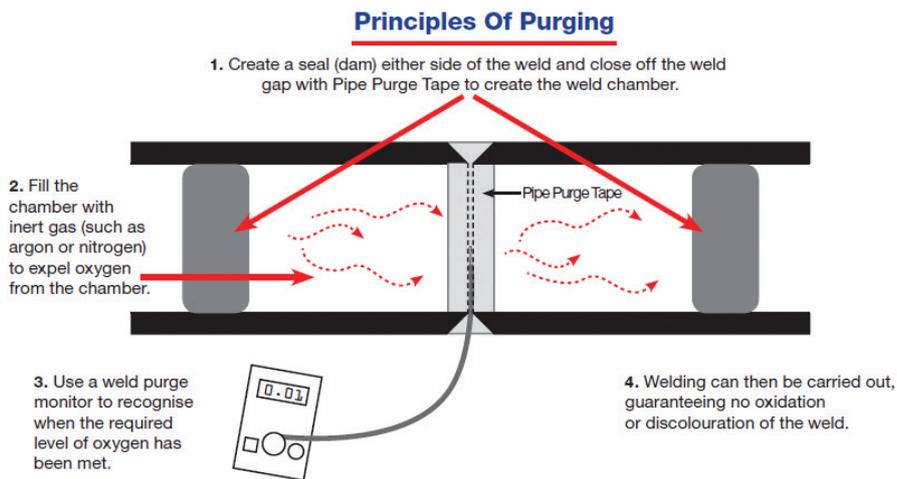


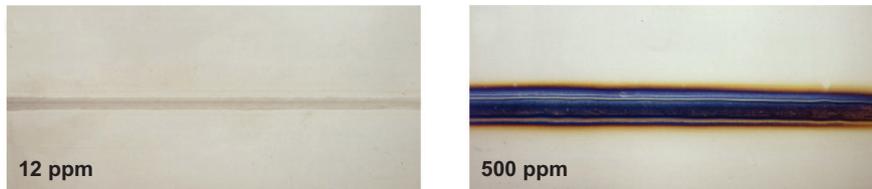
Why Purge?

When welding stainless steel, titanium and other corrosion resistant materials the perfect environment for welding is paramount to maintaining the corrosion resistant properties and weld quality. During the welding process, the weld seam is subjected to heat and air which causes oxidation if the correct processes are not adhered to. For the best results, the oxidation must be prevented hence the reason to purge.



During the welding of these metals oxidation occurs in the weld seam if oxygen reaches this area unhindered. This situation is even more acute with titanium, zirconium, molybdenum and other gas-reactive metals and alloys so the resulting oxidized surfaces are no longer corrosion resistant and this can result in a greatly reduced performance life. Studies have shown that proper professional purging systems can increase a life of a pipe up to 2 or 3 years.

The difference with reduced residual oxygen levels in the weld chamber -



This oxidation if allowed to occur must either be prevented as above or treated later by either removing it. However in most cases such as pipe welding, this is impractical and can very costly. Removing oxidation after welding is difficult or can be impossible to do.

Purging a pipe prior to welding removes the cause of oxidization and there are several procedures to do it with. With purging, a gas is used to protect the weld seam until it has cooled to the point that oxidation no longer can occur. Usually, an inert gas, such as argon which is heavier than air, is used. Other purging gases such as nitrogen and nitrogen/hydrogen blends can also be used.

Taping up the ends and purging the whole length of pipe is a common approach, but this can be very time consuming and an uneconomical process that usually results in wasted purging gas, unproductive labour time and a less-than-desirable outcome. Proper professional purging equipment and accessories save so much time, money and labour that you wonder how you could be with out it. Studies have shown that with an 18" pipe a purge time of 18 minutes was cut down to 2½ minutes and a greatly decreased gas usage by reducing the volume in a well sealed area.

Proper equipment and accessories should include a professional purging unit to reduce the purge volume, provide a well-sealed chamber and introduce no contaminants. The purging gas must be distributed at a slow enough speed within the purge chamber so that purge gas and oxygen mixing is reduced and excess turbulence is minimized-a key to high-quality purging. At the same time, the purging chamber should be sealed against further oxygen penetration.

The pipe's joints should be sealed from the outside with a halogen-free, temperature resistant aluminium tape. Regular tape should not be used for sealing pipe gaps because these adhesives generally contain halogens, specifically chlorine. Chlorine, like hydrogen and oxygen, is absorbed by reactive metals at high temperatures, causing embrittlement in the weld surface.

Oxygen indicators with read-out capabilities of only 0.1 percent (1,000 PPM) or 0.01 percent (100 PPM) may not be accurate enough, as most precision welding is done well below 70 PPM. Higher accuracy makes it possible to find the source of each extra oxygen value and prevents weld failures and/or rework.

The effective welding of stainless steel, titanium, nickel, zirconium, molybdenum, tantalum and their alloys for the nuclear, petrochemical, pharmaceutical, semi-conductor, aerospace and food industries requires the proper tools to create a perfect weld environment.



Unpurged Weld



Purged Weld