



Safety Form C-2-0-1

EXPLOSION RISK ASSESSMENT

Location: 888

Department: PH

INFORMATION ON FLAMMABLE OR EXPLOSIVE SUBSTANCE AND WHO IS EXPOSED REFERRING TO GUIDELINE C-2-0-2

Flammable or explosive substance: CH₄, C₂H₆, i-butane

Trade name: Methane, Ethane

Describe the activity involving the flammable or explosive substance: Gas mixing in 888 R-28. For use as active medium for COMPASS particle detectors:

- Micromegas: 10% C₂H₆ (+Ne 85%, CF₄ 5%)
- DCs: 45% C₂H₆ (+Ar 45%, CF₄ 10%)
- RICH MWPC: CH₄ 100%
- Muon Wall: CH₄ 25% (+Ar 75%)

What category of flammable or explosive substance is involved?

- Flammable gas or gas mixture Flammable liquid Dusts of combustible solids Other (specify below)

Who could be affected by an accident involving the flammable or explosive substance?

- CERN Staff CERN Users Visitors Students Contractors Others

HAZARDOUS AREAS (ATEX ZONES) REFERRING TO SAFETY FORM C-2-0-2

Reference No. for completed form, "Safety Form – Classification of Hazardous Areas"
<https://edms.cern.ch/document/1214926>


TECHNICAL MEASURES FOR EXPLOSION PROTECTION REFERRING TO GUIDELINE C-2-0-1

What prevention measures are in place?

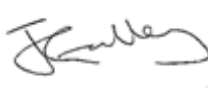
- Limiting of concentrations Inerting Ventilation
 Flammable gas/vapour detection Process Control Engineering Other: specify

Has the system been leak-tested to your satisfaction (experimental gas chambers)?

- YES NO N/A

How likely is it that ignition sources will be present and of sufficient energy to cause ignition?						
	Likelihood source is present			Likelihood of sufficient energy to cause ignition		
Naked Flames and hot gases	High <input type="checkbox"/>	Medium <input type="checkbox"/>	Low <input checked="" type="checkbox"/>	High <input type="checkbox"/>	Medium <input type="checkbox"/>	Low <input checked="" type="checkbox"/>
Hot surfaces	High <input type="checkbox"/>	Medium <input type="checkbox"/>	Low <input checked="" type="checkbox"/>	High <input type="checkbox"/>	Medium <input type="checkbox"/>	Low <input checked="" type="checkbox"/>
Mechanically generated sparks	High <input type="checkbox"/>	Medium <input type="checkbox"/>	Low <input checked="" type="checkbox"/>	High <input type="checkbox"/>	Medium <input type="checkbox"/>	Low <input checked="" type="checkbox"/>
Chemical reactions	High <input type="checkbox"/>	Medium <input type="checkbox"/>	Low <input checked="" type="checkbox"/>	High <input type="checkbox"/>	Medium <input type="checkbox"/>	Low <input checked="" type="checkbox"/>
Electrical apparatus	High <input checked="" type="checkbox"/>	Medium <input type="checkbox"/>	Low <input type="checkbox"/>	High <input type="checkbox"/>	Medium <input type="checkbox"/>	Low <input checked="" type="checkbox"/>
Static electricity	High <input type="checkbox"/>	Medium <input type="checkbox"/>	Low <input checked="" type="checkbox"/>	High <input type="checkbox"/>	Medium <input type="checkbox"/>	Low <input checked="" type="checkbox"/>
Radiation (electromagnetic or ionising)	High <input type="checkbox"/>	Medium <input type="checkbox"/>	Low <input checked="" type="checkbox"/>	High <input type="checkbox"/>	Medium <input type="checkbox"/>	Low <input checked="" type="checkbox"/>
Other (specify)	High <input type="checkbox"/>	Medium <input type="checkbox"/>	Low <input type="checkbox"/>	High <input type="checkbox"/>	Medium <input type="checkbox"/>	Low <input type="checkbox"/>
Free text if needed						
What mitigation measures are required for the use of this flammable or explosive substance?						
<input checked="" type="checkbox"/> Explosion resistant equipment <input type="checkbox"/> Explosion relief <input type="checkbox"/> Other (state type required)						
How is it ensured that work equipment and installation material is suitable for use in places where explosive atmospheres may occur? (Includes assembly, installation and operation):						
ORGANISATIONAL MEASURES REFERRING TO GUIDELINE C-2-0-1						
Which of the following organisational measures are in place?						
<input checked="" type="checkbox"/> Written operating instructions <input type="checkbox"/> Worker supervision <input checked="" type="checkbox"/> Worker competence <input type="checkbox"/> Permit to work system						
How have workers been provided with information or training?						
<input type="checkbox"/> Training course/Individual instruction supported by written information <input type="checkbox"/> Other						
Are the points of entry to zones at risk from explosion marked with standard warning notices?						
 <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO						



EVALUATION & ACTIONS		
Are all the measures detailed above currently in place?		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
If these measures are not in place or additional measures are required, state action to be taken below. Flammable or explosive substances must NOT be used if adequate explosion protection measures are not in place.		
<i>Remedial actions required</i>	<i>Date for completion</i>	<i>Assigned to</i>
Completed: Check that propagation of alarm in case ventilation failure was tested by Nicola Broca as part of yearly check of the alarm system.	30/06/2012	G. Mallot
Completed: Ex signs on all 3 used mixing stations (SCEM 50.55.89.094.2)	15/05/2012	R. Geyer
Completed: Confirmation that electrical equipment is rated according to the declared ATEX Zone, certificates of conformity etc. (verified by electrical safety inspection, O. Tison)	31/12/2012	G. Mallot, R. Geyer
All actions completed	26/09/2014	N.A
TRACEABILITY		
Reference No.: (give a ref. No. for this assessment) version 2		EDMS No.: 1214925
The assessor signs to certify that hazards to health are adequately controlled with all explosion protection measures in place.		
Assessor(s) name: Henric Wilkens, deputy FGSO	Assessor(s) signature: 	Date: 26/09/2014
Assessor(s) name:	Assessor(s) signature:	Remedial actions complete:
Assessor(s) name:	Assessor(s) signature:	Reviewed on¹: <input type="checkbox"/> No change <input type="checkbox"/> Changes (give ref. or ver. No. of new assessment)
The HSE Unit must verify the overall explosion safety and/or authorize the start of activities before a workplace containing places where explosives atmospheres may occur is used for the first time.		
HSE Unit (name): J. Gulley	HSE Unit signature: 	Date: 29/09/2014
Distribution list: (Organic Unit, FGSO, HSE Unit, DSO, TSO)		

¹ The risk assessment must be regularly reviewed and updated when necessary.



A copy of the safety data sheet for the flammable or explosive substance must be attached to this assessment.

A copy of this assessment shall be kept in a known and readily accessible location.