

Hazardous Area ClassificationFor PDF version visit www.ricelake.com

For assistance in selecting hazardous area control equipment for your application requirements, please complete this form and submit, along with a description of the application, to:

Rice Lake Weighing Systems

Attn: Hazardous Environment

230 West Coleman Street

Rice Lake, WI 54868

Telephone: 715-234-9171 • Fax: 715-234-6967



RLWS File #: _____	Date: _____	For Rice Lake Office Use Only
Sales Order #: _____	Checked By: _____	
Equipment PN#(s) & Serial Number(s): _____		
Factory Mutual Not Applicable _____	(International Orders Only) _____	

RICE LAKE CUSTOMER INFORMATION:

Rice Lake Customer Name: _____ Customer Number: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: (_____) _____ Fax: (_____) _____

Contact Name: _____
(Printed name) (Signature) (Date)Authorized Signature: _____
(Printed name) (Signature) (Date)**END USER INFORMATION:**

End User Company Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: (_____) _____ Fax: (_____) _____

Contact Name: _____
(Printed name) (Signature) (Date)Authorized Signature: _____
(Printed name) (Signature) (Date)

Title: _____

(The following information is to be defined and completed by the END USER'S plant safety engineer or other authorized party)		
Hazardous Area Classification: Class _____, Division _____, Group _____, Temperature Class _____		
Zone _____, Group _____, Temperature Class _____		
Specific Hazard/Material (please print): _____		
Defining Individual: _____	(Signature)	(Date)
Defining Authority (Title): _____		

Please retain a copy of this completed form for your records.

Explosive Environment Solutions



Caution: The equipment contained within this Explosive Environment section requires greater attention to specification and installation guidelines. Improper specification, installation or service of these products can result in loss of equipment or serious injury.

EXPLOSION PROOF SYSTEM

What is an explosion-proof indicator?

It is simply a digital weight indicator enclosed in a special case. The purpose of an explosion-proof indicator is not, as the name suggests, to protect the indicator. Instead, the case prevents any explosion WITHIN the case from causing subsequent fire or explosion in the surrounding atmosphere.

For example, in a grain elevator application, combustible dusts (Class II hazardous atmosphere) may be present. A spark in a non-explosion-proof indicator could ignite an elevator-wide explosion. However, with an explosion-proof indicator, the spark (or even an explosion) is contained within the case. The hazardous atmosphere cannot be ignited, and the elevator is protected.

ADVANTAGES

- Explosion containment
- Requires low maintenance
- No electronics
- No moving parts

DISADVANTAGES

- Cannot indicate failure of containment capability
- Cost of protection per cubic foot increases with enclosure size
- Promotes condensation
- Cumbersome, limited access
- Causes harmful heat buildup
- Limited sizes
- Bulky designs
- Excessive weight

PURGE SYSTEM

Purged systems are ideal for hazardous environments and use positive pressure to prevent particles, gases and fibers from entering the controller enclosure. As an added safeguard, a differential pressure switch automatically cuts off power when the pressure falls below the acceptable level. Type X, Y and Z purging hardware is available that meets National Fire Protection Association (NFPA) article 496 guidelines.

The three configurations are as follows:

Type X Pressurizing: Reduces the classification within the protected enclosure from Division 1 to Safe.

Type Y Pressurizing: Reduces the classification within the protected enclosure from Division 1 to Division 2.

Type Z Pressurizing: Reduces the classification within the protected enclosure from Division 2 to Safe.

ADVANTAGES

- Reduces heat buildup
- Inhibits metal corrosion
- Requires low maintenance
- Increases equipment longevity
- Allows fast access to equipment
- Reduces moisture and dust buildup
- Reduces classification within enclosure
- Continuous system status indication
- Protects enclosures up to 450 cubic feet
- Allows use of any enclosure shape
- Cost of protection per cubic foot decreases with enclosure size

DISADVANTAGES

- Contains moving parts
- Requires instrument air supply
- Some systems contain electronics
- Some systems require electrical power

INTRINSICALLY SAFE BARRIER SYSTEM

Intrinsically safe load cells and safety barriers take the explosion proof principle a step further. Intrinsic safety ensures the indicator's electrical wiring and components are, by design, incapable of releasing enough energy to ignite flammable or combustible atmospheric mixtures in their most easily ignitable concentrations. In short, an intrinsically safe device eliminates the conditions for an explosion, no matter what the circumstances.

ADVANTAGES

- Limits energy to device
- Requires low maintenance
- No moving parts
- Ideal for sensors

DISADVANTAGES

- One barrier is required for each conductor
- Project cost increases with number of conductors
- Offers no protection against heat, moisture and dust
- Requires protection or installation in nonclassified area
- 24VDC, 50mA maximum power and signal strength limit

Hazardous Atmospheres (for reference only)

Hazardous atmospheres are divided into three general classes and two divisions:

CLASS I:

Flammable gases or vapors

CLASS II:

Combustible dusts

CLASS III:

Ignitable fibers or flyings

DIVISION 1:

Hazard exists under normal conditions

DIVISION 2:

Hazardous material is handled, processed or stored. Hazard is not normally present, but may be released due to accident or equipment malfunction.

CLASS I:

Flammable gases or vapors

CLASS I, GROUP A:

- Acetylene

CLASS I, GROUP B:

- Acrolein (inhibited)
- Arsine
- Outadiene
- Ethylene oxide
- Hydrogen
- Manufactured gases containing more than 30% hydrogen by volume
- Propylene oxide
- Propyl nitrate

CLASS I, GROUP C:

- Acetaldehyde
- Allyl alcohol
- N-butyraldehyde
- Carbon monoxide
- Crotonaldehyde
- Cyclopropane
- Diethyl ether
- Diethylamine
- Epichlorohydrin
- Ethylene
- Ethylenimine
- Ethyl mercaptan
- Ethyl sulfide
- Morpholine
- 2-nitropropane
- Tetrahydrofuran
- Unsymmetrical dimethyl hydrazine
- (UMDH 1, 1-dimethyl hydrazine)

CLASS I, GROUP D:

- Acetic acid
- Acetone
- Acrylonitrile
- Ammonia
- Benzene
- Butane
- 1-butanol (butyl alcohol)
- 2-butanol (secondary butyl alcohol)
- N-butyl acetate
- Isobutyl acetate
- Di-isobutylene
- Ethane
- Ethanol (ethyl alcohol)
- Ethyl acetate
- Ethyl acrylate (inhibited)
- Ethylene diamine (anhydrous)
- Ethylene dichloride
- Ethylene glycol monomethyl ether
- Gasoline
- Heptanes
- Hexanes
- Isoprene
- Isopropyl ether
- Mesityl oxide
- Methane (natural gas)
- Methanol (methyl alcohol)
- 3-methyl 1-butanol (isoamyl alcohol)
- Methyl ethyl ketone
- 2-methyl 1-propanol (isobutyl alcohol)
- 2-methyl 2-propanol (tertiary butyl alcohol)
- Petroleum naphtha
- Pyridine
- Octanes
- Pentanes
- 1-pentanol (amyl alcohol)
- Propane
- 1-propanol (propyl alcohol)
- 2-propanol (isopropyl alcohol)
- Propylene
- Styrene
- Toluene
- Vinyl acetate
- Vinyl chloride
- Xylenes

CLASS II:

Combustible Dusts

CLASS II, GROUP E

Atmospheres containing:

- Aluminum, magnesium or their commercial alloys
- Metals of similarly hazardous characteristics with a resistivity of 100 ohms per centimeter

CLASS II, GROUP F

Atmospheres containing:

- Carbon black, charcoal, coal or coke dusts containing more than 8 percent total volatile material
- Dusts sensitized by other materials, presenting an explosion hazard and having a resistivity greater than 100 ohms per centimeter and equal to or less than 100 megohms per centimeter

CLASS II, GROUP G

Atmospheres containing:

- Flour
- Starch
- Grain
- Combustible plastics or chemical dusts having resistivity greater than 1 megohm per centimeter

CLASS III:

Ignitable Fibers or Flyings

Atmospheres containing:

- Rayon
 - Cotton
 - Other textiles
- Combustible fiber manufacturing and processing plants such as:

- Cotton gins
- Cottonseed mills
- Flax processing plants
- Clothing manufacturing plants
- Sawmills
- Other woodworking locations.

Easily ignitable fibers including:

- Rayon
- Cotton (including cotton linters and cotton wastes)
- Sisal or henequen
- Istle
- Jute
- Hemp
- Tow
- Cocoa
- Oakum
- Baled waste kapok
- Spanish moss
- Excelsior
- Sawdust
- Wood chips