

THE ELEMENTAL

Placing Safety at the Center of Hydrogen

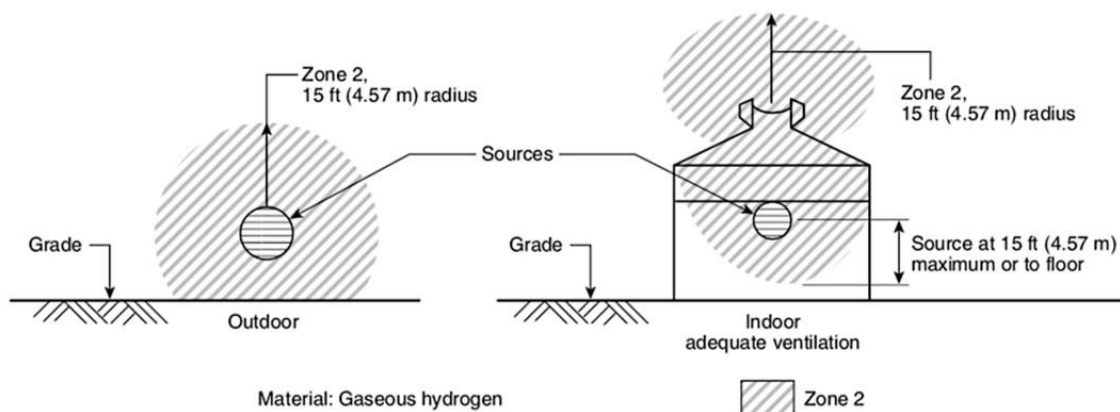
CENTER FOR
Hydrogen
SAFETY



Electrical

In the intricate design of hydrogen systems, a paramount emphasis must be placed on minimizing the potential for electric sparks to ignite hydrogen. To achieve this critical objective, a comprehensive range of precautions should be meticulously observed. This includes ensuring the effective bonding and grounding of all hydrogen equipment, a foundational measure that significantly mitigates the risk of sparking. Additionally, when devising ventilation systems, a prudent approach involves the construction of vent fans featuring blades composed of non-sparking materials like aluminum or plastic.

A pivotal aspect of hydrogen system safety entails addressing areas where potential hydrogen ignition sources exist. In this context, adhering to authoritative guidance from sources such as NFPA 70, notably Article 500, and EN 60079-10-1 (ATEX Standard and Classification of Areas with Presence of Gas) is essential. These comprehensive guidelines provide essential insights into effectively controlling and managing zones with potential ignition risks, ensuring a robust approach to safety and risk mitigation. Furthermore, it is imperative to adhere to electrical component standards that align with Class 1, Division 1 or 2, Group B specifications as outlined in the NEC, or meet the necessary requirements stipulated by ATEX standards, as applicable. Collectively, these precautions culminate in the creation of hydrogen systems designed to function securely and efficiently while minimizing the potential for hazardous events. Specific requirements are described in the standards referenced by the jurisdiction where the facility is located. An example can be seen below from NFPA 497 Classification of Flammable Liquids, Gases or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas.



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