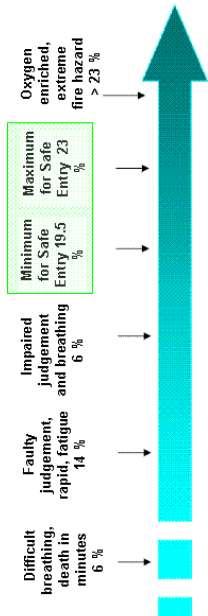


Confined Space → Atmosphere Conditions in and around CS



To work in safe conditions in the confined space the oxygen level must be between (19,5 – 22.5) %

Oxygen **deficient** atmosphere starts from < 19.5 %

Oxygen **enriched** atmosphere starts from > 22.5 %

In both cases entry into confined spaces is prohibited.

Oxygen DEFICIENT Atmospheres

Oxygen Deficiency Can Be Caused by CONSUMPTION

- “Hot work” (welding)
- Breathing
- Chemical reactions (ex. Oxidation of chemicals or metal)
- Biological action (ex. Decomposing organic matter)

Oxygen ENRICHED Atmospheres

Oxygen level above 22.5%.

- Causes flammable and combustible materials to burn violently when ignited.
 - Hair, clothing, materials, etc.
 - Oil soaked clothing and materials.
- Never use pure oxygen to ventilate.
- Never store or place compressed tanks in a confined space.

Flammable Atmospheres

• 2 Critical Factors:

- Oxygen content in the air.
- Presence of a flammable gas, or vapor
- Presence of dust (visibility of 5” (12 cm) or less)
- Proper air/gas mixture can lead to explosion
- Typical Ignition Sources:
 - Sparking or electric tool.
 - Welding / cutting operations.
 - Smoking

Toxic Atmospheres

• Stored Products Source:

Gases released when cleaning. (e.g.: purging by Argon (Ar))

Materials absorbed into walls of confined space.

Decomposition of materials in the confined space.

• Source by work performed:

- Welding, cutting, brazing, soldering.
- Painting, stripping, scraping, sanding, degreasing.
- Sealing, bonding, melting.

- Areas adjacent to a confined space: venting or entering into space

Required checklist for an Atmosphere Conditions

The Confined Space contains 1 or more of the following gases ?

- ★ ☒ ☐ Argon (Ar)
- ★ ☒ ☐ Nitrogen (N₂) (e.g. following nitrogen purge).
- ★ ☒ ☐ Helium (He)
- ★ ☒ ☐ Carbon monoxide (Co)
- ★ ☒ ☐ Carbon Dioxide (Co₂)
- ★ ☒ ☐ Hydrogen Sulfide (H₂S)
- ★ ☒ ☐ Methane (CH₄)
- ★ ☒ ☐ Cleaning agents, adhesives, or
- ★ ☒ ☐ Other chemicals (.....)

★ ☒ ☐ Is the Oxygen level measured :%

★ ☒ ☐ Is the work to realise in a Flammable Atmosphere
If YES:

★ ☒ ☐ Do a hot work permit exist ?