

CROP SCIENCE  
INGREDIENTS





## Crop Science Ingredients

Crop Science Ingredients business of Jubilant Life Sciences offers value added Intermediates & Actives for Agrochemical industry. We are a preferred supplier to agrochemical customers across the globe.

### PRODUCT OFFERINGS

#### 2-Chloro-6-Trichloromethylpyridine

2-Chloro-6-Trichloromethylpyridine is the key Advanced Intermediate to produce various pesticides including Fungicide. Jubilant is producing 2-Chloro-6-Trichloromethylpyridine through a niche technology developed through in-house R&D using Alpha Picoline as a Starting material which is produced captively. Jubilant is committed to remain a cost effective and sustainable supplier of 2-Chloro-6-Trichloromethylpyridine to all its customers.

#### Symtet (2, 3, 5, 6-Tetrachloropyridine)

Symtet is the key Advanced Intermediate to produce Chlorpyrifos (insecticide) and Triclopyr (herbicide). Jubilant is producing Symtet through a niche technology developed through in-house R&D, using Pyridine as a starting material which is produced captively. Jubilant is committed to remain a cost effective and sustainable supplier of Symtet to all its customers.

#### PCP (2, 3, 4, 5, 6-Pentachloropyridine)

PCP is the basic building block for the production of Fluroxypyr (Herbicide). Jubilant is producing PCP through a niche technology developed through in-house R&D, using Pyridine as a starting material which is produced captively.

#### 2, 3-DCP (2, 3-Dichloropyridine)

2, 3-DCP is the key intermediate for the production of many insecticides. It is produced in a highly cost-efficient way through a niche, in-house technology.

#### 2-Fluoro-6-Trifluoromethylpyridine

2-Fluoro-6-Trifluoromethylpyridine is the key Advanced Intermediate to produce Fungicide. Jubilant is producing 2-Fluoro-6-Trifluoromethylpyridine through a niche technology developed through in-house R&D using Alpha Picoline as a starting material which is produced captively. Jubilant is committed to remain a cost effective and sustainable supplier of 2-Fluoro-6-Trifluoromethylpyridine to all its customers.

#### IPRAC (Isopropenyl Acetate)

Isopropenyl Acetate is used as an intermediate as well as solvent in Agrochemical and Pharma Industry. Jubilant is producing this molecule through a very cost effective and niche technology developed through in-house R&D using Ketene as a starting material which is produced captively. Jubilant is committed to remain a cost effective and sustainable supplier of Isopropenyl Acetate to all its customers.

#### CCC (Chlormequat Chloride)

Chlormequat Chloride is an effective plant growth regulator, which normally induces retardation of shoot elongation and vegetative growth in most crops. The Product has been used to improve both yield potential and quality of crops. Jubilant leads the Indian CCC market, with a sizeable capacity, supplying to several customers.

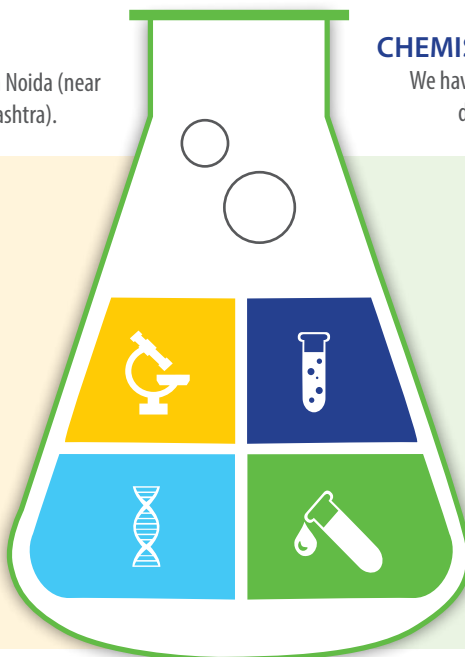
#### Contract Development and Manufacturing - Agro Intermediates & Actives

Jubilant provides Contract Development and Manufacturing Services for Agro Chemicals industry – including both Intermediates & Actives for global agro customers, through specific long term agreements. Its expertise lies in developing customisable, cost effective, efficient and scalable processes for specific products (Intermediates & Actives). The business has several ongoing, successful long term arrangements with its customers and global agrochemical companies.

## R&D CAPABILITIES

The business has three major R&D facilities located in Noida (near Delhi), Gajraula (near Delhi) and Ambernath (Maharashtra).

All R&D facilities have fully equipped analytical laboratory with advance equipment including: NMR, XRD, Reaction Calorimeter, LC-MS, Prep HPLC, Particle Size Analyser, Optical Microscope, Stability Chambers, Polarimeter, IR, DSC, TSC etc. All projects in R&D are coded and distributed to maintain strict confidentiality. We have state-of-art R&D facilities, Kilo lab, pilot plant (including HF based fluorination) and multipurpose plants (4 Locations) to commercialize customer projects through our chemistry capabilities.



## CHEMISTRY & TECHNOLOGY PLATFORMS

We have developed several chemistry platforms and have also developed expertise in the following niche technologies

Amination (Chichibabin reaction), Grignard Reaction, Sodamide/Sodium Methoxide Reaction, Quarternisation, Photochlorination, Halogenation & Dehalogenation, Vapour phase Rxn (up to 450°C), High Pressure Reaction, Liquid & Vapour phase Chlorination, Polychlorination, Bromination, Fluorination using KF & HF, Oxime Reaction and many more.

## MANUFACTURING OVERVIEW

The business has four Manufacturing facilities:

- **Ambarnath, Maharashtra, India**
- **Bharuch, Gujarat, India**
- **Gajraula, Uttar Pradesh, India**

Commercial plants have over 70 reactors (MSGLR, SS, and Hastelloy) size ranging from 1KL to 14KL with total reactor volume of about 750 KL. At these facilities, operations are carried out at both very high (200°C) and very low (-20°C) temperatures.

Quality, Safety and Environmental Protection are the foremost commitments at Jubilant's manufacturing plants. Conscious efforts are constantly undertaken to build efficiencies and economies of scale without compromising on quality. All of the Company's manufacturing plants follow global standards of best manufacturing practices.

Jubilant's plants are ISO 9001:2008, 14001:2004 & OHSAS 18001:2007 certified. They also have NABL accredited QC laboratories with Standard ISO/IEC 17025:2005 certification. Jubilant contributes to the planet's most precious resource, water, by 100% recycling with use of latest technologies.

## SUSTAINABILITY

### Low Carbon Footprint

Most of our Crop Science Ingredients are manufactured using captive feedstock of Pyridine and Picoline, using greener inputs (non-petro route), to offer ecological benefits in addition to reducing the carbon footprint by 10-30%.


## PROJECT MANAGEMENT

An exclusive Project Management Office (PMO) has been introduced to improve overall co-ordination for Custom Manufacturing of agrochemicals. Each project in Custom Manufacturing of agrochemicals is handled with care by a certified Project Manager.

A designated Project Manager is the single point of contact for customers. The processes are structured to map project progress, documentation etc., with the help of Enterprise Project Management (EPM) software.

## GLOBAL REACH

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



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.

## MANUFACTURING FACILITIES

### UTTAR PRADESH

- Gajraula

### GUJARAT

- Bharuch
- Samlaya

### MAHARASHTRA

- Nira
- Ambernath

## OFFICE LOCATIONS

### India

#### Maharashtra

##### Jubilant Life Sciences Limited

Transocean House, 1st Floor,  
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