

### Mixture – Safety and Quality

Safety and quality considerations limit the mixtures we can offer – among these are:

■ **Fuel – Oxidizer Mixtures**

Praxair will complete a safety review for any mixtures containing flammable and oxidizing components. Each mixture is evaluated to ensure the flammable concentration is well below the flammable limits. Praxair will determine if the mixture must be made at reduced pressure. Final mixture pressures are based on BTU calculations.

■ **Vapor Pressure Restrictions**

Mixtures containing low vapor pressure components are generally made at reduced pressures.

Pressure reduction helps prevent condensation of less volatile component and ensures mixture homogeneity. Computer modeling is used to generate phase envelopes for mixture evaluation and determination of appropriate pressures.

Where applicable, Praxair will recommend low-pressure containers to maximize the volume of contents. Refer to page B5 for details.

■ **Reactive Gas Mixtures**

Mixture stability is assessed to make sure the requested components do not react with each other or with the cylinder. Primary consideration is given to safety and the potential by-products created by a chemical

reaction. Integrity of analytical accuracy is also evaluated. A feasibility review is performed prior to mixture preparation.

Where applicable, Praxair will provide aluminum or specially treated cylinders for low concentration reactive gas mixtures. See Section B for details on aluminum (B3) and stainless steel (B5) cylinders.

The stability of certain gas mixtures can be affected by the length of time they are stored, as well as the storage temperature. To ensure the integrity of gas mixtures, storage time and temperature for susceptible mixtures should be monitored.

### Mixture Grades and Specifications

Praxair mixtures are grouped into two basic categories, environmental and standard. Please refer to the table on page D1 for complete specifications of all available grades.

**Environmental Grades** have been developed to meet the stringent requirements of specific environmental applications such as EPA Protocols, I&M (Inspection and Maintenance) emission standards, and mixtures requiring NIST Traceability. In all cases, specifications have been developed to meet industry standards or, in some cases, to meet regulatory requirements.

When EPA Protocols are not necessary, but NIST traceability is desired, Praxair's master grades provide the highest degree of accuracy and confidence for your most demanding applications. These mixtures are prepared gravimetrically on high-precisions, electronic balances or with

state-of-the-art dynamic blenders. The accuracy from these methods generally exceed the accuracy of most analytical instruments. Praxair produces three grades within the Master category; Primary, Certified, and Dynamic-Blend. The minor component(s) are analyzed and certified by Praxair and are traceable to NIST reference material.

For general purposes, Praxair's **standard grades** are available as Primary and Certified. These analyzed standards are typically used for high volume applications where the blending precision and accuracy of the Master grade is not required. Standard grade mixtures are prepared using gravimetric, volumetric, or partial pressure methods. As in the Master grades, the minor component(s) are analyzed and certified. The economical Non-Certified grade is suitable for applications that do not require analytical certification.

If your requirements call for specifications that fall outside of those defined by Praxair's various grades, a custom standard will include the exact specifications you need.

**If you are uncertain about which grade to choose, Praxair technical support staff can provide recommendations based on specific applications and requirements. Call your Praxair representative or your nearest customer service location for assistance!**

**Contact the  
North America  
Technical Support Center  
at 877-PRAXAIR  
for assistance!**