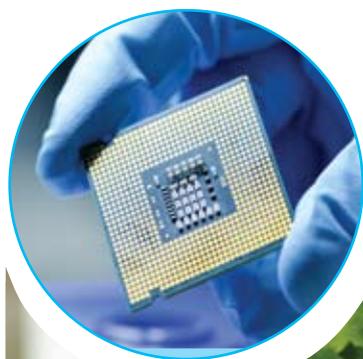


ADVANCE INTERMEDIATES

(Pyridine, Picolines, Cyanopyridines,
Piperidine, Acetaldehyde, Formalde-
hyde & Alkyl Pyridine Mixture)





Advance Intermediates

The Advance Intermediates business of Jubilant Life Sciences manufactures **Pyridine, Picolines, Cyanopyridines, Piperidine, Acetaldehyde and Formaldehyde**. These are used as Advance Intermediates/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 40 years of experience in Pyridine chemistry and is the only manufacturer of Pyridines and Picolines with **complete forward and backward integration**.

Manufacturing Prowess

The world scale plant located at Gajraula, U.P. (approximately 120 kms from Delhi), is Zero Discharge and ISO 9000, ISO 14001, OHSAS 18001, RC14001 certification under the American Chemistry Council's Responsible Care program.

Environment Sustainability

Company is committed to environment sustainability and supports green chemistry by prioritising use of bio inputs in manufacturing. Jubilant is one of the world's largest producer of Acetaldehyde from bio route.

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.

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. It is derived from Alpha Picoline.

3-Cyanopyridine

3-Cyanopyridine is a white crystalline solid.

4-Cyanopyridine

4-Cyanopyridine is a white to off-white solid at room temperature. It is derived from Gamma Picoline.

Piperidine

Piperidine is a colourless fuming liquid, derived by the hydrogenation of Pyridine.

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.

Alkyl Pyridine Mixture

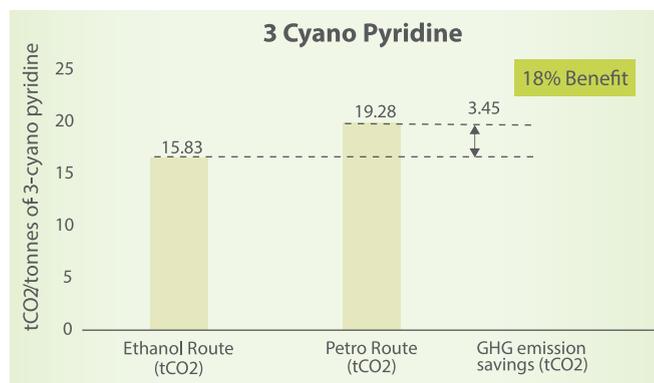
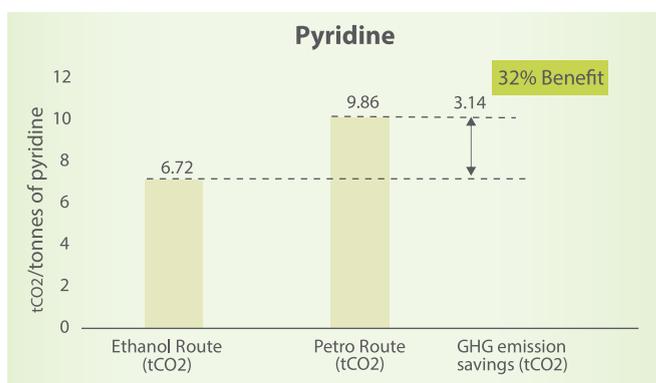
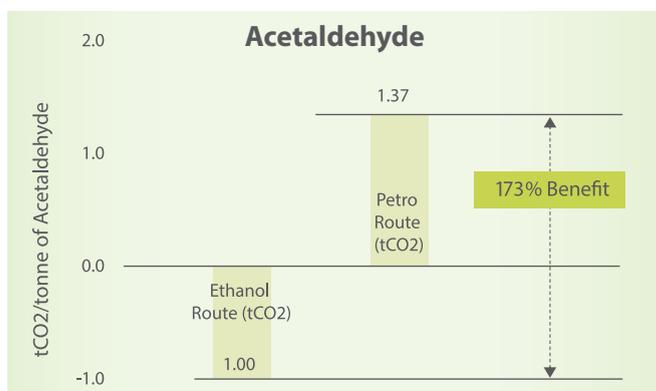
This is complex heterocyclic mixture containing poly alkylated pyridines, which is derived as high boiling distillate during Pyridine manufacturing.

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, Haloxfop, 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. Also finds application as disinfectant. 	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

Carbon Foot Print

The Company manufactures Acetaldehyde, Pyridine, Beta Picoline & 3-Cyano Pyridine via the biomass route, using agricultural feedstock which gives it a benefit in carbon footprint as compared to the conventional petroleum route.



Source: Carbon Footprint Study conducted by Ernst & Young

MANUFACTURING FACILITIES

UTTAR PRADESH

- Gajraula

GUJARAT

- Bharuch
- Samlaja

MAHARASHTRA

- Nira
- Ambernath

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To know more log on to: www.jubl.com/lsci

The Life Science Ingredients segment of Jubilant Life Sciences is engaged in Specialty Intermediates, Nutritional Products and Life Science Chemicals through five manufacturing facilities in India.

Serving customers in over 80 countries, the segment offers a broad portfolio of high quality ingredients that find application in wide range of industries.

