DIALIGHT INDUSTRIAL LED LIGHTING

For Metals & Mining

AMERICAS

Dialight

WHY LIGHTING MATTERS in Metals and Mining Applications

Lighting is of critical importance in Metals and Mining applications to maximize both safety and productivity. These sites are among the most dangerous to work due to extremely harsh conditions and explosive environments. It is without question that the lighting must be able to withstand combustible atmospheres and prevent explosions, while also providing clear illumination for workers to perform tasks safely. For this reason, and the fact that workers can struggle with fatigue when operating complicated, specialized equipment for long periods of time, United Steelworkers recommends bright white lighting.
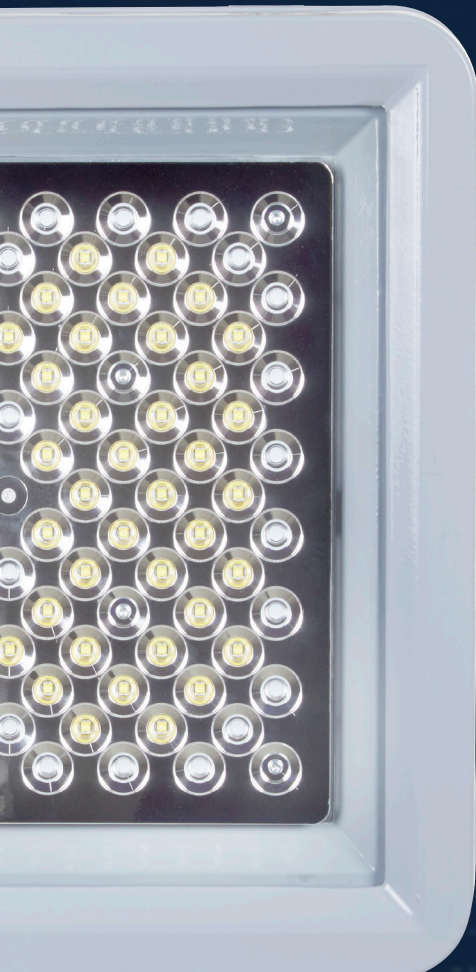
- Noisy, complex heavy machinery
- High heat and high vibration
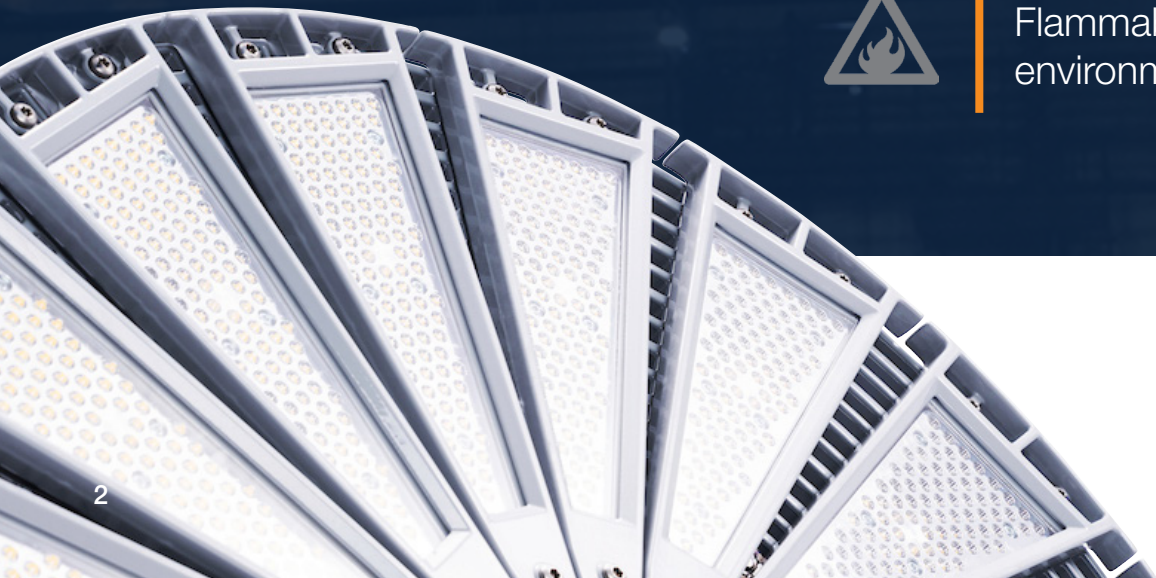- Chemical vapors, dust and debris
- Physical hazards, such as slips, falls, and moving objects
- Arc Flash
- Flammable and explosive environments

THE COST OF POOR LIGHTING in Metals and Mining Applications

Poor illumination can contribute to tragic work site accidents and injuries in the Metals and Mining sector. Between 2009-2018 the US Bureau of Labor statistics cited:

61,700 NON-FATAL INJURIES with **$2.1 BILLION** TOTAL COSTS

**365** FATALITIES with **$373 MILLION** TOTAL COSTS

While significant strides have been made by organizations such as the MSHA over the past few decades to improve safety, the Metals and Mining industries inherently involve risks and hazards that demand high quality lighting. When choosing a lighting partner for your facilities, care must be taken to ensure their products have proven to perform safely and reliably in your environments and offer a sustainable solution.
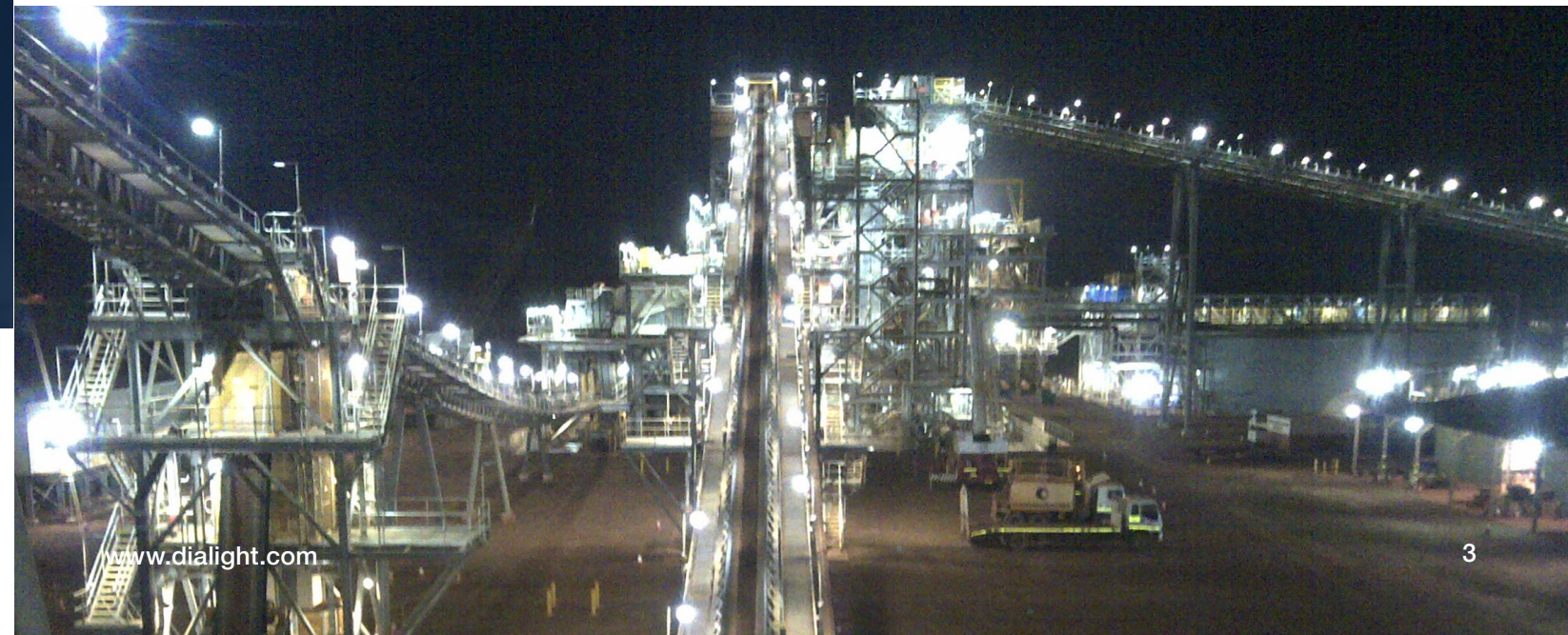
DIALIGHT SOLUTIONS for Metals and Mining Applications

Dialight is the world leader in industrial LED lighting technology with millions of fixtures installed worldwide. We specialize in lighting products designed for the world's harshest industrial environments – enabling industrial customers to reduce their energy costs, maintenance costs, and carbon footprint while maximizing the safety and productivity of their employees and facility. From our signature High Bay line to our versatile Linear fixtures, Dialight offers a large selection of rugged products ideally suited for environments found within the Metals and Mining Industry.
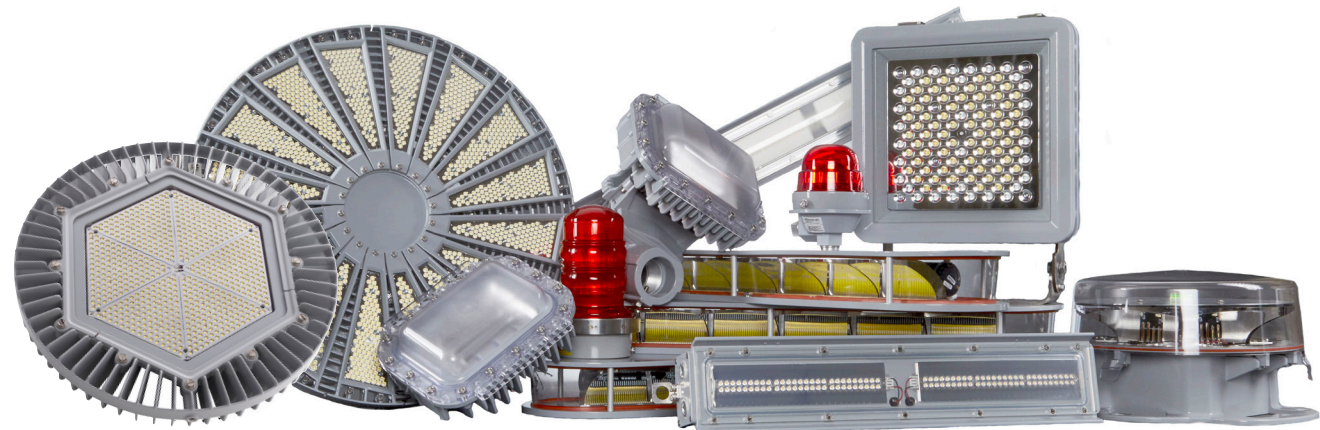
WHERE TO USE DIALIGHT PRODUCTS in Metals and Mining Applications

METALS

- FURNACES
- CATWALKS
- CRANES
- HOT MILL, PICKLING, AND COLD MILL PROCESSING AREAS
- ELECTRICAL EQUIPMENT ROOMS
- COIL STORAGE AND WAREHOUSES
- GENERAL AREAS
- MAINTENANCE SHOPS

MINING

- MILL PROCESS AREAS
- CONVEYORS
- GENERAL FLOOD LIGHTING FOR OPEN PITS
- POWER STATIONS
- EXCAVATOR DRAG LINES
- LOADING / UNLOADING AREAS
- WAREHOUSES AND GENERAL AREAS
- MAINTENANCE SHOPS

See product portfolio pages for more detailed product and ordering information

TECHNOLOGY DIFFERENTIATION

When choosing an LED Lighting partner, consider how their products are engineered, constructed and tested prior to making your decision. Most Dialight products are engineered to a **10 year warranty** and were designed with harsh environments, such as Metals and Mining applications, in mind.

CUSTOM POWER SUPPLIES

Long-life potted drivers with optimized thermal dissipation for protection against environmental contaminants and vibration related failures.

LOW MAINTENANCE MECHANICAL DESIGN

Sealed and optimized to reduce or eliminate the need for maintenance over the life of the fixture. Easy to install and retrofit to existing infrastructure.

LATEST LEDS AND ADVANCED OPTICS

Highly efficient, crisp, low-glare illumination. Lighting where you need it, not where you don't.
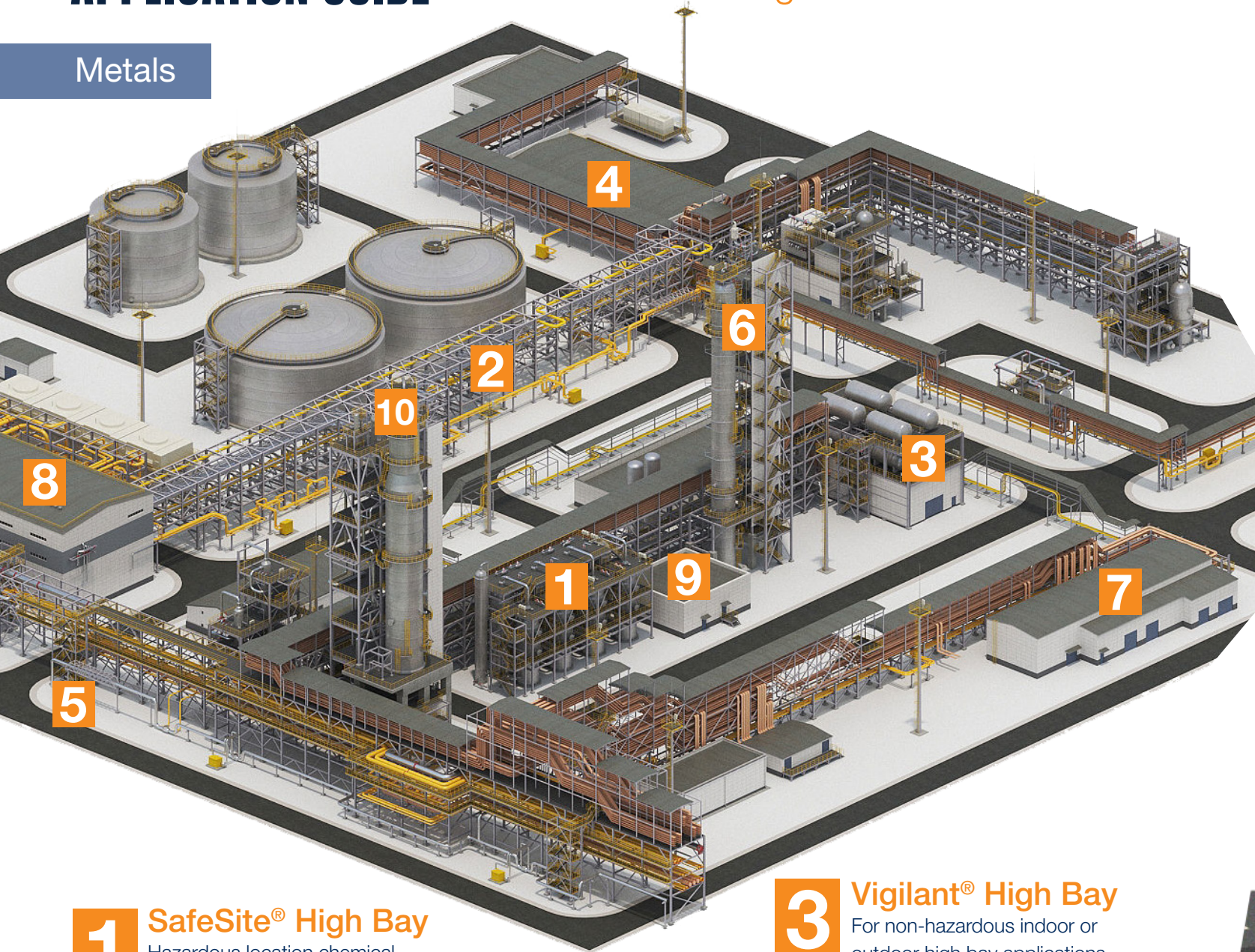
INTELLIGENT CONTROLS

Flexibility to group, dim and schedule lights around the unique needs of a facility to maximize energy savings. Plus, seamless integration with existing factory automation.
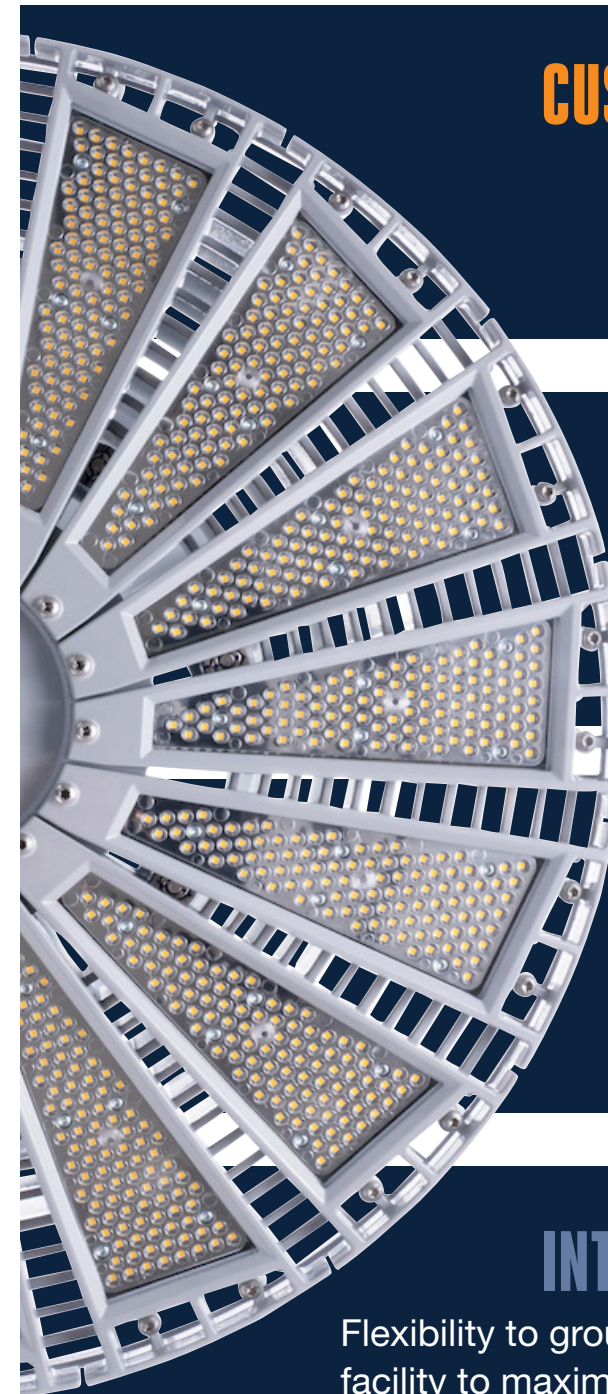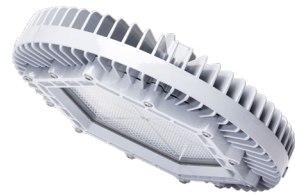
APPLICATION GUIDE for Metals and Mining Sites

Metals

4 SafeSite® and Vigilant® Low Bays
For hazardous and non-hazardous lower ceiling indoor or outdoor applications where wider light distribution is critical, boilers and basements specifically.

5 StreetSense® Street Light
For plant maintained roadways and general outdoor illumination

6 SafeSite® and DuroSite® Flood Lights
For hazardous and non-hazardous indoor or outdoor flood lighting applications; multiple beam patterns available
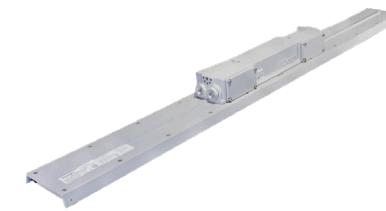
7 Reliant™ High Bay
For indoor, light industrial applications and lighter-duty areas of heavy industrial facilities, such as warehouses

8 Vigilant® High Output High Bay
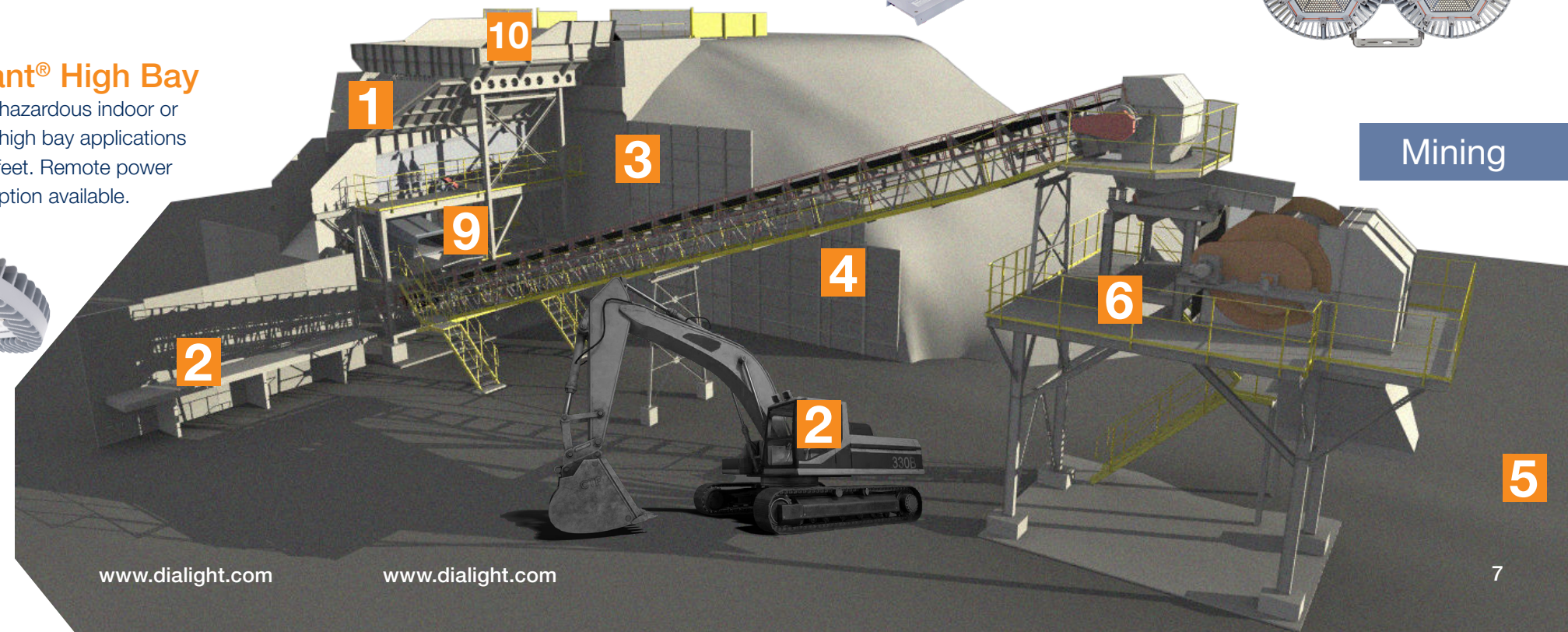For high ceiling high bay applications typically 40 feet or above

9 SafeSite® and Vigilant® LP/TC Linears
For hazardous and non-hazardous indoor or outdoor fluorescent strip/vaportite replacements, task or inspection lighting, electrical rooms, shops, and process areas. 4ft and 2ft versions available

8 Vigilant® Dual Floodlight
For indoor or outdoor high power flood applications (Typical 1,000 watt or better HID replacement)

1 SafeSite® High Bay
Hazardous location chemical storage and processing

3 Vigilant® High Bay
For non-hazardous indoor or outdoor high bay applications over 14 feet. Remote power supply option available.

2 SafeSite® and Vigilant® Area Lights
For hazardous and non-hazardous lower ceiling indoor or outdoor process and stanchion mount applications*

Mining

*Ask about our retrofit adapters to save labor by retrofitting to existing HID infrastructure

CASE STUDY NLMK Pennsylvania *Sharon, Pennsylvania*

To keep the operation well-illuminated 24/7, the facility runs more than 10,000 lights throughout production, warehouse and inspection areas, in roadways, waterways and parking lots and perimeter security lighting. Just 6 years ago, the entire facility relied on a mix of conventional HID lights, including high pressure sodium and mercury vapor, with a few fluorescents in key areas. Because of the heavy industrial environment and the failureprone nature of the HID bulbs and fixtures, electrical crews were continuously bogged down with lighting maintenance. "If we got two years out of the lights, we were happy, but they were very dim," said Jeff Stidham, NLMK facilities maintenance manager at the site. "Changing the bulbs was extremely difficult and required that we take production equipment and cranes offline, which cut severely into plant operations."

Determined to find a better solution to reduce both the cost and the headache, Stidham began investigating LED lighting as an alternative to the conventional HIDs. He invited several companies to come in and run a 6-8 month trial with test fixtures throughout the plant. "Dialight was hands-down our top pick," Stidham said. "We especially liked the heavy duty aspect of the fixtures, because we needed something that could hold up to the steel mill environment. This is where Dialight blew everyone out of the water." NLMK placed an initial order of 800 Dialight LED High Bays for its hot mill area, thus kicking off a full plant-wide conversion that's now in its 6th year. Stidham estimates the facility is roughly 40% converted to Dialight LED, with a total fixture count nearing approximately 5,000 Dialight LEDs in place. So far, the plant has already saved at least $50,000 annually on maintenance, and Stidham says it could be perhaps as much as $100,000. In addition to the mass quantity of High Bays in the rolling and other production areas, Stidham says their other "favorite" fixture and most popular are the 70W Area Lights, which was one of the first test products installed at the facility. After just 4 months in place, the Area Lights were enough to prompt the 2nd largest retrofit project in the plant – a street lighting upgrade using nearly 400 Dialight StreetSense fixtures.

- Upgraded from over 10,000 HID lights including mercury vapor, HPS, fluorescent & incandescent
- Upgraded to a variety of Dialight LED High Bays, Area Lights, Linears, StreetSense street lights & RTO fixtures
- At least $100,000 annual maintenance & energy savings so far
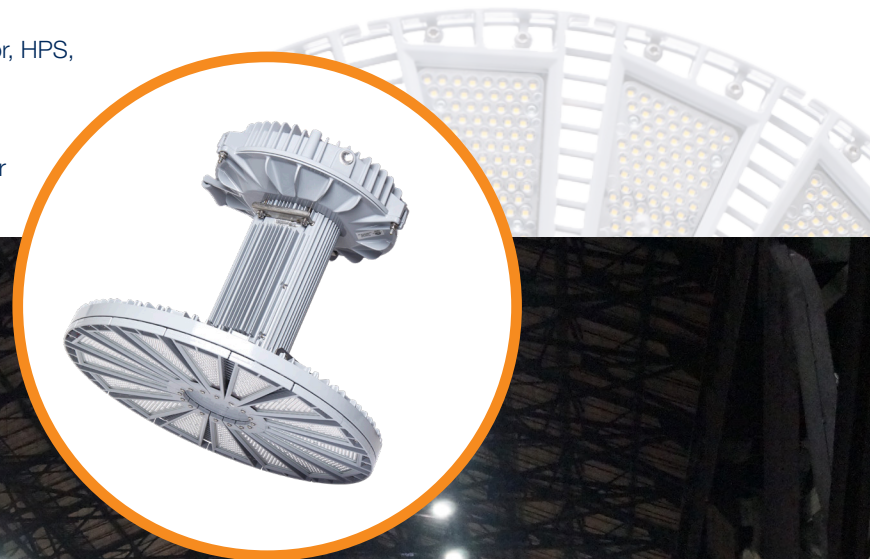
CASE STUDY Mining operator *Western Australia*

Located in a remote part of Western Australia where weather conditions are hot and dusty, a new iron ore mine has just been commissioned producing high quality ore that is shipped to steel makers around the world. As with any mine, appropriate lighting is a key component to safe operations, for both processing and non-processing infrastructure. Initially, the electrical engineering company tasked with electrical design and product selection opted to run with traditional HID light fittings as part of the Lighting solution. The tender was then released and won by Crushing Services International ("CSI"), based on cheaper, less efficient traditional HID luminaires. The challenge for Dialight was to provide a more efficient solution whilst keeping within the budget restraints.

Swayed by the Dialight advantage, CSI chose our DuroSite products for their durability, energy efficiency, five-year full-performance warranty, long-term reduction in operational and maintenance cost, and proven performance in rugged conditions. For example, the advanced optics and light efficacy of the DuroSite Conveyor Lights offered increased spacing between luminaires on conveyors, resulting in fewer fixtures being used overall, further reducing energy and maintenance related costs. In addition, Dialight's DuroSite Emergency Shower Safe Luminaire and DuroSite Bulkhead Emergency Lighting closed the loop on their fully integrated emergency lighting system. With over 1,500 DuroSite units installed to outfit the entire site with Dialight luminaires, the company saw a 50% reduction in energy consumption compared to the HID lighting they initially planned to install.

- Upgraded to DuroSite High Bays, Bulkhead Emergency Lighting, Bulkhead Luminaire, Emergency Shower Safe Luminaire, Conveyor Lights, and Area Light Gen II
- >50% increase in efficiency
- Increased safety
- Emergency lighting integration
- Five-year warranty
- Minimal maintenance
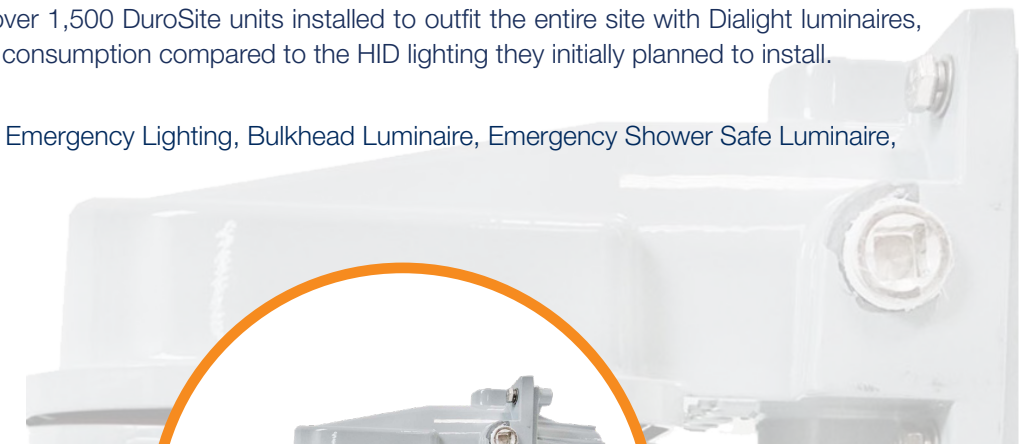
For more case study information please visit www.dialight.com.

PRODUCT PORTFOLIO High Bays
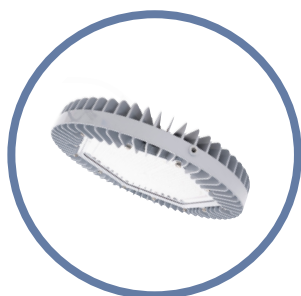
VIGILANT® HIGH BAY

For use in non-hazardous indoor and outdoor high bay and occasionally flood lighting applications. Replaces up to 1,000 watt traditional HID fixtures.

Ideally suited for:

| STORAGE/WAREHOUSE |
| MAINTENANCE SHOPS |
| BOILER ROOM |

SAFESITE® HIGH BAY

For use in hazardous classified high bay applications where chemical vapors or explosive dusts are present. See technical spec sheet for applicable certifications.

Ideally suited for:

| PROCESS AREAS |
| CHEMICAL STORAGE |
| LOADING/UNLOADING |

RELIANT™ HIGH BAY

For use in indoor non-hazardous applications to replace either HID or Fluorescent fixtures up to 1,000 watts where harsh environment protection is less of a concern.

Ideally suited for:

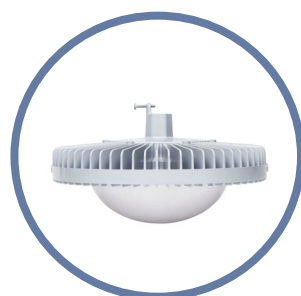| STORAGE/WAREHOUSE |
| MAINTENANCE SHOPS |
| SHIPPING/RECEIVING |

VIGILANT® HIGH OUTPUT HIGH BAY

For use in high output or high ceiling non-hazardous indoor and outdoor high bay applications. Replaces up to 1,500 watt traditional HID fixtures with mounting heights up to 100'.

Ideally suited for:

| STORAGE/WAREHOUSE |
| BALL MILL |
| MAINTENANCE SHOPS |

VIGILANT® LOW BAY

For use in indoor and outdoor lower mounting height high bay applications where wider light distribution is required. Replaces up to 250+ watt traditional HID fixtures.

Ideally suited for:

| WAREHOUSES |
| MCC/ELECTRICAL ROOMS |
| MAINTENANCE SHOPS |

SAFESITE® LOW BAY

For use in lower mounting height hazardous high bay applications where chemical vapors or explosive dusts are present. See technical spec sheet for applicable certifications.

Ideally suited for:

| PROCESS AREAS |
| CHEMICAL STORAGE |
| LABORATORIES |
| LOADING/UNLOADING |

PRODUCT PORTFOLIO High Bays

Part Number	Certification	Fixture Lumens	Wattage	lm/W	CCT	Lens	Beam Distribution
Vigilant® High Bay*							
HEU7MC2ANNWNGN	UL 1598/A, CSA	11,250	80	141	5000K (cool white)	Glass - Clear	Medium
HEU7MC2BNNWNGN	UL 1598/A, CSA	14,250	102	140	5000K (cool white)	Glass - Clear	Medium
HEU7MC2CNNWNGN	UL 1598/A, CSA	19,500	129	151	5000K (cool white)	Glass - Clear	Medium
HEU7MC2ENNWNGN	UL 1598/A, CSA	26,250	186	141	5000K (cool white)	Glass - Clear	Medium
SafeSite® High Bay*							
HED7MC2ANNWNGN	UL 844 (CID2)	11,250	80	141	5000K (cool white)	Glass - Clear	Medium
HED7MC2BNNWNGN	UL 844 (CID2)	14,250	102	140	5000K (cool white)	Glass - Clear	Medium
HED7MC2CNNWNGN	UL 844 (CID2)	19,500	129	151	5000K (cool white)	Glass - Clear	Medium
HED7MC2ENNWNGN	UL 844 (CID2)	26,250	186	141	5000K (cool white)	Glass - Clear	Medium
HEC7MC2ENNWNGN	UL 844 (CID1)	23,500	186	126	5000K (cool white)	Clear Tempered Glass	Circular
Reliant™ High Bay*							
RHU5MC2FDCNNGN	UL 1598, CSA	26,400	199	133	5000K (cool white)	Diffused Polycarbonate	Medium
RHU5MC2HDCNNGN	UL 1598, CSA	31,500	239	132	5000K (cool white)	Diffused Polycarbonate	Medium
Vigilant® Low Bay							
LEULUC29NNWNGN	UL 1598/A, CSA	9,000	80	113	5000K (cool white)	Polycarbonate Dome - Diffused	Ultra Wide
SafeSite® Low Bay							
LEDLUC29NNWNGN	UL 844 (CID2)	9,000	80	113	5000K (cool white)	Polycarbonate Dome - Diffused	Ultra Wide

*Polycarbonate lens options available. Consult product spec sheet for more information.

Occupancy Sensor models available, see Product Specification Sheet

Dialight   **Dialight**

PRODUCT PORTFOLIO Area Lights

VIGILANT® AREA LIGHT

This extremely versatile fixture series can be used in non-hazardous indoor and outdoor applications. Designed for ease of installation, this product line features quick install retrofit kits that support legacy HID fixtures from GE, Crouse, Appleton, Killark and others. See technical spec sheet for more information and additional accessories.

Ideally suited for:

CATWALKS
TRANSPORT VEHICLE SUPPLEMENTAL LIGHTING
LOADING/UNLOADING
CONVEYORS

SAFESITE® AREA LIGHT

For use in hazardous classified applications where chemical vapors or explosive dusts are present. Designed for ease of installation, this product line features quick install retrofit kits that support many legacy HID fixture brands. See technical spec sheet for hazardous certifications and more information on additional accessories.

Ideally suited for:

PROCESS AREAS
CATWALKS
CONVEYORS
LOADING/UNLOADING
CHEMICAL STORAGE

Part Number	Certification	Fixture Lumens	Wattage	lm/W	CCT	Lens	Beam Distribution	Mounting
Vigilant® Area Light								
ALU5BC23NSNNGN	UL 1598/A, CSA, NOM	2,800	24	117	5000K (cool white)	Diffused Polycarbonate	360°	45° Stanchion
ALU5BC27NWNNGN	UL 1598/A, CSA, NOM	6,700	52	129	5000K (cool white)	Diffused Polycarbonate	360°	45° Wall
ALU7BC29NNWNGN	UL 1598/A, CSA, NOM	9,000	66	136	5000K (cool white)	Glass - Clear	360°	3/4" NPT
SafeSite® Area Light								
ALF5BC26NSNNGN	UL 844 (CID2, CII, CIII)	5,300	40	133	5000K (cool white)	Diffused Polycarbonate	360°	45° Stanchion
ALC7BC26NNWNGN	UL 844 (CID1)	5,400	40	135	5000K (cool white)	Clear Tempered Glass	360°	3/4" NPT
ALD7BC27NVNNGN	UL 844 (CID2, CIII)	7,300	52	140	5000K (cool white)	Glass - Clear	360°	0° Stanchion
ALD7BC27NSNNGN	UL 844 (CID2, CIII)	7,300	52	140	5000K (cool white)	Glass - Clear	360°	45° Stanchion
Accessories								
HZXW3	316 stainless steel adjustable mounting bracket							

For more details on product specifications including mounting information, please visit www.dialight.com.

WARNING - INSTALLATION & SECONDARY RETENTION. Use of any Dialight products without proper installation (including secondary retention / netting) and periodic inspections could cause severe injury or death. Dialight recommends that all installations should use secondary retention / netting (appropriate to the installation environment) where applicable.It is the exclusive responsibility of the contractor, installer and/or end-user to: (a) determine the suitability of the product for its intended application; and, (b) ensure that the product is safely installed (with secondary retention / netting where appropriate) and in compliance with all applicable laws and regulations. To the extent permissible under applicable laws, Dialight disclaims all liability for personal injury and/or other damage resulting from any dislodgment or other dislocation of its products.


PRODUCT PORTFOLIO Area Light Accessories

With a wide variety of brackets and retrofit kits available, Dialight's versatile Area Light can easily meet the needs of virtually any industrial application, while saving time and money on installation.
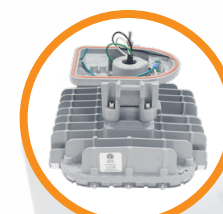
AREA LIGHT RETROFIT KITS

Dialight's Area Light series is available with quick install retrofit kits to the following products: Eaton's Crouse-Hinds – Champ®, GE Lighting Solutions – Filtr-Gard™, Holophane Petrolux® II, III, Thomas & Betts Hazlux®, Appleton® Mercmaster III , Appleton® Mercmaster II, and Killark® Certilite® & Certilite® V
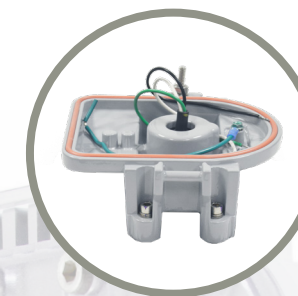
AREA LIGHT MOUNTING ACCESSORIES

The Area Light has always been extremely versatile and now with our new Universal Mounting Adapter (HZXUMA), it provides even greater flexibility by allowing you to modify stock you have on-hand to configure based on your needs. All available in Class I, Div. 2, Class II, and Class III certified options.

Eaton's Crouse-Hinds – Champ® Retrofit Kit - HZXTHCH

Pendant	Ceiling	Wall	Stanchion	Quad Mount
APM2	CM2	TWM2	JM5	QM25
APM3	CM3	TWM3	PM5	
HPM2				

Holophane® Petrolux II, III Retrofit Kit - HZXTHP3

Pendant	Universal	Stanchion	Ceiling	Wall
PD	UN	SA	CD	WL
GH		ST	CE	W
P		A	B, C, D	

Appleton® Mercmaster II Retrofit Kit - HZXTHM2

Pendant	Ceiling	Wall	Stanchion
LPA-75	LPC-75	LPWB-75	LPS-125
LPA-100	LPC-100	LPWB-100	LPS-150

Killark® Certilite® & Certilite® V Retrofit Kit - HZXTHKL

Pendant	Ceiling	Wall	Stanchion
VMA2B & VMA-2	VMX2B & VMX-2	VMB2B & VMB-2	VMD4B
VMA3B & VMA-3	VMX3B & VMX-3	VMB3B & VMB-3	VMD5B
VMC2B & VMC-2	VMX6B, 7B, 8B, 9B		VMS5B
VMC3B & VMC-3			
VMF2B, 3B			

Appleton® Mercmaster III Retrofit Kit - HZXTHAP

Pendant	Ceiling	Wall	Stanchion
KPA- 75, 100	KPC-75	KPWB-75	KPS-125
KPAF-75, 100	KPC-100	KPWB-100	KPS-150
KPCH-75, 100			KPST-125
			KPST-150

Thomas & Betts Hazlux® Retrofit Kit - HZXTHTB

Pendant	Pendant Cone	Flexible Pendant	Ceiling	Wall
3P	3F	3C	3W	5S
4P	4F		4W	6S
				5J, 6J

Wall	25° Angle Stanchion	25° Angle Stanchion	Straight Stanchion	Straight Stanchion
VB2-VIB	VS4	VS4-VIB	VL4	VL4-VIB
VB3-VIB	VS5	VS5-VIB	VL5	VL5-VIB

GE Lighting Solutions – Filtr-Gard™ Retrofit Kit - HZXTHGE

Pendant	Ceiling	Wall	Stanchion	Quad Mount
3P	3F	3C	3W	5S
4P	4F		4W	6S
				5J, 6J

UMA Area Light
ALx-xxxx-xxUx-xxN

Stanchion 45°
HZXS45

Wall 45°
HZXW45

Wall 0°
HZXW01

Conveyor
HZXCV34

NEW
Ceiling
HZXFM

For more details on product specifications including mounting information, please visit www.dialight.com.

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PRODUCT PORTFOLIO Floodlights

VIGILANT® DUAL FLOODLIGHT

Round high lumen dual floodlight to replace up to 1500 watt HID units in nonhazardous areas. See technical spec sheet for more information on additional accessories, optical patterns, and hazardous certified options.

Ideally suited for:

| GENERAL FLOOD LIGHTING |
| RAIL YARDS |

SAFESITE® 10/15K FLOODLIGHT

Traditional square flood light designed to replace 250 watt and 400 watt HID units in hazardous areas. See technical spec sheet for information on additional accessories and optical patterns.

Ideally suited for:

| LOADING/UNLOADING |
| CHEMICAL STORAGE |

STREETSENSE® STREET LIGHT

For use in plant maintained roadways, parking areas and general outdoor illumination.

Ideally suited for:

| ROADWAYS/PARKING AREAS |

Part Number	Certification	Fixture Lumens	Wattage	lm/W	CCT	Lens	Beam Distribution
Vigilant® Dual Floodlight							
FDU76C2MDSNNGN	UL 1598/A	56,000	385	145	5000K (cool white)	Clear Tempered Glass	NEMA 6
FDU76CAMDSNNGN	UL 1598/A	56,000	457	122	5000K (cool white)	Clear Tempered Glass	NEMA 6
DuroSite® Floodlight							
FLW266NC2NG	UL 1598/A	11,250	106	106	5000K (cool white)	Clear Tempered Glass	NEMA 6
FLW455NC4NG	UL 1598/A	14,500	140	104	5000K (cool white)	Clear Tempered Glass	NEMA 5
SafeSite® Floodlight							
FLD266NC2NG	UL 844 (CID2)	11,250	109	103	5000K (cool white)	Clear Tempered Glass	NEMA 6
FLD466NC4NG	UL 844 (CID2)	15,000	130	115	5000K (cool white)	Clear Tempered Glass	NEMA 6
StreetSense® Street Light							
SL3C5CLGG	UL 1598, CSA	6,400	62	103	5000K (cool white)	Clear Tempered Glass	Type III
SL3C7ILGG	UL 1598, CSA	15,700	154	102	5000K (cool white)	Clear Tempered Glass	Type III

For more details on product specifications, please visit www.dialight.com.

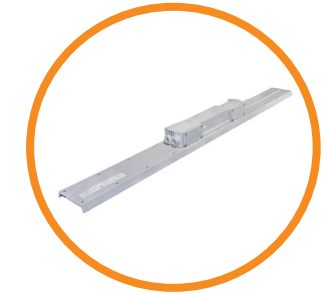# PRODUCT PORTFOLIO Linear Lights

VIGILANT® LP/TC LINEAR

Now featuring Dialight's exclusive 10 year warranty. Available in 2ft and 4ft varieties. For use in indoor and outdoor non-hazardous linear and occasionally flood lighting applications.

Ideally suited for:

| MCC/ELECTRICAL ROOMS |
| WALKWAYS |
| SHOP AREAS |

SAFESITE® LP/TC LINEAR

Now featuring Dialight's exclusive 10 year warranty. Available in 2ft and 4ft varieties. For use in indoor and outdoor hazardous certified linear and occasionally flood lighting applications where chemical vapors or explosive dusts are present. CID1 linear available in a different series. Refer to Dialight website for more information.

Ideally suited for:

| LABORATORIES |
| PROCESS AREAS |

Part Number	Certification	Fixture Lumens	Wattage	lm/W	CCT	Lens	Beam Distribution
Vigilant® Low Profile Linear							
LKU4MC27DNNNGN	UL 1598/A	7,250	52	139	5000K (cool white)	Clear Polycarbonate	Medium
LJU4MC25DNNNGN	UL 1598/A	4,750	37	128	5000K (cool white)	Clear Polycarbonate	Medium
LKU4MC29DNNNGN	UL 1598/A	9,600	70	137	5000K (cool white)	Clear Polycarbonate	Medium
SafeSite® Low Profile Linear							
LKD4MC29DNNNGN	UL 844 (CID2, CIID2, CIII)	9,600	70	137	5000K (cool white)	Clear Polycarbonate	Medium
LKD4MC27DNNNGN	UL 844 (CID2, CIID2, CIII)	7,250	52	139	5000K (cool white)	Clear Polycarbonate	Medium
LJD4MC25DNNNGN	UL 844 (CID2, CIID2, CIII)	4,750	37	128	5000K (cool white)	Clear Polycarbonate	Medium
LSC3C4M3GEX	UL 844 (CID1)	7,250	78	93	5000K (cool white)	Clear Tempered Glass	Medium
LSD3C4MEP*	UL 844 (CID2)	7,000	85	82	5000K (cool white)	Clear Polycarbonate	Medium

*Battery backup unit

For more details on product specifications, please visit www.dialight.com.

HAZARDOUS LOCATIONS RATINGS

Fixed and portable fixtures for installation and use in hazardous (classified) locations Class I, Divisions 1 and 2, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Class II, Division 2, Groups F and G; and Class III, Divisions 1 and 2, in accordance with the National Electrical Code, NFPA 70

Classes

The classes define the general nature of hazardous material in the surrounding atmosphere.

Class	Hazardous Material in Surrounding Atmosphere
Class I	Hazardous due to the presence of flammable gases or vapors in the air in quantities to produce explosive or ignitible mixtures
Class II	Hazardous due to the presence of combustible and/or conductive dusts
Class III	Hazardous due to the presence of easily ignitible fibers and flyings, such as wood chips, cotton, flax and nylon. Group classifications are not applied to this class

Divisions

The division defines the likelihood of hazardous substances being present in ignitible concentrations in the surrounding atmosphere.

Division	Presence of Hazardous Material
Division 1	The hazard exists during normal operating conditions
Division 2	The hazard is present only due to accidental system breakdowns or abnormal operations

Groups

The group(s) are determined by the specific hazardous materials which may be present.

Group	Hazardous Material in Surrounding Atmosphere
Class I Groups	
Group A	Acetylene
Group B	Hydrogen, fuel and combustible process gases containing more than 30% hydrogen by volume or gases of equivalent hazard such as butadiene, ethylene oxide, propylene oxide and acrolein
Group C	Carbon monoxide, methyl ether, hydrogen sulfide, methylacetylene, cyclopropane, ethyl and ethylene or gases of equivalent hazard
Group D	Gasoline, acetone, ammonia, benzene, butane, cyclopropane, ethanol, hexane, methanol, methane, vinyl chloride, natural gas, naphtha, propane or gases of equivalent hazard
Class II Groups	
Group E	Combustible metal dusts, including aluminum, magnesium and their commercial alloys or other combustible dusts whose particle size, abrasiveness and conductivity present similar hazards in connection with electrical equipment
Group F	Carbonaceous dusts that have more than 8 percent total entrapped volatiles or that have been sensitized by other materials so that they present an explosion hazard. Coal, carbon black, charcoal, and coke dusts are examples of carbonaceous dusts
Group G	Flour dust, grain dust, flour, starch, sugar, wood, plastic and chemicals

Reference
2020 NEC Code

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