Product Information

SCAFELL ORGANICS

Gases in Solution

Description

Hazardous gases are widely used today in industry and academia. Scafell is skilled at converting these gases into a solution form, which is typically easier to handle and also offers a number of important safety benefits.

'Gases in solution' is a broad collective term but in practice usually relates to the preparation of commonly used gases such as Hydrogen chloride, Ammonia, Trimethylamine and Boron trichloride in a range of different solvents. Examples are given in the table overleaf.

We prepare these gases in solution by taking a liquefied, pressurised gas and passing it through a solvent until a target weight per volume concentration based on molarity is achieved. Great care is required to handle these flammable, toxic and corrosive gases and weigh them accurately into the solvent.

Examples of gases in solution:

Gas	Solvent
Hydrogen chloride **Ammonia** **Methylamine (MA)** **Dimethylamine (DMA)** **Trimethylamine (TMA)** **Diethylamine (DEA)**	1,4-Dioxane Diethyl ether Methanol Ethanol Water Tetrahydrofuran (THF) 2-Methyltetrahydrofuran Cyclopentyl methyl ether (CPME) Isopropyl alcohol
Boron trichloride	Dichloromethane Hexane

A range of different molarities and solvents is available depending on customer needs and the gas solubility profile.

Why choose 'gases in solution' from Scafell?

We manufacture gases in solution using 20L scale equipment and can produce up to 200L of material, and multiples thereof, to a customer's specification. There are very few others, who manufacture to this scale in the UK.

We have many years' experience with this chemistry and are expert at dealing with all related safety issues so our customers have confidence in our ability to manufacture and deliver as required. We welcome requests for non-standard product specifications and our short lead times can improve our customers' production scheduling, which is often a key distinguishing factor.

- Customer chooses volume, solvent and molarity
- Removes need for customer keeping pressurised gas cylinders on site
- Added convenience and improved health and safety
- Gases in solution are made to highly accurate concentrations

Continuous improvement of our product range has also resulted in solutions being offered in environmentally preferred solvents such as 2-Methyltetrahydrofuran or CPME, which have limited miscibility with water and this facilitates easier product recovery. These solvents can also be easily dried with lower losses and lower recycle costs compared to THF.

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Applications

Many of these gases are ubiquitous in organic chemistry today. Examples of some applications are given in the table below:

Gas	Use
Hydrogen chloride	Hydrochloric acid Vinyl and alkyl chlorides Metal surface "pickling" Food processing
Ammonia	Fertilisers Polyamides Cleaner Wood pulp chemical Nitric acid
Methylamine	Intermediates for agrochemicals, biocides Catalysts Cosmetic raw materials Pharmaceutical intermediates Resins for water demineralisation
Dimethylamine	Epoxy resins accelerator in laminates for electronics Solvents Water treatment: agents to remove suspended solids Rubber vulcanisation Rocket fuel
Trimethylamine	Choline chloride, Vitamin B supplement Paper chemicals Plant growth regulators Anion exchange resins Dyestuffs Gas sensors
Diethylamine	Corrosion inhibitor Rubber Dyes Pharmaceuticals
Boron trichloride	Organic synthesis Electronics industry