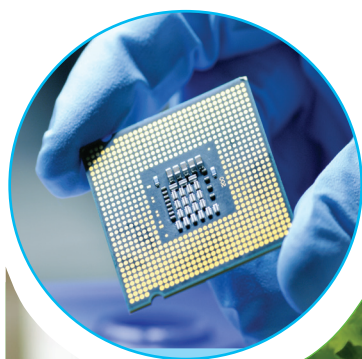


PYRIDINE & PICOLINES

(Pyridine, Picolines, Cyanopyridines, Piperidine, Acetaldehyde, Formaldehyde, Alkyl Pyridine Mixture and Liquid Choline Chloride)





Pyridine & Picolines

Pyridine & Picolines business of Jubilant Ingrevia manufactures **Pyridine, Picolines, Cyanopyridines, Piperidine, Acetaldehyde, Formaldehyde, Alkyl Pyridine Mixtures and Liquid Choline Chloride**. These are used as specialty ingredients/building blocks for the production of a range of agrochemicals, pharmaceuticals, dyes, solvents, metal finishes, fine chemicals, etc. The products are trusted by more than 275 global pharmaceutical, agrochemical and other industrial customers who rely on Jubilant's consistent quality and service. Their trust and support has helped us attain global leadership in Pyridine & its derivatives.

KEY STRENGTHS

Vertical Integration

The company has over 30 years of experience in Pyridine chemistry and is the only manufacturer of Pyridines and Picolines with **complete forward and backward integration**.

Manufacturing Prowess

Global Leadership Position: Jubilant holds Global leadership position and ranks amongst top 2 global producers for Pyridine & Beta Picoline.

Economies of Scale: The world scale plant located at Gajraula, U.P. (approximately 120 kms from Delhi), is Zero Discharge facility with ISO 9000, ISO 14001, OHSAS 18001, RC14001, certification under the American chemistry council's responsible care® program and other certifications such as REACH, KOSHER, & HALAL.

R&D Capabilities: Operations at facilities are backed by strong R&D teams for better efficiencies, highest quality and leading the way for new expansions.

Global Reach

Jubilant has a noticeable global footprint owing to its network of offices and warehouses in India, Europe, USA & China. This network is backed by a strong supply chain, ensuring consistent supply of products to its customers.

PRODUCTS

Pyridine

Pyridine, a basic organic chemical, is a versatile building block and an excellent solvent used in agrochemical, pharmaceutical and other industries. It is completely soluble in Water, Alcohol, Ether and Benzene. It acts as an acid scavenger and can catalyse reactions. Pyridine ACS grade qualifies for many high purity applications mainly for pharmaceutical.

Alpha Picoline

Alpha Picoline, also called 2-Picoline or 2-Methylpyridine, is a clear organic liquid. It is completely soluble in Water, Alcohol and Ether.

Beta Picoline

Beta Picoline, also called 3-Picoline or 3-Methylpyridine, is a clear organic liquid. It is completely soluble in Water, Alcohol and Ether.

Gamma Picoline

Gamma Picoline, also called 4-Picoline or 4-Methylpyridine, is a clear organic liquid. It is completely soluble in Water, Alcohol and Ether.

2-Cyanopyridine

2-Cyanopyridine is a white to off-white solid at room temperature with almond like odour.

3-Cyanopyridine

3-Cyanopyridine is a white crystalline solid. It is used mainly in manufacture of Vitamin B3 and also serves to pharmaceutical and agrochemical industry.

4-Cyanopyridine

4-Cyanopyridine is a white to off-white solid at room temperature. It is used as an intermediate in organic synthesis and pharmaceuticals substances.

Piperidine

Piperidine is a colourless fuming liquid and is a widely used amine for synthesis of organic compound.

Acetaldehyde

It is one of the most important aldehydes, occurring widely in nature and being produced on a large scale in industry. It is building block for many chemicals.

Formaldehyde

Formaldehyde is the simplest of the aldehydes, produced on a large scale in industry. It is an important precursor to many other materials and chemical compounds. Formaldehyde in concentrations from 37-43% are used in oil field application for producing value added products.

Alkyl Pyridine Mixture

This is complex heterocyclic mixture containing poly alkylated pyridines, which is derived as high boiling distillate during Pyridine manufacturing.

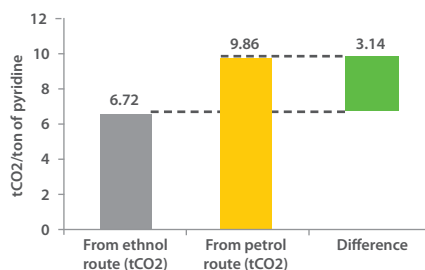
Liquid Choline Chloride

Liquid choline chloride is produced as clear aqueous solution and is available in 63-75% concentration. It is a safe chemical with excellent environmental profile.

Note : Please refer separate leaflets for Oil Field Chemicals & Acetaldehyde.

| APPLICATIONS | REACH STATUS |
|--|--|
| <ul style="list-style-type: none"> The largest application of Pyridine globally is in the manufacturing of Bipyridyl Herbicides: Paraquat and Diquat Pyridine is also used in industries like: dyestuffs & textiles, agrochemicals, pharmaceuticals and electronics Pyridine is used as a solvent, and for metal finishes | Registered as full phase in and Transported Isolated Intermediate (TII) |
| <ul style="list-style-type: none"> The largest application of Alpha Picoline is 2-Vinylpyridine monomer (2 VP), which is used in the manufacturing of VP Latex Other application of Alpha Picoline is in the manufacturing of agrochemicals: Picloram and Nitrapyrin Alpha Picoline is also the raw material for 2-Cyanopyridine It is also used in the pharmaceuticals industry | Registered as Transported Isolated Intermediate (TII) |
| <ul style="list-style-type: none"> The largest application of Beta Picoline is in the manufacturing of Vitamin B3 (Niacinamide) Beta Picoline is a significant intermediate for agrochemicals like Chlorpyrifos, Haloxypop, Fluazifop Butyl and also for Pharmaceutical Intermediates | Registered as full phase in and Transported Isolated Intermediate (TII) |
| <ul style="list-style-type: none"> Gamma Picoline finds application in the manufacturing of several catalysts such as 4-DMAP and the drug INH & other pharmaceuticals Gamma Picoline is used in the manufacturing of 4-Vinylpyridine (4 VP) and 4-Cyanopyridine | Not Registered at Present |
| <ul style="list-style-type: none"> 2-Cyanopyridine finds applications in pharmaceuticals, agrochemicals & fine chemicals 2-Cyanopyridine is converted to Chromium and Zinc Picolinate for use in human and animal nutrition | Not Registered at Present |
| <ul style="list-style-type: none"> 3-Cyanopyridine is used in the manufacturing of Niacinamide & Niacin (Vitamin B3) Other major application areas of 3-Cyanopyridine are: Pymetrisone, 2 Chloro Nicotinic Acid, and 3-Aminomethylpyridine, pharmaceuticals & agrochemicals | Registered as Transported Isolated Intermediate (TII) |
| <ul style="list-style-type: none"> 4-Cyanopyridine finds applications in the manufacturing of the drug INH Isoniazid and other pharmaceuticals and agrochemicals | Not Registered at Present |
| <ul style="list-style-type: none"> The major application of Piperidine is for the production of Dipiperidinyl Dithium Tetrasulfide, which is used as a rubber vulcanisation accelerator Piperidine is also used as a solvent and base in agrochemical and pharmaceutical industries for Mepiquat Chloride, Dipyridamole and Minoxidil | Registered as Transported Isolated Intermediate (TII); Full Phase in registration in process |
| <ul style="list-style-type: none"> Acetaldehyde is used in production of many chemicals such as Acetic Acid, Pentaerythritol, Pyridine & Picolines, Acetate esters, Cinnamaldehyde, Glyoxal etc. | Registered as Transported Isolated Intermediate (TII) |
| <ul style="list-style-type: none"> Formaldehyde is used in large quantities for production of many chemical compounds such as Urea formaldehyde resin, Phenol formaldehyde resin, Pentaerythritol, Pyridine & Picolines. It also finds application as disinfectant and in oil field applications. | Not Registered at Present |
| <ul style="list-style-type: none"> Alkyl Pyridine Mixture is used an intermediate for manufacturing corrosion inhibitor formulations for oilfield applications. | Not Registered at Present |
| <ul style="list-style-type: none"> Liquid Choline chloride is used in oil & gas industry as an effective temporary clay stabilizer/KCl substitute for the smectite, illite and mixed layer clay minerals, those commonly found in formations. | |

Growing Sustainably with Lower Carbon Foot Print



Product life cycle assessment with cradle to Gate approach: E&Y report

Jubilant is committed to Environment Sustainability & supports green chemistry by using bio inputs in manufacturing. Our products have lower carbon footprint compared to products made up from petro route. Owing to green nature, we provide our customers with lower carbon footprint value chain.



**Dow Jones
Sustainability Indexes**

- Achieved 81 percentile in the Global Chemical Industry
- Among the top 20% companies globally
- Among to 3 Indian Chemical companies in ESG score



- Received Gold Rating
- Achieved 93 percentile



Responsible Care®
OUR COMMITMENT TO SUSTAINABILITY

Global chemical industry's EHS initiative & Ethical framework towards safe chemicals management and performance excellence

MANUFACTURING FACILITIES

UTTAR PRADESH

- Gajraula

GUJARAT

- Bharuch
- Samlaya

MAHARASHTRA

- Nira
- Ambernath

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Jubilant Ingrevia Limited is a global integrated Life Science products and Innovative Solutions provider serving Pharmaceutical, Nutrition, Agrochemical, Consumer and Industrial customers with customised products and solutions that are innovative, cost-effective and conforming to excellent quality standards.

The Company offers a broad portfolio of high-quality ingredients that find application in a wide range of industries. The company has 2,100 employees and serves more than 1,400 customers in more than 50 countries across the world. The Company's portfolio also extends to custom research and manufacturing for pharmaceutical and agrochemical customers on an exclusive basis.



**JUBILANT
INGREVIA**