

With Gas shielded Flux Cored Wires:

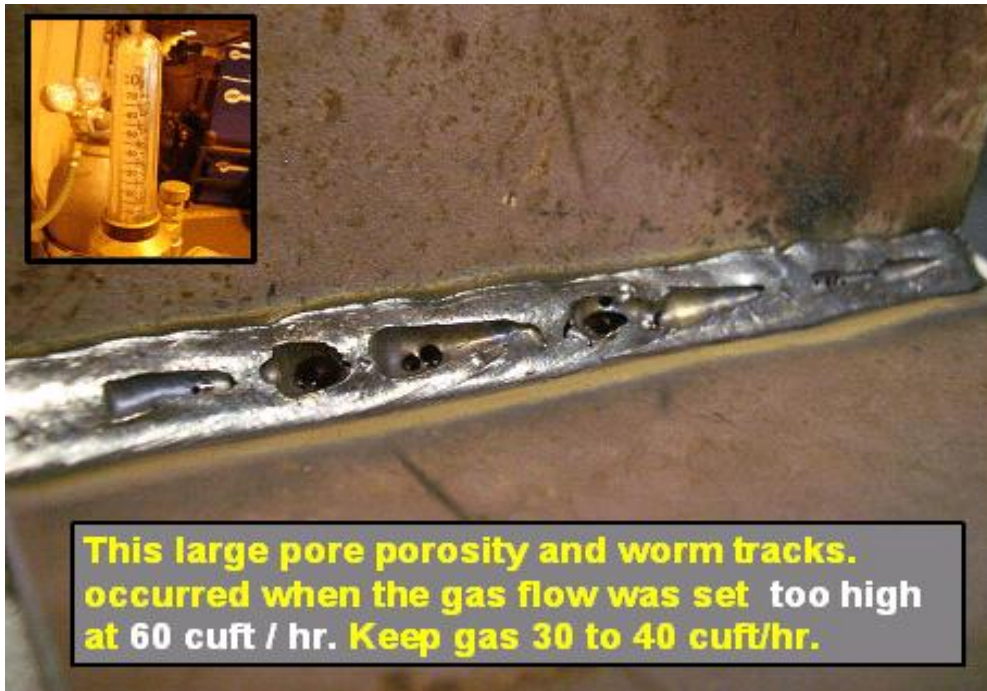


GAS SHIELDED FLUX CORED. WORM TRACKS & WELD POROSITY:

Weld porosity: As indicated in the picture, a cavities or discontinuities have formed in the molten weld. The porosity can be trapped inside the weld or evident at the weld surface.

Weld porosity is typically round in shape, but can also be elongated. Porosity is caused by the absorption of oxygen, nitrogen and hydrogen into the molten weld pool. The gases are then released during weld solidification. As the gases try to rise to the weld surface some gas pores will become trapped in the weld metal, some pores pass into the weld slag, while other pores will combine on the weld surface producing **worm tracks**.

E71T-1. Flux cored weld porosity from and Excess Gas Flow.



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LARGE PORE WELD POROSITY. If weld surface is clean and does not look oxidized, large pore MIG / FCAW porosity is often a result of "excessive gas flow".

Excessive gas flow causes weld surface turbulence. This porosity can result with gas flow greater than 45 cuft/hr. Optimum MIG and flux cored gas flow for carbon steels is 25 to 35 cuft / hr. The shielding gas flow should be measured as it exits the gun nozzle.

If the weld surface is dirty (oxidized) the cause of larger pore porosity is often a result of insufficient gas flow, less than 20 cuft /hr.



CLUSTER WELD POROSITY. A localized group of small gas pores with random distribution. Causes.

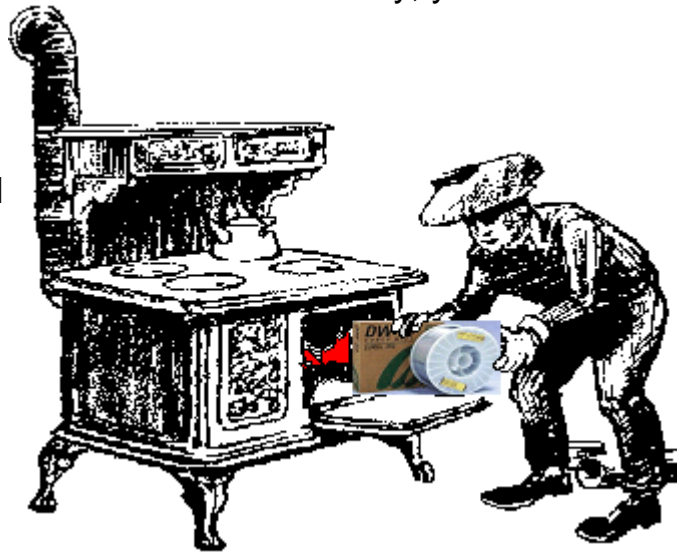
- [a] Arc blow,
- [b] if surface oxidized, insufficient gas,
- [c] material or weld wire contamination,
- [d] (low) weld parameters,
- [e] welds too small or too wide and too thin.



PIPING, WORM HOLES OR SOME CALL IT WAGON TRACKS. As seen in bottom picture the "wagon tracks" are typically found in the center of the gas shielded weld, parallel to weld axis, this is the last area for weld solidification so the porosity congregates as one.

The worm holes or wagon tracks are elongated gas pores producing a herring bone appearance on a radiograph. Worm hole porosity is common in gas shielded flux cored welds when the electrodes have **too much moisture** in the wire flux or the weld solidifies too rapidly.

If you purchase the flux core wire from a third world country, you are almost guaranteed severe weld porosity issues. The cheaper the flux cored wire, the greater the potential for wagon tracks. If the flux cored products are not stored in a dry atmosphere look out for porosity and wagon tracks. To reduce wagon tracks,



[a] extend the wire stick out as this preheats the weld wire but remember it also lowers the weld current,

[b] storing the wires in a dry environment reduces this potential,

[c] slow weld speeds,

[d] make welds larger,

[e] avoid weaves,

[f] increase current and decrease voltage.