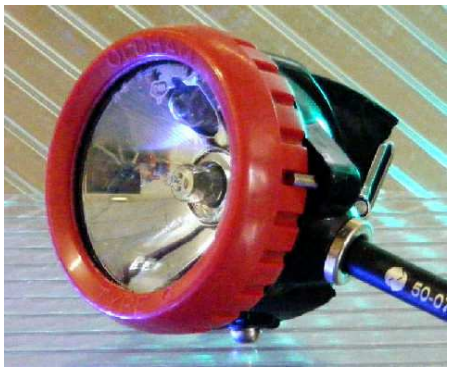
Fully repairable "G" headpiece:
Low operational and life running costs

38 lumen output focussed over 3.0 degrees angle:
High intensity light concentrated in the operator's field of vision.

Bulb manufactured to Oldham's specific criteria:
Optimised lighting and battery performance even at end of shift

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 GL9 is not certified against mining safety standards and is therefore only recommended for use in hard-rock mining and tunnelling or other non-hazardous applications.

Charging:
Care should be taken to recharge the GL9 at a maximum of 4.2-volt. Charging at higher voltages will invalidate warranty and may lead to permanent damage to the battery.

BATTERY & CAP LAMP PART NUMBERS	
L9 Lithium-Ion Battery	M456623
GL9 Lamp (38 Lumen main bulb)	M271551
Single Lamp Charger	M656501
10-Lamp Charger	M656601

G-HEADPIECE AND CABLE SPECIFICATION	
Number of Light Sources	1 main halogen & 1 auxiliary bulb
Main bulb rating	4.1V-0.75A 38 lumen ~10 hour shift
Auxiliary bulb rating	0.46 amp
Type of cable	Flexible twin core short lay polychloroprene sheath
Light Output	1200 lux at 1.0m
Max. beam intensity over 3.0^{O}	7,000cd
Angle over which intensity is not less than 1 candela	120^{O}
Burning time with auxiliary light	30+ 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

OLDHAM Lion Lithium Battery

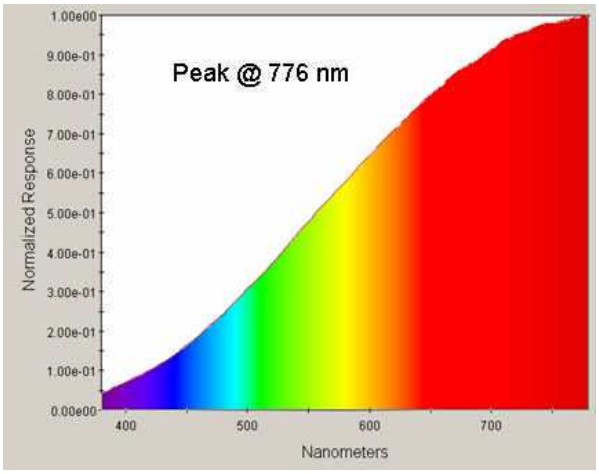
EnerSys Power/Full Solutions

OLDHAM

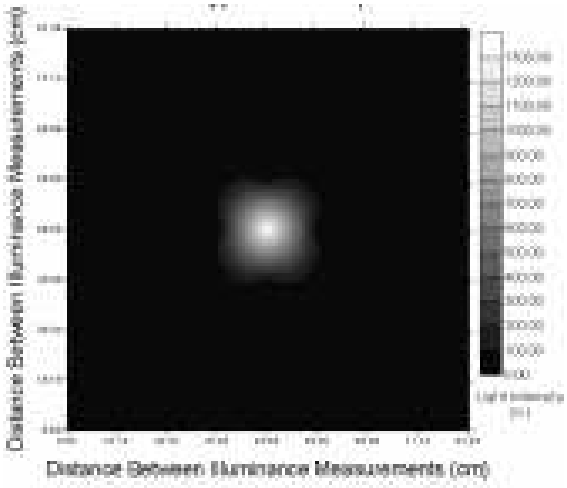
GL9 Li-Ion Safety Lamp

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 GL9 caplamp achieves a spot of ~7000 Cd over 3 degrees (this is the normal area of focused sight for the human eye) and 10 Cd over 120 degrees. The battery voltage seriously effects the light output from any bulb, where a small percentage change in voltage greatly reduces the lumen output of the light source. To counter this effect, the main bulb has been designed and manufactured to Oldham's specific criteria, which stabilises voltage toward the end of the daily working shift, and optimises light output. This results in a brighter lighting performance from 8 to 10 hours than any other competitor. The main bulb has a life of more than 1000 hours.

SPECTRAL POWER DISTRIBUTION



ISOCANDELA BEAM PROFILE



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 spectral content of visible light can be characterised by the spectral power distribution (SPD) as shown above, indicating the visible spectrum of light produced by the G-type caplamp.

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 halogen bulb fitted in the G headpiece has a greater intensity in the long-wave region of the light spectrum when compared with other light sources. This activates the cones and enables the eye to see colour, making the lamp more suitable for seeing detail vision such as the ore vein in a nickel mine..

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 GL9 caplamp lighting intensity profile is depicted in the isocandela plot. The tight spot profile shows the precise nature of the GL9 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 may 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.