Sample of Industries which use nitrogen and typical purities

Nitrogen is presently used in a wide variety of industries for its various benefits. See below for a small sample of industries where nitrogen has been extremely beneficial.

Application/ Typical Purity	Usage/Benefits
Food Packaging 99.5%	• Inert atmosphere packaging extends shelf life and minimizes both spoilage and moisture migration. • Prevents insect invasion and/or growth.
Beverage Industry 99% - 99.9%	• Protect raw materials and final product from oxidation. • Extends shelf life. • Sparging and head space to eliminate oxygen and improve shelf life.
Beer Brewing 99.99%	• Protect full-leaf hops from degradation during storage. • Reduce CO_2 usage and subsequent contribution to environment • Sparging and head space purging to extend shelf life. • Nitrogenation of product to improve texture and taste.
Coffee 99.5%	• Protect beans from degradation due to oxidation. • Extend shelf-life of final product. • Inert atmosphere for all packaging requirements
Fruits & Vegetables 99%	• N2 inerting to eliminate bacteria growth—preventing mold and mildew • Extend warehouse life of stored product • Controlled atmosphere storage to control ripening time
Vertical Form Filling Machines—99.5%	• Injection of N2 for inerting plastic bags prior to sealing. • N2 inflation of the bag protects fragile products during shipping while also inerting to improve shelf-life
Grain Storage > 99.5%	• Grain drying and kilns benefit from the low moisture content of N2. • The need for continuous drying enhances the ROI of self-nitrogen generation.
Tobacco 99.9%	• Kill/prevent infestation by tobacco beetles.
Soldering > 99.95%	• A nitrogen blanket can reduce the solid oxides ("dross") formed when low melting point metals such as tin solders are in contact with air.
Semiconductors > 99.99%	• Purging toxic gases from process chambers including: Chemical Vapor Deposition, Reactive Etch, and Sputtering tools. • Providing an inert environment during solder bump processes.
Chemical and Petrochemical 95% - 99.99%	• Suppress flammability, purging of volatile organics (VOCs). • Blanketing to protect chemicals from degradation. • Flare tower inerting. • For sensitive chemicals, preserve product integrity by removing oxidizing environment.
Gas Barriers > 95%	• N2 is an effective barrier in hazardous areas • N2 forms an effective barrier in ships, oil platforms, compressors, and storage containers to separate combustible barriers.
Pipelines > 95%	• N2 purging to bring O2 levels to within safe limits. • Safe and cost effective pressure gas to support "pigging" operations. • Containerized systems enable easy "drop-in" to support field operations.

** Purity ranges are typical only and a variety of factors can change requirements.*

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Application/ Typical Purity	Usage/Benefits
Refineries **95% - 98%**	• Tank blanketing, purging, or pipe pressurization. • Blanketing to prevent build-up of combustible vapors.
Off-Shore Platforms **95% - 99.5%**	• Inaccessible off-shore oil & gas platforms benefit greatly from localized N2 production. • Establishes the inert atmosphere required to prevent explosions. • Designed to meet stringent environmental and safety certifications.
Oil Recovery **> 95%**	• Replacement of liquid injection. • N2 minimizes corrosion effects on borehole piping. • Inerting fro re-pressurization of oil wells. • Containerized systems enable easy drop-in to support field operations.
Oil & Gas Wells **> 95%**	• Displace O2 to eliminate a combustible environment. • Minimize oxidation of hydrocarbons. • Installed in ISO-containers for full environmental protection.
Pharmaceuticals **99% - 99.9%**	• Lab use (purging) • Blanketing of raw materials and process environments • Sparging of bottles and inerting of packaging. • Product degradation protection.
Autoclaves **95% - 99.999%**	• Ideal for autoclaves and ovens requiring an inert atmosphere for processing. • Metals, carbon fibers, high performance polymers.
Metal Operations **99.5% - 99.99%**	• Brazing, laser cutting, heat treatment: controls corrosion. • Protection during annealing and sintering operations.
Heat Treatment **99% - 99.999%**	• Pressurized furnaces utilize a high volume of N2. • Inert atmosphere prevents many undesirable oxidizing processes from occurring.
Laser Cutting **99.5% - 99.99%**	• Superb ROI in the competitive environment of a metal fabrication shop. • N2 eliminates the oxide edges during laser cutting. • Systems are sized to handle both beam pathway purge and assist gas for all laser powers.
Sintering **99.5% - 99.999%**	• Sintering of metals and ceramics in high temperature furnaces often requires an inert environment. • N2 inerting prevents the damaging effects that oxidation imparts.
Adhesives **< 99.9%**	• Blanketing to eliminate adhesive chemical degradation. • Purging to eliminate O2 from degrading the bonding action resulting in incomplete or reduced tensile bond strength.
Shipping / Storage **> 99.5%**	• Blanketing of storage reservoirs to eliminate the transport of foreign pest species. • N2 minimizes the combustible environment in both chemical and grain transportation.
Metal Fabrication **99% - 99.99%**	• Purging during S/S welding. • Eliminate oxide edges during laser cutting.
Mining Industry **> 95%**	• Flotation and flammability suppression.
Injection Molding **> 99%**	• Prevention of resin degradation due to oxidation. • Prevent discoloration, loss of tensile strength and premature failure.

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