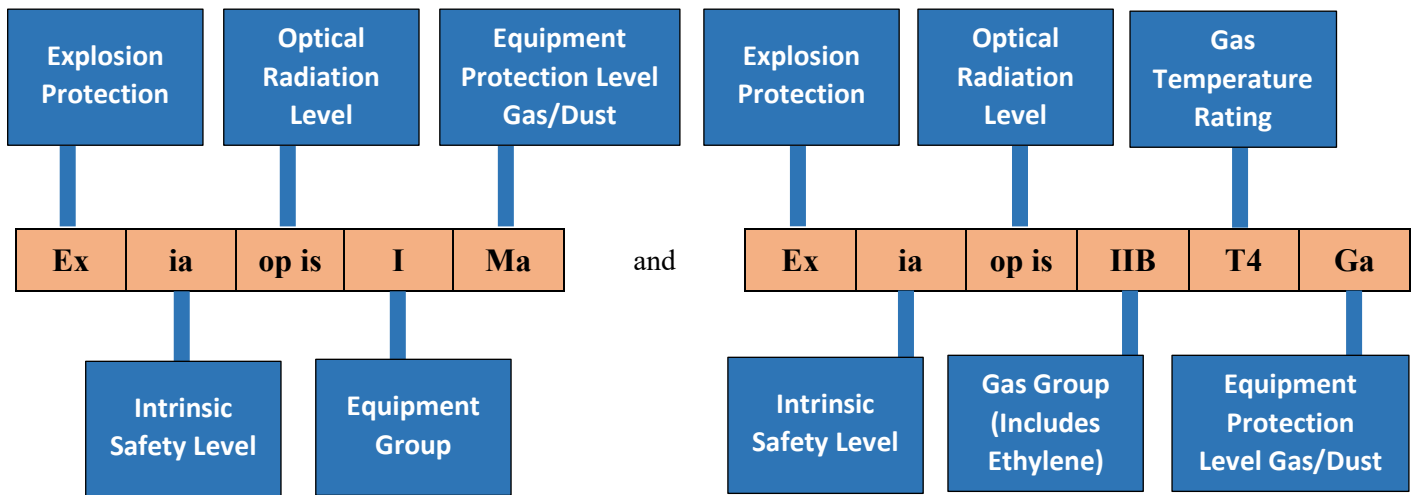


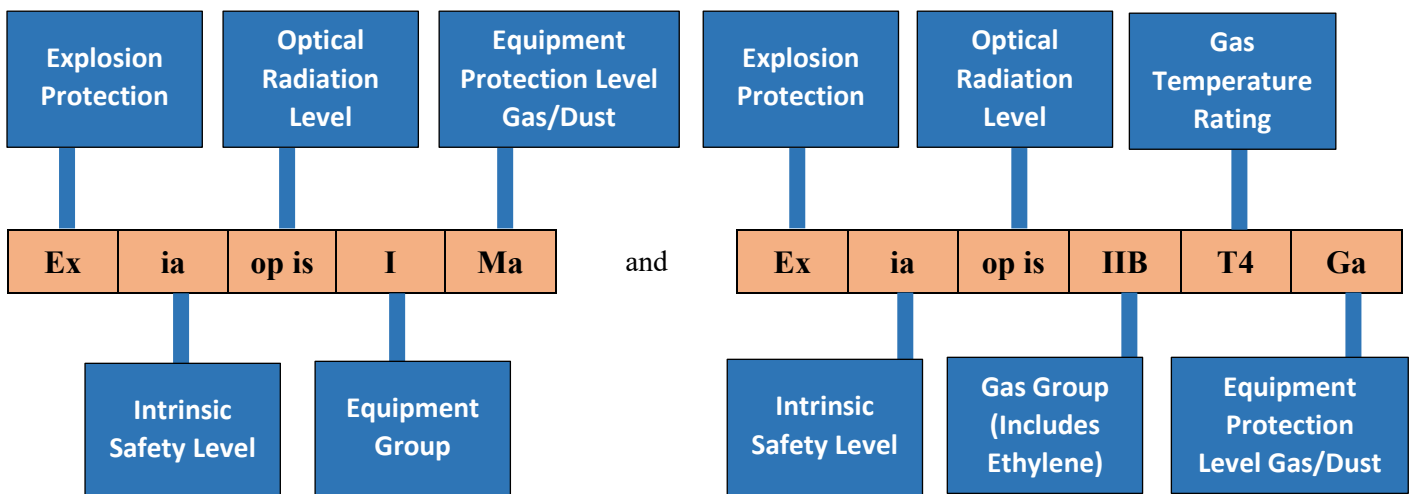
IECEX is an international system for certification of equipment for use in explosive atmospheres. Its quality assessment specifications are based on standards prepared by the International Electrotechnical Commission (IEC).

The EXIN Light EX90L range of lights are regularly tested, assessed and certified by accredited third party test laboratories to ensure they adhere to these strict standards. Each EX90L model carries markings which indicate the particular environments that it has been designed for. These markings can be found on the rating labels attached to each light. The detail of the certified markings for each model is as follows.

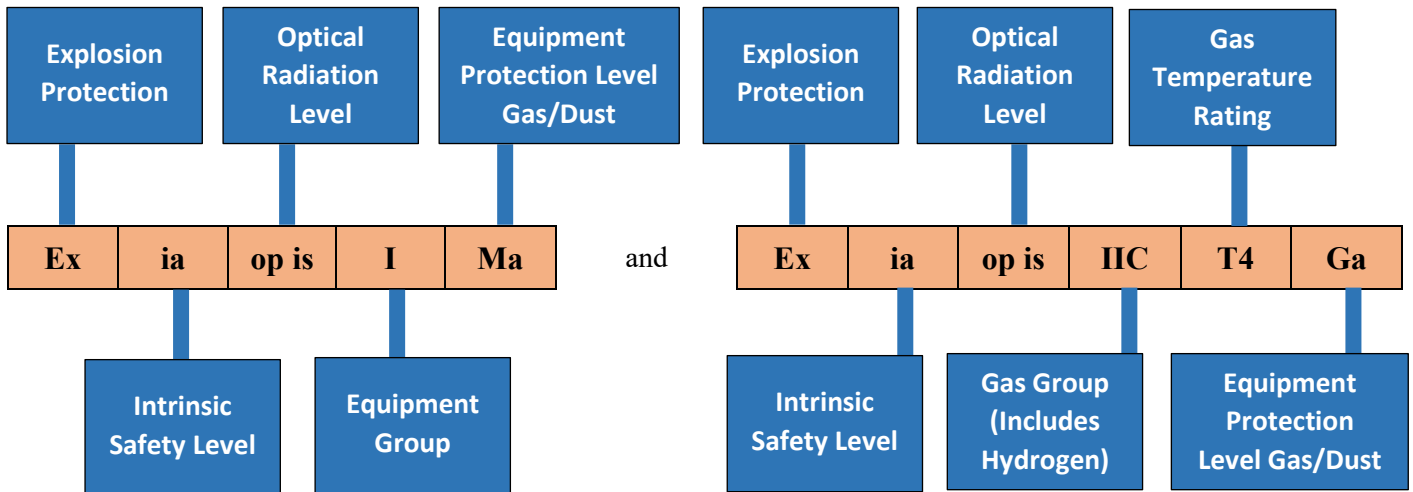
EX90L T4 IIB 1440 SS



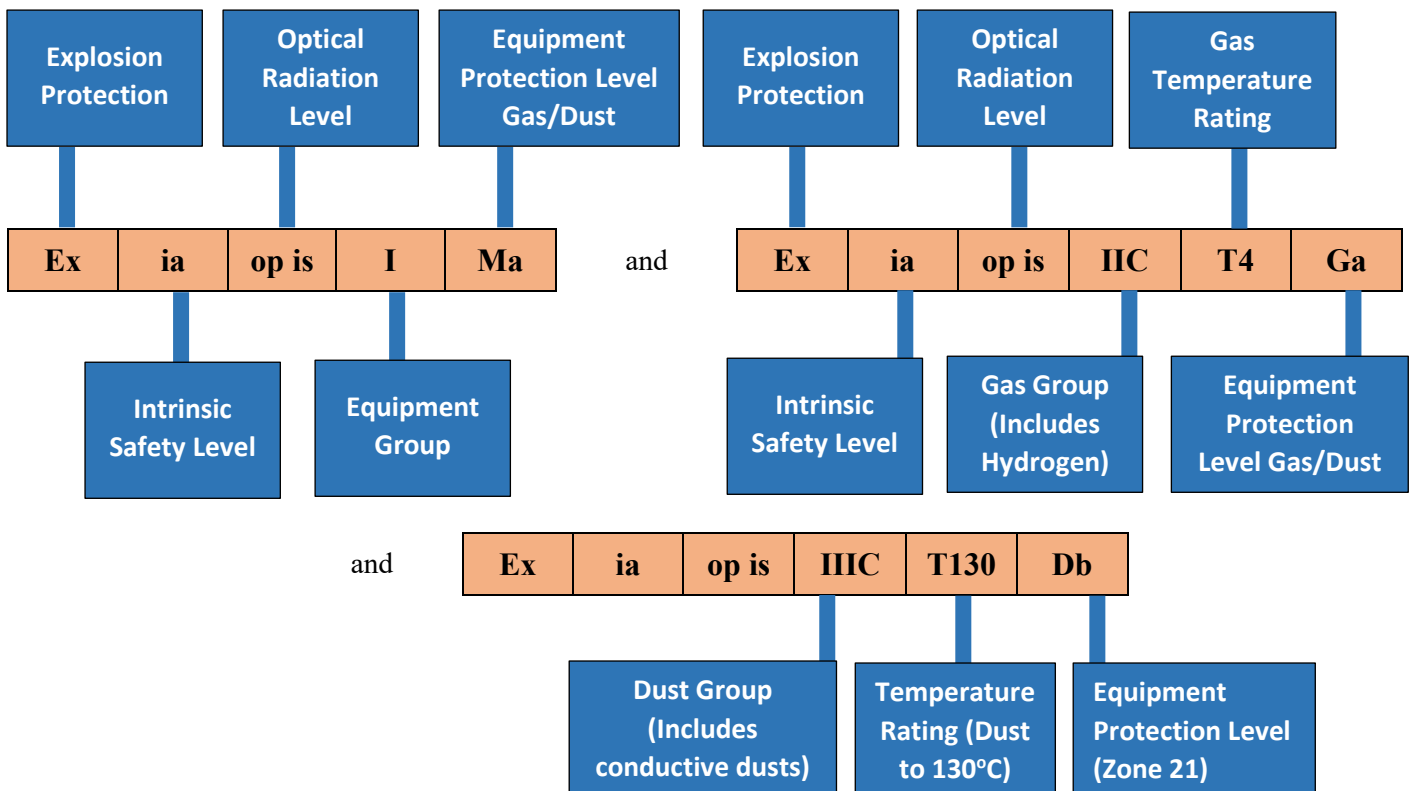
EX90L T4 IIB 720 DS



EX90L T4 IIC 720 SS



EX90L T4 IIIC 2000 SS – Explosive Dust Environments



All EX90L models are certified to the maximum level possible for the following:

| | |
|--|---|
| Intrinsic Safety (ia) | Highest level of intrinsic safety (Zone 0) |
| Equipment Group (I) | Highest level, suitable for underground mining applications |
| Equipment protection level (Ma) | Highest level of protection with no exposed conductive materials (Zone 0) |
| Light Radiation level (op is) | Lowest level of optical radiation (inherently safe) |
| Gas Temperature Rating (T4) | Will not cause ignition in environments that ignite at as low as 135°C or above |
| Equipment protection level (Ga) | Highest level of protection able to withstand 2 abnormal faults (Zone 0) |

| Protection Concept - Electrical - Gas | |
|--|-------------------|
| Type of Protection (electrical - gas) | Reference |
| General Requirements | EN/IEC 60079-0 |
| Flameproof - Ex d / da / db / dc | EN/IEC 60079-1 |
| Purge/Pressurised - Ex p / pxb / pyb / pzc | IEC 60079-2 |
| Quartz/Sand Filled - Ex q / qb / qc | EN/IEC 60079-5 |
| Oil Immersion - Ex o / ob / oc | EN/IEC 60079-6 |
| Increased Safety - Ex e / eb / ec | EN/IEC 60079-7 |
| Intrinsic Safety - Ex i / ia / ib / ic | EN/IEC 60079-11 |
| Non Sparking - Ex nA / nC / nL | EN/IEC 60079-15 |
| Encapsulation - Ex m / ma / mb / mc | EN/IEC 60079-18 |
| Optical Radiation - Ex op is / op sh / op pr | EN/IEC 60079-28 |
| Trace Heating Systems - Ex e / Ex 60079-30-1 | EN/IEC 60079-30-1 |
| Special Protection Ex s | EN/IEC 60079-33 |
| Caplights | EN/IEC 60079-35-1 |
| Controlled Spark Duration Power-i | TS 60079-39 |
| Process Sealing | TS 60079-40 |
| Flame Arresters | EN 16852 |
| Diesel Engines | EN 1834-1,2,3 |

| Protection Concept - Electrical - Dust | |
|--|-----------------|
| Type of Protection (electrical - dust) | Reference |
| General Requirements | EN/IEC 60079-0 |
| Enclosure - ta / tb / tc | EN/IEC 60079-31 |
| Purge/Pressurised - Ex p / pxb / pyb / pzc | EN/IEC 60079-2 |
| Intrinsic Safety - Ex i / ia / ib / ic | EN/IEC 60079-11 |
| Encapsulation - Ex m / ma / mb / mc | EN/IEC 60079-18 |

| Temperature Class (T Class) | |
|-----------------------------|---|
| Temperature Class (T Class) | Highest temperature achieved under the most adverse equipment rating and heating conditions. (Flashpoint temperature of some gases) |
| T1: 450°C | Ammonia (630°C), Hydrogen (560°C), Methane (537°C), Propane (470°C) |
| T2: 300°C | Ethylene (425°C), Butane (372°C), Acetylene (305°C) |
| T3: 200°C | Cyclohexane (259°C), Kerosene (210°C) |
| T4: 135°C | Di-ethyl Ether (160°C) |
| T5: 100°C | - |
| T6: 85°C | Carbon Disulphate (95°C) |

| Gas Zones | | | | |
|-----------|--|---------------|-----|-------------------------|
| Gas Zones | Definition | ATEX Category | EPL | Required Protection |
| Methane | Mines with methane and dust. Equipment remains energised in explosive atmosphere | M1 | Ma | Two Faults |
| Methane | Mines with methane and dust. Equipment is de-energised in explosive atmosphere | M2 | Mb | Severe Normal Operation |
| Zone 0 | Explosive atmosphere present continuously or for long periods, frequently | 1G | Ga | Two Faults |
| Zone 1 | Explosive atmosphere is likely to occur under normal conditions, occasionally | 2G | Gb | One Fault |
| Zone 2 | Explosive atmosphere is unlikely to occur under normal conditions, short periods | 3G | Gc | Normal Operation |

| Dust Zones | | | | |
|------------|--|---------------|-----|---------------------|
| Dust Zones | Definition | ATEX Category | EPL | Required Protection |
| Zone 20 | Explosive atmosphere present continuously or for long periods, frequently | 1D | Da | Two Faults |
| Zone 21 | Explosive atmosphere is likely to occur under normal conditions, occasionally | 2D | Db | One Fault |
| Zone 22 | Explosive atmosphere is unlikely to occur under normal conditions, short periods | 3D | Dc | Normal Operation |

| Gas Groups | |
|------------|--|
| Gas Groups | Gases are classified according to the ignitability of the gas/air mixture as defined in EN/IEC 60079-20-1 |
| IIA | Acetic Acid, Acetone, Ammonia, Butane, Cyclohexane, Propane, Gasoline (petrol), Methane (natural gas, non-mining), Toluene, Xylene, Methanol (methyl alcohol), Propane-2-ol (iso-propyl alcohol) |
| IIB | Group IIA gases plus, Di-ethyl ether, Ethylene, Ethanol Methyl ethyl ketone (MEK), Propane-1-ol (n-propyl alcohol) |
| IIC | Group IIA and IIB gases plus, Acetylene, Hydrogen |

| Dust Groups | |
|-------------|---|
| Dust Groups | Dusts are classified by the types of material that make up the dust |
| IIIA | Combustible Fibres and Flyings |
| IIIB | Group IIIA dusts plus, Non-Conductive Dusts |
| IIIC | Group IIIA and IIIB dusts plus, Conductive Dusts |

| Equipment Groups | |
|------------------|---|
| Equipment Group | Definition |
| Group I | Electrical equipment intended for use in mines susceptible to fire damp |
| Group II | Electrical equipment intended for use in explosive gas atmospheres |
| Group III | Electrical equipment intended for use in explosive dust atmospheres |