RelyOn Nutec
360° Safety

Course code	OSP347
Course name	Explosive Atmospheres Course – 08h
Duration	08 hours
Target group	Saipem do Brasil professionals working in the areas of Maintenance, Production and Cargo Handling that carry out activities in hazardous areas.
Prerequisites	- RG and CPF; - Passport (Expatriate); - Have more than eighteen (18) years; - Have completed High School.
Objective	Instruct workers about the risks involved in activities carried out in hazardous areas.
Contents	Theory – 08 hours 1. Hazardous Area: 1.1 Explosive Atmosphere; 1.2 Fire Tetrahedron; 1.3 Oxidizer; 1.4 Fuel; 1.5 Ignition; 1.6 Chain Reaction; 1.7 Ignition Sources (Mechanical, Electrical, Chemical and Atmospheric); 1.8 Propagation; 1.9 Flash Point; 1.10 Combustion Point; 1.11 Self-Ignition Point. 2. Process Equipment: 2.1 Tanks; 2.2 Pressure Vessels; 2.3 Reactors; 2.4 Boilers; 2.5 Silos. 3. Risk Management: 3.1 Danger; 3.2 Risk; 3.3 Types of Risks; 3.4 Preventive Measures; 3.5 Risk Analysis; 3.6 Preventive Actions with Flammable Liquids; 3.7 How to Manage Risks of Explosions. 4. Standardization and Legislation: 4.1 Penalties; 4.3 Responsibilities. 5. Classification of Areas and Its Characteristics: 5.1 Procedure for Classifying Areas; 5.2 Zones (0, 1, 2 and 20, 21, 22); 5.3 Group of Explosiveness; 5.4 Temperature Classes; 5.5 Areas Delimitation; 5.6 Ventilation; 5.7 Flammability Limits; 5.8 Air Density; 5.9 Relative Density of Gas and Steam; 5.10 Volatility; 5.11 Minimum Ignition Energy; 5.12 Hazardous Areas; 5.13 Non-hazardous Areas; 5.14 Justification for Hazardous Areas Classification. 6. Electrical Equipment: 6.1 Tables of Types of Protection According to the Zones; 6.2 Types of Equipment Protection: Containment; Segregation; Dilution; Limitation; Suppression; Intrinsic Safety; Explosion-proof; Not Ignitable; Not Sparkling; Restricted Breathing; Limited Power; Protected Contacts; Pressurization; Increased Safety; Immersion in Oil; Immersion in Sand; Encapsulated; Wrapper Protection; Special; 6.3. Ex Equipment Specification; 6.4 Protection level – EPL; 6.5. Tables of Protection Level According to EPL; 6.6 IP Protection Levels; 6.7. Additional Letter; 6.8. Supplementary Letter. Technical Reference: ABNT NBR IEC 60079-10-1, NR-20, NBR 15662, NR-10, NR-33, INMETRO 179/2010, ABNT NBR IEC 60079-17, ABNT NBR IEC 60079-19, ABNT NBR IEC 60079-0, ABNT NBR IEC 60079-14, ABNT NBR IEC 62262, ABNT NBR IEC 60529.
Exam	N/A Validity: N/A