

Appendix B

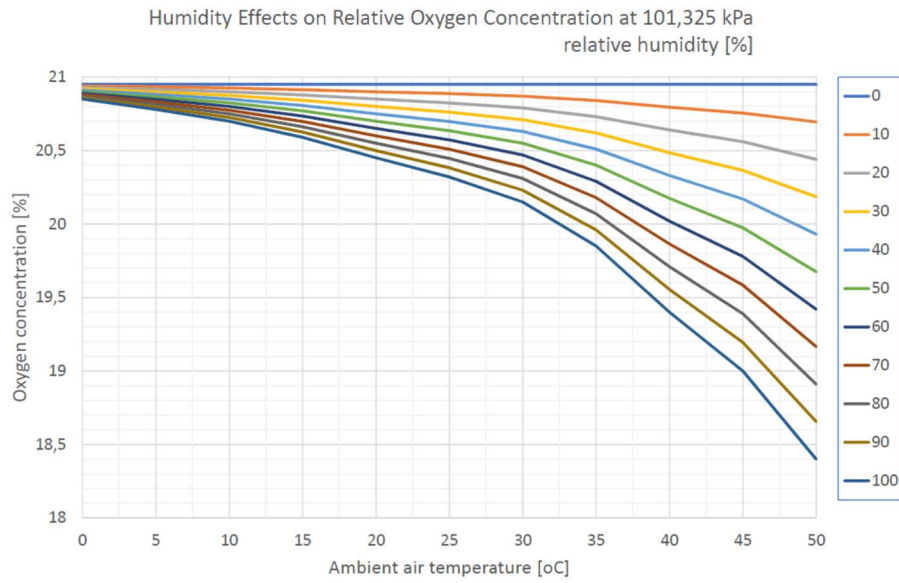


Figure A1. An influence of air humidity on the volume (mole) concentration of oxygen in dependence of ambient temperature at air pressure 101.325 Pa.

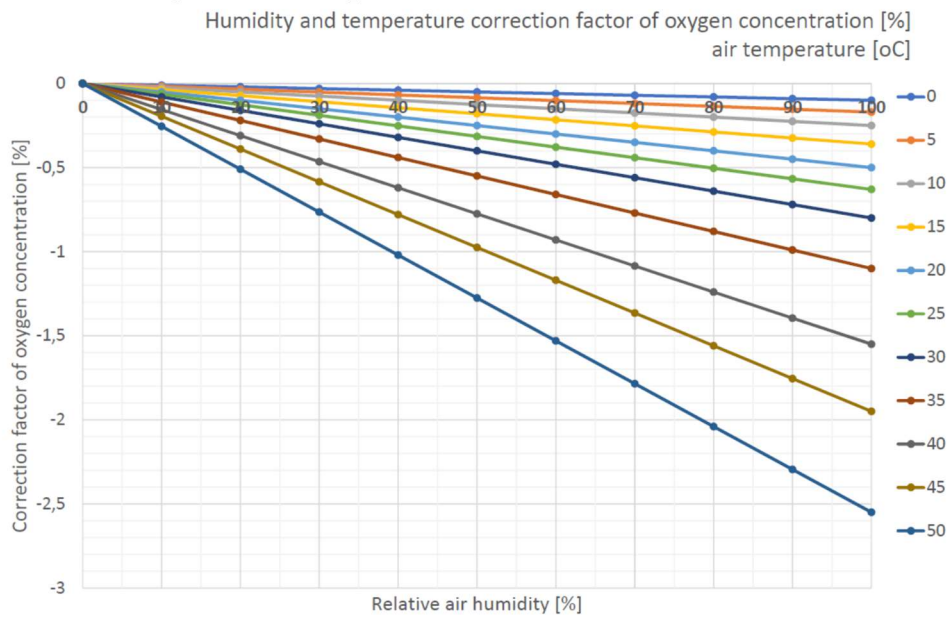


Figure A2. An influence of air temperature on the volume (mole) concentration of oxygen in dependence of humidity at air pressure 101.325 Pa.

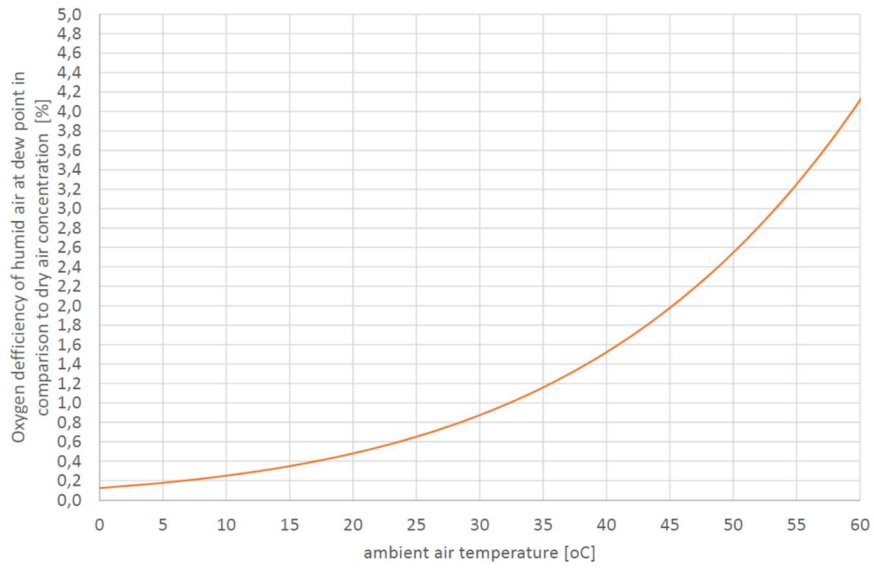


Figure A3. The oxygen deficiency in saturated air (at dew point) at pressure 101.325 Pa in dependence of ambient air temperature.

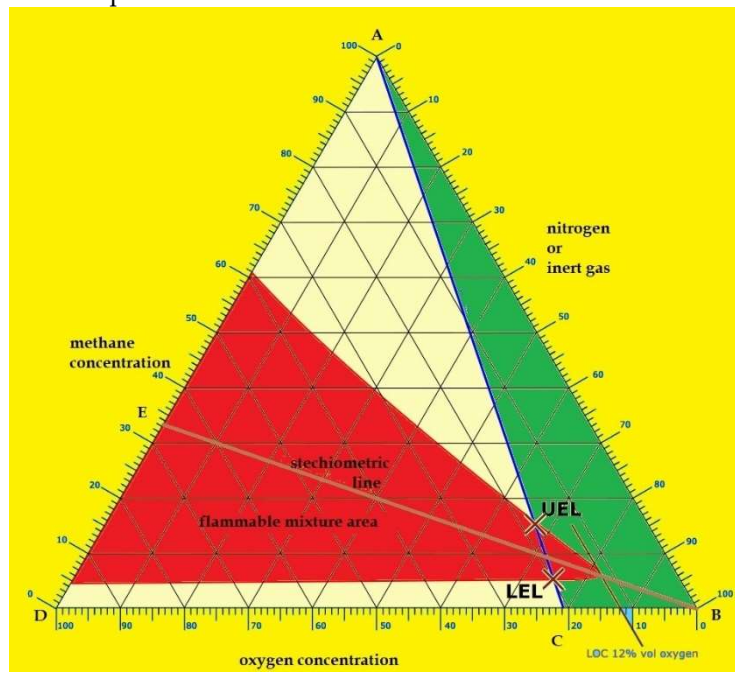


Figure A4. Diagram of methane-oxygen-inert gas mixtures.

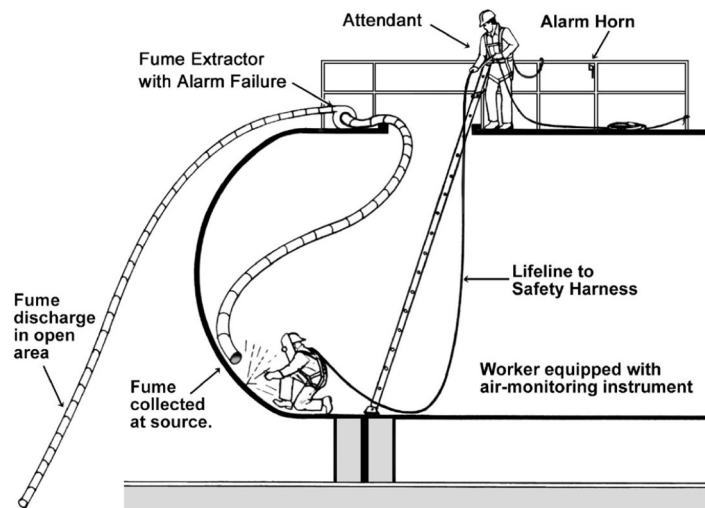


Figure A5. Essential conditions for allowing the work into enclosed spaces – the safety system.

Table A1. Dry air composition [1,18,19].

Symbol	Name	Concentration [%] [v/v]
N ₂	nitrogen	78.048
O ₂	oxygen	20.947
Ar	argon	0.934
CO ₂	carbon dioxide	0.041
Ne	neon	0.001818
He	helium	0.000524
CH ₄	methane	0.00017
	other gases	the rest to 100%

Table A2. Oxygen concentration in cargo tank atmosphere versus human health [6,14].

Oxygen concentration [%] [v/v]	The hazards for human health depending on oxygen concentration in the atmosphere
>22	prohibition of entrance , enriched atmosphere in oxygen, increased the fire hazard, the human reaction – state of excitation and euphoria;
20.6÷22 or 20.6÷21	the possibility of human entrance to enclosed space if no any additional hazards exist, human reaction – natural;
19.5	prohibition of entrance , decreased oxygen concentration of the atmospheric air in tank, human reaction – speeding up the breathing, little difficulties in breathing, threat of loss the conscious during the work of high intensity;
16	prohibition of entrance , significantly worsened the ability of stocktaking, difficulties in breathing, human reaction – the

possibility of quick conscious loss without extortion prohibition of
entrance, breathing with strong difficulties;

<11

human reaction – a loss of life in a few minutes.
