FORM-I

For

PROPOSED PESTICIDE PRODUCTS AND SPECIALTY CHEMICALS (8712 MT/ANNUM) MANUFACTURING PLANT

Of

M/S. SHREE GANESH REMEDIES LTD (UNIT-5)

PLOT NO. D-2/17/16,DAHEJ-II, GIDC ESTATE,
TAL: VAGRA, DIST:BHARUCH, GUJARAT-392130

PREPARED BY:

ACCREDITATION DETAILS

(NABET/QCI Accredited EIA Consultant): NABET/EIA/2023/IA0062(Rev.01)
(MoEF Accredited Testing Laboratory): 15018/24/2019-CPW
(NABL Accredited Testing Laboratory): TC - 7328
(GPCB Recognized Schedule-II Environmental Auditor)
ISO 9001: 2015 Certified Company
OHSAS 18001: 2007 Certified Company

APPENDIX I

FORM 1

(I) Basic Information

Sr. No.	Item	Details
1.	Name of the Project/s	M/S. SHREE GANESH REMEDIES LTD (UNIT-5)
2.	S.No. in the Schedule	5 (b)& 5(f)
3.	Proposed capacity/area/length/tonnage to be handled/command area/lease area/number of wells to be drilled	Proposed Capacity – 8712 MT/Annum (Pesticide – 100 MT/Month + Specialty Chemicals -621 MT/Month + R&D – 5 MT/Month) Land Area = 40554.30 Sq. Meter
4.	New/Expansion/Modernization	New
5.	Existing capacity/area etc.	Proposed unit
6.	Category of project i.e. 'A' or 'B'	'A'
7.	Does it attract the general condition? If yes, please specify.	N.A.
8.	Does it attract the specific condition? If yes, please specify.	N.A.
9.	Location	Plot No. D-2/17/16,Dahej - II, GIDC Estate, Tal: Vagra, Dist:Bharuch, Gujarat-392130
	Plot/Survey/Khasra No.	Plot No. D-2/17/16
	Village	Dahej - II, GIDC Estate
	Tehsil	Vagra
	District	Bharuch
	State	Gujarat
10.	Nearest railway station/airport along with distance in kms.	Nearest Railway Station: Bharuch:32.50 Km Nearest Airport: Baroda: 86.70 Km
11.	Nearest Town, city, District Headquarters along with distance in km	Nearest town: Bharuch: 32.50 Km, Nearest District Head quarter: Bharuch: 32.50 Km
12.	Village Panchayats, zillaparishad, Municipal corporation, Local body	Village: Vadadla, Tal: Vagra, Dist:Bharuch, Gujarat.
13.	Name of the applicant	M/s.Shree Ganesh Remedies Ltd (Unit-5)
14.	Registered address	Plot No. D-2/17/16,Dahej - II, GIDC Estate,Tal: Vagra, Dist:Bharuch, Gujarat
15.	Address for correspondence:	M/S.Shree Ganesh Remedies Ltd, Plot no. 6011- 6012,GIDC Estate,Ankleshwar - 393002
	Name	Mr. Akash Kanani.
	Designation (Owner/Partner/CEO)	Executive Environment Engineer
	Address	M/S. Shree Ganesh Remedies Ltd, Plot no. 6011- 6012,GIDC Estate,Ankleshwar - 393002
	Pin Code	393 002.

	E-Mail	contact@ganeshremedies.com
	Telephone No.	+919662287187
	Fax No.	--
16.	Details of Alternative Sites examined, if any location of these sites should be shown on a topo sheet.	No, Unit has not examined any Alternative site.
17.	Interlinked Projects	No. Unit has no Interlinked Projects.
18.	Whether separate application of interlinked project has been submitted?	Not applicable. Unit has no Interlinked Projects.
19.	If Yes, date of submission	Not applicable
20.	If no., reason	Unit has no Interlinked Projects.
21.	Whether the proposal involves approval/clearance under: If yes, details of the same and their status to be given. (a) The Forest (Conservation) Act, 1980? (b) The Wildlife (Protection) Act, 1972?	Not applicable, as the project is located in notified estate.
22.	Whether there is any Government order/policy relevant/relating to the site?	No, there is no Government Order/Policy relevant/relating to the site.
23.	Forest land involved (hectares)	Not Applicable, no forest land is involved.
24.	Whether there is any litigation pending against the project and/or land in which the project is propose to be set up? (a) Name of the Court (b) Case No. (c) Orders/directions of the Court, if any and its relevance with the project.	No litigation is pending against the project.

(II) Activity

1. Construction, operation or decommissioning of the Project involving actions, which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)

Sr. No.	Information/Checklist confirmation	Yes /No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
1.1	Permanent or temporary change in land	Yes	Land use will change but proposed

	use, land cover or topography including increase in intensity of land use (with respect to local land use plan)		Project site is within Dahej GIDC Estate.
1.2	Clearance of existing land, vegetation and buildings?	Yes	Minor site clearance activities shall be carried out to clear shrubs and weed.
1.3	Creation of new land uses?	No	Site is located in GIDC Dahej. GIDC Dahej has allotted us open land for our project.
1.4	Pre-construction investigations e.g. bore houses, soil testing?	Yes	Soil testing will be carried out before construction activities.
1.5	Construction works?	Yes	Construction Activities will be carried out after getting EC & NOC. Construction works is shown in plant layout as **Annexure-1.**
1.6	Demolition works?	No	There will not be any demolition work at the site, This is open plot.
1.7	Temporary sites used for construction workers or housing of construction workers?	No	Construction workers would be from local area so temporary sites won't berequired.
1.8	Above ground buildings, structures or Earthworks including linear structures, cut and fill or excavations	Yes	New buildingsforproduction constructed as per approved plan and plant layout is attached Annexure-1.
1.9	Underground works including mining or tunneling?	No	No underground works, mining or tunneling would be carried out.
1.10	Reclamation works?	No	No, there is no any reclamation work.
1.11	Dredging?	No	Dredging will not be required.
1.12	Offshore structures?	No	Off shore structure is not needed.
1.13	Production and manufacturing	Yes	List of Products is attached **Annexure: 2** and manufacturing process attached as **Annexure: 3.**
1.14	Facilities for storage of goods or materials?	Yes	Dedicated storage area for storage of Raw Materials and finished products, solvents, etc. shall be provided.
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	Yes	Effluent Treatment Plant will be installed to treat effluent so as to achieve the GPCB norms. Hazardous Waste from different operation will be collected, stored and disposed as per Hazardous and other waste management and trans boundary movementRule, 2016.
1.16	Facilities for long term housing of operational workers?	No	The operational staff will be recruited locally and working in shift, hence no

			housing for the operational workers.
1.17	New road, rail or sea traffic during construction or operation?	No	Not required as site is connected with the existing road of GIDC.
1.18	New road, rail, air waterborne or other airports etc?	No	Not required as site is connected with the existing road of GIDC.
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	No	Not required as Industrial Estate.
1.20	New or diverted transmission lines or pipelines?	No	Not required.
1.21	Impoundment, damming, converting, realignment or other changes to the hydrology of watercourses or aquifers?	No	Not required as Industrial Estate.
1.22	Stream crossings?	No	There are no stream crossings.
1.23	Abstraction or transfers or the water form ground or surface waters?	No	No ground water shall be used. The requirement of raw water shall be met through GIDC Water Supply.
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	No	Site is located in G.I.D.C. Dahej, Ta: Vagra, Di: Bharuch. There is no water body within the proposed project Site.
1.25	Transport of personnel or materials for construction, operation or decommissioning?	Yes	Transportation of Raw material or personnel will be by road only.
1.26	Long-term dismantling or decommissioning or restoration works?	No	There is no dismantling of any sort. Not applicable.
1.27	Ongoing activity during decommissioning which could have an impact on the environment?	No	No Impact on the Environment
1.28	Influx of people to an area in either temporarily or permanently?	No	This will be a well-developed Industrial Area and due to project, 100 people shall be employed for operation.
1.29	Introduction of alien species?	No	Project site is located in Dahej Industrial Estate
1.30	Loss of native species of genetic diversity?	No	Project site is located in Dahej Industrial Estate
1.31	Any other actions?	No	There is no any action or work.

2. Use of Natural resources for construction or operation of the Project (such as land, water, materials or energy, especially any resources which are non-renewable or in short supply):

Sr. No	**Information/checklist confirmation**	**Yes/ No?**	**Details there of (with approximate quantities/rates, wherever possible) with**

			source of information data
2.1	Land especially undeveloped or agriculture land (ha)	No	This land is purchased from Gujarat Industrial Development Corporation (GIDC)-Dahej, So land is developed by GIDC.
2.2	Water (expected source & competing users) unit: KLD	Yes	The entire water requirement of 399.5 KLD whichwill be met through GIDC Water Supply.
2.3	Minerals (MT)	No	There are no any minerals.
2.4	Construction material -stone, aggregates, sand / soil (expected source MT)	Yes	Company shall use Sand, stone, Cement and Structural Steel for Construction as required.
2.5	Forests and timber (source - MT)	No	No wood shall be used as construction material or as a fuel.
2.6	Energy including electricity and fuels source, competing users Unit: fuel (MT), energy (MW)	Yes	Power required from DGVCL is 1000KVA. Standby power supply from D.G. set – Proposed: 1000 KVA x1Nos. 500 KVA x1Nos. **Fuel:** Imported Coal: 20 MT/Day Natural Gas: 200 M^3/Hr HSD : 720 Liters/Hr
2.7	Any other natural resources (use appropriates standard units)	No	No any other natural resources being used.

3. Use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health.

Sr. No.	**Information / Checklist confirmation**	**Yes/ No?**	**Details thereof (with approximate quantities / rates wherever possible) with source of information data**
3.1	Use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies)	Yes	Company will store of hazardous chemicals as per MSIHC Rules.
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	No	Not applicable as site is located in Dahej Industrial Area, Tal: Vagra, Dist: Bharuch.
3.3	Affect the welfare of people e.g. by changing living conditions?	No	Not applicable as site is located in Dahej Industrial Area, Tal: Vagra, Dist: Bharuch.
3.4	Vulnerable groups of people who could	No	Not applicable as site is located in

	be affected by the project e.g. hospital patients, children, the elderly etc.,		DahejIndustrial Area, Tal: Vagra, Dist: Bharuch.
3.5	Any other causes	No	No Other Causes.

4. Production of solid wastes during construction or operation or decommissioning MT/month)

Sr. No.	Information/Checklist confirmation	Yes/ No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
4.1	Spoil, overburden or mine wastes	No	This is not mining project, This is Core Chemical Industry.
4.2	Municipal waste (domestic and or commercial wastes)	No	There will be no generation of MSW.
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	Yes	There are 17 hazardous waste which are dispose as per Hazardous & other Wastes management & Transboundry Movement rules, 2016. Please refer **Annexure– 6.**
4.4	Other industrial process wastes	Yes	Hazardous waste disposed as per Hazardous & other Wastes Management & Transboundry movement rules, 2016. Please refer **Annexure– 6.**
4.5	Surplus product	No	As per Hazardous Waste Rule-2016, There is no generated any surplus Products.
4.6	Sewage sludge or other sludge from effluenttreatment	Yes	STP sludge will be sent to TSDF along with ETP Sludge.
4.7	Construction or demolition wastes	No	Construction waste shall be utilized for leveling, land filling in the premises.
4.8	Redundant machinery or equipment	No	No
4.9	Contaminated soils or other materials	No	There are no any contaminated soils.
4.10	Agricultural wastes	No	There are no generating agricultural wastes.
4.11	Other solid wastes	Yes	Hazardous waste dispose as per Hazardous & other Wastes management & Transboundry movement rules, 2016. Please refer **Annexure– 6.**

5. Release of pollutants or any hazardous, toxic or noxious substances to air (Kg/hr)

Sr. No.	Information/Checklist confirmation	Yes/ No?	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
5.1	Emissions from combustion of fossil fuels From stationary or mobile sources	Yes	Company will use imported Coal/Natural Gas in Boiler & TFH and HSD in DG Set., MCS + bag Filter with water scrubber and Adequate Stack Height will be provided for the proper dispersion ofemissions. Details of flue gas emission are referred as **Annexure– 7.**
5.2	Emissions from production processes	Yes	There will be 5 process vents of HCl, NH_3, Cl2, HBr and HCl + SO_2. Two Stage Scrubber System will be provided. Details of process gas emission are referred as **Annexure– 7.**
5.3	Emissions from materials handling including storage or transport	Yes	All liquid raw materials shall be procured in bulk tankers and shall be transferred through a closed circuit pipe lines by pumps. Solid raw material shall be handled in closed charging rooms with proper ventilation and charged through close pipeline into reactors.
5.4	Emissions from construction activities including plant and equipment	No	Utmost care will be taken during construction activity and water sprinklers shall be utilized whenever necessary.
5.5	Dust or odours from handling of materials including construction materials, sewage and waste	No	All liquid raw materials shall be procured in tankers and shall be transferred through a closed circuit pipe lines. Adequate measures will be taken to reduce Dust and Odors.
5.6	Emissions from incineration of waste	No	This Point is not applicable because Unit will not install Incinerator.
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	No	Company will not burn any waste in open air.
5.8	Emissions from any other sources	No	There will not be any emissions from other sources.

6. Generation of Noise and Vibration, and Emissions of Light and Heat:

Sr. No.	Information/Checklist confirmation	Yes/ No?	Details there of (with approximate Quantities /rates, wherever possible) With source of source of information data
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	Yes	Acoustic enclosures shall be provided for DG set.
6.2	From industrial or similar processes	Yes	All machinery / equipment shall be well maintained, shall be proper foundation with anti-vibrating pads wherever applicable and noise levels within permissible limits. Acoustic enclosures shall be provided for DG set.
6.3	From construction or demolition	Yes	Noise and vibration will generate during construction phase but which is only temporary.
6.4	From blasting or piling	No	There shall not be any blasting or Piling activities.
6.5	From construction or operational traffic	Yes	There will be vehicular movement during construction and operation stage. All the vehicle will be maintain properly toreducenoiseand vibration from the vehicles.
6.6	From lighting or cooling systems	No	There will not any problem from lighting or cooling system.
6.7	From any other sources	No	Acoustic enclosures shall be provided for DG set.

7. Risks of contamination of land or water from releases of pollutants into the ground or into sewers, surface waters, groundwater, coastal waters or the sea:

Sr. No	Information/Checklist confirmation	Yes/ No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
7.1	From handling, storage, use or spillage of hazardous materials	Yes	All the raw material shall be stored separately in designated storage area and safely. Bund walls shall be provided around raw materials storage tanks for containing any liquid spillage. Other materials shall be stored in bags /

			drums on pallets with concrete flooring and no spillage is likely to occur.
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	Yes	Sewage effluent shall be treated in STP and treated water will reuse in Cooling. The treated effluent shall be sent to CETP, Dahej.
7.3	By deposition of pollutants emitted to air into the land or into water	Yes	The Project site is located in Dahej Industrial Area, Tal: Vagra, Dist:Bharuch. The emissions shall conform to the GPCB / CPCB norms of discharge. The treated effluent shall be sent to CETP, Dahej.
7.4	From any other sources	No	Not applicable
7.5	Is there a risk of long term build up of pollution in the environment from these sources?	Yes	Full- fledged Environmental Management System (EMS) will be installed. i.e. ETP, Air Pollution Control systems, Hazardous Waste Handling and Management as per norms, etc. which will eliminates the possibility of building up of pollution.

8. Risks of accident during construction or operation of the Project, which could affect human health or the environment:

Sr. No	**Information/Checklist confirmation**	**Yes/ No?**	**Details thereof (with approximate quantities / rates, wherever possible) with source of information data**
8.1	From explosions, spillages, fires etc from storage, handling, use or production of hazardous substances	Yes	The risk assessment will be carried out and all mitigative measures shall be taken to avoid accidents.
8.2	From any other causes	No	No any other Causes.
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc)?	No	There is no history of flood in Dahej Industrial Estate, Bharuch. The buildings are designed considering seismic zone III. The land is plain terrain – no scope of landslide. This area is having moderate rainfall and there is no history of cloudburst.

9. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality

Sr. No.	Information/Checklist confirmation	Yes/ No?	Details thereof (with approximate quantities / rates, wherever possible) with source of information data
9.1	Lead to development of supportingfacilities, ancillary development or development stimulated by the project which could have impact on the environment e.g.: * Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.) • housing development • extractive industries • supply industries • other	Yes	Site is located in Dahej-II Industrial Area, Tal: Vagra, Dist: Bharuch will be having the entire required infrastructure. This industrial zone is having existing road infrastructure, power supply are to be utilized. Local people will be employed and no housing is required. Please refer **Annexure – 9.**
9.2	Lead to after-use of the site, which could have an impact on the environment	No	There will be no impact on environment due to after-use of thesite.
9.3	Set a precedent for later developments	No	Not applicable
9.4	Have cumulative effects due to proximity to Other existing or planned projects with similar effects	No	The ETP of the company shall be designed such that the treated effluent conforms to the statutory requirement. The treated effluent shall be sent to CETP, Dahej.

(III)Environmental Sensitivity

Sr. No	Information/Checklist confirmation	Name / Identity	Aerial distance (within 25 km). Proposed Project Location Boundary.
1	Areas protected under international conventions national or local legislation for their ecological, landscape, cultural or other related value	No	Site is located in Dahej-II Industrial Area, Tal. Vagra, Dist: Bharuch, Gujarat.
2	Areas which are important or sensitive for Ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains,	No	Site is located in Dahej-II Industrial Area, Dist: Bharuch, Gujarat.

	forests		
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	Yes	Site is located in Dahej-II Industrial Area, Dist: Bharuch, Gujarat.
4	Inland, coastal, marine or underground waters	Yes	Arabian Sea- 20 Km RiverNarmada- 10 Km
5	State, National boundaries	No	No State or national boundaries
6	Routes or facilities used by the public for to recreation or other tourist, pilgrim areas.	No	Not applicable
7	Defense installations	No	NIL
8	Densely populated or built-up area	Yes	Bharuch city – 4 lakh population
9	Areas occupied by sensitive man-made land community facilities)	No	There is no such facilities near our project site
10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, tourism, minerals)	Yes	The project is being in industrial area which does not affect agricultural land.
11	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	Yes	Site is located in Dahej-II Industrial Area, Tal: Vagra, Dist: Bharuch, Gujarat.
12	Are as susceptible to natural hazard which could cause the project to present environmental problems (earthquake s, subsidence ,landslides, flooding erosion, or extreme or adverse climatic conditions)	No	No, Area is not susceptible to natural hazard which could cause the project to present environmental problems

IV).Proposed Terms of Reference for EIA studies: For detail please refer **Annexure – 10.**

I hereby given undertaking that, the data and information given in the application and enclosures are true to the best of my knowledge and belief and I am aware that if any part of the data and information submitted is found to be false or misleading at any stage the project will be rejected and clearance give, if any to the project will be revoked at our risk and cost.

Date: 13.10.2021
Place: Dahej GIDC

Mr. Akash Kanani
(Executive Environment Engineer)
M/S. SHREE GANESH REMEDIES LTD (UNIT-5)

NOTE:

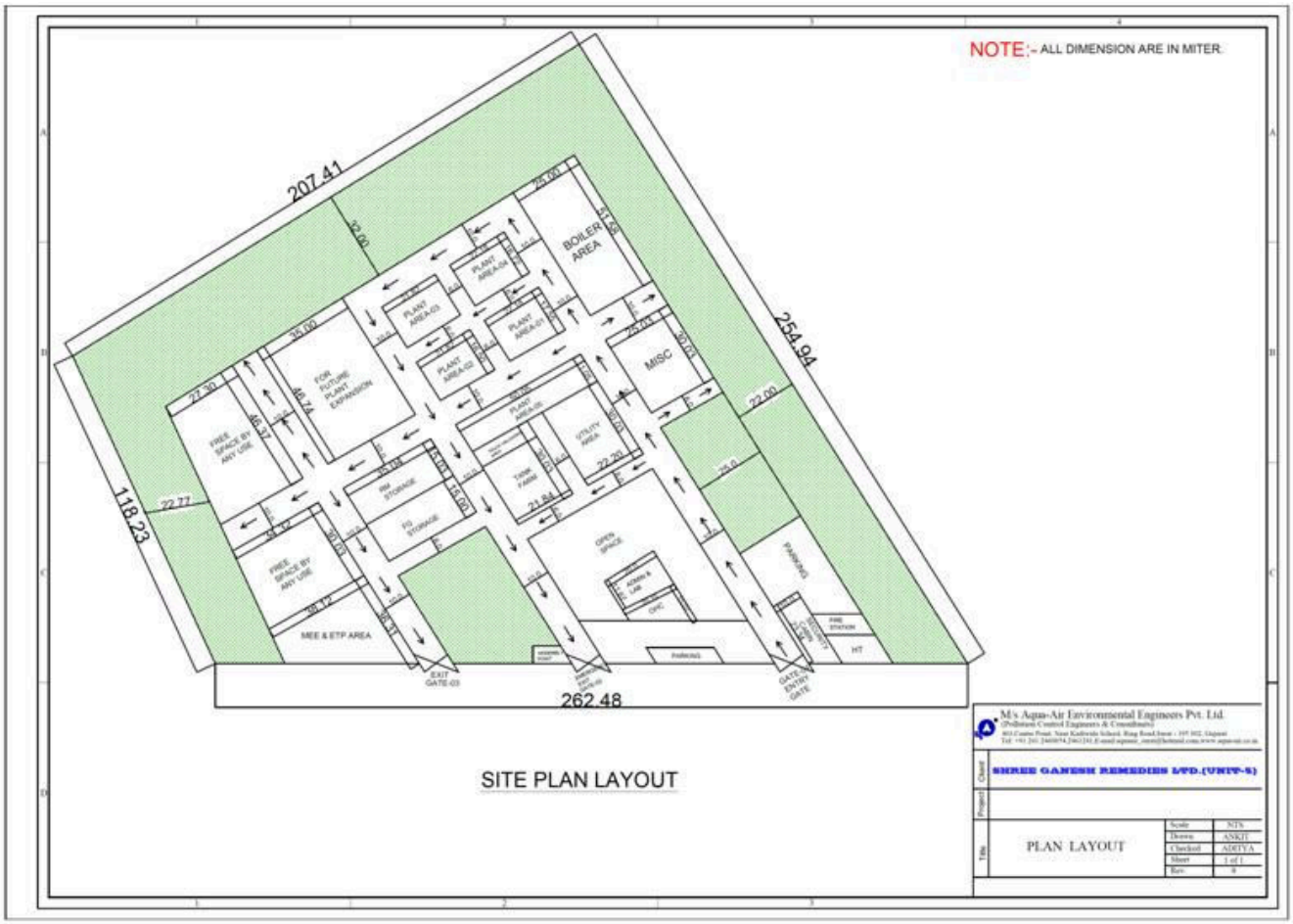
1. The projects involving clearance under Coastal Regulation Zone Notification, 1991 shall submit with the application a C.R.Z. map duly demarcated by one of the authorized agencies, showing the project activities, w.r.t. C.R.Z. (at the stage of TOR) and the recommendations of the State Coastal Zone Management Authority (at the stage of EC). Simultaneous action shall also be taken to obtain the requisite clearance under the provisions of the C.R.Z. Notification, 1991 for the activities to be located in the CRZ.
2. The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief Wildlife Warden thereon (at the stage of EC).
3. All correspondence with the Ministry of Environment & Forests including submission of application for TOR/Environmental Clearance, subsequent clarifications, as may be required from time to time, participation in the EAC Meeting on behalf of the project proponent shall be made by the authorized signatory only. The authorized signatory should also submit a document in support of his claim of being an authorized signatory for the specific project.

ANNEXURES

1	PLANT LAYOUT & 10 KM RADIUS FROM PROJECT SITE LOCATION ON GOOGLE MAP
2	LIST OF PRODUCTS WITH PRODUCTION CAPACITY AND RAW MATERIALS
3	BRIEF MANUFACTRING PROCESS, CHEMICAL REACTION AND MASS BALANCE
4	WATER CONSUMPTION AND EFFLUENT GENERATION WITH SEGREGATION OF EFFLUENT STREAMS
5	DETAILS OF PROPOSED EFFLUENT TREATMENT PLANT
6	DETAILS OF HAZARDOUS SOLID WASTE MANAGEMENT AND DISPOSAL
7	DETAILS OF AIR POLLUTION CONTROL MEASURES
8	DETAILS OF HAZARDOUS CHEMICAL STORAGE FACILITY
9	SOCIO - ECONOMIC IMPACTS
10	PROPOSED TERMS OF REFERENCES
11	PLOT ALLOTMENT LETTER
12	UNDERTAKING OF NO BANNED CHEMICALS/PRODUCTS IS PROPOSED TO BE MANUFACTURED

ANNEXURE: 1

PLANT LAYOUT&10 KM RADIUS FROM PROJECT SITE LOCATION ON GOOGLE MAP



NOTE: The proposed unit is located in Dahej-II GIDC Industrial area. There is no protected area/Eco sensitive area within 10 km radius of the proposed project site.

ANNEXURE: 2

LIST OF PRODUCTS WITH PRODUCTION CAPACITY

Sr. No.	Name of Products	Quantity MT/Annum	CAS No.	LD50 (mg/Kg)	Category
Agro Chemicals					
1	2,4 dichlorophenoxyacetic acid (2,4-D)	1200	94-75-7	3670	5(b)
2	Benfuresate		68505-69-1	2031	5(b)
3	Fluopicolide		239110-15-7	5000	5(b)
4	Anilofos		64249-01-0	1681	5(b)
5	Triazophos		24017-47-8	1100	5(b)
6	Deltamethrin		52918-63-5	5	5(b)
7	Flumethrin		69770-45-2	2000	5(b)
Intermediates					
8	1-[4-[2-(cyclopropylmethoxy)ethyl]phe noxy]-3-(propan-2-ylamino)propan-2-ol	1200	56392-17-7	--	5(f)
9	(R)-3-Amino-1-butanol		61477-40-5	--	5(f)
10	2-Aminomethyl-1-ethylpyrrolidine		22795-99-9	--	5(f)
11	1,3-Dimethyladamantane		702-79-4	--	5(f)
12	(R)-2-hydroxy-4-phenylbutanoic acid ethyl ester		90315-82-5	--	5(f)
13	Trans-4-aminocyclohexanol		27489-62-9	--	5(f)
14	2-Ethyl-2-methylbutanoic acid		19889-37-3	--	5(f)
15	trans-4-(4-Chlorophenyl)cyclohexanecarb oxylic acid		49708-81-8	--	5(f)
16	4,4’-dimethylbiphenyl		613-33-2	--	5(f)
17	4-Phenylbenzonitrile		2920-38-6	--	5(f)
18	2-Methyl-[1,1'-biphenyl]-3-yl)methanol--		76350-90-8	--	5(f)
19	3-Chloro-2-methyl-1,1'-		20261-24-9	--	5(f)

	biphenyl				
20	2-Fluorophenol		367-12-4	--	5(f)
21	2-Fluoroanisole		321-28-8	--	5(f)
22	2-Chloro-6-fluoroanisole		363-51-9	--	5(f)
23	(2-Chloro-4-fluoro-3-methoxyphenyl)boronic acid		944129-07-1	--	5(f)
24	1H-Pyrrole		109-97-7	--	5(f)
25	2-Chlorobenzonitrile		873-32-5	--	5(f)
26	1-Methoxy-2-propylamine		37143-54-7	--	5(f)
27	Bicyclo[4.2.0]octa-1,3,5-triene [Benzocyclobutene]		694-87-1	--	5(f)
28	N,N'-(2-(4-(2-aminobenzamido)butyl)pentane-1,5-diyl)bis(2-aminobenzamide)		951-985-7	--	5(f)
29	4,5,6,7-Tetrahydrothieno[3,2-c]pyridine Hydrochloride		28783-41-7	--	5(f)
30	3,5-Dimethylbenzoyl chloride		6613-44-1	--	5(f)
31	1-(4-Chlorophenyl)-4,4-dimethyl-3-pentanone		66346-01-8	--	5(f)
32	2,4,6-triaminopyrimidine		1004-38-2	--	5(f)
33	dl-2,2-Dimethyl cyclopropane- 1-carboxylic acid		931-26-0	--	5(f)
34	4-Morpholinopiperidine		53617-35-9	--	5(f)
35	4,4'--DIMETHOXYTRITYL CHLORIDE		40615-36-9	--	5(f)
36	4-Hydroxy Benzyl Alcohol		623-05-2	--	5(f)
37	4 (2-chloro Ethyl) MorpholineHCl		3647-69-6	--	5(f)
38	Di Methyl Amino		4584-49-0	--	5(f)

	Isopropyl Chloride HCl				
39	4- ChloroButyryl Chloride		4635-59-0	--	5(f)
40	Methyl 4-chlorobutyrate		3153-37-5	--	5(f)
41	Cyclorpropane Carbonyl Chloride		4023-34-1	--	5(f)
42	Cyclohexane Carbonyl chloride		2719-27-9	--	5(f)
43	2- Furoyl Chloride		527-69-5	--	5(f)
44	O- Acetylsalicloyl Chloride		5538-51-2	--	5(f)
Building Blocks					
45	1,1-Cyclobutane dicarboxylic acid	1200	5445-51-2	--	5(f)
46	Cyclobutane carboxylic acid		3721-95-7	--	5(f)
47	Cyclobutane carbonyl chloride		5006-22-4	--	5(f)
48	Cyclobutyl carbinol		4415-82-1	--	5(f)
49	Cyclobutyl carboxaldehyde		3019-25-8	--	5(f)
50	Cyclobutyl methyl Chloride		5911-08-0	--	5(f)
51	Cyclopropyl boronic acid		411235-57-9	--	5(f)
Aroma					
52	1-Cyclopropylmethyl-4-methoxybenzene	1200	16510-27-3	--	5(f)
53	2-(3,5-dimethylhex-3-en-2-yloxy)-2-methylpropyl cyclopropanecarboxylate		676532-44-8	--	5(f)
54	4-Methylpropiophenone		5337-93-9	--	5(f)
55	Cyclopropyl 4-methoxyphenyl ketone		7152-03-6	--	5(f)
56	1-(4-Chlorophenyl)cyclopropanecarboxylic acid		72934-37-3	--	5(f)
57	Para Anisyl Acetate		104-21-2	--	5(f)
58	(E,Z)-7,9-Dodecadienyl		55774-32-8	--	5(f)

	acetate				
59	(Z)-13-Icosen-10-one		63408-44-6	--	5(f)
60	cis-7,8-Epoxy-2-methyloctadecane		29804-22-6	--	5(f)
61	(Z,E) -9,12-Tetradecadienyl acetate		69775-62-8	--	5(f)
62	(Z)-11-Tetradecenyl acetate		20711-10-8	--	5(f)
63	(E,Z)-3,13-Octadecadien-1-ol		53120-26-6	--	5(f)
64	(Z,Z)-3,13-Octadecadien-1-ol		53120-27-7	--	5(f)
65	(Z)-4-Tridecen-1-yl acetate		65954-19-0	--	5(f)
66	(E)-4-Tridecen-1-yl acetate		72269-48-3	--	5(f)
67	(E,E) -8,10-Dodecadien-1-ol		77967-64-7	--	5(f)
68	(Z)-11-Hexadecenyl Acetate		34010-21-4	--	5(f)
69	Methyl p-anisate		121-98-2	--	5(f)
Fine Chem					
70	Norcamphor	1200	497-38-1	--	5(f)
71	ANETHOL		104-46-1	--	5(f)
72	2,4 Dihydroxy Benzophenone		131-56-6	--	5(f)
73	7-Octyne-1-ol		871-91-0	--	5(f)
74	4-Pentenoic Acid		591-80-0	--	5(f)
75	4-Hexy Resorcinol		136-77-6	--	5(f)
76	2-Cyano Phenol		611-20-1	--	5(f)
77	7 – Bromo, 1 - heptene		4117-09-3	--	5(f)
78	1-Cyano-Cyclobutane-1,2-dicarboxylic acid dimethyl ester		14132-45-7	--	5(f)
79	E-Tetraacetate		15956-28-2	--	5(f)
80	N-Methyl-4-Chloro Piperidine HCl		5570-77-4	--	5(f)
81	Syringaldehyde		134-96-3	--	5(f)
82	Indoline		120-72-9	--	5(f)
83	2-p-Anisyl Propanal		5462-06-6	--	5(f)
84	4-Amino Benzonitril		873-74-5	--	5(f)
85	Acrylamide Purified		79-06-1	--	5(f)

86	Ethylenediaminetetraacetic Acid Metal Chelate salts		60-00-4	--	5(f)
87	Sodium Selenite Pentahydrate		26970-82-1	--	5(f)
88	Peonile		10461-98-0	--	5(f)
89	4,5-Dichloro phthalic Acid		56962-08-4	--	5(f)
Inorganic Products					
90	Sodium Sulphite	867	7757-83-7	--	5(f)
91	Calcium Chloride Fused Powder / Lumps	1785	7440-70-2	--	5(f)
92	R&D	60	--		
TOTAL		8712MT/ANNUM	--		

LIST OF RAW MATERIALS

Product No	Product Name	Raw Material Name	Cas No	Quantity MT/Annum
Group-1				
1	2,4 dichlorophenoxyacetic acid (2,4-D)	2,4 Dichloro phenol	120-83-2	936
		Monochloroacetic Acid	79-11-8	732
		Caustic Solution 35 %	1310-73-2	2220
		2,4 - D Acid Base	94-75-7	1860
		2,.4-D as a sodium salt	2702 – 72 – 9	5256
		30 % HCl	7647-01-0	1812
2	Benfuresate	Toluene	108-88-3	3492
		Morpholine	110-91-8	444
		Isobutryldehyde	78-84-2	372
		4-benzoquinone	106-51-4	546
		Ethane Sulfonyl Chloride	594-44-5	642
		Di Chloro Ethane	107-06-2	2400
		30% HCl	7647-01-0	600
		Sodium Borohydride	16940-66-2	186
		Sulphuric Acid	7664-93-9	120
3	Fluopicolide	2,6-Dichlorobenzoic acid	50-30-6	452.4
		Thionyl Chloride	7719-09-7	282
		N,N-Dimethylformamide (DMF)	68-12-2	16.8
		Toluene	108-88-3	187.2
		Dichloro Benzoyl Chloride	2905-62-6	507.6
		Aminomethyl-3-chloro-5-	175277-74-4	507.6
		Sodium Hydroxide	1310-73-2	194.4
4	ANILOPHOS	IPPCA	67-63-0	874.8
		CAC	79-04-9	654
		Xyelen/Toluene/MCB	108-88-3	1929.6
		HCl(30%)	7647-01-0	84
		NaHCO3	205-633-8	51.6
		48% NaOH lye	1310-73-2	452.4
		Methanol	67-56-1	534
		Xyelen/Toluene/MCB	108-88-3	2772
		TEA		3.6
		Ammonia Gas	7664-41-7	144
		48% NaOH lye	1310-73-2	348
		Ammonium DMTA	27546-07-2	634.8

		Anilide	62-53-3	852
		Xyelen/Toluene/MCB	108-88-3	2280
		48% NaOH lye	1310-73-2	237.6
5	Trizophos	1-Phenyl-2-Hydroxy-1,2,4 triazole	4231-68-9	684
		Triethylamine	121-44-8	468
		EDC	107-06-2	1368
		O,O Diethylthiophoryl Chloride	2524-04-1	792
		48% Caustic Lye	1310-73-2	300
6	Deltamethrin	DCA	79-43-6	660
		CPBA	937-14-4	600
		Benzene	71-43-2	720
		Catalyst		216
		Caustic	1310-73-2	120
		Flumethric Acid	69770-45-2	714.24
		Thionyl Chloride	7719-09-7	361.92
		Dimethyl Formamide	68-12-2	1.32
		Toluene	108-88-3	8233.32
		Sodium Bi Sulphite	7631-90-5	125.4
		FPBA	87199-17-5	528.6
		Tetra Butyl Ammonium Bromide	1643-19-2	4.8
		Sodium Cyanide	143-33-9	238.08
		Sodium Caronate	497-19-8	317.52
		Sodium Hypochlorite	7681-52-9	285.72
		Activated Carbon	64365-11-3	47.64
7	Flumethrin	Methylene Dichloride	75-09-2	3800.04
		Phosphorus Oxychloride	10025-87-3	2076.24
		Dimethyl Formamide	68-12-2	1123.8
		4-Chloro Acetophenone	99-91-2	952.44
		Sodium Acetate	6131-90-4	857.16
		Sodium Carbonate flakes	1310-73-2	190.44
		FLMSC		1666.68
		HCl Gas	7647-01-0	333.36
		Ethylene Dichloride	107-06-2	7238.04
		Tetra Butyl Ammonium Bromide	1643-19-2	19.08

		Sodium Hydroxide Flakes	1310-73-2	761.88
		Sulphuric Acid	7664-93-9	381
		HCl	7647-01-0	423.84
		Flumethric Acid	69770-45-2	714.24
		Thionyl Chloride	7719-09-7	361.92
		Dimethyl Formamide	68-12-2	1.32
		Toluene	108-88-3	8233.32
		Sodium Bi Sulphite	7631-90-5	125.4
		FPBA	87199-17-5	528.6
		Tetra Butyl Ammonium Bromide	1643-19-2	4.8
		Sodium Cyanide	143-33-9	238.08
		Sodium Caronate	497-19-8	317.52
		Sodium Hypochlorite	7681-52-9	285.72
		Activated Carbon	64365-11-3	47.64
8	1- 4- 2- (cyclopropylmethoxy)	M-192		832.8
		Epichlorohydrin	106-89-8	489.6
		25% NaOH	1310-73-2	126.756
		Toluene	108-88-3	4320
		Isopropyl amine	75-31-0	1052.84
9	(R)-3-Amino-1-butanol	Acetone	67-64-1	6162.89
		Paraformaldehyde	30525-89-4	1669.2
		10% Sodium hydroxide	1310-73-2	420
		1 M sulfuric acid	7664-93-9	240
		Dichloromethane	75-09-2	5400
		4-hydroxy-2-butanone	590-90-9	5398.8
		Hydroxylamine hydrochloride	5470-11-1	4721.23
		50% sodium hydroxide	1310-73-2	4272
		Methanol	67-56-1	46719.6
		4-hydroxy-2-butanone oxime	590-90-9	1291.2
		Raney nickel	12003-78-0	60
		Hydrogen	1333-74-0	60
		(R,S)-3-amino-1-butanol	61477-40-5	1356
		D-(-)-tartaric acid	147-71-7	3402
		(R)-3-amino-1-butanol	61477-40-5	1239.6
		30% sodium methoxide in methanol	124-41-4	1200
10	2-Aminomethyl-1	N-Pyrrolidone	872-50-4	1020
		Ethyl chloride	75-00-3	900

		DMF	68-12-2	1710
		NaOH sol.	1310-73-2	804
		Ethyl acetate	141-78-6	2256
		Chloroform	67-66-3	5040
		POCl3	10025-87-3	1020
		Nitromethane	75-52-5	660
		Methanol	67-56-1	948
		Sod. Meth.sol.	124-41-4	4380
		Ether	60-29-7	4200
		Hydrogen	1333-74-0	30
		Methanol	67-56-1	3384
		Catalyst		192
11	1,3-Dimethyladamantane	Acenaphthele	83-32-9	1212
		Dodecane	112-40-3	1200
		Catalyst		88.8
		Hydrogen	1333-74-0	96
12	(R)-2-hydroxy-4-pheny	4-phenyl-2,4-dioxobutyrate	64920-29-2	1269.6
		Methanol	67-56-1	1440
		Catalyst		24
		Hydrogen	1333-74-0	10.8
13	Trans-4-aminocyclohexanol	Paracetamol	103-90-2	1890
		Methanol	67-56-1	3600
		Catalyst		60
		Hydrogen	1333-74-0	25.2
		Sodium hydroxide	1310-73-2	402
14	2-Ethyl-2-methylbutanoic ac	Methyl chloride	74-87-3	659.4
		Mg Turnings	7439-95-4	329.004
		Catalyst		25.2
		THF	109-99-9	2931.01
		3-Penatanone	96-22-0	1122.82
		Catalyst		30
		THF	109-99-9	2931.02
		10% H2SO4	7664-93-9	2373.84
		20% NaCl solution	7647-14-5	1800
		3-Methyl-3- pentanone	565-69-5	1198.56
		98% Sulfuric acid	7664-93-9	1201.85
		Formic acid	64-18-6	648.6
		Dimethoxyethane	110-71-4	4021.45

		10% sodium carbonate	497-19-8	3600
15	trans-4-(4-Chlorophenyl)	Cyclohexene	110-83-8	787.092
		Anhy. Aluminum chloride	7446-70-0	1530.89
		Acetyl chloride	75-36-5	669.024
		Chlorobenzene	108-90-7	902.4
		30% Hydrochloric acid	7647-01-0	2676
		1 N sodium hydroxide solution	1310-73-2	630
		n-hexane	110-54-3	1548
		Sodium hydroxide solution	1310-73-2	4200
		Chlorine	7782-50-5	511.2
		1,4-dioxane	123-91-1	6624.29
		10% sodium metabisulphite	7681-57-4	1248
		Acetic acid	64-19-7	120
		Diemthyl formamide	68-12-2	3570
16	4,4’-dimethylbiphenyl	4-Chlorotoluene	106-43-4	926.4
		Mg Turnings	7439-95-4	207.36
		Catalyst		12
		THF	109-99-9	4117.85
		10% H2SO4	7664-93-9	3242.4
		20% NACl Solution	7647-14-5	2400
		Toluene	108-88-3	1998
17	4-Phenylbenzonitrile	4-hydroxybenzoic acid	99-96-7	1094.4
		Propanol	71-23-8	1200
		Catalyst		40.8
		Toluene	108-88-3	1680
		Sat. Na2CO3 soln.	5968-11-6	540
18	2-Methyl- 1,1'-biphenyl	2,6-Dichlorotoluene	118-69-4	1164
		Phenylboronic acid	98-80-6	882
		3M aq. K2CO3 Sol.	584-08-7	1632
		Pd catalyst	7440-05-3	42
		Toluene	108-88-3	2520
		Conc. HCl (35%, w/w)	7647-01-0	276
		Sat. NaCl sol	7647-14-5	1236
		Methanol	67-56-1	1920
		Mg Turnings	7439-95-4	150
		THF	109-99-9	3000
		Iodine	7553-56-2	3.6
		DMF	68-12-2	510
		HCl	7647-01-0	1296

		Sod. Borohydrate	16940-66-2	42
		Dil. sulfuric acid	7664-93-9	360
		Toluene	108-88-3	1740
19	3-Chloro-2-methyl-1,1'-biph	2,6-Dichlorotoluene	118-69-4	1164
		Phenylboronic acid	98-80-6	882
		3M aq. K2CO3 Sol.	584-08-7	1632
		Pd catalyst	7440-05-3	42
		Toluene	108-88-3	2520
		Conc. HCl (35%, w/w)	7647-01-0	276
20	2-Fluorophenol	2-Fluoroaniline	348-54-9	1700.68
		Sulfuric acid	7664-93-9	2252.28
		Nitrosyl sulphuric acid	7782-78-7	3792.83
		Sulfuric acid	7664-93-9	1360.54
		Dichloromethane	75-09-2	1200
21	2-Fluoroanisole	2-Fluorophenol	367-12-4	1253.62
		Dimethyl sulphate	77-78-1	1484.9
		Toluene	108-88-3	2713.14
		50% NaOH Solution	1310-73-2	1074.53
22	2-Chloro-6-fluoroanisole	2-Fluorophenol	367-12-4	1200
		Chlorine gas	7782-50-5	760.668
		Catalyst		1.2
		Monochlorobenze	108-90-7	5328
		Sodium hydroxide	1310-73-2	471.396
		Dimethyl sulphate	77-78-1	1484.64
		Toluene	108-88-3	2400
23	(2-Chloro-4-fluoro	2-chloro-6- fluoroanisole	53145-38-3	1014
		Dimethoxyethane	110-71-4	5070
		n-Butyl lithium	109-72-8	1644
		Trimethyl borate	121-43-7	780
		1 N NaOH	1310-73-2	2578.24
		tert-butyl methyl ether	1634-04-4	2400
		Organic layer-1		4081.76
24	1H-Pyrrole	Furan	110-00-9	60
		Catalyst		1296
		Ammonia gas	7664-41-7	648
25	2-Chlorobenzonitrile	4-chloro benzamide	619-56-7	1696.8
		Catalyst		180
		Toluene	108-88-3	1800
26	1-Methoxy-2-propylamine	1-methoxypropan-2-ol	107-98-2	1278
		Catalyst		60

		Ammonia gas	7664-41-7	966
		Hydrogen gas	1333-74-0	28.8
		Xylene	1330-20-7	1278
27	Bicyclo 4.2.0 octa-1,3,5-t	2-Methylbenzyl chloride	552-45-4	8100
		Catalyst		120
28	N,N'-(2-(4-(2- aminob	Isatoic anhydride	118-48-9	1080
		NMP	872-50-4	3000
		Hexatran-110		390
		NMP	872-50-4	198
		Aq. ammonia	1336-21-6	150
		Ethanol	64-17-5	2640
		DCM	75-09-2	3000
		DCM	75-09-2	300
29	4,5,6,7-Tetrahydrothieno	T2EA		948
		Toluene	108-88-3	3000
		Paraformladehyde	30525-89-4	246
		DMF	68-12-2	1188
		Dry HCl	7647-01-0	300
		Toluene	108-88-3	600
30	3,5-Dimethylbenzoyl	Mesitylene	108-67-8	900
		Tris(acetylacetonato)cob alt(III) Co(acac)3	21679-46-9	6.6
		KBr	7758-02-3	4.44
		Acetic acid	64-19-7	1356
		Oxygen gas (O2)	7782-44-7	1200
		Dichloromethane (DCM)	75-09-2	1800
		Thionyl chloride	7719-09-7	798
31	1-(4-Chlorophenyl)-4,4-dimet	4-Chlorobenzaldehyde	104-88-1	789.6
		Pinacolone	75-97-8	590.4
		Methanol	67-56-1	1440
		Catalyst		60
		Hydrogen gas	1333-74-0	18
32	2,4,6-triaminopyrimidine	Guanidine nitrate	506-93-4	936
		Sodium methoxide	124-41-4	542.4
		Methanol	67-56-1	3867.6
		Malononitrile	109-77-3	646.8
33	dl-2,2-Dimethyl cyclopropa	Methyl 2-diazoacetate	6832-16-2	1068
		Ethylene dichloride	107-06-2	5250
		Catalyst		26.4
		Isobutylene	115-11-7	840

		Sodium hydroxide	1310-73-2	435.6
		Methanol	67-56-1	1800
		Hydrochloric acid	7647-01-0	510
34	4-morpholino piperidine	1-Benzylpiperidin-4-One	3612-20-2	1744.8
		Morpholine	110-91-8	804
		Hydrogen	1333-74-0	19.2
		Palladium Carbon	7440-05-3	86.4
		Toluene	108-88-3	5234.4
		4-(1-benzylpiperdine-4-yl)morpholine	415967-79-2	2160
		Hydrogen	1333-74-0	16.8
		Palladium Carbon	7440-05-3	108
		Toluene	108-88-3	6482.4
35	4,4'-DIMETHOXYTRITYL CHLORI	Benzotrichloride	98-07-7	1224
		Anisol	100-66-3	1368
		Aluminum Trichloride	7446-70-0	864
		MDC	75-09-2	9420
		Ethyl Acetate	141-78-6	4620
		Hexane	110-54-3	4320
36	4-Hydroxy Benzyl Alcohol	PHBA	99-96-7	1158
		Methanol	67-56-1	4632
		Reny Nickle	12003-78-0	17.4
		Methanol for Recycle	67-56-1	4320
		Ethyl Acetate	141-78-6	2895.6
		Ethyl Acetate for Recycle	141-78-6	2655.6
37	4(2-Chloroethyl) Morpholine	Toluene	108-88-3	76.8
		Thionyl Chloride	7719-09-7	897.12
		2 hydroxy ethyl morpholine	622-40-2	868.32
		Rec. toluene	108-88-3	3460.32
		Soda Ash	497-19-8	399.36
38	Di Methyl Amino Isopropyl C	EDC	107-06-2	4800
		TC	7719-09-7	1152
		Dimethyl Amino 2 Propanol	108-16-7	864
		Soda Ash	497-19-8	519.6
39	4-Chloro Butyry Chloride	Gama Butyro Lactose	96-48-0	777.6
		Zinc Chloride	7646-85-7	13.2
		TC	7719-09-7	1267.2

		Soda Ash	497-19-8	562.8
40	METHYL- 4- BUTYRYL CHLORIDE	Gama Butyro Lactose	96-48-0	840
		Methanol	67-56-1	237.6
		Rec. Methanol	67-56-1	447.6
		TC	7719-09-7	1273.2
		Soda Ash	497-19-8	565.2
41	CYCLOPROPANE CARBONYL CHLORI	Cyclo Propane Carboxilic Acid	1759-53-1	1048.8
		TC	7719-09-7	1497.6
		Soda Ash	497-19-8	656.4
42	Cyclohexane Carbonyl Chlori	Cyclo Hexane carboxylic Acid	98-89-5	1155.6
		TC	7719-09-7	1106.4
43	2-Furoyl Chloride	2-Furoic Acid	88-14-2	1057.2
		TC	7719-09-7	1179.6
		Soda Ash	497-19-8	525.6
44	O-ACETYL SALICOYL CHLORIDE	Acetyl Salicylic Acid	50-78-2	1125.6
		Fresh ED	107-06-2	268.8
		Rec. EDC	107-06-2	2432.4
		TC	7719-09-7	782.4
		Soda Ash	497-19-8	346.8
45	1,1-Cyclobutane dicarboxylic	Diethyl cyclobutanecarboxylate	3779-29-1	1207.2
		HCl	7647-01-0	241.2
		Toluene	108-88-3	603.6
46	Cyclobutane carboxylic acid	Cyclobutanecarbaldehyde	2987-17-9	1176
		sodiumhypochlorite	7681-52-9	423.6
47	Cyclobutane carbonyl chlori	Cyclobutanecarboxylicacid	98071-16-0	1111.2
		HCl	7647-01-0	266.4
		Toluene	108-88-3	667.2
48	Cyclobutyl carbinol	Cyclobutanecarboxylic acid	3721-95-7	1378.8
		Sodiumborohydride	16940-66-2	634.8
		THF	109-99-9	690
49	Cyclobutyl carboxaldehyde	Cyclobutanecarboxylic acid	3721-95-7	1237.2
		Pyridine chlorochromate	26299-14-9	544.8
		Toluene	108-88-3	742.8
50	Cyclobutyl methyl	Cyclobutanecarboxylic	3721-95-7	1034.4

	Chloride	acid		
		HCl	7647-01-0	537.6
		Toluene	108-88-3	620.4
51	Cyclopropyl boronic acid	Cyclobutanecarboxylic acid	3721-95-7	1005.6
		Trimethyl borate	121-43-7	402
		THF	109-99-9	502.8
52	1-Cyclopropylmethyl-4	Anisic acid	100-09-4	643.2
		Cyclopropanecarboxylic acid	1759-53-1	476.4
		pd	7440-05-3	15.6
		H2	1333-74-0	76.8
		methanol	67-56-1	386.4
53	2-(3,5-dimethylhex-3-en-2	3,5-dimethylhex-3-en-2-ylone	107-54-0	662.4
		Cyclopropanecarboxylic acid	1759-53-1	464.4
		pd	7440-05-3	13.2
		H2	1333-74-0	66
		methanol	67-56-1	397.2
54	4-Methylpropiophenone	Resorcinol	108-46-3	288
		Hexanoic acid	142-62-1	301.2
55	Cyclopropyl 4-methoxyp	4-chloro butyl chloride	4635-59-0	1263.12
		Anisol	100-66-3	775.56
		Alcl3	7446-70-0	631.56
		MDC	75-09-2	631.56
		DMSO	67-68-5	505.32
		Sodium hydride	7646-69-7	126.36
		trimethylsulfoiodide	1774-47-6	176.88
56	1-(4-Chlorophenyl)cycloprop	1,4 dichlorobenzene	106-46-7	657.12
		Cyclopropanecarboxylic acid	1759-53-1	473.16
		pd	7440-05-3	14.4
		H2	1333-74-0	72.24
		methanol	67-56-1	394.32
57	Para Anisyl Acetate	4-hydroxybenzyl acetate	623-05-2	958.44
		Acetic anhydride	108-24-7	588.48
		Acetic acid	64-19-7	479.28
58	(E,Z)-7,9-Dodecadienyl aceta	(7E,9E)-dodeca-7,9-dien-1-ol	54364-60-2	975.6
		Acetic anhydride	108-24-7	546.36

		Acetic acid	64-19-7	487.8
59	(Z)-13-Icosen-10-one	(E)-icos-13-en-10-ol	17735-94-3	1207.2
		Pyridine chloro chromate	26299-14-9	874.08
		Toluene	108-88-3	482.88
60	cis-7,8-Epoxy-2-met	(8R,9R)-2-methylnonadecane-8,9-diol	629-92-5	1284.84
		p-toluene sulfonic acid	6192-52-5	25.68
		Methanol	67-56-1	513.96
61	(Z,E) -9,12-Tetrade	(3E,5E)-tetradeca-3,5-dien-1-ol		999.96
		Acetic anhydride	108-24-7	489.96
		Acetic acid	64-19-7	399.96
62	(Z)-11-Tetradecenyl a	(E)-tetradec-11-en-1-ol	33189-72-9	1008.36
		Acetic anhydride	108-24-7	488.04
		Acetic acid	64-19-7	403.32
63	(E,Z)-3,13-Octadecadien-1-ol	(4E,14Z)-nonadeca-4,14-dienoic acid	29204-20-4	1324.56
		Sodium borohydride	16940-66-2	166.92
		THF	109-99-9	794.76
64	(Z,Z)-3,13-Octadecadien-1	(4Z,14Z)-nonadeca-4,14-dienoic acid	29204-20-4	1324.56
		Sodium borohydride	16940-66-2	166.92
		THF	109-99-9	794.76
65	(Z)-4-Tridecen-1-yl acetate	(Z)-tridec-4-en-1-ol		990.12
		Acetic anhydride	108-24-7	514.8
		Acetic acid	64-19-7	396
66	(E)-4-Tridecen-1-yl acetate	(E)-tridec-4-en-1-ol		990.12
		Acetic anhydride	108-24-7	514.8
		Acetic acid	64-19-7	396
67	(E,E) -8,10-Dodecadien-1-ol	(S,E)-3,7,11-trimethyldodeca-6,10-dienal		1195.2
		Sodium borohydride	16940-66-2	198.36
		THF	109-99-9	717.12
68	(Z)-11-Hexadecenyl Acetate	(E)-hexadec-11-en-1-ol	61301-56-2	1022.16
		Acetic anhydride	108-24-7	437.52
		Acetic acid	64-19-7	408.84

69	Methyl p-anisate	4-methoxy benzoic acid	100-09-4	1188.12
		Methanol	67-56-1	594
		Sulfuric acid	7664-93-9	35.64
70	Norcamphor	Norbornylene	498-66-8	1020
		Formic Acid	64-18-6	2040
		Acetone	67-64-1	5022
		Cr2O3	1308-38-9	1308
		Sulphuric Acid	7664-93-9	1950
		Sodium Bi Sulphite	7631-90-5	300
		Sat. Pottassium carb. Sol.		498
		Benzene	71-43-2	2154
71	Anethole	Anisol	100-66-3	594
		Sodium Chloride	7440-23-5	90
		Aluminum Chloride	7446-70-0	780
		Propyl Chloride	5407-04-5	576
		Sodium Bi carbonate	144-55-8	34.2
		Methanol	67-56-1	80.4
		Raney Nickel	12003-78-0	6
		Hydrogen	1333-74-0	144
		Triethyl Amine	121-44-8	1.8
		Divyol 460 Oil		0.36
		Pottasium Hydrogen Sulphate	7646-93-7	1.8
		EDC	107-06-2	90
72	2,4-Dihydroxy Benzophenone	Resorcinol	108-46-3	324
		Methanol	67-56-1	194.4
		Benzotrichloride	98-07-7	648.6
73	7-Octyne-1-Ol	3-Buytl-1-Ol	927-74-2	666.72
		Ethyl Vinyl ether	109-92-2	699.96
		Methylene Chloride	75-09-2	3333.36
		HCL (30%)	7647-01-0	111.96
		Caustic Lye	1310-73-2	69.96
		n Butyl Bromide	109-65-9	1033.32
		Sodium Metal	7440-23-5	173.28
		Ammonia Liquid	7664-41-7	133.32
		Methylene Chloride	75-09-2	3333.36
		HCL (30%)	7647-01-0	927.96
		n Butyl Bromide	109-65-9	1033.32
		Pottasium t-butoxide	865-47-4	666.72
		THF	109-99-9	3333.36
		MDC	75-09-2	3333.36

		NaOH	1310-73-2	26.64
		Carbon	7440-44-0	33.36
74	4-Pentenoic Acid	Tri Ethyl Ortho Acetate	78-39-7	1395
		Ally Chloride	107-05-1	582
		Iso Butyric Chloride	79-30-1	4.8
		Caustic Lye 50%	1310-73-2	825.6
		Water	7732-18-5	3288
		Aliquat	63393-96-4	14.4
		HCl 30%	7647-01-0	1494
		Toluene	108-88-3	600
		Salt	7647-14-5	120
75	4 – Hexyl Resorcinol	Recorsinol	108-46-3	652.8
		Hexanoic Acid	142-62-1	707.4
		Zinc Chloride	7646-85-7	850.2
		MDC	75-09-2	660
		Zinc	7440-66-6	2524.8
		Con. HCl	7647-01-0	1200
		EtOH	64-17-5	2340
		HgCl2	7487-94-7	189.6
		Toluene	108-88-3	1578
		Charcoal	7440-44-0	78.6
		Chloroform	67-66-3	394.2
		n-Hepten	25339-56-4	3946.8
76	2 – Cyano phenol	Formic Acid	64-18-6	3748.8
		NaOH	1310-73-2	675
		NH2OH2H2So4	10039-54-0	759
		Salicylaldehyde	90-02-8	937.2
		Chloroform	67-66-3	7800
		Toluene	108-88-3	4687.2
		Hexane Wash	110-54-3	1800
77	7-Bromo, 1-Hepten	Allyl Bromide/Chloride	106-95-6	4320
		1,4 Di Bromo Butan	110-52-1	2442
		Mg	7439-95-4	1512
		Toluene	108-88-3	3822
78	1-Cyano-Cyclobutane-1,2-dic	Adipic Acid	124-04-9	1040.04
		Thionyl Chloride	7719-09-7	2547.96
		Bromine	7726-95-6	2496
		Methanol	67-56-1	4160.04
		NaCN	143-33-9	666
		Ethyl Acetate	141-78-6	6663.96
79	E-Tetraacetate	Trimethyl Ortho Acetate	1445-45-0	1080

		Acetic Acid	64-19-7	84
		Toluene	108-88-3	2520
		Meso Erythritol	149-32-6	504
		thioacetic Acid	507-09-5	1050
		Haxane	110-54-3	2400
80	N-Methyl-4-Chloro P	Methyl Arcylate	96-33-3	1682.4
		Methyl Amine Solution	74-89-5	303
		Sodium Methoxide	124-41-4	636
		Toluene	108-88-3	16800
		Hydrogen	1333-74-0	9.6
		Raney Nickle	12003-78-0	53.4
		Methanol	67-56-1	3000
		Thionyl Chloride	7719-09-7	807
81	Syringaldehyde	TMB	54827-17-7	1500
		AlCl3	7446-70-0	1836
		Methylene Chloride	75-09-2	10800
		Pottasium Chloride	7440-09-7	900
82	Indoline	O Chloro Phenyl Acetonitrile	1529-41-5	1263
		Raney Nickle	12003-78-0	415.8
		Methanol	67-56-1	30000
		Ammonia	7664-41-7	6000
		NaCl	7647-14-5	1800
		Ammonia	7664-41-7	2100
83	2-p-Anisyl Propanal	P-Anisic Aldehyde	123-11-5	590.4
		Propionaldehyde	123-38-6	270.6
		Toluene	108-88-3	37.8
		Sodium Hydroxide	1310-73-2	8.16
		Sulphuric Acid	7664-93-9	13.8
		Sodium Bi Carbonate	144-55-8	23.64
		Catalyst		1.56
		Hydrogen	1333-74-0	9
		Methanol	67-56-1	1953
84	4 – Amino Benzonitrile	4-Amino Benzamide	2835-68-9	857.4
		Toluene	108-88-3	3728.4
		Thionyl Chloride	7719-09-7	2795.4
		NaOH	1310-73-2	939.6
		Hexane	110-54-3	282.6
85	Acrylamide Purified	Acrylamide	79-06-1	600.6
86	Ethylenediaminete	EDTA	60-00-4	480
		Metal Oxide (Zn/Cu/Mn)	131413-2	120
		HPLC Grade Water	7732-18-5	4800

87	Sodium Selenite Pentahydrate	Selenious Acid	7783-00-8	490.8
		Sodium Hydroxide	1310-73-2	303.6
88	Peonile	Cyclo Hexanone	108-94-1	600
		Benzyl Cyanide	140-29-4	540
		Methanol	67-56-1	1200
		Sulphuric Acid	7664-93-9	210
		Sodium Hydroxide	1310-73-2	150
89	4,5-Dichloro phthalic Acid	Pathalic Anhydride	85-44-9	1500
		Pottassium carbonate	584-08-7	1410
		Chlorine Gas	7782-50-5	1800
		50% Aq. NaOH	1310-73-2	3345
90	Sodium Sulphite	Sodium Bi Sulphite Solution	7631-90-5	3034.5
		Caustic Lye	1310-73-2	867
91	Calcium Chloride	HCl 25-30%	7647-01-0	3880.44
		Lime Stone 94%	1317-65-3	1940.16
		Hydrated Lime	1305-62-0	38.76

ANNEXURE: 3

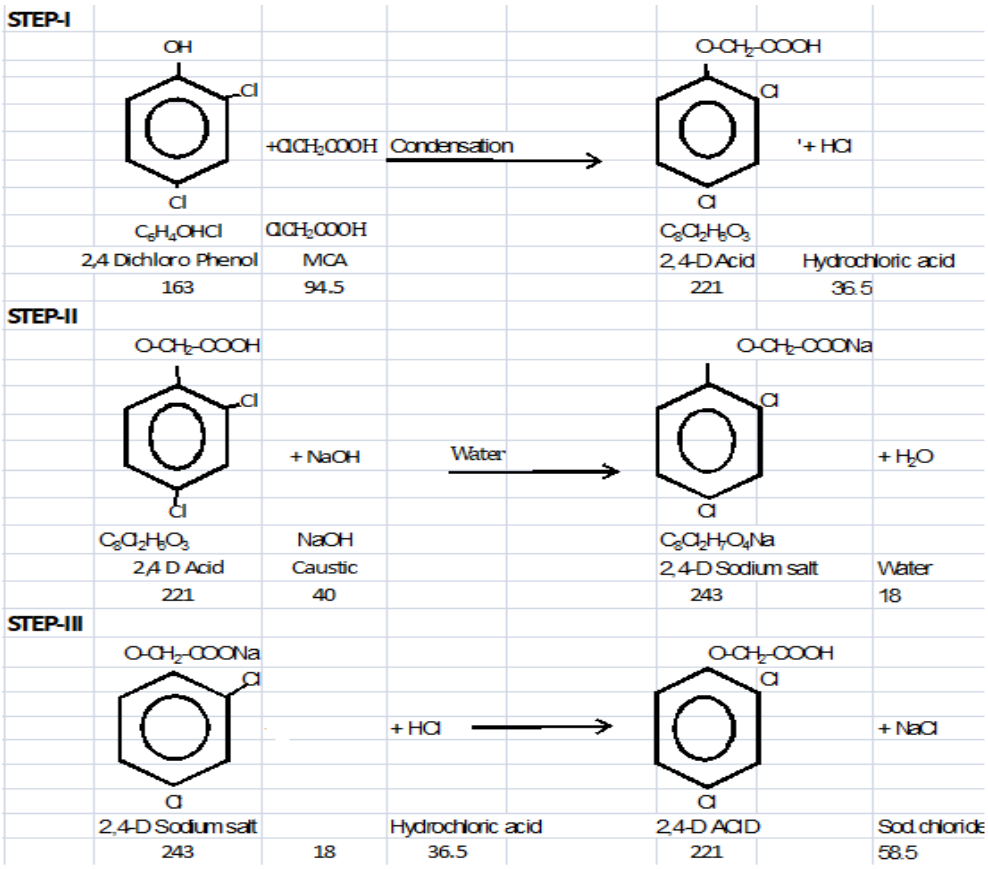
BRIEF MANUFACTRING PROCESS, CHEMICAL REACTION AND MASS BALANCE WITH FLOW DIAGRAM

1) 2,4 dichlorophenoxyacetic acid (2,4-D):

Manufacturing Process:

2,4 Di Chloro Phenol when undergoes for condensation reaction with Mono Chloro Acetic Acid (MCA) in presence of water medium gives the crude product 2,4 D Acid base. Crude 2,4 D acid is further undergoes for purification reaction whereby Acid moiety is converted to soluble product as Sodium salt of 2,4 D acid by reaction of Caustic Soda lye. Finally, Sodium salt of 2,4 D acid is acidified by means of 30 % Hydrochloric acid to give the pure product 2,4 Di chloro acetic acid.

Chemical Reaction:



Mass Balance:

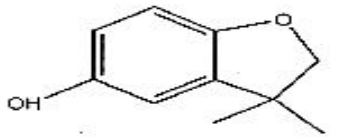
Sr No.	Input	Kgs	Output	Kgs
1	2,4 Dichloro phenol	780	Product	1000
2	Monochloroacetic Acid	610	2,4 - D Acid Base	1550
3	Caustic Solution 35 %	1850	Effluent to ETP	7110
4	2,4 - D Acid Base	1550	2,.4-D as a sodium salt	4380
5	2,.4-D as a sodium salt	4380		
6	30 % HCl	1510		
7	Water	3360		
	Total	**14040**	**Total**	**14040**

2) Benfuresate:

Manufacturing Process:

Charge 2,3-dihydro-3,3-dimethyl benzofuran-5-ol and toluene in a reactor and reflex for azotropic separation of water. Add ethane sulfonyl chloride and heat at 60-80 degree C. Maintain for 5 to 6 hours. Add dichloroethane, water and 30% hydrochloric acid, mix well and separate the aqueous layer. The organic layer is treated with sodium borohydrate and sulfuric acid in presence of water. Aqueous layer is separated. The organic layer is transferred to another reactor. And Benfuresate crystallization is done. Dichloriethane is recycled after distillation.

Chemical Reaction:



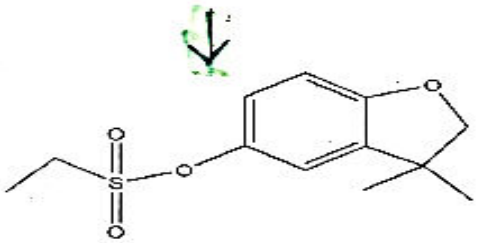
2,3-dihydro-3,3-dimethylbenzofuran-5-ol

+

RM-2

CH3CH2SO2Cl CAS NO-594-44-5

ethanesulfonyl chloride



2,3-dihydro-3,3-dimethylbenzofuran-5-yl ethanesulfonate

Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	Toluene	2910	Product	1000
2	Morpholine	370	Hydrogen Chloride	150
3	Isobutryldehyde	310	Toluene	2850
4	4-benzoquinone	455	Effluent	2660
5	Ethane Sulfonyl Chloride	535	Di Chloro Ethene	1960
6	Di Chloro Ethane	2000	Residue	40
7	30% HCl	500	Loss	175
8	Sodium Borohydride	155		
9	Sulphuric Acid	100		

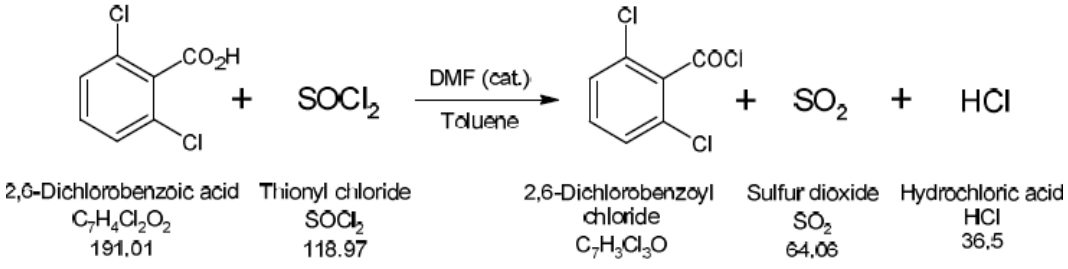
10	Water	1500		
	Total	**8835**	**Total**	**8835**

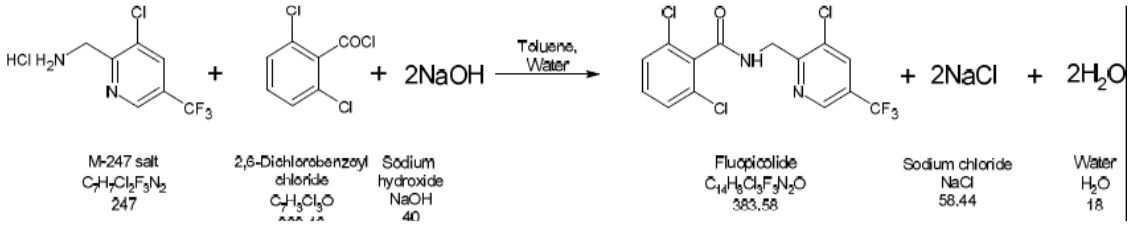
3) Fluopicolide:

Manufacturing Process:

Charge 2,6-Dichlorobenzoic acid, DMF and toluene into the reactor.2) Charge thionyl chloride while stirring.3) Heat to 70 oC till it becomes clear. Heat additional 2 hours.4) Distill off excess thionyl chloride & toluene. 1) Charge M-247 salt and add NaOH solution gradually and stir.2) Charge Stage-1 gradually.3) After reaction completion, filter the mass and take wet solid for crystallization.4) Crystallize wet cake using toluene and water mixture.5) Filter and dry the product.

Chemical Reaction:





Balance:

Sr No.	Input	Kgs	Output	Kgs
1	2,6-Dichlorobenzoic acid	378	Product	1000
2	Thionyl Chloride	235	Toluene	148
3	N,N-Dimethylformamide (DMF)	14	N,N-Dimethylformamide (DMF)	13
4	Toluene	156	Moisture	10

5	Dichloro Benzoyl Chloride	423	Effluent	5075
6	Aminomethyl-3-chloro-5-	423	So2	127
7	Sodium Hydroxide	162	HCL	72
8	Water	5000	Dichloro Benzoyl Chloride	422
	Total	**6867**	**Total**	**6865**

4) Anilofos:

Manufacturing Process:

1) O, O-dimethyl hydrogen dithiophosphate Preparation: -

Reaction of phosphorus pentasulfide with methanol using solvent to form O,O-dimethyl hydrogen dithiophosphate with hydrogen sulfide evolution. Hydrogen sulfide is neutralized with sodium hydroxide.

2) Ammonium salt of O,O-dimethyl hydrogen dithiophosphate Preparation: -

Reaction of O,O-dimethyl hydrogen dithiophosphate with ammonia gas using solvent to form ammonium salt of O,O-dimethyl hydrogen dithiophosphate.

3) 2-chloro-N-(4-chlorophenyl)-N-isopropyl acetamide Preparation: -

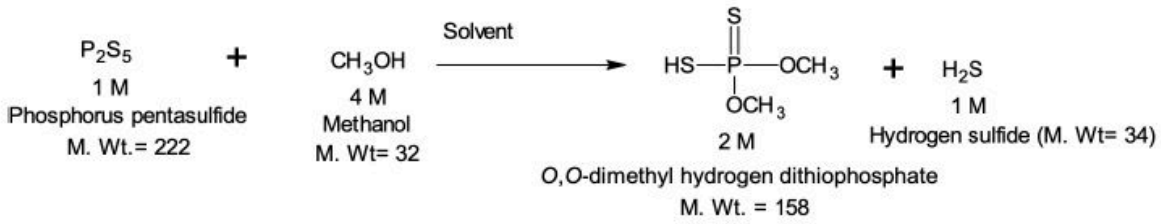
Reaction of N-isopropyl p-chloro aniline with chloroacetyl chloride to form 2-chloro-N-(4-chlorophenyl)-Nisopropyl acetamide.

4) Anilofos preparation: -

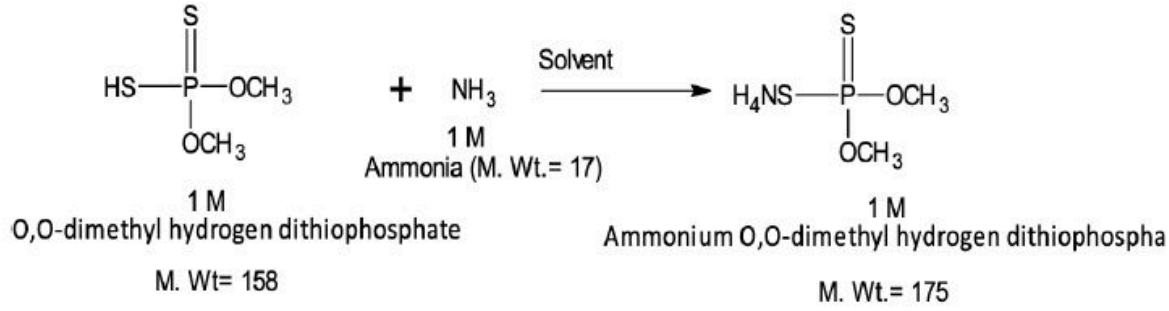
Reaction of ammonium salt of O,O-dimethyl hydrogen dithiophosphate with 2-chloro-N-(4-chlorophenyl)-Nisopropyl acetamide using solvent to form anilofos.

Chemical Reaction:

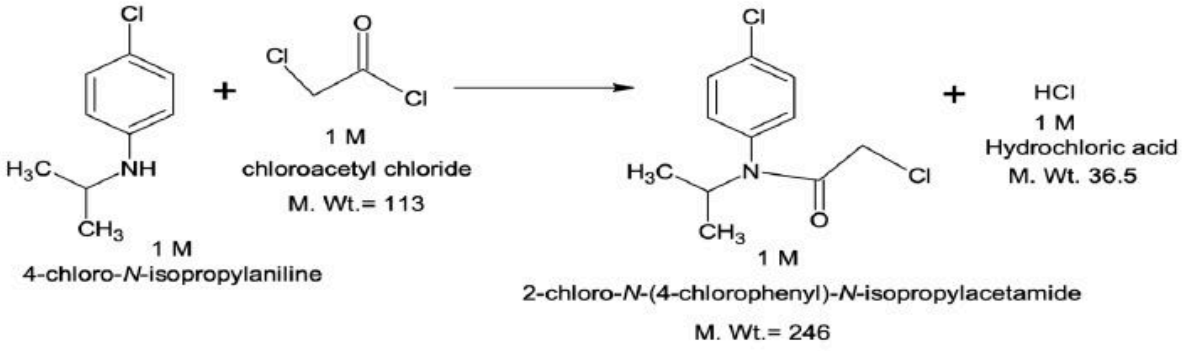
1) O, O-dimethyl hydrogen dithiophosphate Preparation: -



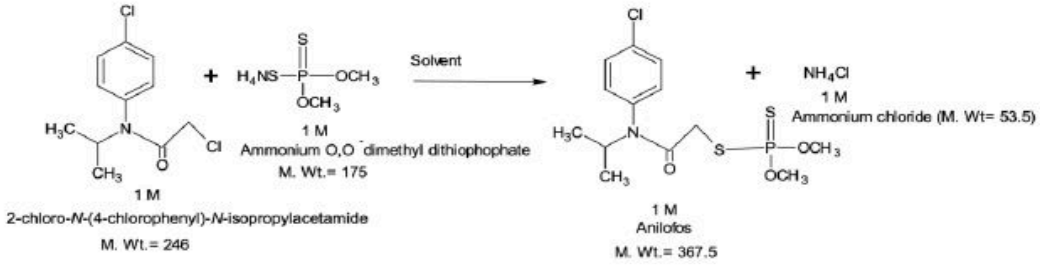
2) Ammonium salt of O, O-dimethyl hydrogen dithiophosphate Preparation:



3) 2-chloro-N-(4-chlorophenyl)-N-isopropyl acetamide Preparation: -



4) Anilofos preparation: -



Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
Stage - 1 (Prepearation of Anilide)				
1	IPPCA	729	Anilide	1000
2	CAC	545	Rec. Xylene/Toluene/MCB	1528
3	Xyelen/Toluene/MCB	1608	Loss	80
4	HCl(30%)	70	30% HCL By Product	523
5	NaHCO3	43	Effluent stream to ETP	2143
6	48% NaOH lye	377		
7	Water	1902		
	Total	**5274**	**Total**	**5274**
Stage - 2 (Formation of Ammonium DMTA)				
1	P2S5	703	Ammonium DMTA	1000
2	Methanol	445	Rec. Xylene/Toluene/MCB	2270
3	Xyelen/Toluene/MCB	2310	Loss	40
4	TEA	3	Residue	50
5	Ammonia Gas	120	NaSH 30% By Product	590
6	48% NaOH lye	290	Effluent stream to ETP	562

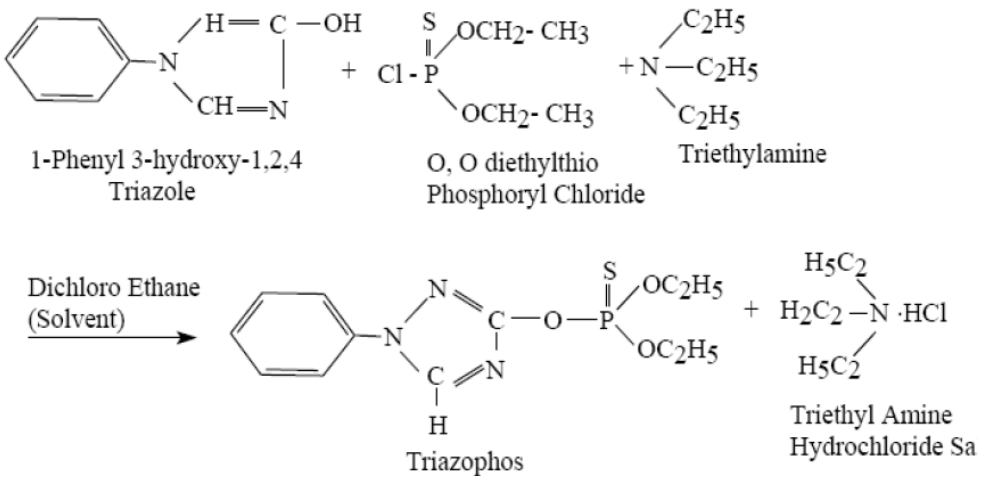
7	Water	641		
	Total	**4512**	**Total**	**4512**
Stage - 2 (Anilophos Preparation)				
1	Ammonium DMTA	529	Product	1000
2	Anilide	710	Rec. Xylene/Toluene/MCB	1853
3	Xyelen/Toluene/MCB	1900	Loss	48
4	48% NaOH lye	198	NH4CL By Product	154
5	Water	1577	Effluent stream to ETP	1860
	Total	**4914**	**Total**	**4914**

5) Triazophos:

Manufacturing Process:

1 Phenyl-3-hydroxy-1, 2, 4- triazole, Dichloroethane and Triethyl amine are heated to 40-42° C in the reactor. Then O, O–diethyl- thiophosphyoryl chloride is added slowly to the reaction mass. After completion of the reaction, mass is cooled and triethylamine hydrochloride is filtered off and send to recovery section. Solvent is recovered by distillation from filtrate. Product obtained is then packed in drum for dispatch.

Chemical Reaction:



Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	1-Phenyl-2-Hydroxy-1,2,4 triazole	570	Product	1000
2	Triethylamine	390	TEA Recycle	330

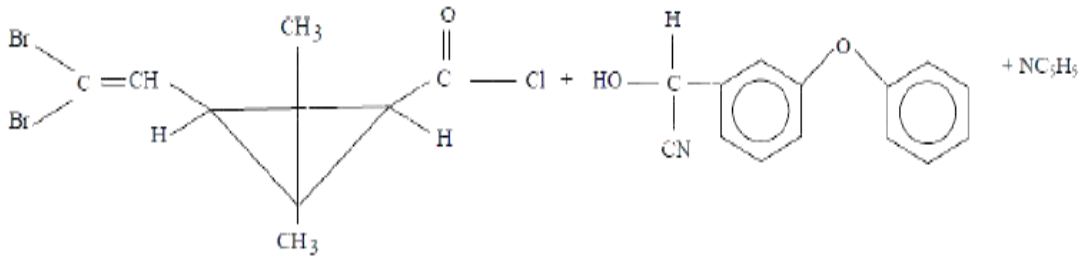
3	EDC	1140	EDC	1070
4	O,O Diethylthiophoryl Chloride	660	Effluent	2720
5	Water	2110		
6	48% Caustic Lye	250		
	Total	**5120**	**Total**	**5120**

6) Deltamethrin:

Manufacturing Process:

Take Deltametric Acid, Benzene and Catalyst in the rector, Add C3PB Alcohol slowly at 20 Degree temperature. This reaction mass is taken into another vessel to separate aq. Layer. Organic layer is separated in distillation unit to get product.

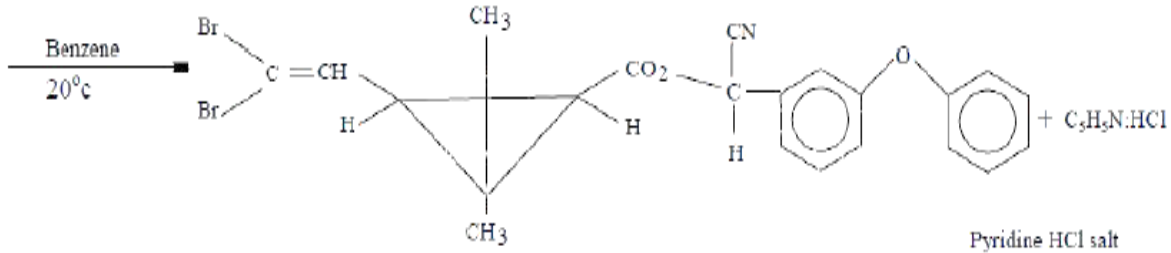
Chemical Reaction:



Delthmetric Acid Chloride
3-(2,2-dibromovinyl)-cyclopropane acid chloride

α -cyano-3-phenoxy benzyl alcohol
(CPCB)

N-Pyridine



Deltamethrin

Pyridine HCl salt

Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	DCA	550	Prpduct	1000
2	CPBA	500	Rec. Catalyst	180

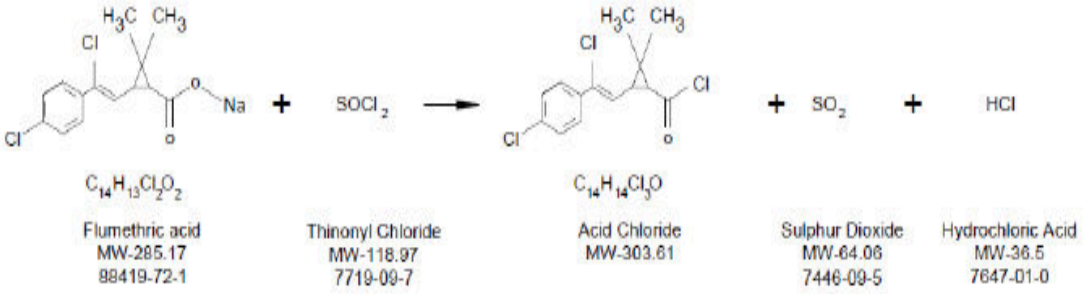
3	Benzene	600	Rec. Benzene	588
4	Catalyst	180	Loss	12
5	Caustic	100	Effluent	500
6	Water	350		
	Total	**2280**	**Total**	**2280**

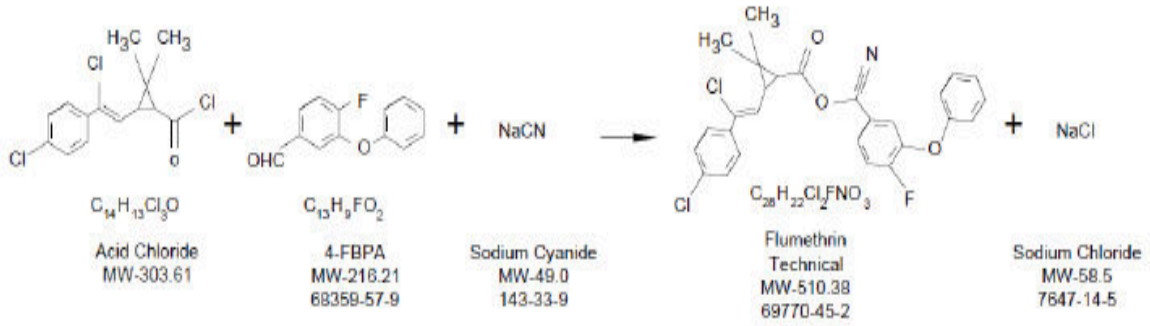
7) Flumethrin:

Manufacturing Process:

Flumethric acid is react with Thionyl chloride in presence of Dimethyl formamide and Toluene to form Acid chloride, Sulphur dioxide and Hydrochloric acid. Dimethyl formamide used as Catalyst and Toluene used as solvent. Sulphur dioxide scrub with sodium hydroxide (48%) to produced sodium sulfite (20%) is dispatch as by-product and Hydrochloric acid scrub with water to produced hydrochloric solution (30%) is dispatch as by-product. Then Toluene is distilled out and reuse in next batch by distillation. After that mass is reacted with 4-fluoro-3-phenoxy benzaldehyde and Sodium cyanide in presence of TEBA, Sodium bisulphite and water to form crude Flumethrin and Sodium chloride. TEBA used as Catalyst, Sodium bisulphite usefor washing and Toluene used as solvent. Reaction mass wash with Water. Water wash is contaminated by Sodium cyanide. This contaminated effluent goes to detoxification by Sodium hypochlorite & Then treated effluent send to ETP for further treatment. After that mass is treated with Charcoal for color improvement & Charcoal is separated by filtration. Spent Charcoal is sent for Incineration. After filtrated mass goes for Toluene recovery by distillation process & recovered toluene is reuse in next batch. Remain mass is pack as product – Flumethrin Technical.

Chemical Reaction:





Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
Stage-1				
1	Methylene Dichloride	2394	Flumethrin Acid	347
2	Phosphorus Oxychloride	1308	HCl Gas	295
3	Dimethyl Formamide	708	Rec. Methylene Dichloride	2323
4	4-Chloro Acetophenone	600	Loss	407
5	Sodium Acetate	540	Effluent	39282
6	Water	35460	Rec. FLMSC	735
7	Sodium Carbonate flakes	120	Rec. EDC	4560
8	FLMSC	1050		
9	HCl Gas	210		
10	Ethylene Dichloride	4560		
11	Tetra Butyl Ammonium Bromide	12		
12	Sodium Hydroxide Flakes	480		

13	Sulphuric Acid	240		
14	HCl	267		
	Total	**47949**	**Total**	**47949**

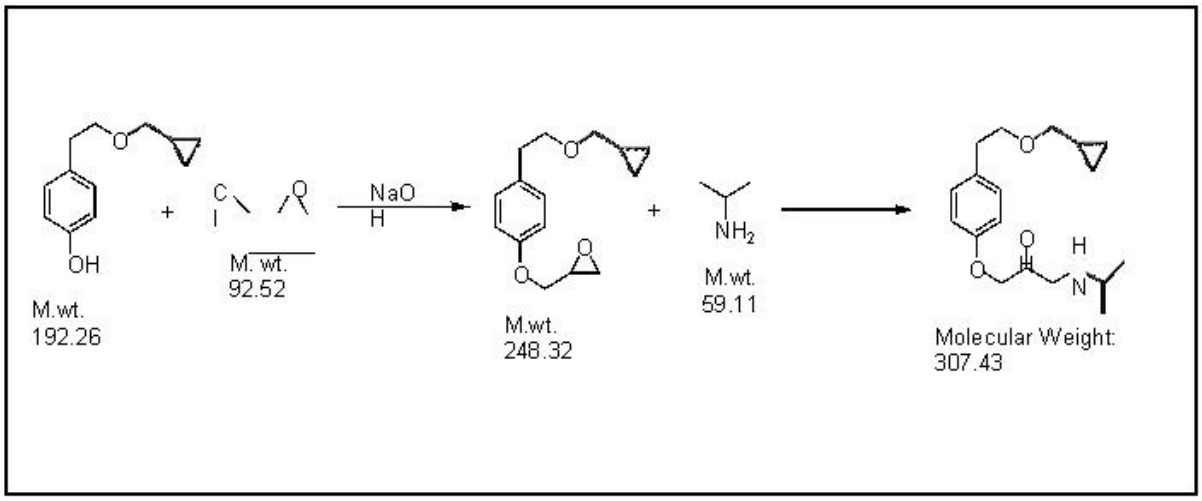
Group-2

8) 1-[4-[2-(cyclopropylmethoxy)ethyl]phe noxy]-3-(propan-2-ylamino)propan-2-ol:

Manufacturing Process:

M-192 and Epichlorohydrin is taken into vessel in the presence of NaOH to produce Stage - 1 prodcut with a aq. Layer. Same will be charge into second reactore in presence of isopropyl amine to react with it and distillout product.

Chemical Reaction:



Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	M-192	694	Product	1000
2	Epichlorohydrin	408	Aq. Layer	8007.44
3	Water	6664.5	Rec. Toluene	3850
4	25% NaOH	206.27	Toluene Loss	105
5	Toluene	3955	Residue	50
6	Isopropyl amine	1084.67		
7				
	Total	**13012.44**	**Total**	**13012.4**

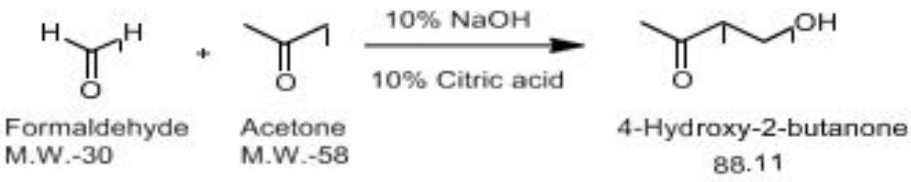
9) (R)-3-Amino-1-butanol:

Manufacturing Process:

Formaldehyde and acetne is react in presnce of NaOH and Citric Acid to get 4-Hydroxy 2-butanole, and this same will be charged in for second satge with hydroxylamine gydrochloride to produce 4-hydroxy 2-butanone oxime and this material is taken into reactor with nickel and H2 to get R S 3-amino Butanole. this reaction mass is charged with titric acid in presnece of methanol to get r-3 amino 1- butanol tartarate salt and this salt will react with KOH and ACn to get final product.

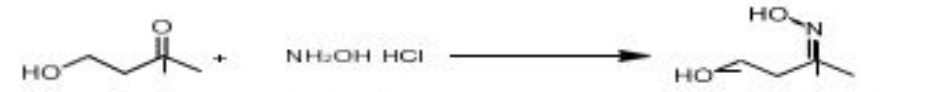
Chemical Reaction:

Step -1 Preparation for 4-hydroxy-2-butanone



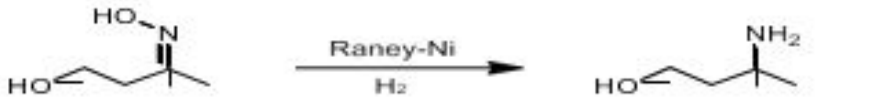
Formaldehyde M.W.-30 | Acetone M.W.-58 | 4-Hydroxy-2-butanone 88.11

Step -2 Preparation for 4-hydroxy-2-butanone oxime



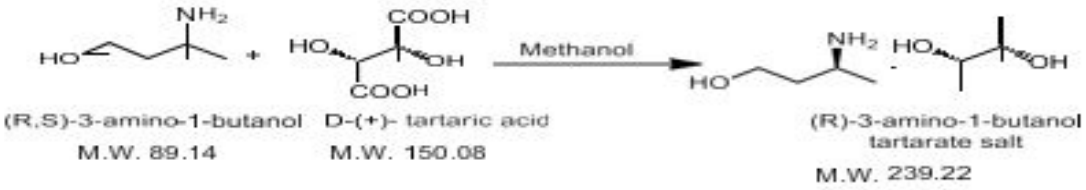
4-Hydroxy-2-butanone M.W. 88.11 | Hydroxylamine hydrochloride M.W. 69.49 | 4-Hydroxy-2-butanone oxime M.W. 103.12

Step -3 Preparation for (R,S)-3-amino-1-butanol



4-Hydroxy-2-butanone oxime M.W. 103.12 | (R,S)-3-amino-1-butanol M.W. 89.14

Step -4 Preparation for (R)-3-amino-1-butanol tartarate salt



(R,S)-3-amino-1-butanol M.W. 89.14 | D-(+)- tartaric acid M.W. 150.08 | (R)-3-amino-1-butanol tartarate salt M.W. 239.22

Step -5 Preparation for (R)-3-amino-1-butanol

(R)-3-amino-1-butanol tartarate salt M.W. 239.22 | (R)-3-amino-1-butanol M.W. 89.14

Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	Acetone	5135.74	Product	1000
2	Paraformaldehyde	1391	Rec.Acetone	4786
3	10% Sodium hydroxide	350	Aq, layer	1435.59
4	1 M sulfuric acid	200	Dichloromethane	4200
5	Dichloromethane	4500	Low boiler	400
6	4-hydroxy-2-butanone	4499	Mix cut	968.08
7	Hydroxylamine hydrochloride	3934.36	Residue	500
8	50% sodium hydroxide	3560	Salt	4530
9	Methanol	38933	Rec.Methanol	38190
10	4-hydroxy-2-butanone oxime	1076	isomer	5925
11	Raney nickel	50	Water	7392.43
12	Hydrogen	50	Raney nickle	350
13	(R,S)-3-amino-1-butanol	1130		
14	D-(-)-tartaric acid	2835		
15	(R)-3-amino-1-butano	1033		
16	30% sodium methoxide in methanol	1000		

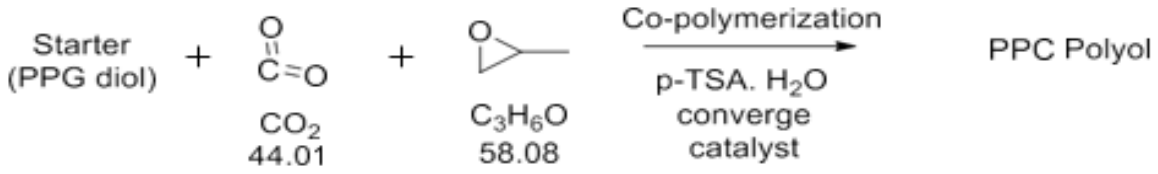
	Total	**69677.1**	**Total**	**69677.1**

10) 2-Aminomethyl-1- ethylpyrrolidine:

Manufacturing Process:

N Pyroridine and Ethyl Chloride with DMF is react in presnce of NaOH and Citric Acid to reaction mass, and this same will be charged in for second satge with niromethanol in presence of chlorodom to get final product.

Chemical Reaction:



Mass Balance:

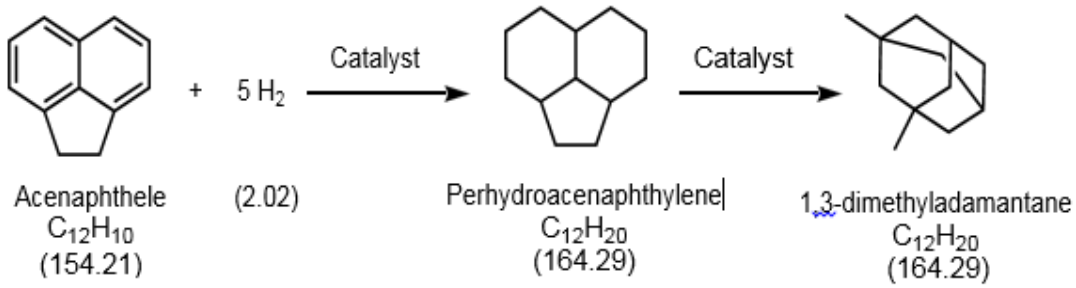
Sr No.	Input	Kgs	Output	Kgs
1	N-Pyrrolidone	850	Product	1000
2	Ethyl chloride	750	Rec.DMF	1365
3	DMF	1425	Inorg. Salt	350
4	NaOH sol.	670	Aqeoues waste	925
5	Ethyl acetate	1880	Rec. EA	1720
6	Chloroform	4200	Rec. EA	95
7	POCl3	850	Residue	50
8	Nitromethane	550	Residue	430
9	Methanol	790	Rec. Chloroform	4080
10	Sod. Meth.sol.	3650	Rec. methenol	3350
11	Ether	3500	Inorg. salt	1550
12	Hydrogen	25	Solid waste	300
13	Methanol	2820	Rec.Ether	3380
14	Catalyst	160	Residue	320
15	Methanol	500	Catalyst	185
			Rec. methenol	2800
			Rec. methenol	470
			Residue	250
	Total	**22620**	**Total**	**22620**

11) 1,3-Dimethyladamantane:

Manufacturing Process:

Acenaphthele is react with 5H2 in presence of Dodecan to produce Perhydroacenaphthylene, this same reaction mass is ditillout product with the help of catalyst.

Chemical Reaction:



Mass Balance:

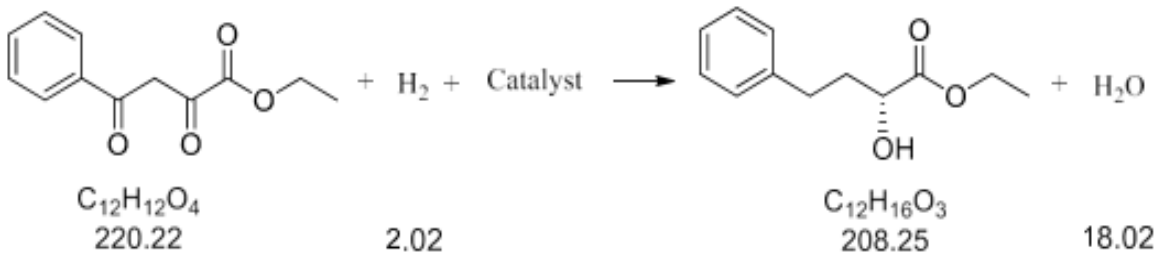
Sr No.	Input	Kgs	Output	Kgs
1	Acenaphthele	1010	Product	1000
2	Dodecane	1000	Spent Catalyst	74
3	Catalyst	74	Rec. Solvent	1000
4	Hydrogen	80	Residue	76
5			Hydrogen Gas	17
	Total	**2164**	**Total**	**2164**

12) (R)-2-hydroxy-4- phenylbutanoic acid ethyl ester:

Manufacturing Process:

4-phenyl-2,4- dioxobutyrate and Hydrogen is taken into reactor in presnec of methanol cataylst and reaction is occureed at desire temperature with specific time boundary to get final product and Aq. Layer is goes to ETP for futher treatment.

Chemical Reaction:



Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	4-phenyl-2,4- dioxobutyrate	1058	Product	1000
2	Methanol	1200	Rec. Catalyst	20
3	Catalyst	20	Rec. Methanol	1180
4	Hydrogen	9	Rec. Water	80
5			Residue	7
	Total	**2287**	**Total**	**2287**

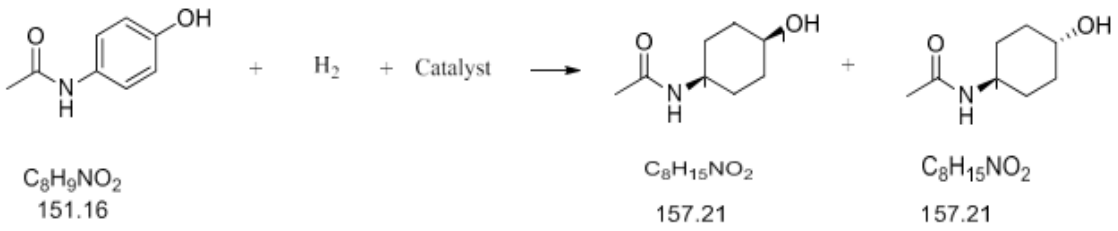
13) Trans-4-aminocyclohexanol:

Manufacturing Process:

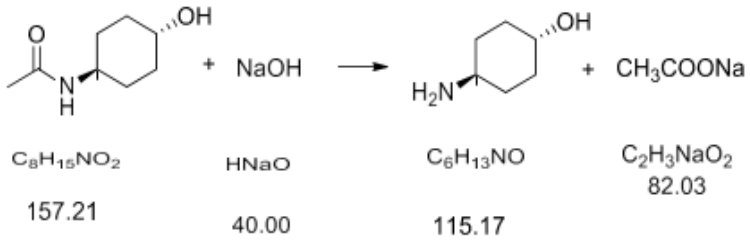
During Hydrogenation process Paracetamole and Methanol is react in vessel to get Tranexamic acid and this reaction mass react in presence of NaOH to get final Product

Chemical Reaction:

Stage-1: Hydrogenation



Stage-2 : Hydrolysis



Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	Paracetamol	1575	Product	1000
2	Methanol	3000	Rec. Catalyst	50

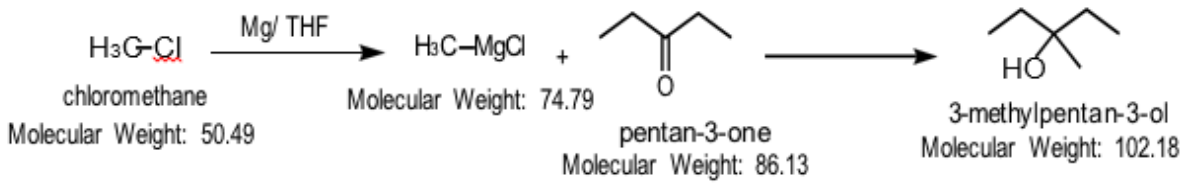
3	Catalyst	50	cis-N-(4-hydroxycyclohexyl)acetamide byproduct	303
4	Hydrogen	21	Rec.Methanol	2980
5	Sodium hydroxide	335	Re. Water	1462
6	Water	1500	Sodium acetate	686
	Total	**6481**	**Total**	**6481**

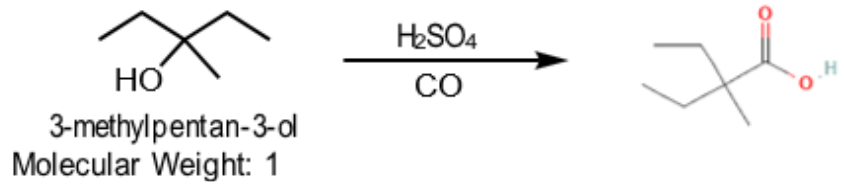
14) 2-Ethyl-2-methylbutanoic acid:

Manufacturing Process:

Chloro methane is charging in GLV and react in presence of Mg and THF catalyst to produce pentane 3 -one, and this same will be taken into second satge to produce 3-methylpentane 3-ol, this reaction mass will react in presence of sulphuric acid and CO to get final product.

Chemical Reaction:





Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	Methyl chloride	549.5	Product	1000
2	Mg Turnings	274.17	Aq. layer	2663.55
3	Catalyst	21	Aq. layer	1510
4	THF	2442.51	Rec. THF	4810.04
5	3-Penatanone	935.68	THF loss	75
6	Catalyst	25	Mix Fraction	61.2
7	THF	2442.52	Residue	50
8	10% H2SO4	1978.2	Aq. layer	3590.84

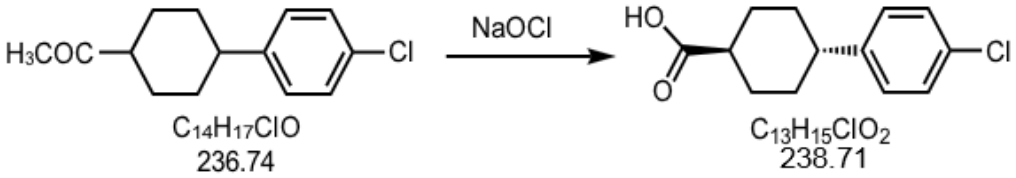
9	20% NaCl solution	1500	Aq. layer	3050
10	3-Methyl-3- pentanone	998.8	Rec. Dimethoxyethane	5880
11	98% Sulfuric acid	1001.54	Dimethoxyethane loss	120
12	Formic acid	540.5	Mix Fraction	115
13	Dimethoxyethane	3351.21	Residue	135
14	Water	2000		
15	Dimethoxyethane	2000		
16	10% sodium carbonate	3000		
	Total	**23060.63**	**Total**	**23060.6**

15) trans-4-(4- Chlorophenyl)cyclohexanecarb oxylic acid:

Manufacturing Process:

Cyclohexanon and aluminum chloride is charged in vessel and react in presence of NaOCl to get final product

Chemical Reaction:



Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	Cyclohexene	655.91	Product	1000
2	Anhy. Aluminum chloride	1275.74	Hydrochloric acid	291.42
3	Acetyl chloride	557.52	Aqueous layer	6046.37
4	Chlorobenzene	752	Aqueous layer	787.5
5	30% Hydrochloric acid	2230	Chlorobenzene	694.6
6	Water	2379.5	n-hexane	1280
7	1 N sodium hydroxide solution	525	Residue	168.02
8	n-hexane	1290	1,4-dioxane	5837
9	Sodium hydroxide solution	3500	Aqueous layer	5530.08
10	Chlorine	426	DMF	3975
11	Stage-1	2435.71	Residue	52.63
12	1,4-dioxane	5520.24		

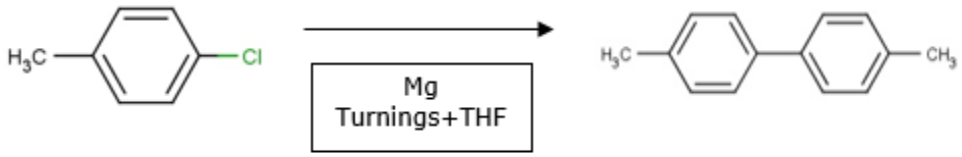
13	10% sodium metabisulphite	1040		
14	Acetic acid	100		
15	Diemthyl formamide	2975		
	Total	**25662.62**	**Total**	**25662.6**

16) 4,4'-dimethylbiphenyl:

Manufacturing Process:

4 Chloro toluene and Mg turining react in presence of THF catalyst at desire temperature to get finalized distilled product.

Chemical Reaction:



4-Chlorotoluene **4,4'-dimethylbiphenyl**

Mass Balance:

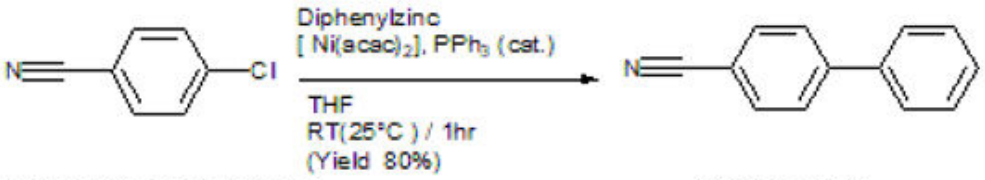
Sr No.	Input	Kgs	Output	Kgs
1	4-Chlorotoluene	772	Product	1000
2	Mg Turnings	172.8	Aq. layer	3198.8
3	Catalyst	10	Aq. layer	2050
4	THF	3431.54	Rec. THF	5344
5	4-Chlorotoluene	772	Rec. Toluene	1665
6	catalyst	20	Residue	202
7	THF	2215	Loss	300.54
8	10% H2SO4	2702		
9	20% NACl Solution	2000		
10	Toluene	1665		
	Total	**13760.3**	**Total**	**13760.3**

17) 4-Phenylbenzonitrile:

Manufacturing Process:

1-Chloro 4-Cyanobenzene charge in to vessel in presence of Diphenylzinc and THF at 25 degree temperature for 1 hour to get final product.

Chemical Reaction:



1-chloro-4-cyanobenzene **Final Product**

Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	4-hydroxybenzoic acid	912	Product	1000
2	Propanol	1000	Propanol	901
3	Catalyst	34	Distillation Residue	120
4	Toluene	1400	4-hydroxybenzoic acid	120
5	Sat. Na2CO3 soln.	450	Effluent	368
			Toluene	1287
	Total	**3796**	**Total**	**3796**

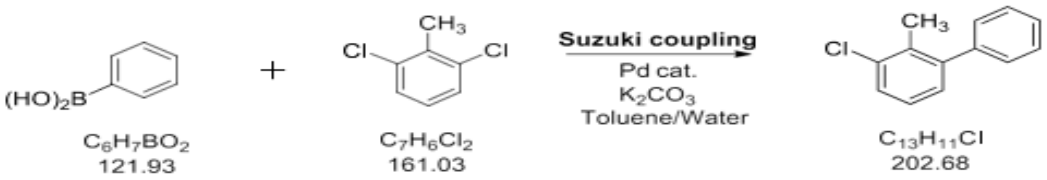
18) 2-Methyl-[1,1'-biphenyl]-3- yl)methanol-- :

Manufacturing Process:

Phenylboronic acid and 2-6 dichloro toluene charge in to reactor with K2CO3 to get 3-chloro 2-methyl 1-1 Biphenyl and this will be taken to second reactor with magnasium to prepare 2MB3C and this reaction mass is distill out final product.

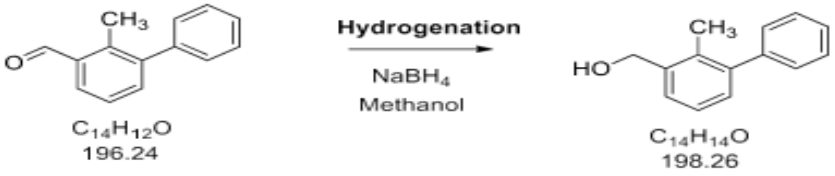
Chemical Reaction:

Stage-1: Preparation of 3-Chloro-2-methyl-1,1'-biphenyl



Stage-2: Preparation of 2-Methyl-[1,1'-biphenyl]-3-carbaldehyde

Stage-2: Preparation of Bifenthrin alcohol



Mass Balance:

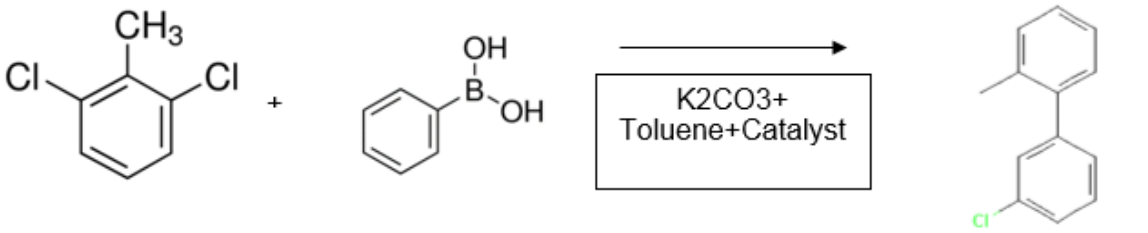
Sr No.	Input	Kgs	Output	Kgs
1	2,6-Dichlorotoluene	970	Product	1000
2	Phenylboronic acid	735	Wet catalyst	50
3	3M aq. K2CO3 Sol.	1360	Aq. Layer	2070
4	Pd catalyst	35	Aq. Layer	1155
5	Toluene	2100	Mid. Fraction	75
6	Conc. HCl (35%, w/w)	230	Rec. Toluene	2030
7	Sat. NaCl sol	1030	Rec. Methanol	2025
8	Methanol	1600	Residue	70
9	Methanol	530	Aq. layer	1815
10	Mg Turnings	125	THF	2415
11	THF	2500	Rec. Toluene	1425
12	Iodine	3	Resdiue	288
13	DMF	425	Eva. Loss	25
14	HCl	1080	Eva. Loss	65
15	Sod. Borohydrate	35		
16	Dil. sulfuric acid	300		
17	Toluene	1450		
	Total	**14508**	**Total**	**14508**

19) 3-Chloro-2-methyl-1,1'- biphenyl:

Manufacturing Process:

Phenylboronic acid and 2-6 dichloro toluene charge in to reactor with K2CO3 to get 3-chloro 2-methyl 1-1 Biphenyl and this will be taken to second reactor with magnasium to preapre 2MB3C and this reaction mass is distill out final product.

Chemical Reaction:



2,6-Dichlorotoluene Phenylboronic acid Final Product

Mass Balance:

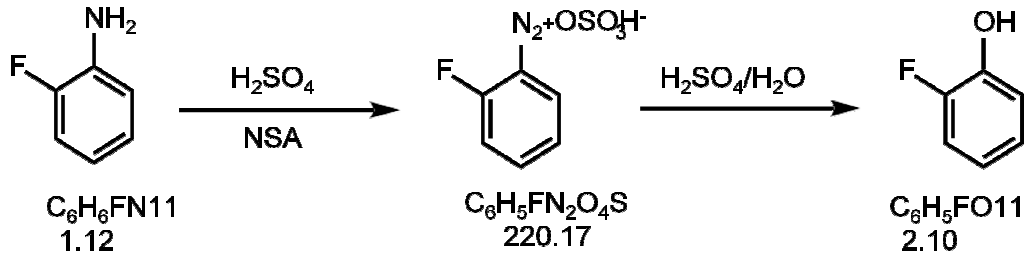
Sr No.	Input	Kgs	Output	Kgs
1	2,6-Dichlorotoluene	870	Product	1000
2	Phenylboronic acid	655	Wet catalyst	35
3	3M aq. K2CO3 sol.	1215	Aq. layer	2792
4	Pd catalyst	31	Rec. Toluene	1850
5	Toluene	1880	Low boilers	100
6	Conc. HCl (35%, w/w)	206		
7	Sat. NaCl sol.	920		
	Total	**5777**	**Total**	**5777**

20) 2-Fluorophenol:

Manufacturing Process:

2-Fluoroaniline is react in presence of Sulphuric acid to get nitrosyl sulfuric acid and this reaction mass is charged in vessle in presence of sulphuric acid and water to get final product and aq. Layer is send to ETP.

Chemical Reaction:



Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	2-Fluoroaniline	1417.23	Product	1000
2	Sulfuric acid	1876.9	Aqueous layer	9221.66
3	Water	2530.54	Dichloromethane	955
4	Nitrosyl sulphuric acid	3160.69	Mix fractions	1000
5	Sulfuric acid	1133.78	Residue	816.54
6	Water	1874.06		
7	Dichloromethane	1000		
	Total	**12993.2**	**Total**	**12993.2**

21) 2-Fluoroanisole:

Manufacturing Process:

2-Fluorophenol is react with Di methyl sulphate in presence of Toluene at desire temperature to get final product.

Chemical Reaction:

Fluorophenol

2-Fluoroanisole

Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	2-Fluorophenol	1044.68	Product	1000
2	Dimethyl sulphate	1237.42	Aqueous layer	2027.54
3	Toluene	2260.95	Toluene	2256

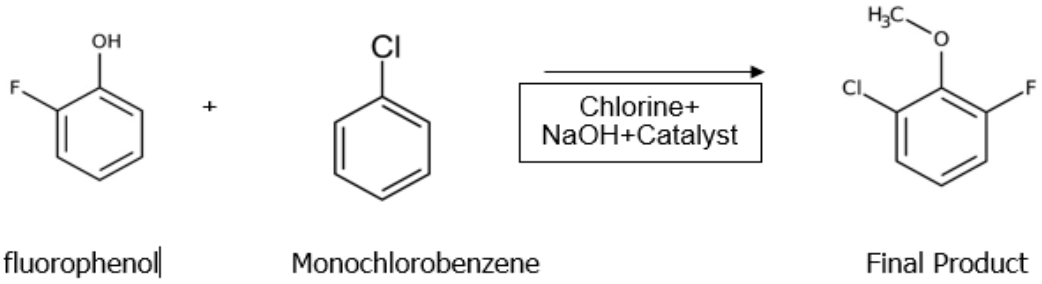
4	50% NaOH Solution	895.44	Mix Frictions	100
			Residue	54.95
	Total	**5438.49**	**Total**	**5438.49**

22) 2-Chloro-6-fluoroanisole:

Manufacturing Process:

2-Fluorophenol and Monochloro benzene is charged in vessel and then slowly mixing of NaOH and Catalyst in presence of Chlorine at desire temeprature to get final product.

Chemical Reaction:



2 fluorophenol Monochlorobenzene Final Product

Mass Balance:

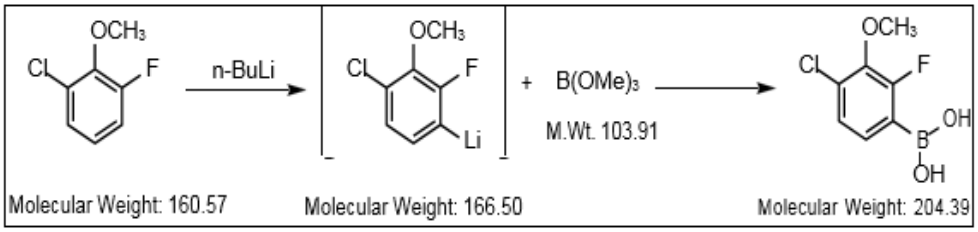
Sr No.	Input	Kgs	Output	Kgs
1	2-Fluorophenol	1000	Product	1000
2	Chlorine gas	633.89	NaCl	325.87
3	Catalyst	1	Monochlorobenzene	4014.74
4	Monochlorobenze	4440	Aqueous layer	2107.14
5	Sodium hydroxide	392.83	Toluene	1990
6	Water	392.83	Mix fractions	160
7	Dimethyl sulphate	1237.2	Residue	500
8	Toluene	2000		
	Total	**10097.75**	**Total**	**10097.8**

23) (2-Chloro-4-fluoro-3- methoxyphenyl)boronic acid:

Manufacturing Process:

2-chloro-6- fluoroanisole and n Butyl Lithium is react in vessel to get reaction mass, this reaction mass is well react with B(Ome)3 to get fianl product and aq. Layer is goes to ETP for final treatment.

Chemical Reaction:



Mass Balance:

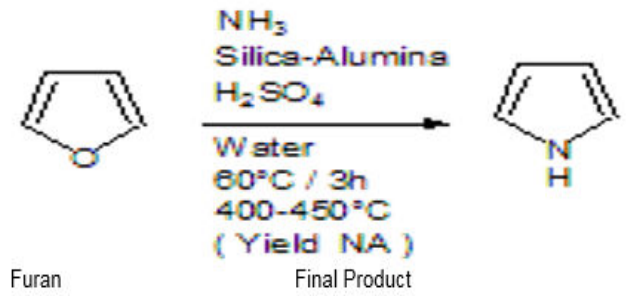
Sr No.	Input	Kgs	Output	Kgs
1	2-chloro-6- fluoroanisole	845	Product	1000
2	Dimethoxyethane	4225	n-hexane	1282.8
3	n-Butyl lithium	1370	Butane	350.9
4	Trimethyl borate	650	Methanol	500
5	1 N NaOH	2148.53	Aqueous layer	4505.23
6	tert-butyl methyl ether	2000	tert-butyl methyl ether	1890
7	Organic layer-1	3401.47	Dimethoxyethane	4200
			Low boiler	320
			Mix. Cut	111.5
			Residue	479.57
	Total	**14640**	**Total**	**14640**

24) 1H-Pyrrole

Manufacturing Process:

Furan is charghed in vessel in presnece of ammonia and silica alumina at 60 degree temperature for 3 hours to get final product.

Chemical Reaction:



Mass Balance:

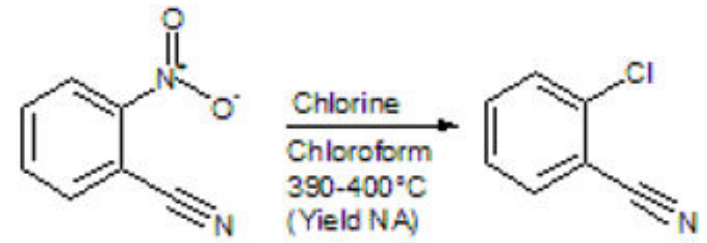
Sr No.	Input	Kgs	Output	Kgs
1	Furan	50	Product	1000
2	Catalyst	1080	Rec. Ammonia gas	243
3	Ammonia gas	540	Rec. Catalyst	50
			Residue	91
			Aq. layer	286
	Total	**1670**	**Total**	**1670**

25) 2-Chlorobenzonitrile

Manufacturing Process:

2-Nirobenzonitril is purging in presence of chlorin and chlorofom into reaction vessel after 2 hour well mixing at specified temperature, we get final product.

Chemical Reaction:



2-Nitro benzonitrile **2-Chlorobenzonitrile**

Mass Balance:

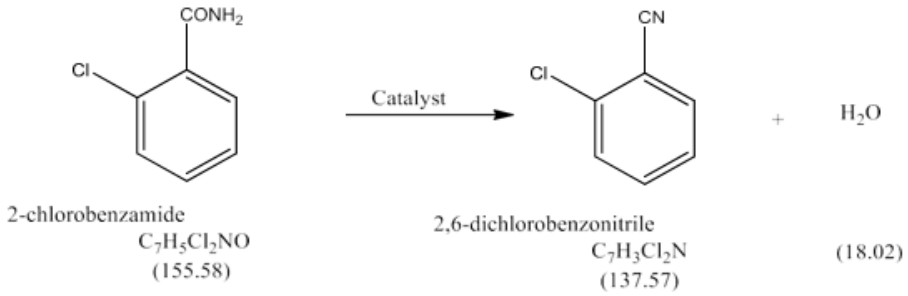
Sr No.	Input	Kgs	Output	Kgs
1	4-chloro benzamide	1414	Product	1000
2	Catalyst	150	Rec. Toluene	1350
3	Toluene	1500	Rec. Catalyst	150
			Residue	394
			Aq. layer	170
	Total	**3064**	**Total**	**3064**

26) 1-Methoxy-2-propylamine

Manufacturing Process:

2-Chlro Bezamide is reacted in presence of the catalyst at 50 degree tempertaure for 4 to 5 hours to get final product.

Chemical Reaction:



2-chlorobenzamide
$C_7H_5Cl_2NO$
(155.58)

2,6-dichlorobenzonitrile
$C_7H_3Cl_2N$
(137.57)

H_2O
(18.02)

Mass Balance:

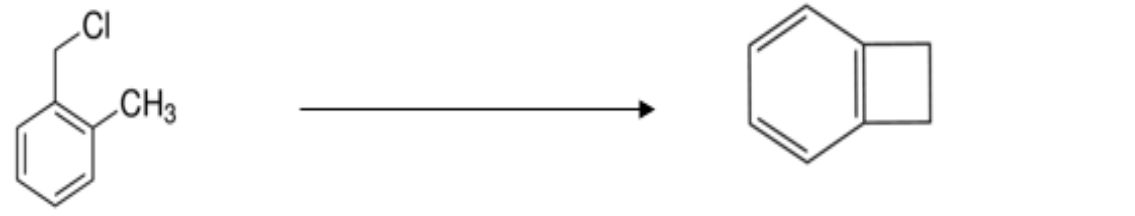
Sr No.	Input	Kgs	Output	Kgs
1	1-methoxypropan-2-ol	1065	Product	1000
2	Catalyst	50	Rec. Catalyst	50
3	Ammonia gas	805	Rec. Xylene	980
4	Hydrogen gas	24	Aq. Layer	213
5	Xylene	1065	Residue	93
			Ammonia	573
			Hydrogen	50
			Eva. Loss	50
	Total	**3064**	**Total**	**3064**

27) Bicyclo[4.2.0]octa-1,3,5-triene [Benzocyclobutene]

Manufacturing Process:

In this,2-Methylbenzyl Chloride is charged in GLV reactor and at specified temeprature catalyst is slowy added and reaction taking place after 4 hours to get final product.

Chemical Reaction:



2-Methylbenzyl chloride

Bicyclo [4.2.0] octa-1, 3, 5-triene

Mass Balance:

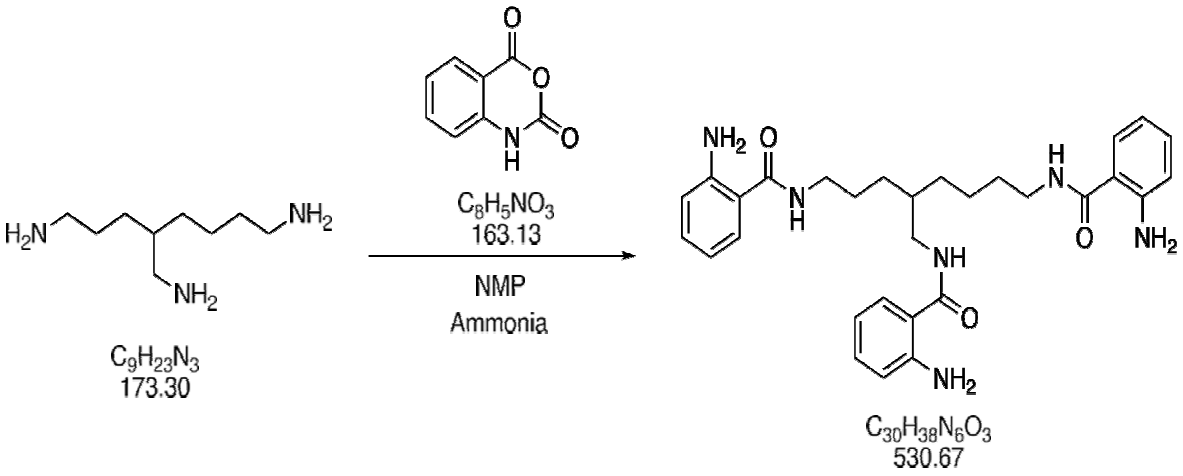
Sr No.	Input	Kgs	Output	Kgs

1	2-Methylbenzyl chloride	6750	Product	1000
2	Catalyst	100	Rec. Catalyst	100
3	Water	1200	Rec. HCL	1550
			Rec. Methylbenzyl chloride	5330
			Residue	70
	Total	**8050**	**Total**	**8050**

28) N,N'-(2-(4-(2-aminobenzamido)butyl)pentan e-1,5-diyl)bis(2- aminobenzamide)

Manufacturing Process:
Isatoic Anyhydryde is charge with Hextran -110 in presence of NMP and amomonia and ethanol in vessel at 50 degree temperture to get final product.

Chemical Reaction:



Mass Balance:

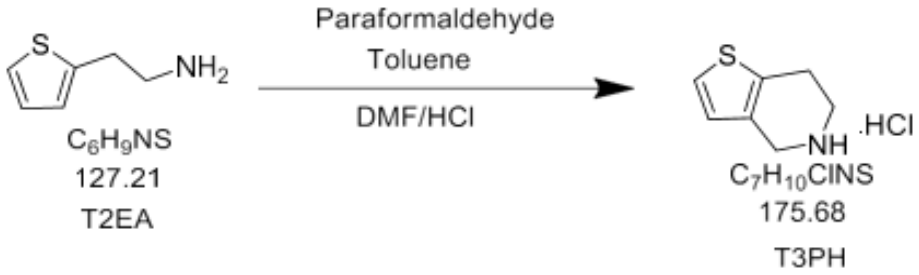
Sr No.	Input	Kgs	Output	Kgs
1	Isatoic anhydride	900	Product	1000
2	NMP	2500	CO2 gas	225
3	Hexatran-110	325	Distilled Water	120
4	NMP	165	Rec. NMP	2635
5	Aq. ammonia	125	Rec. DCM	2600
6	Ethanol	2200	Rec. Ethanol	2160
7	DCM	2500	Residue	225
8	DCM	250		
	Total	**8965**	**Total**	**8965**

29) 4,5,6,7-Tetrahydrothieno[3,2- c]pyridine Hydrochloride

Manufacturing Process:

T2EA is charged in GLV reactor, then paraformaldehyde is added slowly in presence of Toluene and HCl to complete reaction at specified temperature to get final product.

Chemical Reaction:



Mass Balance:

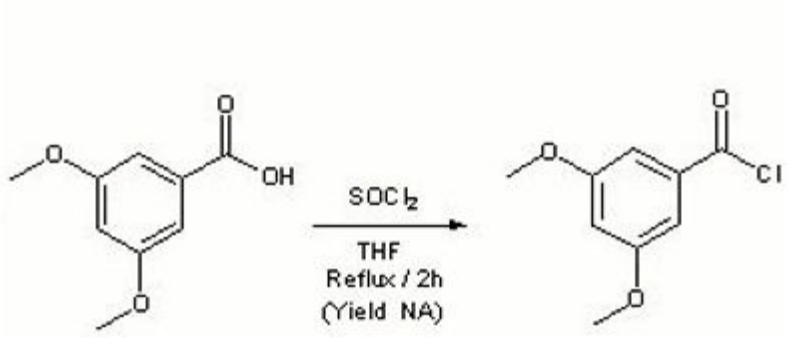
Sr No.	Input	Kgs	Output	Kgs
1	T2EA	790	Product	1000
2	Toluene	2500	water	110
3	Paraformladehyde	205	Rec. Toluene	2850
4	DMF	990	Rec. DMF	950
5	Dry HCl	250	Residue	325
6	Toluenel	500		
	Total	**5235**	**Total**	**5235**

30) 3,5-Dimethylbenzoyl chloride

Manufacturing Process:

3,5 Dimethyl Benzoic Acid is charged up in reactor with thoinyl Chloride and in presence of THF. Refulx for 2 hour to get final product.

Chemical Reaction:



3, 5 dimethoxybenzoic acid Final Product

Mass Balance:

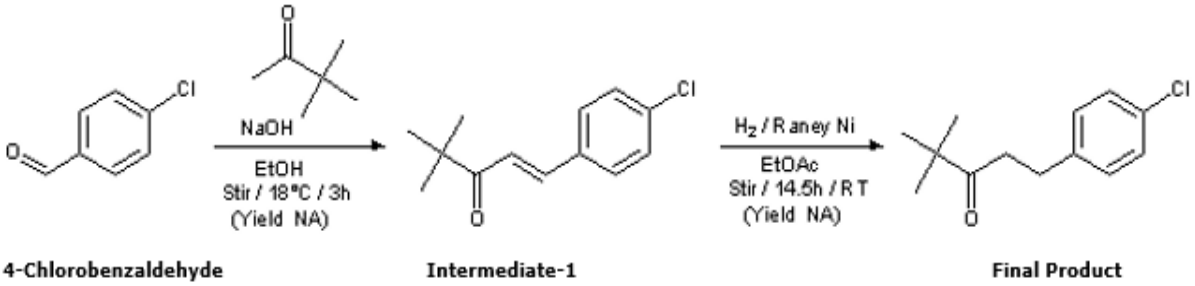
Sr No.	Input	Kgs	Output	Kgs
1	Mesitylene	750	Product	1000
2	Tris(acetylacetonato)cobalt(III) Co(acac)3	5.5	Oxygen gas	441
3	KBr	3.7	Rec. Mesitylene	710
4	Acetic acid	1130	Rec. acetic acid	1100
5	Oxygen gas (O2)	1000	Sulfur dioxide gas	250
6	Dichloromethane (DCM)	1500	Rec. DCM	1420
7	Thionyl chloride	665	Rec. Thionyl chloride	33.2
			Low boiler impurities	0
			High boilers & Residue	100
	Total	**5235**	**Total**	**5235**

31) 1-(4-Chlorophenyl)-4,4- dimethyl-3-pentanone

Manufacturing Process:

4-chloro benzaldehyde and pinacolone added into vessel in the presence of methanol solvent at 18 degree temperatrure for 3 hours to get stage 1 intermediate and this same will be heat in presence of raney nickle at hydrogen gas pressure at room temperature to get final product.

Chemical Reaction:



Mass Balance:

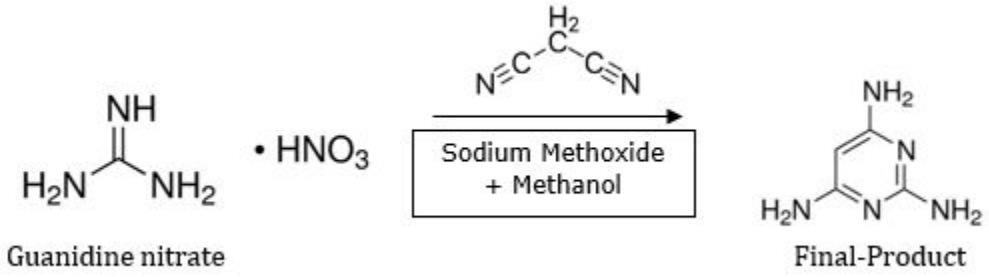
Sr No.	Input	Kgs	Output	Kgs
1	4-Chlorobenzaldehyde	658	Product	1000
2	Pinacolone	492	Spent catalyst	50
3	Methanol	1200	Rec. methanol	1200
4	Catalyst	50	Residue	159
5	Hydrogen gas	15	Hydrogen gas	6
	Total	**2415**	**Total**	**2415**

32) 2,4,6-triaminopyrimidine

Manufacturing Process:

In this, Guanidine nitrate and malononitrile is added in reactor with the solution of sodium methoxide in the presence of methanol at desire temperature for 5 to 6 hours to get final product.

Chemical Reaction:



Mass Balance:

Sr No.	Input	Kgs	Output	Kgs

1	Guanidine nitrate	780	Product	1000
2	Sodium methoxide	452	Sodium chloride	477
3	Methanol	3223	Methanol Recover	3222
4	Malononitrile	539	Residue Waste	99
			Loss	196
	Total	**4994**	**Total**	**4994**

33) dl-2,2-Dimethyl cyclopropane- 1-carboxylic acid

Manufacturing Process:

Methyl 2- Diazoacetate and ethylene dichloride is reacted at hydrogen gas pressure in the presence of catalyst at 60 degree temperature to get final product.

Chemical Reaction:

Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	Methyl 2-diazoacetate	890	Product	1000
2	Ethylene dichloride	4375	Nitrogen Gas	249
3	Catalyst	22	Rec. Catalyst	22
4	Isobutylene	700	Rec.Ethylene dichloride	4350
	Sodium hydroxide	363	Rec.Isobutylene	575
	Methanol	1500	Rec.Methanol	1400
	Hydrochloric acid	425	Aq.layer	679
	Total	**8275**	**Total**	**8275**

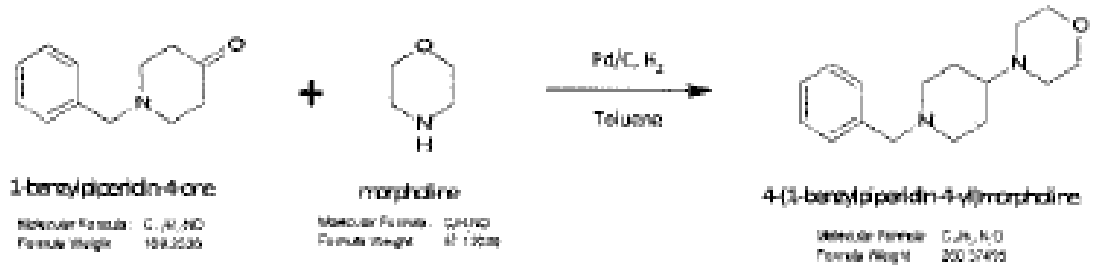
34) 4-Morpholinopiperidine

Manufacturing Process:

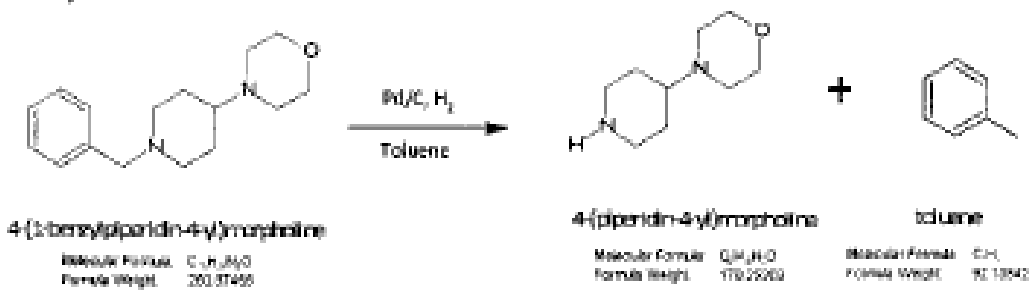
1-Benzilepiperidine-4-one and morpholine is reacted at hydrogen pressure in the presence of Palladium carbon and toluene to get stage 1 intermediate and this same will be charged in second vessel with mixture of palladium carbon and toluene to get final product.

Chemical Reaction:

INT01:



INT02/FP:



Mass Balance:

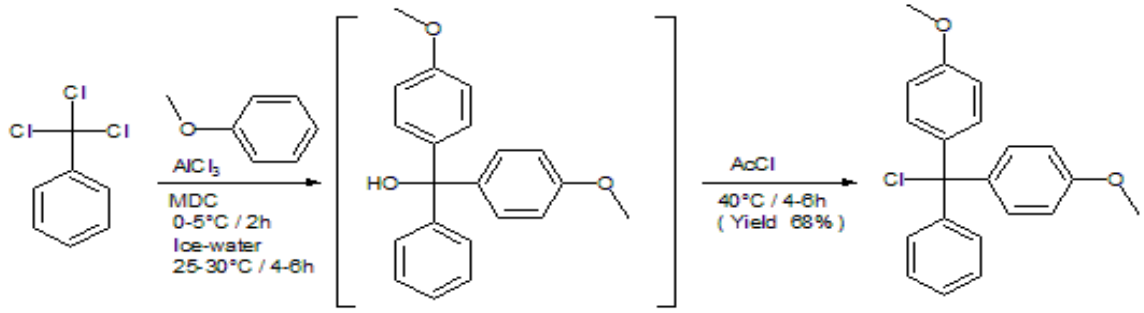
Sr No.	Input	Kgs	Output	Kgs
Stage -1				
1	1-Benzylpiperidin-4-One	727	4-(1-benzylpiperdine-4-yl)morpholine	900
2	Morpholine	335	Water (By Product)	69
3	Hydrogen	8	Solvent Recovery	2072
4	Palladium Carbon	36	Solvent Loss	109
5	Toluene	2181	Resdiue	100
			Palladium Carbon	36
	Total	**3287**	**Total**	**3287**
Stage -2				
1	4-(1-benzylpiperdine-4-yl)morpholine	900	Product	500
2	Hydrogen	7	Toluene (by Product)	319
3	Palladium Carbon	45	Palladium Carbon	45
4	Toluene	2701	Solvent	2566
			Solvent loss	135
			Resdiue	88
	Total	**3653**	**Total**	**3653**

35) 4,4'--Dimethoxytrityl Chloride

Manufacturing Process:

Benzonitrile and anisol is charged with aluminium chloride solution with mixture of MDC in vessel for 5 to 9 hours to get stage 1 intermediate and this reactoin mass is charged in vessel with solution of aluminium tri chloride and ethanol at 40 degree tempereture for 4 to 6 hours to get final product.

Chemical Reaction:



Benzotrichloride **Intermediate** **Final Product**

Mass Balance:

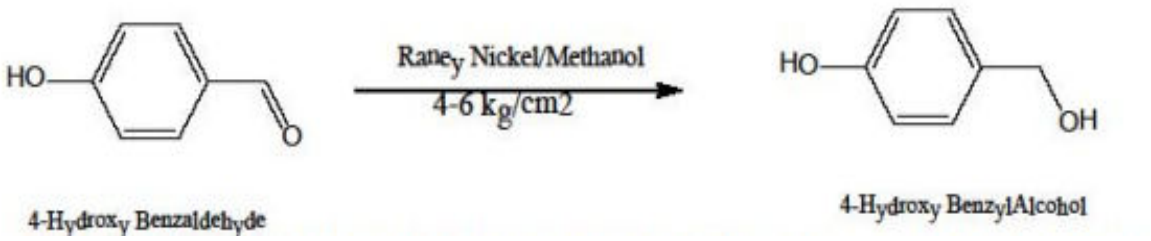
Sr No.	Input	Kgs	Output	Kgs
1	Benzotrichloride	1020	Product	1000
2	Anisol	1140	MDC	7000
3	Aluminum Trichloride	720	Aq. Layer	4880
4	MDC	7850	Rec. Hexane	3000
5	Ethyl Acetate	3850	Rec. Ethyl Acetate	3500
6	Hexane	3600	Vapour Loss	1800
7	Water	3000		
	Total	**21180**	**Total**	**21180**

36) 4-Hydroxy Benzyl Alcohol

Manufacturing Process:

4 - Hydroxy Benzaldehyde is charged in reactor with Raney nickle addition and methonal charged slowly at desire temeprature to get final product after 7 to 8 hours.

Chemical Reaction:



Mass Balance:

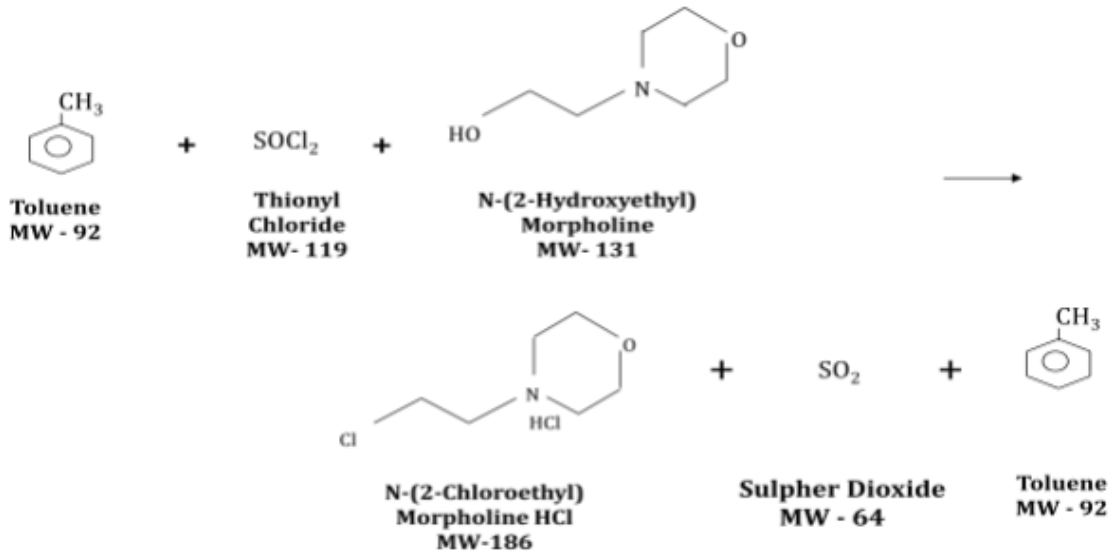
Sr No.	Input	Kgs	Output	Kgs
1	PHBA	965	Product	1000
2	Methanol	3860	Reny Nickle Loss	1
3	Reny Nickle	14.5	Methanol Evo. Loss	200
4	Methanol for Recycle	3600	Ethyl Acetate Evo. Loss	200
5	Ethyl Acetate	2413	Rec. Methanol	7246
6	Ethyl Acetate for Recycle	2213	Rec. Ethyl Acetate	4405
			Rec. Reny Nickl	13.5
	Total	**13065.5**	**Total**	**13065.5**

37) 4 (2-chloro Ethyl) MorpholineHCl

Manufacturing Process:

Charge toluene and Thionyl chloride at room temperature add 2HEM at 48°C to 50°C temperature in several hours, raise the temperature to 75°C within 2 to 3 hours and maintain for the 5 hours, cool at 25°C , during the reaction generation of SO2 scrub in soda ash solution. Filter the product and dry under vacuum at 50°C to 55°C recovered toluene from mother liquor(ML).

Chemical Reaction:



Mass Balance:

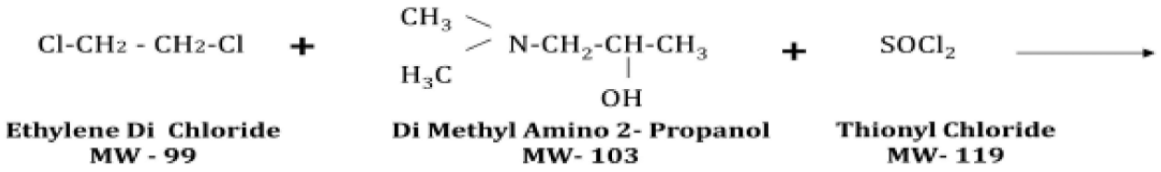
Sr No.	Input	Kgs	Output	Kgs
1	Toluene	160	Product	2500
2	Thionyl Chloride	1869	Sodium Bi Sulphite Solution (30-35%)	3853
3	2 hydroxy ethyl morpholine	1809	Loss	331
4	Rec. toluene	7209	Rec. toluene	7209
5	Soda Ash	832		
6	Water	2014		
	Total	**13893**	**Total**	**13893**

38) Di Methyl Amino Isopropyl Chloride HCl

Manufacturing Process:

First Add Toluene, BCP and Caustic Soda 48%, than addition of DMA 40%. Maintain at temp 24°C. Add water and mix well, Take time for settling. Separate out sodium Bromide 33- 35% sol. as a byproduct. Take Organic layer then add HCl 28-30% and take pH 1 to 2.5 then layer separate. Take organic layer separate the Toluene Layer and crude product take for distillation which contain Tol/BCP/DMPC 65-67%.

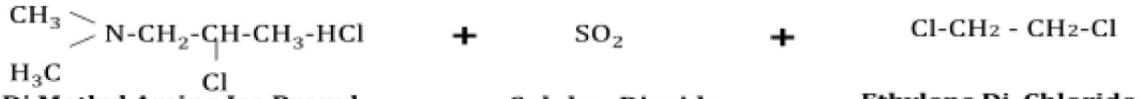
Chemical Reaction:



Ethylene Di Chloride
MW - 99

Di Methyl Amino 2- Propanol
MW- 103

Thionyl Chloride
MW- 119



Di Methyl Amino Iso Propyl Chloride HCl
M/W-158

Sulpher Dioxide
MW -64

Ethylene Di Chloride
MW - 99

Mass Balance:

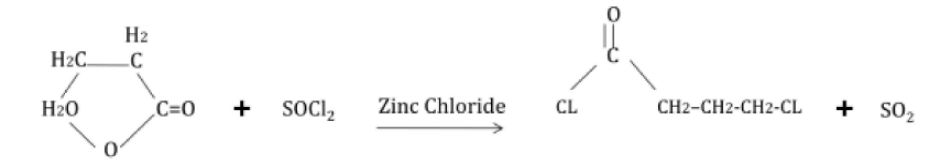
Sr No.	Input	Kgs	Output	Kgs
1	EDC	3000	Product	750
2	TC	720	Loss	121
3	Dimethyl Amino 2 Propanol	540	Sodium Bi Sulphite (30-35%)	1486
4	Soda Ash	325	Rec. EDC	3002
5	Water	774		
	Total	**5359**	**Total**	**5359**

39) 4- ChloroButyryl Chloride

Manufacturing Process:

Charge GBL and catalyst heat to 90°C to 95°C temperature, add Thionyl chloride maintain 92°C to 95°C temperature for several hours, after addition of TC maintain 2 to 3 hours at 95°C to 100°C temperature. During the reaction generation of SO2 scrub in soda ash solution, after completion of reaction distil out pure product under high vacuum up to 130°C to 135°C temperature.

Chemical Reaction:



Gamma ButyroLactone
MW = 86

Thionyl Chloride
MW = 119

4-Chloro Butyryl Chloride
MW - 141

MW = 64

Mass Balance:

Sr No.	Input	Kgs	Output	Kgs

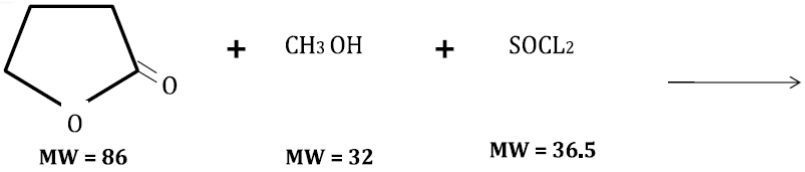
1	Gama Butyro Lactose	1178.54	Product	1820
2	Zinc Chloride	20.62	Loss	124.09
3	TC	1921.12	Sodium Bi Sulphite (30-35%)	3955
4	Soda Ash	854	Residue	142.54
5	Water	2067.35		
	Total	**6041.63**	**Total**	**6041.63**

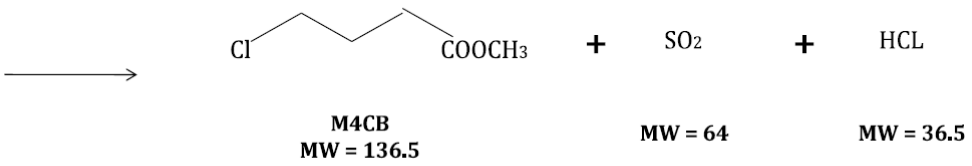
40) Methyl 4- chlorobutyrate

Manufacturing Process:

Mixture of GBL and methanol, cool to 5°C temp add TC in above mixture, maintaining temp. 0 to 10°C in several hours. Remove SO2 gas by slow heating and absorb gas in alkali soln. Simultaneously , HCL gas also absorb in water, Reaction mass proceed for partial distillation to remove methanol and bring moisture of reaction mass less than 0.5 % , this is final M4CB product.

Chemical Reaction:





Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	Gama Butyro Lactose	1169.23	Product	1671.23
2	Methanol	331	Loss	105.86
3	Rec. Methanol	623.54	Sodium Bi Sulphite (30-35%)	3648
4	TC	1772.91	28-30% HCl Solution	2229.1
5	Soda Ash	787.95	Rec. methanol	622.74
6	Water	3592.3		

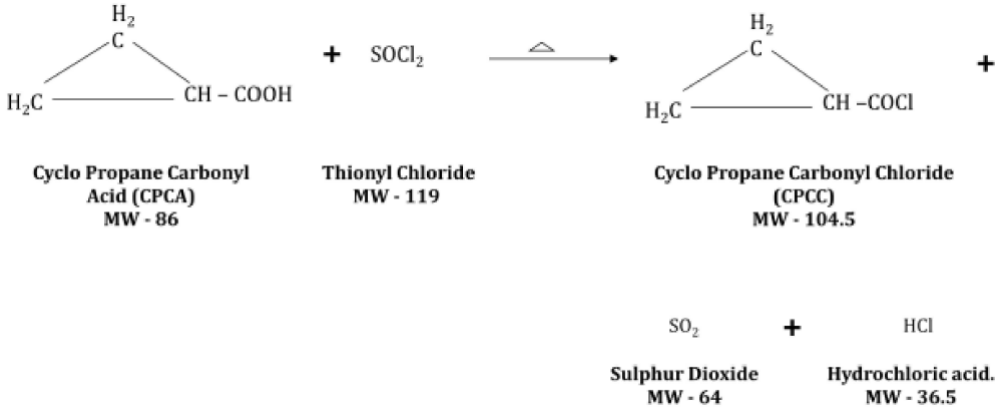
	Total	**8276.93**	**Total**	**8276.93**

41) Cyclorpropane Carbonyl Chloride

Manufacturing Process:

Mixture of CPCA , cool to 5°C temp add TC in above mixture, maintaining temp. 0 to 10°C in several hours. Remove SO2 gas by slow heating and absorb gas in alkali soln. Simultaneously, HCL gas also absorb in water, Reaction mass proceed for partial distillation to remove methanol and bring moisture of reaction mass less than 0.5 % , this is final product.

Chemical Reaction:



Mass Balance:

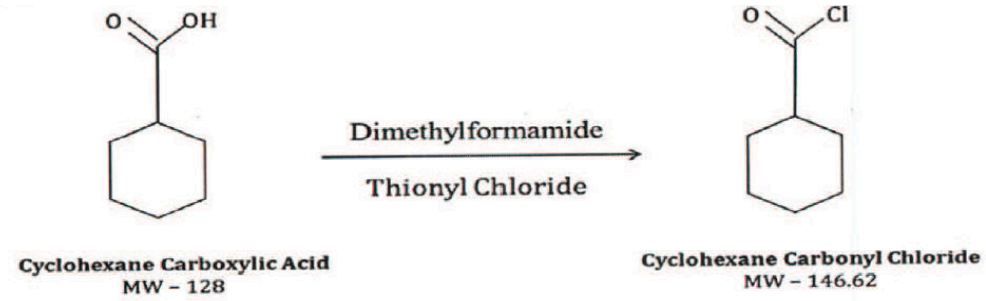
Sr No.	Input	Kgs	Output	Kgs
1	Cyclo Propane Carboxilic Acid	1397.89	Product	1600
2	TC	1996.99	Sodium Bi Sulphite (30-35%)	4047
3	Soda Ash	874.53	Loss	21
4	Water	4006.59	25% HCl Solution	2608
	Total	**8276**	**Total**	**8276**

42) Cyclohexane Carbonyl chloride

Manufacturing Process:

Charge Cyclohexane Carboxylic Acid heat to 40°C to 45°C Temperature add Thionyl Chloride 42°C to 45°C Temperature in several hours. Heat to 75°C to 80°C temperature maintain for the 3 to 4 hours. Distil out the final product under high vacuum SO2 and HCL gas scrub in soda ash and water respectively.

Chemical Reaction:



Cyclohexane Carboxylic Acid
MW – 128

Cyclohexane Carbonyl Chloride
MW – 146.62

Mass Balance:

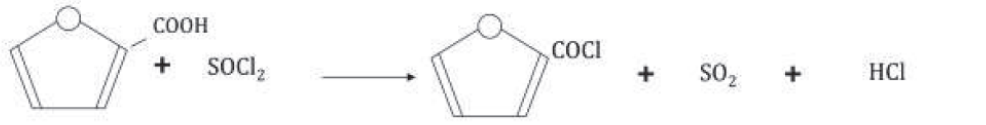
Sr No.	Input	Kgs	Output	Kgs
1	Cyclo Hexane carboxylic Acid	1001	Product	1040
2	TC	959	So2 gas	515
			Loss	116
			Residue	3
			HCl gas	286
	Total	**1960**	**Total**	**1960**

43) 2- Furoyl Chloride

Manufacturing Process:

Charge 2FC and Thionyl Chloride at room temperature. Heat to 110°C to 115°C temperature in several hours and make uniform liquid mass, maintain 115°C to 120°C temperature for 5 hours. Cool at room temperature, distil out final product from above organic mass under high vacuum and 110°C temperature.

Chemical Reaction:



Furoic Acid
MW - 112

ThionylChloride
MW - 119

Furoyl Chloride
MW – 130.5

Sulphur Dioxide
MW - 64

Hydrochloric Acid
MW - 36.5

Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	2-Furoic Acid	1136.25	Product	1290
2	TC	1267.5	Sodium Bi Sulphite Solution (30-35%)	2610.39

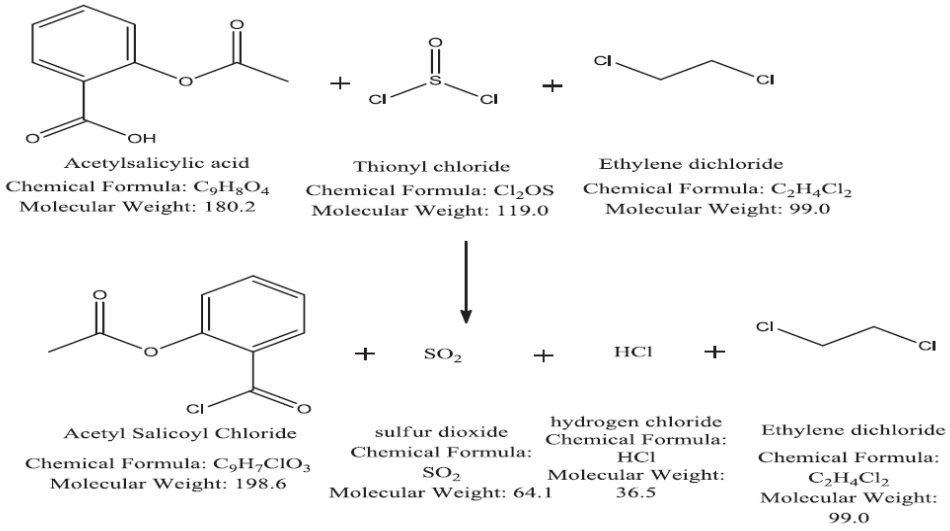
3	Soda Ash	565.41	Loss	30.34
4	Water	2247.07	Residue	23
			28-30% HCl	1262.5
	Total	**5216.23**	**Total**	**5216.23**

44) O- Acetylsalicloyl Chloride

Manufacturing Process:

Prepared and mixture of EDC and Acetyl salicyl Acid, to the mixture add slowly thionyl chloride, maintaining temperature below 45°C, Slowly heat to 65 °C temperature and maintain for 5 to 6 hrs., Absorb SO2 andHCl Gas in alkali solution and water respectively, remove EDC from reaction mass by distillation after remove EDC distilled out pure product by high vacuum distillation.

Chemical Reaction:



Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	Acetyl Salicylic Acid	2298.67	Product	2450
2	Fresh ED	550	Sodium Bi Sulphite Solution (30-35%)	3277.98
3	Rec. EDC	4966.66	Loss	641.32
4	TC	1597.33	Residue	9.33
5	Soda Ash	708	28-30% HCl	2003.33
6	Water	3227.96	Rec. EDC	4966.66
	Total	**13348.62**	**Total**	**13348.62**

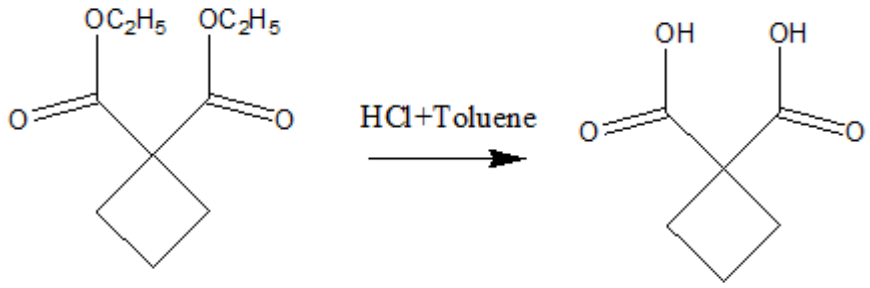
Group-3

45) 1,1-Cyclobutane dicarboxylic acid

Manufacturing Process:

Diethyl cyclobutanecarboxylate is react with HCl in presnce of toluene at 70-75 degree temperature for 36 hours to get final product.

Chemical Reaction:



Diethyl Cyclobutanecarboxylate Final-Product

Mass Balance:

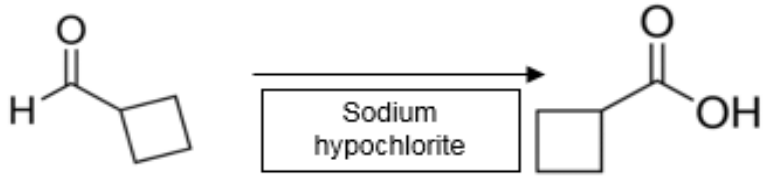
Sr No.	Input	Kgs	Output	Kgs
1	Diethyl cyclobutanecarboxylate	500	Product	497
2	HCl	100	Recover Toluene	240
3	Toluene	250	Residue	18
			Recover HCl	95
	Total	**850**	**Total**	**850**

46) Cyclobutane carboxylic acid

Manufacturing Process:

Cyclobutanecarbaldehyde is reacted with sodium hypochlorite in mixture of Water at 55 to 60 degree temperature for 24 hours to get final product.

Chemical Reaction:



Cyclobutanecarbaldehyde Final Product

Mass Balance:

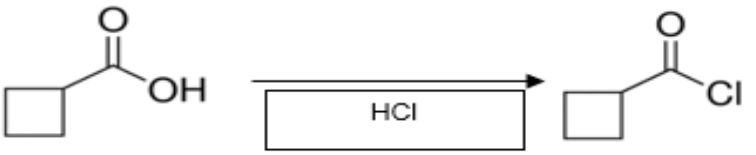
Sr No.	Input	Kgs	Output	Kgs
1	Cyclobutanecarbaldehyde	500	Product	510
2	sodiumhypochlorite	180	Sodium chloride	50
3	water	250	water	340
			residue	30
	Total	**930**	**Total**	**930**

47) Cyclobutane carbonyl chloride

Manufacturing Process:

Cyclobutanecarboxylicacid is reacted with HCl in presnce of Toluene at 40-45 degree temperature for 20-22 hours to give final product.

Chemical Reaction:



Cyclobutanecarboxylic acid Final Product

Mass Balance:

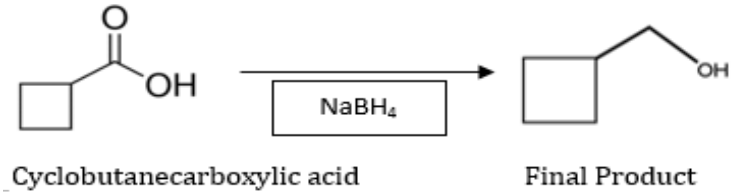
Sr No.	Input	Kgs	Output	Kgs
1	Cyclobutanecarboxylicacid	500	Product	540
2	HCl	120	Sodium chloride	80
3	Toluene	300	water	280
			residue	20
	Total	**920**	**Total**	**920**

48) Cyclobutyl carbinol

Manufacturing Process:

Cyclobutanecarboxylic acid is reacted with Sodium Borohydride in presnce of THF catalyst for 30- 35 hours at desire temperature to give final product.

Chemical Reaction:



Cyclobutanecarboxylic acid Final Product

Mass Balance:

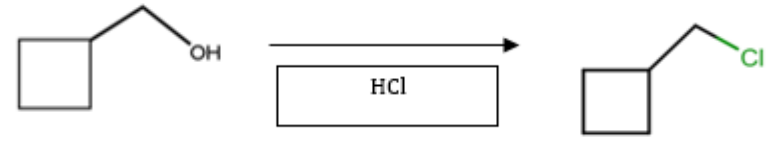
Sr No.	Input	Kgs	Output	Kgs
1	Cyclobutanecarboxylic acid	500	Product	435
2	Sodiumborohydride	230	Recover THF	235
3	THF	250	Residue	17
			BH3	170
			Sodium Hydroxide	123
	Total	**980**	**Total**	**980**

49) Cyclobutyl methyl Chloride

Manufacturing Process:

Cyclobutanecarboxylic acid and HCL is reacted in presence of toluene at 70-80 degree temperature for 24 hours to give final product.

Chemical Reaction:



Cyclobutanecarboxylic acid Final-Product

Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	Cyclobutanecarboxylic acid	500	Product	580
2	HCl	260	Recover HCl	170
3	Toluene	300	Residue	25

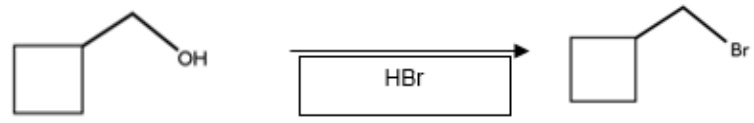
			Recover Toluene	285
	Total	**1060**	**Total**	**1060**

50) Cyclobutyl methyl bromide

Manufacturing Process:

Cyclobutanecarboxylic acid is reacted with Hydrogen bromide in presnce of methanol solvent for 30 hours to give final product at desire temperature.

Chemical Reaction:



Cyclobutanecarboxylic acid Final-Product

Mass Balance:

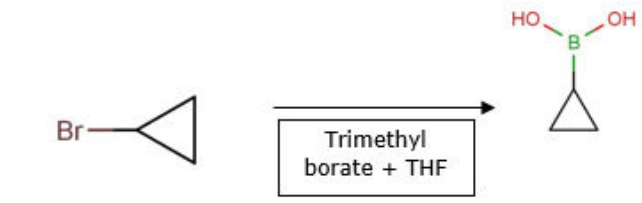
Sr No.	Input	Kgs	Output	Kgs
1	Cyclobutanecarboxylic acid	500	Product	615
2	HBr	230	Recover HBr	120
3	Methanol	250	Residue	15
			Recover Methanol	230
	Total	**980**	**Total**	**980**

51) Cyclopropyl boronic acid

Manufacturing Process:

Cyclobutanecarboxylic acid is reacted with trimethyl borate in presence of THF catalyst for 30-35 hours at desire temperature to obtain fianl product.

Chemical Reaction:



Cyclobutanecarboxylic acid Final-Product

Mass Balance:

Sr	Input	Kgs	Output	Kgs

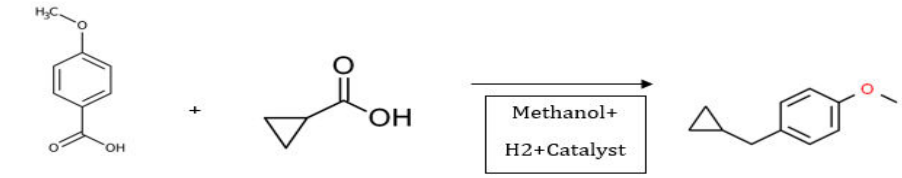
No.				
1	Cyclobutanecarboxylic acid	500	Product	597
2	Trimethyl borate	200	Recover THF	230
3	THF	250	Residue	18
			Methanol	105
	Total	**950**	**Total**	**950**

52) 1-Cyclopropylmethyl-4-methoxybenzene

Manufacturing Process:

In this reaction anisic acid and CPCC charged in to reactor in the presence of methonal and catalyst at hydrogen gas pressure to obtain product.

Chemical Reaction:



Anisic acid Cyclopropanecarboxylic acid Final

Mass Balance:

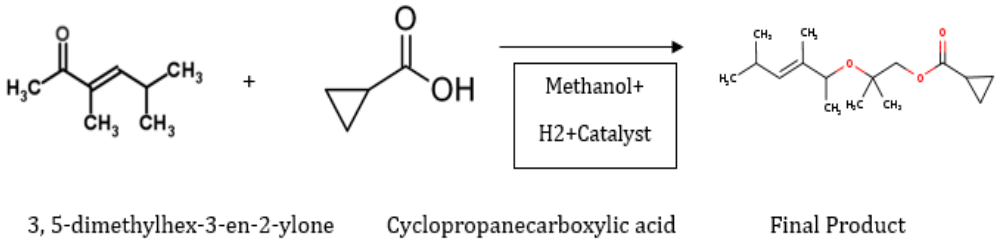
Sr No.	Input	Kgs	Output	Kgs
1	Anisic acid	500	Product	932
2	Cyclopropanecarboxylic acid	370	Recover methanol	280
3	pd	12	Residue	18
4	H2	60	Recover pd	12
5	methanol	300		
	Total	**1242**	**Total**	**1242**

53) 2-(3,5-dimethylhex-3-en-2-yloxy)-2-methylpropyl cyclopropanecarboxylate

Manufacturing Process:

3,5-dimethylhex-3-en-2-ylone with CPCC is added in GLV with paldium and methanol at hydrogen Gas pressure to derive product after 5-6 hours.

Chemical Reaction:



3, 5-dimethylhex-3-en-2-ylone Cyclopropanecarboxylic acid Final Product

Mass Balance:

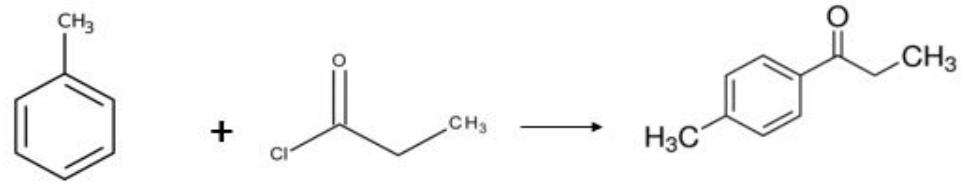
Sr No.	Input	Kgs	Output	Kgs
1	3,5-dimethylhex-3-en-2-ylone	500	Product	905
2	Cyclopropanecarboxylic acid	350	Recover methanol	280
3	pd	10	Residue	15
4	H2	50	Recover pd	10
5	methanol	300		
	Total	**1210**	**Total**	**1210**

54) 4-Methylpropiophenone

Manufacturing Process:

First take toluen in GLR and charge PC under controlled temperature 0 to 1 degree temperature within three hours in presence of ferric chloride and toluene as a solvent and reflux & cool the mass distilled out recover toluene use for next batch and derived final product.

Chemical Reaction:



Toluene
MW – 86

Propionyl Chloride
MW – 95

4- Methyl Propiophenone
MW – 148

Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	Toluene	200	Product	327

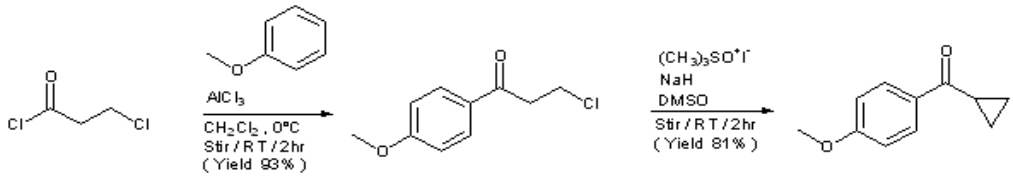
2	Propionyl Chloride	210	Residue	83
	Total	**410**	**Total**	**410**

55) Cyclopropyl 4-methoxyphenyl ketone

Manufacturing Process:

Chloro Butyrl Chloride with anisol is charged in vessle with aluminium chloride and MDC at cold temperature for 2 hour to get stage 1 intermediate and this same will be reacted with DMSO and sodium hydried at room temeperature for 2 hour to get product.

Chemical Reaction:



Chloro butyrl chloride Intermediate-1 Final

Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
Stage-1				
1	4-chloro butyl chloride	500	Intermediate-1	802
2	Anisol	307	Recover MDC	220
3	Alcl3	250	Alcl4	235
4	MDC	250	Residue	50
	Total	**1307**	**Total**	**1307**
Stage-2				
1	Intermediate-1	500	Product	475
2	DMSO	200	Recover DMSO	195
3	Sodium hydride	50	Recover trimethylsulfoiodie	60
4	trimethylsulfoiodide	70	Sodium chloride	65
			Residue	25
	Total	**820**	**Total**	**820**

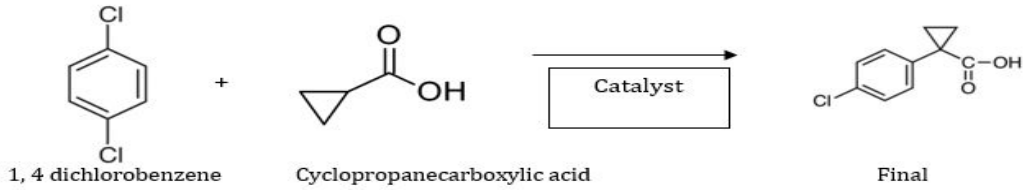
56) 1-(4-Chlorophenyl)cyclopropanecarboxylic acid

Manufacturing Process:

1,4 Dichloro Benzene and CPCC is taken in to reactor with catalyst and reflux at 50-6 degree

temperature at hydrogen pressure for 7-9 hours to get final product.

Chemical Reaction:



1, 4 dichlorobenzene Cyclopropanecarboxylic acid Final

Mass Balance:

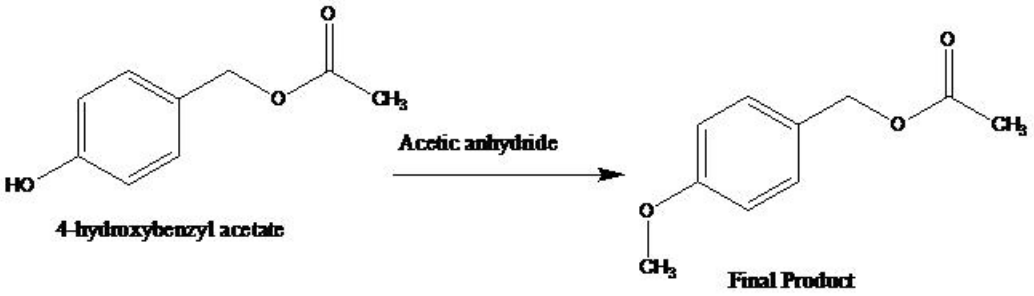
Sr No.	Input	Kgs	Output	Kgs
1	1,4 dichlorobenzene	500	Product	913
2	Cyclopropanecarboxylic acid	360	Recover methanol	285
3	pd	11	Residue	17
4	H2	55	Recover pd	11
5	methanol	300		
	Total	**1226**	**Total**	**1226**

57) Para Anisyl Acetate

Manufacturing Process:

4-Hydroxy benzyl actetate and acetic anhydried is charged into GLV with presence of acetic acid and refulx at room temperature to derive product.

Chemical Reaction:



4-hydroxybenzyl acetate Final Product

Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	4-hydroxybenzyl acetate	500	Product	626
2	Acetic anhydride	307	Acetic acid	185
3	Acetic acid	250	Recover Acetic acid	235

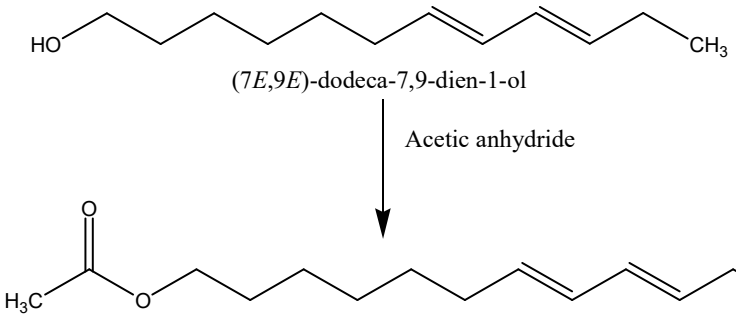
4			Residue	11
	Total	**1057**	**Total**	**1057**

58) (E,Z)-7,9-Dodecadienyl acetate

Manufacturing Process:

7E, 9E dodeca 7,9 dien 1-ol is reaxcte with acetic anhydried and acetic acid to obtain final product.

Chemical Reaction:



Mass Balance: (E,Z)-7,9-Dodecadienyl acetate

Final Product

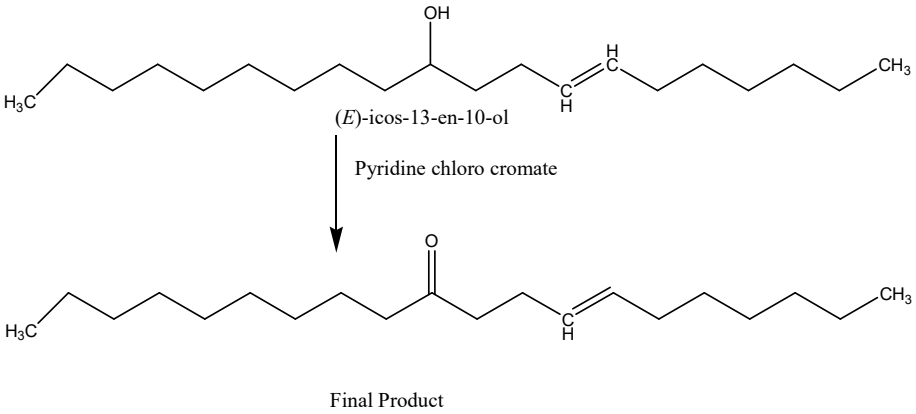
Sr No.	Input	Kgs	Output	Kgs
1	(7E,9E)-dodeca-7,9-dien-1-ol	500	Product	615
2	Acetic anhydride	280	Acetic acid	170
3	Acetic acid	250	Recover Acetic acid	232
4			Residue	15
	Total	**1030**	**Total**	**1030**

59) (Z)-13-Icosen-10-one

Manufacturing Process:

E-icos-13en-10-ol is react with pyridine chloro cromate in presence of toluene to derive final product at desire time.

Chemical Reaction:



Final Product

Mass Balance:

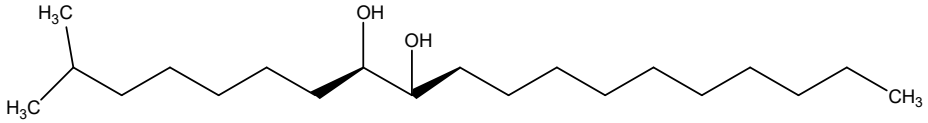
Sr No.	Input	Kgs	Output	Kgs
1	(E)-icos-13-en-10-ol	500	Product	497
2	Pyridine chloro chromate	362	pyridine	210
3	Toluene	200	Chloromic acid	165
			Toluene recover	190
			residue	15
	Total	**1062**	**Total**	**1062**

60) cis-7,8-Epoxy-2-methyloctadecane

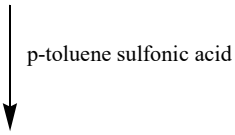
Manufacturing Process:

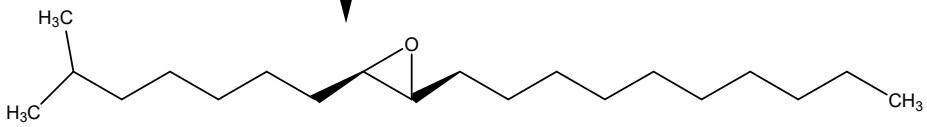
(8R,9R)-2-methylnonadecane-8,9-diol is react with p-toluene sulfonic acid in presence of Methanol to get final Product.

Chemical Reaction:



(8*R*,9*R*)-2-methylnonadecane-8,9-diol





Final Product

Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	(8R,9R)-2-methylnonadecane-8,9-diol	500	Product	467
2	p-toluene sulfonic acid	10	P-toluene sulfonic acid	10

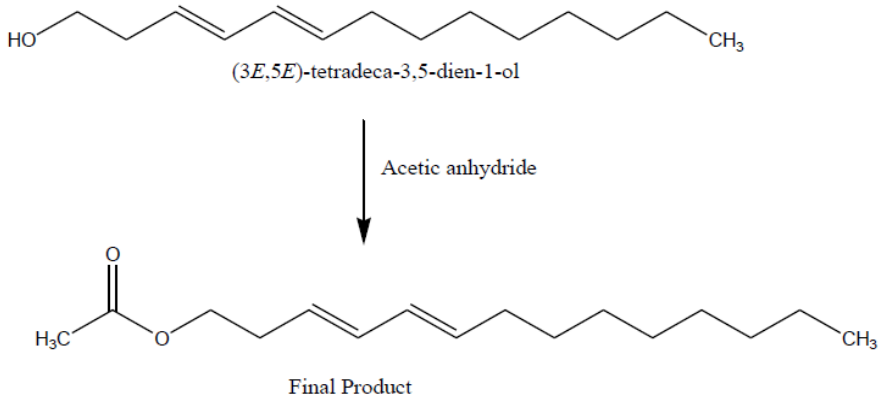
3	Methanol	200	Recover methanol	190
			water	30
			residue	13
	Total	**710**	**Total**	**710**

61) (Z,E) -9,12-Tetradecadienyl acetate

Manufacturing Process:

(3E,5E)-tetradeca-3,5-dien-1-ol is reacted with acetic anhydried is reacted in presence of acetic acid to get product.

Chemical Reaction:



Mass Balance:

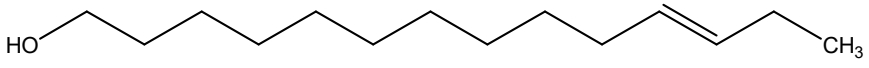
Sr No.	Input	Kgs	Output	Kgs
1	(3E,5E)-tetradeca-3,5-dien-1-ol	500	Product	600
2	Acetic anhydride	245	Acetic acid	145
3	Acetic acid	200	Recover acetic acid	185
			residue	15
	Total	**945**	**Total**	**945**

62) (Z)-11-Tetradecenyl acetate

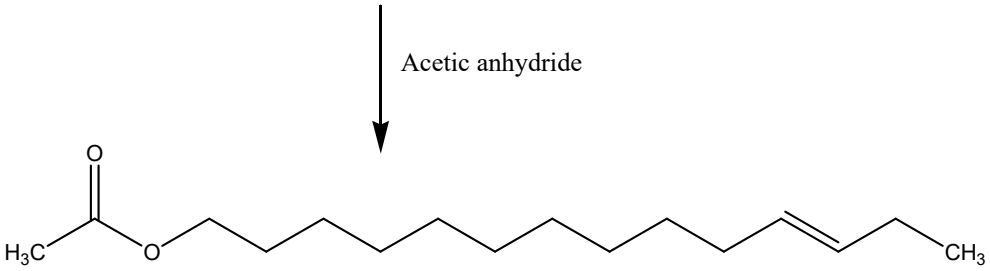
Manufacturing Process:

(E)-tetradec-11-en-1-ol is reacted with acetic anhydried in presnce of acetic acid to give final product.

Chemical Reaction:



(*E*)-tetradec-11-en-1-ol



Final Product

Mass Balance:

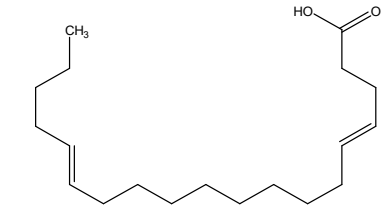
Sr No.	Input	Kgs	Output	Kgs
1	(E)-tetradec-11-en-1-ol	500	Product	595
2	Acetic anhydride	242	Acetic acid	145
3	Acetic acid	200	Recover acetic acid	190
			residue	12
	Total	**942**	**Total**	**942**

63) (Z,Z)-3,13-Octadecadien-1-ol

Manufacturing Process:

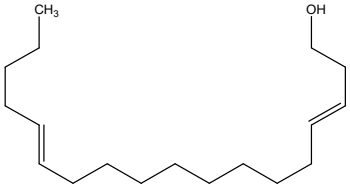
(4Z,14Z)-nonadeca-4,14-dienoic acid is reacted with sodium borohydried in presence of THF catalyst to derive final product.

Chemical Reaction:



(4*Z*,14*Z*)-nonadeca-4,14-dienoic acid

Sodium borohydride



Final Product

Mass Balance:

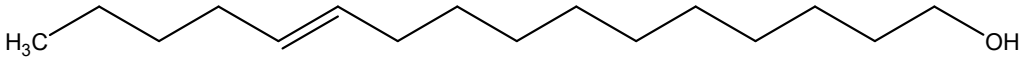
Sr No.	Input	Kgs	Output	Kgs
1	(4Z,14Z)-nonadeca-4,14-dienoic acid	500	Product	453
2	Sodium borohydride	63	Boronic acid	120
3	THF	300	Recover THF	280
			residue	10
	Total	**863**	**Total**	**863**

64) (Z)-11-Hexadecenal

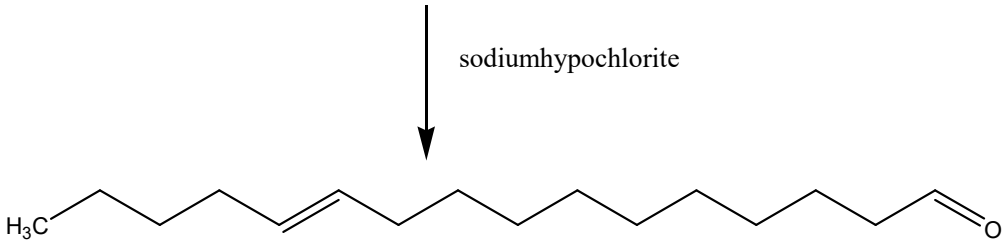
Manufacturing Process:

E-Hexaedc 11-en-1-ol is reacted with sodiumhypochlorite with mixture of water to get final product.

Chemical Reaction:



(*E*)-hexadec-11-en-1-ol



Final Product

Mass Balance:

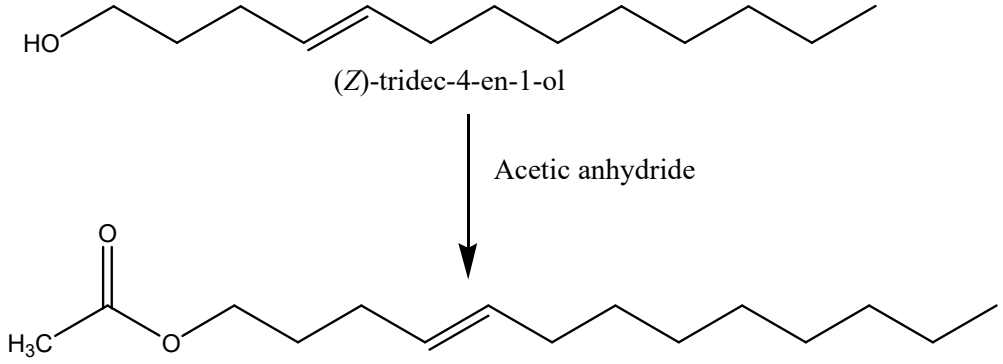
Sr No.	Input	Kgs	Output	Kgs
1	(4Z,14Z)-nonadeca-4,14-dienoic acid	500	Product	485
2	Sodium hypochloride	340	Sodium chloride	70
3	Water	300	Water	575
			residue	10
	Total	**1140**	**Total**	**1140**

65) (Z)-4-Tridecen-1-yl acetate

Manufacturing Process:

(Z)-tridec-4-en-1-ol and acetic anhydried is reacted in presence of acetic acid to get final product.

Chemical Reaction:



Final Product

Mass Balance:

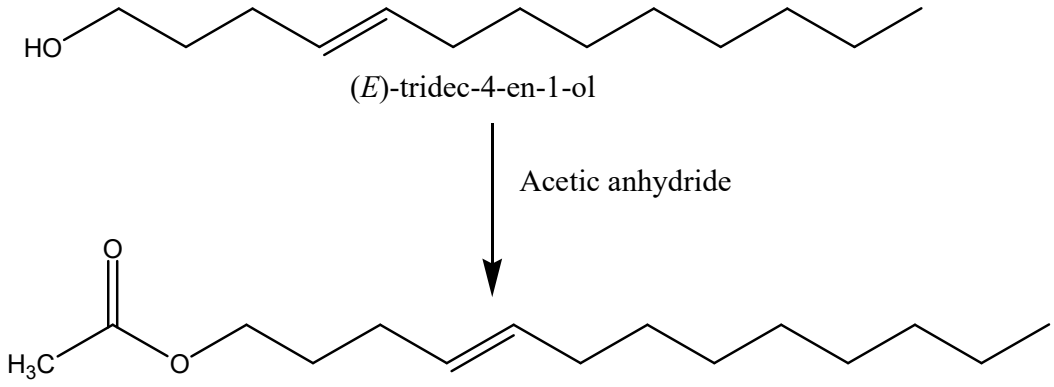
Sr No.	Input	Kgs	Output	Kgs
1	(Z)-tridec-4-en-1-ol	500	Product	606
2	Acetic anhydride	260	Acetic acid	151
3	Acetic acid	200	Recover acetic acid	190
			residue	13
	Total	**960**	**Total**	**960**

66) (E)-4-Tridecen-1-yl acetate

Manufacturing Process:

(E)-tridec-4-en-1-ol is reacted with acetic anhydried in presence of acetic acid to get final product.

Chemical Reaction:



Final Product

Mass Balance:

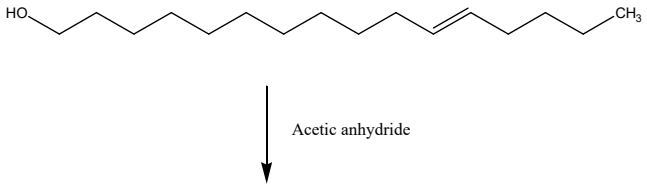
Sr No.	Input	Kgs	Output	Kgs
1	(E)-tridec-4-en-1-ol	500	Product	606
2	Acetic anhydride	260	Acetic acid	151
3	Acetic acid	200	Recover acetic acid	190
			residue	13
	Total	**960**	**Total**	**960**

67) (Z)-11-Hexadecenyl Acetate

Manufacturing Process:

(E)-hexadec-11-en-1-ol is reacted with acetic anhydried in presence of acetic acid to derive final product.

Chemical Reaction:



Mass Balance:

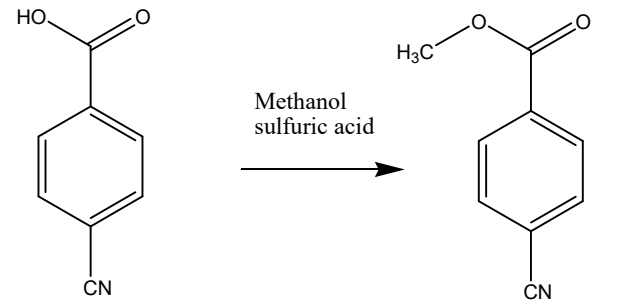
Sr No.	Input	Kgs	Output	Kgs
1	(E)-hexadec-11-en-1-ol	500	Product	587
2	Acetic anhydride	214	Acetic acid	124
3	Acetic acid	200	Recover acetic acid	190
			residue	13
	Total	**914**	**Total**	**914**

68) Methyl 4-cyanobenzoate

Manufacturing Process:

4-Cynobenzoic Acid reacteds with sulphuric acid in presnece of Methanol solvent at 50-60 degree temperature for specific time to get final product.

Chemical Reaction:



4-cyanobenzoic acid
Mol. Wt.: 147.13

Final Product
Mol. Wt.: 161.16

Mass Balance:

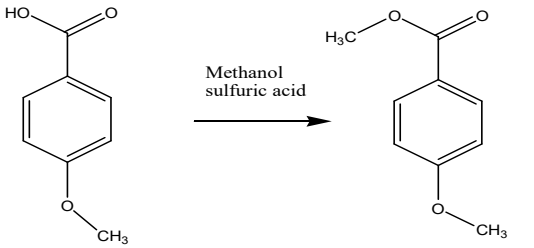
Sr No.	Input	Kgs	Output	Kgs
1	4-cyanobenzoic acid	500	Product	508
2	Methanol	250	Recover Methanol	230
3	Sulfuric acid	15	Sulfuric acid	15
			residue	12
	Total	**765**	**Total**	**765**

69) Methyl p-anisate

Manufacturing Process:

4-Methoxy benzoic acid is chraged up in reactor and sulphuric acid also mix with presence of methanol solvent and stir for 4-5 hours at desire temperature and pressure to get final product.

Chemical Reaction:



4-methoxybenzoic acid
Mol. Wt.: 152.15

Final Product
Mol. Wt.: 166.17

Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	4-methoxy benzoic acid	500	Product	505
2	Methanol	250	Recover Methanol	228
3	Sulfuric acid	15	Sulfuric acid	15
			residue	17
	Total	**765**	**Total**	**765**

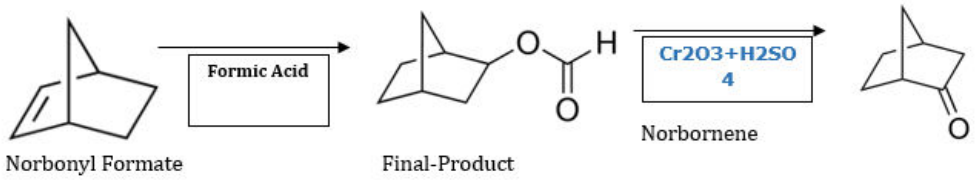
Group- 5

70) Norcamphor

Manufacturing Process:

Norbornylene is reacted with formic acid at 105 to 110 Degree temperature, followed by oxidation with jone's reagent at room temeperature. The crude product obrtained after workup is purified by distillation at atmoshperic temperature.

Chemical Reaction:



Mass Balance:

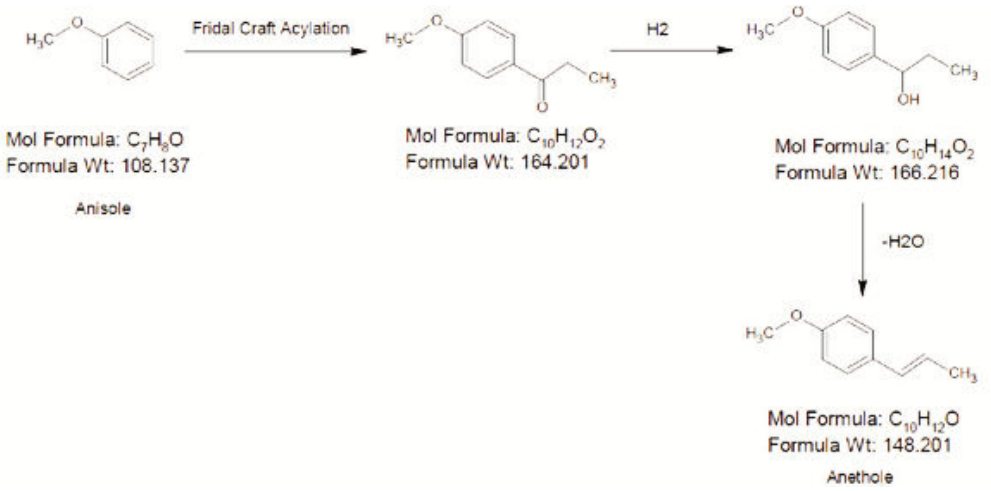
Sr No.	Input	Kgs	Output	Kgs
1	Norbornylene	170	Norcamphor	100
2	Formic Acid	340	Distill (Recycle)	303
3	Water	1280	2 Exonobornyl Formate	207
4	Acetone	837	Aq. Layer	1822
5	Cr2O3	218	Spent Pottasssium Carb	89
6	Sulphuric Acid	325	Loss	82
7	Sodium Bi Sulphite	50	Distillate Recycle	1032
	Sat. Pottassium carb. Sol.	83	Forerun	10
	Benzene	359	Loss	7
			Residue	10
	Total	**3662**	**Total**	**3662**

71) Anethol

Manufacturing Process:

Anisole is coverted in 4-methoxypropiophenone by friedal crafts acylation with Propionyl Chloride. The 4-methoxypropeiphenone is hydrogenated to the corresponding 1-4 Methoxyphenyl Propane 1-ol Alcohol with catalyst. This reaction mass is dehydrated in presence of acidic catalyst is give product.

Chemical Reaction:



Mass Balance:

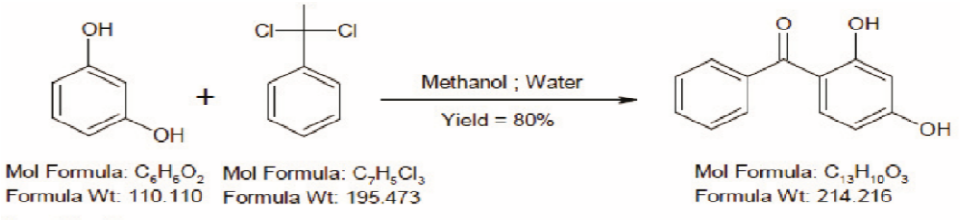
Sr No.	Input	Kgs	Output	Kgs
1	Anisol	99	Product	100
2	Sodium Chloride	15	Dil. Aqu. AlCl3	572.05
3	Aluminum Chloride	130	Methanol	9.38
4	Propyl Chloride	96	Reaney Nickle	1
5	Sodium Bi carbonate	5.7	TEA	0.203
6	Water	325	EDC	10.5
7	Methanol	13.4	Vapour Loss	8.607
8	Raney Nickel	1	Dihydroanethole By Product	6
9	Hydrogen	24	Anethole Polymer By Product	17
10	Triethyl Amine	0.29		
11	Divyol 460 Oil	0.06		
12	Pottasium Hydrogen Sulphate	0.29		
13	EDC	15		
	Total	**724.74**	**Total**	**724.74**

72) 2,4 Dihydroxy Benzophenone

Manufacturing Process:

Resorcinol and Benzotrichloride are reacted in presence of methanol and water at 40-45 degree temp. and further crystallization with toluene afford the Product.

Chemical Reaction:



Mass Balance:

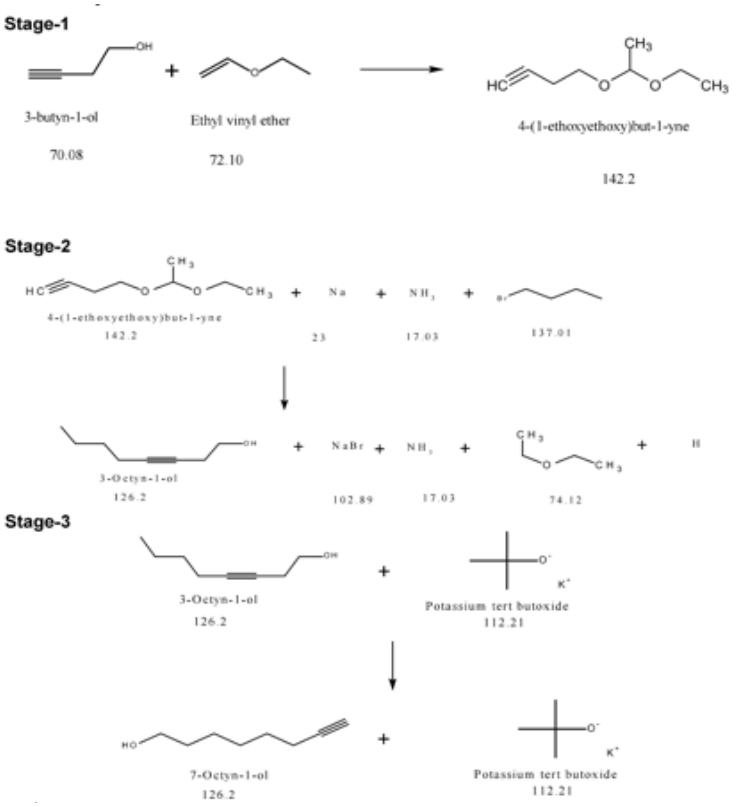
Sr No.	Input	Kgs	Output	Kgs
1	Resorcinol	0.54	Product	1
2	Water	6	30% HCl in Scrubber	3
3	Methanol	0.324	Effluent to ETP	3.945
4	Benzotrichloride	1.081		
	Total	**7.945**	**Total**	**7.945**

73) 7-Octyne-1-ol

Manufacturing Process:

3 Butyn 1-ol and ethyl vinyl ether is addeing in reactor and stage 1 intermediate is fomed, this reactiuon mass is taken in reactor with sodium and ammonia solution in presence of metheyn chloride to get stage 2 intermediate and this will react with pottasium t butoxide to get final product.

Chemical Reaction:



Mass Balance:

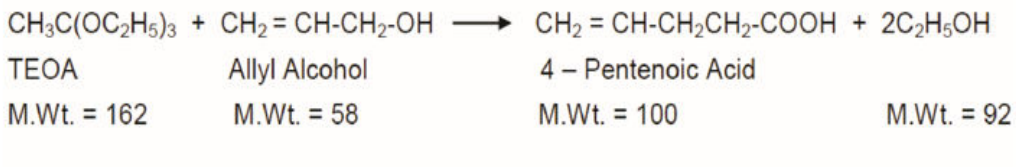
Sr No.	Input	Kgs	Output	Kgs
Stage-1				
1	3-Buytl-1-Ol	100	Stage-1	160
2	Ethyl Vinyl ether	105	Unreacted Organics	24.8
3	Methylene Chloride	500	Waste Water	419.7
4	Water	400	NaCl	8
5	HCL (30%)	16.8	Methylene Chloride (recovery)	480
6	Caustic Lye	10.5	3-Buytl-1-Ol (recovery)	19.8
			Loss	20
	Total	**1132.3**	**Total**	**1132.3**

74) 4-Pentenoic Acid

Manufacturing Process:

A mixture of ally alcohol and isobutyric acid is added to triethylorthoacetate at its boiling point with distillation of alcohol formed during the reaction. This solution of caustic in water and PTC, is added slowly in reaction mass. The organic layer on drying and distillation gives the product.

Chemical Reaction:



Mass Balance:

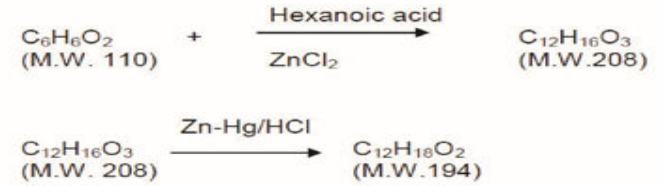
Sr No.	Input	Kgs	Output	Kgs
1	Tri Ethyl Ortho Acetate	232.5	Product	100
2	Ally Chloride	97	Distillate	319.8
3	Iso Butyric Chloride	0.8	Residue	16.1
4	Caustic Lye 50%	137.6	Aq. Layer	826
5	Water	548	Toluen (recycled)	97.9
6	Aliquat	2.4	LB	27.5
7	HCl 30%	249		
8	Toluene	100		
9	Salt	20		
	Total	**1387.3**	**Total**	**1387.3**

75) 4-Hexy Resorcinol

Manufacturing Process:

Hexy Resorcinol is prepared by two process, starting from Resorcinol, Starting material is reacted with zinc chloride and hexanoic acid, followed by cemensons reduction to get crude 4 - Hexy resorcinol.

Chemical Reaction:



Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	Recorsinol	1.088	Product	1
2	Hexanoic Acid	1.179	MDC	1
3	Zinc Chloride	1.417	Mother Liquor	6.6
4	Water	21.5	Hexanoic Acid - recovery	0.8
5	MDC	1.1	4-Hexanoyl	1.644

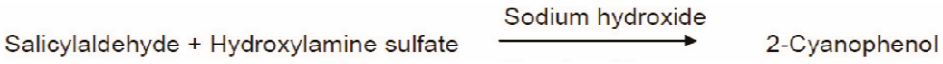
			Resorcinol	
6	Zinc	4.208	EtOH	2.2
7	Con. HCl	2	toluene	2.2
8	EtOH	3.9	Charcoal	0.13
9	HgCl2	0.316	Zinc	2
10	Toluene	2.63	Chloroform	0.4
11	Charcoal	0.131	Hepten	4
12	Chloroform	0.657	Effluent	24.73
13	n-Hepten	6.578		
	Total	**46.704**	**Total**	**46.704**

76) 2-Cyano Phenol

Manufacturing Process:

Mix Formic Acid, Sodium Hydroxide, Hydroxi amine sulfate and salicyladehyde under water circulation at 40 to 50 degree temperature under nitrogen. Heat at 115 degree temperature for 3 to 4 hours. Extract the product with chlorofom and wash with DM water and Brine to get final product.

Chemical Reaction:



Mass Balance:

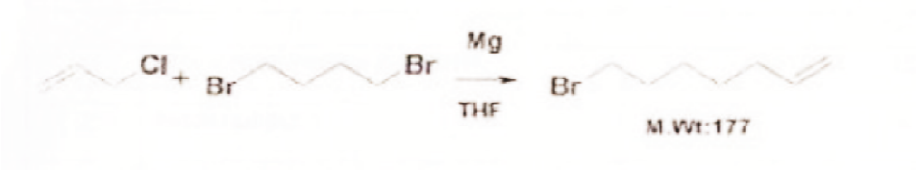
Sr No.	Input	Kgs	Output	Kgs
1	Formic Acid	6.248	Product	1
2	NaOH	1.125	Formic Acid	5
3	NH2OH2H2So4	1.265	Aq. Layer	27.636
4	Salicylaldehyde	1.562	Chloroform Recover	11.7
5	Water	23.436	Loss	1.3
6	Chloroform	13	Toluene Recover	7.0308
7	Toluene	7.812	Hexane Recover	2.7
8	Hexane Wash	3	Vapor Loss	1.0812
	Total	**57.448**	**Total**	**57.448**

77) 7 – Bromo, 1 - heptene

Manufacturing Process:

Grignalld reaction using ally Bromide/Chloride with magnasium turnings and 1,4 Dibromo butene, after worked up and concentrated of the organic layer crude product obtained, after distillation final product obtained.

Chemical Reaction:



Mass Balance:

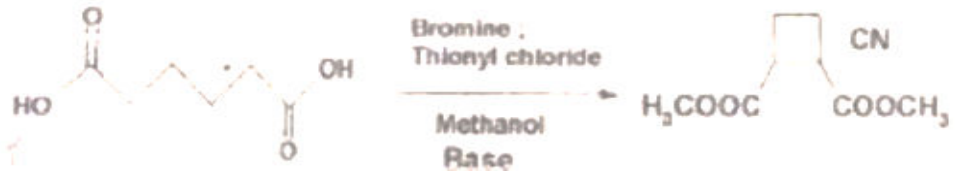
Sr No.	Input	Kgs	Output	Kgs
1	Allyl Bromide/Chloride	7.2	Product	1
2	1,4 Di Bromo Butan	4.07	Aq. Layer	23.79
3	Mg	2.52	Rec. toluene	6
4	Toluene	6.37	Loss	0.37
5	Water	16	Residue	5
	Total	**36.16**	**Total**	**36.16**

78) 1-Cyano-Cyclobutane-1,2-dicarboxylic acid dimethyl ester

Manufacturing Process:

TC, adipic acid and bromine was reacted at 80 degree temperature. After reaction methanol is added. Ethyl Acetate is mixed up and then filltered to reaction mass. Sodium Bi Carbonate washing were given to Ethyl acetate layer. Solid obtained was filtered product obatined was dried under vaccume.

Chemical Reaction:



Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	Adipic Acid	5.2	Product	3
2	Thionyl Chloride	12.74	Aq. Layer	60.75
3	Bromine	12.48	Rec. Methanol	20
4	Methanol	20.8	Rec. Ethyl Acetate	32
5	NaCN	3.33	Loss	2.12
6	Ethyl Acetate	33.32		
7	Water	30		

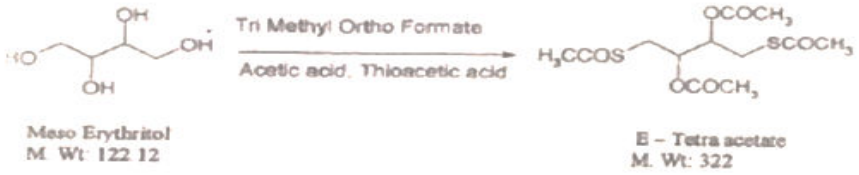
	Total	**117.87**	**Total**	**117.87**

79) E-Tetraacetate

Manufacturing Process:

Trimethyl orthoacetate, acetic acid, toluene and Meso Erythritol in reactor heat the mass at 6 degree temp. Add thioacetic acid and conitune the heating and add hexane and filter the mass wash with DM water and crystallise in methanol.

Chemical Reaction:



Mass Balance:

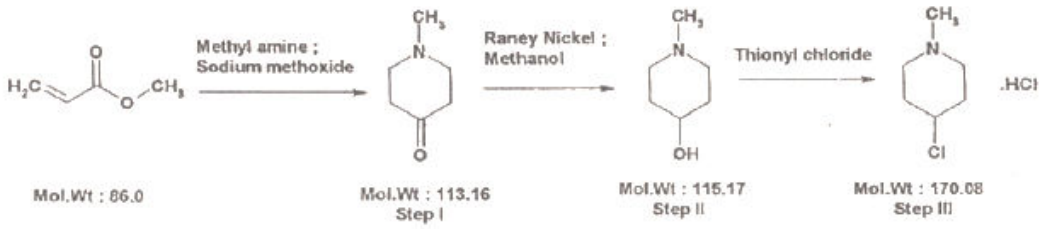
Sr No.	Input	Kgs	Output	Kgs
1	Trimethyl Ortho Acetate	1.8	Product	1
2	Acetic Acid	0.14	Hexane	3.5
3	Toluene	4.2	Rec. Toluene	4
4	Meso Erythritol	0.84	Loss	0.7
5	thioacetic Acid	1.75	Residue	3.53
6	Haxane	4		
	Total	**12.73**	**Total**	**12.73**

80) N-Methyl-4-Chloro Piperidine HCl

Manufacturing Process:

Methyl acrylate and methyl amine solution reacted at 50 degree temp. sodium methoxide solution in toluene and refulxed the reaction mass. Step 1 product obtained after toluene layer concentration. This reaction mass is produce stage 2 using raney nickel catalyst under hydrogen pressure. Step 2 product was reacted with TC, after reaction completion concenrated the reaction mass and isolated the Hydrochloric Salt of product.

Chemical Reaction:



Mass Balance:

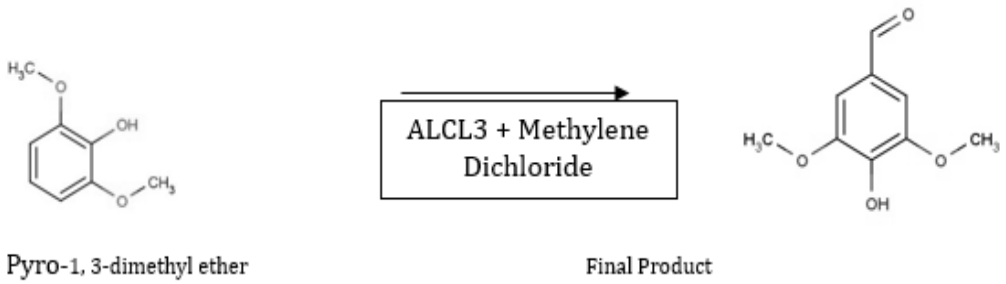
Sr No.	Input	Kgs	Output	Kgs
Stage - 1				
1	Methyl Arcylate	2.804	Stage -1	0.92
2	Methyl Amine Solution	0.505	Aq. Layer	4.449
3	Sodium Methoxide	1.06	Rec. Toluene	27
4	Toluene	28	Loss	1
5	Water	1		
	Total	**33.369**	**Total**	**33.369**
Stage - 2				
1	Stage - 1	0.92	Stage -2	0.797
2	Hydrogen	0.016	Rec. Raney Nickle	0.08
3	Raney Nickle	0.089	Rec. Methanol	4.5
4	Methanol	5	Loss	0.1
			Residue	0.548
	Total	**6.025**	**Total**	**6.655**
Stage - 2				
1	Stage - 2	0.797	Product	1
2	Thionyl Chloride	1.345	Rec. thionyl Chloride	1.142
	Total	**2.142**	**Total**	**2.142**

81) Syringaldehyde

Manufacturing Process:

TMB and AlCl3 reacte in presence of methyelen dichloride and pottasium di chloride to get final product meanwhile aq layer is send to Etp for further treatment.

Chemical Reaction:



Pyro-1, 3-dimethyl ether

Final Product

Mass Balance:

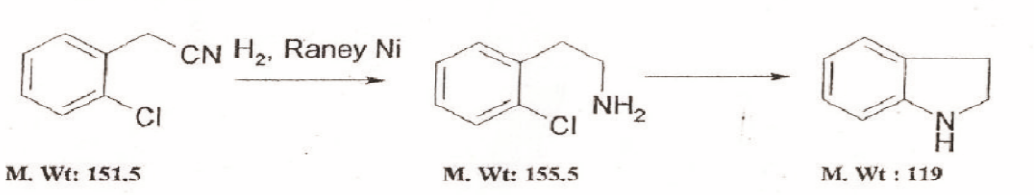
Sr No.	Input	Kgs	Output	Kgs
1	TMB	2.5	Product	1
2	AlCl3	3.06	Aq. AlCl3	16.5
3	Methylene Chloride	18	MDC	17
4	Pottasium Chloride	1.5	Vapour loss	1
5	Water	30	Effluent to ETP	19.56
	Total	**55.06**	**Total**	**55.06**

82) Indoline

Manufacturing Process:

Charge o-chloro phenyl acetonitrile methanol saturated with ammonia in flask add raney nickle 30% of starting material. Hydrogenation was carried out at ambient temeparture under 10 Kg/Cm2 pressure for 3-4 hours. Cool the reaction mass and filter it. Charge O-Chloro Phenethyl Amine catalyst and ammonia water raise the temeprature at 110 and stir for 4 hours and product is isolated.

Chemical Reaction:



M. Wt: 151.5 M. Wt: 155.5 M. Wt : 119

Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
Stage - 1				
1	O Chloro Phenyl Acetonitrile	2.105	Step - 1	1.481
2	Raney Nickle	0.693	Rec. methanol	48

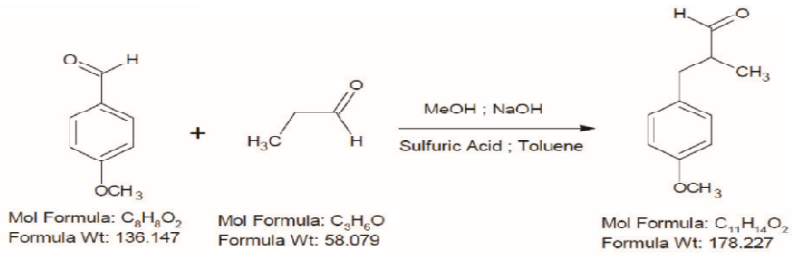
3	Methanol	50	Ammonia	10
4	Ammonia	10	Raney Nickle	0.693
5	NaCl	3	Effluent to ETP	41.119
	Water	35.6	Residue	0.105
	Total	**101.398**	**Total**	**101.398**
Stage - 2				
1	Step - 1	1.481	Step - 1	1
2	Ammonia	3.5	Effluent to ETP	3.981
	Total	**4.981**	**Total**	**4.981**

83) 2-p-Anisyl Propanal

Manufacturing Process:

P-Anisic aldehyde under goes condensation reaction with propionaldehyde in presence of sodium hydroxide which will give intermediate product. After distillation of intermediate product recovered product under hydrogenation reaction in presence of catalyst, Hydrogen & methanol which will give final product.

Chemical Reaction:



Mass Balance:

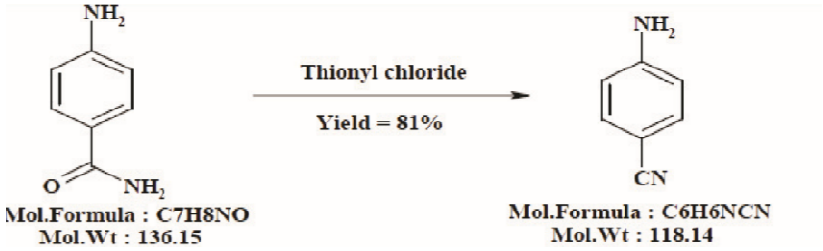
Sr No.	Input	Kgs	Output	Kgs
1	P-Anisic Aldehyde	0.984	Product	1
2	Propionaldehyde	0.451	Methanol	3.169
3	Toluene	0.063	Recover Toluen	0.059
4	Sodium Hydroxide	0.0136	Effluent to ETP	1.0292
5	Sulphuric Acid	0.023	Residue	0.112
6	Sodium Bi Carbonate	0.0394	Vapour Loss	0.4774
7	Water	1		
8	Catalyst	0.0026		
9	Hydrogen	0.015		
10	Methanol	3.255		
	Total	**5.8466**	**Total**	**5.8466**

84) 4-Amino Benzonitril

Manufacturing Process:

In this reaction 4-amino benzamide along with toluene & TC refluxed. After the reaction completion sodium hydroxide solution added. Layer seperated & to the organic layer charged hexane to precipitate the product.

Chemical Reaction:



Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	4-Amino Benzamide	1.429	Product	1
2	Toluene	6.214	Effluent to ETP	12.374
3	Thionyl Chloride	4.659	Toluene	6
4	Water	5.72	Hexane	0.4
5	NaOH	1.566	Vapour Loss	0.285
6	Hexane	0.471		
	Total	**20.059**	**Total**	**20.059**

85) Acrylamide Purified

Manufacturing Process:

This process is involves only drying. The raw material acrylamide is to be dried under vaccume 700-730 mmHg at 30-35 Degree temp. for 12-14 hours.

Chemical Reaction:

Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	Acrylamide	1.001	Pure Acrylamide	1
			Residue	0.001

	Total	**1.001**	**Total**	**1.001**

86) Ethylenediaminetetraacetic Acid Metal Chelate salts

Manufacturing Process:

Ethylenediaminetetraacetic Acid Metal Chelate salts prepared by using respected metal oxide by refluxing with EDTA disodium salt in HPLC grade water.

Chemical Reaction:

Mass Balance:

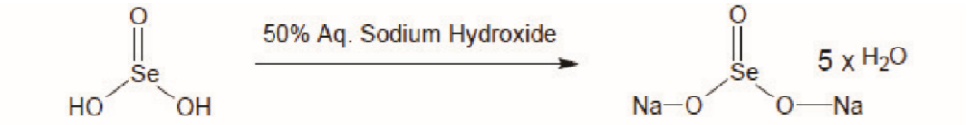
Sr No.	Input	Kgs	Output	Kgs
1	EDTA	0.8	Product	1
2	Metal Oxide (Zn/Cu/Mn)	0.2	Effluent to ETP	8
3	HPLC Grade Water	8		
	Total	**9**	**Total**	**9**

87) Sodium Selenite Pentahydrate

Manufacturing Process:

Dissolved Selenous acid in water at 25-30 degree temp. and react with 50% sodium hydroxide solution in a stiochiometric amount at 30-70 degree temp. Distillout water upto dryness to obtain product.

Chemical Reaction:



Mol Formula: H_2O_3Se
Formula Wt: 128.97408

Mol Formula: $H_{10}Na_2O_8Se$
Formula Wt: 263.014138

Mass Balance:

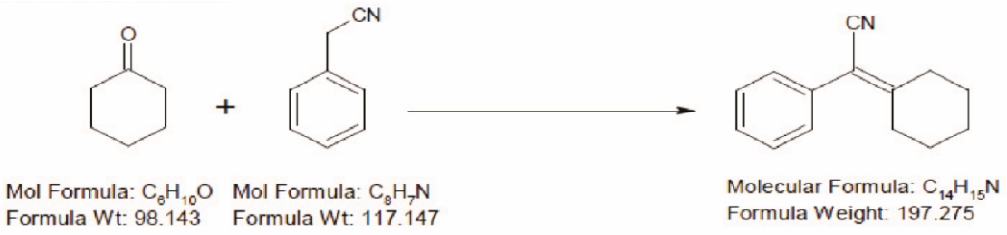
Sr No.	Input	Kgs	Output	Kgs
1	Selenious Acid	0.818	Product	1
2	Sodium Hydroxide	0.506	Effluent to ETP	8.324
3	Water	8		
	Total	**9.324**	**Total**	**9.324**

88) Peonile

Manufacturing Process:

The Condensation reaction between cyclohexanone and Benzyl Cynide in presence of Methanol as solvent and finally fractional distillation under high vaccume give final product.

Chemical Reaction:



Mass Balance:

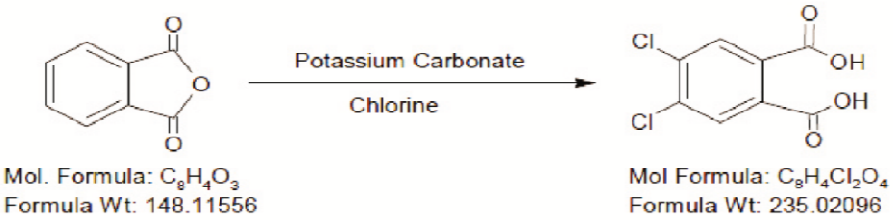
Sr No.	Input	Kgs	Output	Kgs
1	Cyclo Hexanone	1	Product	1
2	Benzyl Cyanide	0.9	Aq. Layer	6.5
3	Methanol	2	rec. Methanol	1.6
4	Water	5	Vapour Loss	0.4
5	Sulphuric Acid	0.35		
6	Sodium Hydroxide	0.25		
	Total	**9.5**	**Total**	**9.5**

89) 4,5-Dichloro phthalic Acid:

Manufacturing Process:

Pathalic Anhydride was chlorinated by passing chlorine to give product.

Chemical Reaction:



Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	Pathalic Anhydride	2.5	Product	1
2	Water	25	Aq. Layer to ETP	37.425
3	Pottassium carbonate	2.35		
4	Chlorine Gas	3		
5	50% Aq. NaOH	5.575		
	Total	**38.425**	**Total**	**38.425**

90) Sodium Sulphite:

Manufacturing Process:

In this process, Sodium Bi Sulphite is taken into reactor, after this pH is maintain with the help of caustic lye. Proper heat is given to the solution and powder of sodium sulphite is generated.

Chemical Reaction:

Mass Balance:

Sr No.	Input	Kgs	Output	Kgs
1	Sodium Bi Sulphite Solution	3.5	Product	1
2	Caustic Lye	1	Evoporation Loss	2
			ML use for Scrubbing Media	1.5
	Total	**4.5**	**Total**	**4.5**

91) Calcium Chloride Fused Powder / Lumps:

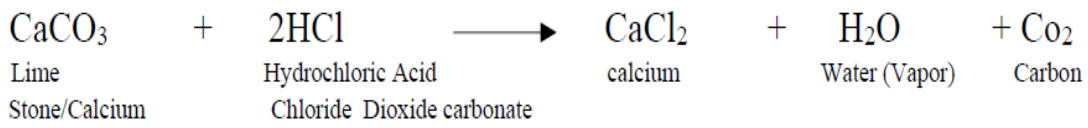
Manufacturing Process:

High purity limestone is use as source of Calcium Carbonate. The purification of product is mainly
Accomplished by adding Hydrated Lime Ca(OH)2 in order to order to removing Magnesium impurities.
Limestone will be fed at the top of the reactor and Hydrochloric acid (HCl) will flow counter current from the bottom. In the reactor Hydrochloric acid (HCl) will react with limestone to produce Calcium Chloride solution. Solution of Calcium Chloride obtained with the above reaction is filtered and then concentrated by evaporation of water in coal/firewood/Bricket/agro waste furnace to obtain minimum 74% CaCl2 fused Product.
Off gas from the reaction stage mainly Carbon dioxide with traces of HCl gas is passed through a scrubber to absorb HCl gas into water followed by alkali scrubber.

No liquid effluent generates from process, Scrubber water is recharged back to reaction stage being dilute.

HCl of 12 % - 15 % along with fresh HCl. Alkaline water is used in liquid Calcium solution to be filtered.

Chemical reaction:



Mass Balance:

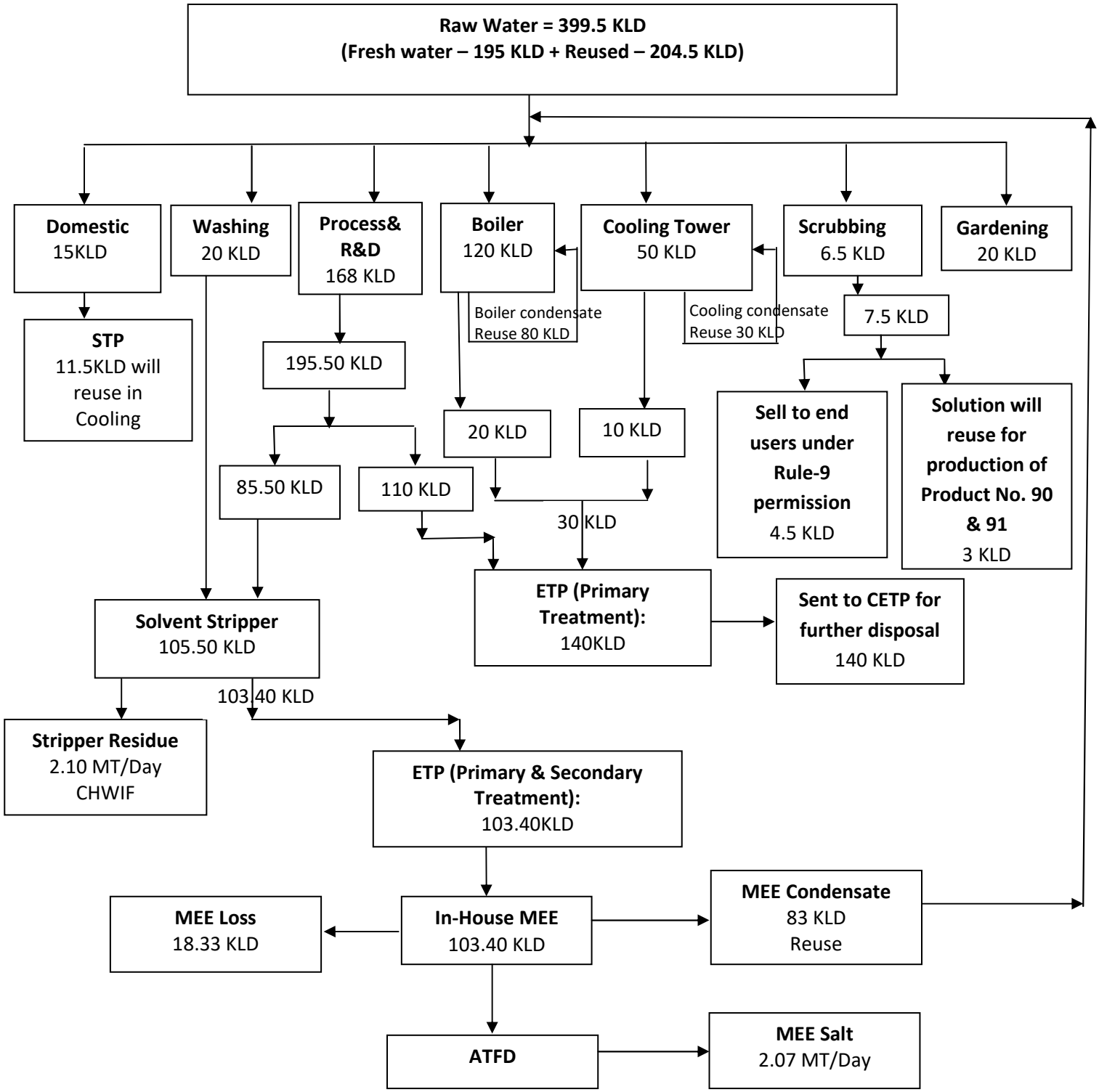
For 94% Purity				
Sr No.	**Input**	**Kgs**	**Output**	**Kgs**
1	HCl 25-30%	50	Product (94%)	23
2	Lime Stone 94%	25	Solid Waste	2.7
3	Hydrated Lime	0.5	Co2	9.8
			Vapour Loss	40
	Total	**75.5**	**Total**	**75.5**

For 74% Purity				
Sr No.	**Input**	**Kgs**	**Output**	**Kgs**
1	HCl 25-30%	50	Product (74%)	30
2	Lime Stone 94%	25	Solid Waste	2.7
3	Hydrated Lime	0.5	Co2	9.8
			Vapour Loss	33
	Total	**75.5**	**Total**	**75.5**

ANNEXURE: 4
WATER CONSUMPTION AND EFFLUENT GENERATION

Sr. No.	Category	Water Consumption (KL/Day)	Waste Water Generation (KL/Day)
1	Domestic	15	11.5
2	Gardening	20	--
3	**Industrial**		
	Process & R&D	168	195.50
	Washing	20	20
	Boiler	120	20
	Cooling	50	10
	Scrubbing	6.5	7.5
Total Industrial		**364.5**	**253**
Grand Total		**399.5**	**264.5**

WATER BALANCE DIGRAM:



ANNEXURE: 5

ETP DETAILS

Design flow:-

Stream I = 105.5 KL/day
Stream II = 140.0 KL/day

Stream I (105.50KLD)

First all non-toxic and biodegradable streams of wastewater shall be collected in Collection cum Neutralization Tank-01 (CNT-01) where caustic shall be added from CDT-01. Then, wastewater shall be pumped to Primary Settling Tank-01(PST-01). Here Alum and Polyelectrolyte shall be dosed from Alum Dosing Tank (ADT-01) and Polyelectrolyte Dosing Tank (PEDT-1) respectively by gravity to carry out coagulation by using Mixer. Then after, mixer will be stopped and wastewater shall be allowed to settle in Primary Settling Tank-01 (PST-01). Clear supernatant from PST-01 shall be collected in Aeration Tank (AT-01). Here, biodegradation of organic matter of the wastewater shall be carried out by bacteria (suspended growth) in the AT-01 and for that oxygen shall be supplied by 2 nos. of air blowers through diffusers. Air blowers also keep MLSS in suspension.
Then after, wastewater shall go to Secondary Settling Tank (SST-01). Here, the suspended solids shall be settled. Sludge shall be removed from bottom of SST-01 and pumped to AT-1 to maintain MLSS and excess activated sludge shall be sent to Sludge Drying Beds (SDB-01) and Clear supernatant from SST-01 shall be collected in Holding Tank (HT-01) before pumped to strippers (ST-01). Effluent from stripper shall be collected in MEE Feed Tank (MFT-01). Then effluent shall be sent to Multiple Effect Evaporator (MEE-01) for further treatment followed by Agitated Thin Film Dryer (ATFD-01) for solids dewatering. Condensate from MEE & ATFD shall collect in Condensate Storage Tank (CST-01) before Reuse for further treatment. Solids from ATFD-01 shall be collected and stored in HWSA for disposal in TSDF.

Sludge settled in PST-01 Shall be collected in Sludge Beds (SDBs-01-A/B) for sludge dewatering. Then, dewatered sludge shall be stored in HWSA and then ultimate disposal to TSDF Site.

Stream II (140.0 KLD)

First all streams of wastewater shall be collected in Collection cum Equalization Tanks-(CETs-01). Mixer is provided in CET-01 to keep all suspended solids in suspension and to provide proper mixing. Then effluent shall be pumped to Neutralization Tank -(NT-01) where Lime

shall be added from Lime Dosing tank. Then after, effluent shall have sent to Flash Mixer-1 (FM-01) where Alum and poly shall be added from ADT and PDT-01 respectively. Then after, coagulated wastewater shall be settled in Primary Settling Tank (PST-02).Clear supernatant from PST-02 shall be collected in Holding Tank (HT-01) before sent to CETP For Further Treatment.

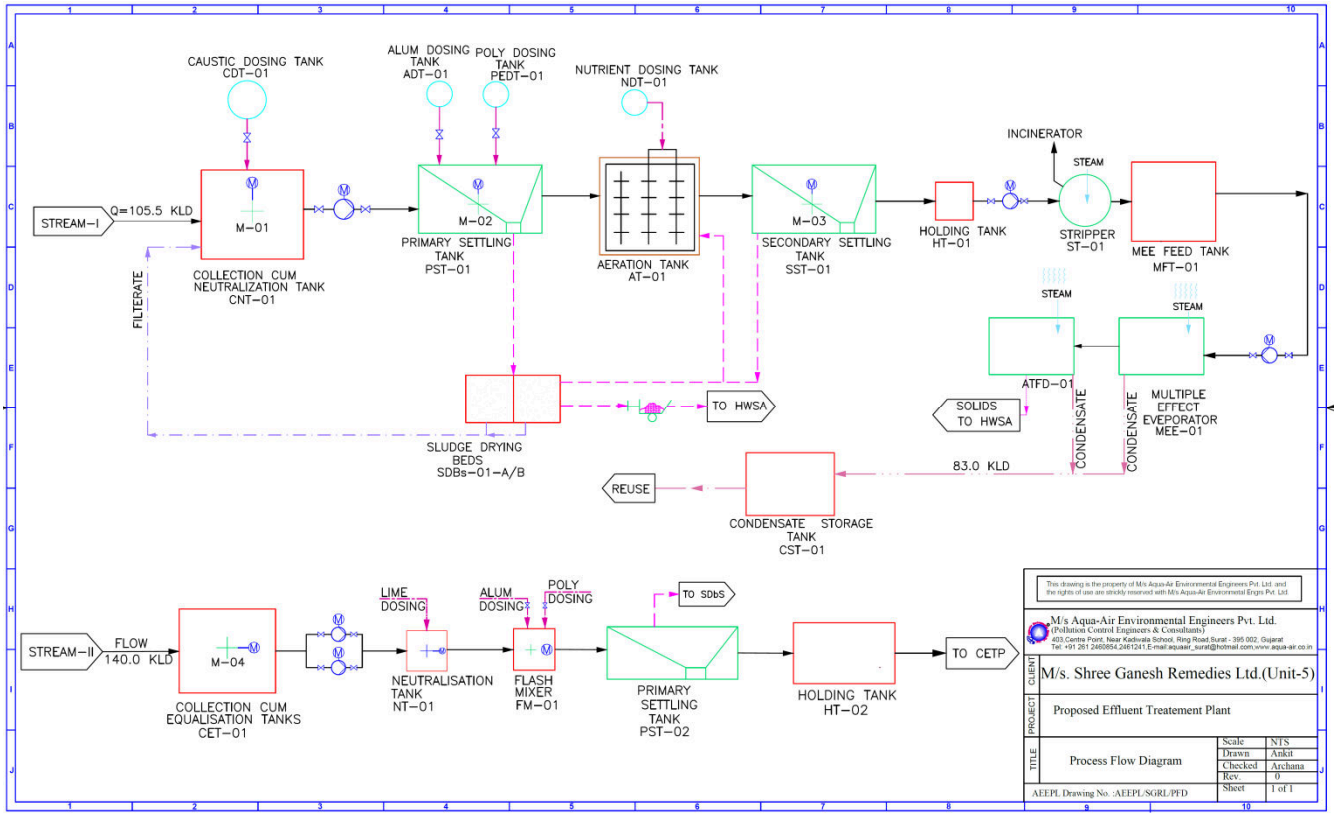
DETAILS OF ETP UNITS (FOR STREAM-1): (105.50 KLD)

S.N.	Name of unit	Size (m x m x m)	No.	MOC/ Remark
Stream-I Flow -105.50 KLD				
1	Collection cum Neutralization Tank (CNT-01)	55 KLD	1	RCC M30+A/A Bk. Lining
2	Primary Settling Tank (PST-01)	25 KLD	1	RCC M30
3	Holding Tank (HT-01)	45 KLD	1	RCC M30
4	Aeration Tank (AT-01)	80 KLD	1	RCC M30
5	Secondary Settling Tank (SST-01)	40 KLD	1	RCC M30
6	Stripper (ST-01)	103.0 M^3/D	1	SS316L
7	MEE Feed Tank (MFT-01)	50 KLD	1	RCC M30
8	Multi Effect Evaporator (MEE-01) with Agitated Thin Film Dryer (ATFD-01)	103.0 M^3/D	1	SS316L
9	Condensate Storage Tank (CST-01)	60 KLD	1	RCC M30
10	Sludge Drying Beds	3.0 x 2.0	1	RCC M30
11	Alkali Dosing Tank	1000 Lit	1	HDPE
12	Alum Dosing Tank	1000 Lit	1	HDPE
13	Poly Dosing Tank	1000 Lit	1	HDPE

DETAILS OF UNITS: (FOR STREAM -2): (140.0KLD)

140.0 KLD Stream -2				
1	Collection cum Equalization Tank (CET-01)	98 KL	1	RCC M30
2	Neutralization Tank (CNT-01)	10 KL	1	RCC M30
3	Flash Mixer (FM-01)	10 KL	1	RCC M30
4	Primary Settling Tank (PST-02)	40 KL	1	RCC M30
5	Holding Tank (HT-02)	45 KL	1	RCC M30

ETP Flow Diagram:



Characteristics of untreated and treated effluent:

Sr. No.	Parameter	Characteristics (mg/l)			
		Untreated	Solvent Stripper	Primary Treated	MEE Treated
1.	pH	4-6	4-6	7.0-7.5	6.5-7.5
2.	COD	12500	1200	950	<150
3.	BOD_3	4100	400	300	<50
4.	TDS	18000	18000	18800	<200

Sr. No.	Parameter	UntreatedStream	AfterPrimary Treatment	CETPInlet norms
1	pH	4.0-9.0	6.5-8.5	6.5-8.5
2	COD (mg/L)	1500-2000	<1500	1000
3	BOD_3 (mg/L)	500-600	<450	300
4	TSS (mg/L)	100-150	<100	250

ANNEXURE: 6

DETAILS OF HAZARDOUS SOLID WASTE MANAGEMENT AND DISPOSAL

No.	Name of waste	Source of Generation	Category No.	Proposed Quantity (MT/Annum)	Mode of Disposal
1	Discarded Containers/Bags/Liners	Storage & handling of Raw Materials	Sch-I/ 33.1	120	Collection, Storage, Transportation, Decontamination & Disposal by selling to registered recycler.
2	Used/Spent oil	Equipment & Machineries	Sch-I/ 5.1	15	Collection, Storage, Transportation and reused for Machine Lubrication / Given to GPCB registered reprocessor.
3	Spent Solvent	Process	Sch-I/ 28.6	18696	Collection, Storage, distill& Reuse within plant premises.
4	Distillation Residue	Solvent Distillation	Sch-I/ 20.3	560	Collection, Storage, Transportation and sell to co-processing or sent to Common Incineration Facility.
5	Stripper Residue	Solvent Stripper	Sch-I/ 35.3	766.50	
6	Spent Carbon	Process (Product No 6)	Sch-I/ 29.1	72	
7	MEE Salt	MEE	Sch-I/ 35.3	755.55	Collection, Storage, Transportation and sent to common TSDF.
8	Inorganic Salt	Process	Sch-I/ 29.1	891	
9	ETP Sludge	In-house ETP	Sch-I/ 35.3	1265.82	
10	Spent Catalyst	Process (Product No 10)	Sch-I/ 29.5	222	Collection, Storage, Transportation and sent to regenerator.
11	Sodium Chloride	Process (Product No 22 + Scrubber)	Sch-I/ 29.1	938.46	Collection, Storage, Transportation & Disposal by selling to authorized end user registered under

12	NaSH(30%)	Process (Product No 4)	Sch-I/ 29.1	708	Rule-9.
13	Dilute HBr	Scrubber	Sch-I/ 28.1	547.5	
14	Dilute NH3	Scrubber	Sch-I/ 28.1	547.5	
15	Sodium Bisulphite	Process (Product No 43 + Scrubber)	Sch-I/ 28.1	3034.8	Collect, Storage & will reuse in production of Sodium Sulfite within the plant premises.
16	HCl (30%)	Process (Product No 45) + Scrubber	Sch-II-Class B(15)	2976.30	Collect, Storage & will reuse in production of Calcium Chloride Fused Powder / Lumps within the plant premises.
Non-Hazardous Waste					
17	Ash from Boiler	--	--	93	Collect, Storage & Sell to Brick Manufacturer.

ANNEXURE: 7
DETAILS OF FLUE & PROCESS GAS EMISSION

FLUE GAS EMISSION

Sr. No.	SOURCE OF EMISSION	STACK HEIGHT	Fuel	PARAMETERS	AIR POLLUTION CONTROL SYSTEM
1	Boiler -(8 TPH)	30 Meters	Imported Coal –13.5 MT/Day	**Pollutants** SPM=≤ 150 mg/Nm^3 SOX=≤ 262 mg/Nm^3 NOX=≤ 94 mg/Nm^3	MCS + Bag filter + Water Scrubber
2	Boiler -(3 TPH)	30 Meters	Imported Coal – 6.5 MT/Day		MCS + Bag filter + Water Scrubber
3	Boiler -(3 TPH)	20 Meters	Natural Gas-150 M^3/Hr		Adequate stack height
4	Thermic Fluid Heater (3 Lac Kcal/Hr)	20 Meters	Natural Gas – 50 M^3/Hr		Adequate stack height
5	D G Set(1000 KVA)	12 Meters	HSD – 480 Liters/hr		Adequate stack height
6	D G Set(500 KVA)	12 Meters	HSD – 240 Liters/hr		Adequate stack height

OTHER UTILITIES TO BE PROPOSED

Sr. No.	Utility	CAPACITY	QUANTITY
1	Cooling Tower	600 TR	4 Nos.
2	Chilling Plant	40 TR	2 Nos.
3	Chilling Plant	100 TR	1 Nos.
4	Hot Air Generator	100000 KCal	2 Nos.

Details of Process Vent

Sr. No.	Vent attached to	Stack Height (Meter)	Pollutants	Air pollution Control System
1	Process vent(Product No -29)	12	HCl	Two Stage Water Scrubber
2	Process vent(Product No - 94)	12	Cl2	Two Stage Water+ Alkali Scrubber
3	Process vent (Product No - 26)	12	NH3	Two Stage Water Scrubber
4	Process vent (Product No - 83)	12	HBr	Two Stage Water Scrubber
5	Process vent (Product No - 3)	12	HCl & SO2	Two Stage Water +Alkali Scrubber

ANNEXURE: 8
DETAILS HAZARDOUS CHEMICAL STORAGE FACILITY

Sr. No.	Name of the Hazardous Substance	Maximum Storage	No of Vessels	Vessel Capacity	Mode of Storage	Type Of Hazard
1	Chlorine	19.8 MT	22	0.9 MT	Tonner	Toxic
2	Hydrogen	0.72	12	60 kg	Cylinder	Explosive
3	Ammonia Gas	9.96 MT	166	60 kg	Cylinder	Toxic
4	HCl Gas	4.98 MT	83	60 kg	Cylinder	Toxic
5	Bromine	0.9 MT	300	3 kg	Bottle	Toxic
6	Toluene	50 MT	2	25 MT	Tank	Flammable
7	Methanol	50 MT	2	25 MT	Tank	Flammable
8	Ethyl Acetate	20 MT	100	200 kg	Drum	Flammable
9	Chloroform	20 MT	100	200 kg	Drum	Toxic
10	Monochlorobenzene	20 MT	100	200 kg	Drum	Flammable/ Toxic
11	MCB	10 MT	50	200 kg	Drum	Flammable/ Toxic
12	Ethylene Dichloride	10 MT	50	200 kg	Drum	Toxic & Flammable
13	Hexane	10 MT	50	200 kg	Drum	Toxic & Flammable
14	Tetrahydrofuran	10 MT	50	200 kg	Drum	Toxic & Flammable
15	HCl	10 MT	50	200 kg	Drum	Corrosive
16	Sulphuric Acid	8 MT	40	200 kg	Drum	Corrosive
17	Thionyl Chloride	8 MT	40	200 kg	Drum	Flammable
18	Acetic Acid	8 MT	40	200 kg	Drum	Corrosive
19	Cyclohexene	8 MT	40	200 kg	Drum	Flammable
20	Caustic Lye	8 MT	40	200 kg	Drum	Toxic/corrosive
21	Methylene Chloride	8 MT	40	200 kg	Drum	Toxic
22	Dimethyl Sulphate	8 MT	40	200 kg	Drum	Toxic
23	Sodium Methoxide	8 MT	40	200 kg	Drum	Flammable/ Toxic
24	Xylene	6 MT	30	200 kg	Drum	Flammable/ Toxic
25	Acetyl Chloride	5 MT	25	200 kg	Drum	Flammable/ Toxic
26	Benzyl Cyanide	5 MT	25	200 kg	Drum	Toxic
27	Triethyl Amine	5 MT	25	200 kg	Drum	Flammable
28	Liq Ammonia	2 MT	10	200 kg	Drum	Toxic
29	DiMethylFormamide	1 MT	5	200 kg	Drum	Flammable

30	Sodium Cyanide	1 MT	200	50 kg	Bag	Toxic

ANNEXURE – 9

SOCIO - ECONOMIC IMPACTS

1) EMPLOYMENT OPPORTUNITIES

The manpower requirement for the proposed project is expected to generate some permanent jobs and secondary jobs for the operation and maintenance of plant. This will increase direct / indirect employment opportunities and ancillary business development to some extent for the local population. This phase is expected to create a beneficial impact on the local socio-economic environment.

2) INDUSTRIES

Required raw materials and skilled and unskilled labors will be utilized maximum from the local area. The increasing industrial activity will boost the commercial and economical status of the locality, to some extent.

3) PUBLIC HEALTH

The company regularly examines, inspects and tests its emission from sources to make sure that the emission is below the permissible limit. Hence, there will not be any significant change in the status of sanitation and the community health of the area, as sufficient measures have been taken and proposed under the EMP.

4) TRANSPORTATION AND COMMUNICATION

In brief, as a result of the proposed project there will be no adverse impact on sanitation, communication and community health, as sufficient measures have been proposed to be taken under the EMP. The proposed project is not expected to make any significant change in the existing status of the socio - economic environment of this region.

ANNEXURE – 10

PROPOSED DRAFT TERMS OF REFERENCE:

1. **Project Description**
   - Justification of project.
   - Promoters and their back ground
   - Project site location along with site map of 5 km area and site details providing various industries, surface water bodies, forests etc.
   - Project cost
   - Project location and Plant layout.
   - Water source and utilization including proposed water balance.
   - Product spectrum (proposed products along with production capacity) and process
   - List of hazardous chemicals.
   - Mass balance of each product
   - Storage and Transportation of raw materials and products.

2. **Description of the Environment and Baseline Data Collection**
   - Micrometeorological data for wind speed, direction, temperature, humidity and rainfall in 5 km area.
   - Existing environmental status Vis a Vis air, water, noise, soil in 5 km area from the project site. For SPM, RSPM, SO_2, NOx.
   - Ground water quality at 5 locations within 5 km.
   - Complete water balance

3. **Socio Economic Data**
   - Existing socio-economic status, land use pattern and infrastructure facilities available in the study area were surveyed.

4. **Impacts Identification And Mitigatory Measures**
   - Identification of impacting activities from the proposed project during construction and operational phase.
   - Impact on air and mitigation measures including green belt
   - Impact on water environment and mitigation measures
   - Soil pollution source and mitigation measures
   - Noise generation and control.
   - Solid waste quantification and disposal.

5. **Environmental Management Plan**
   - Details of pollution control measures
   - Environment management team
   - Proposed schedule for environmental monitoring including post project

6. **Risk Assessment**

- Objectives and methodology of risk assessment
- Details on storage facilities
- Process safety, transportation, firefighting systems, safety features and emergency capabilities to be adopted.
- Identification of hazards
- Consequence analysis through occurrence & evaluation of incidents
- Disaster Management Plan.

7. **Information for Control of Fugitive Emissions**
8. **Post Project Monitoring Plan for Air, Water, Soil and Noise.**
9. **Information on Rain Water Harvesting**
10. **Green Belt Development plan**

ANNEXURE – 11
GIDC ALLOTMENT LETTER

Gujarat Industrial Development Corporation
(A Govt. of Gujarat Undertaking)
Office of the Regional Manager
Office of the Regional Manager, Gujarat Industrial Development Corporation,Commercial Plot No.320-2, Asian Trade Centre, Near Asian Paint Chowkadi,GIDC,Ankleshwar-393002 , Phone - (02646) 221351,221451,221403 , Mail Id - rmank@gidcgujarat.org , website: www.gidc.gujarat.gov.in

No. GIDC/RM/ANK/TRF/FTO/DAH5/249 **Date : 28/09/2021**

Office Order

Sub: Transfer of Industrial Plot No. **D-2/17/16** at **Dahej-II** Industrial Estate

A Industrial Plot No. **D-2/17/16** admeasuring about **40554.30** Sq.mt. in **Dahej-II** estate. was allotted to **DHARI CHEMICALS LIMITED (1)Akshar Jyot Pvt Ltd Wholly owned subs of SGRL :0.00 %(2)Chetan Bhanuchandra Shah :48.94 %(3)Dipak Bhanuchandra Shah :49.37 %(4)Dipti Dipak Shah :0.63 %(5)Manisha Chetan Shah :1.06 %**. The Lease Deed / Conveyance Deed / Licence Agreement was executed on **28/07/2021**. The Lessee had applied to the Corporation for transfer of the said Industrial Plot in favour of **Shree Ganesh Remedies Ltd Unit 5 Public Limited Company** directors / shareholders **(1)Akshar Jyot Pvt Ltd Wholly owned subsidiary of SGR :26.00 %(2)Shree Ganesh Remedies Ltd :74.00 %**. Certain terms and conditions have been stipulated by the Regional Manager, Ankleshwar as per Provisional Transfer Order no. **GIDC/RM/ANK/TRF/PTO/DAH5/308** dtd. **27/09/2021**

Lessee has paid all dues of the Corporation up to Date. Lesse has also paid the Corporation's share in Transfer fee amounting to Rs.**(Nil)**, NU Penalty amounting to Rs.**(Nil)** and additional transfer fees amounting to Rs.**(Nil)** @ Rs.**2240.00** per Sq.mt. The **Deed of Supplementary Agreement** has therefore been executed on **28/09/2021** between the Corporations, transferor & transferee. The plot now therefore stands transferred in the name of **Shree Ganesh Remedies Ltd Unit 5 Public Limited Company Akshar Jyot Pvt Ltd Wholly owned subsidiary of SGR, Shree Ganesh Remedies Ltd** with effect from **28/09/2021** for establishment of **Chemical and Chemical product** industry. This transfer permission shall not be considered as valid under the building bye-laws of the Corporation, if any unauthorized construction is carried out by Transferee. If any unauthorized construction is carried out, the same shall not be considered that Corporation has regularized the same. Transferee shall have to remove/demolish non violative construction or shall have to get approved from the Competent Authority. The water requirement as per transfer application is **73000** KLD per year only.

Validity unknown
Digitally signed by DS Gujarat Industrial Development Corporation 388
Date: 2021.09.28 19:46:55 IST
Reason: V S RATHWA REGIONAL MANAGER
Location: Ankleshwar

Thanking you,

Yours faithfully,

Regional Manager,
G.I.D.C., Ankleshwar.

To,

1. **Shree Ganesh Remedies Ltd Unit 5**
   Plot NO.6011-12, GIDC Industrial Estate, Ankleshwar - 393002
   Along with a copy of Deed of Supplementary Agreement

2. **DHARI CHEMICALS LIMITED**
   Plot No. 261, Ranujadhan Society, Puna, Surat City, Surat – 395006

Copy To :

1. The Executive Engineer, GIDC, Bharuch.
2. Accounts Officer, GIDC, Ankleshwar.
3. Deputy Executive Engineer, GIDC, Bharuch.
4. EDP, GIDC, Ankleshwar.

Validity unknown
Digitally signed by DS Gujarat Industrial Development Corporation 388
Date: 2021.09.28 19:46:58 IST
Reason: V S RATHWA , REGIONAL MANAGER
Location: Ankleshwar

ANNEXURE- 12

UNDERTAKING OF NO BANNED CHEMICALS/PRODUCTS IS PROPOSED TO BE MANUFACTURED

SHREE GANESH **REMEDIES** LIMITED
Manufacturer of API Intermediates & Speciality Chemicals

UNDERTAKING

We, M/s. Shree Ganesh Remedies Ltd (Unit-5) located at Plot No. D-2/17/16,Dahej - II, GIDC Estate, Tal: Vagra, Dist:Bharuch, Gujarat-392130, India hereby solemnly undertake that company will not manufacture any banned pesticides products or chemicals.

Thanking you

Yours faithfully,

For M/S.SHREE GANESH REMEDIES LTD (UNIT-5)

Mr. Akash Kanani

(Executive Environment Engineer)

Head Office (Unit-1) :
Plot No. 6011-12, GIDC Estate,
Ankleshwar - 393 002. Gujarat (INDIA)
Ph.: +91 9614961469, 7574976076
CIN No. : L24230GJ1995PLC025661

(Unit-2) :
Plot No. 6714/2,-6715 GIDC Estate,
Ankleshwar - 393 002. Gujarat (INDIA)
Ph.: +91 9614961469, 7574976076
GSTIN : 24ABACS1471R1ZQ (Zero)

(Unit-5) :
Plot No. D-2/17/16,
GIDC Estate,
Dahej-II, Ta. Vagra,
Gujarat (INDIA)

www.ganeshremedies.com
WEBSITE
contact@ganeshremedies.com
EMAIL