

Welding

Welding - Types of Compressed Gases

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What types of compressed gases are used in welding, and what are their hazards?

The table below lists common welding gases along with general information on how and where they are used.

Common compressed gases used in welding	Purpose	Example of welding or application	WHMIS Classification by CNEST*	Hazards
Oxygen gas	Heating gas	Oxy-cutting and oxy-welding	Oxidizing gases - Category 1 Gases under pressure - Compressed gas	May cause fire Gas under pressure May explode if heated
Propane	Heating gas	Oxy-cutting and oxy-welding	Flammable gas – Category 1 Gases under pressure – Liquefied gas	Extremely flammable gas Gas under pressure May explode if heated
Propylene	Heating gas	Oxy-cutting and oxy-welding	Flammable gas – Category 1 Gases under pressure – Liquefied gas Simple asphyxiants - Category 1	Extremely flammable gas Gas under pressure May explode if heated May displace oxygen and cause rapid suffocation
Hydrogen	Heating gas and shielding gas when combined with argon and carbon dioxide	Specialized welding processes that require high temperatures such as 3371°C to 3982°D (6100°F to 7200°F) for materials like tungsten	Flammable gas – Category 1 Gases under pressure – Compressed gas Simple asphyxiants - Category 1	Extremely flammable gas Gas under pressure May explode if heated May displace oxygen and cause rapid suffocation
Acetylene	Heating gas	Oxy-cutting and oxy-welding	Flammable gas – Category 1	Extremely flammable gas

			<p>Gases under pressure – Dissolved gas</p> <p>Simple asphyxiants - Category 1</p>	<p>Gas under pressure</p> <p>May explode if heated.</p> <p>May displace oxygen and cause rapid suffocation.</p> <p>May react explosively even in the absence of air at elevated temperature or gauge pressure above 15 pounds per square inch gauge (psig) (103 Kilopascal (kPa)) or absolute pressure above 30 pounds per square inch absolute (psia) (206 kPa).</p>
Argon	shielding gas	Flux-cored arc welding (FCAW)	<p>Gases under pressure - Compressed gas</p> <p>Simple asphyxiants - Category 1</p>	<p>Gas under pressure</p> <p>May explode if heated</p> <p>May displace oxygen and cause rapid suffocation</p>
Helium	shielding gas	Gas metal arc welding (GMAW)	<p>Gases under pressure - Compressed gas</p> <p>Simple asphyxiants - Category 1</p>	<p>Gas under pressure</p> <p>May explode if heated</p> <p>May displace oxygen and cause rapid suffocation</p>

Nitrogen	shielding gas, heat treatments	Laser welding, plasma cutting, and some heat treatments	Gases under pressure - Compressed gas Simple asphyxiants - Category 1	Gas under pressure May explode if heated May displace oxygen and cause rapid suffocation
Carbon dioxide	shielding gas	Flux-cored arc welding (FCAW)	Gases under pressure - Liquefied gas 1	Gas under pressure May explode if heated May displace oxygen and cause rapid suffocation May increase respiration and heart rate.

*Please note that these classifications were retrieved from the Commission des normes, de l'équité, de la santé et de la sécurité du travail ([CNESST](#)) site on December 5, 2023 and was established by CNESST personnel to the best of their knowledge based on data obtained from scientific literature and it incorporates the criteria contained in the *Hazardous Products Regulations* (SOR/2015-17). It does not replace the supplier's classification which can be found on its Safety Data Sheet.

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