MINIMUM
IGNITION CURVES

The graphs on the following pages answer the question: What is a dangerous amount of electrical energy?

These graphs are for circuits containing aluminum, cadmium, magnesium or zinc—substances that produce a high temperature incendiary spark.

It is important to keep in mind that these curves reflect the worst case scenario.

When designing intrinsically safe electronic equipment today, most manufacturers start by specifying the equipment for the worst possible case.

The graphs chosen are those that are used most often by designers and manufacturers of electrical apparatus.
Minimum Ignition Curves for Inductive Circuits

Inductive Circuits
Minimum igniting currents applicable to electrical apparatus with cadmium, zinc, magnesium or aluminium where $U = 24 \text{ V}$.

The maximum permissible working current will be two thirds of the values shown.

Groups A, B, C and D are Class I North American classifications.

** Currently there is no North American equivalent to the European Group I classification.
Minimum Ignition Curves for Resistive Circuits

Resistive Circuits
Minimum igniting currents applicable to electrical apparatus with cadmium, zinc, magnesium or aluminium.
The maximum permissible working current will be two thirds of the values shown.

- METHANE Group I **
- PROPANE Group IIA (D)*
- ETHYLENE Group IIB (C)*
- HYDROGEN Group IIC (A&B)*
Minimum Ignition Curves for Capacitive Circuits
Group I

Capacitive Circuits
Minimum igniting voltages (22 per cent hydrogen) applicable to Group I electrical apparatus.
The curves correspond to values of current limiting resistance as indicated.
The curve marked Sn is applicable only where cadmium, zinc or magnesium can be excluded.
The maximum permissible working voltage will be two thirds of the values shown.
Appendix 5 – INTRINSIC SAFETY MINIMUM IGNITION CURVES

Minimum Ignition Curves for Capacitive Circuits
Class I, Groups A & B (Group II, C)

Capacitive Circuits
Minimum igniting voltages applicable to Class I, Groups A and B (Group II, C) electrical apparatus. The curves correspond to values of current limiting resistance as indicated. The curve marked Sn is applicable only where cadmium, zinc or magnesium can be excluded. The maximum permissible working voltage will be two thirds of the values shown.
Certification Curves Showing Relationship Between Inductance and Minimum Igniting Current

![Graph showing the relationship between inductance and minimum igniting current for hydrogen.](image)