



I.S. Approved Flashlights

### Overview

#### Understanding Intrinsic Safe Approval

One of the most misunderstood topics involving equipment is the Classifications for Intrinsic Safe (I.S.) Approved equipment.

While everyone knows that you need approved equipment for hazardous locations, few people realize what the various classifications, groups and symbols actually mean.

I.S. Approved Classifications are structured so that equipment users know where they can (or cannot) use equipment in relation to explosive or potentially explosive atmospheres.

This topic is of particular importance to confined space rescuers, but is something about which all firefighters, first responders, safety managers, industrial hygienists, confined space entrants or anyone else working, entering or residing in or around a potentially hazardous or flammable location should be aware.

### Common Questions About Safety Approvals



Oil Rig



Tanker Truck



Mines

#### Q. Why do flashlights need to be approved?

A. So they can be used safely in hazardous locations without causing a fire or an explosion.

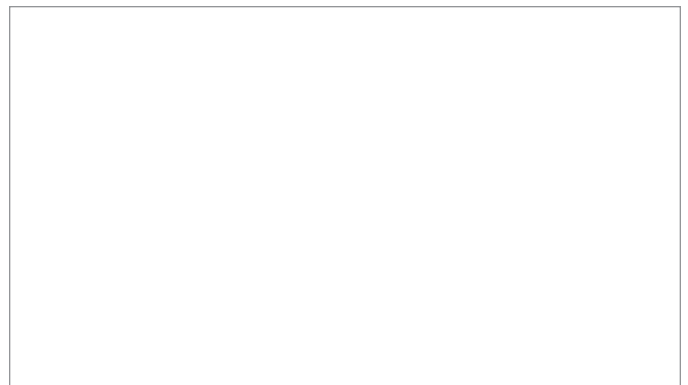
#### Q. What are hazardous locations?

A. Any area where a potential for explosion or fire exists because of:

- Flammable gases or vapors
- Finely pulverized dusts
- Easily ignitable fibers

#### Q. Where do these hazardous areas exist?

- A. • Chemical manufacturing plants
- Coal and/or grain warehouses
  - Petroleum refineries
  - Many other types of industrial/municipal facilities



## Common Questions About Safety Approvals (cont.)

### Q. Why are flashlights potentially dangerous in a hazardous location?

A. They can be a source of ignition in these areas. A source of ignition is:

- A spark or arc. This can be created when an unsealed light is turned on or if it is made of metal and dropped.
- A flashlight lamp that is hotter than the minimal ignition temperature of the gas, vapor, fiber or dust.

### Q. What do the different Classes, Divisions and Groups mean?

A. • Class I Locations are those in which flammable gases are present in the air in sufficient quantities to produce explosive or ignitable mixtures.

- Class II Locations are defined as hazardous because of the presence of combustible dusts.
- Class III Locations are defined as hazardous because of the presence of easily ignitable fibers or flyings.

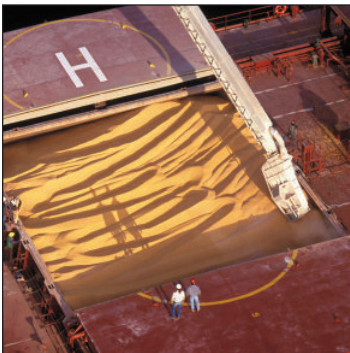


Example of Class I Location –  
Petrochemical Plant

### Examples of Class I Locations

Petroleum refineries, dry cleaning plants, petrochemical plants, hospitals, utilities, aircraft hangers, paint manufacturing, dip tanks containing flammable or combustible liquids, and spray finishing areas.

- Class I Division I Locations are areas where flammable liquids or gases are expected to be present during normal working hours.
- Class I Division II Locations are areas where flammable materials are handled, processed or used, but are normally confined within containers or closed systems.



Example of Class II Location –  
Grain Ship

### Examples of Class II Locations

Grain elevators, flour and feed mills, confectionery plants, bulk handling facilities, fireworks manufacturing and storage, grain ships, areas for packaging and handling of pulverized sugar and cocoa, manufacturing and storage of magnesium and aluminum, spice grinding mills and some coal handling plants.

- Class II Division I Locations are areas where combustible dusts may be suspended in the air under normal working conditions.
- Class II Division II Locations are areas where combustible dusts are not normally present, but the accumulation of these dusts could be ignited by arcs, sparks or heat dissipation of electrical products.



Example of Class III Location –  
Textile Mill

### Examples of Class III Locations

Woodworking plants, textile mills, cotton gins, cottonseed mills, flax producing plants, and knitting and weaving mills.

- Class III Division I Locations are areas where easily ignitable fibers or materials producing combustible flyings are handled, manufactured or used in normal operations.
- Class III Division II Locations are areas where easily ignitable fibers are stored and handled.