

What is Formaldehyde?

Formaldehyde is a volatile organic compound (VOC) with the chemical formula CH₂O. It is a colourless, strong-smelling gas commonly used in building materials, adhesives, and household products. In the context of UK house building, residential retrofit, and home renovation, formaldehyde is a critical consideration due to its potential health risks and its presence in materials like engineered wood products, insulation, and paints.

Formaldehyde is often released into indoor air from building materials and furnishings, contributing to poor indoor air quality. In the UK, its use and emissions are regulated under Part F of the Building Regulations (Ventilation) and Approved Document F, which sets standards for ventilation to ensure adequate indoor air quality. The Control of Substances Hazardous to Health (COSHH) Regulations also apply to formaldehyde exposure in occupational settings. Prolonged exposure to formaldehyde can cause respiratory issues, skin irritation, and is classified as a Group 1 carcinogen by the International Agency for Research on Cancer (IARC).

Synonyms

Methanal, Formalin (when dissolved in water).

Related Terms

1. **Volatile Organic Compounds (VOCs):** A group of chemicals that evaporate at room temperature, contributing to indoor air pollution.
2. **Indoor Air Quality (IAQ):** The quality of air within and around buildings, particularly as it relates to the health and comfort of occupants.
3. **Building Regulations Part F:** UK regulations that address ventilation requirements to maintain healthy indoor air quality.
4. **Approved Document F:** Provides guidance on meeting the ventilation requirements of the Building Regulations.
5. **Engineered Wood Products:** Materials like plywood, MDF, and particleboard, which often contain formaldehyde-based resins.
6. **Low-VOC Products:** Building materials and finishes designed to emit fewer VOCs, including formaldehyde.
7. **COSHH Regulations:** UK legislation that controls exposure to hazardous substances, including formaldehyde, in the workplace.

Practical Examples

- **New Build Homes:** Formaldehyde emissions from MDF used in cabinetry and flooring can be mitigated by specifying low-VOC products and ensuring adequate ventilation as per Approved Document F.
- **Retrofit Projects:** During insulation upgrades, choosing formaldehyde-free insulation materials can improve indoor air quality.
- **Home Renovations:** Using water-based paints and adhesives instead of solvent-based alternatives can reduce formaldehyde emissions.
- **Commercial Buildings:** In office fit-outs, selecting low-emission furniture and finishes can help comply with indoor air quality standards.

Health Risks

Prolonged exposure to formaldehyde can lead to:

- Respiratory issues such as asthma and bronchitis.
- Skin irritation and allergic reactions.
- Increased risk of nasopharyngeal cancer (classified as a Group 1 carcinogen by IARC).

Mitigation Strategies

- **Ventilation:** Ensure adequate mechanical or natural ventilation as per Approved Document F.
- **Material Selection:** Use low-VOC or formaldehyde-free building materials.
- **Air Purification:** Install air purifiers with activated carbon filters to reduce formaldehyde levels.