

## Hazardous Area Classification: Spill of ethanol of 1 m<sup>2</sup>

**Company** Hazchem  
**Assessment** Spill of ethanol of 1 m<sup>2</sup>  
**Location of release** Inside  
**Area name** Production room 1

### Substance properties

**Substance name** Ethanol (= Alcohol)  
**CAS-number** 64-17-5  
**Molmass** 46.10 kg/kmol  
**Flashpoint** 12 °C  
**Vapour pressure @ Tmedium** 5900.00 Pa  
**LFL [vol/vol]** 0.031 vol/vol  
**Relative vapour density (air = 1)** 1.59

### Release-assessment

**Type of release** Atmospheric  
**Size of the liquid pool** 1 m<sup>2</sup>  
**Calculated average air velocity in area** 1.39e-2 m/s  
**Estimated local air velocity over pool** 1.00e-1 m/s  
**Total airvelocity of fluid, Uw** 1.14e-1 m/s  
**Mass release rate of the gas, Wg** 1.05e-4 kg/s  
**Volumetric gas release rate, Qg** 5.49e-5 m<sup>3</sup>/s  
**Release characteristic** 1.76e-3 m<sup>3</sup>/s

### Ventilation assessment

**Area length, width and height** 10.00 x 5.00 x 3.00 mtr  
**Ventilation capacity** 1500 m<sup>3</sup>/h  
**Volume** 150.00 m<sup>3</sup>  
**Ventilation rate** 10.00 times/hr  
**Air velocity for dilution** 1.39e-2 m/s  
**Dilution class** Medium dilution  
**Availability ventilation** Fair  
**Efficiency ventilation** 3  
**Critical concentration, Xcrit** 7.75e-3 vol/vol  
**Background concentration, Xb** 3.95e-4 vol/vol

**Result** background concentration < critical concentration, so **OK**  
**Resulting dilution class** Medium dilution

### Classification of area

**Type of release source** Secondary  
**Zone** Zone 2  
**Density of gas relative to air** vapour/gas is heavier than air  
**Type of release** Heavy gas  
**Radius zone area** 1,5 mtr  
**Temperature class** T2  
**Gas group** IIB

### Comments

Your remarks can be added here!

### Advice

Add advice can be added here!



**Liquid density @ 20°C** 790 kg/m<sup>3</sup>  
**Universal Gas Constant, R** 8314 (J/kmol/K)

**Ambient temperature, Ta** 293 °K  
**Temperature medium, Tm** 293 °K  
**Density of the gas, ρg** 1.92 kg/m<sup>3</sup>  
**Used formula** B6 and B7

