

Hazardous Area

What is a hazardous area?

A Hazardous area is defined as a three-dimensional space where a flammable atmosphere maybe expected to be present at such frequencies as to require special precaution for the type and use of electrical apparatus or other potential ignition sources. Hazardous area will be identified and classified into zone 0, zone 1, and zone 2.

What is a Zone?

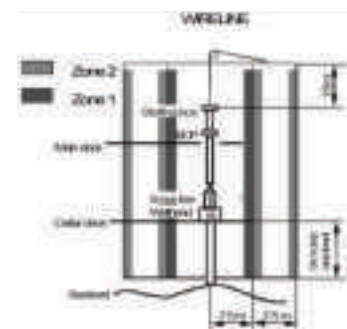
The zone defines the probability of hazardous material being present in an ignitable concentration in the surrounding atmosphere.

ZONE 0	Explosive atmosphere is Continuously present Area in which the an explosive gas-air mixture is continuously present or present for long period
ZONE 1	Explosive atmosphere is Often present Area in which the an explosive gas-air mixture is likely to occur for short period
ZONE 2	Explosive atmosphere may Accidentally be present Area in which the an explosive gas-air mixture is not likely to occur in normal operation and if it occurs it will only exist for a short period of time (leaks or maintenance)

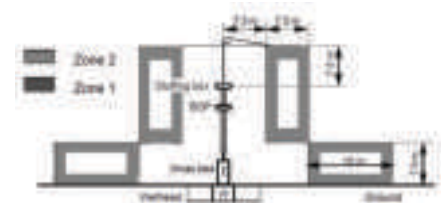
Non-hazardous area: Any area which is not classed Zone 0, 1 or 2 is defined as the "Non-Hazardous Area and colloquially as the "Safe Area" although using the term "safe" could be misleading.

Rig-safe is an undefined specification, sometimes referred as "added safety" for unclassified areas. It is NOT ZONE 2 and is unregulated.

Application to Slickline :



Offshore Wellhead in wireline phase



Onshore wellhead in wireline phase for an eruptive well. For a non-eruptive well, zone 1 becomes zone 2 and zone 2 becomes a safe area.

The danger of using unprotected equipment

The possibility of fire or explosion due to the ignition of leaking flammable gas or vapors coming into contact with sparks or hot surface is a concern in all production facilities and around producing wells. The concern is even greater offshore because of the concentration of equipment and personnel in a relatively small area where fire extinguishing or platform evacuation can be very difficult. The consequences may be catastrophic, resulting in destruction of the site and, occasionally loss of lives. All products intended for use within an explosive area must meet the requirements of the Directive 1992/92/EC.



Standards and Directives applied for use in potentially explosive atmospheres

- The ATEX Directive (94/9/EC) concerning equipment and protective systems intended for use in potentially explosive atmospheres.
- The ATEX Directive (1999/92/EC) concerning the minimum requirements for improving the safety and health protection of workers potentially at risk from exposure to explosives.
- EN 1834-1: Reciprocating internal combustion engines – Safety requirements for design and construction of engines for use in potentially explosive atmosphere.
- EEMUA Publication number 107: "Recommendations for the Protection of Diesel Engines Operating in Hazardous Area" is superseded by EN 1834-1 standard.



How to operate your equipment safely

	ZONE 1	ZONE 2	Rigsafe
Diesel engine Non-electric system	Automatic overspeed air shutoff valve if low engine oil pressure or high temperature coolant (>100deg.c) and manual shut down control in case of emergency stop.		Automatic overspeed air shutoff valve if low engine pressure and manual shut down control in case of emergency stop.
	Automatic fuel shut down system on high engine coolant temperature, high exhaust gas temperature and low oil pressure.	Automatic fuel shut down valve not mandatory but frequently installed.	
	Water-cooled exhaust manifold combined with exhaust gas cooler pressure tested at 10 bars.		-
	Stainless steel exhaust spark arrestors		Muffler
	Engine breather flame arrestor		-
	Antistatic drive belt Exhaust flame arrestor		-
Electric system	Electric starter Ex d		-
	Alternator Ex d		-
	Batteries Ex e		-
	Electrical junction box Ex e		-
	Fuel injection pump Ex m		-
Certification	Third party inspection certification after installation of the whole unit	No third party certification need	