Chemical Acetylene for Vacuum Carburizing

Today’s low pressure carburizing process, like many thermal treating processes, demands an atmosphere that is highly reproducible and highly controllable. The right carbon source for this process has been available for use since well before the vacuum heat treating process was developed.

At ambient temperatures and under pressure, Praxair’s chemical acetylene is a hydrocarbon gas with the chemical formula C₂H₂. However acetylene gas readily dissociates when it comes into contact with metal surfaces at low pressure and high temperature. A triple bond connecting the two carbon atoms is broken leaving carbon and hydrogen as the products. Figure 1 illustrates the basic dissociation mechanism for acetylene on steel surfaces.

In today’s demanding, data driven environment, consistency plays a big role in the choice of carbon gases used for low pressure carburizing. As a carbon source, chemical acetylene breaks down into C and H₂ quickly and efficiently. The furnace operator has less concern with the formation of other carbon species that form soot or tar on parts. The carbon molecules formed in acetylene’s dissociation reaction easily migrate through baskets of parts and are available for surface reactions on the most complex of shapes.

Choosing Praxair’s chemically produced acetylene provides the heat treater with a more consistently pure carbon source. Another benefit to Praxair’s chemically produced acetylene is the transport solvent, dimethylformamide (DMF). DMF reduces the risk of introducing unwanted atmosphere constituents coming from the transport solvent into the carburizing equilibrium. The choice of Praxair’s chemically produced acetylene for the low pressure carburizing process is a key for achieving high levels of precision and reproducibility.

Praxair acetylene provides a steady stream of availability

Whether your operation is large or small, a reliable supply of chemical acetylene can make a difference to your bottom line. Praxair can assure you’ll have that necessary access to high-quality, high-purity acetylene so you can focus on your business rather than product availability.
Praxair Delivers.

A disruption in your acetylene supply is a wrench you don’t need thrown into the works. Choosing Praxair as your acetylene supplier keeps your operation running smoothly because you have a reliable, source of carburizing gas day after day.

Count on Praxair for complete turnkey acetylene supply solutions in whatever packaged volumes you need that meet supply and quality requirements for low pressure carburizing.

Features Benefits

Reliable Acetylene Supply
- Dependable source for higher purity chemical acetylene
- Generated acetylene supply as a secure source
- Dependable, flexible supply methods provide continuous carburizing gas flows

Scalable Delivery Options
- Single cylinder from 10 to 450 cubic feet
- Nine-cylinder cluster packs – 4,500 cubic feet
- Bulk trailer quantities from 78,000 to 90,000 cubic feet

Bulk Acetylene Advantage
- Increased gas flows
- Volume – based pricing
- Reduced labor and maintenance
- Optimized utilization of existing space
- Increased site safety

Quality Counts
- Acetylene purities available from 98.0% – 99.9%
- Alternative solvent (Dimethylformamide – DMF) for vacuum carburizing, glass mold coating, chemical synthesis, semi-conductor film deposition and other unique applications

Call 800.225.8247 today to find out how you can set up a dependable Praxair acetylene supply.