

# Standards, zone definitions & product markings

## Kopex-Ex - Product marking guide

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Classification of hazardous areas		European/IEC or NEC classifications		
Flammable substances	Temporary behaviour of flammable substances in hazardous places	Typical zones	Required marking for installation	
			equipment group	equipment protection level
Gases Vapours	is present continuously or for long periods or frequently	zone 0	<b>II</b>	<b>Ga</b>
	is likely to occur in normal operation occasionally	zone 1	<b>II</b>	<b>Gb</b>
	is not likely to occur in normal operation but, if it does occur, will persist for a short period only	zone 2	<b>II</b>	<b>Gc</b>
Dusts	is present continuously or for long periods or frequently	zone 20	<b>III</b>	<b>Da</b>
	is likely to occur in normal operation occasionally	zone 21	<b>III</b>	<b>Db</b>
	it is not likely to occur in normal operation but, if it does occur, will persist for a short period only	zone 22	<b>III</b>	<b>Dc</b>
Methane Dusts	-	mines	<b>I</b>	<b>Ma</b>
	-	mines	<b>I</b>	<b>Mb</b>

Subdivision of gases and vapours				
Apparatus may be used in group		Gases or vapours		
IIA	IIB	ammonia	ethyl alcohol	galsoline
		methane	cyclohexane	n-hexane
IIB	IIC	ethane	n-butane	acetaldehyde
		propane		
IIB	IIC	town gas, acrylnitril	ethylene oxide	ethylene glycol
				ethyl-ether
IIC	IIC	hydrogen	ethine (acetylene)	sulphide of carbon

Dust	
IIIA	Combustible Flyings
IIIB	Non-Conductive Dust
IIIC	Conductive Dust

### Product stamp detail

**KPEX**  **I M2/II 2GD Exde I Mb Exde IIC Gb Extb IIIC Db**

(Product stamp detail)

 **CLI.Div1.ABCD .CLII.Div1.EFG.**

(Class & Divisions)

#### CLI (Class I), Div 1

Where ignitable concentrations of flammable gases, vapours or liquids are present within the atmosphere under normal operation conditions.

#### CLI (Class I), Div 2

Where ignitable concentrations of flammable gases, vapours or liquids are present within the atmosphere under abnormal operation conditions.

#### Class I areas

Group A: Acetylene / Group B: Hydrogen /  
Group C: Propane & Ethylene / Group D: Benzene, Butane & Propane.

#### CLII (Class II), Div 1

Where ignitable concentrations of combustible dusts are present within the atmosphere under normal operation conditions.

#### CLII (Class II), Div 2

Where ignitable concentrations of combustible dusts are present within the atmosphere under abnormal operation conditions.

#### Class II areas

Group E: Metal Dust / Group F: Carbon & Charcoal / Group G: Flour, Starch, Wood & Plastic.

Restriction for using apparatus	
Requirements	Marking
Equipment without restriction	-
Equipment with special condition may be noted	<b>X</b>
Ex component, which is not intended to be used alone and requires additional certification before being used in hazardous area	<b>U</b>

Protection technique					
Application	Type of protection		Marking	EN/IEC standard	
All applications	General requirements		-	60079-0	
Control stations, motors, fuses, switchgear, power electronics	Flameproof enclosure		<b>Ex d</b>	60079-1	
Installation materials, motors, luminaries	Increased safety		<b>Ex e</b>	60079-7	
Measurement and control, automation technology, sensors, actuators	Intrinsic safety		<b>Ex i</b>	60079-11	
Switch- and control cupboards, analyse-apparatus, computers	Pressurisation		<b>Ex p</b>	60079-2	
Coils of motors or relays, solenoid valves	Encapsulation		<b>Ex m</b>	60079-18	
Transformers, relays, control stations, magnetic contactors	Oil immersion		<b>Ex o</b>	60079-6	
Capacitors, transformers	Powder filling		<b>Ex q</b>	60079-5	
See at the top - only for zone 2	'Non sparking'		<b>Ex n</b>	60079-15	
For use in zone 0, 1, 2 / for use in zone 1, 2	Dust atmospheres		<b>Ex t</b>	60079-31	

**IECEx SIRA09.0103 X**  
(Certification Number)

### New Marking - EPL's (Explosion Protection Levels)

The introduction of the EPL's and changes in the EN 60079 series standard has introduced new marking requirements.

- IIA **T1** Acetone 735°
- IIA **T1** Ammonia 630°
- IIB **T1** Carbon Monoxide 605°
- IIA **T1** Bensene 560°
- IIC **T1** Hydrogen 560°
- IIA **T1** Methane 537°
- IIA **T1** Toluene 535°
- IIA **T1** Styrene 490°
- IIA **T1** Propane 470°
- IIA **T1** 1-Butene 455°
- IIB **T1** Butadiene 430°
  
- IIB **T2** Ethylene 425°
- IIA **T2** Butane 372°
- IIA **T2** Ethanol 363°
- IIA **T2** Butylalcohol 359°
- IIB **T2** Dimetylether 350°
- IIC **T2** Acetylene 305°
  
- IIA **T3** Nafta 290°
- IIA **T3** Hydrogen Sulphide 270°
- IIA **T3** Cyclohexane 259°
- IIA **T3** Hexane 233°
- IIA **T3** Heptane 215°
- IIA **T3** Kerosene 210°
- IIA **T3** Dekane 201°
  
- IIB **T4** Diethyl Ether 160°
  
- IIC **T6** Carbon Disulphide 95°

