APPLICATION FOR APPROVAL
OF
TERMS OF REFERENCE

FOR

OBTAINING ENVIRONMENT CLEARANCE
(FOR EXPANSION)

OF

M/s. SYNTHOKEM LABS PVT.LTD, UNIT - II

PLOT NO'S: 222 to 224 & 235 to 237, PHASE – II, IDA,
PASHAMAILARAM, PATANCHERU (M), MEDAK (D),
ANDHRA PRADESH.

Prepared By:

Rightsource Industrial Solutions Pvt. Ltd
Plot No.203, H.No.5-36/203, Prashanthi Nagar,
IDA, Kukatpally, Hyderabad-500072.
Ph: 040-65873137,23070602,23075699, 40126589
Fax: 040-23800602, Mail: info@rightsource.co.in.

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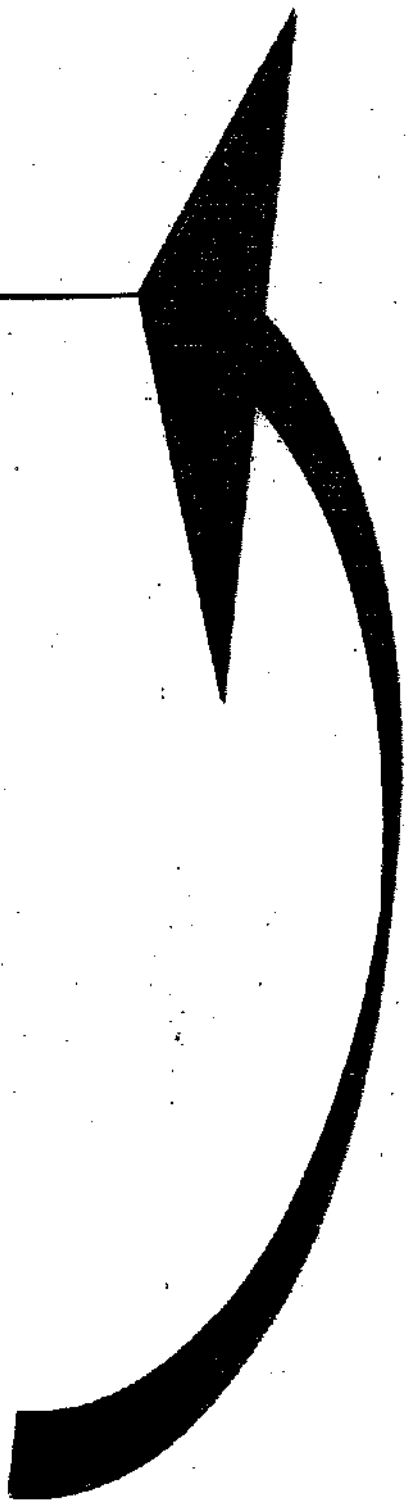

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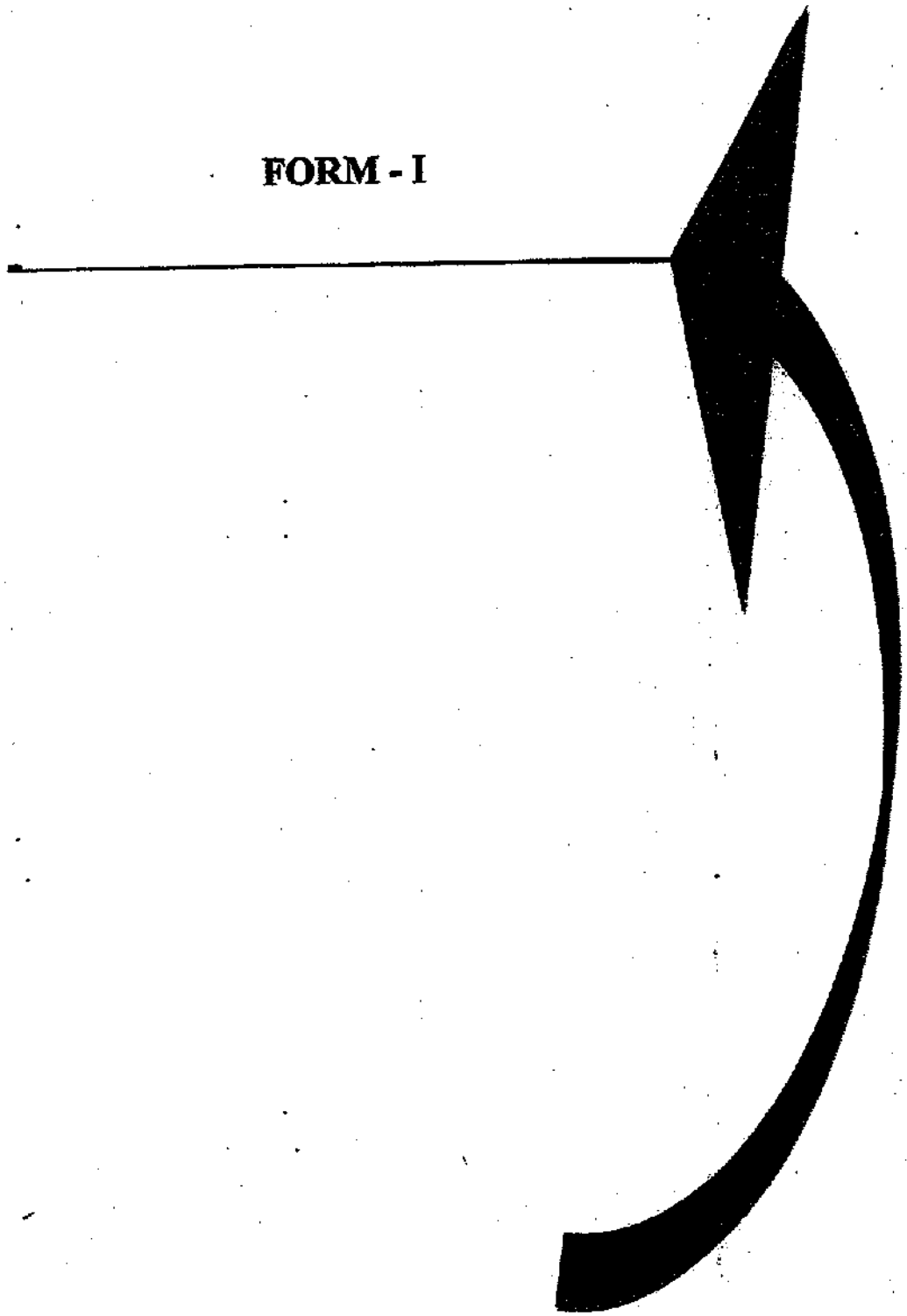
FORM - I



APPENDIX - I
FORM -1

I) Basic information

S.NO	ITEM	DETAILS
1.	Name of the project/s	**M/s. SYNTHOKEM LABS PVT. LTD., UNIT-II**
2.	S.No.in the schedule	5 (f)
3.	Proposed capacity / area / length / tonnage to be handled/command area/lease area/ number of wells to be drilled	Area Existing: [Expansion within existing land area] Proposed capacity after Expansion : 2064.72 TPA Proposed products with capacities are Enclosed as **Annexure - I**
4.	New/Expansion/Modernization	Expansion
5.	Existing Capacity/Area etc.	Existing capacity : 165.99 TPA Area existing : 5.78 Acres (23390.65 SQM)
6.	Category of Project i.e. 'A' or 'B'	Category – A
7.	Does it attract the general condition? If yes, please specify.	Yes. The unit is located in notified Industrial area Critically polluted Area of Patancheru located at a distance of 8.0KM from the site
8.	Does it attract the specific condition? If yes, please specify.	NO
9.	Location	17^0 32'10.55" North Latitude 78^0 10' 42.05"East Longitude Plot No's: 222-224 & 235-237, Phase-ll, IDA, Pashamailaram Patancheru (M), Medak (Dt), - 502319. Andhra Pradesh. Topo Map Enclosed as **Annexure-II**
10.	Nearest railway station Airport Along with distance in kms.	Shankarpalli Railway Station – 10 KMs (NNE) Rajeev Gandhi International Air Port (shamshabad) - 42.8 KMs (SE)
11.	Nearest Town, City, District Headquarters Along with distance in Kms.	Kukatpally - 23.70 KMs (ESE) Secunderabad – 35.4KMs (SE) Sangareddy –17 KMs
12.	Village Panchayats, Zilla Parishad, Municipal Corporation, Local Body (Complete postal addresses with telephone nos. to be given)	IALA (Industrial Area Local Authority) Pashamailaram, Patancheru (M), Medak (Dt).
13.	Name of the applicant	K. Lakshma Reddy
14.	Registered Address	**M/s. Synthokem Labs Pvt. Ltd., Unit-II.** P. B. No.1911,B-5,Industrial Estate, Sanathnagar, Hyderabad - 500018. Andhra Pradesh.

15.	Address for correspondence:	M/s. Right source Industrial Solutions Pvt. Ltd. Plot No.203,H.No.536/203,Prashantinagar, IDA, Kukatpally, Hyderabad-500072.
	Name	K. Lakshma Reddy
	Designation (Owner/Partner/CEO)	Vice President, Corporate operations.
	Address	P. B. No.1911,B-5,Industrial Estate, Sanathnagar, Hyderabad - 500018. Andhra Pradesh.
	Pin Code	500072
	E-mail	info@rightsource.co.in sriram@synthokemslabs.com
	Telephone No.	040-23812956,040-23075699, 40126589
	Fax No.	040-23070602
16.	Details of alternative sites examined, if any. Location of these sites should be shown on a Topo sheet	Not Applicable
17.	Interlinked Projects	Not Applicable
18.	Whether separate application of interlinked project has been submitted?	No
19.	If Yes, date of submission	--
20.	If no, reason	--
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, 972? (c) The C.R.Z Notification, 1991?	Not Applicable
22.	Whether there is any Government Order/Policy relevant/relating to the site?	G.O.Ms No.62 (Ban Notification), Dt.20/04/1999 Now it has lifted as per G.O.Ms No.95, (Ban relaxation), Dt.25/07/2013. Enclosed as **Enclosure - 7**
23.	Forest land involved (hectares)	No
24.	Whether there is any litigation pending against the project and/or land in which the project is propose to be setup? (a) Name of the court (b) Case No. (c) Orders/directions of the Court, if any and its relevance with the proposed project.	NIL

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.)

S. 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 use, land cover or topography including increase in intensity of land use (with respect to local land use plan)	No	The proposal is expansion of the manufacturing capacity in the existing API Manufacturing unit.
1.2	Clearance of existing land, vegetation and buildings?	No	Proposed expansion in existing plant area
1.3	Creation of new land uses?	No	Existing land use - Industrial
1.4	Pre-construction investigations e.g. bore houses, soil testing?	No	Existing unit.
1.5	Construction works?	Yes	Construction of Production Blocks and utility blocks. Site Plan Enclosed - **Annexure-III**
1.6	Demolition works?	No	No demolition work
1.7	Temporary sites used for construction works or housing of construction workers?	No	Local Villagers will be employed for construction Activities
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations	No	Not Applicable.
1.9	Underground works including mining or tunneling?	No	Not Applicable.
1.10	Reclamation works?	No	Not Applicable.
1.11	Dredging?	No	Not Applicable.
1.12	Offshore structures?	No	Not Applicable.
1.13	Production and manufacturing processes?	Yes	Manufacturing processes Enclosed as **Annexure - IV**
1.14	Facilities for storage of goods or materials?	Yes	Common facility for storage of raw materials and solvents will be used
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	Yes	All the Liquid Waste generated from the plant will be treated in ZLD System. All the solid wastes will be segregated and stored at an elevated platform under roof with leachate collection system, and disposed to Cement Industries, TSDF based on their Calorific values.

			Some of the wastes like Containers, Liners etc., will be sold to SPCB authorized buyers. Used Oils and grease will be sold to authorize Reprocessors. Lead acid batteries send back to suppliers for buyback of New Batteries
1.16	Facilities for long term housing of operational workers?	No	Not Requires as there are nearby villages can accommodate the work force.
1.17	New road, rail or sea traffic during construction or operation?	No	Not Required.
1.18	New road, rail, air, waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	No	Not Required
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	No	-
1.20	New or diverted transmission lines or pipelines?	No	-
1.21	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	No	-
1.22	Stream crossings?	No	-
1.23	Abstraction or transfers of water from ground or surface waters?	Yes	Water will be drawn from the APIIC (supply). Roof water harvesting will be suggested for recharge of Ground water to the maximum possible extent.
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	No	Nil (There will not be any changes in water bodies or the land surface affecting drainage or run-off)
1.25	Transport of personnel or materials for construction, operation or decommissioning?	No	
1.26	Long-term dismantling or decommissioning or restoration works?	No	Not Applicable
1.27	Ongoing activity during decommissioning which could have an impact on the environment	No	Not Applicable

1.28	Influx of people to an area in either temporarily or permanently?	Yes	The proposed expansion shall increase the employment potential
1.29	Introduction of alien species?	No	No Introduction of alien species
1.30	Loss of native species or genetic diversity?	No	No Loss of native species or genetic diversity
1.31	Any other actions?	No	Every care shall be taken to protect the ecology of the surroundings

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)

S. No	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
2.1	Land especially undeveloped or agricultural land (ha)	NO	Existing unit
2.2	Water (expected source & competing users) unit: KLD	Yes	190.88 KLD , APIIC water supply Requirement of Water Enclosed as - **Annexure - V**
2.3	Minerals (MT)	No	No Minerals required
2.4	Construction material – stone, aggregates, sand/soil (expected source (MT)	No	-
2.5	Forests and timber (source – MT)	No	No Timber will be used.
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)	Yes	• **Electricity**–From-APCPDCL–1000KVA • **Generators** **Existing:** 250 KVA – 2 No's 250 KVA -- 1No - Dropped. **Proposed:** 500 KVA – 2No's. **Fuel:** HSD about 750 Liters per day. • **Boiler :** **Existing:** 2.0 TPH as stand by. (Oil fired) **Proposed:** 4.0 TPH Coal Fired Boiler • Coal to the maximum of 12.5 MT is required and will be procured from the local sources. • **Thermic Fluid Heater:** **Existing:** 4,00,000 Kcl/hr (Dropped) **Proposed:** 6,00,000 Kcl/hr
2.7	Any other natural resources (use appropriate standard units)	No	None

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.

S. 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	Enclosed
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	No	No such occurrence envisaged , since waste water generated will be treated properly and reused as per norms of PCB
3.3	Affect the welfare of people e.g. by changing living conditions?	Yes	Shall increase the employment potential for locals thereby effect the living conditions towards betterment
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.,	No	None
3.5	Any other causes	No	Nil

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

S. 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	Not applicable
4.2	Municipal waste (domestic and or commercial wastes)	Yes	Commercial waste like empty cement bags, Iron scrap etc. will be sold to scrap buyers after the construction phase. Domestic waste like used paper, label, cartoons will be disposed to the scrap buyers. Organic waste from canteen will be disposed as per the local Panchayath / Municipal disposal mechanism.

4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	Yes	As per the **Annexure - VI**
4.4	Other industrial process wastes	Yes	As per **annexure –VI**
4.5	Surplus product	No	Surplus production is not envisaged since production will be as per the market demand only.
4.6	Sewage sludge or other sludge from effluent treatment	Yes	As per **Annexure -VI**
4.7	Construction or demolition wastes	Yes	Construction activity involves creation of additional utilities.
4.8	Redundant machinery or equipment	No	None
4.9	Contaminated soils or other materials	No	Nil
4.10	Agricultural wastes	No	Nil
4.11	Other solid wastes	Yes	As per **Annexure – VI**

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

S. 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	As per Enclosed - **Annexure –VII**
5.2	Emissions from production processes	Yes	All the reactors are connected with primary and secondary condensers with chilled brine Circulation to reduce the solvent losses and to control the emissions of volatile compounds. All the gaseous emissions generating during the production processes are mitigated by using suitable scrubbing system with suitable media. Quantities of gaseous emissions. As per the Enclosed **Annexure – VIII**
5.3	Emissions from materials handling including storage or transport	Yes	All the solvents are stored in storage tanks are connected with vent condensers .All the solvents will be pumped to the day tanks in production blocks in a closed pipe line system to avoid the fugitive losses of the volatiles.

5.4	Emissions from construction activities including plant and equipment	Yes	Negligible quantity of fugitive dust will generate.
5.5	Dust or odors from handling of materials including construction materials, sewage and waste	Yes	Negligible quantity of dust will arise in construction phase. During the operational phase possible sources are Coal storage areas and coal ash storage areas. Coal will be stored under the roof and on a Masonry platform under the roof. Coal ash will be stored on a platform and frequent sprinkling of water will arrest the flying dust.
5.6	Emissions from incineration of waste	No	No incineration of waste in the site
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	No	No burning activity in the site. No emissions will generate
5.8	Emissions from any other sources	Yes	A little quantity of emissions will arise during the dispensing of Raw materials from the ware house, the dispensing area in the ware house is under the air handling system hence their will not be any health nuisance to the health of the workers as the air handling system will arrest these emissions and dispose into atmosphere as their quantity is very negligible

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

S. No	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	Yes	Material transport and construction equipment shall be source of noise, while transfer pumps ,vacuum systems, DG sets are the sources of noise during operation
6.2	From industrial or similar processes	Yes	• There is a chance of noise pollution from DG sets which are used as stand by .the DG sets are covered with an acoustic enclosure and with silencers will mitigate this noise. • Pumps, motors, gearboxes etc will generate little bit noise and will be mitigated with regular maintenance. • Apart from all these a thick plantation of green belt is

			proposed along with periphery of the compound wall will arrest the noise nuisance during the operation phase.
6.3	From construction or demolition	Yes	The noise generating from the construction / commissioning equipment is very low as it is a small construction activity.
6.4	From blasting or pilling	No	None, since no blasting or pilling during construction
6.5	From construction or operational traffic	No	Negligible
6.6	From lighting or cooling systems	No	Negligible.
6.7	From any other sources	No	Nil

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

S. 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 solvents are stored in storage tanks will be pumped to the day tanks in production blocks in a closed pipe line system to avoid spillages. The hazardous materials which are sending for production purpose from the Ware House to production Blocks will be sent in closed containers to avoid the spillage of such components.
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	Yes	All the effluent generated will be collected on Above ground Storage tanks to avoid the contamination with soil. These tanks are lined with acid/alkali proof lining. Domestic effluent will\ be sent to septic Tank and the overflow is used for biological treatment to achieve ZLD. All the effluent will be treated in ZLD System and the recovered water will be reused. Hence, There s no impact due to water effluent generating from this unit.
7.3	By deposition of pollutants emitted to air into the land or into water	Yes	Stack emission is controlled by providing adequate height of the chimney and Bag filters will be provided to the boiler.

7.4	From any other sources	Yes	A little quantity of emissions will arise during the dispensing of Raw materials from the warehouse ,the dispensing area in the ware house is under the air handling system hence their will not be any health nuisance to the health of the workers as the air handling system will arrest these emissions and dispose into atmosphere as their quantity is very negligible
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	No	Not Applicable

8. Risk of accidents during construction or operation of the Project, which could affect human health or the environment

S. 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	No explosions will occur during construction. During production-operations, all inbuilt safety precautions will be adopted and there will not be any damage to environment or human health.
8.2	From any other causes	Yes	Explosions and fire will be possible to occur, during the handling of hazardous chemicals through static electricity which is dissipated by provide earthing to the equipment.
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc)?	No	No natural disasters are envisaged, since site is in an area where such occurrences do not arise

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.

S. 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 supporting laities, 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	The project shall enhance the socioeconomic status of the area by increasing the demand for housing, and improving employment. there are no major support industries for this plant
9.2	Lead to after-use of the site, which could have an impact on the environment	No	
9.3	Set a precedent for later developments	No	
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects	No	The baseline environmental status of the surrounding areas is within the prescribed limits as observed from the secondary.

10. Environmental Sensitivity

S. No	Areas	Name/ Identity	Aerial distance (within 25 km) Proposed project location boundary
10.1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	-	None
10.2	Areas which are important or sensitive for ecological reasons – Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	Water bodies	Tank – Isnapur – 1.0 KMs (ENS) Kotta cheruvu – 1.6 KMs (N) Pedda cheruvu – 4.25 KMs (NE) Lakdaramcheruvu – 5.2 KMs (NNE)

10.3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	-	None
10.4	Inland, coastal, marine or underground waters	-	None
10.5	State, National boundaries	-	None
10.6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	-	None
10.7	Defense installations	-	None
10.8	Densely populated or built-up area	Yes	Patancheru – 8.8 KMs (E)
10.9	Areas occupied by sensitive man-made land uses (hospitals, places of worship, community facilities)	Yes	Pashamailaram -1.4 KMs (SE) Kukatpally – 23.70 KMs (ESE)
10.10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals).	Water bodies	Kotta cheruvu – 1.6 KMs (N) Pedda cheruvu – 4.25 KMs (NE) Lakdaram cheruvu – 5.2 KMs (NNE)
10.11	Areas already subjected to pollution or environmental damage. (Those where existing legal environmental standards are exceeded)	No	None
10.12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions).	No	None

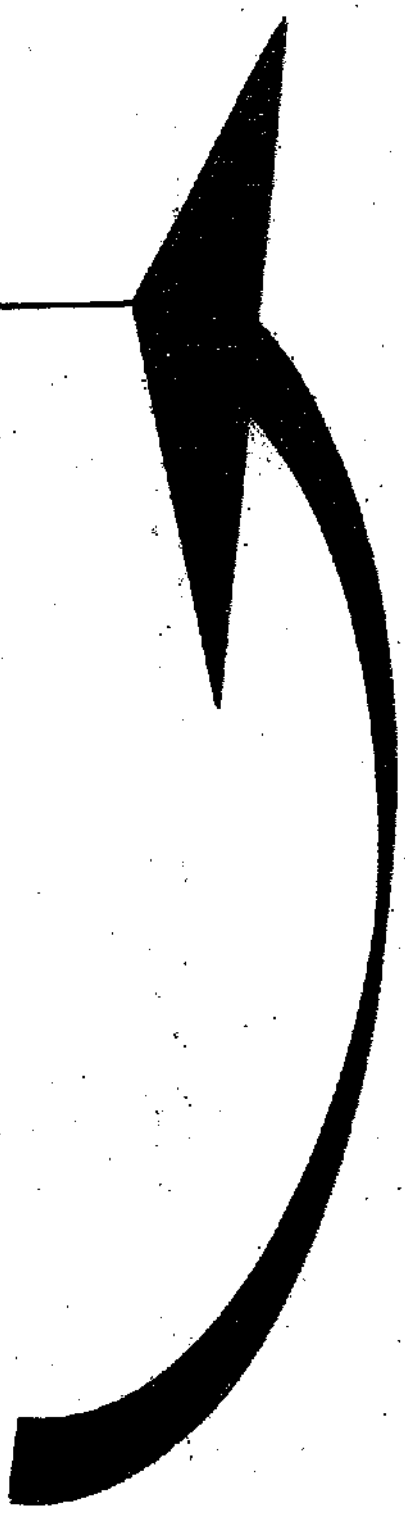
"I hereby given undertaking that the data and information given in the application and enclosures are true to the best of my knowledge and behalf and I am aware that if any part of the data and information submitted is found to be false or misleading at any stage, the project will be rejected and clearance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

Date:
Place: Hyderabad

for Synthokem Labs Pvt. Ltd., Unit-II.

K. Lakshma Reddy
Vice President, Corporate operations.

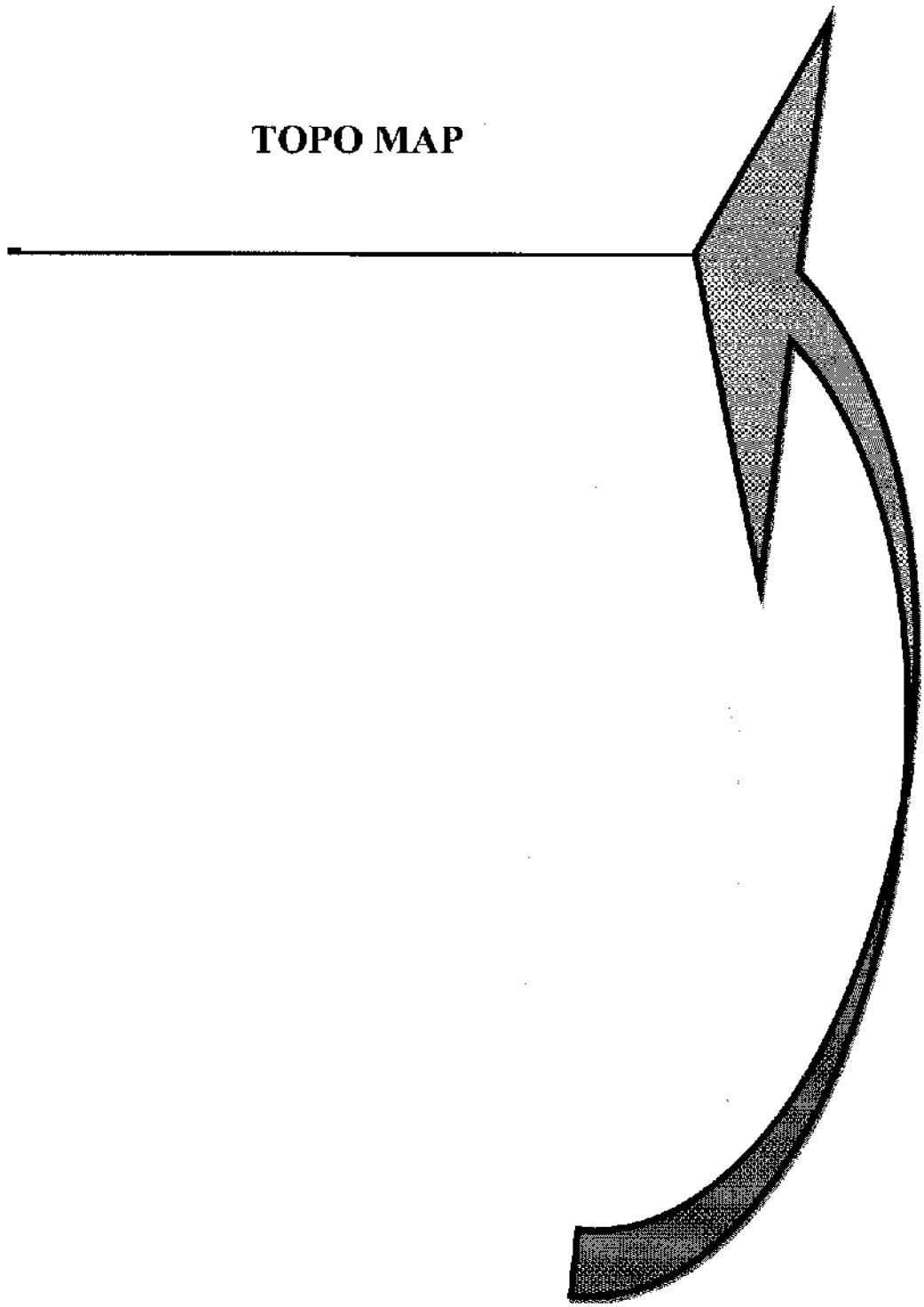
LIST OF PRODUCTS

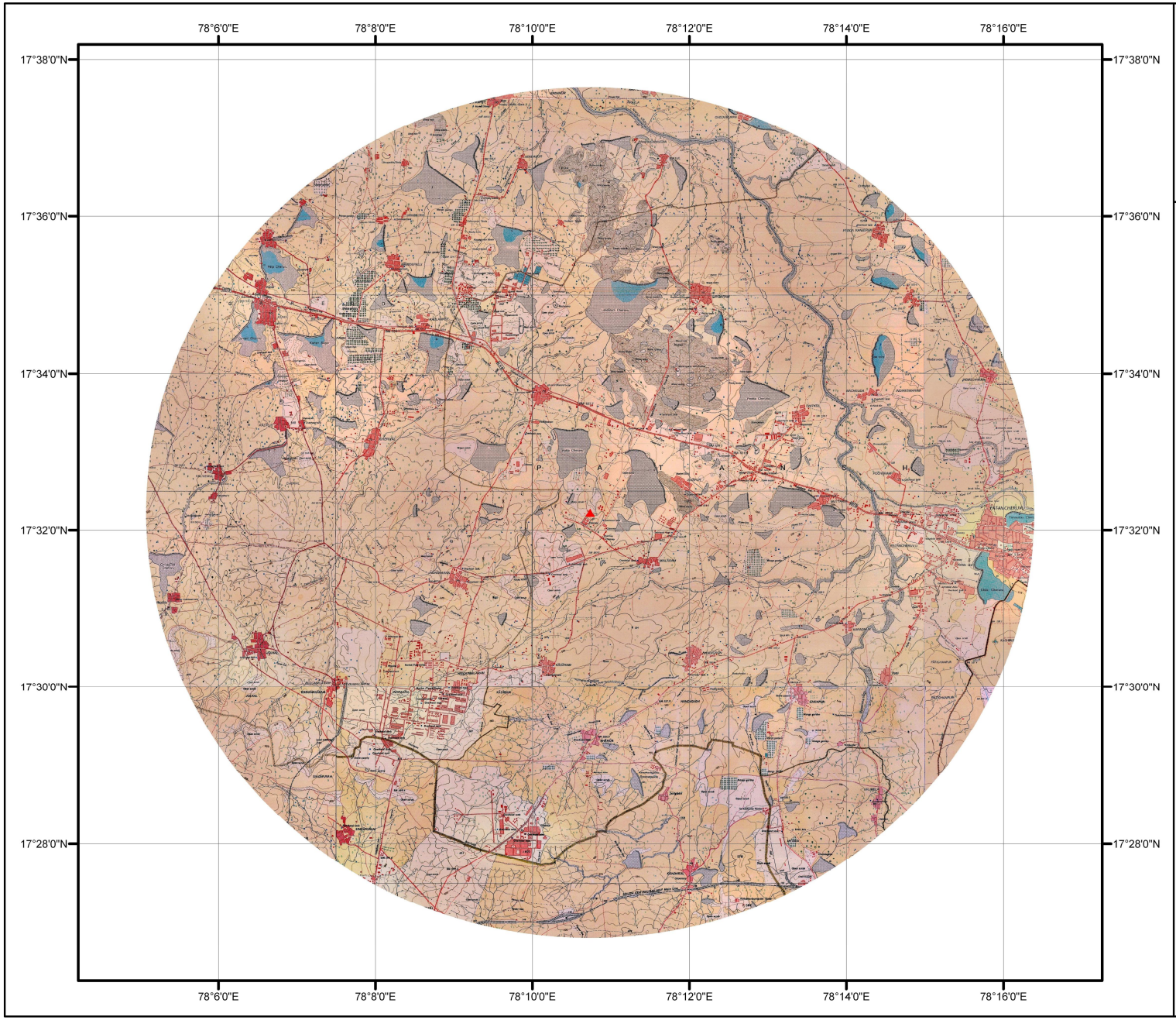


LIST OF PRODUCTS

S. No	Product Name	CAS No's	Therapeutic Category	Quantity In Kg/Month	Quantity In Kg/Day
1	Alfuzosin Hydrochloride	81403-68-1	Alpha adrenergic blocking agent	170	5.67
2	Chlorphenesin	104-29-0	Anti fungal	15000	500
3	Chlorphenesin carbamate	886-74-8	Muscle relaxant	3000	100
4	Dextromethorphan Hydrobromide	125-69-9	Anti tussive	10000	333.33
5	Drotaverine Hydrochloride	985-12-6	Antispasmodics	3000	100
6	Guaifenesin	93-14-1	Expectorant	100000	3333.33
7	1-(4-Hydroxyphenyl) piperazine	56621-48-89	Drug intermediate	500	16.67
8	Mebeverine Hydrochloride	2753-45-9	Antispasmodics	3000	100
9	Mephenesin	59-47-2	Skeletal Muscle Relaxant	15000	500
10	Methocarbamol	532-03-6	Skeletal Muscle Relaxant	10000	333.33
11	Potassium guaiacol sulfonate	1321-14-8	Expectorant	1700	56.67
12	Prazosin Hydrochloride	19237-84-4	Anti hypertensive	420	14
13	Ribavirin	36791-04-5	Antiviral agent	50	1.67
14	Ropinirole Hydrochloride	91374-20-8	Anti dyskinetic	50	1.67
15	Terazosin Hydrochloride	63074-08-8	Anti hypertensive	170	5.67
16	Veratrole	91-16-7	Drug intermediate	10000	333.33
	Total			***172060.00***	***5735.33***

TOPO MAP





10 Km RADIUS TOPO MAP SHOWING SITE SURROUNDINGS

N
W E
S

1 0.5 0 1 2 3 4 Kilometers

1 centimeter = 1,188 meters

LEGEND

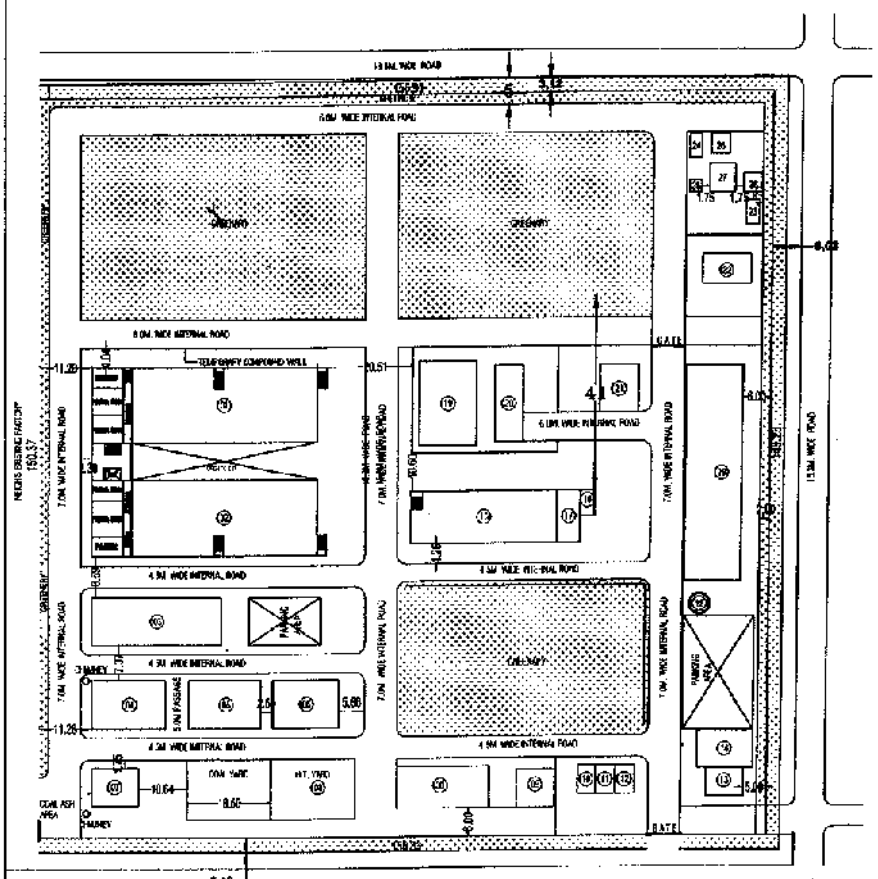
▲ PROJECT SITE

CO-ORDINATES
17°32'10.55"N 78°10'42.05"E

SITE PLAN

ANNEXURE-III

SITE LAYOUT OF FACTORY BUILDINGS BELONGS TO M/S SYNTHOKEM LABS PVT.LTD.
SITUATED IN PLOT NOS. 222,223,224,235,236 & 237 OF SURVEY NOS 219 TO 246
OF PHASE-II OF I.D.A., PASHMYLARAM, MEDAK (DIST), A.P.



REFERENCE

SNo.	DESCRIPTION	SIZE IN METRES	AREA (SQ.MTS)
01	PRODUCTION BLOCK-1	49.70 X 15.53	762.59
02	PRODUCTION BLOCK-2	49.70 X 15.78	786.00
03	UTILITY BLOCK	20.00 X 10.00	200.00
04	OFFICE BUILDING	15.00 X 10.00	150.00
05	RAW MATERIAL STORE	16.00 X 10.00	160.00
06	PROCESS WATER PUMP	14.00 X 13.00	140.00
07	BOILER HOUSE-1	16.00 X 8.00	88.00
08	H.T. YARD	20.00 X 11.75	235.00
09	PRODUCTION BLOCK-4	8.00 X 8.00	64.00
10	GUEST HOUSE (TEMPORARY OFFICE PROPOSED)	7.00 X 9.00	24.00
11	WEIGHTS ROOM PROPOSED)	4.00 X 6.00	24.00
12	SECURITY- 1(PROPOSED)	4.00 X 6.00	24.00
13	FIRE HYDRANT SYSTEM	8.30 X 6.00	48.00
14	UNDERGROUND WATER SUMP FOR FIRE HYDRANT SYSTEM	8.00 X 6.00	48.00
15	SECURITY-2	4.52 M	95.01
16	PRODUCTION BLOCK-3	31.00 X 16.38	385.73
17	LAB BLOCK	18.00 X 5.42	54.20
18	EJECTOR SYSTEM	3.00 X 5.42	16.26
19	UNDERGROUND SOLVENTS TANKS YARD	12.00 X 17.46	210.00
20	DIESEL STORAGE SHED	6.00 X 18.00	90.00
21	NEW CHEMICAL STORAGE PLATFORM	16.00 X 5.00	80.00
22	WASTE SALT BAGS SHED	10.41 X 6.25	65.06
23	TANK PLATFORM-1	3.00 X 5.00	15.00
24	TANK PLATFORM-2	2.50 X 5.00	12.50
25	TANK PLATFORM-3	2.50 X 2.50	6.25
26	COOLING TOWER	4.30 X 4.00	16.00
27	SHEDS	5.50 X 6.00	33.00
28	ATRO	4.00 X 4.30	16.00
29	ADMIN BUILDING (PROPOSED)	13.50 X 45.05	607.50
30	STORES SHED (PROPOSED)	8.0 X 20.00	160.00

TOTAL BUILT UP AREA = 4572.86 SQ.MTS (OR) 49.46 %

OPEN AREAS:-

1. GREENERY	4630.50 SQ.MTS	50.09 %
2. ROADS AREA	4623.65 SQ.MTS	19.98 %
3. OTHER AREA	5724.00 SQ.MTS	29.93 %

TOTAL PLOT AREA = 23405.03.00 MT. (OR) 2.3405 HECTRES OR 5.11 ACRES

SL.NO	DRG.NO	REV. NO	DATE

CLIENT:

M/S. SYNTHOKEM LABS PVT. LTD.
I.D.A., PASHMYLARAM, MEDAK (DIST).

TITLE: SITE LAYOUT

EXISTING: PROPOSED:

SCALE: 1:400 | DRG NO: LC/SYNTHOKEM/ARCH/SL/01 | DATE: 27-05-2013

FIRM:
M/S. LEEV CONSULTANTS
170/14 H.No.24,
M.V.Nagar Colony,
Kukatpally,
HYDERABAD-500072.

PREPARED BY: JYOTI T. G.E.C.

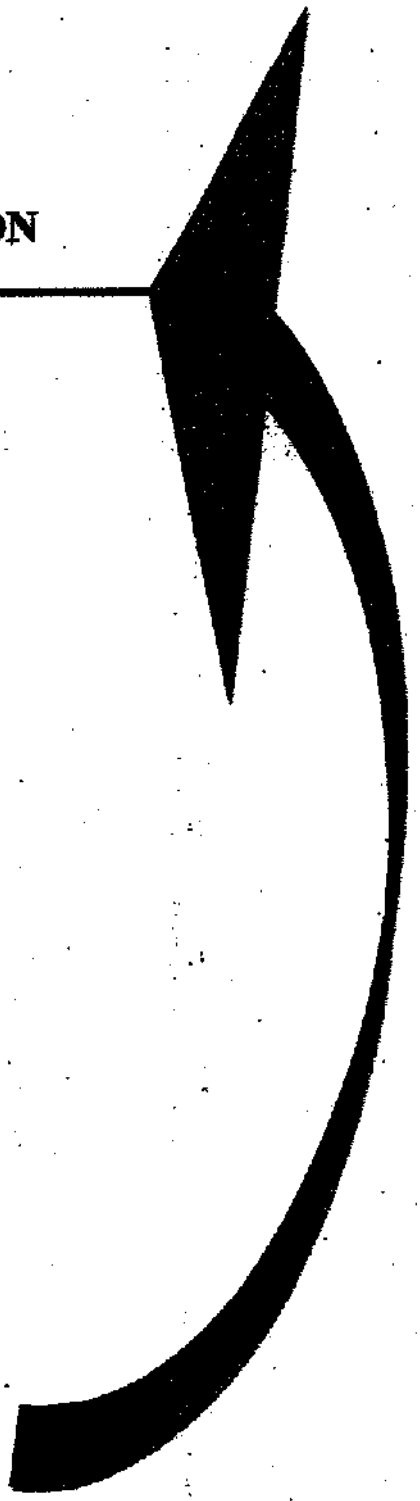
OWNERS SIGNATURE

DESIGNED & CHECKED BY:

V.V. RAO

APPROVED BY

PROCESS DESCRIPTION



1. ALFUZOCIN HYDROCHLORIDE

Process Description

Stage-1

4-Amino-2-chloro-6, 7-dimethoxy quinazoline reacts with N-Methyl-3-amino propionitrile in presence of 2-Methoxy ethanol as a solvent media to give stage-1 as a product.

Stage-2

Stage-1 undergoes hydrogenation in presence of Raney nickel and Isopropyl Alcohol as a solvent media to give Stage-2 as a product.

Stage-3

Stage-2 reacts with 2-tetrahydro methyl furoate in presence of MDC as a solvent media to give stage-3 as a product.

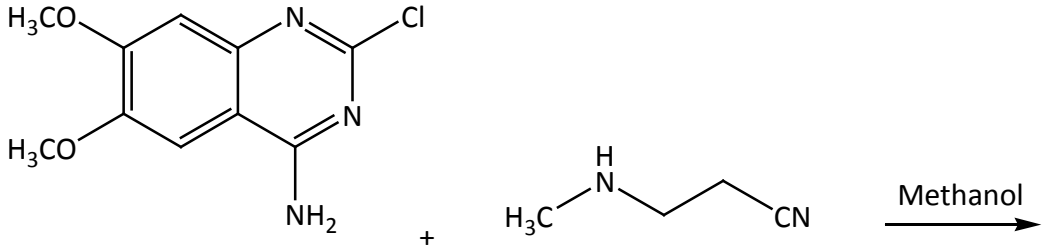
Stage-4

Stage-3 reacts with Isopropyl Alcohol Hydrochloride in presence of Isopropyl Alcohol as a solvent media to give Alfuzocin Hydrochloride as a product.

ALFUZOCIN HYDROCHLORIDE

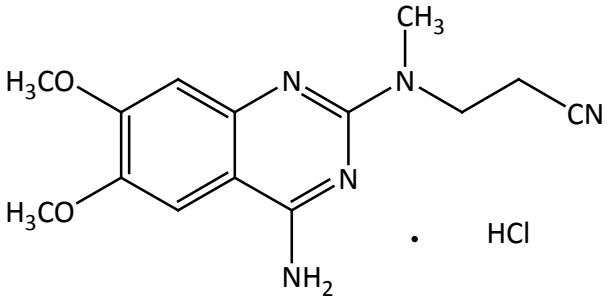
Route of Synthesis:

Stage-1



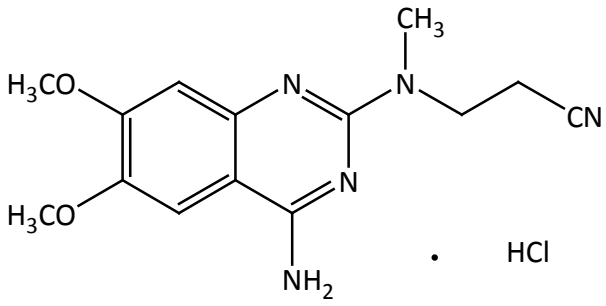
2-Chloro-6,7-dimethoxy
-quinazolin-4-ylamine
$C_{10}H_{10}N_3ClO_2$
239.66

3-Methylamino-propionitrile
$C_4H_8N_2$
84.12



3-[(4-Amino-6,7-dimethoxy-quinazolin
-2-yl)-methyl-amino]-propionitrile
$C_{14}H_{18}ClN_5O_2$
323.78

Stage-2



• HCl

3-[(4-Amino-6,7-dimethoxy-quinazolin
-2-yl)-methyl-amino]-propionitrile

$C_{14}H_{18}ClN_5O_2$

323.78

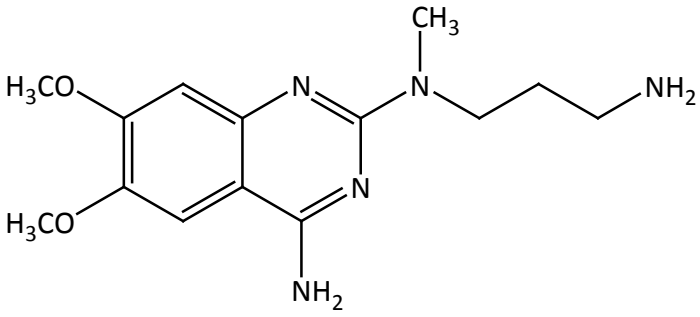
\+ $2\ H_2$

Hydrogen

4.00

Raney Nickel

Methanol



N^2-(3-Amino-propyl)-6,7-dimethoxy
-N^2-methyl-quinazoline-2,4-diamine

$C_{14}H_{21}N_5O_2$

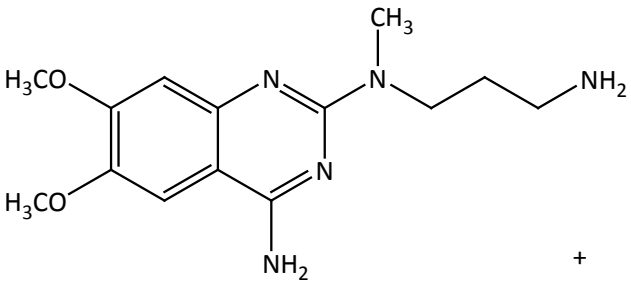
291.35

\+ HCl

Hydrochloric acid

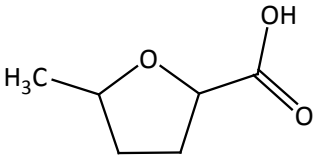
36.5

Stage-3



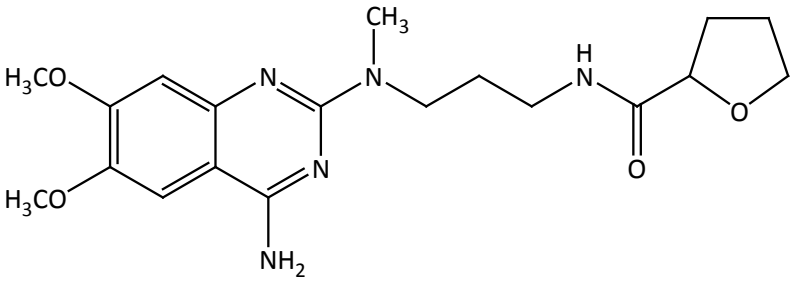
N^2-(3-Amino-propyl)-6,7-dimethoxy
-N^2-methyl-quinazoline-2,4-diamine
$C_{14}H_{21}N_5O_2$
291.35

+



2-Tetra hydro methyl furonate
$C_6H_{10}O_3$
130.14

Ethyl Acetate →

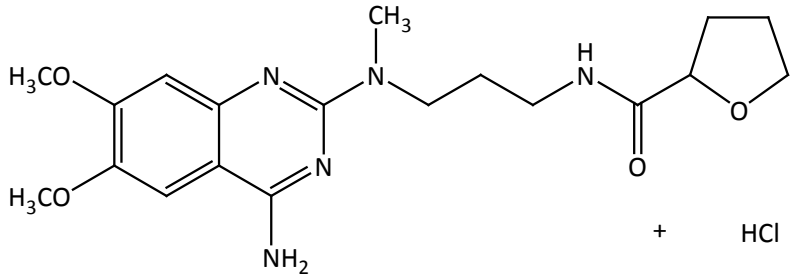


Alfuzosin Base
$C_{19}H_{27}N_5O_4$
389.45

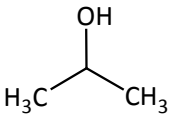
+ CH_3OH

Methanol
32.04

Stage-4:



\+ HCl +



• HCl

Alfuzosin Base

$C_{19}H_{27}N_5O_4$

389.45

Hydrochloric acid

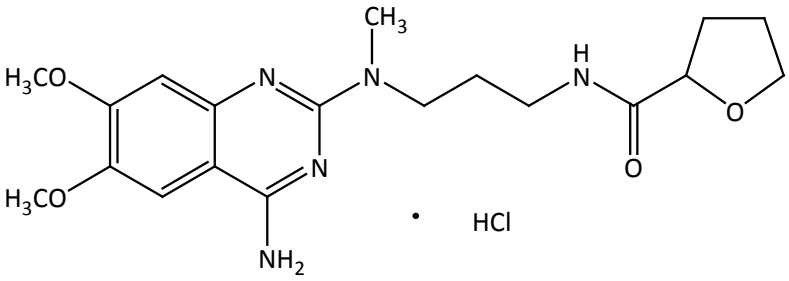
36.5

Isopropyl Alcohol

C_3H_9ClO

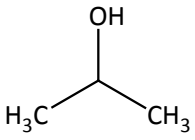
96.56

Isopropyl Alcohol



• HCl

\+



\+ HCl

Alfuzosin Hydrochloride

$C_{19}H_{28}N_5O_4Cl$

425.90

Isopropyl Alcohol

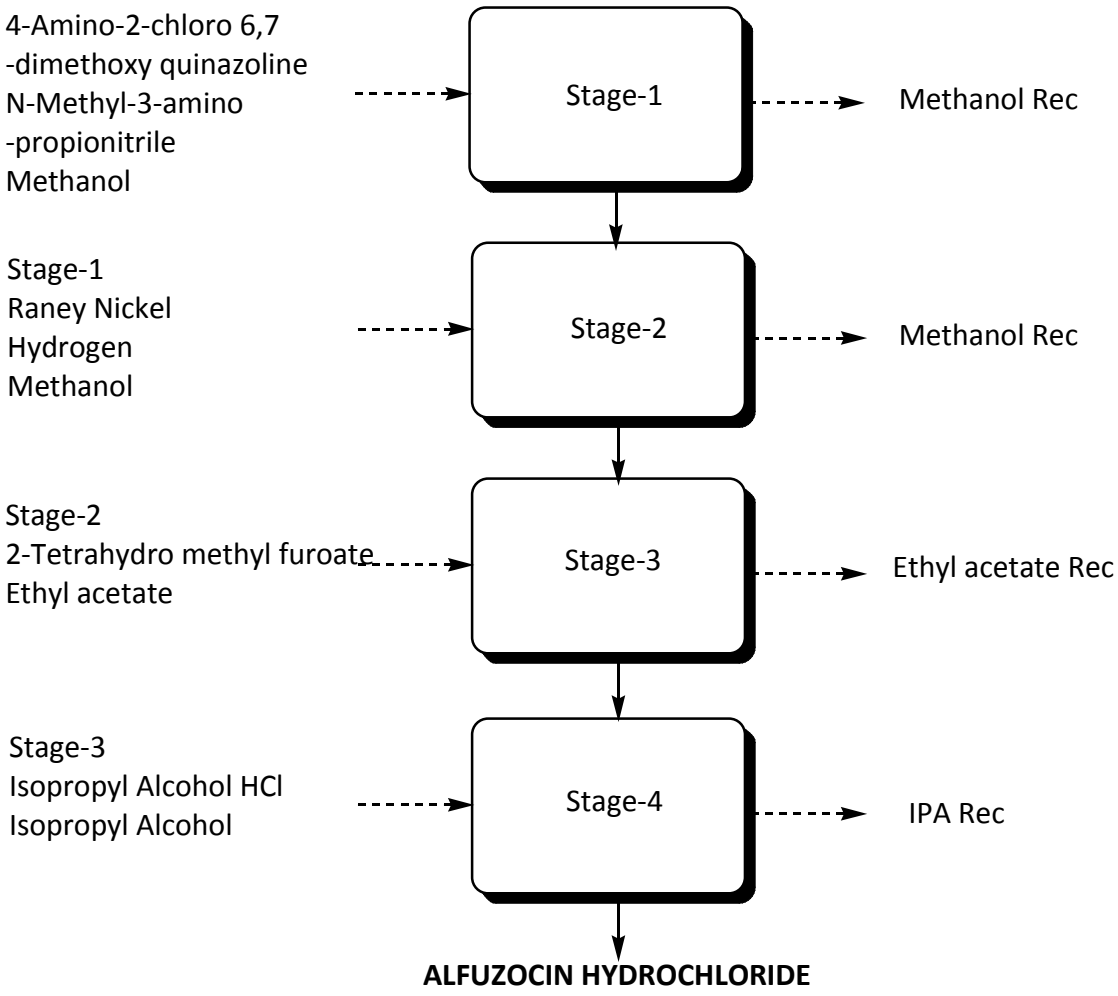
$C_3H_6O_3$

60.10

36.5

ALFUZOCIN HYDROCHLORIDE

Flow Chart:



ALFUZOCIN HYDROCHLORIDE

Material Balance:

Material balance of Alfuzosin Hydrochloride Stage-1 Batch Size:100.0 Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity In Kg
4-Amino-2-chloro 6,7-Dimethoxy quinazoline	225.00		Stage-1	145.00
Isopropyl alcohol	250.00		Isopropyl alcohol Recovery	236.50
2-Methoxy Ethanol	700.00		Isopropyl alcohol Loss	12.50
Methanol	1800.00		Methanol Recovery	1707.00
N-Methyl-3-amino propionitrile	80.00		Methanol Loss	90.00
Sodium Hydroxide(47%)	85.00		2-Methoxy Ethanol Recovery	665.00
Hydrochloric acid	30.00		2-Methoxy Ethanol Loss	35.00
Water	1800.00		Effluent water	1918.95
			(Water-1800,Sodium chloride-48.02,Water from Sodium hydroxide-45.05,Sodium hydroxide-7.08,Generated water-14.8,Methanol-3,IPA-1)	
			Organic Residue	160.05
			(Organic impurities-159.02, N-Methyl-3-amino propionitrile-1.03)	
Total	4970.00		Total	4970.00

Material balance of Alfuzosin Hydrochloride Stage-2 Batch Size:100.0 Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity In Kg
Stage-1	145.00		Stage-2	120.00
Isopropyl alcohol	800.00		Isopropyl alcohol Recovery	757.00
Raney Nickel	35.00		Isopropyl alcohol Loss	40.00
Ammonia gas	100.00		Effluent water	818.34
Hydrogen	5.00		(Water-800,Hydrochloric acid-16.34,IPA-2)	
Nitrogen gas	10.00		Spent catalyst for Reuse	35.00
Water	800.00		Process emissions	115.00
			(Ammonia -100,Hydrogen-5,Nitrogen-10)	
			Organic Residue	9.66
			(Organic impurities-8.66,IPA-1)	
Total	1895.00		Total	1895.00

Material balance of Alfuzosin Hydrochloride Stage-3 Batch Size:100.0 Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity In Kg
Stage-2	120.00		Stage-3	100.00
2-Tertahydro methyl furoate	55.00		MDC Recovery	1897.00
Methylene Dichloride	2000.00		MDC Loss	100.00
Sodium Hydroxide(47%)	50.00		Ethyl acetate Recovery	285.00
Ethyl acetate	300.00		Ethyl acetate Loss	15.00
Activated carbon	20.00		Effluent water	3566.51
Anhydrous Sodium Sulfate	20.00		(Water-3500,Water from sodium hydroxide-23.50,Sodium methoxide-22.82,Generated water-8.63,Sodium hydroxide-4.30,Sodium chloride-3.36,Water from Hydrochloric acid-3.9)	
Hydrochloric acid(35%)	6.00		Spent carbon	20.00
Water	3500.00		Inorganic Residue	20.00
			(Sodium sulfate-20)	
			Organic Residue	67.49
			(Organic impurities-64.49,MDC-3	
Total	6071.00		Total	6071.00

Material balance of Alfuzosin Hydrochloride Stage-4 Batch Size:100.0 Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity In Kg
Stage-3	100.00		Alfuzosin Hydrochloride	100.00
Isopropyl alcohol HCl(10%)	120.00		Isopropyl alcohol Recovery	413.68
Isopropyl alcohol	360.00		Isopropyl alcohol Loss	18.00
Activated carbon	20.00		Spent Carbon & Hyflow	40.00
Hyflow	20.00		Organic Residue	38.95
			(Organic impurities-35.95, IPA-3)	
			Process Emissions	9.37
			(Hydrogen chloride-9.37)	
Total	620.00		Total	620.00

2. CHLORPHENESIN

Process Description:

Stage-1

Epichlorohydrin undergoes Hydrolysis to give Stage-1 as product.

Stage-2

Stage-1 product reacts with P-Chloro phenol and sodium hydroxide in the presence of EDC as solvent media to give Stage-2 as product.

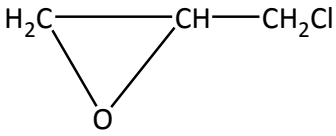
Stage-3

Stage-2 product undergoes purification in the presence of Toluene as solvent media to give Chlorophenesin as product.

CHLORPHENESIN

Route of Synthesis:

Stage-1



Epichlorohydrin

C_3H_5ClO

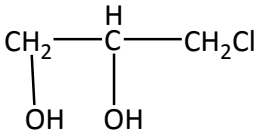
92.52

+

H_2O

Water

18.0

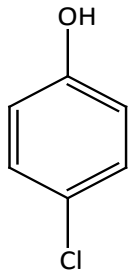


Glycerol mono chloro hydrin

$C_3H_7ClO_2$

110.54

Stage-2

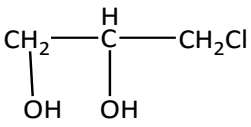


p-Chloro phenol

C_6H_5ClO

128.56

+



Glycerol mono chloro hydrin

$C_3H_7ClO_2$

110.54

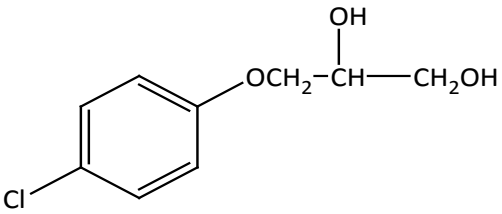
+

NaOH

Sodium hydroxide

40.0

EDC



Chlorophenesin Tech

$C_9H_{11}ClO_3$

202.63

+

NaCl

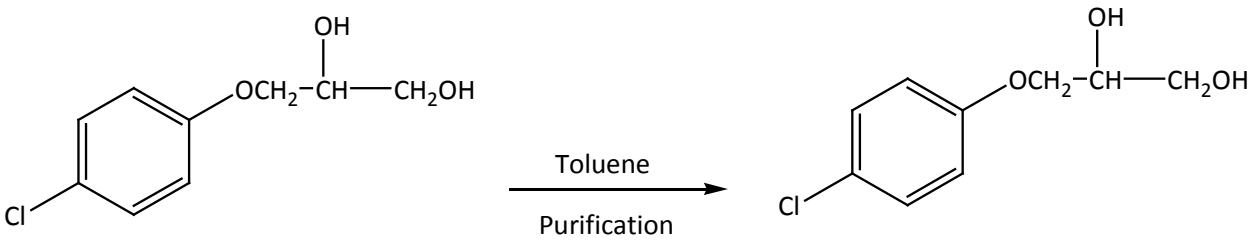
58.5

+

H_2O

18.0

Stage-3



Chlorophenesin Tech

$C_9H_{11}ClO_3$

202.63

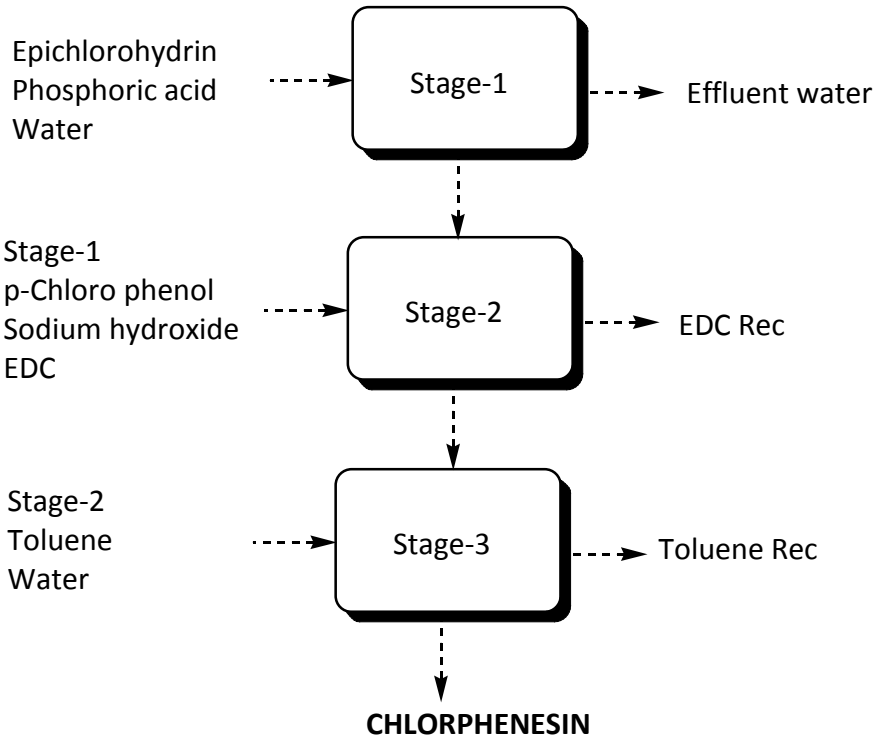
Chlorophenesin Pure

$C_9H_{11}ClO_3$

202.63

CHLORPHENESIN

Flow Chart:



CHLORPHENESIN

Material Balance:

Material Balance of Chlorphenesin Stage-1 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Epichlorohydrin	50.00		Stage-1 Layer	122.00
Phosphoric acid	2.00			
Water	70.00			
Total	122.00		Total	122.00

Material Balance of Chlorphenesin Stage-2 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-1	122.00		Stage-2	101.00
p-Chloro phenol	80.00		EDC Recovery	33.50
Sodium hydroxide (47%)	70.00		EDC Loss	1.50
EDC	35.00		Effluent water	277.46
Hydrochloric acid (30%)	4.00		(Water-190,Sodium hydroxide-9.17,Sodium chloride-27.5, Generated water-8.46, Sodium phosphate-2.43,Water from Sodium hydroxide-37.10, Water from HCl-2.80)	
Water	120.00		P-Chloro phenol Recovery	10.54
			Organic Residue	7.00
Total	431.00		Total	431.00

Material Balance of Chlorphenesin Stage-3 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-2	101.00		Chlorphenesin	100.00
Toluene	35.00		Toluene Recovery	33.40
Water	60.00		Toluene Loss	1.40
			Effluent water	60.20
			(Water-60,Toluene-0.2)	
			Organic Residue	1.00
			(Organic impurities-0.8,Toluene-0.2)	
Total	196.00		Total	196.00

3. CHLORPHENESIN CARBAMATE

Process Description:

Stage-1

Epichlorohydrin undergoes Hydrolysis to give Stage-1 as product.

Stage-2

Stage-1 product reacts with P-Chloro phenol and sodium hydroxide in the presence of EDC as solvent media to give Stage-2 as product.

Stage-3

Stage-2 product undergoes purification in the presence of Toluene as solvent media to give Chlorophenesin as product.

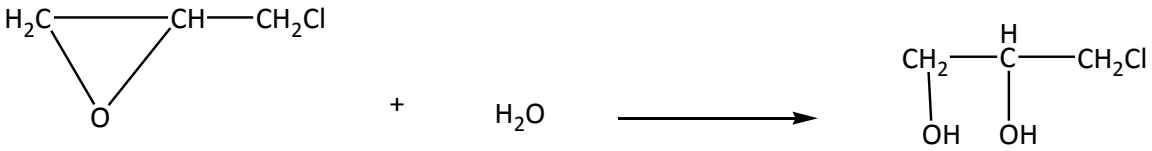
Stage-4

Stage-3 product reacts with Dimethyl carbonate and Ammonia in the presence of Toluene as solvent media to give Chlorphenesin carbamate as product.

CHLORPHENESIN CARBAMATE

Route of Synthesis:

Stage-1



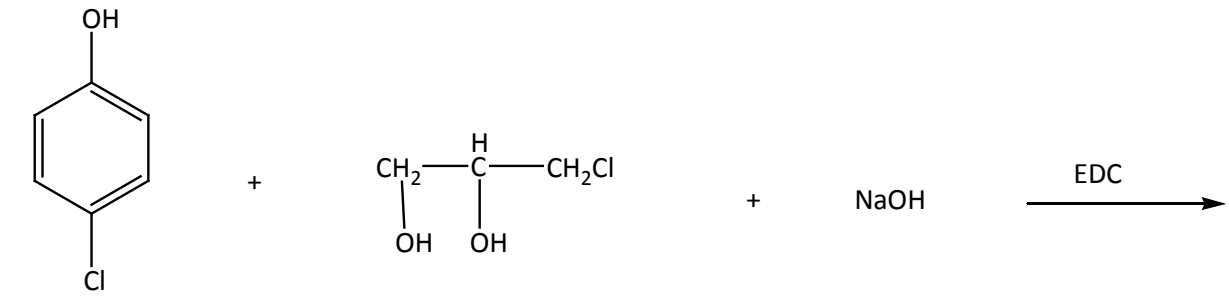
Epichlorohydrin
C_3H_5ClO
92.52

+ H_2O

Water
18.0

Glycerol mono chloro hydrin
$C_3H_7ClO_2$
110.54

Stage-2



p-Chloro phenol
C_6H_5ClO
128.56

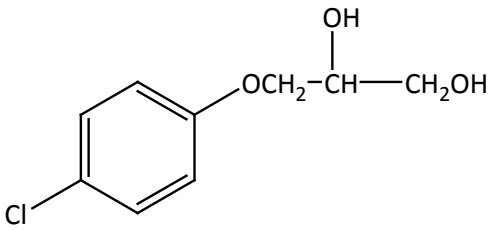
+

Glycerol mono chloro hydrin
$C_3H_7ClO_2$
110.54

+ NaOH

Sodium hydroxide
40.0

EDC



Chlorophenesin Tech
$C_9H_{11}ClO_3$
202.63

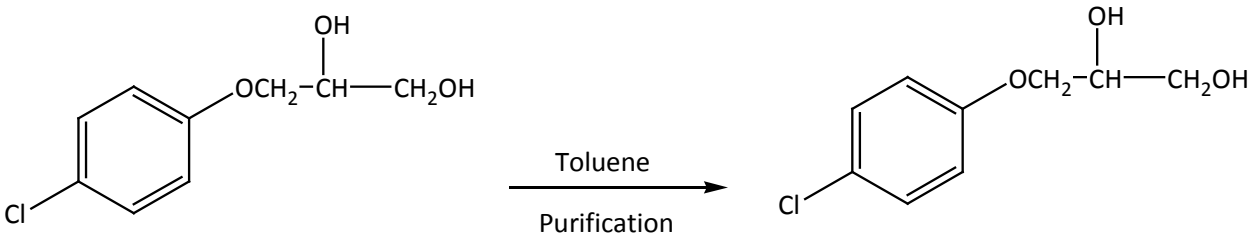
+ NaCl

58.5

+ H_2O

18.0

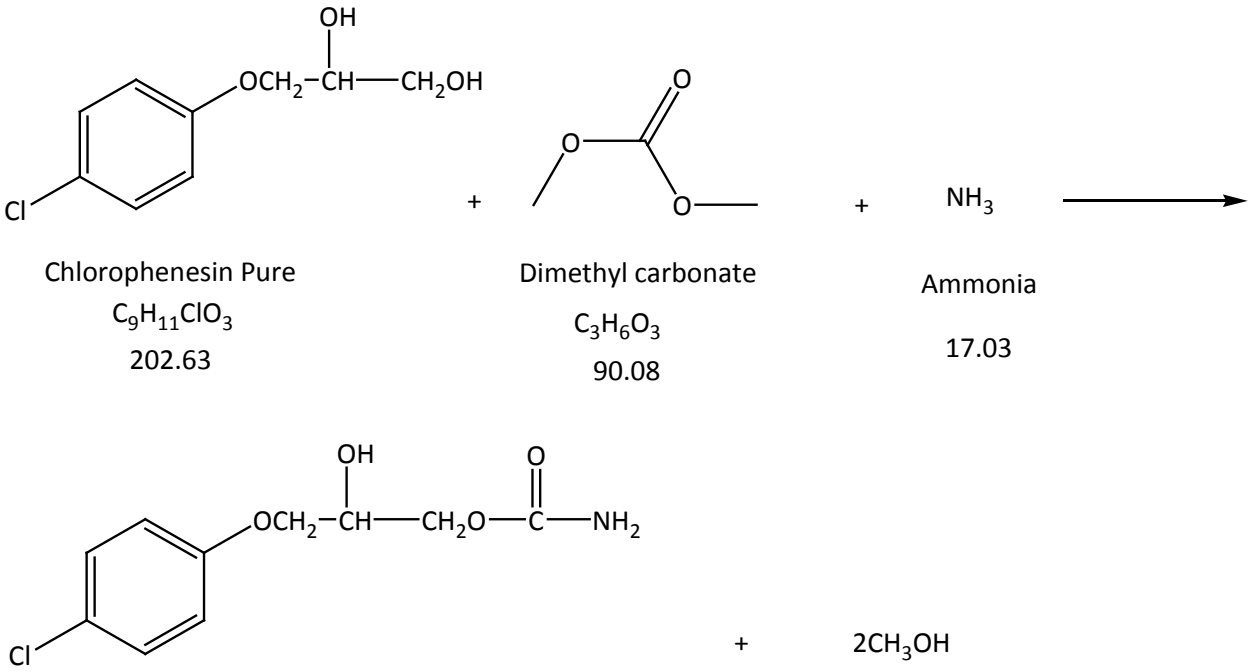
Stage-3



Chlorophenesin Tech
$C_9H_{11}ClO_3$
202.63

Chlorophenesin Pure
$C_9H_{11}ClO_3$
202.63

Stage-4



Chlorophenesin Pure
$C_9H_{11}ClO_3$
202.63

Dimethyl carbonate
$C_3H_6O_3$
90.08

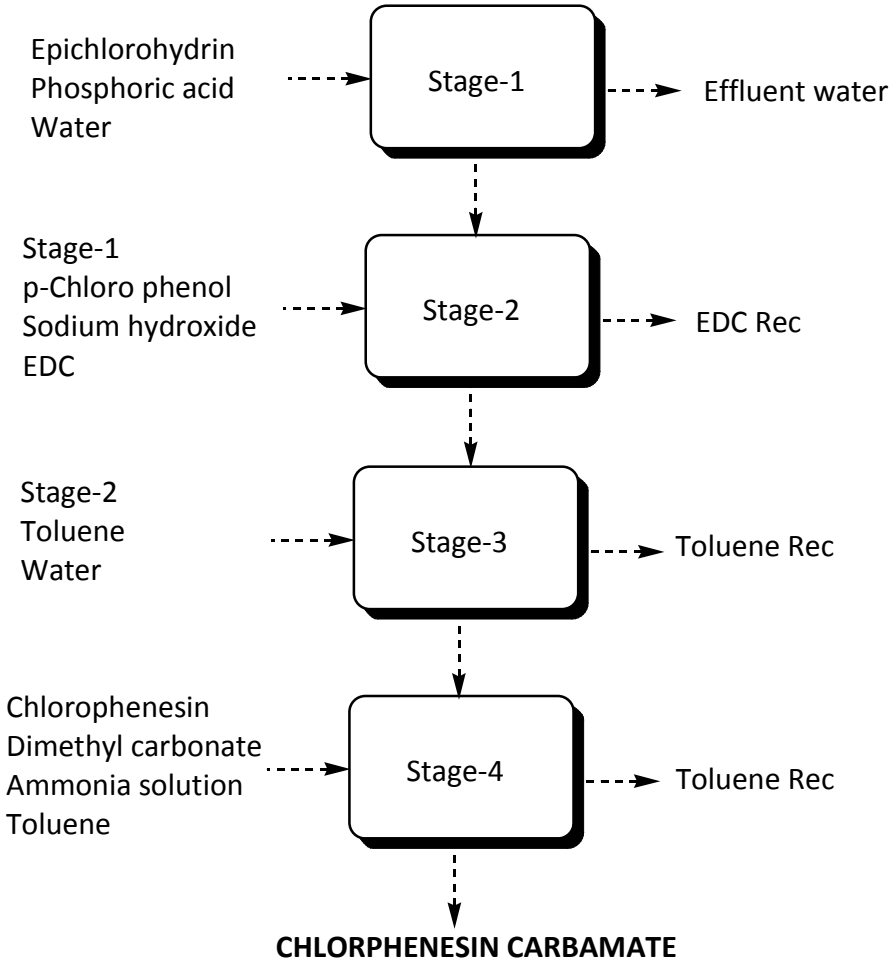
Ammonia
17.03

Chlorophenesin carbamate
$C_{10}H_{12}ClNO_4$
245.66

Methanol
2X32=64.0

CHLORPHENESIN CARBAMATE

Flow Chart:



CHLORPHENESIN CARBAMATE

Material Balance:

Material Balance of Chlorphenesin Carbamate Stage-1 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Epichlorohydrin	50.00		Stage-1Layer	122.00
Phosphoric acid	2.00			
Water	70.00			
Total	122.00		Total	122.00

Material Balance of Chlorphenesin Carbamate Stage-2 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-1	122.00		Stage-2	101.00
p-Chloro phenol	80.00		EDC Recovery	33.50
Sodium hydroxide (47%)	70.00		EDC Loss	1.00
EDC	35.00		Effluent water	285.73
Hydrochloric acid (30%)	4.00		(Water-190,Water from Hydrochloric acid-2.8,Water from sodium hydroxide-37.1, Generated water-10.69,Sodium hydroxide-9.15,Sodium phosphate-2.45,Sodium chloride-33.54)	
Water	120.00		P-Chloro phenol un reacted	9.77
Total	431.00		Total	431.00

Material Balance of Chlorphenesin Carbamate Stage-3 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-2	101.00		Chlorphenesin	100.00
Toluene	35.00		Toluene Recovery	31.00
Water	60.00		Toluene Loss	1.00
			Effluent water	62.00
			(Water-60,Toluene-2)	
			Organic Residue	2.00
			(Organic Impurities-1,Toluene-1)	
Total	196.00		Total	196.00

Material Balance of Chlorphenesin Carbamate Stage-4 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Chlorphenesin	100.00		Chlorphenesin Carbamate	100.00
Di methyl carbonate	23.77		Toluene Recovery	474.00
Ammonia solution (7%)	125.00		Toluene Loss	25.00
Toluene	500.00		Effluent water	249.77
Water	100.00		(Water-100,Water from ammonia-116.25,Dimethyl carbonate-0.56,Ammonia-0.35, Methanol-31.61,Toluene-1)	
Total	848.77		Total	848.77

4. DEXTROMETHORPHAN HYDROBROMIDE

Process Description:

Stage-1

2-Cyclohex-1-en-1-yl ethamine reacts with 4-Methoxy phenyl acetic acid and Phosphorous oxy chloride in presence of Toluene as a solvent media to give Stage-1 as a product.

Stage-2

Stage-1 reacts with hydroxy phenyl acetic acid in presence of Toluene as a solvent media to give Stage-2 as a product.

Stage-3

Stage-2 reacts with Sodium Hydroxide in presence of toluene as a solvent media to give Stage-3 as a product.

Stage-4

Stage-3 reacts with Formic acid in presence of Toluene as a solvent media to give Stage-4 as a product.

Stage-5

Stage-4 reacts with Methanol and Sodium Hydroxide in presence of Toluene as a solvent media to give Stage-5 as a product.

Stage-6

Stage-5 reacts with Formaldehyde in presence of Toluene as a solvent media to give Stage-6 as a product.

Stage-7

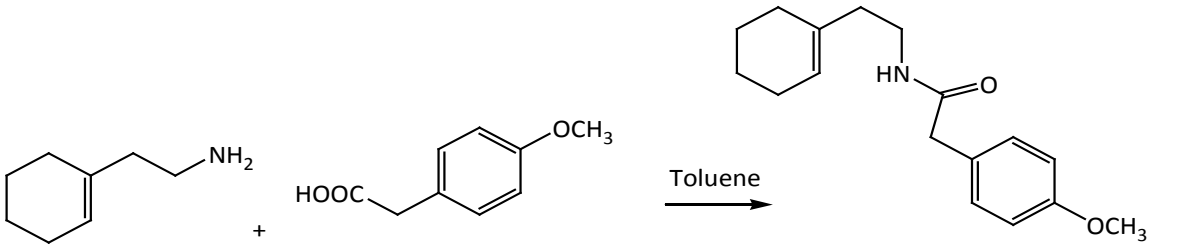
Stage-6 reacts with Hydrobromic acid in presence of Acetone as a solvent media to give Dextromethorphan Hydrobromide.

DEXTROMETHORPHAN HYDROBROMIDE

Route of Synthesis:

Stage-1

Step-A



2-(Cyclohex-1-en-1-yl) ethanamine
$C_8H_{15}N$
125.22

+

(4-methoxy phenyl) acetic acid
$C_9H_{10}O_3$
166.17

N-[2-(cyclohex-1-en-1-yl)ethyl]-2 -(4-methoxy phenyl)acetamide
$C_{17}H_{23}NO_2$
273.37

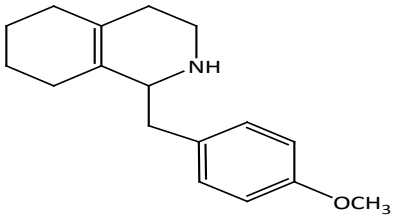
+ H_2O
18.00

Step-B

N-(2-Cyclohex-1-enyl-ethyl)-2-(4-methoxy-phenyl)-acetamide
$C_{17}H_{23}NO_2$
273.37

+ $POCl_3$
Phosphorous oxy chloride
153.33

+ 3 H_2O
2X18=54.00



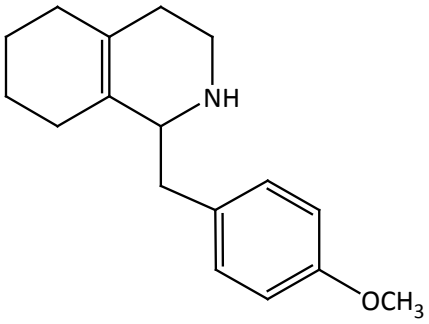
1-(4-Methoxy-benzyl)-1,2,3,4,5,6,7,8 -octahydro-isoquinoline
$C_{17}H_{23}NO$
257.37

+ 3 HCl
Hydrochloric acid
3X36.5=109.50

+ H_3PO_4
Phosphoric acid
98.00

+ $^1/_2\,O_2$ ↑
Oxygen
1/2X32=16.00

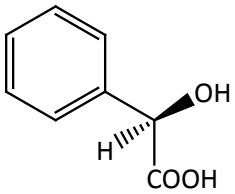
Stage-2



1-(4-Methoxy-benzyl)-1,2,3,4,5,6,7,8 -octahydro-isoquinoline

$C_{17}H_{23}NO$

257.37

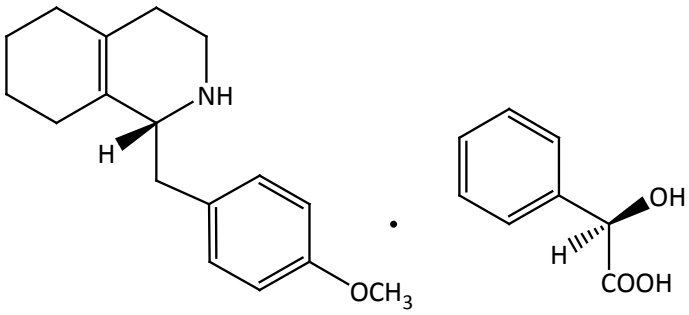


Hydroxy-phenyl-acetic acid

$C_8H_8O_3$

152.15

Toluene

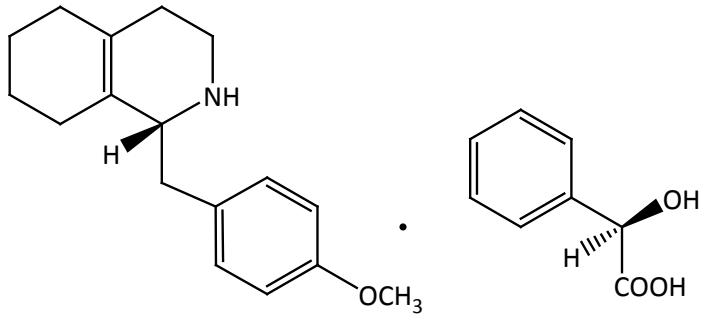


1-(4-Methoxy-benzyl)-1,2,3,4,5,6,7,8 -octahydro-isoquinoline Mandalate

$C_{25}H_{31}NO_4$

409.52

Stage-3



\+ NaOH —Toluene→

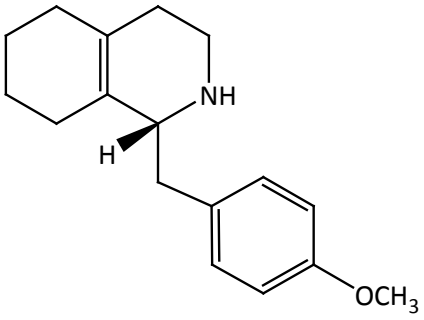
1-(4-Methoxy-benzyl)-1,2,3,4,5,6,7,8 -octahydro-isoquinoline Mandalate

$C_{25}H_{31}NO_4$

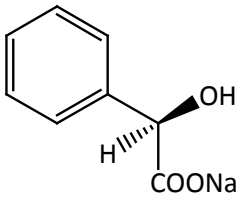
409.52

Sodium Hydroxide

40.00



\+



\+ H_2O

1-(4-Methoxy-benzyl)-1,2,3,4,5,6,7,8-octahydro-isoquinoline

$C_{17}H_{23}NO$

257.37

Sodium mandalate

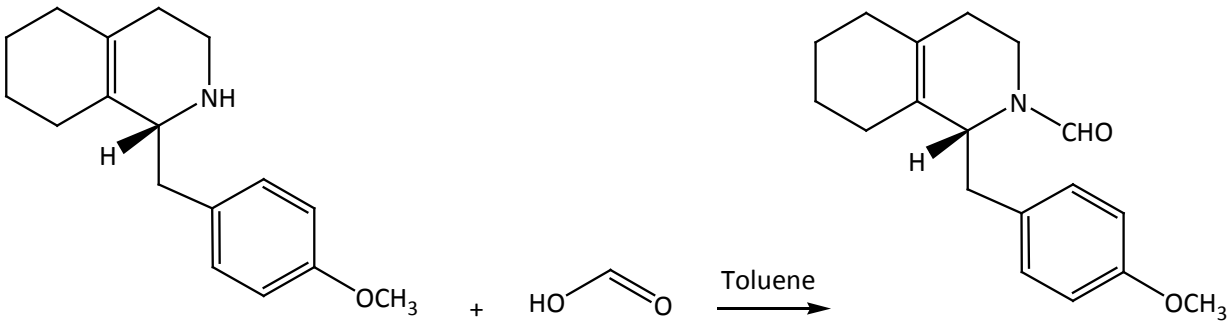
$C_8H_7NaO_3$

174.13

18.00

Stage-4

Step-A



1-(4-Methoxy-benzyl)-1,2,3,4,5,6,7,8-octahydro-isoquinoline

$C_{17}H_{23}NO$

257.37

Formic acid

46.03

1-(4-Methoxy-benzyl)-3,4,5,6,7,8-hexahydro-1*H*-isoquinoline-2-carbaldehyde

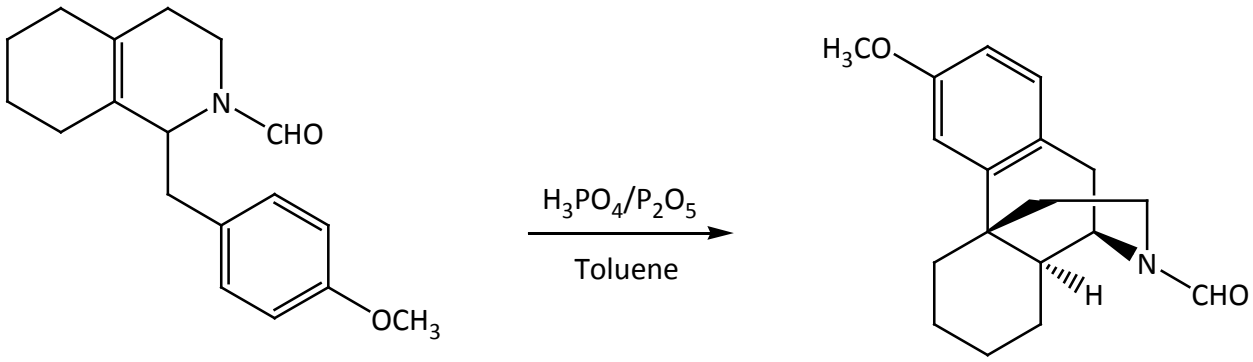
$C_{18}H_7NaO_3$

285.38

+ H_2O

18.00

Step-B



1-(4-Methoxy-benzyl)-3,4,5,6,7,8-hexahydro-1*H*-isoquinoline-2-carbaldehyde

$C_{18}H_{23}NO_2$

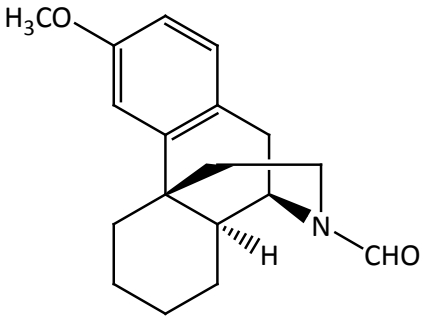
285.39

Stage-4

$C_{18}H_{23}NO_2$

285.38

Stage-5



Stage-4

$C_{18}H_{23}NO_2$

285.38

\+ CH_3OH + NaOH

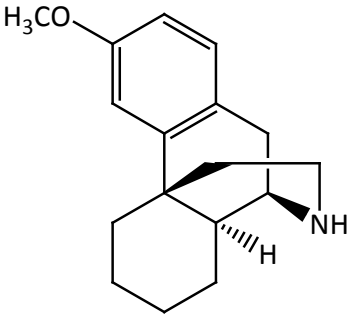
Toluene →

Methanol

32.04

Sodium Hydroxide

40.00



Stage-5

$C_{17}H_{23}NO$

257.37

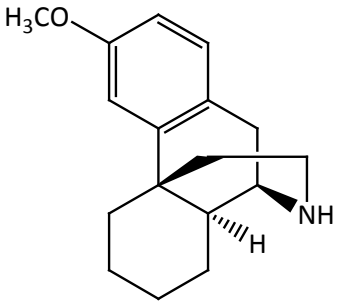
\+ CH_3COONa + H_2O

Sodium Acetate

82.03

18.00

Stage-6

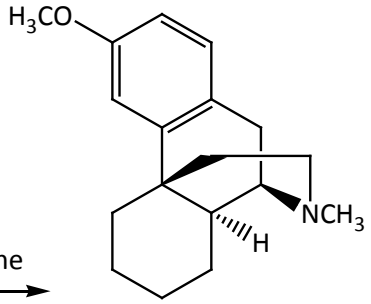


Stage-5
$C_{17}H_{23}NO$
257.37

\+ 2 HCHO

Formaldehyde
2X30.03=60.06

Toluene →



Stage-6
$C_{18}H_{25}NO$
271.40

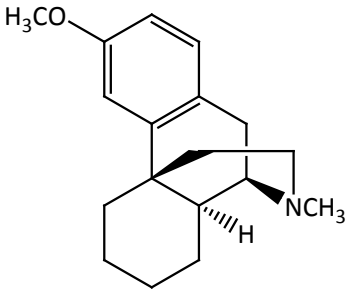
\+ CO_2 ↑

Carbondioxide
44.00

\+ H_2 ↑

2.00

Stage-7

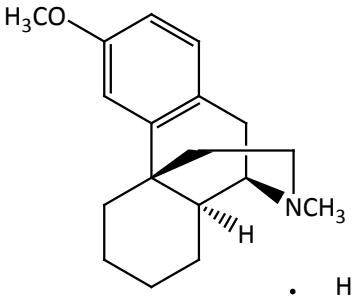


Stage-6
$C_{18}H_{25}NO$
271.40

\+ HBr

Hydrobromic acid
80.91

Acetone →

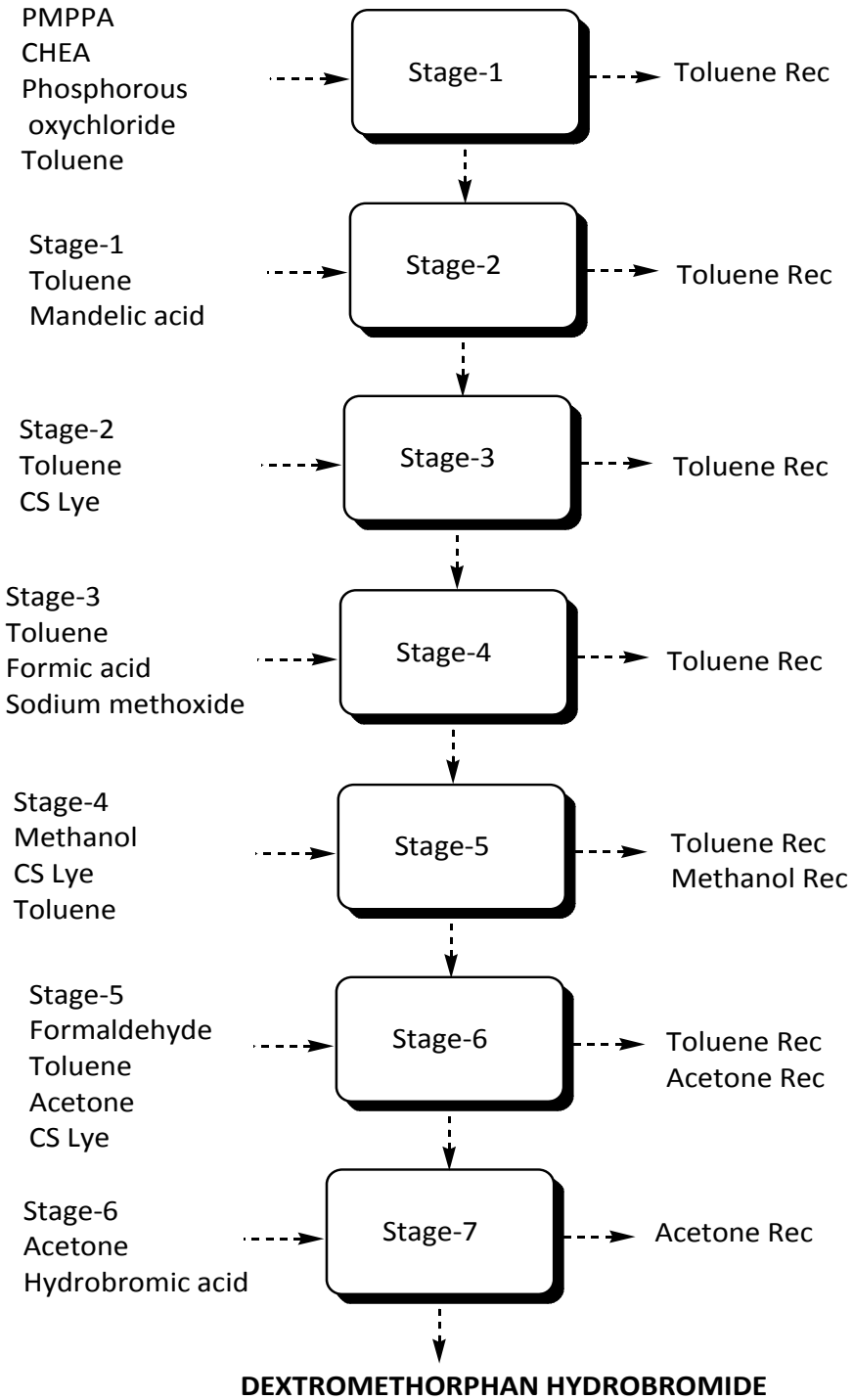


. HBr

Dextromethorphan Hydrobromide
$C_{18}H_{26}BrNO$
352.31

DEXTROMETHORPHAN HYDROBROMIDE

Flow Chart:



DEXTROMETHORPHAN HYDROBROMIDE

Material Balance:

Material balance of Dextromethorphan Hydrobromide Stage-1 Batch Size:100.0Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity In Kg
PMPPA	449.00		Stage-1	695.00
CHEA	338.34		Toluene Recovery	475.00
Phosphorous oxy chloride	415.00		Toluene Loss	25.00
Caustic lye	218.00		Effluent water	1302.03
Toluene	500.00		(Water-473.9,Generated water-48.63,Hydrochloric acid-296.3,Phosphoric acid-265.2, Caustic lye-218)	
Water	620.00		Process Emission	43.31
			(Oxygen)	
Total	2540.34		Total	2540.34

Material balance of Dextromethorphan Hydrobromide Stage-2 Batch Size:100.0Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity In Kg
Stage-1	695.00		Stage-2	231.50
Toluene	163.00		Toluene Recovery	536.50
Mandelic acid	55.00		Toluene Loss	46.00
			Organic Residue	99.00
			(Organic Impurities-97, Toluene-2)	
Total	913.00		Total	913.00

Material balance of Dextromethorphan Hydrobromide Stage-3 Batch Size:100.0Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity In Kg
Stage-2	231.50		Stage-3	134.27
Toluene	520.00		Toluene Recovery	492.00
CS Lye	70.00		Toluene Loss	26.00
Water	278.00		Effluent water	408.90
			(Water-278,Generated water-31.5,Sodium mandalate-98.4, Toluene-1)	
			Organic Residue	38.33
			(Organic Impurities-37.33, Toluene-1)	
Total	1099.50		Total	1099.50

Material balance of Dextromethorphan Hydrobromide Stage-4 Batch Size:100.0Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity In Kg
Stage-3	134.27		Stage-4	150.43
Toluene	319.00		Toluene Recovery	303.00
Formic acid	13.88		Toluene Loss	15.00
Sodium methoxide powder	3.41		Generated water	5.42
Phosphoric acid	1480.00		Phosphoric acid Reuse	1480.00
Phosphorous pentoxide	54.00		Inorganic solid waste	4.29
			(Sodium formate-4.29)	0
			Methanol Recovery	2.01
			Organic Residue	44.41
			(Organic Impurities-43.41, Toluene-1)	
Total	2004.56		Total	2004.56

Material balance of Dextromethorphan Hydrobromide Stage-5 Batch Size:100.0Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity In Kg
Stage-4	150.43		Stage-5	127.45
Methanol	245.00		Toluene Recovery	431.00
CS Lye	128.03		Toluene Loss	22.00
Toluene	453.00		Methanol Recovery	215.20
Water	570.00		Methanol Loss	12.00
			Effluent water	738.81
			(Water-570,CS Lye-105, Generated water-19.8, Sodium acetate-43.01, Methanol-1)	
Total	1546.46		Total	1546.46

Material balance of Dextromethorphan Hydrobromide Stage-6 Batch Size:100.0Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity In Kg
Stage-5	127.45		Stage-6	90.90
Formaldehyde	45.45		Toluene Recovery	378.00
Toluene	398.00		Toluene Loss	19.00
Acetone	163.00		Acetone Recovery	153.00
CS Lye	30.00		Acetone Loss	8.00
Activated carbon	4.50		Effluent water	275.71
Hyflow	4.50		(Water-228,CS Lye-30, Formaldehyde-15.71, Acetone-2)	
Water	228.00		Spent carbon & Hyflow	9.00
			Process Emission	22.77
			(Carbon dioxide-21.78, Hydrogen-0.99)	
			Organic Residue	44.52
			(Organic Impurities-43.52, Toluene-1)	
Total	1000.90		Total	1000.90

Material balance of Dextromethorphan Hydrobromide Stage-7 Batch Size:100.0Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity In Kg
Stage-6	90.90		Dextromethorphan Hydrobromide	100.00
Acetone	273.00		Acetone Recovery	261.00
Hydrobromic acid	9.10		Acetone Loss	12.00
Total	373.00		Total	373.00

5. DROTAVERINE HYDROCHLORIDE

Process Description:

Stage-1

Pyro catechol reacts with Diethyl sulphate and sodium hydroxide in the presence of Toluene as solvent media to give Stage-1 as product.

Stage-2

Stage-1 product reacts with Para formaldehyde and Hydrochloric acid in the presence of Toluene as solvent media to give Stage-2 as product.

Stage-3

Stage-2 product reacts with Sodium cyanide in water media to give Stage-3 as product.

Stage-4

Stage-3 product undergoes hydrogenation by using Raney Nickel as catalyst in the presence of Methanol as solvent media to give Stage-4 as product.

Stage-5

3, 4-Diethoxy benzyl cyanide reacts with Sodium hydroxide and Hydrochloric acid in the presence of Toluene as solvent media to give Stage-5 as product.

Stage-6

Stage-5 product reacts with Stage-4 in the presence of Toluene as solvent media to give Stage-6 as product.

Stage-7

Stage-6 product reacts with Phosphorous oxychloride and Sodium hydroxide by using Toluene as solvent media to give Stage-7 as product.

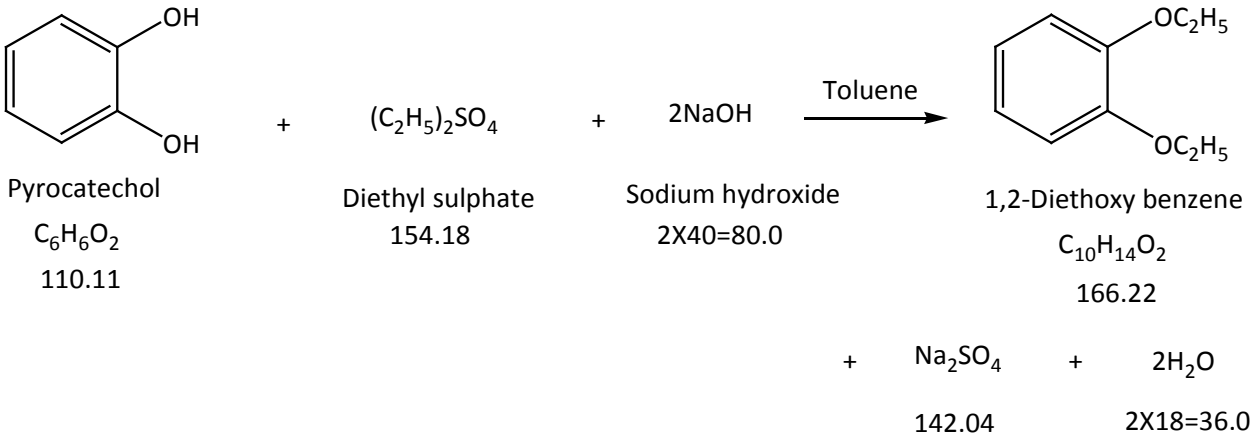
Stage-8

Stage-7 product undergoes purification by using IPA as solvent media to give Drotaverine Hydrochloride as product.

DROTAVERINE HYDROCHLORIDE

Route of Synthesis:

Stage-1



Pyrocatechol
$C_6H_6O_2$
110.11

Diethyl sulphate
154.18

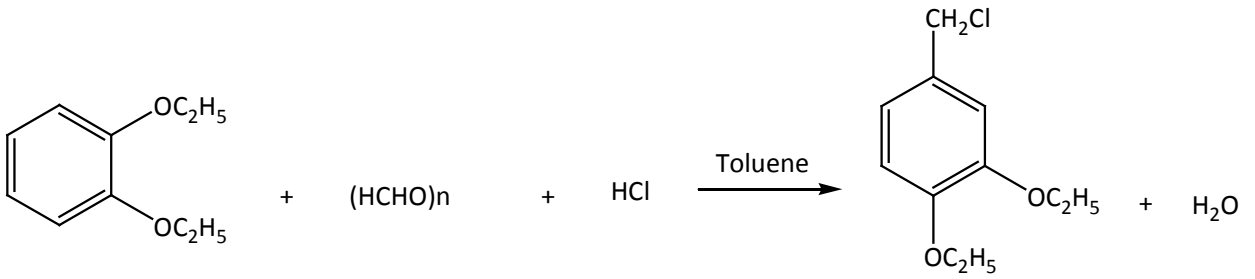
Sodium hydroxide
2X40=80.0

1,2-Diethoxy benzene
$C_{10}H_{14}O_2$
166.22

142.04

2X18=36.0

Stage-2



1,2-Diethoxy benzene
$C_{10}H_{14}O_2$
166.22

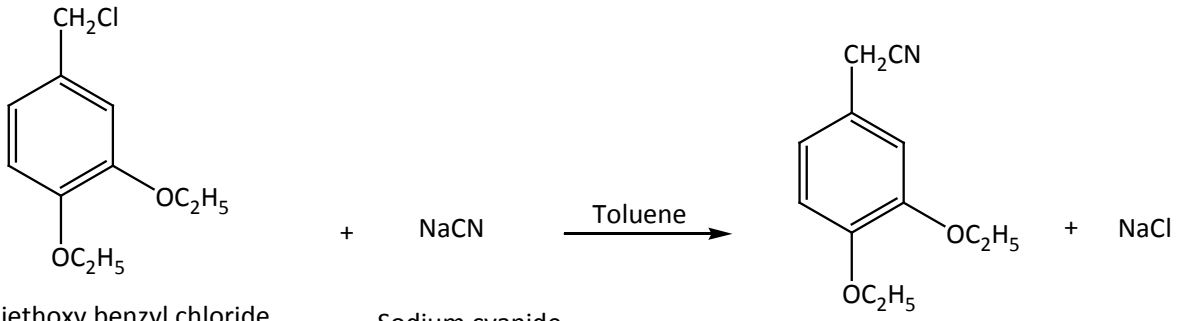
Para formaldehyde
30.03

Hydrochloric acid
36.5

3,4-Diethoxy benzyl chloride
$C_{11}H_{15}ClO_2$
214.69

18.0

Stage-3



3,4-Diethoxy benzyl chloride

$C_{11}H_{15}ClO_2$

214.69

Sodium cyanide

49.01

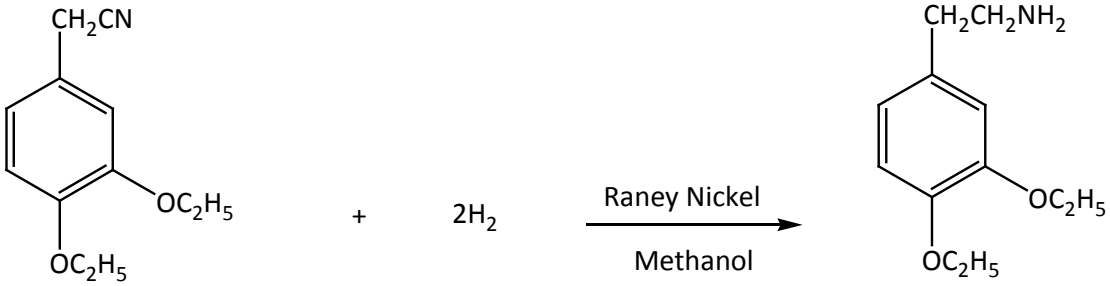
3,4-Diethoxy benzyl cyanide

$C_{12}H_{15}NO_2$

205.25

58.5

Stage-4



3,4-Diethoxy benzyl cyanide

$C_{12}H_{15}NO_2$

205.25

Hydrogen

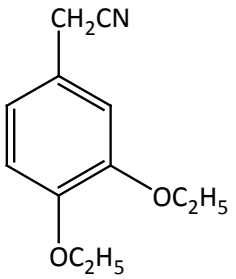
2X2=4.0

3,4-Diethoxy phenyl ethyl amine

$C_{12}H_{19}NO_2$

209.28

Stage-5



3,4-Diethoxy benzyl cyanide

$C_{12}H_{15}NO_2$

205.25

+ H_2O + NaOH + 2HCl ⟶

Water

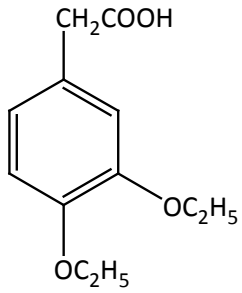
18.0

Sodium hydroxide

40.0

Hydrochloric acid

2X36.5=73.0



3,4-Diethoxy phenyl acetic acid

$C_{12}H_{16}O_4$

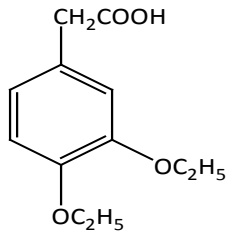
224.25

+ NaCl + NH_4Cl

58.5

53.49

Stage-6

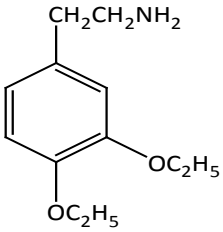


3,4-Diethoxy phenyl acetic acid

$C_{12}H_{16}O_4$

224.25

+

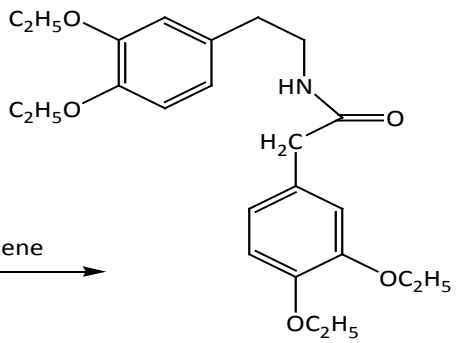


3,4-Diethoxy phenyl ethyl amine

$C_{12}H_{19}NO_2$

209.28

Toluene ⟶



2-(3,4-Diethoxy-phenyl)-*N*-[2-(3,4-diethoxy-phenyl)-ethyl]-acetamide

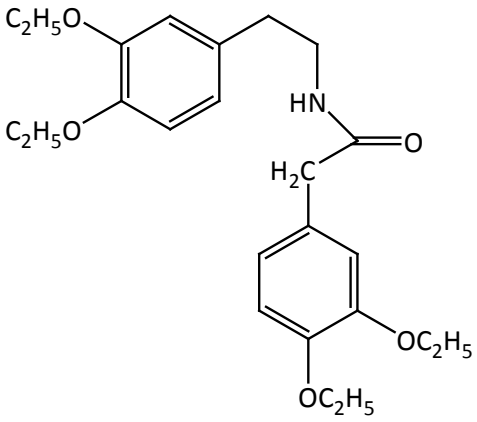
$C_{24}H_{33}NO_5$

415.52

+ H_2O

18.0

Stage-7



2-(3,4-Diethoxy-phenyl)-*N*-[2-(3,4-diethoxy-phenyl)-ethyl]-acetamide

$C_{24}H_{33}NO_5$

415.52

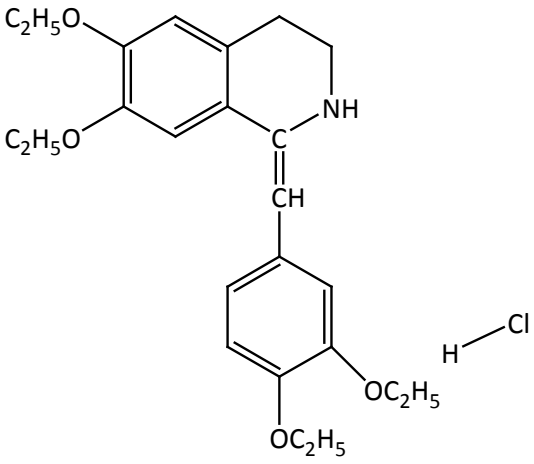
+ $POCl_3$ + 2NaOH $\xrightarrow{\text{Toluene}}$

Phosphorous oxy chloride

153.33

Sodium hydroxide

2X40.0=80.0



Drotaverine Hydrochloride

$C_{24}H_{32}ClNO_4$

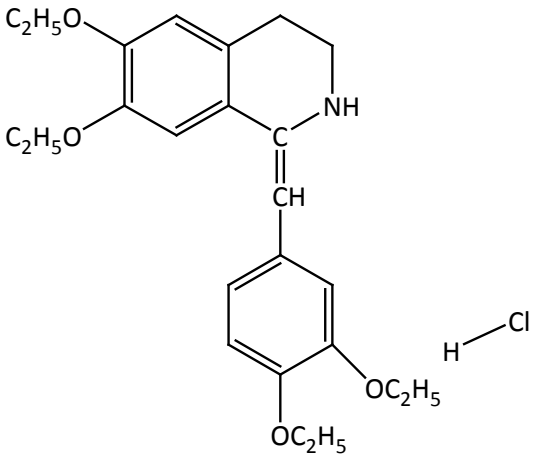
434.0

+ 2NaCl + H_3PO_4

2X58.5=117.0

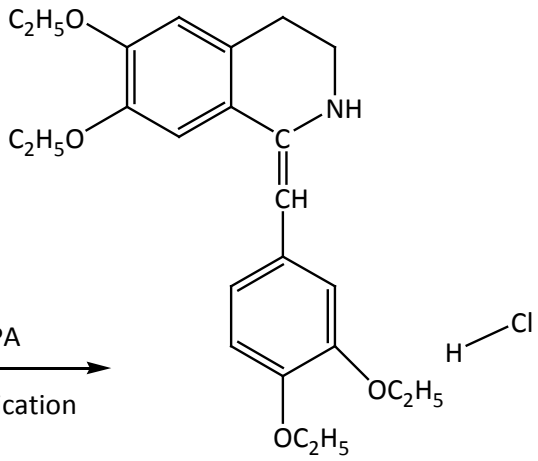
98.0

Stage-8



IPA

Purification



Drotaverine Hydrochloride (Tech)

$C_{24}H_{32}ClNO_4$

434.0

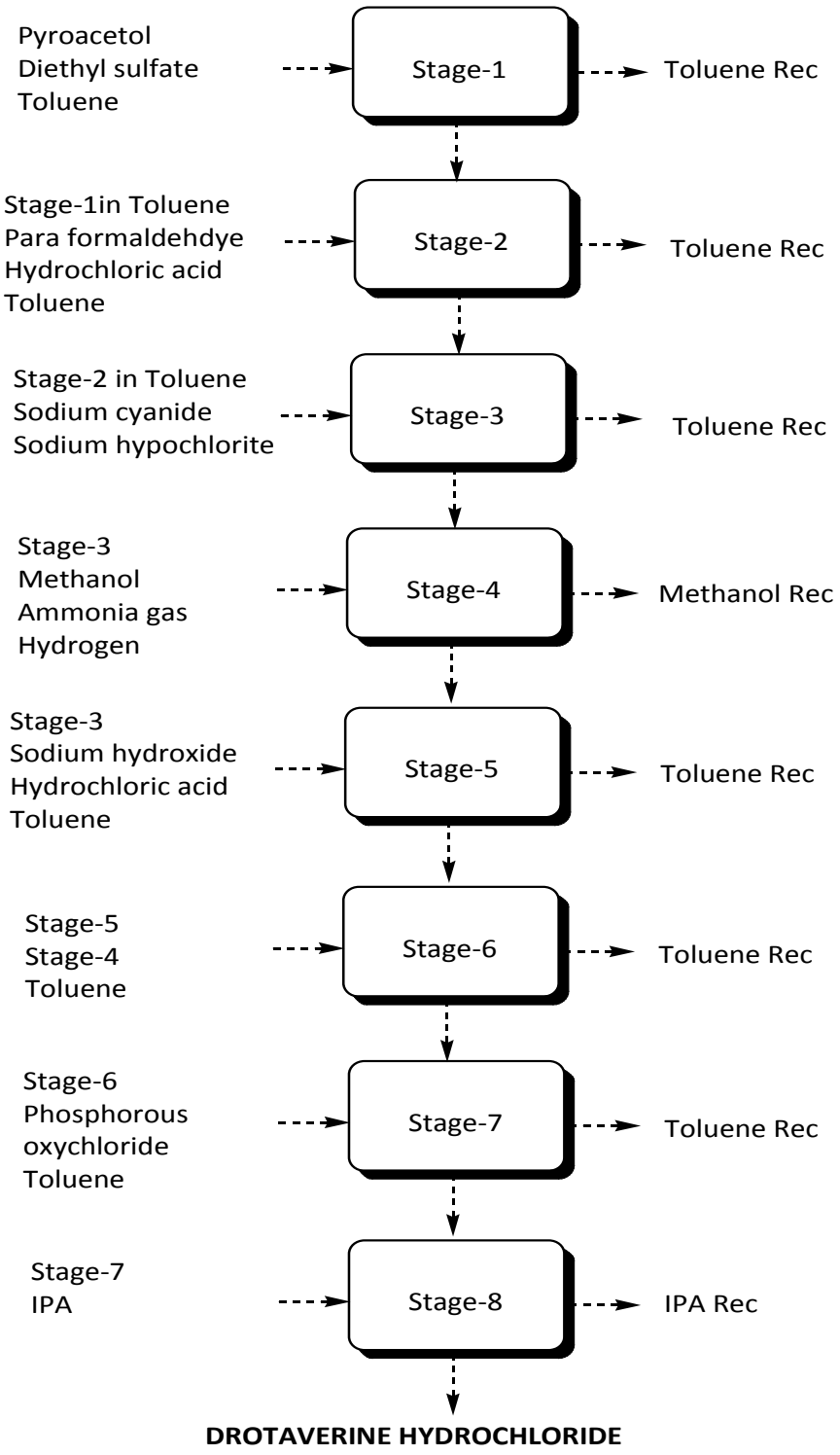
Drotaverine Hydrochloride (Pharma)

$C_{24}H_{32}ClNO_4$

434.0

DROTAVERINE HYDROCHLORIDE

Flow Chart:



DROTAVERINE HYDROCHLORIDE

Material Balance:

Material Balance of Drotaverine Hydrochloride Stage-1 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Pyro catechol	147.00		Stage-1in Toluene (85+370)	455.00
Diethyl sulfate	191.62		Effluent water	549.10
Toluene	310.00		(Water-300,Generated water-71.1,Water from sodium hydroxide-178)	
Sodium hydroxide (47%)	336.00		Inorganic solid waste	280.52
Water	300.00		(Sodium sulfate)	
Total	1284.62		Total	1284.62

Material Balance of Drotaverine Hydrochloride Stage-2 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-1in Toluene (85+370)	455.00		Stage-2 (104+440)	544.00
Para formaldehyde	19.85		Effluent water	588.62
Hydrochloric acid (35%)	293.00		(Water-300,Generated water-11.34,Sodium chloride-6.95, Hydrochloric acid-79.88,Water from Hydrochloric acid-190.45)	
Toluene	60.00		Process Emissions	5.23
Sodium bicarbonate	10.00		(Carbon dioxide)	
Water	300.00			
Total	1137.85		Total	1137.85

Material Balance of Drotaverine Hydrochloride Stage-3 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-2 in Toluene (104+440)	544.00		Stage-3	75.00
Sodium cyanide	27.00		Toluene Recovery	416.00
Sodium hypochlorite (5%)	1577.50		Toluene Loss	20.00
Water	250.00		Effluent water	1887.50
			(Water-250,Sodium chloride-32.2,Sodium cyanide-3.3,Water from sodium hypochlorite-1520, Toluene-2,Sodium hypochlorite-80)	
Total	2398.50		Total	2398.50

Material Balance of Drotaverine Hydrochloride Stage-4 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-3	75.00		Stage-4	75.00
Methanol	500.00		Methanol Recovery	472.00
Ammonia gas	45.00		Methanol Loss	25.00
Hydrogen	3.00		Raney Nickel Reuse	6.00
Nitrogen	1.00		Organic Residue	4.46
Raney Nickel	6.00		(Organic Impurities-3.46, Methanol-1)	
			Process Emissions	47.54
			(Ammonia-45,Hydrogen-1.54, Nitrogen-1)	
Total	630.00		Total	630.00

Material Balance of Drotaverine Hydrochloride Stage-5 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-3	80.00		Stage-5	75.00
Sodium hydroxide (47%)	165.00		Toluene Recovery	141.00
Hydrochloric acid (35%)	120.00		Toluene Loss	7.00
Toluene	150.00		Effluent water	535.61
Water	250.00		(Water-250,Generated water-6.66,Water from sodium hydroxide-87.45,Water from Hydrochloric acid-78,Sodium chloride-44.48,Ammonium chlorie-20.88,Sodium hydroxide-47.14,Toluene-1)	
			Organic Residue	6.39
			(Organic Impurities-5.39, Toluene-1)	
Total	765.00		Total	765.00

Material Balance of Drotaverine Hydrochloride Stage-6 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-5	75.00		Stage-6	120.00
Stage-4	75.00		Toluene Recovery	284.00
Toluene	300.00		Toluene Loss	15.00
			Stage-4 un reacted	5.02
			Generated water	6.03
			Organic Residue	19.95
			(Organic Impurities-18.95, Toluene-1)	
Total	450.00		Total	450.00

Material Balance of Drotaverine Hydrochloride Stage-7 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-6	120.00		Stage-7	115.00
Phosphorous oxy chloride	139.65		Toluene Recovery	665.00
Toluene	700.00		Toluene Loss	35.00
Sodium hydroxide (47%)	600.00		Effluent water	1144.65
Water	400.00		(Water-400,Generated water-52.77,Sodium chloride-154.58, Tri sodium phosphate-160.25, Sodium hydroxide-59.05, Water from sodium hydroxide-318)	
Total	1959.65		Total	1959.65

Material Balance of Drotaverine Hydrochloride Stage-8 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-7	115.00		Drotaverine Hydrochloride	100.00
IPA	350.00		IPA Recovery	332.00
			IPA Loss	17.00
			Organic Residue	16.00
			(Organic Impurities-15,IPA-1)	
Total	465.00		Total	465.00

6. GUAIFENESIN

Process Description:

Stage-1

Step-A

Pyro catechol reacts with Dimethyl sulfate and Sodium carbonate to give Step-A as product.

Step-B

Step-A Product reacts with Sodium hydroxide to give Step-B (Stage-1) as product.

Stage-2

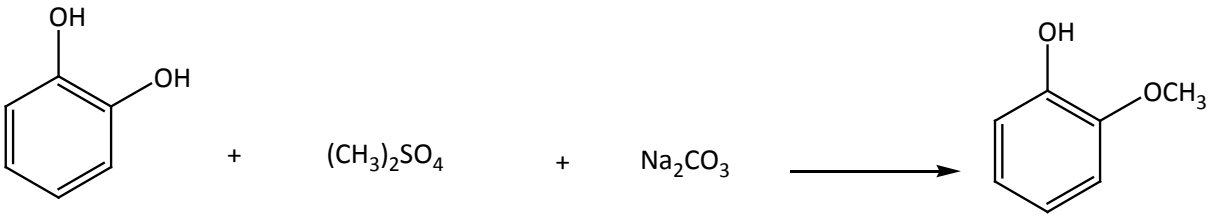
Stage-1 reacts with Epichloro hydrine and water in the presence of Toluene as solvent media to give Guaifenesin as product.

GUAIFENESIN

Route of Synthesis:

Stage-1

Step-A



Pyro catechol
$C_6H_6O_2$
110.11

Dimethyl sulfate
126.13

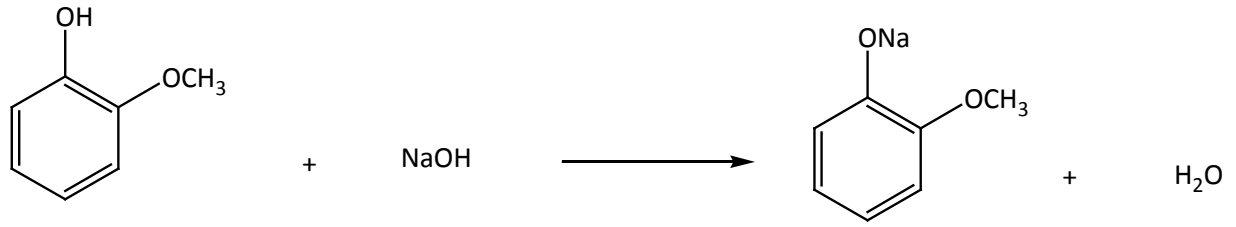
Sodium carbonate
106.0

2-Methoxy-phenol
$C_7H_8O_2$
124.14

+ Na_2SO_4 + CH_3OH + CO_2↑

142.04 32.04 44.0

Step-B



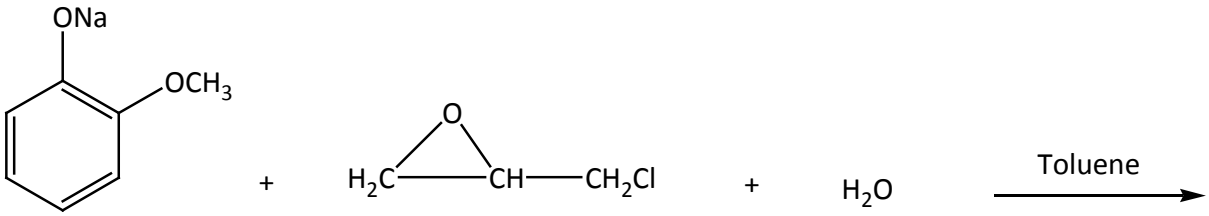
2-Methoxy-phenol
$C_7H_8O_2$
124.14

Sodium hydroxide
40.0

Sodium guiacolate
$C_7H_7NaO_2$
146.12

Water
18.0

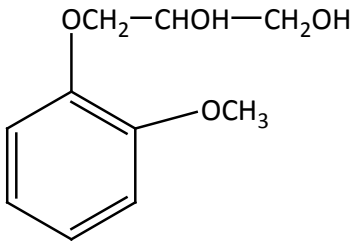
Stage-2



Sodium guiacolate
$C_7H_7NaO_2$
146.12

Epichlorohydrine
C_3H_5ClO
92.52

Water
18.0



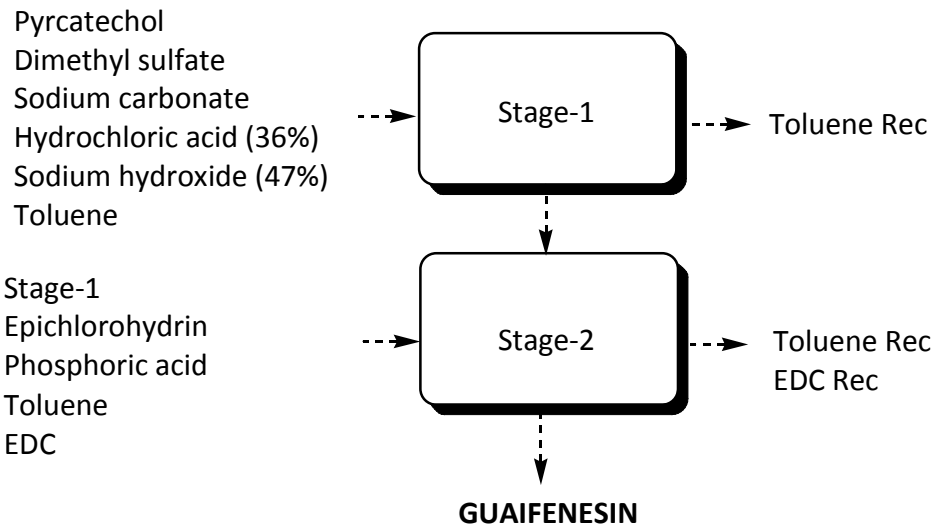
\+

NaCl
58.50

Guaifenesin
$C_{10}H_{14}O_4$
198.22

GUAIFENESIN

Flow Chart:



GUAIFENESIN

Material Balance:

Material Balance of Guaifenesin Stage-1 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Pyrcatechol	61.40		Stage-1	176.00
Di methyl sulfate	45.00		Toluene Recovery	95.50
Sodium carbonate	38.00		Toluene Loss	4.00
Hydrochloric acid (36%)	1.00		Effluent water	113.46
Sodium hydroxide (47%)	60.00		(Water-56.75, Hydrochloric acid-0.26,Sodium chloride-0.16, Methanol-11.43,Water from HCl-0.64,Water from Sodium Hydroxide-31.80,Generated water-11.92,Toluene-0.5	
Toluene	100.00		Process Emissions	15.77
Water	100.00		(Carbondioxide-15.77)	
			Inorganic Residue	0.67
			(Sodiumsulfate-0.67)	
Total	405.40		Total	405.40

Material Balance of Guaifenesin Stage-2 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-1	176.00		Guaifenesin	100.00
Epichlorohydrin	55.00		Toluene Recovery	95.50
Phosphoric acid	2.00		Toluene Loss	4.00
Toluene	100.00		EDC Recovery	71.25
EDC	75.00		EDC Loss	3.75
Hydrochloric acid (36%)	7.00		Effluent water	281.96
Water	200.00		(Water-233.39,Sodium phosphate-2.43,SodiumChloride-34.83,Generated water-1.23 Hydrochloric acid-0.75, Epichlorohydrin-4.35,Toluene-0.5,Water from HCl-4.48)	
			Inorganic Residue	50.00
			(Sodium sulfate-50)	
			Organic Residue	8.54
Total	615.00		Total	615.00

7. 1-(4-HYDROXY PHENYL) PIPERAZINE

Process Description:

Stage-1

Bis-(2-Chloro ethyl)amine HCl undergoes condensation with P-Amino phenol and further treatment with Acetic anhydride in the presence of Methanol as a solvent media to give Stage-1 as product.

Stage-2

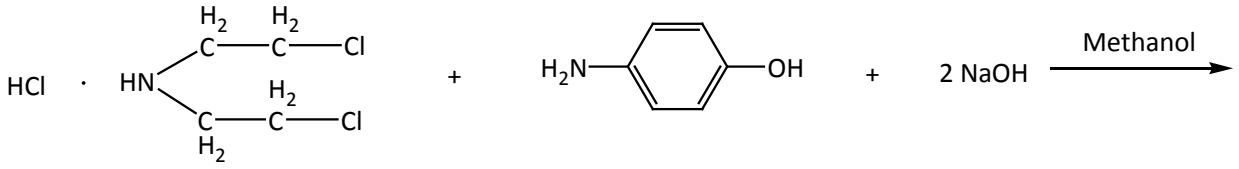
Stage-1 undergoes hydrolysis with aq.Sodium hydroxide in water media to give 1-(4-Hydroxy phenyl)Piperazine as product.

1-(4-HYDROXY PHENYL) PIPERAZINE

Route of Synthesis:

Stage -1:

Step-A



Bis(2-Chloro ethyl)amine hydrochloride

$C_4H_{10}Cl_3N$

178.49

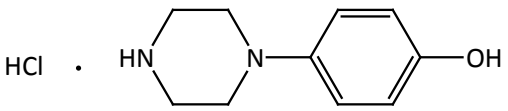
4-Amino-phenol

C_6H_7NO

109.13

Sodium hydroxide

2X40=80.0



+ 2NaCl + $2H_2O$

1-(4-hydroxy phenyl)piperazine hydrochloride

$C_{10}H_{15}ClN_2O$

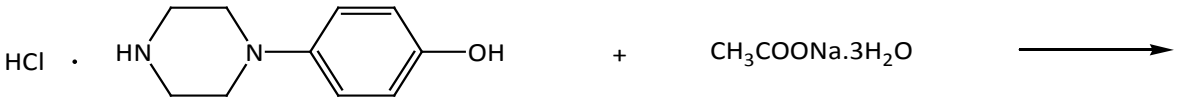
214.69

Sodium chloride

2X58.44=116.88

2X18=36.0

Step-B:



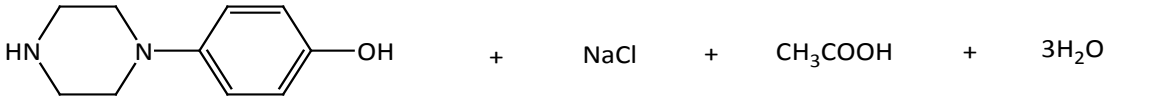
1-(4-hydroxy phenyl)piperazine hydrochloride

$C_{10}H_{15}ClN_2O$

214.69

Sodiumacetate trihydrate

136.03



4-Piperazin-1-yl-phenol

$C_{10}H_{14}N_2O$

178.23

Sodium chloride

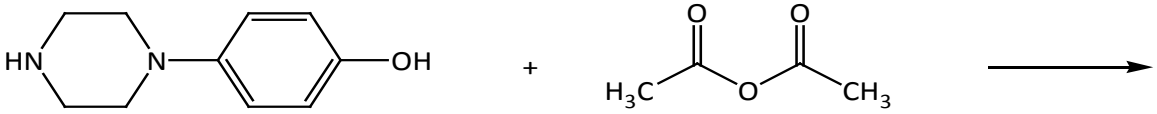
58.44

Acetic acid

60.05

3X18=54.0

Step-C:



4-Piperazin-1-yl-phenol

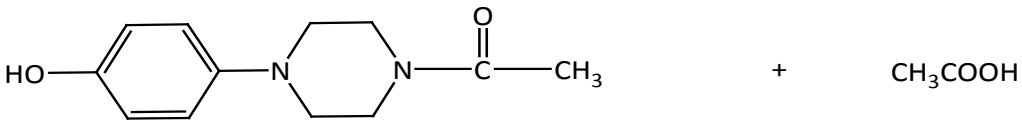
$C_{10}H_{14}N_2O$

178.23

Acetic anhydride

$C_4H_6O_3$

102.09



1-[4-(4-Hydroxy-phenyl)-piperazin-1-yl]-ethanone

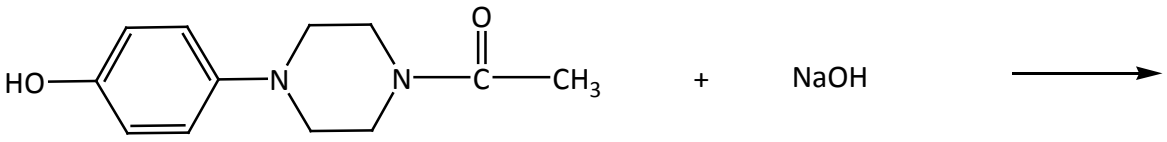
$C_{12}H_{16}N_2O_2$

220.27

Acetic acid

60.05

Stage-2:



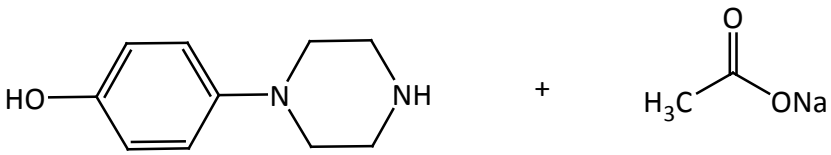
1-[4-(4-Hydroxy-phenyl)-piperazin-1-yl]-ethanone

$C_{12}H_{16}N_2O_2$

220.27

Sodium hydroxide

40.00



1-(4-Hydroxyphenyl)piperazine

$C_{10}H_{14}N_2O$

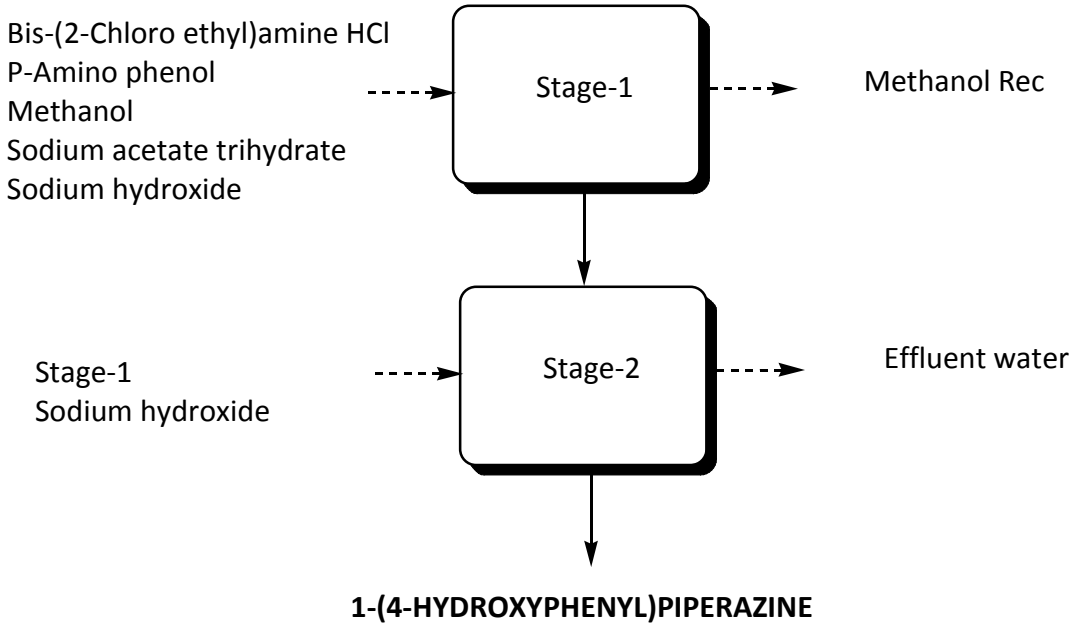
178.23

Sodium acetate Trihydrate

136.08

1-(4-HYDROXY PHENYL) PIPERAZINE

Flow Chart:



1-(4-HYDROXY PHENYL) PIPERAZINE

Material Balance:

Material Balance of 1-(4-Hydroxy phenyl)Piperazine Stage-1 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Bis-(2-Chloro ethyl)amine HCl	250.00		Stage-1	135.00
P-Amino phenol	155.00		Methanol Recovery	946.00
Methanol	1000.00		Methanol Loss	50.00
Sodium acetate trihydrate	300.00		Effluent water	6246.72
Acetic anhydride	250.00		(Water-5000,Acetic acid-279.48, Sodium chloride-292.58, Generated water-169.51,Sodium hydroxide-258.5,Water from Sodium hydroxide-241.5,P-Amino phenol-2.15,Methanol-3)	
Sodium hydroxide(47%)	550.00		Organic Residue	127.28
Water	5000.00		(Organic impurities-126.28,Methanol-1)	
Total	7505.00		Total	7505.00

Material Balance of 1-(4-Hydroxy phenyl)Piperazine Stage-2 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-1	135.00		1-(4-Hydroxy phenyl)Piperazine	100.00
Sodium hydroxide(47%)	163.00		Effluent water	2888.74
Water	2700.00		(Water-2700,Water from Sodium hydroxide-86.39,Sodium acetate -50.25,Sodium hydroxide-52.10)	
			Organic Residue	9.26
Total	2998.00		Total	2998.00

8. MEBEVERINE HYDROCHLORIDE

Process Description:

Stage-1

Vaniline undergoes Methylation with Dimethyl sulphate in presence of Sodium carbonate Toluene as a solvent media to give Stage-1 as a product.

Stage-2

Stage-1 undergoes Oxidation with Potassium permanganate and further reacts with Hydrochloric acid to give Stage-2 as a product.

Stage-3

Stage-2 reacts with Sodium methoxide in presence of Methanol as a solvent media to give Stage-3 as a product.

Stage-4

Stage-3 undergoes esterification with 1, 4-Dibromo butane to give Stage-4 as a product.

Stage-5

Anisic aldehyde reacts with 2-Chloro methyl propionate in presence of Sodium methoxide to give Stage-5 as a product.

Stage-6

Stage-5 undergoes reductive amino ethylation with Hydrogen gas in presence of Pd/C Methanol as a solvent media to give Stage-6 as a product.

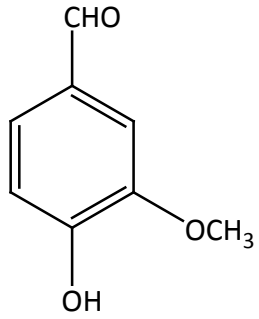
Stage-7

Stage-4 and Stage-6 reacts with Sodium carbonate in presence of MIBK as a solvent media to give Mebeverine Hydrochloride as a product.

MEBEVERINE HYDROCHLORIDE

Route of Synthesis

Stage-1



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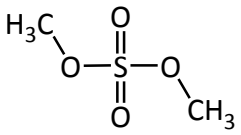


\+ Na_2CO_3 —Toluene→

Vaniline

$C_8H_8O_3$

152.15

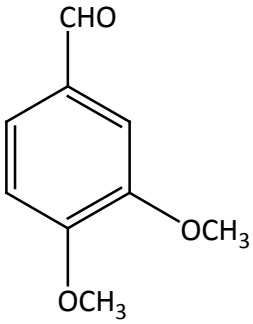
Dimethyl Sulphate

$C_2H_6O_4S$

126.13

Sodium Carbonate

105.99



\+ Na_2SO_4 \+ CO_2 ↑ \+ CH_3OH

Veratraldehyde

$C_9H_{10}O_3$

166.17

Sodium Sulphate

142.04

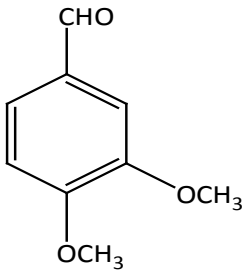
Carbon Dichloride

44.01

Methanol

32.04

Stage-2

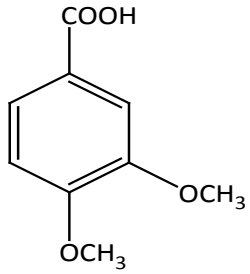


+ $KMnO_4$ + HCl

Veratraldehyde
$C_9H_{10}O_3$
166.17

Potassium Permanganate
158.03

Hydrogen chloride
36.5



+ MnO_2 + KCl + H_2O

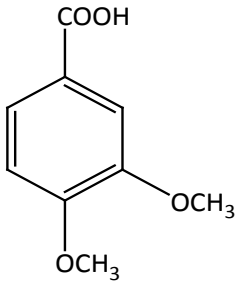
3,4-Dimethoxy-benzoic acid
$C_9H_{10}O_4$
182.17

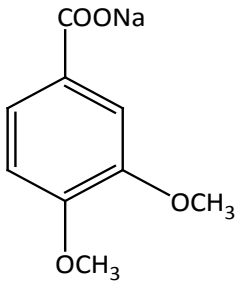
Manganese Dioxide
86.94

Potassium Chloride
74.55

18.00

Stage-3



+ CH_3ONa $\xrightarrow{\text{Methanol}}$ 

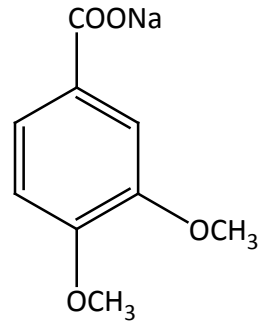
• CH_3OH

3,4-Dimethoxy-benzoic acid
$C_9H_{10}O_4$
182.17

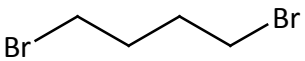
Sodium Methoxide
54.02

Sodium Veratroate
$C_{10}H_{13}NaO_5$
236.20

Stage-4



• CH_3OH +



Sodium Veratroate

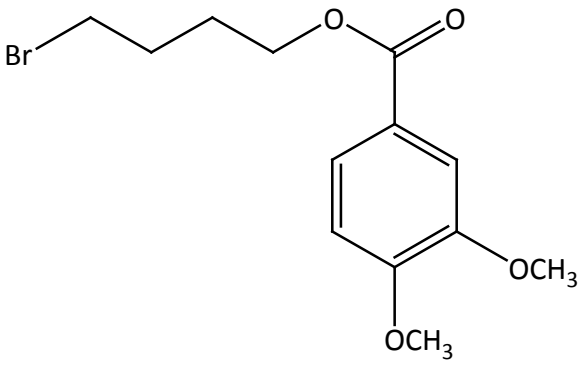
$C_{10}H_{13}NaO_5$

236.20

1,4-Dibromo butane

$C_4H_8Br_2$

215.91



+ NaBr + CH_3OH

3,4-Dimethoxy-benzoic acid
4-bromo-butyl ester

$C_{13}H_{17}BrO_4$

317.18

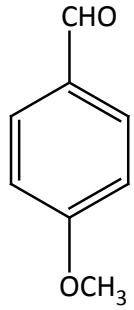
Sodium Bromide

102.89

Methanol

32.04

Stage-5

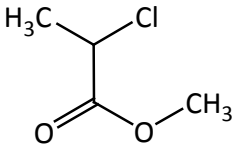


Anisic Aldehyde

$C_8H_8O_2$

136.15

+



2-Chloro methyl propionate

$C_4H_7ClO_2$

122.55

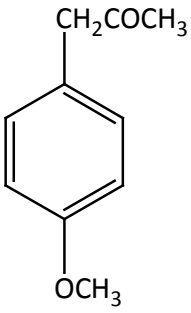
+ CH_3ONa

Sodium methoxide

54.02

+ H_2O

18.00



1-(4-Methoxy-phenyl)
-propan-2-one

$C_{10}H_{12}O_2$

164.20

+ NaCl

Sodium Chloride

58.44

+ 2 CH_3OH

Methanol

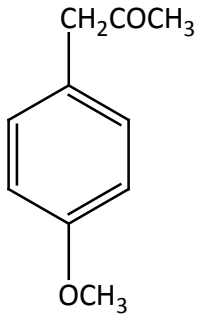
2X32.04=64.08

+ CO_2 ↑

Carbon dioxide

44.00

Stage-6



1-(4-Methoxy-phenyl)
-propan-2-one
$C_{10}H_{12}O_2$
164.20

+

$C_2H_5NH_2$

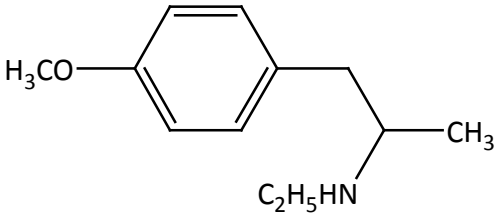
Ethylamine
C_2H_7N
45.08

+

H_2

Hydrogen
2.00

Pd/C
Methanol



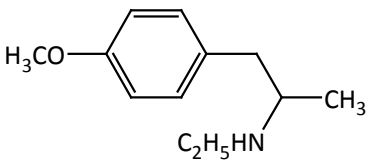
Ethyl-[2-(4-methoxy-phenyl)
-1-methyl-ethyl]-amine
$C_{12}H_{19}NO$
193.29

+

H_2O

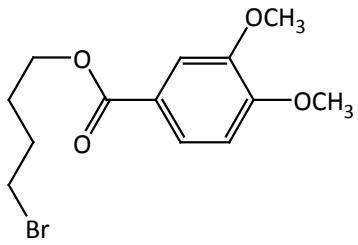
18.00

Stage-7



Ethyl-[2-(4-methoxy-phenyl)
-1-methyl-ethyl]-amine
$C_{12}H_{19}NO$
193.29

+



3,4-Dimethoxy-benzoic acid
4-bromo-butyl ester
$C_{13}H_{17}BrO_4$
317.18

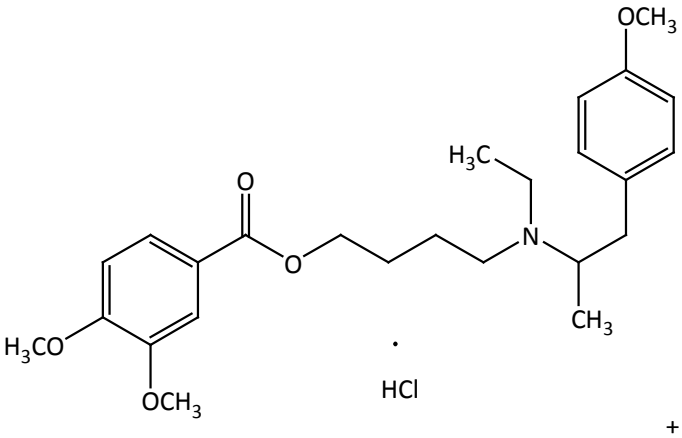
+ Na_2CO_3

Sodium Carbonate
105.99

+ HCl

Hydrochloric acid
36.5

Toluene →



Mebaverine Hydrochloride
$C_{25}H_{36}ClNO_5$
466.01

+ $NaHCO_3$

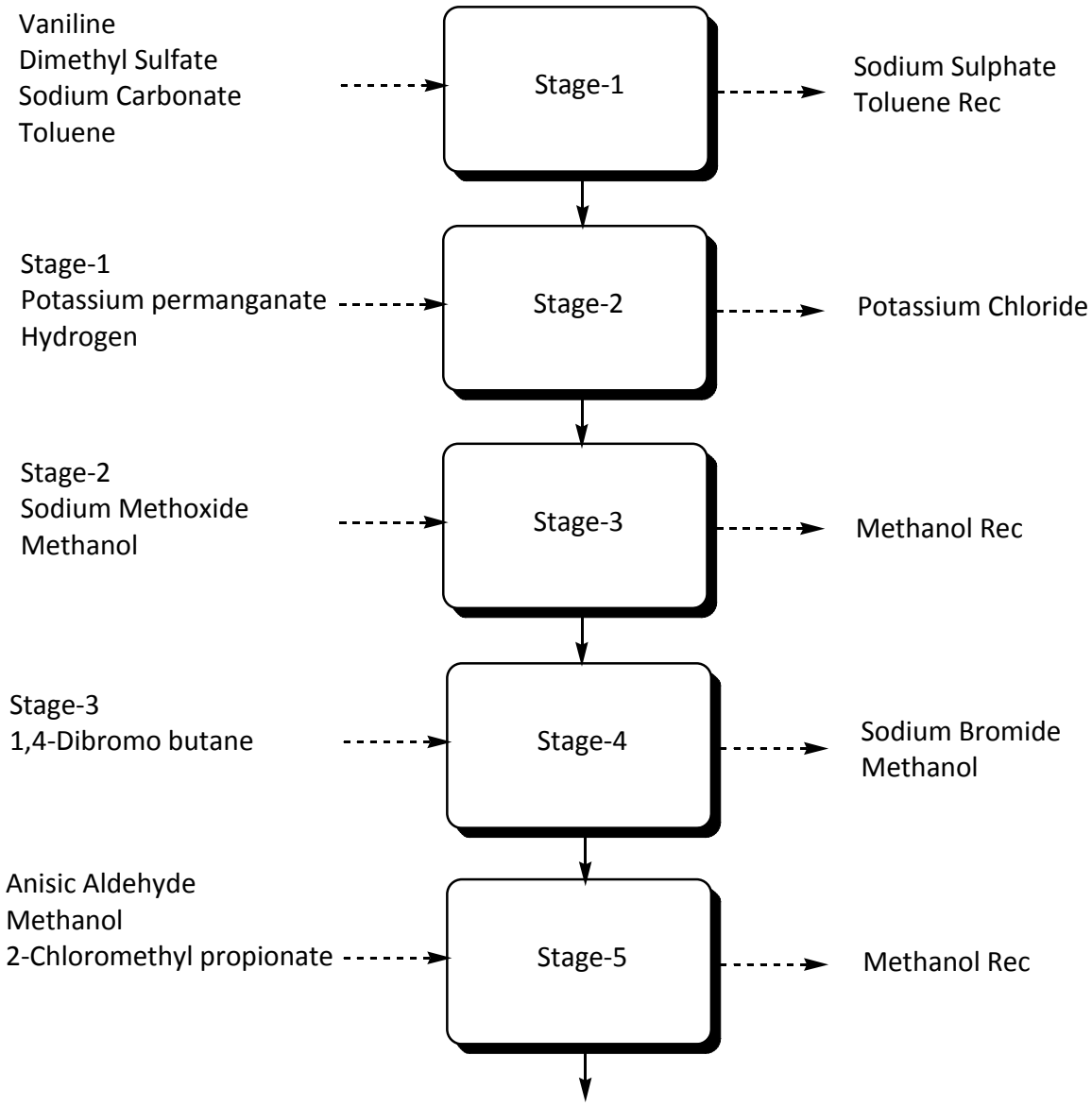
Sodium Bicarbonate
84.01

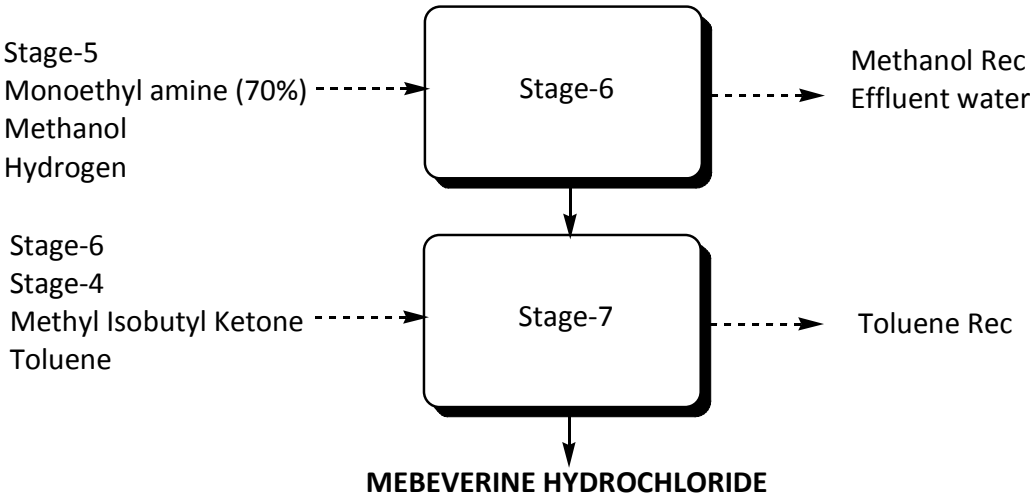
+ NaBr

Sodium Bromide
102.89

MEBEVERINE HYDROCHLORIDE

Flow Chart:




Stage-5
Monoethyl amine (70%)
Methanol
Hydrogen
Stage-6
Methanol Rec
Effluent water
Stage-6
Stage-4
Methyl Isobutyl Ketone
Toluene
Stage-7
Toluene Rec
MEBEVERINE HYDROCHLORIDE

MEBEVERINE HYDROCHLORIDE

Material Balance:

Material Balance of Mebeverine Hydrochloride Stage-1 Batch Size: 100.0 Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Vaniline	75.00		Stage-1	75.00
Dimethyl Sulfate	31.35		Toluene Recovery	711.00
Sodium Carbonate	30.00		Toluene Loss	38.00
Toluene	750.00		Effluent water	380.45
Water	370.00		(Water-370,Sodium carbonate-0.56, Methanol-8.89, Toluene-1)	
			Process Emissions	12.45
			(Carbon Dioxide-12.45)	
			Inorganic Residue	39.45
			(Sodium sulfate-39.45)	
Total	1256.35		Total	1256.35

Material Balance of Mebeverine Hydrochloride Stage-2 Batch Size: 100.0 Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-1	75.00		Stage-2	75.00
Potassium Permanganate	68.20		Effluent water	449.97
Hydrochloric acid (35%)	50.00		(Water-370,Generatedwater-8.13, WaterfromHydrochloricacid-32.5, PotassiumChloride-33.64, Potassium Permanganate-3.67, Hydrochloric acid-1.03 Sodium Bisulfite-1)	
Sodium Bisulfite	1.00		Inorganic solid waste	39.23
Hydrogen	1.00		(Manganese Dioxide-39.23)	
Water	370.00		Process Emissions	1.00
			(Hydrogen-1)	
Total	565.20		Total	565.20

Material Balance of Mebeverine Hydrochloride Stage-3 Batch Size: 100.0 Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-2	75.00		Stage-3	95.00
Sodium Methoxide	52.75		Methanol Recovery	712.00
Methanol	750.00		Methanol Loss	38.00
			Sodium Methoxide (Un reacted)	32.75
Total	877.75		Total	877.75

Material Balance of Mebeverine Hydrochloride Stage-4 Batch Size: 100.0 Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-3	95.00		Stage-4	115.00
1,4-Dibromo butane	800.00		1,4-Dibromo butane Recovery	695.00
Water	110.00		Effluent water	164.28
			(Water-110,SodiumBromide-41.4, Methanol-12.88)	
			1,4-Dibromo butane (Un reacted)	18.16
			Organic Residue	12.56
			(Organic Impurities-12.56)	
Total	1005.00		Total	1005.00

Material Balance of Mebeverine Hydrochloride Stage-5 Batch Size: 100.0 Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
p-Anisic aldehyde	60.00		Stage-5	60.00
Methanol	110.00		Methanol Recovery	103.00
2-Chloromethyl propionate	74.56		Methanol Loss	6.00
Sodium Methoxide	25.00		Toluene Recovery	56.00
Toluene	60.00		Toluene Loss	3.00
Water	250.00		2-Chloromethyl propionate (Un reacted)	25.99
			Effluent water	306.17
			(Water-250,SodiumChloride-25.74, Sodium Methoxide-1.2, Methanol-28.23,Toluene-1)	
			Process Emissions	19.40
			(Carbondioxide-19.4)	
Total	579.56		Total	579.56

Material Balance of Mebeverine Hydrochloride Stage-6 Batch Size: 100.0 Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-5	60.00		Stage-6	60.00
Monoethyl Amine (70%)	66.81		Methanol Recovery	189.00
Hydrochloric acid (35%)	40.00		Methanol Loss	10.00
Methanol	200.00		Toluene Recovery	236.00
Sodium Hydroxide (47%)	40.00		Toluene Loss	13.00
Hydrogen	2.00		Mono methyl amine (Un reacted)	37.00
Nitrogen	2.00		Effluent water	312.54
Toluene	250.00		(Water-200,Generatedwater-13.47, Sodium Hydroxide-3.46, Sodium Chloride-22.41, WaterfromMonomethylamine-24.00, WaterfromSodiumHydroxide-21.2, Water from Hydrochloric acid-26, Methanol-1,Toluene-1)	
Water	200.00		Process Emissions	3.27
			(Hydrogen-1.27,Nitrogen-2)	
Total	860.81		Total	860.81

Material Balance of Mebeverine Hydrochloride Stage-7 Batch Size: 100.0 Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-6	60.00		Mebeverine Hydrochloride	100.00
Stage-4	115.00		Methyl Isobutyl Ketone Recovery	142.00
Methyl Isobutyl Ketone	150.00		Methyl Isobutyl Ketone Loss	8.00
Toluene	200.00		Toluene Recovery	188.00
Ethyl Acetate	250.00		Toluene Loss	10.00
Methylene Dichloride	150.00		Ethyl Acetate Recovery	237.00
Sodium Carbonate	40.00		Ethyl Acetate Loss	13.00
Hydrochloric acid (35%)	35.00		Methylene Dichloride Recovery	142.00
Water	200.00		Methylene Dichloride Loss	8.00
			Stage-4 (Un reacted)	15.00
			Effluent water	289.79
			(Water-200,SodiumBicarbonate-26.11 SodiumBromide-31.93, SodiumCarbonate-7.05, Hydrochloricacid-0.95, WaterfromHydrochloricacid-22.75, Toluene-1)	
			Organic Residue	47.21
			(Organic Impurities-46.21,Toluene-1)	
Total	1200.00		Total	1200.00

9. MEPHENESIN

Process Description:

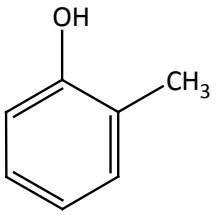
Stage-1

Ortho Cresol reacts with Epichlorohydrin and Sodium Hydroxide in presence of Ethylene Dichloride as a solvent media to give Mephenesin as a product.

MEPHENESIN

Route of Synthesis:

Stage-1

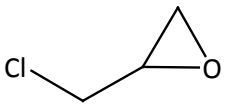


Ortho Cresol

C_7H_8O

108.14

+



Epichlorohydrin

C_3H_5ClO

92.52

+ NaOH

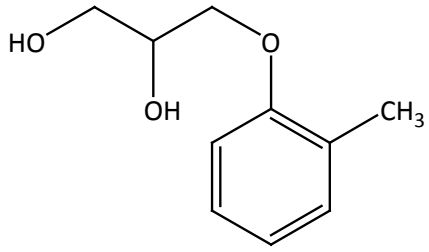
Sodium Hydroxide

40.00

+ H_2O

18.00

EDC →



Mephenesin

$C_{10}H_{14}O_3$

182.22

+ NaCl

Sodium chloride

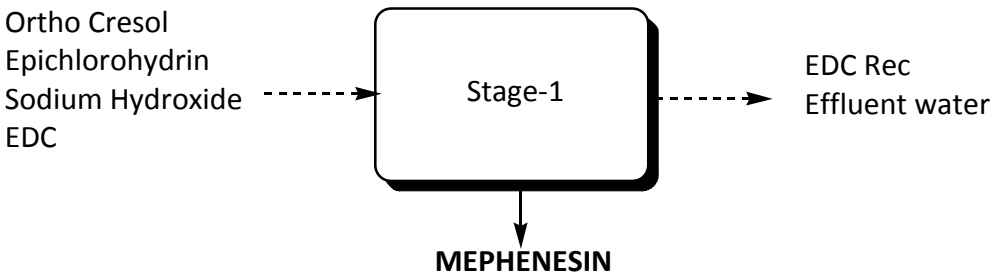
58.44

+ H_2O

18.00

MEPHENESIN

Flow Chart:



MEPHENESIN

Material Balance:

Material Balance of Mephenesin Stage-1 Batch Size: 100.0Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Ortho cresol	68.00		Mephenesin	100.00
Epichlorohydrin	42.34		Ethylene Dichloride Recovery	65.80
Phosphoric acid	5.00		Ethylene Dichloride Loss	4.20
Sodium Hydroxide (47%)	65.00		Toluene Recovery	103.60
Ethylene Dichloride	70.00		Toluene Loss	4.40
Toluene	110.00		Effluent water	342.34
Hydrochloric acid (30%)	10.00		(Water-250,Water from Sodium hydroxide-34.45,Sodium phosphate-24.49,Generated water-13.74,Sodium chloride-8.83,Water from HCl-7, Epichlorohydrin-1.83,Toluene-2)	
Water	250.00			
Total	620.34		Total	620.34

10. METHOCARBAMOL

Process Description

Stage-1

Pyro Catechol reacts with Dimethyl sulphate and Sodium Hydroxide in presence of Toluene as a solvent media to give Stage-1 as a product.

Stage-2

Stage-1 Reacts with Epichlorohydrin in presence of Toluene as a solvent media to give Stage-2 as a product.

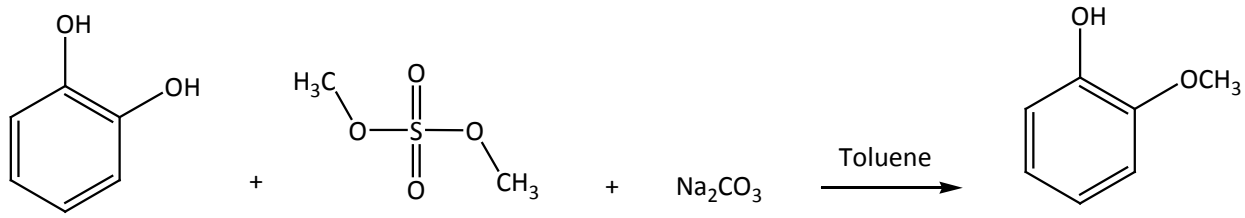
Stage-3

Stage-2 reacts with Dimethyl Carbonate and Ammonia in presence of toluene as a solvent media to give Methocarbamol as a product.

METHOCARBAMOL

Route of Synthesis:

Stage-1

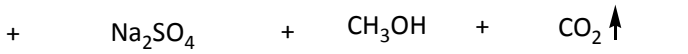


Benzene-1,2-diol
$C_6H_6O_2$
110.11

Dimethyl Sulphate
$C_2H_6O_4S$
126.13

Sodium carbonate
105.99

2-Methoxy-phenol
$C_7H_8O_2$
124.14

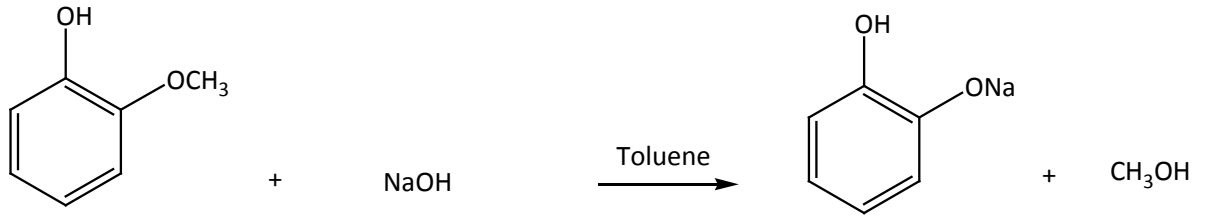


Sodium sulphate
142.04

Methanol
32.04

Carbon dioxide
44.01

Step-B



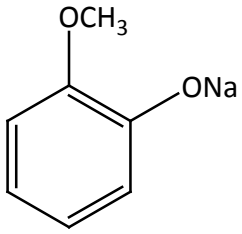
2-Methoxy-phenol
$C_7H_8O_2$
124.14

Sodium Hydroxide
40.00

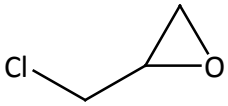
Sodium Guaiacolate
$C_6H_5NaO_2$
132.09

Methanol
32.04

Stage-2



\+



\+ H_2O

Toluene →

Sodium Guaiacolate

$C_7H_7NaO_2$

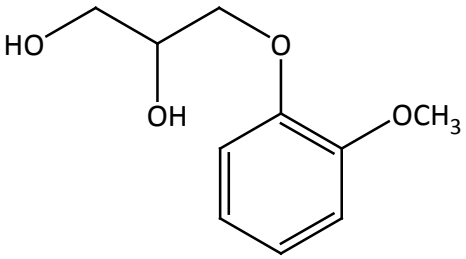
146.12

Epichlorohydrin

C_3H_5ClO

92.52

18.00



\+ NaCl

Guaifenesin

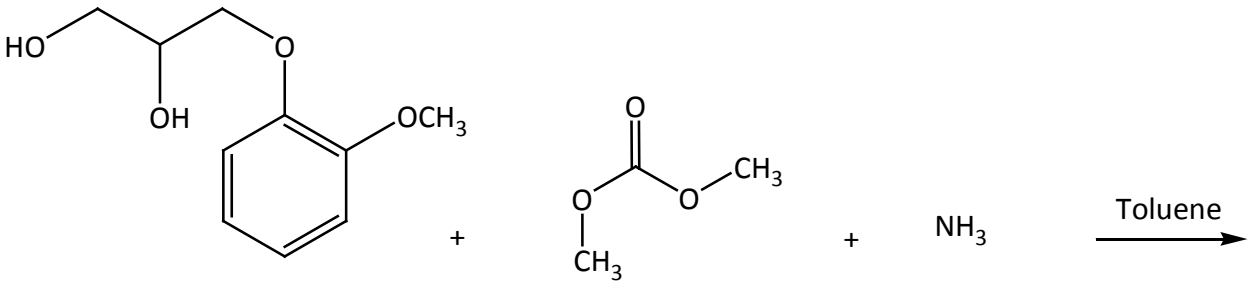
$C_{10}H_{14}O_4$

198.22

Sodium Chloride

58.44

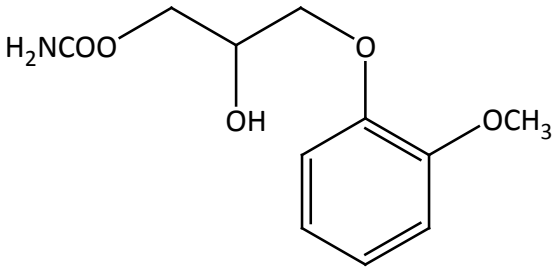
Stage-3



Guaifenesin
$C_{10}H_{14}O_4$
198.22

Dimethyl Carbonate
$C_3H_6O_3$
90.08

Ammonia
17.03



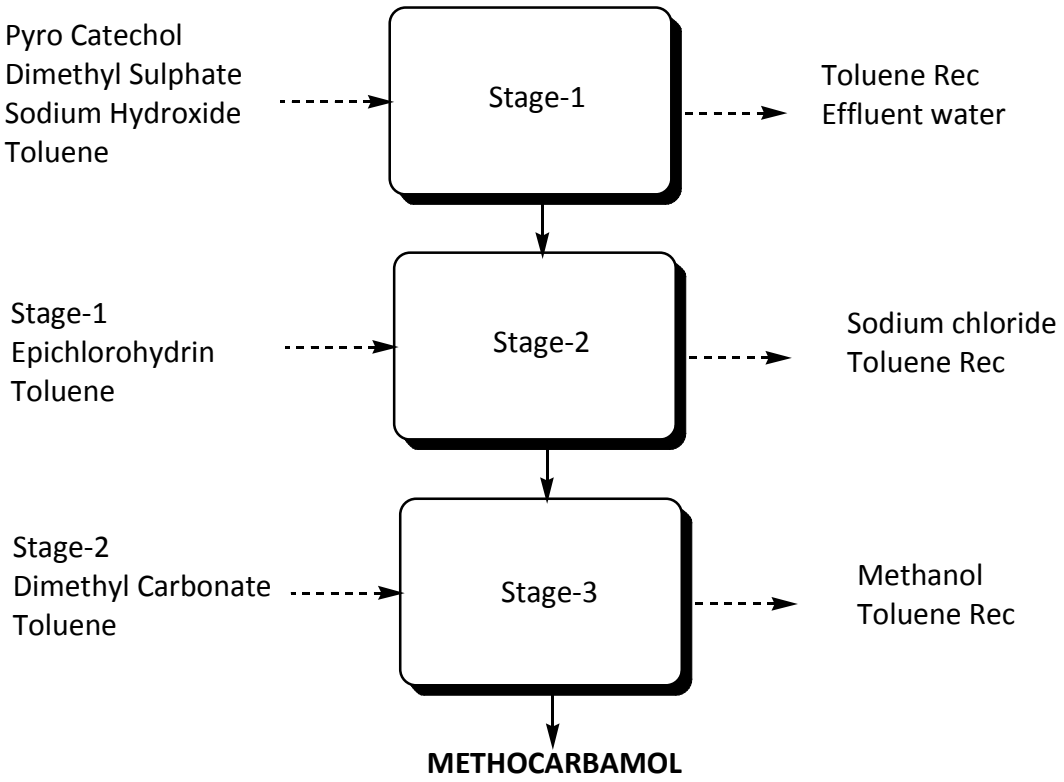
+ 2 CH_3OH

Methocarbamol
$C_{11}H_{15}NO_5$
241.24

Methanol
2X32.04=64.08

METHOCARBAMOL

Flow Chart:



METHOCARBAMOL

Material Balance:

Material Balance of Methocarbamol Stage-1 Batch Size: 100.0Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Pyrocatechol	70.00		Stage-1 Layer	176.00
Dimethyl Sulfate	43.72		Toluene Recovery	95.50
Sodium Carbonate	38.00		Toluene Loss	4.00
Hydrochloric Acid (36%)	1.00		Effluent water	120.77
Sodium Hydroxide (47%)	60.00		(Water-56.75 ,Water from HCl -0.64,Sodium chloride-0.16,HCl -0.26,Methanol-30.65,Toluene -0.5,Water from Sodium Hydroxid-31.8,Generatedwater-0.01	
Toluene	100.00		Process Emissions	15.78
Water	100.00		(Carbon dioxide-15.78)	
			Inorganic Residue	0.67
			(Sodium sulfate-0.67)	
Total	412.72		Total	412.72

Material Balance of Methocarbamol Stage-2 Batch Size: 100.0Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-1 Layer	176.00		Stage-2	100.00
Epichlorohydrin	49.64		Toluene Recovery	95.00
Phosphoric acid	2.00		Toluene Loss	4.00
Toluene	100.00		EDC Recovery	71.25
Ethylene Dichloride	75.00		EDC Loss	3.75
Hydrochloric Acid (36%)	7.00		Effluent water	285.64
Water	200.00		(Water-233.40,Sodium chloride-34.74,Sodium phosphate-2.45, Generated water-1.24,Water from HCl-4.48,Epichlorohydrin -4.35,Toluene-0.5,HCl-4.48)	
			Inorganic Residue	50.00
			(Sodium sulfate-50)	
Total	609.64		Total	609.64

Material Balance of Methocarbamol Stage-3 Batch Size: 100.0Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-2	100.00		Methocarbamol	100.00
Di methyl Carbonate	26.29		Toluene Recovery	192.00
Ammonia (8%)	115.00		Toluene Loss	8.00
Toluene	200.00		Effluent water	240.68
Water	100.00		(Water-100,Water from NH_3 105.8,Methanol-32.32,Toluene-1, Di methyl carbonate-1.56)	
			Process Emissions	0.61
			(Ammonia-0.61)	
Total	541.29		Total	541.29

11. POTASSIUM GUAIACOL SULFONATE

Process Description:

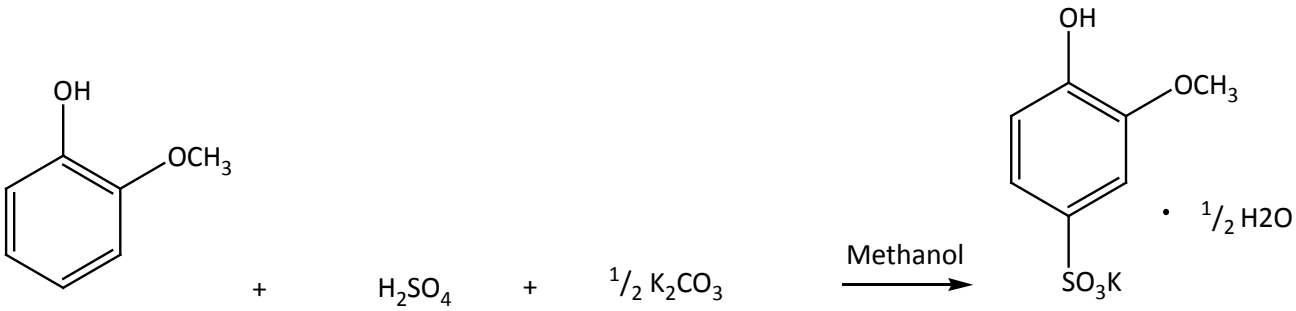
Stage-1

Guaiacol reacts with Sulfuric acid and Potassium Carbonate in presence of Methanol as a solvent media to give Potassium Guaiacol Sulfonate as a product.

POTASSIUM GUAIACOL SULFONATE

Route of Synthesis:

Stage-1



Guaiacol
$C_7H_8O_2$
124.14

Sulfuric acid
98.08

Potassium Carbonate
$^1/_2$X138=69.00

Potassium Guaiacolsulphonate
$C_7H_7KO_5S \cdot {}^1/_2H_2O$
251.30

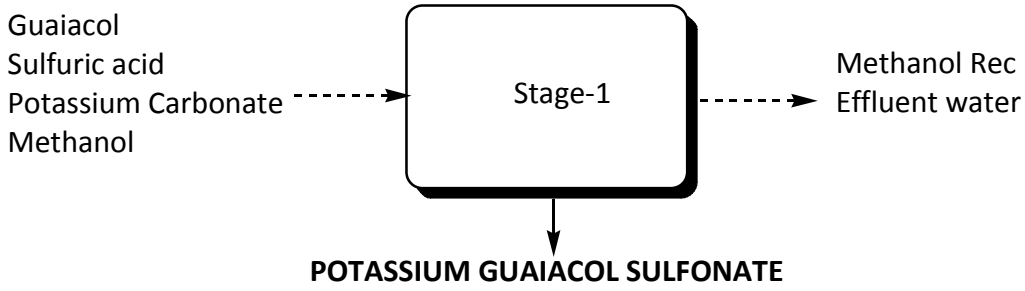
+ $^1/_2\,CO_2$ + H_2O

Carbon Dioxide
1/2X44=22.00

18.00

POTASSIUM GUAIACOL SULFONATE

Flow Chart:



POTASSIUM GUAIACOL SULFONATE

Material Balance:

Material Balance of Potassium Guaiacol Sulfonate Stage-1 Batch Size: 100.0Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Guaiacol	50.00		Potassium Guaiacol Sulfonate	100.00
Sulfuric acid	45.00		Methanol Recovery	24.00
Potassium Carbonate	30.00		Methanol Loss	1.00
Methanol	25.00		Effluent water	103.51
Barium Carbonate	15.00		(Water-75,Potassium carbonate-2.21,Barium carbonate-3.87, Barium sulfate13.17,Methanol-1, Generated water-8.26)	
Water	75.00		Process Emissions	11.34
			(Carbon dioxide-11.34)	
			Organic Residue	0.15
Total	240.00		Total	240.00

12. PRAZOSIN HYDROCHLORIDE

Process Description:

Stage-1

2-Furoic Acid reacts with Methanol in presence of Sulfuric acid to give give Stage-1 as a product.

Stage-2

Stage-1 reacts with Piperazine and Hydrochloric acid in presence of Toluene as a solvent media to give Stage-2 as a product.

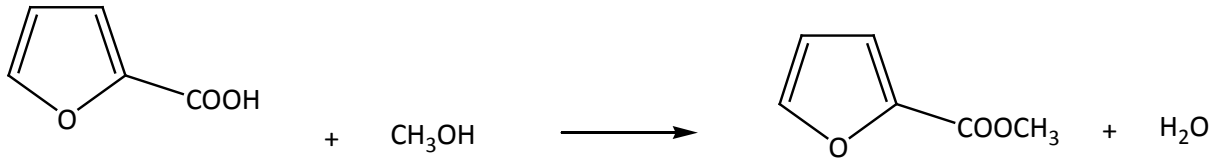
Stage-3

Stage-2 reacts with 4-Amino-2-Chloro-6, 7-dimethoxy quinozoline in presence of Isopropyl Alcohol as a solvent media to give Prazosin Hydrochloride as a product.

PRAZOSIN HYDROCHLORIDE

Route of Synthesis:

Stage-1



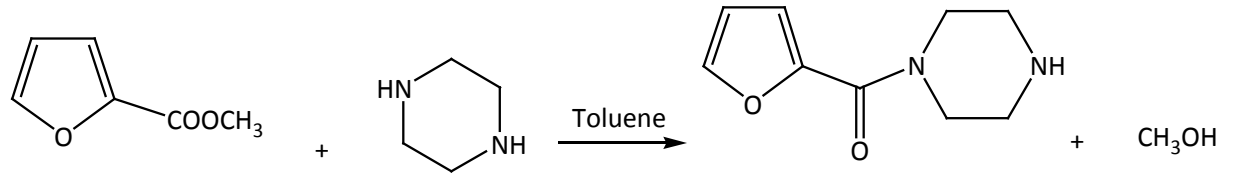
Furan-2-carboxylic acid
$C_5H_4O_3$
112.08

Methanol
32.04

Furan-2-carboxylic acid methyl ester
$C_6H_6O_3$
126.11

18.00

Stage-2



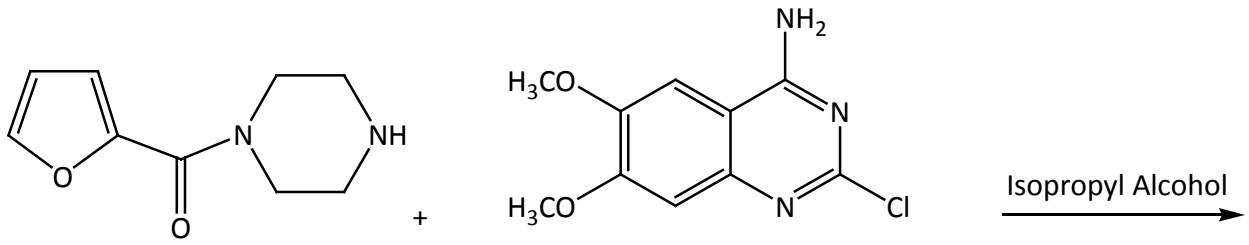
Furan-2-carboxylic acid methyl ester
$C_6H_6O_3$
126.11

Piperazine
$C_4H_{10}N_2$
86.14

Furan-2-yl-piperazin-1-yl-methanone
$C_9H_{12}N_2O_2$
180.20

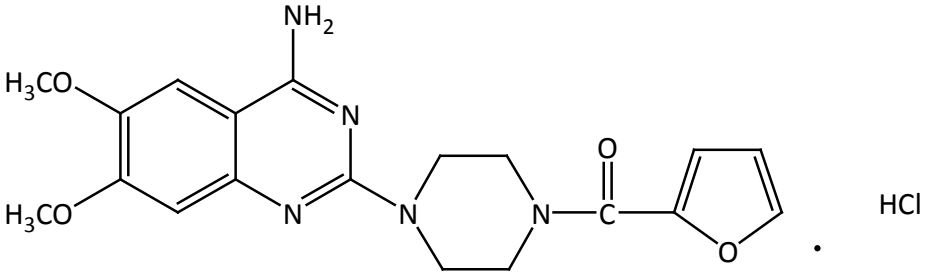
Methanol
32.04

Stage-3



Furan-2-yl-piperazin
-1-yl-methanone
$C_9H_{12}N_2O_2$
180.20

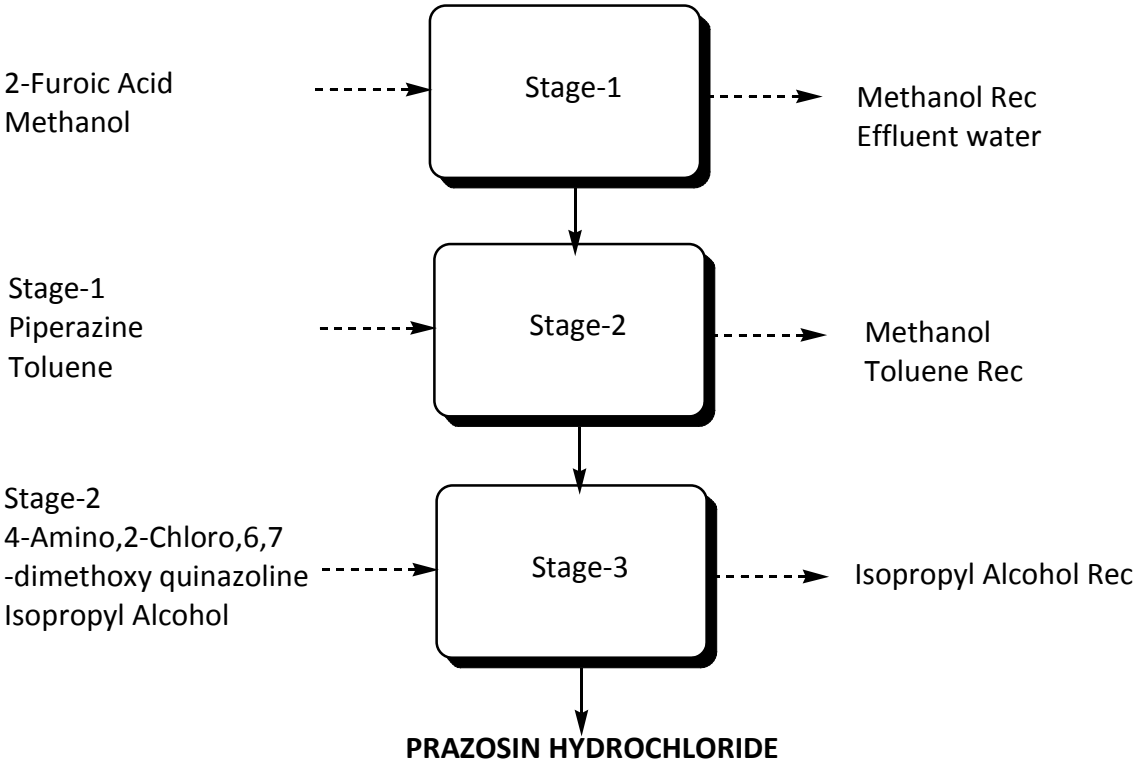
2-Chloro-6,7-dimethoxy
-quinazolin-4-ylamine
$C_{10}H_{10}ClN_3O_2$
239.66



Prazosin Hydrodrochloride
$C_{19}H_{22}ClN_5O_4$
419.86

PRAZOSIN HYDROCHLORIDE

Flow Chart



PRAZOSIN HYDROCHLORIDE

Material Balance:

Material Balance of Prazosin Hydrochloride Stage-1 Batch Size: 25.0Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
2-Furoic acid	36.25		Stage-1	33.75
Methanol	56.25		Methanol Recovery	53.25
Sulfuric acid	1.25		Methanol Loss	2.25
Sodium carbonate	1.50		Effluent water	127.70
Water	125.00		(Water-125,Sodium sulfate-1.82, Generated water-0.23,Sodium carbonate-0.15,Methanol-0.5)	
			Process Emissions	0.56
			(Carbon dioxide-0.56)	
			Organic Residue	2.74
			(Organic impurities-2.49, Methanol-0.25)	
Total	220.25		Total	220.25

Material Balance of Prazosin Hydrochloride Stage-2 Batch Size: 25.0Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-1	33.75		Stage-2	25.00
Piperazine	50.00		Toluene Recovery	235.00
Sodium hydroxide (47%)	25.00		Toluene Loss	12.50
Hydrochloric acid (35%)	30.00		Chloroform Recovery	475.00
Toluene	250.00		Chloroform Loss	25.00
Chloroform	500.00		Piperazine Recovery	46.78
Sodium Sulfate	5.00		Piperazine Loss	2.50
Water	25.00		Effluent water	91.30
			(Water-25,Sodium hydroxide-0.25, Sodium chloride-16.82,Generated water-5.18,Methanol-8.58,Water from Sodium hydroxide-13.25, Water from Hydrochloric acid-19.50,Toluene-2,Piperazine-0.72)	
			Inorganic Residue	5.00
			(Sodium sulfate-5)	
			Organic Residue	0.67
			(Organic impurities-0.17,Toluene-0.5)	
Total	918.75		Total	918.75

Material Balance of Prazosin Hydrochloride Stage-3 Batch Size: 100.0Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-2	25.00		Prazosin Hydrochloride	25.00
4-Amino-2-chloro-6,7-Dimethoxy quinozoline	33.75		IPA Recovery	82.95
2-Methoxy Ethanol	75.00		IPA Loss	3.50
Hydrochloric acid (35%)	1.25		Methanol Recovery	179.00
Isopropyl alcohol	87.50		Methanol Loss	7.50
Methanol	187.50		2-Methoxy Ethanol Recovery	70.75
Water	150.00		2-Methoxy Ethanol Loss	3.75
			Effluent water	153.75
			(Water-150,Water from HCl-0.81, HCl-0.44,2-Methoxy ethanol-0.5, IPA-1,Methanol-1)	
			Organic Residue	33.80
			(Organic impurities-33.19,4-Amino-2-chloro6,7-Dimethoxy quinazoline-0.51,IPA-0.1)	
Total	560.00		Total	560.00

13. RIBAVIRIN

Process Description:

Stage-1

1, 2, 3, 5-Terta-O-Acetyl ribo furanose reacts with Methyl-1, 2, 4-triazole-3-carboxylate in the presence Stannic chloride by using MDC as solvent media to give Stage-1 as product.

Stage-2

Stage-1 product reacts with Ammonia in the presence of Methanol as solvent media to give Stage-2 as product.

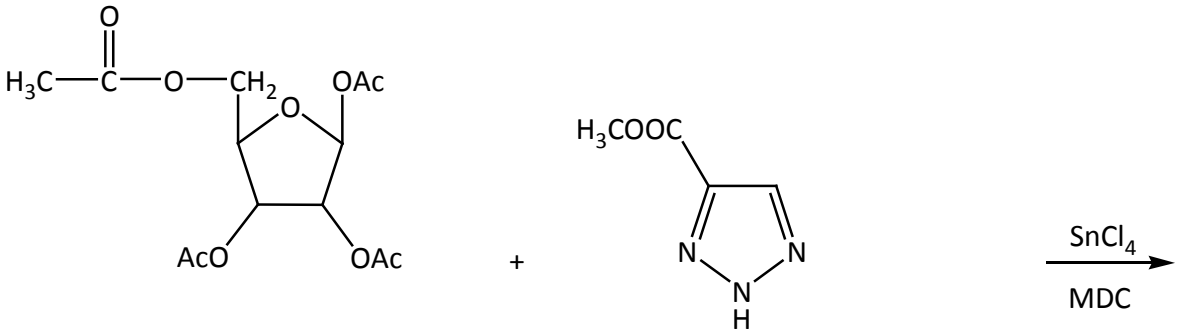
Stage-3

Stage-2 product undergoes Purification by using Methanol and Activated carbon to give Ribavirin as product.

RIBAVIRIN

Route of Synthesis

Stage-1



Acetic acid 3,4,5-triacetoxy-tetrahydro -furan-2-ylmethyl ester

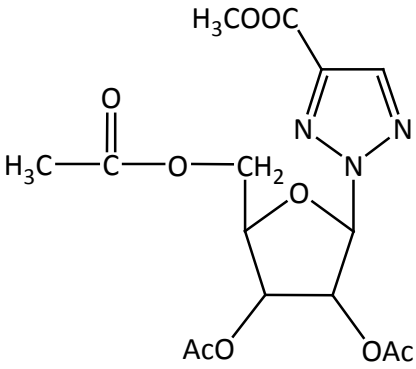
$C_{13}H_{18}O_9$

318.28

2*H*-[1,2,3]Triazole-4-carboxylic acid methyl ester

$C_{13}H_{18}O_9$

127.10



+ CH_3COOH

2-(3,4-Diacetoxy-5-acetoxymethyl-tetrahydro-furan -2-yl)-2*H*-[1,2,3]triazole-4-carboxylic acid methyl ester

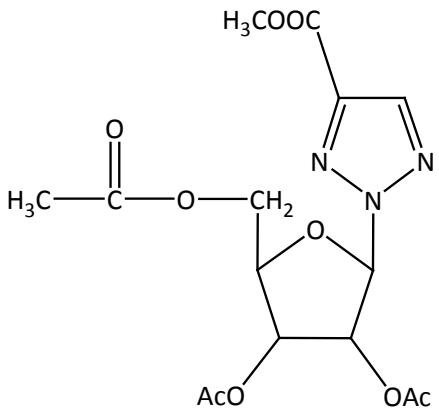
$C_{15}H_{19}N_3O_9$

385.33

Acetic acid

60.05

Stage-2



2-(3,4-Diacetoxy-5-acetoxymethyl-tetrahydro-furan-2-yl)-2*H*-[1,2,3]triazole-4-carboxylic acid methyl ester

$C_{15}H_{19}N_3O_9$

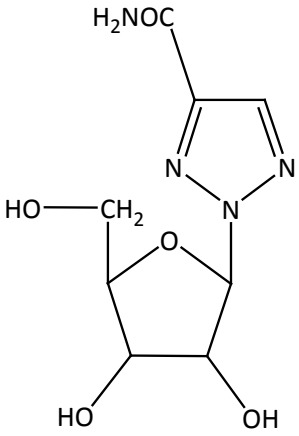
385.33

\+ 4 NH_3

Ammonia

4X17=68.00

Methanol →



Ribavirin Tech

$C_8H_{12}N_4O_5$

244.20

\+ 3 CH_3CONH_2

Acetamide

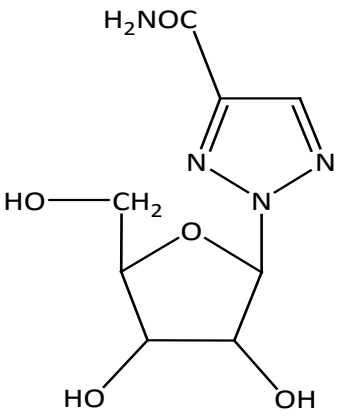
3X59.07=177.21

\+ CH_3OH

Methanol

32.04

Stage-3

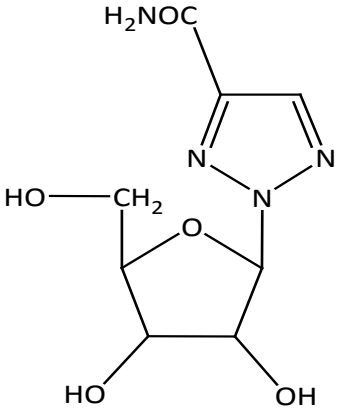


Ribavirin Tech

$C_8H_{12}N_4O_5$

244.20

Methanol →



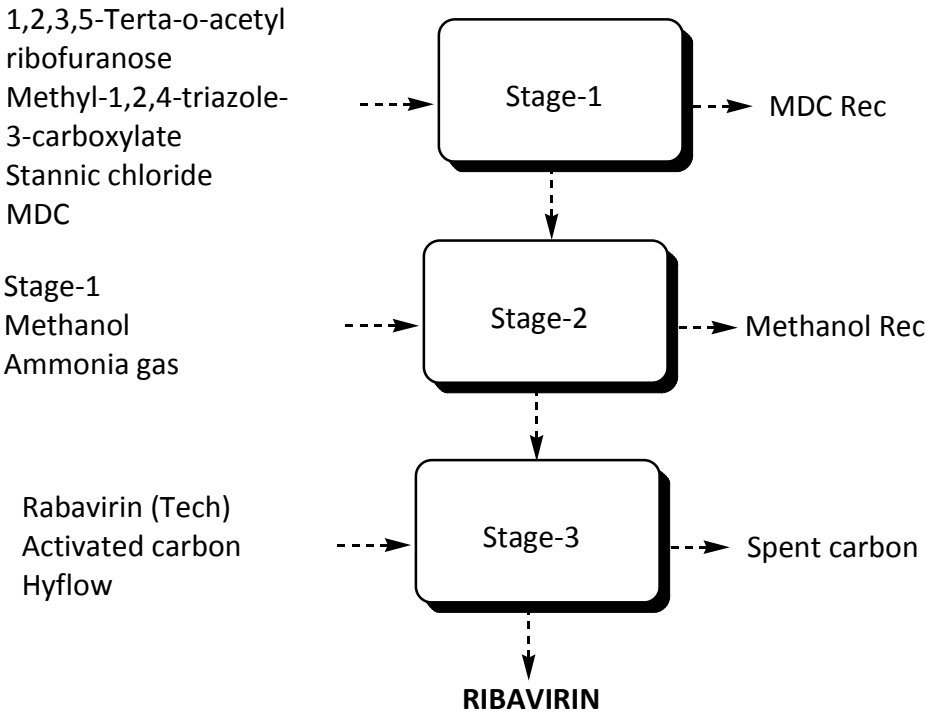
Ribavirin Pharma

$C_8H_{12}N_4O_5$

244.20

RIBAVIRIN

Flow Chart:



RIBAVIRIN

Material Balance:

Material balance of Ribavirin Stage-1 Batch Size:50.0Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity In Kg
1,2,3,5-Terta-o-acetylribofuranose	90.00		Stage-1	107.50
Methyl-1,2,4-triazole-3-carboxylate	37.50		MDC Recovery	143.00
Stannic chloride	85.00		MDC Loss	7.00
MDC	150.00		Toluene Recovery	260.00
Toluene	275.00		Toluene Loss	13.00
Water	1500.00		Effluent water	1602.98
			(Water-1500,Acetic acid-16.98,Stannic chloride-85, Toluene-1)	
			Organic Residue	4.02
			(Organic Impurities-3.02,Toluene-1)	
Total	2137.50		Total	2137.50

Material balance of Ribavirin Stage-2 Batch Size: 50.0Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity In Kg
Stage-1	107.50		Rabavirin (Tech)	57.50
Methanol	550.00		Methanol Recovery	522.00
Ammonia gas	21.00		Methanol Loss	27.00
Water	250.00		Effluent water	308.33
			(Water-250,Acetamide-49.4, Methanol-8.93)	
			Organic Residue	11.64
			(Organic Impurities-10.64, Methanol-1)	
			Process Emissions	2.03
			(Ammonia)	
Total	928.50		Total	928.50

Material balance of Ribavirin Stage-3 Batch Size: 50.0Kg				
Name of the input	Quantity in Kg		Name of the out put	Quantity In Kg
Rabavirin (Tech)	57.50		Ribavirin (Pure)	50.00
Methanol	400.00		Methanol Recovery	378.00
Activated carbon	0.05		Methanol Loss	20.00
Hyflow	0.25		Spent carbon &Hyflow	0.30
Water	25.00		Effluent water	26.00
			(Water-25,Methanol-1)	
			Organic Residue	8.50
			(Organic Impurities-7.5, Methanol-1)	
Total	482.80		Total	482.80

14. ROPINIROLE HYDROCHLORIDE

Process Description:

Stage-1

4-(min-Bromo ethyl)-3-chloror-1,3-dihydro-2H-Indol-2-one reacts with Hydrogen by using Raney Nickel as catalyst in the presence of Ethyl acetate as solvent media to give Stage-1 as product.

Stage-2

Stage-1 product reacts with Di-n-propyl amine and Hydrochloric acid in the presence of IPA as solvent media to give Stage-2 as product.

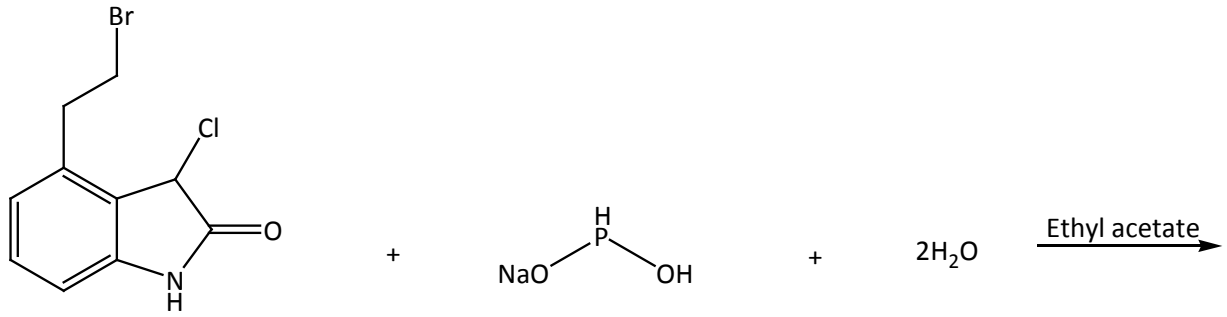
Stage-3

Stage-2 product undergoes purification by using Methanol as solvent media to give Ropinirole Hydrochloride as product.

ROPINIROLE HYDROCHLORIDE

Route of Synthesis:

Stage-1



4-(2min-Bromoethyl)-3-chloro -1,3-dihydro-2H-indol-2-one

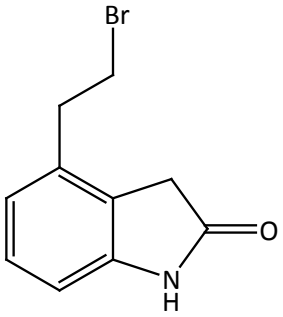
$C_{10}H_9BrClNO$

274.54

Sodium hypophosphite

87.98

2X18=36.0



+ NaCl + H_3PO_4 + H_2

4-(2-Bromo-ethyl)-1,3-dihydro-indol-2-one

$C_{10}H_{10}BrNO$

240.10

Sodium chloride

58.44

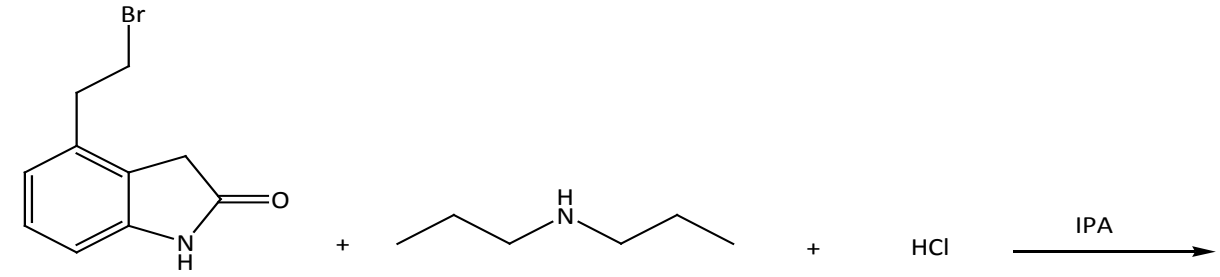
Phosphoric acid

98.00

Hydrogen

2.00

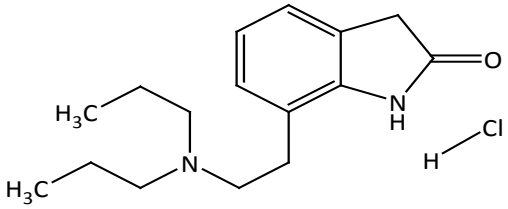
Stage-2



4-(2-Bromo-ethyl)-1,3-dihydro-indol-2-one
$C_{10}H_{10}BrNO$
240.10

Di-n-propyl amine
$C_6H_{15}N$
101.19

Hydrochloric acid
36.5

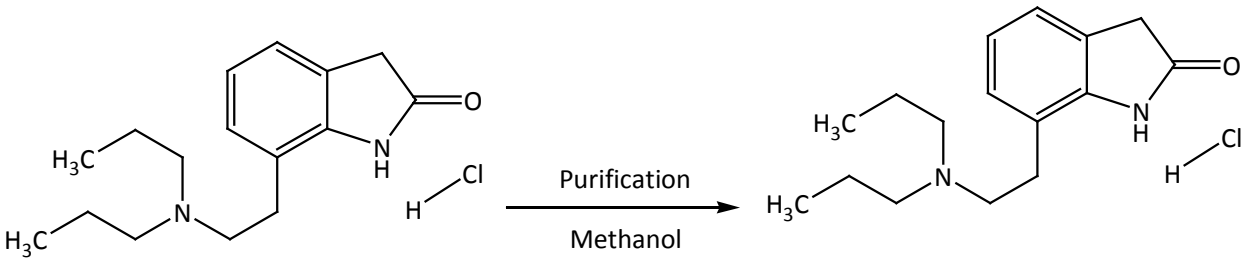


+ HBr

Ropinirole Hydrochloride
$C_{16}H_{25}ClN_2O$
296.87

80.91

Stage-3

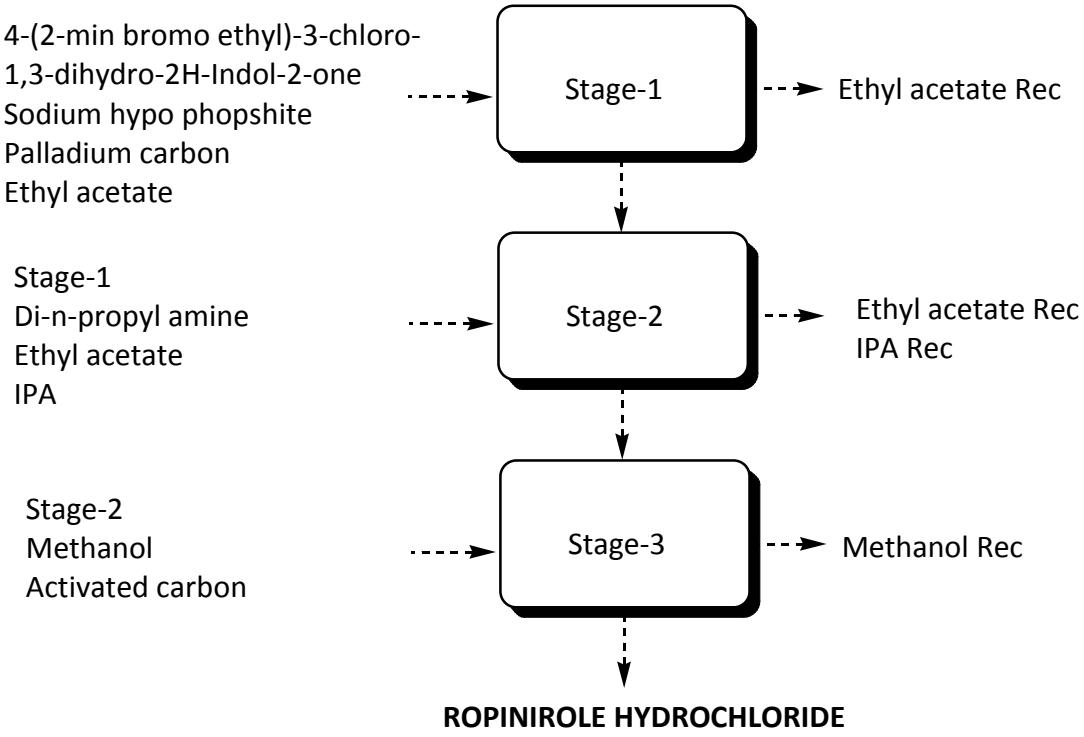


Ropinirole Hydrochloride (Tech)
$C_{16}H_{25}ClN_2O$
296.87

Ropinirole Hydrochloride (Pure)
$C_{16}H_{25}ClN_2O$
296.87

ROPINIROLE HYDROCHLORIDE

Flow Chart:



ROPINIROLE HYDROCHLORIDE

Material Balance:

Material Balance of Ropinirole Hydrochloride Stage-1 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
4-(2-min bromo ethyl)-3-chloro-1,3-dihydro-2H-Indol-2-one	51.25		Stage-1	40.00
Sodium hypo phosphite	21.25		Ethyl acetate Recovery	403.75
Palladium carbon	5.00		Ethyl acetate Loss	21.25
Ethyl acetate	425.00		Effluent water	1527.27
Water	1500.00		(Water-1492.30,Phosphoric acid -18.30,Sodium hypo Phosphite Monohydrate-5.77,Sodium chloride-10.90)	
			Process Emissions	0.37
			(Hydrogen-0.37)	9.86
			Organic Residue-9.86)	
Total	2002.50		Total	2002.50

aterial Balance of Ropinirole Hydrochloride Stage-2 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-1	40.00		Stage-2	30.00
Di-n-propyl amine	150.00		Ethyl acetate Recovery	261.25
Ethyl acetate	275.00		Ethyl acetate Loss	13.75
IPA	500.00		IPA Recovery	468.00
Hydrochloric acid (35%)	17.50		IPA Loss	25.00
Water	150.00		Di-n-Propyl amine Recovery	125.10
			Di-n-Propyl amine Loss	5.25
			Effluent water	167.97
			(Water-150,Hydrochloric acid-0.05,Water from HCl-11.37,IPA-5,Di-n-propylamine-1.55)	
			Process Emissions	13.48
			(Hydrogen Bromide-13.48)	
			Organic Residue	22.70
			(Organic impurities-19.45,IPA-2, Di-n-Propylamine-1.25)	
Total	1132.50		Total	1132.50

Material Balance of Ropinirole Hydrochloride Stage-3 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-2	30.00		Ropinirole Hydrochloride	25.00
Methanol	75.00		Methanol Recovery	69.75
Activated carbon	6.25		Methanol Loss	3.75
			Spent carbon	6.25
			Organic Residue	6.5
			(Organic impurities-5,Toluene-1.5)	
Total	111.25		Total	111.25

15. TERAZOSIN HYDROCHLORIDE

Process Description:

Stage-1

2-Furoic acid reacts with Hydrogen and Methanol by using Methanol as solvent media to give Stage-1 as product.

Stage-2

Stage-1 product reacts with Piperazine by using Toluene as solvent media to give Stage-2 as product.

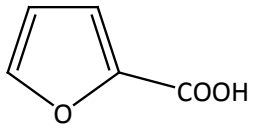
Stage-3

Stage-2 product reacts with Stage-1 by using IPA as solvent media to give Terazosin Hydrochloride as product.

TERAZOSIN HYDROCHLORIDE

Route of Synthesis:

Stage-1



2-Furoic acid

$C_5H_4O_3$

112.08

+ $2H_2$ +

Hydrogen

2X2=4.0

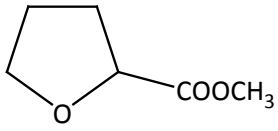
CH_3OH

Methanol

32.0

Methanol

Pd/Carbon



Tertahydromethyl -2-furaote

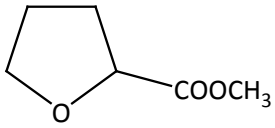
$C_6H_{10}O_3$

130.14

+ H_2O

18.0

Stage-2

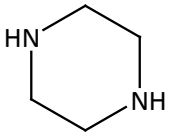


Tertahydromethyl -2-furaote

$C_6H_{10}O_3$

130.14

+

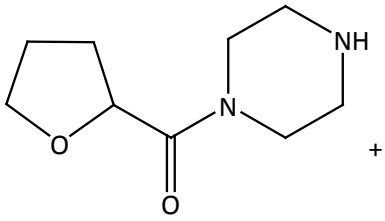


Piperazine

$C_4H_{10}N_2$

86.14

Toluene



Tetrahydro-N-(2-Furoyl) -2-piperazine

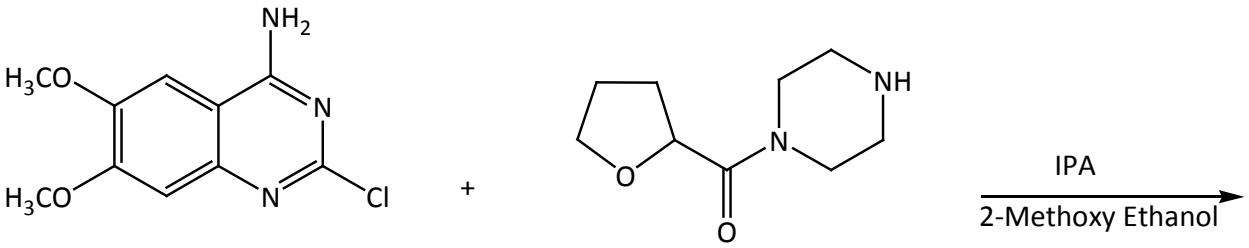
$C_9H_{16}N_2O_2$

184.24

+ CH_3OH

32.0

Stage-3



4-Amino-2-chloro-6,7
-dimethoxy quinazoline

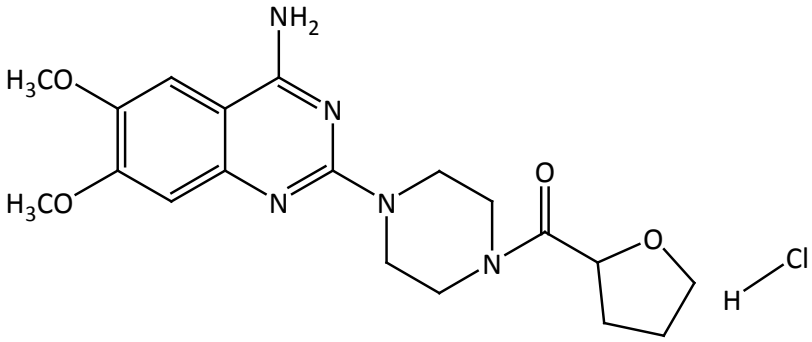
$C_{10}H_{10}ClN_3O_2$

239.66

Tetrahydro-N-(2-Furoyl)
-2-piperazine

$C_9H_{16}N_2O_2$

184.24



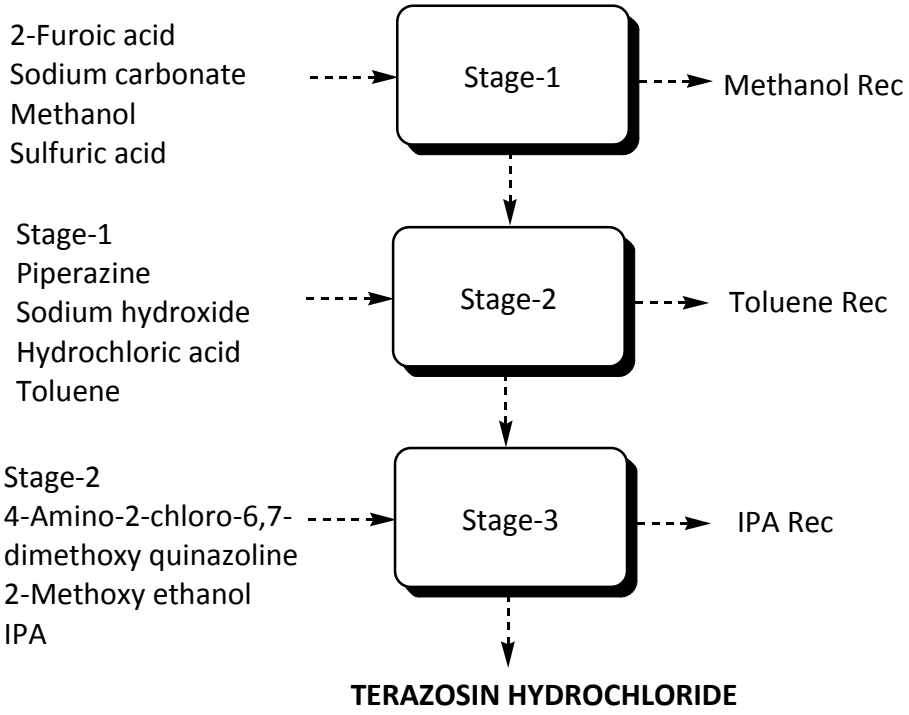
Terazosin Hydrochloride

$C_{19}H_{26}ClN_5O_4$

423.93

TERAZOSIN HYDROCHLORIDE

Flow Chart:



TERAZOSIN HYDROCHLORIDE

Material Balance:

Material Balance of Terazosin Hydrochloride Stage-1 Batch Size: 50.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
2-Furoic acid	52.50		Stage-1	50.00
Sodium carbonate	3.00		Methanol Recovery	80.00
Methanol	100.00		Methanol Loss	4.00
Sulfuric acid	2.50		Effluent water	110.19
Palladium carbon	0.50		(Water-100,Generated water-8.9,Sodium carbonate-0.29, Methanol-1)	
Hydrogen	2.50		Palladium carbon Reuse	0.50
Nitrogen	1.50		Organic Residue	10.94
Water	100.00		(Organic Impurities-10.84, Methanol-0.1)	
			Process Emissions	3.245
			(Hydrogen-0.625,Nitrogen-1.5, Carbon dioxide-1.12)	
			Inorganic solid waste	3.625
			(Sodium sulfate)	
Total	262.50		Total	262.50

Material Balance of Terazosin Hydrochloride Stage-2 Batch Size: 50.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-1	50.00		Stage-2	36.50
Piperazine	100.00		Toluene Recovery	378.00
Sodium hydroxide (47%)	45.00		Toluene Loss	20.00
Hydrochloric acid (35%)	45.00		Chloroform Recovery	712.00
Toluene	400.00		Chloroform Loss	37.00
Chloroform	750.00		Piperazine Recovery	62.50
Sodium sulfate	7.50		Piperazine Loss	2.50
Water	25.00		Effluent water	129.42
			(Water-25,Sodium chloride-25.24,Sodium hydroxide-3.89, Piperazine-1.92,Methanol-12.3, Toluene-0.25,Water from sodium hydroxide-23.85, Generated water-7.77,Water from Hydrochloric acid-29.2)	
			Organic Residue	37.08
			(Organic Impurities-34.08 Toluene-2,Chloroform-1)	
			Inorganic solid waste	7.50
			(Sodium sulfate)	
Total	1422.50		Total	1422.50

Material Balance of Terazosin Hydrochloride Stage-3 Batch Size: 50.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Stage-2	36.50		Terazosin Hydrochloride	50.00
4-Amino-2-chloro-6,7-dimethoxy quinazoline	50.00		IPA Recovery	117.00
2-Methoxy ethanol	100.00		IPA Loss	6.00
IPA	125.00		Methanol Recovery	258.00
Hydrochloric acid (35%)	2.50		Methanol Loss	13.00
Methanol	275.00		2-Methoxy ethanol Recovery	89.00
Water	175.00		2-Methoxy ethanol Loss	10.00
			Effluent water	182.74
			(Water-175,2-Methoxy ethanol-1, IPA-1.25,Methanol-3, Water from Hydrochloric acid-1.62, Hydrochloric acid-0.87)	
			Organic Residue	38.26
			(Organic Impurities-36.51,IPA-0.75,Methanol-1)	
Total	764.00		Total	764.00

16. VERATROLE

Process Description:

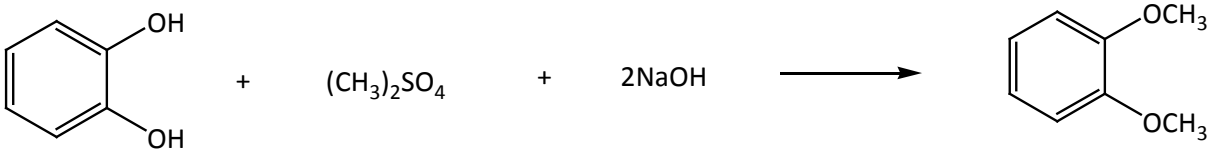
Stage-1

Pyrocatechol reacts with Dimethyl sulfate and Sodium hydroxide in the presence of Toluene as a solvent media to give Veratrole as product.

VERATROLE

Route of Synthesis:

Stage-1:



Pyrocatechol	Dimethyl sulphate	Sodium hydroxide	Veratrole
$C_6H_6O_2$	126.13	2X40=80.0	$C_8H_{10}O_2$
110.11			138.16

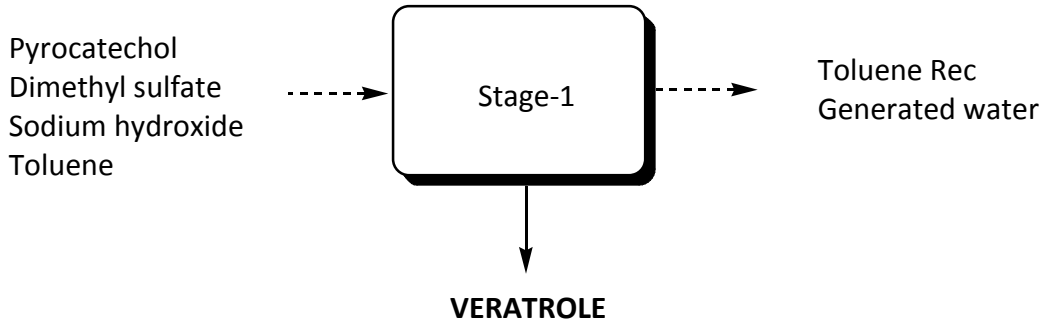
+ Na_2SO_4 + $2H_2O$

Sodium sulfate 2X18=36.0

142.04

VERATROLE

Flow Chart:

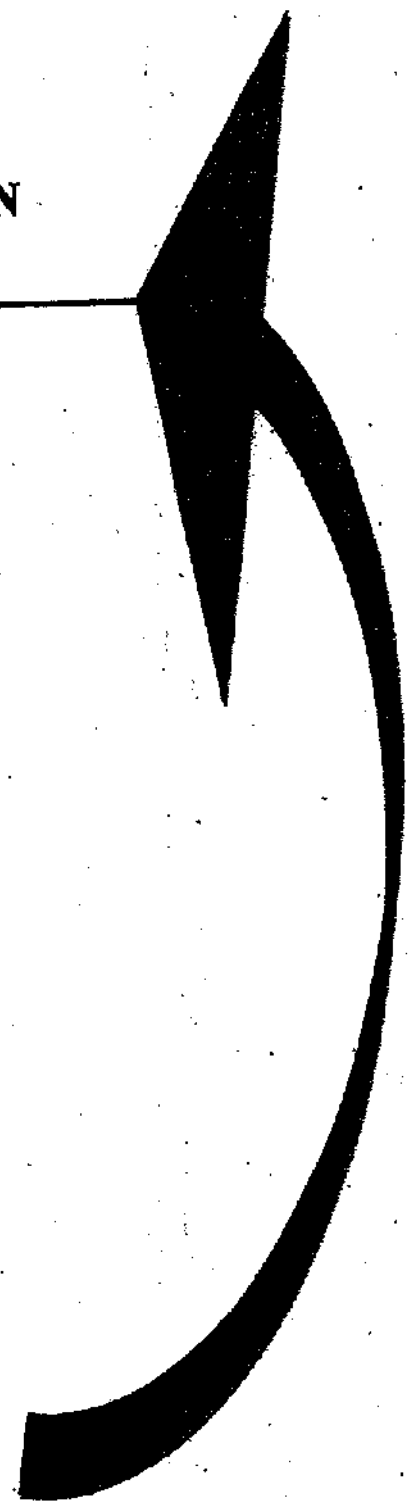


VERATROLE

Material Balance:

Material Balance of veratrole Stage-1 Batch Size: 100.0Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Pyrocatechol	85.00		Veratrole	100.00
Dimethyl sulfate	100.00		Toluene Recovery	143.00
Sodium hydroxide(47%)	136.00		Toluene Loss	6.00
Toluene	150.00		Effluent water	703.05
Water	600.00		(Water-600,Water from sodium hydroxide-72.08,Generated water-27.8,Sodium hydroxide-2.17,Toluene-1)	
			Inorganic Residue	112.61
			(Sodium sulfate-112.61)	
			Organic Residue	6.34
Total	1071.00		Total	1071.00

WATER CONSUMPTION DETAILS



WATER REQUIREMENT DETAILS

S. No	Purpose	Water Requirement In KLD
1	Process	26.88
2	Washings	3.00
3	Boiler Make up	47.00
4	Cooling towers Make up	96.00
5	DM Plant	2.00
6	Scrubbing system	2.00
7	Domestic Usage	8.00
8	Gardening	6.00
	Total	**190.88**

SOLID WASTE DETAILS

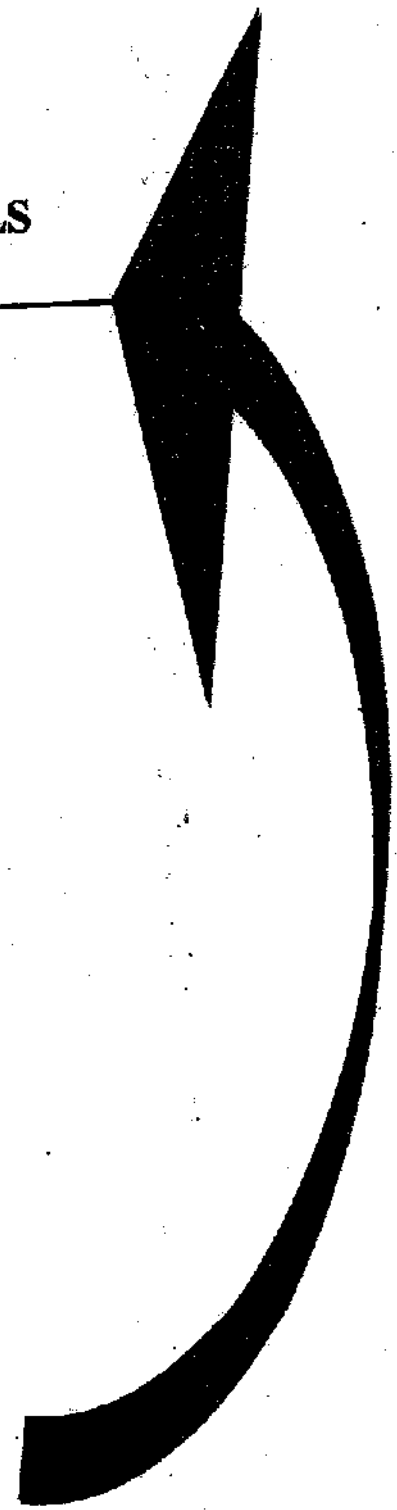
SOLID WASTE DETAILS

S. No	Name of the Solid Waste	Quantity In Kg/Day	Disposal method
1	Organic Residue	1377.00	Sent to Cement Industries
2	Inorganic solid waste	2613.00	Sent to TSDF
3	Spent carbon	34.00	Sent to Cement Industries
4	MEE salts	6158.00	Sent to TSDF
5	ETP Sludge	60.00	Sent to TSDF
6	Coal ash from Boiler	4700.00	Sent to Brick Manufacturers
7	Solvent Distillation Bottom Residue	35.00	Sent to Cement Industries

HAZARDOUS WASTE DETAILS

S. No	Description	Quantity	Mode of Disposal
1	Waste Oils & Grease	150 Ltrs /Month	APPCB Authorized Agencies for Reprocessing/Recycling
2	Detoxified Containers	300 No's/Month	After Detoxification sent back to suppliers/APPCB Authorized Parties
3	Used Lead Acid Batteries	10 No's/Annum,	Send back to suppliers for buyback of New Batteries

STACK EMISSION DETAILS



STACK EMISSIONS FOR BOILER

Particulars	Units	4.0TPH Coal fired Boiler
Type of Fuel	--	Indian Coal
Coal Consumption	TPD	10.0
Ash Content	%	47
Sulphur Content	%	0.8
Nitrogen Content	%	1.07
No. of Stacks	No	1.0
Height of stack	M	30
Diameter of Stack	M	1.0
Temperature of Flue Gas	^{o}C	110
Velocity of Flue Gas	m/s	9.5
Particulate Matter at outlet of Bag filter (Based on 115 mg/Nm3 at outlet)	gm/sec	0.26
Sulphur dioxide emission	gm/sec	0.92
Oxides of Nitrogen emission	gm/sec	1.23

- ***2.0 TPH Coal Fired Boiler is kept as standby.***

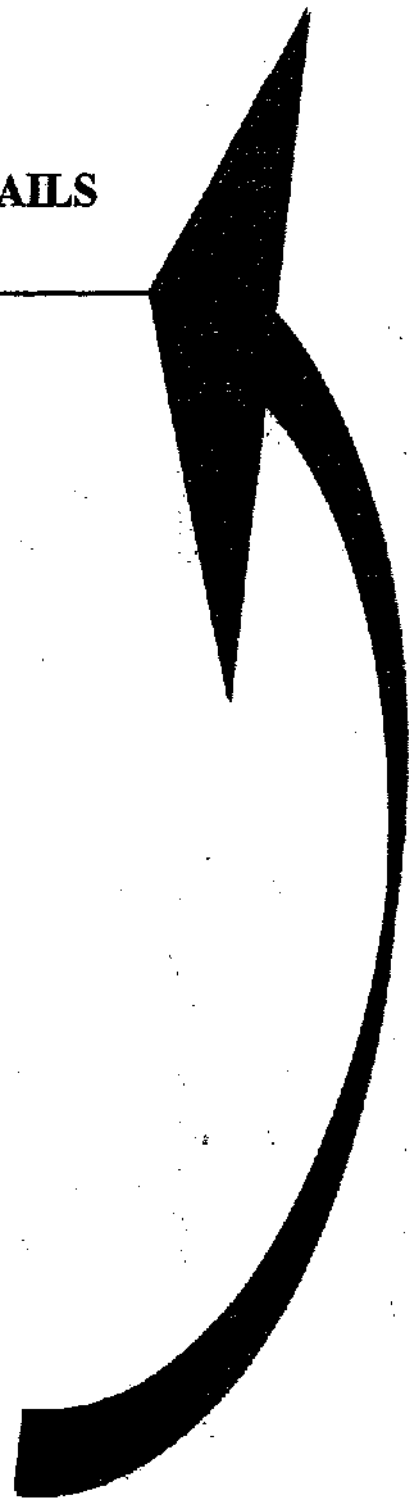
STACK EMISSIONS FOR THERMOPACK BOILER

Particulars	Units	6,00,000 kcal/hr. Thermo pack Boiler
Thermo pack Boiler Capacity	Kcal/hr.	6,00,000
Type of Fuel	--	Coal
Stack Temperature Before Air preheater	^{o}C	350
Stack Temperature After Air pre heater	^{o}C	200
Combination Air Temperature	^{o}C	140
Efficiency Increased By	%	5.0
Stack Height	m	10.0
Fuel Consumption per Day	TPD	1.4

STACK EMISSIONS FOR DG SETS

Capacity In KVA	Emission of SPM in Mg/Nm^3	Emission Of SO_2 in Mg/Nm^3	Emission of NO_x in Mg/Nm^3	Stack dia. In m	Flue Gas Temp. in ^OC	Stack Height in (m)	Flue gas Velocity In m/sec.
500KVA	80.0	190.0	235.0	0.30	220	10	23.20
250KVA	58.0	24.0	30.0	0.30	250	10	18.24

PROCESS EMISSION DETAILS



PROCESS EMISSION DETAILS

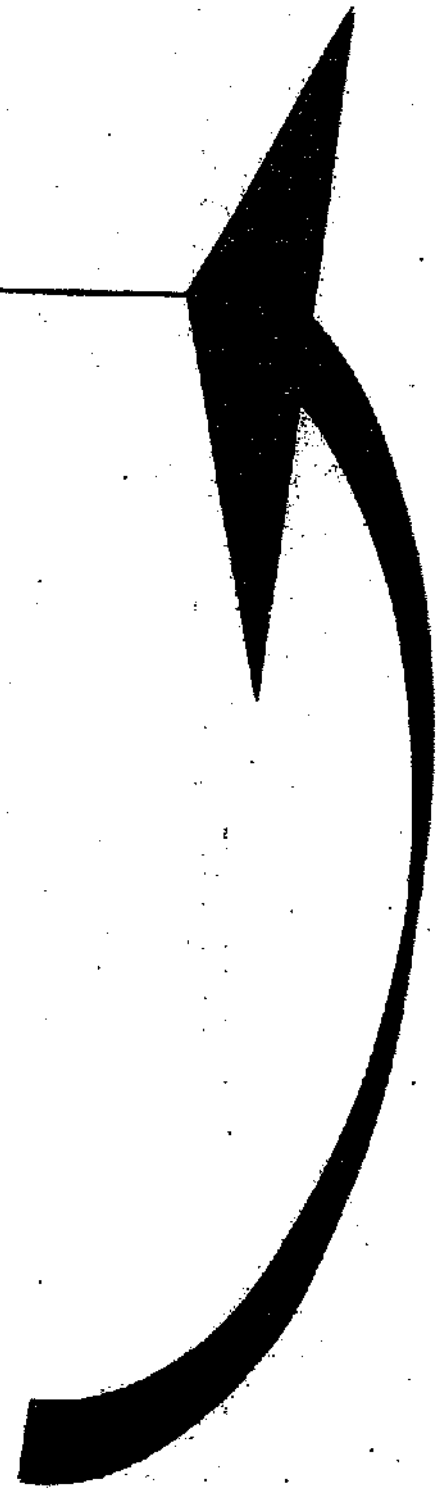
POLLUTING PROCESS EMISSION DETAILS:

S. No	Name of the Gas	Quantity In Kg/Day	Disposal Method
1	Ammonia	53.00	Scrubbed by using water media
2	Hydrogen Bromide	0.90	Scrubbed by using C. S. Lye solution
3	Hydrochloric acid	0.53	Scrubbed by using water media

NON- POLLUTING PROCESS EMISSION DETAILS:

S. No	Name of the Gas	Quantity In Kg/Day	Disposal Method
1	Carbon dioxide	695.00	Dispersed into Atmosphere
2	Nitrogen	3.00	Dispersed into Atmosphere
3	Hydrogen	7.50	Diffused with Flame arrestor
4	Oxygen	144.50	Dispersed into Atmosphere

DRAFT TOR



Proposed Draft Terms of Reference for Preparation of EIA & EMP For M/s. Synthokem Labs Pvt. Ltd., Unit-II.

01. Executive summary of the project
02. Justification of the project
03. Promoters and their back ground
04. Regulatory framework
05. A map indicating location of the project and distance from severely polluted areas
06. Project site location along with site map of 10 km area and site details providing various industries, surface water bodies, forests etc.
07. A copy of Gazette Notification issued by the Govt. of Andhra Pradesh indicating location of the project in Notified Industrial Area
08. Plant Layout
09. Infrastructure facilities including power sources
10. Total cost of the project along with total capital cost and recurring costs environmental pollution control measures
11. Present land use based on satellite imagery for the study area of 10 km radius.
12. Details of the total land and break-up of the land use for green belt and other uses
13. Location of National Park/Wild life sanctuary/Reserve Forest within 10 km radius of the project
14. List of products along with the production capacities
15. Maximum number of products and its production capacity to be manufactured at a time (worst-case scenario)
16. Detailed list of raw material required and source, mode of storage and transportation.
17. Explore the use of solvent other than benzene
18. Manufacturing process details along with the chemical reactions and process flow chart.
19. Site-specific micro-meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall is necessary
20. Ambient air quality monitoring at 6 locations within the study area of 10 km., aerial coverage from project site
21. One season site-specific micro-meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall and AAQ data (excluding monsoon season) for $PM_{2.5}$, PM_{10}, SO_2, NOx and VOCs including
22. The monitoring stations should take into account the pre-dominant wind direction, population zone and sensitive receptors including reserved forests. Data for water and noise monitoring should also be included
23. Air pollution control measures proposed for the effective control of gaseous emissions within permissible limits. Multi cyclone followed by bag filter to be provided to boiler to control particulate emissions
24. Name of all solvents to be used in the process and details of solvent recovery system.
25. Design details of ETP, incinerator, boiler, and scrubbers/bag filters etc.
26. Details of water and air pollution and its mitigation plan
27. An action plan to control and monitor secondary fugitive emissions from all the Sources

28. Determination of atmospheric inversion level at the project site and assessment of ground level concentration of pollutants from the stack emission based on Site-specific meteorological features
29. Air quality modelling for proposed plant
30. Action plan for Zero Liquid Discharge of effluent should be included. Segregation of the Wastewater should be based on the pollution load and high TDS effluent should be treated in MEE
31. Ground water quality monitoring minimum at 6 locations should be carried out.
32. Geological features and Geo-hydrological status of the study area and ecological status (Terrestrial and Aquatic)
33. The details of solid and hazardous wastes generation, storage, utilization and disposal particularly related to the hazardous waste calorific value of hazardous waste and detailed characteristic of the hazardous waste. Action plan for the disposal of fly ash generated from boiler should be included
34. Precautions to be taken during storage and transportation of hazardous chemicals should be clearly mentioned and incorporated
35. Membership for the disposal of liquid effluent in CETP or Zero Liquid discharge action plan and solid/hazardous waste in TSDF
36. An action plan to develop green belt in 33 % area
37. Occupational health of the workers needs elaboration including evaluation of Noise, heat, illumination, dust, any other chemicals, metals being suspected in Environment and going into body of workers either through inhalation, ingestion or through skin absorption and steps taken to avoid musculo-skeletal disorders (MSD), backache pain in minor and major joints, fatigue etc. Occupational Hazards specific pre-placement and periodical monitoring should be carried out
38. Socio-economic development activities should be in place
39. Note on compliance to the recommendations mentioned in the CREP guidelines
40. Detailed Environment management Plan (EMP) with specific reference to details of air pollution control system, wastewater management, monitoring frequency, responsibility and time bound implementation plan for mitigation measure should be provided
41. Any litigation pending against the project and/or any direction/order passed by any Court of Law against the project, if so, details thereof
42. A tabular chart with index for point wise compliance of above TORs

PRE-FEASIBILITY REPORT

PRE FEASIBILITY REPORT

OF

Synthokem Labs
private limited

P.B.NO. 1911, B-5INDUSTRIAL ESTATE, SANATHNAGAR
HYDERABAD - 500 018, ANDHRA PRADESH.

EXPANSION OF BULK DRUGS UNIT

At

PLOT NO: 222-224 & 235- 237,
PHASE-II, IDA PASHAMAILARAM, PATANCHERU MANDAL,
MEDAK (DT), ANDHRA PRADESH.

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1.0 EXECUTIVE SUMMARY

M/s. Synthokem Labs Pvt Ltd., was incorporated in the year of 1978 to produce bulk drugs with registered address at P. B. No.1911, B-5 Industrial Estate, Sanathnagar, Hyderabad - 500 018, Andhra Pradesh.

The company proposes for expansion of its bulk drug and intermediate manufacturing capacity at unit- II, at Plot No: 222-224 & 235- 237, Phase-II, IDA Pashamailaram, Patancheru Mandal, Medak (Dt), Andhra Pradesh.

S. No	Parameter	Description
1	Project Location	Plot No: 222-224 & 235- 237, Phase-II, IDA Pashamailaram, Patancheru (M), Medak (Dt), AP
2	Category of Project as per EIA Notification & Amendments	5(f) "B" Treated as Category-A i.e. Critically Polluted areas is within the 10 KMs
3	Project cost	Existing : 2.90 Crores Proposed : 15.0 Crores
4	Plot area	2.34 Ha
5	Proposed Products	Existing: 13.8 MT/Month of Bulk Drugs Proposed : 172.06 MT/Month The details of products& Quantities are mentioned in Section 3.1
6	Resources	
	(I)Electricity Requirement	1250 KVA
	Source of electricity	APCPDCL
	D. G. Sets	Existing : 2 No's 250 KVA D.G Sets (one 250 KVA will be dropped) Proposed: 2 No's 500 KVA D.G Sets
	(II)Water consumption	Existing : 64.31 KLD Proposed : 198.88 KLD
	Source of water	APIIC
	Waste water generation	76.77 KLD
	Mode of disposal	Zero Liquid Discharge System
	(III)Boiler	Existing : 2.0 TPH (Oil Fired Boilers) Proposed : 4.0 TPH Coal Fired Boiler & Existing 2.0TPH (Oil Fired Boilers) is Kept as Stand by
	IV) Thermic Fluid Heater	Existing : 4 Lakh K. Cal/hr Capacity (Will be dropped) Proposed 6Lakh K.Cal/ hr Capacity
	(V)Fuel	Coal - 10 MT / Day
7	Solid waste generation	Mentioned in Para 3.3 of report
8	Nearest Highway	National Highway No.9 -2.4 KMs
9	Nearest Railway Station	Shankarpally Railway Station – 10.8 KMs
10	Nearest Air Port	Rajeevgandhi International Air Port - 43 KMs

2.0 INTRODUCTION OF THE PROJECT

The objective of this pre- feasibility study is to provide information for the proposed expansion of Bulk Drugs and its Intermediates manufacturing unit –II by **M/s. Synthokem Labs Pvt Ltd., Unit - II** at Plot No: 222-224 & 235- 237, Phase-II, IDA Pashamailaram, Patancheru Mandal, Medak (Dt), Andhra Pradesh.

2.1 Project Proponent

M/s. Synthokem Labs Pvt Ltd is promoted by **Mr. M. Rabindranath Tagore** in the year 1978 as a private limited company to be in the business of research, developing, manufacturing and marketing of pharmaceutical substances and intermediates for Indian and International markets.

Mr. M Jayanth Tagore is the Managing Director of the company and has more than three decades of experience in Bulk drugs manufacturing.

2.2 Brief description of nature of the project.

The **M/s. Synthokem Labs Pvt Ltd** proposes to expand its manufacturing products and capacity of Bulk Drugs and its intermediates, to meet the increasing demand.

2.3 Need for the project and its importance to the country and or region

In the last few decades, India's population is skyrocketing and so is the demand for Drugs to support this population. In order to satisfy this need, more production of bulk drugs and active pharma ingredients is needed. The expansion of the industry will be beneficial to the region. The company will bring new job opportunities for the local people. They will, therefore, become economically stronger.

M/s. Synthokem Labs Private Limited is a manufacturer of Active Pharmaceutical Ingredients and drug intermediates, located in Hyderabad.

Our commitment lies in providing the required quality API's and Intermediates to our exacting customers worldwide. We cater to a cross section of clients in Asia, Europe, North and South America.

Our inherent strength lies in producing cutting edge intermediates, for new as well as off patent API's within the requisite time frame stipulated by our customers. Fifty percent of our business has evolved from custom synthesis projects, which start from gram level and rise to multi ton supplies.

Hyderabad has developed as a major production center for bulk drugs due to the location if the many major Pharmaceutical Industries such as Dr. Reddy's Laboratories, Aurobindo Pharma, Neuland Laboratories, Siris, Hetaro Drugs, Divis Labs, Natco Pharma Limited, Matrix Labs, Nicholas Piramal etc., besides a large number of medium and small industries manufacturing bulk drugs of all kinds.

In support of this growth in Hyderabad and Bangalore, many basic chemical units and drug intermediate units have also come up to meet the input requirements of Bulk Drug manufacturing Companies. Large numbers of these units are still dependent on supply of basic chemicals mainly from Mumbai, Gujarat and other parts of the country involving heavy expenditure on transport and transit risks.

2.4 Demand-Supply Gap.

The demand for APIs and API intermediates is a derived demand. It gets derived from the demand for various medicinal formulations (final administrable drugs) for the formulation industry.

- The APIs and API intermediates being manufactured by basic drug manufacturers are exported as such or used by domestic formulators in their production processes. The formulation firms further produce final medicines and export these as well as sell these in the domestic market.
- There is a wide gap in the demand and availability of cheap and quality medicines in India and the world over.
- Generic medicines and off patent drugs have significant potential to increase access to cheap and effective medicines to poor people and in general to bridge the demand supply gap.
- Indian basic drug manufacturers are playing a significant role in increasing access to affordable off patent drugs.

- The products envisaged include third generation antibiotics, anticancer, antipsychotic, etc drugs which address the problems associated with present day stressful lifestyles and demand for these outstrips their demand and is increasing by the day.

Pharmaceutical Industry – Domestic Scenario

The Indian Pharmaceutical Industry today is in the front rank of India's Science-based industries with wide ranging capabilities in the complex field of drug manufacture and technology. The Indian Pharmaceutical industry is estimated to be worth US $ 8.0 billions at present, growing at a CAGR of over 15 % annually. If India' s high Economic growth rate holds steady, the pharmaceuticals market will triple to $ 24 billion by 2015 and become one of the world` s top 10 markets according to a study by McKinsey and company ,a leading management consulting firm. At a compounded annual growth rate of 15.0 %, the absolute growth of $ 24 billion will be next to the growth potential of the US and China, and in the same league as the growth in Japan and Canada and the UK. Five factors will drive the growth of the Indian Pharmaceuticals market over the next decade; Doubling of disposable incomes and the increase in numbers of middle class households , significant expansion of medical infrastructure, greater penetration of health insurance, a gradual shift in disease profile and adoption of patented products, and finally population growth.

It ranks very high in the third world, in terms of technology, quality and range of medicines manufactured. Playing a key role in promoting and sustaining development in the vital field of medicines, the Indian Pharmaceutical Industry boasts of quality producers and many units approved by regulatory authorities in USA and UK.

The Indian Pharmaceutical sector has more than 20,000 registered units. It has expanded drastically in the last two decades. The leading 250 pharmaceutical Companies control 70% of the market. The pharmaceutical industry in India meets around 70% of the country's demand for bulk drugs, drugs intermediates, pharmaceutical formulations, chemicals, tablets, capsules, orals and injectables.

There are about 250 large units and about 8000 small Scale Units, which form the core of the pharmaceutical industry in India (including 5 Central Public Sector Units). These units produce the complete range of pharmaceutical formulations, i.e. medicines ready for consumption by patients and about 350 bulk drugs, i.e. chemicals having therapeutic value and used for production of pharmaceutical formulations.

2.5 Employment Generation (Direct and Indirect) due to the project

Teamwork is paramount at SYNTHOKEM:

At present the company has over 250 employees spread across various administrative and technical functions in two units and Administration office. We have a strong team of R&D, Manufacturing, Quality Control and Quality Assurance chemists with very pertinent skills in process development, manufacture and testing of our product range. The team comprises of Doctorates, Post Graduates, Graduates and Chemical Engineers from some of the premier institutes in India. Hyderabad has emerged as major drug manufacture city with a presence in global market. Pharma industry in the state contribute more than one third to the country's total production.

Most of the companies have set up their R&D facilities in the state, thus making the state the pharmaceutical capital of the country.

The Details of employment during operational phase in this unit shown in below Table.

TABLE 2.1: EMPLOYMENT REQUIREMENTS

Particulars	**No. of employees**	**Functional Area**
Key managerial staff	8	Finance, Marketing, Production, Quality control, R&D, Logistics etc.
Administration	4	Office work
Skilled and semi skilled	50	Production Process, Maintenance, stores, Safety.& Un skilled workers
Total	**62**	

3.0 Project Description

M/s. Synthokem Labs Private Limited., Unit – II Proposes for expansion of its products and production quantities at manufacturing unit- II at IDA Pashamailaram. The Location map is shown at **Figure** – 1.

The site coordinates are

Latitude: 17°32'10.55"N

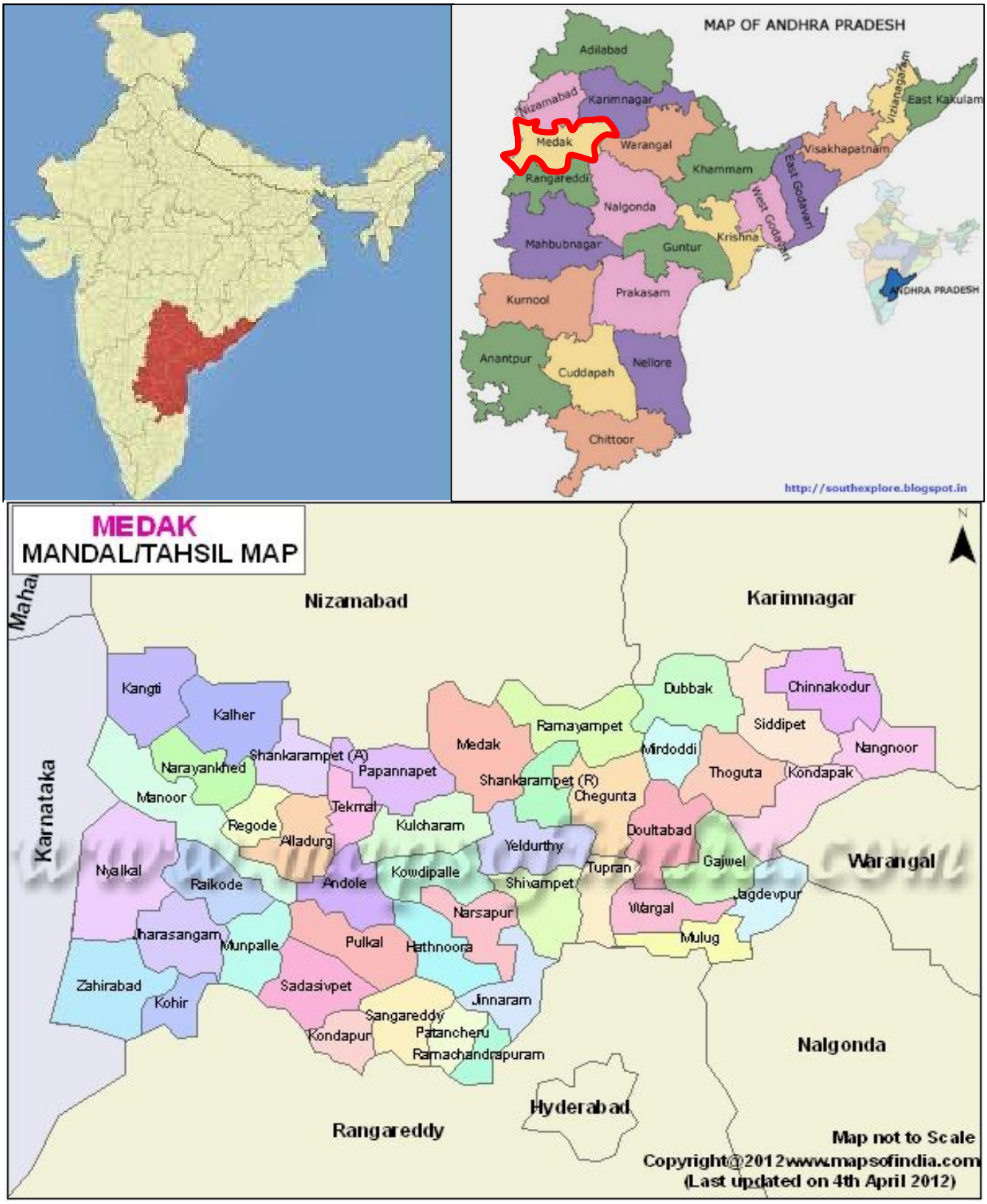
Longitude: 78°10'42.05"E

There are no archaeological, historical sites located nearby. Therefore, the project site does not offer any negative impact on the local area, but rather has a positive impact on socio economic conditions of the habitants around it.

The proposed plant is well connected both to National Highway No– 9 and Railway line at Shankarpally Railway Station

The present expansion will not require any additional land and the unit is located in an area

FIGURE 1.1: LOCATION MAP



- **M/s. Synthokem Labs Private Limited**
  Plot No: 222-224 & 235- 237, Phase-II, IDA Pashamailaram, Patancheru Mandal, Medak (Dt), Andhra Pradesh

3.1 Products and Production Capacity

M/s. Synthokem Labs Private Limited. is proposes to produce the below mentioned shown in Table3.1.

Table3.1: Proposed Products and Quantities

S.No	Product Name	CAS No's	Quantity In MT/Month	Quantity In Kg/Day
1	Alfuzosin Hydrochloride	81403-68-1	0.17	5.67
2	Chlorphenesin	104-29-0	15.00	500
3	Chlorphenesin carbamate	886-74-8	3.00	100
4	Dextromethorphan Hydrobromide	125-69-9	10.00	333.33
5	Drotaverine Hydrochloride	985-12-6	3.00	100
6	Guaifenesin	93-14-1	100.00	3333.33
7	1-(4-Hydroxyphenyl)piperazine	56621-48-89	0.50	16.67
8	Mebeverine Hydrochloride	2753-45-9	3.00	100
9	Mephenesin	59-47-2	15.00	500
10	Methocarbamol	532-03-6	10.00	333.33
11	Potassium guaiacol sulfonate	1321-14-8	1.70	56.67
12	Prazosin Hydrochloride	19237-84-4	0.42	14
13	Rabavirin	36791-04-5	0.05	1.67
14	Ropinirole Hydrochloride	91374-20-8	0.05	1.67
15	Terazosin Hydrochloride	63074-08-8	0.17	5.67
16	Veratrole	91-16-7	10.00	333.33
	Total		***172.06***	***5735.33***

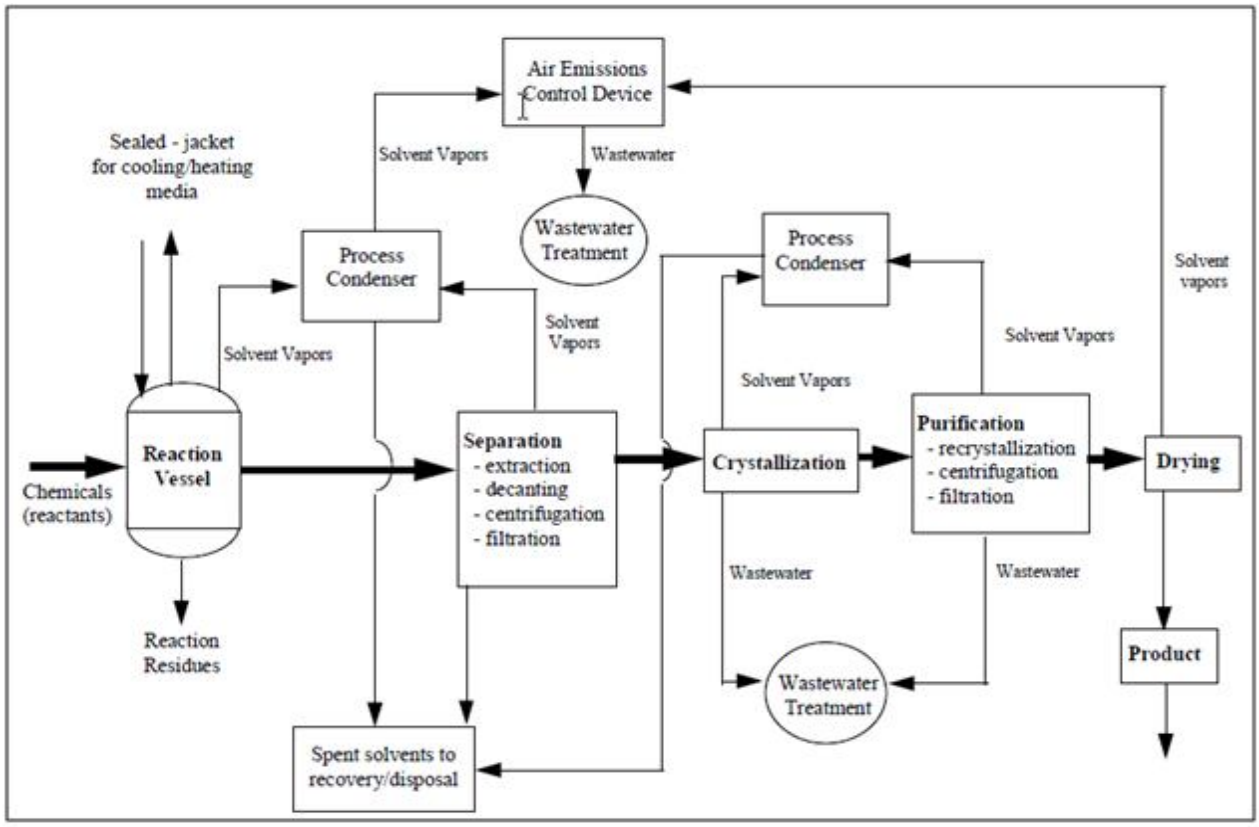
3.2 Raw materials required and Quantities

All the raw materials required for manufacturing of above products will be sourced from local market. The products wise required raw materials and quantities are enclosed in the annexure.

3.3 Manufacturing Process

The manufacturing process of bulk drugs consists of chemical synthesis extending to stages of processing involving different type of chemical reactions. The generalized Flow chart for bulk drug manufacturing is shown in **Flow chart 3.1.**

Flow Chart 3.1: Generalized Flow Chart for Bulk Drug Manufacturing



3.4 Resource – Utilize & Recycling

3.4.1 Water

Water requirement of the project for domestic and industrial activity during operation phase will be 190.88 KLD. The water requirement will be met through APIIC. The detailed water requirement shown in below **Table3.2.**

Table 3.2: WATER REQUIREMENT DETAILS

S. No	Purpose	Water Requirement In KLD
1	Process	26.88
2	Washings	3.00
3	Boiler Make up	47.00
4	Cooling towers Make up	96.00
5	DM Plant	2.00
6	Scrubbing system	2.00
7	Domestic Usage	8.00
8	Gardening	6.00
	Total	**190.88**

3.4.2 Power Requirement

Power requirement of proposed project will be made available through APCPDCL. Total power requirement of proposed expansion is 1250 KVA.

Two No's of D. G. sets of capacity 500 KVA will be installed in addition to existing one 250 KVA DG set (another 250 KVA existing DG Set is disposed) to meet the emergency power requirement of the plant.

3.4.3 Fuel Requirement

M/s. Synthokem Labs Private Limited. is proposes to install 4 TPH coal fired boiler and the existing 2.0TPH Oil fired Boiler is Kept as Standby. Total fuel requirement will be around 10.0 TPD. Coal is procured form local sources.

Existing 4 Lakh K Cal/Hr Thermic Fluid Heater will be replaced with 6 Lakh K Cal/Hr Thermic Fluid Heater for plant operations

3.5 Quantity of wastes to be generated

3.5.1 Waste Water Generation and utilization

Total effluent generated in the project is 76.77 KLD. The treated water will be reused for plant operations.

The process waste water from Process, floor Washes, scrubbers, QC and R&D are evaporated in MEE with stripper and ATFD after neutralization. The condensate from MEE and ATFD will be collected and treated in effluents treatment plant along with effluents from utilities followed by RO. RO rejects will be send back to MEE and RO Permeate will be re-used back.

To treat the sewage generated due to domestic activities will be disposed through septic tank following by soak pit.

Table3.3: Wastewater generation and Treatment Method

S. No	Unit	HTDS KLD	LTDS KLD	Effluent Generation in KLD	Treatment Method
1	Process	26.88	(+)12.89	39.77	HTDS effluent sent to ETP with MEE System LTDS effluents treated in ETP – RO Plant / RO Rejects to MEE System and RO permeate to reuse, Condensate from MEE to reuse and MEE residue to ATFD.
2	Washings	3.00	0.00	3.00	
3	Boiler make up	47.00	40.00	7.00	
4	Cooling towers Makeup	96.00	80.00	16.00	
5	DM Plant	2.00	0.00	2.00	
6	Scrubber system	2.00	0.00	2.00	
7	Domestic	8.00	1.00	7.00	
8.	Gardening	6.00	6.00	0.00	Septic tank followed by soak pit
	Total	**190.88**	**127.00**	**76.77**	

3.5.2Solid waste generation and Disposal

The types of Hazardous and non Hazardous wastes generated from the project, method of disposal is shown in below table3.4.

Table 3.4: Solid waste generation and Disposal

S. No	Name of the Solid Waste	Quantity Kg/Day	Disposal Method
1	Inorganic Solid Waste	2613.00	Sent to TSDF
2	Organic solid waste	1377.00	Sent to Cement Industries
3	MEE Salts	6158.00	Sent to TSDF
4	Spent Carbon	34.00	Sent to Cement Industries
5	ETP Sludge	60.00	Sent to TSDF
6	Solvents residue	35.00	Recovered and reuse
7	Coal ash from Boiler	4700.00	Sent to Brick Manufacturers
8	Waste Oils & Grease	150 L/Annum	APPCB Authorized Agencies for Reprocessing/Recycling
9	Detoxified Containers	300 No's / Month	After Detoxification sent back to suppliers/APPCB Authorized Parties

10	Used Lead Acid Batteries	10 No's/ Annum	Send back to suppliers for buyback of New Batteries

3.6 Schematic representations of the feasibility drawing which give information of EIA purpose.

The applicability of the S.O 1533 for the proposed project was explored by considering different possibilities & provision made in the said notification. Considering the products & project location of the proposed project it is noticed that the proposed project falls under Category 5 (f) "A" of the Schedule-I of EIA Notification SO 1533.

As per the provision of the SO 1533, it is necessary to get Environmental Clearance by applying to MoEF along with the Environmental Impacts Assessment Study Report for the proposed project prior to commissioning of the project activities. Therefore the EIA is required to conduct to comply with provisions of SO 1533 made for Category 5(f) "A" of schedule –I of the notification.

4.0Site Analysis

4.1 Connectivity

M/s. Synthokem Labs Private Limited. is located at Plot No: 222-224 & 235-237, Phase-II, IDA Pashamailaram, Patancheru Mandal, Medak (Dt), Andhra Pradesh

- The nearest habitation from the site is Pashamylaram (Village) at a distance of 1.3Km(ESE).
- The nearest railway station is Shankarpalli Railway station at a distance of 10.8 KMs from the site (SW).
- The nearest airport is Rajeev Gandhi International Air port at a distance of 43 KMs (SSE)
- The Nearest road ways

National Highway No.9 – 2.4 KMs

4.2 Land Form, Land use and Land ownership.

The proposed project is located in Non Agricultural Land. There would be no any change in Land Use, Land Cover or Topography of plot. After implementation of project a dense green belt would be developed. Total 33 % of Plant area will be allocated for green belt development.

4.3 Existing Infrastructure.

Proposed expansion project is a located in industrial Estate and the basic infrastructure is already there.

4.4 Soil classification

The district is mainly covered by three types of soils Sandy Loam, Black clay Loam, Laterate types of soil.

4.5 Climatic data from secondary sources.

Temperature Maximum: 44.4^{o} C
Minimum: 6.9 ^{o} C

Normal annual rainfall **873 mm**

4.6 Social Infrastructure available.

Well developed social infrastructure facilities are available at nearby Habitations.

5.0 Planning Brief

Proposed plant activities will be started after getting statutory clearance form related authorities. The project will be completed within two years.

Further proposed project activities will take care of all the rules and regulation of statutory authority and provide the control measure and devices to achieve the standard norms

6.0 Proposed Infrastructure

6.1 Industrial Area

The present proposal is expansion of existing unit, the infrastructure and other facilities are already well developed and it is also located in Industrial Estate.

Only additional Building and Plant & machinery need to constructed and installed

6.2 Residential Area

No residential area is involved in the proposed project. The employs are accommodated in nearby Residential areas

6.3 Green Belt:

Approximately 33 % of Green Belt will be provided and maintained.

6.4 Social Infrastructure:

Facilities like road and communication are good..Banks, ATM's and medical facilities are also adequate.

Amenities:

Education- schools including middle, secondary and higher secondary schools, social welfare hostels.

Medical and Health- Community Health Centre, & Primary Health center Are available near villages

Power and water- All the villages are electrified and drinking water facilities are extended to all villages.

Rail and Road- The project site is very well connected by road through National Highway no. 9, Southern railways.

6.5 Water management

Water requirement will be fulfilled through APIIC.

6.6 Sewerage System:

There will be no discharge of industrial effluent (**Z**ero **L**iquid **D**ischarge). The treated effluent will be reused. Domestic waste water will be disposed off through soak pit system.

6.7 Industrial Waste Management:

Due to proposed project, the effluent from cooling and Plant/Equipment washing will be generated and treated in the well designed Effluent Treatment Plant. The treated effluent will be reused.

7.0 Rehabilitation and Resettlement (R & R) Plan

Rehabilitation & Resettlement (R&R) plan is not applicable to proposed project.

8.0 Project Schedule & Cost Estimates

Proposed project activities will be started after getting statutory clearance form related authorities. The project will be completed within two years.

Proposed activity will provide benefits to the local people in terms of financial and social welfare. Project cost for the proposed Expansion projects is Rs. 15.0 Crores which includes the cost of new Buildings and plant & machinery.

9.0 Analysis of proposal (Final Recommendations)

- Local people will get direct financial benefit by way of employment.
- Local people will get some contracts of supply and services to get indirect income.
- Company will contribute in improving education and health facilities in nearby area.

ENCLOSURES

LIST OF RAW MATERIALS

1. ALFUZOSIN HYDROCHLORIDE

S. No	Raw Material	Consumption/ Batch in Kgs	Consumption/ Day in Kgs
1	4-Amino-2-chloro 6,7-Dimethoxy quinazoline	225.00	12.75
2	Isopropyl alcohol	1410.00	79.90
3	2-Methoxy Ethanol	700.00	39.67
4	Methanol	1800.00	102.00
5	N-Methyl-3-amino propionitrile	80.00	4.53
6	Sodium Hydroxide	90.00	5.10
7	Hydrochloric acid	32.10	1.82
8	Raney Nickel	35.00	1.98
9	Ammonia gas	100.00	5.67
10	Hydrogen	5.00	0.28
11	Nitrogen gas	10.00	0.57
12	2-Tertahydro methyl furoate	55.00	3.12
13	Methylene Dichloride	2000.00	113.33
14	Ethyl acetate	300.00	17.00
15	Activated carbon	20.00	1.13
16	Anhydrous Sodium Sulfate	20.00	1.13
17	Isopropyl alcohol HCl	12.00	0.68
18	Activated carbon	20.00	1.13
19	Hyflow	20.00	1.13

2. CHLORPHENESIN CARBAMATE

S. No	Raw Material	Consumption/ Batch in Kgs	Consumption/ Day in Kgs
1	Epichlorohydrin	50.00	50.00
2	Phosphoric acid	2.00	2.00
3	p-Chloro phenol	80.00	80.00
4	Sodium hydroxide	70.00	70.00
5	EDC	535.00	535.00
6	Hydrochloric acid	4.00	4.00
7	Toluene	35.00	35.00
8	Di methyl carbonate	23.77	23.77
9	Ammonia solution	125.00	125.00

3. CHLORPHENESIN

S. No	Raw Material	Consumption/ Batch in Kgs	Consumption/ Day in Kgs
1	Epichlorohydrin	50.00	250.00
2	Phosphoric acid	2.00	10.00
3	p-Chloro phenol	80.00	400.00
4	Sodium hydroxide (47%)	70.00	350.00
5	EDC	35.00	175.00
6	Hydrochloric acid (30%)	4.00	20.00
7	Toluene	35.00	175.00

4. DEXTROMETHORPHAN HYDROBROMIDE

S. No	Raw Material	Consumption/ Batch in Kgs	Consumption/ Day in Kgs
1	PMPPA	449.00	1496.67
2	CHEA	338.34	1127.80
3	Phosphorous oxy chloride	415.00	1383.33
4	Caustic lye	446.03	1486.77
5	Toluene	2353.00	7843.33
6	Mandelic acid	55.00	183.33
7	Formic acid	13.88	46.27
8	Sodium methoxide powder	3.41	11.37
9	Phosphoric acid	1480.00	4933.33
10	Phosphorous pentoxide	54.00	180.00
11	Methanol	245.00	816.67
12	Formaldehyde	45.45	151.50
13	Acetone	436.00	1453.33
14	Activated carbon	4.50	15.00
15	Hyflow	4.50	15.00
16	Hydrobromic acid	9.10	30.33

5. DROTAVERINE HYDROCHLORIDE

S. No	Raw Material	Consumption/ Batch in Kgs	Consumption/ Day in Kgs
1	Pyro catechol	147.00	147.00
2	Diethyl sulfate	191.62	191.62
3	Toluene	1520.00	1520.00
4	Sodium hydroxide	1101.00	1101.00
5	Para formaldehyde	19.85	19.85
6	Hydrochloric acid	413.00	413.00
7	Sodium bicarbonate	10.00	10.00
8	Sodium cyanide	27.00	27.00
9	Sodium hypochlorite	1577.50	1577.50
10	Methanol	500.00	500.00
11	Ammonia gas	45.00	45.00
12	Hydrogen	3.00	3.00
13	Nitrogen	1.00	1.00
14	Raney Nickel	6.00	6.00
15	Phosphorous oxy chloride	139.65	139.65
16	IPA	350.00	350.00

6. GUAIFENESIN

S. No	Raw Material	Consumption/ Batch in Kgs	Consumption/ Day in Kgs
1	Pyrcatechol	61.40	2046.67
2	Di methyl sulfate	45.00	1500.00
3	Sodium carbonate	38.00	1266.67
4	Hydrochloric acid	8.00	266.67
5	Sodium hydroxide	60.00	2000.00
6	Toluene	100.00	3333.33
7	Epichlorohydrin	55.00	1833.33
8	Phosphoric acid	2.00	66.67
9	Toluene	100.00	3333.33
10	EDC	75.00	2500.00

7. 1-(4-HYDROXYPHENYL) PIPERAZINE

S. No	Raw Material	Consumption/ Batch in Kgs	Consumption/ Day in Kgs
1	Bis-(2-Chloro ethyl)amine HCl	250.00	41.67
2	P-Amino phenol	155.00	25.83
3	Methanol	1000.00	166.67
4	Sodium acetate trihydrate	300.00	50.00
5	Acetic anhydride	250.00	41.67
6	Sodium hydroxide	335.11	55.85

8. MEBEVERINE HYDROCHLORIDE

S. No	Raw Material	Consumption/ Batch in Kgs	Consumption/ Day in Kgs
1	Vaniline	75.00	75.00
2	Dimethyl Sulfate	31.35	31.35
3	Sodium Carbonate	70.00	70.00
4	Toluene	1260.00	1260.00
5	Potassium Permanganate	68.20	68.20
6	Hydrochloric acid	125.00	125.00
7	Sodium Bisulfite	1.00	1.00
8	Hydrogen	3.00	3.00
9	Sodium Methoxide	52.75	52.75
10	Methanol	1060.00	1060.00
11	1,4-Dibromo butane	800.00	800.00
12	p-Anisic aldehyde	60.00	60.00
13	2-Chloromethyl propionate	74.56	74.56
14	Sodium Methoxide	25.00	25.00
15	Monoethyl Amine	66.81	66.81
16	Sodium Hydroxide	40.00	40.00
17	Nitrogen	2.00	2.00
18	Methyl Isobutyl Ketone	150.00	150.00
19	Ethyl Acetate	250.00	250.00
20	Methylene Dichloride	150.00	150.00

9. MEPHENESIN

S. No	Raw Material	Consumption/ Batch in Kgs	Consumption/ Day in Kgs
1	Ortho cresol	68.00	340.00
2	Epichlorohydrin	42.34	211.70
3	Phosphoric acid	5.00	25.00
4	Sodium Hydroxide (47%)	65.00	325.00
5	Ethylene Dichloride	70.00	350.00
6	Toluene	110.00	550.00
7	Hydrochloric acid (30%)	10.00	50.00

10. METHOCARBAMOL

S. No	Raw Material	Consumption/ Batch in Kgs	Consumption/ Day in Kgs
1	Pyrocatechol	70.00	233.33
2	Dimethyl Sulfate	43.72	145.73
3	Sodium Carbonate	38.00	126.67
4	Hydrochloric Acid	1.00	3.33
5	Sodium Hydroxide	60.00	200.00
6	Toluene	400.00	1333.33
7	Epichlorohydrin	49.64	165.47
8	Phosphoric acid	2.00	6.67
9	Ethylene Dichloride	75.00	250.00
10	Hydrochloric Acid	7.00	23.33
11	Di methyl Carbonate	26.29	87.63
12	Ammonia	115.00	383.33

11. POTASSIUM GUAIACOL SULFONATE

S. No	Raw Material	Consumption/ Batch in Kgs	Consumption/ Day in Kgs
1	Guaiacol	50.00	28.33
2	Sulfuric acid	45.00	25.50
3	Potassium Carbonate	30.00	17.00
4	Methanol	25.00	14.17
5	Barium Carbonate	15.00	8.50

12. PRAZOSIN HYDROCHLORIDE

S. No	Raw Material	Consumption/ Batch in Kgs	Consumption/ Day in Kgs
1	2-Furoic acid	36.25	20.30
2	Methanol	56.25	31.50
3	Sulfuric acid	1.25	0.70
4	Sodium carbonate	1.50	0.84
5	Piperazine	50.00	28.00
6	Sodium hydroxide (47%)	25.00	14.00
7	Hydrochloric acid (35%)	30.00	16.80
8	Toluene	250.00	140.00
9	Chloroform	500.00	280.00
10	Sodium Sulfate	5.00	2.80
11	4-Amino-2-chloro-6,7-Dimethoxy quinozoline	33.75	18.90
12	2-Methoxy Ethanol	75.00	42.00
13	Hydrochloric acid (35%)	1.25	0.70
14	Isopropyl alcohol	87.50	49.00
15	Methanol	187.50	105.00

13. RIBAVIRIN

S. No	Raw Material	Consumption/ Batch in Kgs	Consumption/ Day in Kgs
1	1,2,3,5-Terta-o-acetylribofuranose	90.00	3.00
2	Methyl-1,2,4-triazole-3-carboxylate	37.50	1.25
3	Stannic chloride	85.00	2.83
4	MDC	150.00	5.00
5	Toluene	275.00	9.17
6	Methanol	950.00	31.67
7	Ammonia gas	21.00	0.70
8	Activated carbon	0.05	0.00
9	Hyflow	0.25	0.01

14. ROPINIROLE HYDROCHLORIDE

S. No	Raw Material	Consumption/ Batch in Kgs	Consumption/ Day in Kgs
1	4-(2-min bromo ethyl)-3-chloro-1,3-dihydro-2H-Indol-2-one	51.25	3.42
2	Sodium hypo phosphite	21.25	1.42
3	Palladium carbon	5.00	0.33
4	Ethyl acetate	700.00	46.67
5	Di-n-propyl amine	150.00	10.00
6	IPA	500.00	33.33
7	Hydrochloric acid (35%)	17.50	1.17
8	Methanol	75.00	5.00
9	Activated carbon	6.25	0.42

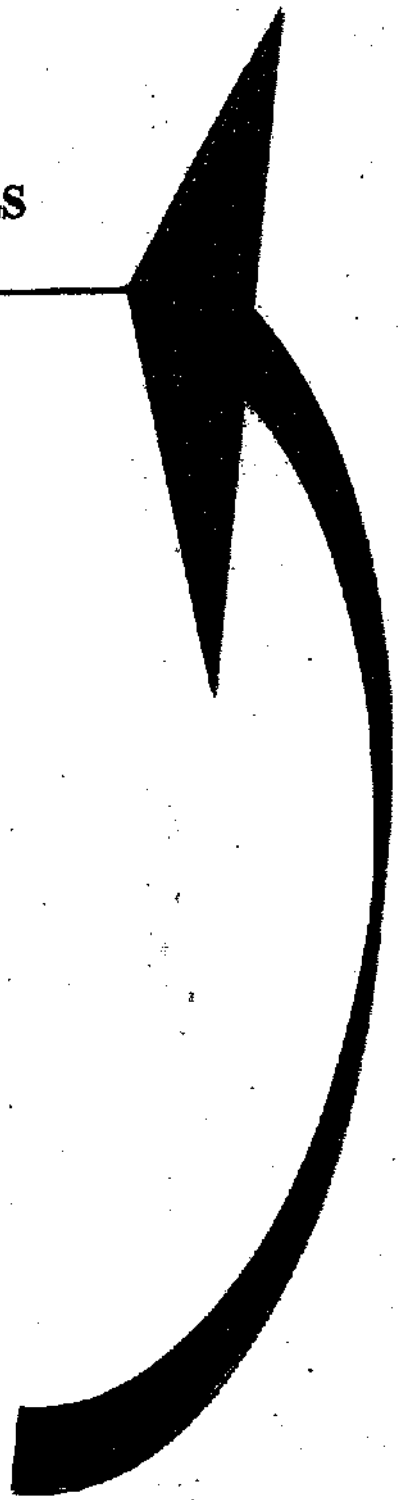
15. TERAZOSIN HYDROCHLORIDE

S. No	Raw Material	Consumption/ Batch in Kgs	Consumption/ Day in Kgs
1	2-Furoic acid	52.50	5.95
2	Sodium carbonate	3.00	0.34
3	Methanol	375.00	42.50
4	Sulfuric acid	2.50	0.28
5	Palladium carbon	0.50	0.06
6	Hydrogen	2.50	0.28
7	Nitrogen	1.50	0.17
8	Piperazine	100.00	11.33
9	Sodium hydroxide	45.00	5.10
10	Hydrochloric acid	47.50	5.38
11	Toluene	400.00	45.33
12	Chloroform	750.00	85.00
13	Sodium sulfate	7.50	0.85
14	4-Amino-2-chloro-6,7-dimethoxy quinazoline	50.00	5.67
15	2-Methoxy ethanol	100.00	11.33
16	IPA	125.00	14.17

16. VERATROLE

S. No	Raw Material	Consumption/ Batch in Kgs	Consumption/ Day in Kgs
1	Pyrocatechol	85.00	283.33
2	Dimethyl sulfate	100.00	333.33
3	Sodium hydroxide	63.92	213.07
4	Toluene	150.00	500.00

WASTE WATER DETAILS



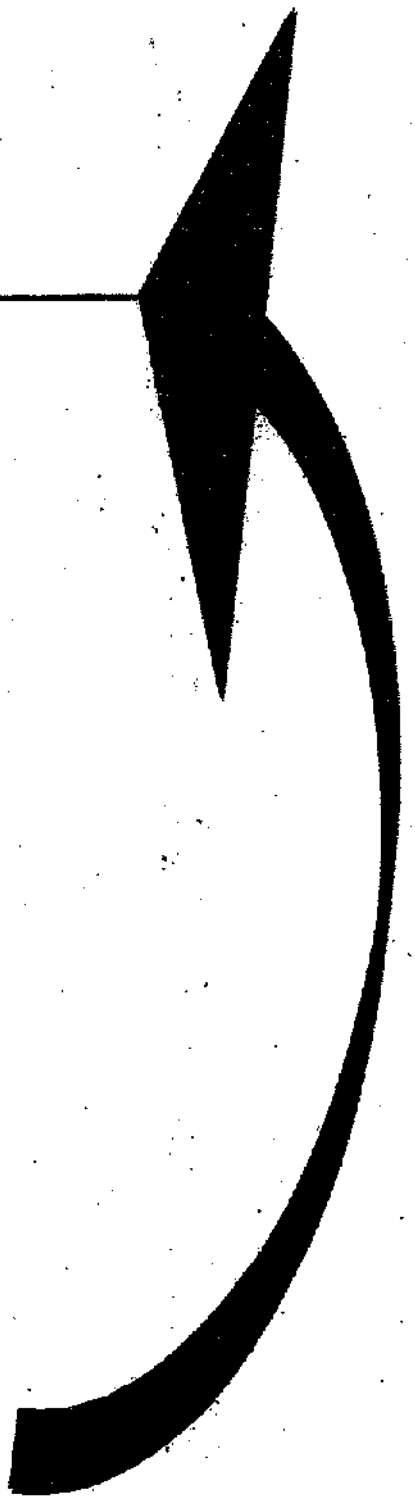
WASTE WATER DETAILS

S. No	Purpose	Effluent Generation In KLD
1	Process	39.77
2	Washings	3.00
3	Boiler Blow down	7.00
4	Cooling towers Blow down	16.00
5	DM Plant Regeneration	2.00
6	Scrubbing system	2.00
7	Domestic	7.00
	Total	**76.77**

HTDS & LTDS DETAILS

Unit	HTDS KLD	LTDS KLD	Effluent Generation in KLD	Treatment Method
Process	**36.85**	**2.92**	**39.77**	HTDS effluent sent to ETP with MEE System LTDS effluents treated in ETP – RO Plant / RO Rejects to MEE System and RO permeate to reuse, Condensate from MEE to reuse and MEE residue to ATFD.
Washings	0	3.00	3.00	
Boiler Blow Down	7.00	0.00	7.00	
Cooling towers Blow Down	0.00	16.00	16.00	
DM Plant Regeneration	2.00	0.00	2.00	
Scrubber System	2.00	0.00	2.00	
Domestic	0.00	7.00	7.00	Septic tank followed by soak pit
Total	**47.85**	**28.92**	**76.77**	

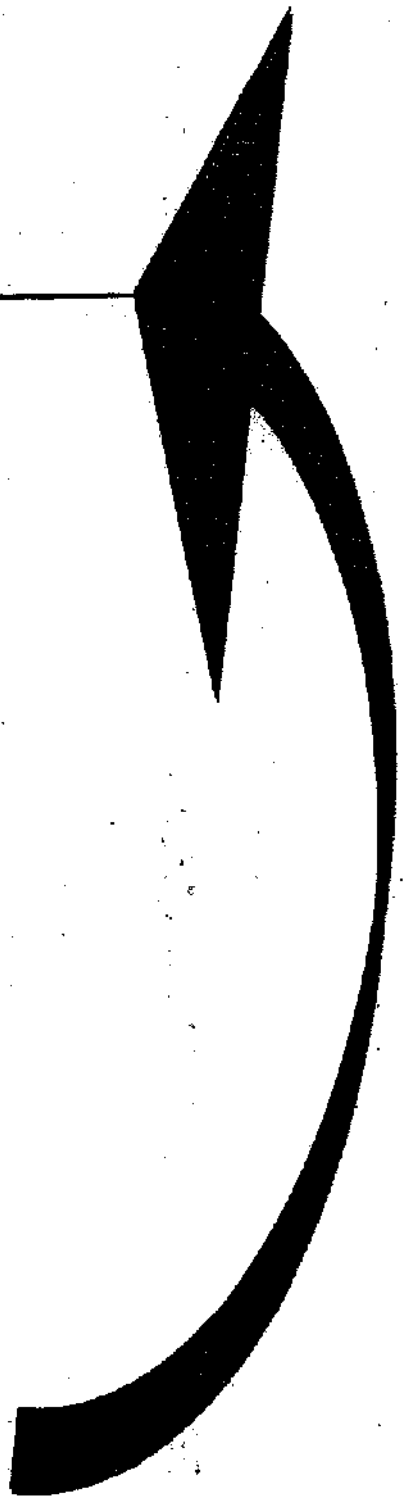
ETP FLOW CHART



FLOW CHART FOR EFFLUENT TREATMENT

Effluent Type	Treatment Flow
HTDS/HCOD	Collection → Equalization & neutralization → Stripper → MEE → ATFD → TSDF MEE Condensate will be Reused.
HTDS	Collection→ Equalization & neutralization → MEE → ATFD → TSDF MEE Condensate will be Reused.
LTDS/LCOD	Collection→ ETP (Biological Treatment) → Sand Filter → Carbon Filter → Booster pump to Membrane Filter set → RO Plant → RO Reject to MEE RO Permeate to Reused.

SPENT SOLVENTS



Solvent Details

S.No	Product Name	Production/ Month	Per Day						
			Solvent Name	Solvent Input	Solvent Recovery	Solvent Loss	Solvent to waste water	Solvent to Residue	Fugitive Loss
1	Alfuzosin Hydrochloride	170.00	Isopropyl alcohol	79.90	75.91	4.00	0.06	0.10	0.04
			2-Methoxy Ethanol	39.67	37.68	1.98	0.03	0.05	0.02
			Methanol	102.00	96.90	5.10	0.08	0.13	0.05
			Methylene Dichloride	113.33	107.67	5.67	0.09	0.14	0.06
			Ethyl acetate	17.00	16.15	0.85	0.01	0.02	0.01
	Total			**351.90**	**334.31**	**17.60**	**0.26**	**0.44**	**0.18**
2	Chlorophenesin Carbamate	3000.00	EDC	35.00	33.25	1.75	0.03	0.04	0.02
			Toluene	535.00	508.25	26.75	0.40	0.67	0.27
	Total			**570.00**	**541.50**	**28.50**	**0.43**	**0.71**	**0.29**
2	Chlorophenesin	15000.00	EDC	175.00	166.25	8.75	0.13	0.22	0.09
			Toluene	175.00	166.25	8.75	0.13	0.22	0.09
	Total			**350.00**	**332.50**	**17.50**	**0.26**	**0.44**	**0.18**
3	Dextromethorphan HBr	10000.00	Toluene	7843.33	7451.17	392.17	5.88	9.80	3.92
			Methanol	816.67	775.83	40.83	0.61	1.02	0.41
			Acetone	1453.33	1380.67	72.67	1.09	1.82	0.73
	Total			**10113.33**	**9607.67**	**505.67**	**7.59**	**12.64**	**5.06**
4	Drotaverine Hydrochloride	3000.00	Toluene	1520.00	1444.00	76.00	1.14	1.90	0.76

			Methanol	500.00	475.00	25.00	0.38	0.63	0.25
			IPA	350.00	332.50	17.50	0.26	0.44	0.18
	Total			**2370.00**	**2251.50**	**118.50**	**1.78**	**2.96**	**1.19**
5	Guiafenesin	100000.00	Toluene	6666.67	6333.33	333.33	5.00	8.33	3.33
	Total			**6666.67**	**6333.33**	**333.33**	**5.00**	**8.33**	**3.33**
6	1-(4-Hydroxyphenyl)piperazine	500.00	Methanol	166.67	158.33	8.33	0.13	0.21	0.08
				166.67	**158.33**	**8.33**	**0.13**	**0.21**	**0.08**
6	Mebeverine Hydrochloride	3000.00	Toluene	1260.00	1197.00	63.00	0.95	1.58	0.63
			Methanol	1060.00	1007.00	53.00	0.80	1.33	0.53
			MIBK	150.00	142.50	7.50	0.11	0.19	0.08
			Ethyl acetate	250.00	237.50	12.50	0.19	0.31	0.13
			MDC	150.00	142.50	7.50	0.11	0.19	0.08
	Total			**2870.00**	**2726.50**	**143.50**	**2.15**	**3.59**	**1.44**
7	Mephenesin	15000.00	EDC	350.00	332.50	17.50	0.26	0.44	0.18
			Toluene	550.00	522.50	27.50	0.41	0.69	0.28
	Total			**900.00**	**855.00**	**45.00**	**0.68**	**1.13**	**0.45**
8	Methocarbamol	10000.00	Toluene	1333.33	1266.67	66.67	1.00	1.67	0.67
			EDC	250.00	237.50	12.50	0.19	0.31	0.13
	Total			**1583.33**	**1504.17**	**79.17**	**1.19**	**1.98**	**0.79**
9	Potassium Guaiacol Sulfonate	1700.00	Methanol	14.17	13.46	0.71	0.01	0.02	0.01
	Total			**14.17**	**13.46**	**0.71**	**0.01**	**0.02**	**0.01**
10	Prazosin Hydrochloride	420.00	Methanol	136.50	129.68	6.83	0.10	0.17	0.07
			Toluene	140.00	133.00	7.00	0.11	0.18	0.07
			Chloroform	280.00	266.00	14.00	0.21	0.35	0.14
			Piperazine	28.00	26.60	1.40	0.02	0.04	0.01

			IPA	49.00	46.55	2.45	0.04	0.06	0.02
	Total			**633.50**	**601.83**	**31.68**	**0.48**	**0.79**	**0.32**
	Rabavirin	50.00	MDC	5.00	4.75	0.25	0.00	0.01	0.00
			Toluene	9.17	8.71	0.46	0.01	0.01	0.00
			Methanol	18.33	17.42	0.92	0.01	0.02	0.01
				32.50	**30.88**	**1.63**	**0.02**	**0.04**	**0.02**
11	Ropinirole Hydrochloride	50.00	Ethyl acetate	46.67	44.33	2.33	0.04	0.06	0.02
			IPA	33.33	31.67	1.67	0.03	0.04	0.02
			Di-n-propyl amine	10.00	9.50	0.50	0.01	0.01	0.01
			Methanol	5.00	4.75	0.25	0.00	0.01	0.00
	Total			**95.00**	**90.25**	**4.75**	**0.07**	**0.12**	**0.05**
12	Terazosin Hydrochloride	170.00	Methanol	42.50	40.38	2.13	0.03	0.05	0.02
			piperazine	11.33	10.77	0.57	0.01	0.01	0.01
			Toluene	45.33	43.07	2.27	0.03	0.06	0.02
			Chloroform	85.00	80.75	4.25	0.06	0.11	0.04
			IPA	14.17	13.46	0.71	0.01	0.02	0.01
	Total			**198.33**	**188.42**	**9.92**	**0.15**	**0.25**	**0.10**
16	Veratrole	10000.00	Toluene	500.00	475.00	25.00	0.38	0.63	0.25
				500.00	**475.00**	**25.00**	**0.38**	**0.63**	**0.25**
	Grand total of solvents details of all products			**27415.40**	**26044.63**	**1370.77**	**20.56**	**34.27**	**13.71**

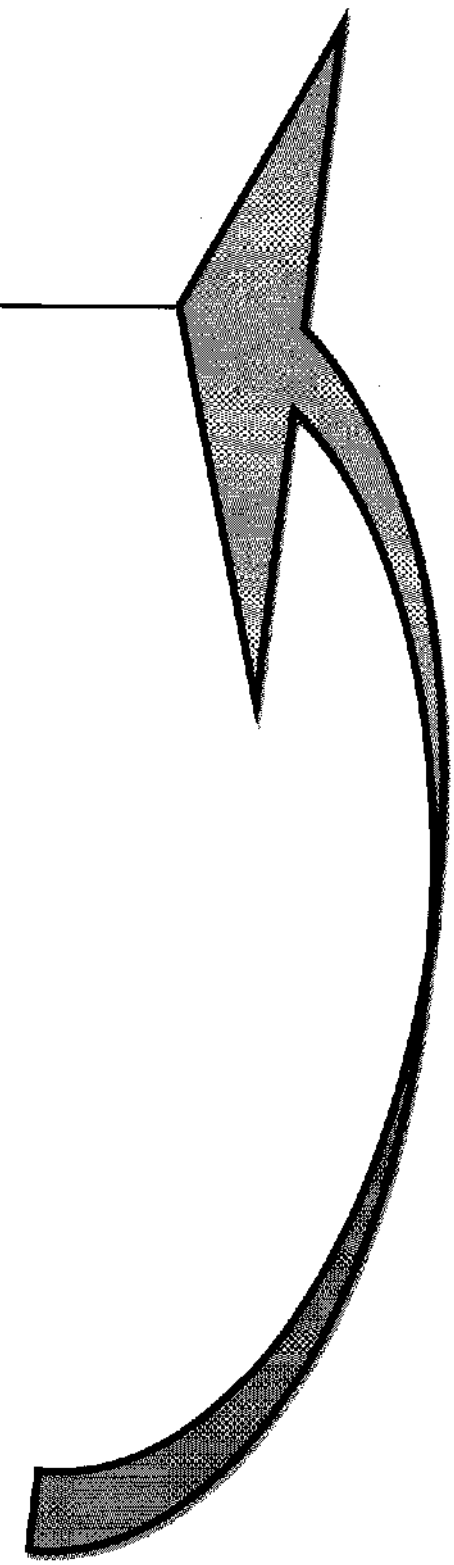
POLLUTION LOAD DETAILS

Consolidated Statement of M/s.Synthokem Labs Pvt.Ltd. — **Enclosure - 5**

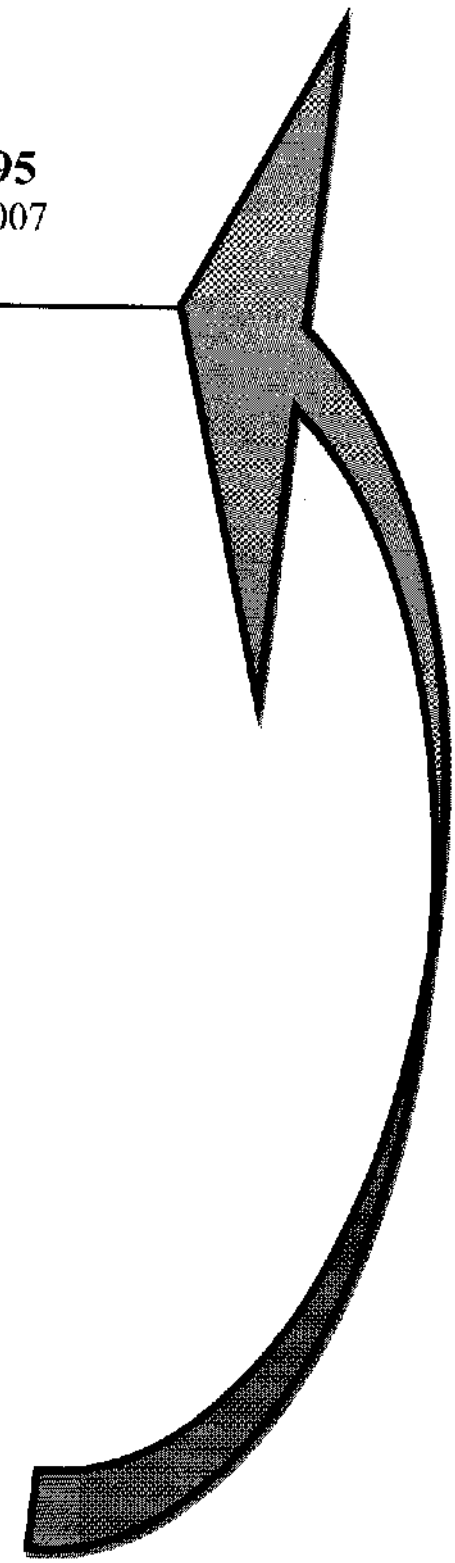
S.No	Product Name	Prodn/ Month	Effluent details									Solid waste Details				Emisisons	
			Water Input	Water In Effluent	Inorganics in water	Organics in water	TDS	COD	HTDS	LTDS	Total Effluent	Organic	Inorganic	Spent carbon	Total solid waste	Process	Fugitive
		Kg/Month	Kg/Day	Kg/Day	Kg/Day	Kg/Day	Kg/Day	Kg/Day	Kg/Day	Kg/Day	Kg/Day	Kg/Day	Kg/Day	Kg/Day	Kg/Day	Kg/Day	Kg/Day
1	Alfuzocin Hydrochloride	170.00	345.67	351.10	5.78	0.34	5.78	0.66	357.22	0.00	357.22	15.65	1.13	3.40	20.18	7.05	17.60
2	Chlorophenesin	15000.00	1250.00	1491.80	195.50	1.00	195.50	3.10	1688.30	0.00	1688.30	40.00	0.00	0.00	40.00	0.00	14.50
3	Chlorophenesin Carbamate	3000.00	350.00	516.84	45.14	34.61	45.14	56.77	597.50	0.00	597.50	2.00	0.00	0.00	2.00	0.00	27.00
4	Dextromethorphan Hydrobromide	10000.00	5653.33	5517.50	3091.70	13.33	3091.70	30.13	9084.83	18.07	9102.90	827.43	14.30	30.00	871.73	220.27	616.67
5	Drotaverine Hydrochloride	3000.00	1500.00	4019.80	314.83	3.00	314.83	9.36	4156.38	555.13	4711.51	69.30	280.52	0.00	349.82	52.77	119.00
6	Guaifenesin	100000.00	10000.00	11340.33	1426.00	414.33	1426.00	675.33	13180.67	0.00	13180.67	284.67	1689.00	0.00	1973.67	525.67	391.67
7	1-(4-Hydroxy phenyl)piperazine	500.00	1283.33	1366.23	155.84	0.50	155.84	0.75	1522.58	0.00	1522.58	22.76	0.00	0.00	22.76	0.00	8.33
8	Mebeverine Hydrochlorlde	3000.00	1500.00	1648.05	176.57	52.71	176.57	77.06	1903.20	0.00	1903.20	59.77	78.68	0.00	138.45	36.12	147.00
9	Mephenesin	15000.00	1250.00	1525.95	175.75	10.00	175.75	31.20	1711.70	0.00	1711.70	0.00	0.00	0.00	0.00	0.00	43.00
10	Methocarbamol	10000.00	1333.33	1780.40	160.00	216.57	160.00	335.63	2156.97	0.00	2156.97	0.00	168.90	0.00	168.90	54.63	65.83
11	Potassium Guaiacol sulfonate	1700.00	42.50	47.18	10.91	0.57	10.91	0.85	58.66	0.00	58.66	0.09	0.00	0.00	0.09	6.43	0.57
12	Prazosin Hydrochloride	420.00	168.00	189.82	11.59	7.32	11.59	13.31	208.74	0.00	208.74	20.84	3.82	0.00	24.66	0.31	31.92
13	Rabavirin	50.00	58.33	58.33	5.05	0.33	5.05	0.55	63.71	0.00	63.71	0.52	0.00	0.00	0.52	0.07	1.57
14	Ropinirole hydrochloride	50.00	110.00	110.24	2.44	0.33	2.44	0.80	113.02	0.00	113.02	2.60	0.00	0.42	3.02	0.92	4.60
15	Terazosin hydrochloride	170.00	34.00	42.09	3.76	2.01	3.76	3.20	47.87	0.00	47.87	9.78	1.26	0.00	11.04	0.37	10.48
16	Veratrole	10000.00	2000.00	2332.93	7.23	3.33	7.23	10.40	0.00	2343.50	2343.50	21.13	375.37	0.00	396.50	0.00	20.00
	Total	***172060.00***	***26878.49***	***32338.59***	***5788.09***	***760.28***	***5788.09***	***1249.10***	***36851.35***			[illegible]	[illegible]	[illegible]	***4023.34***	***904.61***	***1519.74***

- Prodn/Month
- Water Input
- TDS
- COD
- HTDS
- LTDS
- Total Effluent
- Organic
- Inorganic
- Spent carbon

COPY OF G.O's.



COPY OF G.O.Ms.No:95
(Ban Notification), Dt.21/09/2007



GOVERNMENT OF ANDHRA PRADESH
ABSTRACT

Ban – Permanent Ban on Establishment/Expansion of certain Polluting Industries in Medak, Ranga Reddy, Mahaboobnagar and Nalgonda Districts- Notification - Orders-Issued.

ENVIRONMENT, FORESTS, SCIENCE & TECHNOLOGY (ENV) DEPARTMENT

G.O.Ms.No.95

Dated:21-9-2007
Read the following:-

1. Notification of the Andhra Pradesh Pollution Control Board, dated:14-10-1996.
2. G.O.Ms.No. 62, Environment, Forests, Science & Technology (ENV) Department, dated: 28-04-1999 .
3. Resolution No. 1682 of 115th Board Meeting of Andhra Pradesh Pollution Control Board, dated:21-03-2007.
4. Letter No.44144/PCB/Plg/AEE-I/2007-56, Andhra Pradesh Pollution Control Board, Dated:07-04-2007.

<◇>

ORDER:-

In the reference 1st read above, the Andhra Pradesh Pollution Control Board has issued a Notification imposing Ban on the establishment/expansion of certain categories of polluting industries in all the Industrial Estates/Industrial Development Areas and other industrial areas as mentioned in the annexure to the notification and 1km around these industrial areas of Medak, Rangareddy, Mahaboobnagar and Nalgonda districts. These ban orders were subsequently extended by the Andhra Pradesh Pollution Control Board until further orders.

2) In the reference 2nd read above, orders were issued by the Government making permanent the Ban imposed by the Andhra Pradesh Pollution Control Board in their Notification dated:14-10-1996 on the establishment/expansion of certain categories of polluting industries in all the Industrial Estates/Industrial Development Areas and other industrial areas in the Districts of Medak, Rangareddy, Mahaboobnagar and Nalgonda.

3) The Andhra Pradesh Pollution Control Board vide Resolution No.1668 of 113th Board Meeting held on 27-12-2006 had constituted a Sub-Committee to define the industries falling under "Highly Water Polluting Industries" category of the ban notification to have clarity. The sub-committee submitted a report. The Andhra Pradesh Pollution Control Board in its 115th Board meeting held on 21-03-2007 vide resolution No.1682 had agreed to the recommendations of the sub-committee to include only W1 and W2 categories of water polluting industries, as defined by Central Pollution Control Board (CPCB) in the criteria issued in 2004 for preparation of Zoning Atlas for siting of industries, in the ban area. The Member Secretary, Andhra Pradesh Pollution Control Board, has been authorized to communicate the same to Environment, Forests, Science & Technology Department for issuing necessary amendments to the ban notification vide G.O.Ms. No.62, dated: 28-04-1999. Accordingly, the Member Secretary, Andhra Pradesh Pollution Control Board vide reference 4th read above has communicated the report of the sub-committee and the resolution of the Board to the Government.

4) The Government, after careful examination of the matter, have decided to issue a fresh notification by superseding the notifications issued in the matter. Accordingly, the following notification shall be published in the next extra-ordinary issue of the Andhra Pradesh Gazette:

P.T.O.

NOTIFICATION

In exercise of the powers conferred under section 19 of the Water (Prevention and Control of Pollution) Act, 1974 (Central Act No.6 of 1974) and section 19 of the Air (Prevention and Control of Pollution) Act, 1981 (Central Act No. 14 of 1981), and in supersession of the notification issued by the Andhra Pradesh Pollution Control Board, Hyderabad, dated 14-10-1996 and the notification issued by the Government in G.O.Ms.No.62, Environment, Forests, Science & Technology Department, dated: 28-4-1999, the Government of Andhra Pradesh, on the recommendations of the Andhra Pradesh Pollution Control Board, Hyderabad, hereby impose restrictions on establishment/expansion of the following categories of industries in all the Industrial Estates/Industrial Development Areas and other industrial areas as mentioned in the annexure appended to this notification and 1 K.M. around these industrial areas in the Districts of Medak, Rangareddy, Mahaboobnagar and Nalgonda, subject to out come of W.P.19661/02, pending before the Hon'ble High Court:

(a) **All types of Bulk Drug manufacturing units except formulation.**

(b) **All types of Pesticides (technical) manufacturing units except formulations**

(c) **All types of Dyes & Dye Intermediate manufacturing units.**

(d) **All other types of highly water polluting industries as per the criteria mentioned below:**

Industry Category	Criterion	Indicative List of industries
W1	• Industry with ≥ 25 kLD discharge of effluents (irrespective of organic load) that are not easily bio-degradable (BOD/COD ≤ 0.4) or toxic or having TDS generation more than 10,000 mg/l • Industry with 100-500 kLD discharge of non-toxic effluents with organic load of > 100 kg/d with BOD/COD ratio=0.4-0.7. • Industry with > 500 kLD of discharge of non-toxic effluents (irrespective of organic load) that are less bio-degradable (BOD/COD=0.4-0.7).	1. Oil Refinery, Petroleum Refining. 2. Petrochemicals 3. Integrated Iron and Steel 4. Fertilizer 5. Caustic Soda - Mercury cell 6. Leather Tannery (a) Chrome Tanneries / Combined Chrome and Vegetable Tanneries (b) Vegetable Tanneries 7. Pulp and Paper - Agro Based 8. Distillery (Alcohol distillery) 9. Electro Plating 10. Coke Oven

Industry Category	Criterion	Indicative List of industries
W2.	• Industry with 100-500 kLD discharge of non-toxic effluents with organic load of < 100 kg/d with BOD/COD ≤ 0.7. • Industry with >500 kLD discharge of non-toxic effluents (irrespective of organic load) that are less biodegradable (BOD/COD ratio of > 0.7). • Industry with ≥ 25 kLD discharge of effluents (irrespective of organic load) having TDS generation > 5,000 mg/l but ≤ 10,000 mg/l.	1. Thermal Power Plants-Coal or coke based less than 210 MW. 2. Nitric Acid 3. Sulphuric Acid 4. Phospharic Acid 5. Sugar 6. Organic Chemicals * 7. Paint (excluding formulation) 8. Inorganic Chemicals * 9. Man –Made Fibres (Synthetic; Semi Synthetic) 10. Composite Woolen Mills-Common, Chromium and Sulphide 11. Pulp and Paper – Waste Paper Based 12. Fermentation (Maltries and Breweries) 13.Slaughter House, Meat and Sea Food Industry 14.Cotton Textile Industries 15.Synthetic Rubber 16.Starch and Glucose 17.Bone Mills and allied industries

Note:

* All units including fine chemicals irrespective of Pollution Load generated, quantity of effluent generated.

If any industry is not listed /missing in the above list, the same can be categorized as W1, W2 based on the criteria as given by the CPCB mentioned above.

(BY ORDER AND IN THE NAME OF THE GOVERNOR OF ANDHRA PRADESH)

JANAKI R. KONDAPI
SPECIAL CHIEF SECRETARY TO GOVERNMENT

To

The Commissioner, Printing, Stationary & Stores Purchase (Plg.wing), Chenchalguda, Hyderabad, with a request to publish the Notification in the next extra-ordinary issue of the Andhra Pradesh Gazettee, and furnish 200 copies of the same.

To

The Member Secretary, Andhra Pradesh Pollution Control Board, Paryavaran Bhavan, A - 3, Industrial Estate, Sanathnagar, Hyderabad - 500 018.

Copy to:

All the Departments of Secretariat.
The Collectors of Medak, Rangareddy, Mahaboobnagar and Nalgonda districts
The Commissioner of Industries, Chirag-ali-lane, Abids, Hyderabad.
The Director Agriculture, Andhra Pradesh, Hyderabad,
The Commissioner, Information & Public relations Department, Andhra Pradesh, Hyderabad.
The Commissioner, Environment Protection Training Research Institute (E.P.T.R.I), Andhra Pradesh, Hyderabad,
The Chairman, Andhra Pradesh Transco, Somajiguda, Vidyuth Soudha, Andhra Pradesh, Hyderabad.
The Secretary to Hon'ble Chief Minister,
P.S. to M (FES&T),
P.S. to Special Chief Secretary (EFS&T).
All Senior Officers of Environment, Forests, Science & Technology Department.
All Sections in Environment, Forests, Science & Technology Department.
Law (B) Department.
The Information and Technology Department (both Soft & Hard copies) with a request to place on web-site.
SF/SC.

// FORWARDED: BY ORDER //

P. Hanumantha Rao
SECTION OFFICER

ANNEXURE

(Annexure to G.O.Ms.No.95 Environment, Forests, Science & Technology (ENV) Department, dt:21-9-2007)

LIST OF EXISTING INDUSTRIAL ESTATES/INDUSTRIAL DEVELOPMET AREAS

I. Medak District:

1. Patancheru	-	I.E. & I.D.A.
2. Pashamylaram	-	I.D.A.
3. Ramachandrapuram	-	I.E.
4. Yelumela (Ramachandrapuram Mandal)	-	I.D.A.
5. Zaheerabad	-	R.I.E. (Rural Industrial Estate)
6. Bollarum	-	A.I.E. (Anrich Industrial Estate)
7. Bollarum	-	S.V.C.I.E.(Sri Venkateswara Co-operative Industrial Estate)
8. Gaddapotharam Khazipally	-	I.D.A.
9. Boothapally	-	I.D.A.

II. Rangareddy District:

1.Kattedan	-	I.E.
2. Mallapur	-	I.D.A.
3. Nacharam	-	I.E.
4. Vikarabad	-	I.E.
5. Chevella	-	I.E.
6. Jeedimetla Phase I to V	-	I.D.A.
7. Medchal	-	I.E.
8. Gundlapochampa III	-	I.E.
9. Balangar	-	I.E.
10. Cherlapally	-	I.E.
11. Uppal	-	I.E.
12. Moula Ali	-	I.E.
13. Kushaiguda	-	I.E.

III. Nalgonda District:

1. Bhongir	-	I.D.A.
2. Chityal	-	I.E.
3. Nalgonda	-	I.D.A & M.I.E.(Mini Industrial Estate)
4. Suryapet	-	I.E.
5. Miryalguda	-	I.D.A.
6. Nagarjuna Sagar	-	I.E.

IV. Mahaboobnagar District

1. Kothur Phase I & II	-	I.D.A
2. Mahaboobnagar	-	I.H.C. (Industrial Housing Corporation)
3. Jedcherla	-	I.D.A.
4. Gadwal	-	I.D.A.

P.T.O.

EXISTING INDUSTRIAL AREAS OTHER THAN INDUSTRIAL ESTATES/INDUSTRIAL DEVELOPMENT AREAS

I. Medak District:

1. Gummadidala
2. Kallakal – Toopran
3. Gundlamachanoor – Narsapur
4. Rudram
5. Sadasivpet
6. Chitkul – Isnapur
7. Yawapur
8. Gajwel – Pregnapur
9. Siddipet

II. Mahaboobnagar District:

1. Balanagar
2. Nandigam

III. Nalgonda District:

1. Existing Industrial areas of Choutuppal Mandal
2. Gundrampally(V) of Chityal Mandal

IV. Rangareddy District:

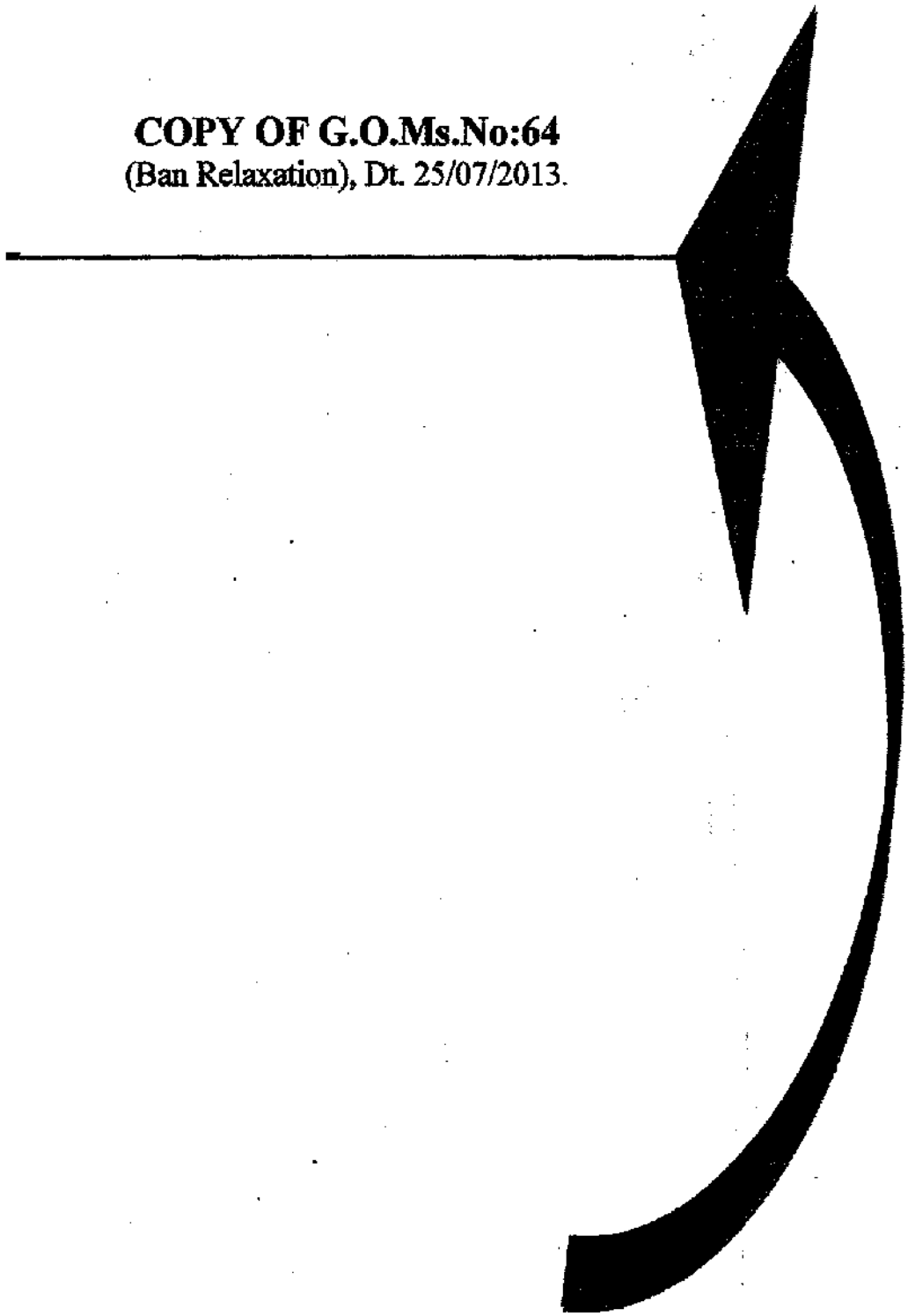
1. L.B.Nagar
2. Ghatkesar
3. Gaganpahad
4. Catchment area of Shameerpet Tank
5. Shameerpet
6. Shamshabad.

JANAKI R. KONDAPI
SPECIAL CHIEF SECRETARY TO GOVERNMENT

//TRUE COPY//

P. Hanumantha Rao
SECTION OFFICER

COPY OF G.O.Ms.No:64
(Ban Relaxation), Dt. 25/07/2013.



GOVERNMENT OF ANDHRA PRADESH
ABSTRACT

Ban – Permanent Ban on Establishment of certain Polluting Industries in Medak, Ranga Reddy, Mahaboobnagar and Nalgonda Districts- Amendment Notification – Orders-Issued.

ENVIRONMENT, FORESTS, SCIENCE & TECHNOLOGY (ENV) DEPARTMENT

G.O. Ms. No. 64 **Dated: 25-07-2013.**
Read the following:-

1. G.O. Ms. No. 95, Environment, Forests, Science & Technology (ENV) Department, dated: 21-09-2007.
2. Representation of Bulk Drug Manufacturer's Association (BDMA), Hyderabad to APPCB, dated 18-09-2012 and Government dated 16-07-2012.
3. Order of the Hon' ble Appellate Authority dated 20-10-2012.
4. Resolution No. 1949 of 130th Board Meeting of Andhra Pradesh Pollution Control Board, dated:04-12-2012.
5. Letter No.44144/PCB/PLG/2012-65, Andhra Pradesh Pollution Control Board, dated:03-04-2013.
6. Commerce Secretary, Government of India D. O. Letter No.15/36/2013/EP (Engg/Pharma). Dated 30-04-2013.

* * *

O R D E R:

In the G.O. 1st read above, Ban was imposed on the establishment/expansion of certain categories of polluting industries in all the Industrial Estates/Industrial Development Areas and other industrial areas as mentioned in the Annexure to the notification and 1km around these industrial areas of Medak, Rangareddy, Mahaboobnagar and Nalgonda districts.

(2) In the representation 2nd read above, the Bulk Drug Manufacturer's Association (BDMA), Hyderabad requested the APPCB to allow the expansion of existing Bulk Drug and its Intermediate Manufacturing Units with Zero Liquid Discharge Facilities and Industries who could send less contaminated non-process water such as domestic, cooling tower and boiler blow down to Common Effluent Treatment Plants (CETPs) and to consider pollution load at Point of Discharge instead of Point of Generation before installation of pollution control systems as provided in Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981. They enumerated the improvements in the technology adopted by them such as Zero Liquid Discharge (ZLD) / Zero Process Liquid Discharge (ZPLD) process comprising of latest equipment such as Stripper, Multiple Effect Evaporator, Agitated Thin Film Drier (ATFD) and Reverse Osmosis (RO) etc, to control water pollution through considerable reduction in High Total Dissolved Solids (HTDS) discharges and also to bring down emission of gaseous substances mainly Volatile Organic Compounds (VOC) to control Air Pollution.

3) The Principal Secretary to Government, Industries and Commerce (CIP) Department offered his views on the present state of pollution control measures implemented by Bulk Drug and Bulk Drug Intermediates industrial units. Keeping the fact that Hyderabad attained the status as International Capital of Pharmaceutical industry, a level playing field is a dire necessity to maintain its leadership position without compromising on pollution control. As there is overall improvement in water pollution control measures adopted by the industry, a suggestion has been made to permit the increase in production capacity to enable them to compete in the international market and to assess the pollution load at the point of discharge.

4) In the order 3rd read above, the Hon'ble A. P. Pollution Control Appellate Authority observed that there is much improvement in the environmental conditions after industries implemented better pollution treatment techniques and Ministry of Environment and Forests (MoEF) has lifted moratorium in establishment of industries in the earlier notified industries. Imposing ban or restrictions on the industries through Administrative Orders is not justifiable and such ban and restrictions are against the Statutory provisions under (Section 2, Rule 5) of Environment (Protection) Act, 1986. The Hon'ble Appellate Authority disposed the appeals filed by the Bulk Drug and Intermediate industries with the direction that the State Government shall take a decision on the representation made by the Bulk Drug Manufacturers Association in the light of the orders passed by MoEF and the Statutory position as explained above within three months from today.

5) In the resolution 4th read above, the Andhra Pradesh Pollution Control Board in its Resolution No.1949 of 130th Board meeting resolved to recommend to the Government, the recommendations of the High Level Expert Committee (HLEC) constituted to study the request of Bulk Drug Manufacturer's Association (BDMA) to amend the G. O. Ms. No.95, dated 21-09-2007. The Committee in their report stated that the requisite treatment facilities are in place and Ministry of Environment and Forests (MoEF), Government of India has withdrawn the moratorium in Patancheru – Bollaram area after implementation of Joint Action Plan. The High Level Expert Committee recommended to the Andhra Pradesh Pollution Control Board that the expansion of capacities could be considered subject to the availability of water resources, Ambient Air Quality including Volatile Organic Compounds (VOC), Capacity of Treatment, Storage and Disposal Facility (TSDF) & Common Effluent Treatment Plants (CETP's) and their performance and scope for using organic waste in cement plants for co-processing.

6) In the letter 5th read above, the Andhra Pradesh Pollution Control Board communicated the Agenda with minutes of the 130th Board meeting of Andhra Pradesh Pollution Control Board and the report of the High Level Expert Committee with their recommendations from the technical point of view. The Andhra Pradesh Pollution Control Board recommended the expansion of existing industries on a case to case basis in relaxation of ban order issued vide G. O. 1st read above, based on legal advice. The recommendations of the Andhra Pradesh Pollution Control Board is based on four parameters namely (i) Availability of Water resources, (ii) Ambient air quality including Volatile Organic Compound (VOC) (iii) Capacity of Treatment, Storage and Disposal Facility (TSDF) & Common Effluent Treatment Plant (CETP) and their performance and (iv) Scope for using organic waste in cement plants for co-processing. The Andhra Pradesh Pollution Control Board recommended comprehensive Zero Liquid Discharge (ZLD) for large industries with effluent generation above 25 KLD and partial ZLD / common ZLD for small industries with effluent generation below 25 KLD of total effluent. The Andhra Pradesh Pollution Control Board recommendation includes the transportation of low TDS effluent generated by the industries to the Common Effluent Treatment Plants (CETPs), meeting the inlet standards stipulated by the Andhra Pradesh Pollution Control Board.

7) In the letter 6th read above, Commerce Secretary, Government of India stated that the share in exports of Drugs and Pharmaceutical Industry from A. P. State is about 35% of the total exports from the Country. He recommended for expansion of existing units subject to compliance of pollution control norms in order to give further boost to the exports from this sector.

8) The Learned Additional Advocate General, High Court of Andhra Pradesh in his letter dated 28-03-2013 has opined that the Government may

consider to amend the condition of restriction imposed on expansion of existing industries in G. O. Ms. No.95, dated 21-09-2007, so far as expansion of production of the existing units.

9) The Government, after careful examination of the matter, have decided to issue an amendment to the G. O. Ms. No.95, Environment, Forests, Science & Technology (ENV) Department, dated: 21-09-2007 to enable the expansion of production of the existing Bulk Drug and Bulk Drug Intermediates manufacturing units only subject to the installation of Zero Liquid Discharge (ZLD) facilities by such units and to assess the Pollution load at the Point of Discharge, as provided in Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981.

10. Accordingly, the following notification will be published in the Extra-ordinary Issue of the Andhra Pradesh Gazette dated 25-07-2013:

NOTIFICATION

In exercise of the powers conferred by section 19 of the Water (Prevention and Control of Pollution) Act, 1974 (Central Act No.6 of 1974) and section 19 of the Air (Prevention and Control of Pollution) Act, 1981 (Central Act No.14 of 1981) the Government of Andhra Pradesh on the recommendations of the A. P. Pollution Control Board, Hyderabad hereby makes the following amendment to the notification issued in G. O. Ms. No.95, Environment, Forests, Science & Technology (ENV) Department, dated: 21-09-2007.

AMENDMENT

In the said notification, after the existing Note, the following shall be added namely:-

"Provided that the expansion of production of all types of existing Bulk Drug and Bulk Drug Intermediate manufacturing units are permitted, subject to the installation of Zero Liquid Discharge (ZLD) facilities by such units and subject to the outcome of cases pending in the National Green Tribunal, Southern Zone, Chennai or in any other court. The Pollution load of industrial unit shall be assessed at the Point of Discharge, as provided in Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981."

(BY ORDER AND IN THE NAME OF THE GOVERNOR OF ANDHRA PRADESH)

M. SAMUEL
SPECIAL CHIEF SECRETARY TO GOVT.

To
The Commissioner, Printing, Stationary & Stores Purchase (Plg.wing), Chenchalguda, Hyderabad, with a request to publish the Notification in the next extra-ordinary issue of the Andhra Pradesh Gazettee, and furnish 200 copies of the same.
The Member Secretary, Andhra Pradesh Pollution Control Board, Paryavaran Bhavan, A - 3, Industrial Estate, Sanathnagar, Hyderabad.

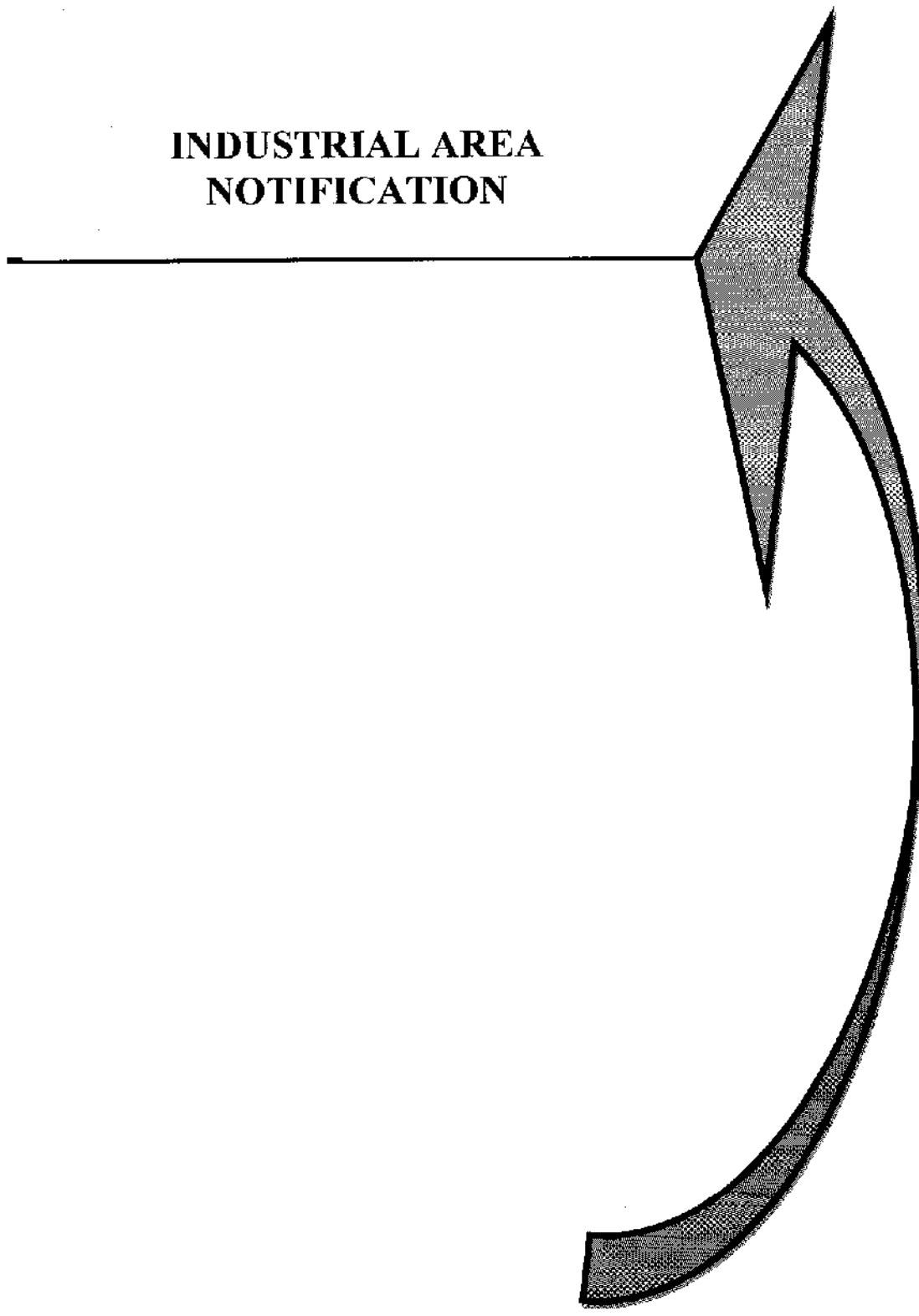
Copy to:
All the Departments of Secretariat.
The Collectors of Medak, Rangareddy, Mahaboobnagar and Nalgonda districts.
The Commissioner of Industries, Chirag-ali-lane, Abids, Hyderabad.
The Director Agriculture, Andhra Pradesh, Hyderabad,

The Commissioner, Information & Public relations Department,
Andhra Pradesh, Hyderabad.
The Commissioner, Environment Protection Training Research Institute
(E.P.T.R.I), Andhra Pradesh, Hyderabad,
The Chairman, Andhra Pradesh Transco, Somajiguda, Vidyuth Soudha,
Andhra Pradesh, Hyderabad.
The Prl. Secretary to Hon'ble Chief Minister.
P.S. to M (FES&T),
P.S. to Special Chief Secretary to Govt., E.F.S. & T. Dept.
All Senior Officers of Environment, Forests, Science & Technology
Department.
All Sections in Environment, Forests, Science & Technology Department.
The Law (B) Department.
SF / SC.

//Forwarded::By Order//

Section Officer

INDUSTRIAL AREA NOTIFICATION



ENCLOSURE-7

GOVERNMENT OF ANDHRA PRADESH

ABSTRACT

Andhra Pradesh Panchayat Raj Act, 1994 (Act No. 13 of 1994) - Andhra Pradesh Industrial Infrastructure Corporation Limited - Declaration as Local Authority for maintenance of Industrial Estates/Industrial Development Areas/Autonagars - Under Section 147 of the Andhra Pradesh Panchayat Raj Act, 1994 - Orders - Issued.

PANCHAYAT RAJ & RURAL DEVELOPMENT (PANCHAYATS.IV) DEPARTMENT

G.O.Ms.No. 109 Date : 9-3-1998.

Read the following :-

1. G.O.Ms.No. 113, PR & RD (Pts.IV) Dept., dt. 4.3.1995.
2. From the Chairman & M.D. APIIC Ltd., D.O.Lr.No. 51120/APIIC/LAC/GPs/94, dt. 29.8.1997.
3. Govt.D.O.Lr.No. 34599/Pts.IV/A2/97-2, dt. 14.10.1997.
4. Govt.Memo.No. 34599/Pts.IV/A2/97, dt. 21.10.97.
5. From the Dist. Collector (PW) R.R.Dist. Lr.Roc.No.B3/2443/94, dt. 24.11.1997.
6. From the Dist.Collector (PW) Srikakulam Dist. Lr.Ro.No. 4128/97/P4, dt. 25.11.1997.
7. From the Dist.Collector, Krishna Dist. Lr.Ro.No. 5540/97/Pts.5, dt. 6.12.1997.
8. From the Dist. Collector (PW) Prakasam Dist. Lr.Ro.No. 7043/97 (Pts.) dt. 3.12.1997.
9. Govt.Fax Message No. 34599/Pts.IV/A2/97-4, PR & RD (Pts.IV) Dept., dt. 22.12.1997.
10. From the D.P.O., Cuddapah Lr.Roc.No. 1995/95-A2, dt. 18.12.1997.
11. From the Director (Estates) APIIC Ltd., Lr.No. 51120/APIIC/LAC/Gr.Pts/94, dt. 23.12.1994.
12. From the Dist. Collector (PR) Nalgonda Dist. Lr.Roc.No.E/2584/97, dt. 22.12.1997.
13. From the Dist.Collector (PW) Mahabubnagar Lr.No.A1/2089/97, dt. 30.12.1997.
14. Govt. Telegram No. 34599/Pts.IV/A2/97, dt. 12.1.1998.
15. From the Dist.Collector (PW) Kurnool Lr.Roc.No.4735/Pts-A1/97, dt. 8.1.1998.
16. From APIIC D.O.Lr.No. 51120/APIIC/LAC/GPs/94, dt. 7.1.98.

*****

ORDER :

The Chairman and Managing Director, Andhra Pradesh Industrial Infrastructure Corporation Limited, has requested for declaration of Andhra Pradesh Industrial Infrastructure

ANNEXURE - I

LIST OF POWERS AND FUNCTION OF GRAM PANCHAYAT TO BE EXERCISED BY THE APIIC LTD.

Sl. No.	Section in the APPR Act 1994 (Nature of powers & function in Brief)	Nature of Power/ function.
(1)	(2)	(3)
1.	60 to 69 71 and 72	Provisions relating to Taxation and Finance.
2.	93 to 103 120 to 123	Provisions relating to public safety, Convenience and Health.
3.	126 to 129 131, 132, 134 to 142 and 145	General and Miscellaneous (Gram Panchayats) provisions.
4.	254 to 257 and 267	Miscellaneous provisions.
5.	271 and 272	
6.	Schedules - III and IV	Provisions relating to Rules Bye-laws and penalities.

G.S.R.C.V.PRASADA RAO,
SECRETARY TO GOVERNMENT.

LIST OF INDUSTRIAL AREAS IN WHICH THE POWERS/FUNCTIONS OF GRAM PANCHAYATS TO BE EXERCISED BY THE APIIC LIMITED.

Sl. No.	Name of the Zone & District.	Name of the Estate	Name of the Village	Name of the Gram Panchayat
(1)	(2)	(3)	(4)	(5)
1	Chandolai-Saradari, Rakabachanagar	1. IDA-Kothur PH.I& II	Kothur	Kothur.
		2. RIE-Kothur	Kothur	Kothur
		3 IDA Jedcherla	Jedcherla	Jedcherla
		4. IDA Patan PH.III	Kistampalli	Patan
		5. IDA-Gadwal	Gadwal	Chengonipalle
2	Jeedimetla, Ranareddy.	1. IE Chevalla	Chevalla	Chevalla
		2. IE-Nadikal	Nadikal	Nadikal
		3. IE-Mancherla	Mancherla	Mancherla
3	Kakinada, East Godavari	1. IDA-Kakinada	Ramanaiahpet	Ramanaiahpet
		2. IDA-Kakinada Expansion.	Ramanaiahpet & Vakalapudi	Ramanaiahpet & Vakalapudi
		3. RIE Kakinada	Ramanaiahpet	Ramanaiahpet
		4. IDA Satyavaram	Satyavaram	Satyavaram
		5. CE-Kakinada	Ramanaiahpet	Ramanaiahpet
		6. IDA-Vakalapudi	Vakalapudi & Thimmavaram	Vakalapudi & Thimmavaram
		7. APIE Doulaiswaram	Doulaiswaram	Doulaiswaram
		8. IDA-Doulaiswaram	Doulaiswaram	Doulaiswaram
		9. IE-Ramachandravaram	Ramachandravaram	Ramachandravaram
		10. IE-Gopalapuram	Gopalapuram	Gopalapuram
		11. IDA Kadiyam	Jagannadhapuram	Kadiyam
4	Kakinada, West Godavari	1. APIE-Eluru	Valluru	Vallur
		2. IE-Eluru (Expn)	Valluru	Vallur
		3. IE Palakol	Ragampeta	Penugonipalli
		4. IE-Tanuku	Tataki	Tetali
5	Tarnaka, Amalapur	1. IE Penumanda	Venkatareddy-palli	Venkatareddy palli
		2. APIE-Amalapur (Expansion)	Rapanapat	A.Narayanapuram
		3. IDA Tadiki	Punnamarallapalli	Punnamarallapalli
		4. IDA Gunty	Gunty	Gunty
6	Tarnaka, Tarnaka	1. IDA-Nandyal	Udumalapuram	Udumalapuram
		2. IE-Dhone	Dhone	Dhone

LIST OF INDUSTRIAL AREA IN WHICH THE POWERS/FUNCTIONS OF GRAM PANCHAYAT TO THE EXERCISED BY THE APIIC LIMITED.

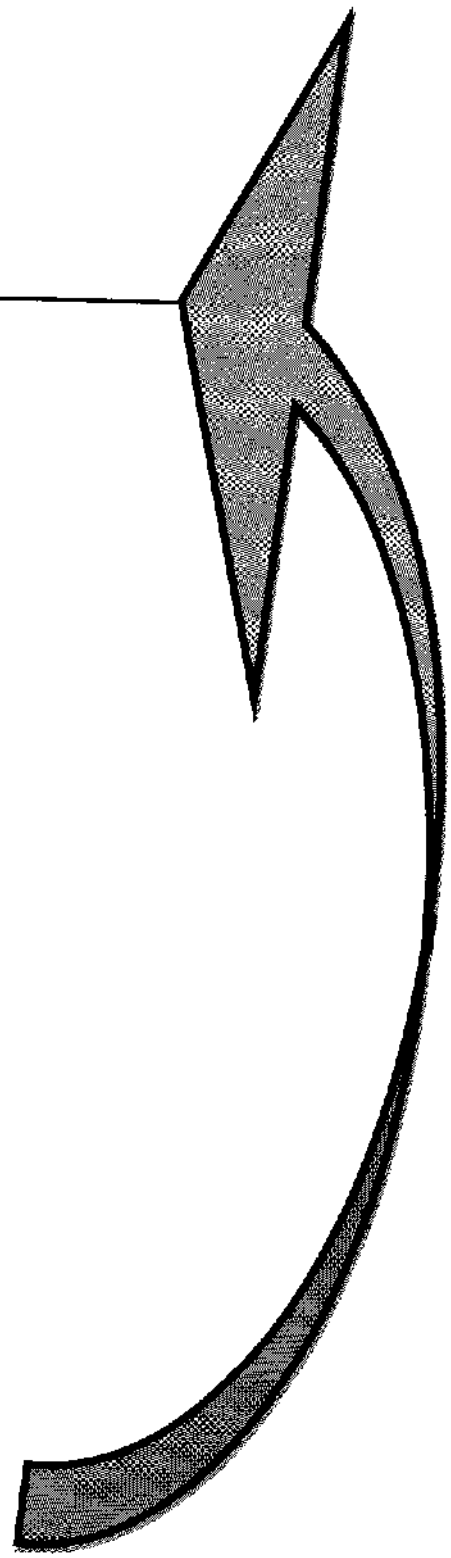
Sl. No.	Name of the Mandal & District.	Name of the Est ta	Name of the Village	Name of the Gram Panchayat
(1)	(2)	(3)	(4)	(5)
10	Suryapet, Khamam	1. IDA Khammam	Khamam Mavuli	Khammam Mavuli
		2. HIE-Khammam	Khamam	Khamam Haveli
		3. IE-Kothagudem	Chunchupalli	Chunchupalli
				50.00 Acs. -
		4. IDA-Bhadrachalam	Bhadrachalam	Bhadrachalam
11	Suryapet, Nalgonda	1. IDA-Miryalaguda	Venkatadripalem	Venkatadripalem
		2. IDA-Nalgonda	Arjalabavi	Arjalabavi
		3. HIE Nalgonda	Arjalabavi	Arjalabavi
		4. IDA-Bhongir	Bhongir	Bhongir
		5. IDA-Nagarjuna Sagar	Nandikonda	Nandikonda
		6. Chityala	Gopalayapalli	Gopalayapalli
12	Tirupathi, Chittoor	1. APIE-(Old) Tirupathi	Yerramareddypalem	Thookivakam
		2. APIE (Old) Tirupathi (Ext.)	Thookivakam	Thookivakam
		3. IF-Tirupathi	Thookivakam	Thookivakam
		4. SIE Tirupathi	Yerramareddypalem	Thookivakam.
		5. IE-Tirupathi	Yerramreddy palem	Thookivakam
		6. HIE-Tirupathi	Yerramreddy palem	Thookivakam
		7. IDA-Tirupathi (Naida Lands)	Thookivakam	Thookivakam
		8. AH-Tirupathi	Akkarampalli & Mangalam	Akkarampalli & Mangalam
		9. IDA-Gajulamandyam PH-I,II&III	Gajulamandyam	Gajulamandyam
		10. IHC Gajulamandyam. (HUDCO SCHEME)	Gajulamandyam	Gajulamandyam
		11. IE Srikalahasti	Kachapanaidu Peripalli	Kanagamanai Peripalli
		12. IE Srikalahasti (Expansion)		
		13. IDA-Kambakkam	Kambakkam	Kambakkam
		14. IE-Palamaneru	Palamaneru	Palamaneru
		15. IE-Palamaneru (Expansion)	Gangavaram	Gangavaram
		16. IDA-Valasapalli	Valasapalli	Valasapalli
		17. AH-Madanapalli	Basinikonda	Basinikonda
13	Tirupathi	1. IE-Cuddapah	Nanillapalli	Nanillapalli &

LIST OF INDUSTRIAL AREA IN WHICH THE POWERS/FUNCTIONS OF GRAM PANCHAYAT TO BE EXERCISED BY THE APIIC LIMITED.

Sl. No.	Name of the Mandals & District.	Name of the Estate	Name of the Village	Name of the Gram Panchayat
(1)	(2)	(3)	(4)	(5)
		(Tribal) 11.IE-Chintapalli (Tribal)	Gothariu	Chintapalli
17	Vijayanagaram, Srikakulam	1. HIE-Srikakulam 2. Growth Centre Bobbili	Kusalapuram Mattavalasa Vijayaramapuram	Kusalapuram Mattavalasa Mattavalasa
18	Vizianagaram Vizianagaram Bobbili	1. AH-Vizianagaram 2. Growth Centre	Cheluvuru Mattavalasa Vijayaramapuram	Cheluvuru Mattavalasa Mattavalasa
		R.Seetharamapuram	K.Seetharamapuram	
		Panchuvalasa Gollapalli	M.Kommuvalasa	

G.S.N.C.V.Prasada Rao,
Secretary to Government.

COPY OF CFO



ENCLOSURE-8

ANDHRA PRADESH POLLUTION CONTROL BOARD
PARYAVARAN BHAVAN, A-3, INDUSTRIAL ESTATE,
SANATHNAGAR, HYDERABAD - 500 018.

Phone: 040-23887500
Fax: 040- 23815631
Grams : Kalusya Nivarana
Website : appcb.ap.nic.in

RED CATEGORY
RENEWAL CONSENT & AUTHORISATION ORDER
BY REGISTERED POST WITH ACKNOWLEDGEMENT DUE

Consent Order No : APPCB/RCP/SRD/399/HO/CFO/2012- 3129 **Date :04.10.2012**

(Consent Order for Existing/New or altered discharge of sewage and/or trade effluents/outlet under Section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and amendments thereof, Operation of the plant under section 21 of Air (Prevention & Control of Pollution) Act 1981 and amendments thereof and Authorisation / Renewal of Authorisation under Rule 5 of the Hazardous Wastes (Management, Handling & Transboundary, Movement) Rules 2008 & Amendments thereof.

CONSENT is hereby granted under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974, under Section 21 of Air (Prevention & Control of Pollution) Act 1981 and Authorisation under the provisions of HW (MH & TM) Rules, 2008 (hereinafter referred to as 'the Acts', 'the Rules') and the rules and orders made thereunder to

M/s. Synthokem Labs Pvt., Ltd., Unit-II,
Plot No.222-224 & 235 – 237,
Phase-II, IDA, Pashamailaram,
Patancheru (M),
Medak District - 502 319
E_mail : sriram@synthokemslabs.com

(hereinafter referred to as 'the Applicant') authorizing to operate the industrial plant to discharge the effluents from the outlets and the quantity of emissions per hour from the chimneys as detailed below.

I) Out lets for discharge of effluents:

Outlet No.	Outlet Description	Max Daily Discharge	Point of Disposal
1.	High TDS Effluents.	18.0 KLD	• Stripper condensate for recovery of organics or disposed to TSDF, Dundigal for incineration or to cement plants for co-processing. • Stripper concentrates to MEE feed • Condensate from MEE & ATFD for treatment in the ETP and to reuse • MEE concentrate to ATFD feed
2.	Low TDS Effluents Process & Washings – 2 KLD + DM Plant re-generation water – 2.0 KLD + Boiler blow down – 4.0 KLD + Cooling tower blow down – 2.5 KLD + Domestic effluents – 8.0 KLD* after pre-treatment	18.5 KLD	• CETP, Patancheru • RO Permeate for reuse • RO Reject to MEE

* *The industry should not use soak pits for final disposal of domestic effluents of 8.0 KLD and they should send these effluents along with LTDS trade effluents to CETP, Patancheru.*

II) Emissions from chimneys:

Chimney No.	Description of Chimney	Quantity of Emissions at peak flow
1.	Attached to 2 TPH Oil Fired Boiler	---
2.	Attached to 4 Lakh K.Cal/hr Thermic Fluid heater.	-
3.	Attached to 2 x 250 KVA D.G. Sets	-

III) **HAZARDOUS WASTE AUTHORISATION (FORM – II) [See Rule 5 (4)]**

1. Number of Authorisation and date of issue - APPCB/RCP/MDKI/182/HWM Dt:04 /10/2012

2. M/s. Synthokem Labs Pvt. Ltd., Unit – II, Plot No. 222-224 & 235 - 237, Phase – II, IDA, Pashamailaram (V), Patancheru (M), Medak District, is hereby granted an authorization to operate a facility for collection, reception, storage, treatment, transport and disposal of Hazardous Wastes namely:

- **HAZARDOUS WASTES WITH DISPOSAL OPTION:**

S. No.	Name of the Hazardous wastes	Stream	Quantity	Disposal option
1.	Process Organic Residue	28.1 of Schedule - I	301.11 Kg/day	Authorised cement plants for co-processing/TSDF, Dundigal, Rangareddy District for incineration
2.	Spent Carbon	28.2 of Schedule - I	27.08 Kg/day	
3.	Distillation Residue	28.1 of Schedule - I	35 Kg/day	
4.	Inorganic and Evaporation salts	28.1 & 34.3 of Schedule - I	1399.74 Kg/day	TSDF, Dundigal for secured land filling.
5.	ETP sludge	34.3 of Schedule - I	20.0 Kg/day	

- **HAZARDOUS WASTES WITH RECYCLING OPTION:**

S. No.	Name of the Hazardous wastes	Stream	Quantity	Disposal option
1.	Waste oil	5.1 of Schedule - I	150 LPM	Authorized Reprocessors / Recyclers.
2.	Detoxified containers & container liners of Hazardous Chemicals	33.3 of Schedule - I	100 nos./month	After complete detoxification, it should be disposed to the outside agencies
3.	Spent/Mixed Solvents	28.5 of Schedule - I	6.2 KLD	Recover within the own premises

This consent order is valid for the manufacturer of the following products with quantities indicated only :

S. No	Products	Quantity	Remarks
1	Guiafensin	100 Kg/day	***The industry should not produce more than any six products at any given time. The maximum production capacity from cumulative of any six products should not exceed 461.11 Kg/day at any given time.***
2	Methocarbamol	100 Kg/day	
3	Chlorphenesin	33.33 Kg/day	
4	Chlorphenesin carbamate	33.33 Kg/day	
5	Mephenesin	33.33 Kg/day	
6	Potassium guaiacol sulfonate	33.33 Kg/day	
7	Drotaverine hydrochloride	36.11 Kg/day	
8	Mebeverine hydrochloride	41.67 Kg/day	
9	Terazosin hydrochloride	1.67 Kg/day	
10	Prazosin hydrochloride	1.67 Kg/day	
11	Alfuzosin hydrochloride	1.67 Kg/day	
12	Ropinirole hydrochloride	1.67 Kg/day	
13	Rabavirin	1.67 Kg/day	
14	Norfloxacin	91.67 Kg/day	
15	Ciprofloxacin hydrochloride	33.33 Kg/day	
16	Diclofenac sodium	91.67 Kg/day	

This order is subject to the provisions of 'the Acts' and the Rules' and orders made thereunder and further subject to the terms and conditions incorporated in the schedule A, B & C enclosed to this order.

This combined order of consent & Hazardous Waste Authorisation should be valid for a period ending with the 30th day of June, 2016.

Sd/-
MEMBER SECRETARY

To
M/s. Synthokem Labs Pvt., Ltd., Unit-II,
Plot No.222-224 & 235 – 237,
Phase-II, IDA, Pashamailaram,
Patancheru (M),
Medak District - 502 319

// C.F.B.O. //

Chief Environmental Engineer (FAC)

SCHEDULE – A

1. The applicant should make applications online for renewal of Consent (under Water and Air Acts) and Authorisation under HWM Rules at least 120 days before the date of expiry of this order, along with prescribed fee under Water and Air Acts for obtaining Consent & HW Authorisation of the Board and along with detailed compliance on the conditions issued in this order.
2. All the conditions stipulated in the Schedule – A of the earlier combined order of CFO No. APPCB/RCP/SRD/399/HO/CFO/2011-1147, dated 16-07-2011 remains same. The industry should ensure consistent compliance of each condition of Schedule -A.
3. Any person aggrieved by an order made by the State Board under Section 25, Section 26, Section 27 of Water Act, 1974 or Section 21 of Air Act, 1981 may within thirty days from the date on which the order is communicated to him, prefer an appeal as per Andhra Pradesh Water Rules, 1976 and Air Rules 1982, to such authority (hereinafter referred to as the Appellate Authority) constituted under Section 28 of the Water(Prevention and Control of Pollution) Act, 1974 and Section 31 of the Air(Prevention and Control of Pollution) Act, 1981.

SCHEDULE - B

Special Conditions

1. The industry should extend Bank Guarantee of Rs.10 lakhs submitted to the Board under JAP, for a period upto 30.06.2015 immediately.
2. The pre-treated effluents sending to M/s. PETL, Patancheru should not contain constituents in excess of the tolerance limits mentioned below.

Outlet No.	Parameter	Limiting Standards
2.	P^H	5.50 - [illegible]
	TDS (Inorganic)	[illegible]
	Chromium Hexavalent (as Cr^{+6})	[illegible]
	Temperature °C	45.0
	Oil & Grease	20.00 mg/l
	Phenolic Compounds (as C_6H_5OH)	5.00 mg/l
	Ammonical Nitrogen (as N)	50.00 mg/l
	Cyanide (as CN)	2.00 mg/l
	Chromium (total) (as Cr)	2.00 mg/l
	Copper (as Cu)	3.00 mg/l
	Lead (as Pb)	1.00 mg/l
	Nickel (as Ni)	3.00 mg/l
	Zinc (as Zn)	15.00 mg/l
	Arsenic (as As)	0.20 mg/l
	Mercury (as Hg)	0.01 mg/l
	Cadmium (as Cd)	1.00 mg/l
	Selenium (as Se)	0.05 mg/l
	Fluoride (as F)	15.00 mg/l
	Boron (as B)	2.00 mg/l
	COD	15000 mg / lit

3. The industry should take steps to reduce water consumption to the extent possible and consumption should NOT exceed the quantities mentioned below:

S.No	Purpose	Quantity
1.	Process	15.31 KLD
2.	Washings	2.00 KLD
3.	Boiler feed	33.00 KLD
4.	DM Water Plant	2.00 KLD
5.	Gardening	4.00 KLD
6.	Domestic	8.00 KLD
	Total	64.31 KLD

4. The industry should file the water Cess returns in Form-I as required under section (5) of Water (Prevention and Control of Pollution) Cess Act, 1977 on or before the 5th of every calendar month, showing the quantity of water consumed in the previous month along with water meter readings. The industry should remit water Cess as per the assessment orders as and when issued by Board.

5. The emissions should not contain constituents in excess of the prescribed limits mentioned below.

Chimney No.	Parameter	Emission Standards
1 & 2	Particulate Matter	115 mg/Nm^3

6. The industry should comply with emission limits for DG sets of capacity upto 800 KW as per the Notification G.S.R.520 (E), dated 01.07.2003 under the Environment (Protection) Amendment Rules, 2003 and G.S.R.448(E), dated 12.07.2004 under the Environment (Protection) Second Amendment Rules, 2004. In case of DG sets of capacity more than 800 KW should comply with emission limits as per the Notification G.S.R.489 (E), dated 09.07.2002 at serial no.96, under the Environment (Protection) Act, 1986.

7. The industry should comply with ambient air quality standards of PM_{10}(Particulate Matter size less than 10μm) - 100 μg/ m^3; $PM_{2.5}$(Particulate Matter size less than 2.5 μm) - 60 μg/ m^3; SO_2 - 80 μg/ m^3; NO_x - 80 μg/m^3, outside the factory premises at the periphery of the industry.
Standards for other parameters as mentioned in the National Ambient Air Quality Standards CPCB Notification No.B-29016/20/90/PCI-I, dated 18.11.2009

Noise Levels: Day time (6 AM to 10 PM) - 75 dB (A)
Night time (10 PM to 6 AM) - 70 dB (A).

8. The industry should not increase the capacity beyond the permitted capacity mentioned in this order, without obtaining CFE & CFO of the Board.

9. ***The industry should earmark an amount of Rs. 1.01 lakhs per annum for 10 years towards the Enterprise Social Responsibility (ESR) activities. The industry should spend the amount and submit certificate from the District Collector regarding the utilisation of the funds earmarked for ESR activities for this amount.***

10. **The industry should not operate 2 TPH Coal fired boiler without CFE & CFO of the Board.**

11. ***The industry should install Reverse Osmosis Plant for Low TDS effluents within two months.***

12. Vide order dt. 31.07.2007, the Board has directed your industry for implementation of Joint Action Plan accepted by the Hon'ble Supreme Court vide order dated. 17.07.2007 in W.P.(C). No. 441/2005, 476/2005 & batch of cases. The industry should explicitly comply with the directions given by the Board without any deviation from the Joint Action Plan accepted by the Hon'ble Supreme Court of India.

13. Inclusion of returns of the production details of other / their sister concern units in the existing industry's Excise Returns is not be permitted under any circumstances.

14. Trading of finished /semi finished products of OTHER INDUSTRIES and its inclusion in the existing industry's Excise Returns should not be permitted under any circumstances.

15. The returns of products manufactured and the Excise returns should reflect concurrently

16. The industry should install VOC analyzers with recording facility at all the strategic locations.

17. The industry should provide & maintain flow meter with digital totalizer to quantify the effluents evaporating in MEE system and report the compliance to the R.O. of the Board.

18. The industry should implement waste minimization measures as stipulated in the E.C and should submit progress report to the Board once in 6 months. The plan of action on proposed waste minimization measures should be submitted to the Board within two months.

19. The industry should maintain the following records and the same should be made available to the Board Officials during the inspection.

a. Daily production details, RG-I records and Central Excise Returns.
b. Quantity of Effluents generated and forced evaporated & effluents sent to CETP.
c. Log Books for pollution control systems.
d. Daily solid waste generated and disposed to TSDF.

20. The industry should notify to the MoE&F, GoI as per the explanatory note under Impact Assessment Notification dt. 27.01.1994 issued under E(P) Act, 1986 regarding change of product mix on no increase of pollution load and should submit the compliance report to the Board within a month, failure to submit the same to the Board the consent order now issued will be valid for the only old products as consented by the Board vide order dated. 10.08.2005.
21. As per G.O.Rt.No.286, the industry should transport the industrial effluents and plying on the roads between 6 A.M. to 8 P.M. only.
22. The industry should maintain the 6-Copy manifest system for transport of effluents to the CETP.
23. The industry should submit mock drill report carried out at least once in six months, as required under the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989.
24. The industry should establish AAQM stations where maximum GLCs are expected & should establish network of AAQM stations due co-ordination with other industries in the industrial cluster in consultation with Regional Officer of the Board.
25. The industry should explore monitoring of Hazardous Air Pollutants (HAP) & odorous compounds and should submit action plan to the Board within three months.
26. All the rules & regulations notified by Ministry of Law and Justice, Government of India regarding Public Liability Insurance Act, 1991 should be followed.
27. The applicant should submit Environment statement in Form V before 30th September of every year as per Rule No.14 of E(P) Rules, 1986 & amendmefits.
28. The industry should maintain the compliance conditions stipulated in CFE order dated 03.06.2010 issued by the Board.
29. Industry shall achieve zero odour nuisance in the surroundings.
30. There shall not be any spillages / chemicals / effluents on ground. The drums containing chemicals & wastes shall be stored on elevated platform with a provision to collect leachate / spillages in the collection pit. In no case the drums shall be stored on the naked open ground.
31. The consolidated daily records on the details of the following shall be submitted to the Regional office of the Board on every month:
    a. Effluent generated.
    b. Quantity of treated effluents evaporated in the Forced Evaporation system.
    c. Quantity of condensate generation & characteristics.
    d. Quantity & characteristics of pretreated effluents.
    e. Solid waste generation.
    f. Effluents sent to PETL.
32. Separate meters with necessary pipe-line should be provided for assessing the quantity of water used for each of the purposes mentioned below.
    a. Industrial cooling, boiler feed.
    b. Domestic purposes.
    c. Process, whereby water gets polluted and pollutants are easily bio degradable.
    d. Processing, whereby water gets polluted and the pollutants are not easily bio – degradable.
33. Rain water should not be allowed to mix with either trade or domestic effluents.
34. The industry shall install and operate the multi stage scrubber with online pH meter for scrubbing of process emissions at all emission sources. The details of chemicals consumption used in the scrubber shall be recorded & kept accessible for the inspecting officials of the Board. Industry shall control fugitive emissions by properly maintaining chilled brine circulation, closed room operations and condensers with receivers.
35. The industry shall not send the spent / mixed solvents to the recyclers. They shall process the same at solvent recovery plant within the plant premises. Solvents shall be recovered to the maximum extent possible and shall be reused.
36. The evaporation losses in solvents should be controlled by taking the following measures:
    i. Chilled brine circulation to effectively reduce the solvent losses into the atmosphere.
    ii. Transfer of solvents by using instead of manual handling.
    iii. Closed centrifuges be used due to which solvent losses will be reduced drastically.
    iv. The reactor vents connected with primary & secondary condensers to catch the solvent vapours.
    v. All the solvent storage tanks connected with vent condensers to prevent solvent vapours.

37. Solvent shall be taken from underground storage tanks to reactors through closed pipeline. Storage tanks shall be vented through trap received and condenser operated on chilled water.
38. Proper earthing shall be provided in all the electrical equipment wherever solvent handling is done.
39. Thick green belt should be developed covering an area of minimum 33% of the total area, without disturbing existing green belt. Action plan to comply with this condition shall be submitted to the Board with in two months.
40. System of leak detection and repair of pump / pipeline shall be installed in the plant and immediate response team shall be identified for preventive maintenance.
41. The industry shall isolate the storage of highly inflammable chemicals solvents and other raw materials from the rest of the facilities in the plant premises.
42. The industry should ensure implementation of requisite measures to prevent air pollution & odour nuisance in the surrounding area. If it is found any activity of the industry is causing odour nuisance & air pollution, this consent order now issued will be revoked without further intimation.
43. The industry should submit mock drill report carried out at least once in six months, as required under the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989.
44. The industry should comply with the Task Force directions issued from to time.
45. The industry should provide elevated platform with collection pit for storage of drums containing chemicals / solvents.
46. The industry should construct elevated lined platform with dyke wall and leachate collection sump for storage of solvent drums, raw material drums, waste drums etc. under shed. In no circumstances the drums should be stored on a naked open ground.
47. The industry shall provide all safety measures including fire fighting system.
48. **The conditions are without prejudice to the rights and contentions of this Board in the Hon'ble Supreme Court of India.**

SCHEDULE - C

[see rule 5(4)]

[CONDITIONS OF AUTHORISATION FOR OCCUPIER OR OPERATOR HANDLING HAZARDOUS WASTES]

1. The industry should give top priority for waste minimization and cleaner production practices.
2. The industry should not store hazzardous waste for more than 90 days as per the Hazardous Wastes (Management. Handling and Transboundary Movement) Rules, 2008 and amendments thereof.
3. The industry should store Used / Waste Oil and Used Lead Acid Batteries in a secured way in their premises till its disposal.
4. The industry should not dispose Waste oils to the traders and the same should be disposed to the authorized Reprocessors/ Recyclers.
5. The industry should dispose Used Lead Acid Batteries to the manufacturers / dealers on buyback basis.
6. The industry should not dispose spent solvents / mixed spent solvents to the traders.
7. The industry should take necessary practical steps for prevention of oil spillages and carry over of oil from the premises.
8. The industry should maintain 6 copy manifest system for transportation of waste generated and a copy should be submitted to Board Office and concerned Regional Office.
9. The industry should maintain good house keeping & maintain proper records for Hazardous Wastes stated in Authorisation.

10. The industry should maintain proper records for Hazardous Wastes stated in Authorisation in FORM-3 i.e., quantity of incinerable waste, land disposal waste, recyclable waste etc., and file annual returns in Form- 4 as per Rule 22(2) of the Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008 and amendments thereof.

11. The industry should submit the condition wise compliance report of the conditions stipulated in Schedule B & C of this Order on half yearly basis to Board Office, Hyderabad and concerned Regional Office.

12. The industry should dispose of e-waste to the authorised recyclers only.

13. The industry should conform to the co-processing guidelines of CPCB in sending wastes to co-processing for cement plants.

Sd/-
MEMBER SECRETARY

To
M/s. Synthokem Labs Pvt., Ltd., Unit-II,
Plot No.222-224 & 235 – 237,
Phase-II, IDA, Pasharnallaram,
Patancheru (M), Medak District - 502 319

// C.F.B.O. //

Chief Environmental Engineer (FAC)

COMPLIANCE OF CFO

Enclosure - 9

COMPLIANCE REPORT FOR CONSENT FOR OPERATION
OF
M/S. SYNTHOKEM LABS PVT. LTD UNIT-II

S. No	CFO Conditions	Compliance
	SCHEDULE-A	
1.	The applicant should make applications through online for renewal of Consent (under Water and Air Acts) and Authorization under HWM Rules at least 120 days before the date of expiry of this order, along with prescribed fee under water and air acts for obtaining Consent & HW Authorization of the Board along with detailed compliance to the conditions issued in this order.	Condition has been noted and following the same.
2	All the conditions stipulated in the Schedule – A of the earlier combined order of CFO No. APPCB/RCP/SRD/399/HO/CFO/2011-1147, dated 16-07-2011 remains same. The industry should ensure consistent compliance of each condition of Schedule –A.	Noted and followed
3	Any person aggrieved by an order made by the State Board under section 25, Section 26, Section27, of Water Act, 1974 or Section 21 of Air Act, 1981 may within thirty days from the date on which the order is communicated to him, prefer an appeal as per Andhra Pradesh Water Rules, 1976 and air Rules 1982, to such authority (hereinafter referred to as the Appellate Authority) constituted under Section 28 of the Water(Prevention and Control of Pollution)Act, 1974 and Section 31 of the Air (Prevention and Control of Pollution) Act, 1981	Noted
	SCHEDULE-B	
1	The industry should extend Bank Guarantee of Rs.10 lakhs submitted to the Board under JAP, for period upto 30.06.2015 immediately.	Will be submitted

2	The pre-treated effluents sending to M/s. PETL, Patancheru, should not contain constituents in excess of the tolerance limits mentioned below	Noted and followed
3	The industry should take steps to reduce water consumption to the extent possible and consumption should NOT exceed the quantities mentioned below.	We will try to reduce and recycle the effluent water to maximum possible extent
4	The industry should file the water Cess returns in Form-I as required under section (5) of water (Prevention and Control of Pollution) Cess Act, 1977 on or before the 5th of every calendar month, showing the quantity of water consumed in the previous month along with water meter readings. The industry should remit water Cess as per the assessment orders as and when issued by Board.	Will be followed
5	The emissions should not contain constituents in excess of the prescribed limits mentioned below	Conditions will be followed
6	The industry should comply with emission limits for DG sets up to 800 KW as per the Notification G.S.R.520 (E), dated 01.07.2003 under the Environment (Protection) Amendment Rules, 2003and G.S.R.448 (E) dated 12.07.2004 under the Environment (Protection) Second Amendment Rules, 2004. In case of DG sets more than 800 KW shall comply with emission limits as per the Notification G.S.R.489 (E), dated 09.07.2002 at serial no.96, under the Environment (Protection) Act, 1986.	Condition has been complied.
7	The industry should comply with ambient air quality standards of PM_{10} (Particulate Matter size less than 10µg) -100µg / m3; $PM_{2.5}$ (Particulate Matter size less than 2.5 µg) – 200 µg/ m3; SO_2 -80 µg /m3; NOX -80 µg/m3, outside the factory premises at the periphery of the industry. Standards for other parameters as mentioned in the National Ambient Air Quality Standards CPCB Notification No. B-29016/20/9/PCI-I, dated 18.11.209	Ambient air quality standards are being maintained as mentioned in the consent.

	Noise Levels: Day time –(6 AM to 10 PM) - 75 Db (A) Night time-(10PM to 6PM)- 70 Db(A)	
8	The industry should not increase the capacity beyond the permitted capacity mentioned in this order, without obtaining CFE & CFO of the Board.	Condition will be complied
9	The industry should earmark an amount of Rs. 1.01 lakshs per annum for 10 years towards the enterprise Social Responsibility (ESR) activities. The industry should spend the amount and submit certificate from the District Collector regarding the utilization of the funds earmarked for ESR activities for this amount.	We will spend the amount for ESR activities
10	The industry should not operate 2 TPH coal fired boiler without CFE & CFO of the Board.	Noted
11	The industry should install Reverse Osmosis Plant for Low TDS effluents within two months.	We will install
12	Vide order dt.31.07.2007, the Board has directed your industry for implementation of Joint Action Plan accepted by the Hon'ble Supreme Court vide order dated. 17.07.2007 in W.P. (C) No. 441/2005, 476/2005 & batch of cases. The industry should explicitly comply with the directions given by the Board without any deviation from the Joint Action Plan accepted by the Hon'ble Supreme Court of India.	Noted
13	Inclusion of returns of the production details of other / their sister concern units in the existing industry's Excise Returns should not be permitted under any circumstances.	Condition has been complied
14	Trading of finished / semi finished products of OTHER INDUSTRIES and its inclusion in the existing industry's Excise Returns should not be permitted under any circumstances.	Condition has been complied
15	The returns of products manufactured and the Excise returns should reflect concurrently	Will be complied

16	The industry should install VOC analyzers with recording facility at all the strategic locations.	Will be installed and provided recording facility
17	The industry should provide & maintain flow meter with digital totalizer to quantify the effluents evaporating in MEE system and report the compliance to the R.O. of the Board.	Flow meters are provided and compliance report will be submitted to R.O
18	The industry should implement waste minimization measures as stipulated in the E.C. and should submit progress report to the Board once in 6 months. The plan of action on proposed waste minimization measures should be submitted to the Board within two months.	Waste minimization measures will be taken and submitted
19	The industry should maintain the following records and the same should be made available to the Board Officials during the inspection. a. Daily production details, RG-I records and Central Excise Returns. b. Quantity of Effluents generated and force evaporated c. Log Books for pollution control systems d. Daily solid waste generated and disposed to TSDF.	The following records will be maintained and available to the officials
20	The industry should notify to the MoE&F, GoI as per the explanatory note under Impact Assessment Notification dt. 27.01.1994 issued under E(P) Act, 1986 regarding change of product mix on no increase of pollution load and should submit the compliance report to the Board within a month, failure to submit the same to the Board the consent order now issued will be valid for the only old products as consented by the Board vide order dated. 10.08.2005.	Condition has been complied
21	As per G.O.Rt.No.286, the industry should transport the industrial effluents and plying on the roads between 6 A.M. to 6P.M. only.	Complied
22	The industry should maintain the 6-copy manifest system for transport of effluents	Will be maintained

	to the CETP.	
23	The industry should submit mock drill report carried out at least once in six months, as required under the Manufacture, Storage and Import of hazardous Chemicals Rules, 1989.	Mock drills will be conducted once in six months and submitted
24	The industry should establish AAQM stations where maximum GLCs are expected & should cluster in consultation with Regional Officer of the Board.	We will establish AAQM stations
25	The industry should explore monitoring of Hazardous Air Pollutants (HAP) & odorous compounds and should submit action plan to the Board within three months.	We will monitor of HAP & odorous compounds
26	All the rules & regulations notified by Ministry of Law and Justice, Government of India regarding Public Liability Insurance Act, 1991 should be followed.	Noted and followed
27	The applicant should submit Environment statement in Form V before 30th September of every year as per Rule No. 14 of E (P) Rules, 1986 & amendments.	Noted
28	The industry should maintain the compliance conditions stipulated in CFE order dated 03.06.2010 issued by the Board.	Will be maintained
29	Industry shall achieve zero odour nuisance in the surroundings.	Complied
30	There shall not be any spillages/ chemicals/ effluents on ground. The drums containing chemicals & wastes shall be stored on elevated platform with a provision to collect leachate / spillages in the collection pit. In no case the drums shall be stored on the naked open ground	Provisions are provided for spillages/chemicals/effluents on ground.
31	The consolidated daily records on the details of the following shall be submitted to the Regional office of the Board on every month: a. Effluent generated. b. Quantity of treated effluents evaporated in the Forced Evaporation system c. Quantity of condensate generation & characteristics. d. Quantity & characteristics of	All records are will be maintained and submitted

	effluents. e. Solid waste generation f. Effluents sent to PETL.	
32	Separate meters with necessary pipe-line should be provide for assessing the quantity of water used for each of the purposes mentioned below. a. Industrial cooling, boiler feed. b. Domestic purposes. c. Processing, whereby water gets polluted and pollutants are easily biodegradable. d. Processing, whereby water gets polluted and pollutants are not easily biodegradable.	Separate water meters have been provided.
33	Rain water should not be allowed to mix with either trade or domestic effluents	Noted and followed
34	The industry shall install and operate the multi stage scrubber with online pH meter for scrubbing of process emissions at all emission sources. The details of chemicals consumption used in the scrubber shall be recorded & kept accessible for the inspecting officials of the Board. Industry shall control fugitive emissions by properly maintaining chilled brine circulation, closed room operations and condensers with receivers.	Installed and followed
35	The industry shall not send the spent / mixed solvents to the recyclers. They shall process the same at solvent recovery plant within the plant premises. Solvents shall be recovered to the maximum extent possible and shall be reused.	Solvents are will be recycled to the max.possible extent
36	The evaporation losses in solvents should be controlled by taking the following measures. i. Chilled brine circulation to effectively reduce the solvent losses into the atmosphere ii. Transfer of solvents by using instead of manual handling. iii. Closed centrifuges be used due to which solvent losses will be reduced drastically iv. The reactor vents connected with	All measures are will be taken for solvent evaporation losses

	primary & secondary condensers to catch the solvent vapours. v. All the solvent storage tanks connected with vent condensers to prevent solvent vapours.	
37	Solvent shall be taken from underground storage tanks to reactors through closed pipeline. Storage tanks shall be vented through trap received and condenser operated on chilled water.	Followed the condition
38	Proper earthling shall be provided in all the electrical equipment wherever solvent handling is done.	To all electrical equipments,earthings are provided
39	Thick green belt should be developed covering an area of minimum 33% of the total area, without disturbing existing green belt. Action plan to comply with this condition shall be submitted to the Board with in two months.	Green belt is developed and maintaining
40	System of leak detection and repair of pump / pipeline shall be installed in the plant and immediate response team shall be identified for preventive maintenance.	Preventive maintenance &Leak detection system will be developed
41	The industry shall isolate the storage of highly inflammable chemicals solvents and other raw materials from the rest of the facilities in the plant premises.	Storage facilities are provided for highly inflammable chemicals solvents and other raw materials
42	The industry should ensure implementation of requisite measures to prevent air pollution & odour nuisance in the surrounding area. If it is found any activity of the industry is causing odour nuisance & air pollution, this consent order now issued will be revoked without further intimation.	Condition is noted and will be taken measures to prevent air pollution and odor nuisance in the surrounding area
43	The industry should submit mock drill report carried out at least once in six months, as required under the Manufacture, Storage and import of Hazardous Chemicals Rules, 1989.	Mock drills are will be conducted and submitted
44	The industry should comply with the Task Force directions issued from to time.	Will be complied
45	The industry should provide elevated platform with collection pit for storage of drums containing chemicals / solvents.	Provided elevated platforms with collection pit for storage of drums
46	The industry should construct elevated	Provided elevated lined platform

	lined platform with dyke wall and leachate collection sump for storage of solvent drums, raw material drums, waste drums etc. under shed. In no circumstances the drums should be stored on a naked open ground.	with dyke wall and leachate collection sump for storage of drums and other raw materials
47	The industry shall provide all safety measures including fire fighting system	Safety measures and firefighting systems are provided
48	The conditions are without prejudice to the rights and contentions of this Board in the Hon'ble Supreme Court of India.	Condition noted
	SCHEDULE-C	
1	The Industry shall give top priority for waste minimization and cleaner production practices.	Waste minimization will be given importance.
2.	The industry shall not store hazardous waste for more than 90 days as per the Hazardous Wastes (Management. Handling and Transboundary Movement) Rules, 2008 and amendments thereof.	Condition will be followed.
3.	The Industry shall store Used /Waste oils and Used Lead Acid Batteries in a secured way in their premises till its disposal.	Condition will be followed.
4.	The industry shall not dispose Waste oils to the traders and the same shall be disposed to the authorized Reprocessors/Recyclers.	Waste oils will be disposed to authorized reprocessors/recyclers.
5.	The industry shall dispose Used Lead Acid Batteries to the manufactures/ dealers on buyback basis.	Used Lead Acid Batteries will be disposed to the manufactures/ dealers on buyback basis.
6.	The industry shall not dispose spent solvents / mixed spent solvents to the traders.	We will not dispose spent solvents / mixed spent solvents to the traders.
7	The industry shall take necessary practical steps for prevention of oil spillages and carryover of oil from the premises.	Necessary steps will be taken for prevention of oil spillages and carryover of oil from the premises.
8	The industry shall maintain 6 copy manifest system for transportation of waste generated and a copy shall be submitted to Board Office and concerned Regional Office.	We are maintaining 6 copy manifest system.
9	The industry shall maintain good house keeping & maintain proper records for Hazardous Wastes stated in Authourisation.	We are maintaining good housekeeping and proper records of hazardous wastes.
10	The industry shall maintain proper records	Records will be maintained as

COPY OF EC

ENCLOSURE-10

No. J-11011/ 75/2005 – IA II (I)
Government of India
Ministry of Environment & Forests
I. A. Division

Plahujarai@yahoo.com
Tel : 2436 3973
Paryavaran Bhawan,
CGO Complex, Lodi Road,
New Delhi – 110 003

Dated the July 14, 2005

To

The Authorised signatory
M/s Synthokem Labs Private Limited Unit – II
P.B.No.1911,B-5, Industrial Estate,
Sanathnagar,
Hyderabad-500018

Sub: Bulk Drug unit by M/s Synthokem Labs Private Limited Unit – II at village Pashamylaram , Tehsil Patancheru in District Medak in Andhra Pradesh – Environmental clearance – Reg.

Sir,

This has reference to your letter no. nil dated 03.05.2005 on the above subject along with EIA /EMP report , questionnaire and seeking environmental clearance for the above project under the Environmental Impact Assessment Notification,1994.

2.0. The Ministry of Environment and Forests has examined your application along with EIA / EMP report. It is noted that the proposal is for environmental clearance of bulk drug unit for manufacture of Norfloxacin 50 TPA, Ciprofloxacin 20 TPA, Omeprazole 1TPA, Diclofenac Sodium 50 TPA, Cloxacillin 25 TPA and Amproleum HCL 20 TPA. The unit is located in an area of 2.34 ha. in District Medak in Andhra Pradesh. Water requirement of 75m3/d will be met from the ground water and municipal sources. The solid waste generated in the form of process sludge (1.58 TPD), ETP sludge (0.04 TPD) and fly ash (0.002 TPD) will be sent to the TSDF of Hyderabad Waste Management Project at Dundigal. Solid waste is collected in polyethylene bags sent to the TSDF of Hyderabad Waste Management Project at Dundigal. NOC from Andhra Pradesh Pollution Control Board was obtained on 3.5.1993. Public hearing panel has considered the project in the meeting held on 13.4.2005. Cost of the Project is Rs. 2.90 crores.

3.0. The Ministry of Environment and Forests hereby accords environmental clearance to the above project under EIA Notification dated 27th January, 1994 as amended subsequently, subject to strict compliance of the following conditions:

A SPECIFIC CONDITIONS.

i) The gaseous emissions (SOx, NOx, & HCl) particulate matter from various process units shall conform to the standards prescribed by the concerned authorities form time to time. At no time, the emission levels shall go beyond the stipulated standards. In the event of failure of pollution control system(s) adopted by the unit, the respective unit shall not be restarted until the control measures are rectified to achieve the desired efficiency.

ii) Ambient air quality monitoring stations shall be set up in the downwind direction as well as where maximum ground level concentration are anticipated in consultation with the SPCB.

iii) For control of particulate emissions, boilers shall be provided with cyclone separators and stack height as per Central Pollution Control Board guidelines.

iv) Spent solvents shall be recovered as far as possible & recovery shall not be less than 95 percent. During purification process, solvent vapours are emitted from purification tanks as fugitive emissions. Action shall be taken to reduce the emission as far as possible. Use of toxic solvents like Methylene Chloride (M.C.) etc. shall be minimum. All venting equipment shall have vapour recovery system.

v) Industry shall switch over to aqueous based coating film in place of use of Methylene Chloride in coating operation, in a phased manner.

vi) Industry shall switch over to use of non halogenated solvents in place of halogenated solvents in a phased manner.

vii) The company shall undertake following Waste Minimization measures :-

- Metering and control of quantities of active ingredients to minimize waste.
- Reuse of by-products from the process as raw materials or as raw material substitutes in other processes.
- Use of automated filling to minimize spillage.
- Use of "Close Feed" system into batch reactors.
- Venting equipment through vapour recovery system.
- Use of high pressure hoses for equipment clearing to reduce wastewater generation.

(viii) Fugitive emissions in the work zone environment, product, raw material storage area shall be regularly monitored. The emissions shall conform to the limits imposed by SPCB.

viii) Effluent generation shall not exceed 65m3/d. The effluent shall be segregated into high TDS and low TDS streams. The low TDS effluent after primary treatment and meeting the norms shall be sent to CETP at Patancheru through tankers for further treatment. Due care shall be taken to prevent leakage of effluent while loading, unloading and transportation. Waste water manifest system shall be provided along with every tanker for proper handling of effluent. The high TDS effluent shall be evaporated in Multiple Effect Evaporator. The condensate shall be given biological treatment. The concentrate shall be dried in evaporator. The salt obtained after drying shall be disposed into secured land fill (TSDF) after packaging in HDPE bags. The domestic waste water shall be sent to the septic tank followed by the soak pit.

ix) Solid waste generated from the process shall be sent to TSDF of M/s Hyderabad Waste Management Project at Dundigal. Boiler ash shall be sold to the brick manufacturers.

x) The company shall develop rainwater harvesting structures to harvest the run off water for recharge of ground water.

xi) Green belt shall be provided in an area of 0.58 ha. to mitigate the effects of fugitive emissions all around the plant. Development of green belt shall be as per the Central Pollution Control Board guidelines.

xii) Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.

xiii) The company shall undertake eco-development measures including community welfare measures in the project area for the overall improvement of the environment. The eco-development plan should be submitted to the APPCB within three months of receipt of this letter for approval.

B. GENERAL CONDITIONS

i. The project authorities shall strictly adhere to the stipulations made by the Andhra Pradesh State Pollution Control Board.

ii. At no time, the emissions shall exceed the prescribed limits. In the event of failure of any pollution control system adopted by the unit, the unit shall be immediately put out of operation and shall not be restarted until the desired efficiency has been achieved.

iii. No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.

iv. The project authorities shall strictly comply with the rules and regulations under Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 as amended in October, 1994 and January, 2000. Authorization from the SPCB shall be obtained for collection, treatment, storage, disposal of hazardous wastes.

v. The project authorities must strictly comply with the rules and regulations with regard to handling and disposal of hazardous wastes in accordance with the Hazardous Wastes (Management and Handling) Rules, 2003. Authorization from the State Pollution Control Board must be obtained for collections/treatment/storage/disposal of hazardous wastes.

vi. The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under Environment (Protection) Act, 1986 Rules ,1989 viz. DBA (day time) and 70 dBA (night time).

vii. The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the Environmental Impact Assessment Notification,1994 report .

viii. A separate Environmental Management Cell equipped with full fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.

ix. The project authorities shall earmark separate funds to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purpose.

x. The implementation of the project vis-à-vis environmental action plans shall be monitored by Ministry's Regional Office at Bangalore/ SPCB/Central Pollution Control Board'. A six monthly compliance status report shall be submitted to monitoring agencies.

xi. The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry at http://envfor.nic.in. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Ministry's Regional Office at Bangalore.

xii. The project authorities shall inform the Regional office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.

4.0. The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.

5.0. The Ministry reserves the right to stipulate additional conditions, if found necessary. The company in a time bound manner will implement these conditions.

6.0. The above conditions will be enforced, inter alia under the provisions of Water(Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 Hazardous Wastes (Management and Handling) Rules, 2003 and the Public Liability Insurance Act, 1991 along with their amendments and rules.

P. Anujar

(Dr. P. L. Anujar)
Director

Copy to :-

1. The Secretary, State Deptt. of Environment, Government of Andhra Pradesh, Mantralaya, Hyderabad.
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
3. The Chairman, Andhra Pradesh State Pollution Control Board, 2nd Floor, HUDA Complex, Maitrivaram, S.R.Nagar, Hyderabad- 500 038.
4. The Chief Conservator of Forests (Central), Regional Office (SZ), Kendriya Sadan, IVth Floor, E&F Wing, 17th Main Road, Koramangala, Bangalore-560034.
5. JS(CCI-I), Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex, New Delhi.- 110003.
6. Monitoring Cell, Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex, New Delhi- 110003.
7. Guard file.
8. Record file.
9. Monitoring file.

(Dr. P. L. Ahujaral)
Director

Room # 1070.

COMPLIANCE OF EC

Enclosure - 12

COMPLIANCE REPORT FOR ENVIRONMENTAL CLEARANCE REPORT

OF

M/S. SYNTHOKEM LABS PVT. LTD UNIT-II

S. No	EC Conditions	Compliance
A.	**Specific Conditions:**	
i	The gaseous emissions (SO2, HCl, & NOx)) particulate matter from various process units shall conform to the standards prescribed by the concerned authorities from time to time. At no time, the emission levels shall go beyond the stipulated standards In the event of failure of pollution control system(s) adopted by the unit, the respective unit shall not be restarted until the control measures are rectified to achieve the desired efficiency.	We will comply with emission standards stipulated by concerned authorities.
ii	Ambient air quality monitoring stations shall be set up in the downwind direction as well as where maximum ground level concentration are anticipated in consultation with the SPCB.	We will comply the same
iii	For control of air emissions, the reactors shall be provided with dedicated scrubbers and stacks of appropriate height as per the Control Pollution Control Board guidelines. The scrubbed water after neutralization shall be sent to CETP for further treatment. The boilers shall be provided with cyclone separator to control the particulate emission. The company shall provide stack height as per the Central Pollution Control Board guidelines for the DG set and boilers.	All the conditions will be followed by concerned authorities
iv	Spent solvent shall be recovered as far as possible & recovery shall not be less than 95 percent. During purification process, solvent vapours are emitted from purification tanks as fugitive emissions, Action shall be taken to reduce the emissions as far as possible. Use of toxic solvents like Methylene Chloride (M.C) etc. shall be minimum. All venting equipment shall have vapour recovery system.	All the spent solvents will be recovered and recycled to the maximum possible extent The venting systems having vapour recovery by providing secondary condenser with chilled water.

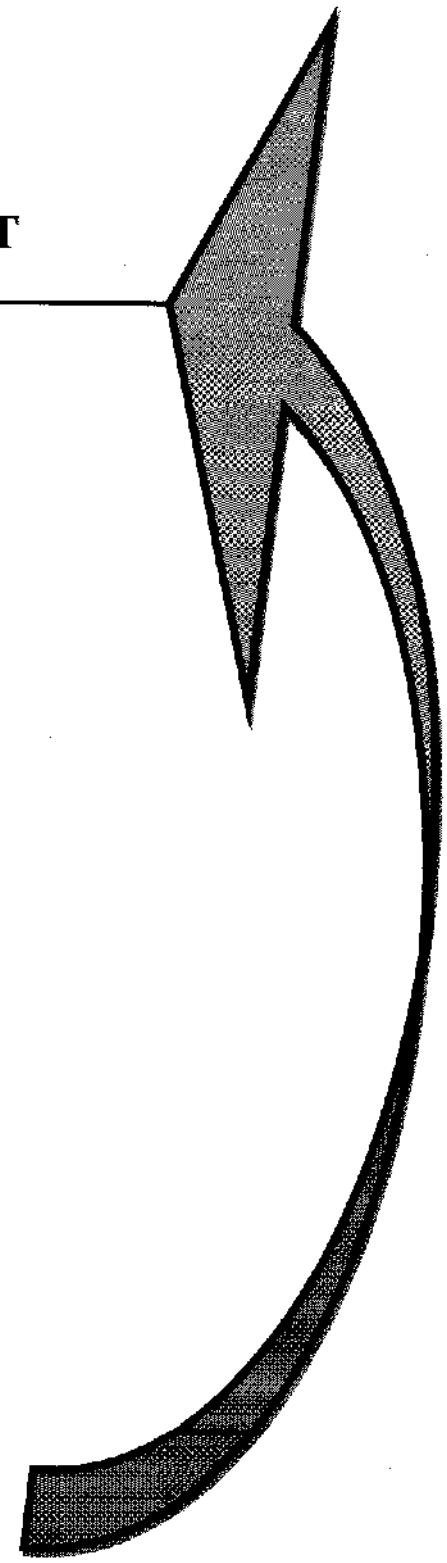
v	Industry switch over to aqueous based coating film In place of use Methylene Chloride in coating operation and to non-halogenated solvents in place of halogenated solvents in a phased manner	We will try to switch over where ever it is possible
VI	Industry shall switch over to use of non halogenated solvents in place of halogenated solvents in a phased manner.	We try to avoid usage of halogenated solvents
VII	The company shall undertake following Waste Minimization measures ➢ Metering and control of quantities of active ingredients to minimize waste. ➢ Reuse of by-products from the process as raw materials or as raw material substitutes in other processes. ➢ Use of automated filing to minimize spillage. ➢ Use of Close Feed system into batch reactors ➢ Venting equipment through vapour recovery system. ➢ Use of high pressure hoses for equipment clearing to reduce wastewater generation.	We will l try to implement waste minimization measures as mentioned by you
VIII	Fugitive emissions in the work zone environment, product, raw material storage area shall be regularly monitored. The emissions shall conform to the limit imposed by SPCB.	We will be monitored the the work zone environment, product, raw material storage area on regular basis and will not be exceed the standards
VIII	Effluent generation shall not exceed 65 m^3/d. The effluent shall be segregated into high TDS and low TDS streams. The low TDS effluent after primary treatment and meeting the norms shall be sent to CETP at Patancheru through tankers for further treatment. Due care shall be taken to prevent leakage of effluent while loading, unloading and transportation. Waste water manifest system shall be provided along with every tanker for proper handling of effluent. The high TDS effluent shall be evaporated in Multiple Effect Evaporator. The condensate shall be treated in ETP. The salt obtained after drying shall be disposed into secured land fill (TSDF) after packaging in HDPE bags. The domestic waste water shall be sent	Effluents are segregated based on the characteristics and treated as per the procedure.

	to the septic tank followed by the soak pit.	
IX	Solid waste generated from the process and ETP sludge shall be sent to TSDF of M/s Hyderabad Waste Management Project at Dundigal. Boiler ash shall be sold to the brick manufacturers.	We will send the ETP sludge and MEE salts to TSDF and Boiler ash to Bick Manufacturing institutes.
X	The company shall develop rainwater harvesting structures to harvest the run off water for recharge of ground water.	We will comply
XI	Green belt shall be provided in an area of 4.2 ha. To mitigate the effects of fugitive emissions all around the plant. Development of green belt shall be as per the Central Pollution Control Board guidelines.	We will comply
xii	Occupational health surveillance of the worker shall be done on a regular basis and records maintained as per the Factories Act.	We will comply
xiii	The Company shall undertake eco-development measures including community welfare measures in the project area for the overall improvement of the environment The eco-development plan should be submitted to the APPCB within three months of receipt of this letter for approval.	We will implement
GENERAL CONDITIONS		
I	The project authorities shall strictly adhere to the stipulations made by the Andhra Pradesh State Pollution Control Board.	We will comply with Andhra Pradesh Pollution control board Stipulations
Ii	At no time, the emissions shall exceed the prescribed limits. In the event of failure of any pollution control system adopted by the unit, the unit shall be immediately put out of operation and shall not be restarted until the desired efficiency has been achieved.	We will not exceed the prescribed limits and we will operate pollution control equipment continuously
Iii	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	We will follow as per the guidelines
Iv	The project authorities shall strictly comply with the rules and regulations under	We will comply

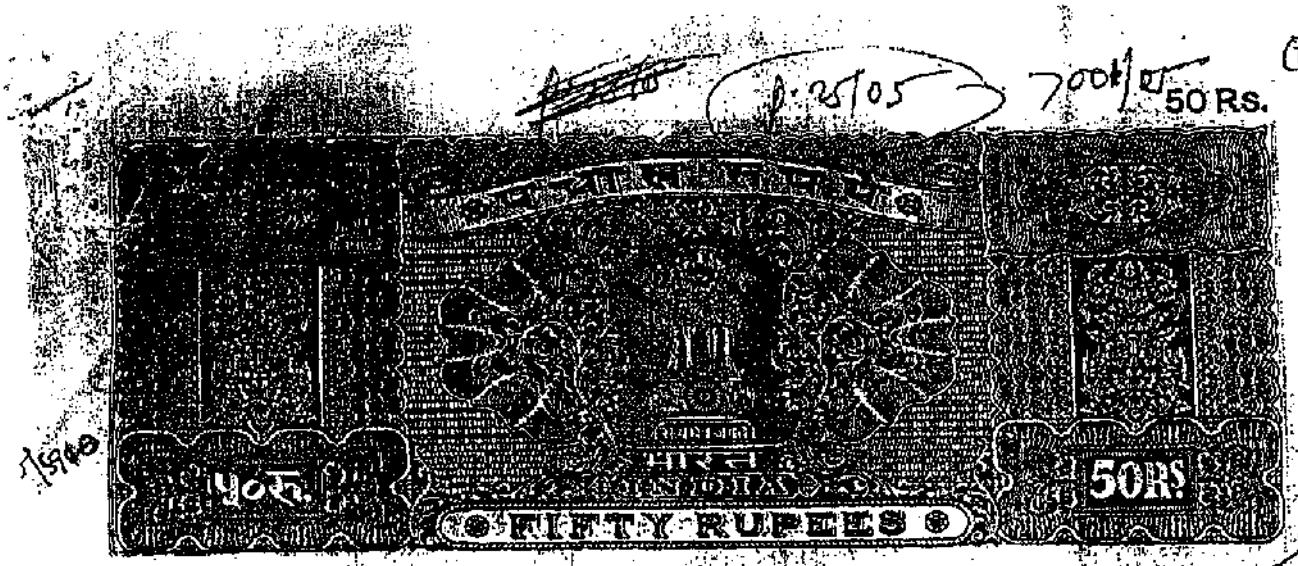
	Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 as amended in October, 1994 and January, 2000. Authorization from the SPCB shall be obtained for collection, treatment, storage, disposal of Hazardous wastes.	
V	The project authorities must strictly comply with the rules and regulations with regard to handling and disposal of hazardous wastes in accordance with the Hazardous Wastes (Management and Handling) Rules, 2003. Authorization from the State Pollution Control Board must be obtained for collections/storage/disposal of hazardous wastes.	We will comply with Hazardous Wastes (Management and Handling) Rules, 2003
Vi	The overall noise levels in and around the plant area shall be kept well within the standards (85 Dba) by providing noise control measure including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under Environment (Protection) Act, 1986 Rules, 1989 viz.DBA (day time) and 70 Dba (night time)	We will kept noise levels within the standards
Vii	The project proponent shall also comply with all the environmental protection measure and safeguards recommended in the Environmental Impact Assessment Notification, 1994 report.	We will implement and comply
Viii	A separate Environmental Management Cell equipped with full fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.	We will be comply
Ix	The project authorities shall earmark separate funds to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purpose.	We will allocate funds for Implementation of conditions stipulated by the MoEF and the State Government
X	The implementation of the project vis-à-vis environmental action plans shall be monitored by Ministry's Regional Office at Bangalore /SPCB/Central Pollution Control Board. A six monthly compliance status report shall be	Noted and we will comply

	submitted to monitoring agencies.	
Xi	The project proponent shall inform the public that project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry at http://envfor.nic.in This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Ministry's Regional Office at Bangalore.	Noted
Xii	The project authorities shall inform the Regional office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.	Complied
4.0	The ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory	Noted
5.0	The Ministry reserves the right to stipulate additional conditions, if found necessary The company in a time bound manner will implement these conditions.	Agreed
6.0	The above conditions will be enforced, inter alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 Hazardous Wastes (Management and Handling) Rules, 2003 and the Public Liability Insurance Act, 1991 along with their amendments and rules.	Noted

LAND DOCUMENT



ENCLOSURE-12



S. No. 47761 DATE 10/5/04

SOLD TO B. L. N. Murthy

S/o. W/o. D/o. Late Satyanarayana. R/o Hyd

FOR WHOM M/s Synthokem Labs pvt. Ltd. Hyd

Smt. R. VIJAYA LAKSHMI
Stamp Vendor L.No. 5/M90, R.L.No. 30/2002
H.No 7-1-621/287 S.R Nagar,
HYDERABAD-500 038

GOVERNMENT OF INDIA
MINISTRY OF FINANCE
DEBTS RECOVERY TRIBUNAL
5th Floor, Triveni complex, Abids,
HYDERABAD - 500 001.

R.P.No.450 Of 2003
IN
O.A.No.1617 of 1999

CERTIFICATE OF SALE OF IMMOVABLE PROPERTY

(See Section 25 to 29 of Recovery of Debts Due to Banks and Financial Institutions Act, 1993 and See Rule 63(1) of the Second Schedule of the Income Tax Act, 1961)

Shri M.Jayant Tagore, Managing Director of M/s.SYNTHOKEM LABS PRIVATE LIMITED, B-5, Industrial Estate, Sanathnagar, Hyderabad - 500 018, has purchased the immovable property specified below for a sum of Rs.3,90,00,000/- (Rupees Three Crores Ninty lacs only) at a sale by public auction held on 31st March, 2004 in execution of Certificate in R.P. No.450 of 2003 in O.A. No.1617 of 1999 dated 28.08.2003 issued by the Presiding Officer, Debts Recovery Tribunal, Hyderabad for recovery of arrears from M/s.PRIMEX ORGANICS LIMITED.

Debts Recovery Tribunal Hyderabad

S. M. HUSSAIN
Recovery Officer,
Debts Recovery Tribunal
HYDERABAD.

Contd...2..

For Synthokem Labs Pvt. Ltd.

Managing Director

100Rs.

ఆంధ్ర ప్రదేశ్ आंध्र प्रदेश ANDHRA PRADESH 00AA 700438

Date : 03-05-2004
Purchased By :
B.L.NNM BHARATA
S/O.LATE SURYANARAYANA
HYDERABAD

Serial No : 2569
For Whom :
SYNTHESIS Labs (I) PVT LTD
HYDERABAD

Signature
Manager
S.B. NAGAR
Private Vendor

3/5/04

The full amount of the sale consideration has been paid on 15.04.2004. Accordingly the said sale is hereby confirmed.

DESCRIPTION OF IMMOVABLE PROPERTY

All those pieces and parcels of lands admeasuring acres 5.78 Cents comprised in Survey Nos 219 to 246 and Plot Nos 222,223,224, 235, 236 and 237 situated at Pashamylaram, IDA Phase – II, Sanga Reddy Taluk, Medak District in the State of Andhra Pradesh together with the buildings, structures, erections and godowns and fixed plant, machinery, fittings and fixtures attached to the earth or permanently fastened to anything attached to the earth bounded as under:-

Debts Recovery Tribunal Hyderabad

S. M. HUSSAIN
Recovery Officer
Debts Recovery Tribunal
HYDERABAD.

Contd....3...

(3)

50 Rs.

S. No. 47762 DATE 10/5/04

SOLD TO: B.L.N.K.L.

S/o. W/o. D/o. Late Sri Narayanan Reddy

FOR WHOM: M/S Synthokem Labs Pvt Ltd.

Smt. R. VIJAYA LAKSHMI
Stamp Vendor L.No. 51/99, R.L.No. 30/2002
H.No 7-1-621/287 S.R Nagar,
HYDERABAD-500 038

:: 3 ::

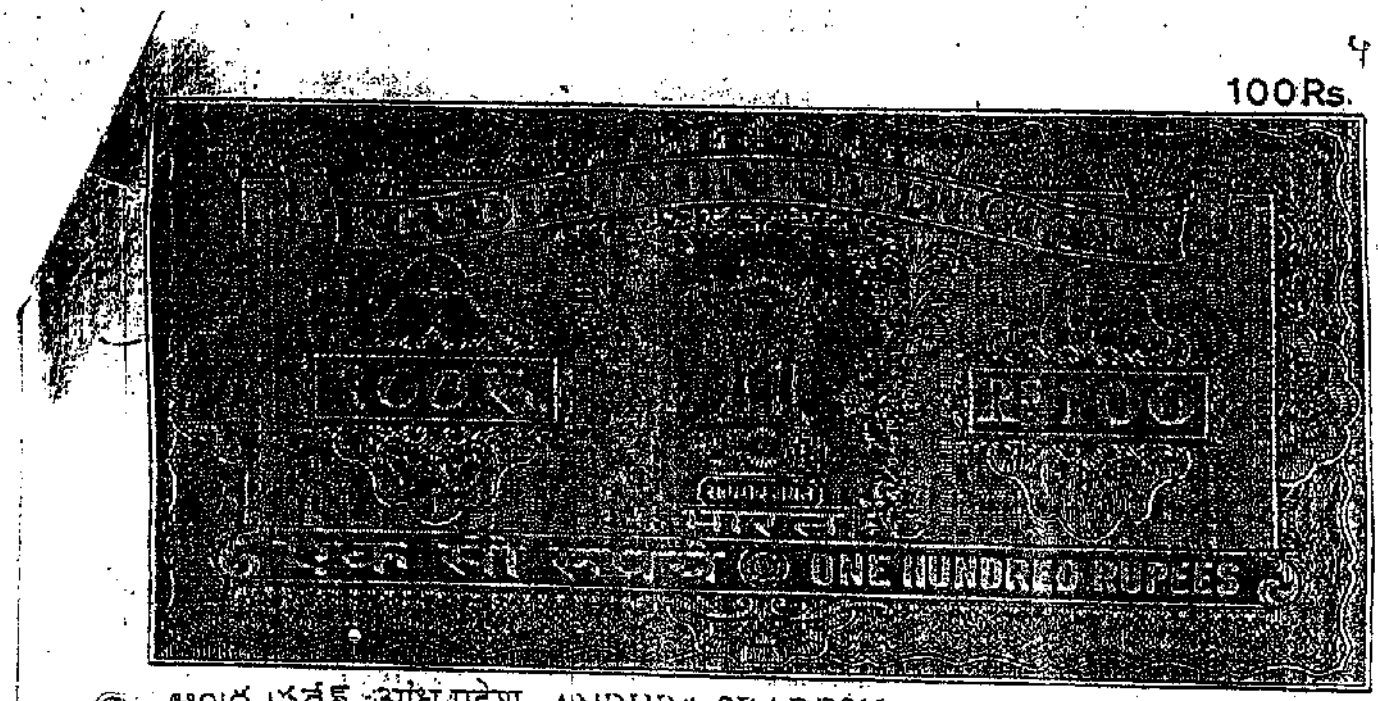
North : 18.3 Meters Wide Road
South : 18.3 Meters Wide Road
East : 18.3 Meters Wide Road
West : Plot No.221 and 238

Copy sent under Rule 21 of the Income Tax (Certificate Proceedings) Rules 1962 to the Registering Officer concerned (Viz. Sub-Registrar at Sangareddy, Medak District at Sangareddy Under the Indian Registration Act 1908 (Act XVI of 1908) within the local limits of whose jurisdiction the whole of the immovable property comprised in this certificate is situated.

GIVEN UNDER MY HAND AND THE SEAL OF THIS TRIBUNAL AT HYDERABAD ON THIS THE 10TH DAY OF MAY, 2004.

Hyderabad Debts Recovery Tribunal

(S.M.HUSSAIN)
RECOVERY OFFICER
S. M. HUSSAIN
Recovery Officer,
Debts Recovery Tribunal
HYDERABAD



ఆంధ్ర ప్రదేశ్ आंध्र प्रदेश ANDHRA PRADESH

03AA 015916

No. 69654 DATE 5/7/04

SOLD TO

S/o. W/o. D/o.

FOR WHOM

Smt. R. VIJAYA LAKSHMI
Stamp Vendor L No 51/98, R.L.No 39/2002
H.No. 7-1-62
HYDERABAD

GOVERNMENT OF INDIA
MINISTRY OF FINANCE
DEBTS RECOVERY TRIBUNAL
HYDERABAD.

R.P.No.450/2003
In
O.A.No.1617 / 1999

ANNEXURE-I TO CERTIFICATE OF SALE OF IMMOVABLE PROPERTY

In continuation to our Certifecate of Sale of Immovable Property issued to M.Jayanth Tagore, M.D., M/s.Synthokem Labs Private Limited 10th Day of May,2004 we are furnishing hereunder break-up of the said Auction Sale Consideration relating to R.P.No.450/2003 in O.A.No.1617/1999.

Value of Land & Building : Rs.167.00 Lakhs

Given under my hand and the seal of this Tribunal at Hyderabad on 5th July, 2004.

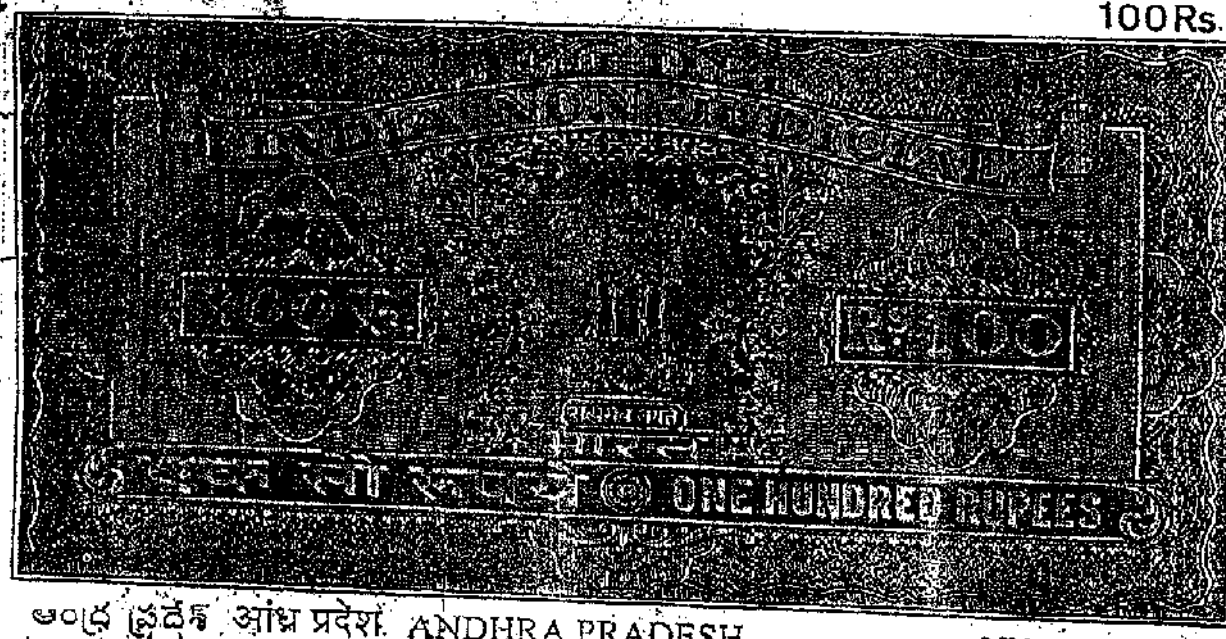
Hyderabad Recovery Tribunal

(S.M.HUSSAIN)
Recovery Officer

S. M. HUSSAIN
Recovery Officer,
Debts Recovery Tribunal
HYDERABAD.

(5)

100Rs.



ఆంధ్ర ప్రదేశ్ ANDHRA PRADESH

03AA 015917

SOLD TO.....

Smt. R. VIJAYA LAKSHMI
Stamp Vendor L No. 51/90, P.L.No. 39/2002
H.No. 7-1-621/2&3, S.R. Nagar,
HYDERABAD.

GOVERNMENT OF INDIA
MINISTRY OF FINANCE
DEBTS RECOVERY TRIBUNAL
HYDERABAD.

R.P.No.450/2003
In
O.A.No.1617 / 1999

ANNEXURE-II TO CERTIFICATE OF SALE OF IMMOVABLE PROPERTY

In continuation to our Certificate of Sale of Immovable Property issued to M.Jayanth Tagore, M.D., M/s.Synthokem Labs Private Limited 10th Day of May,2004 we are furnishing hereunder break up of the said Auction Sale Consideration relating to R.P.No.450/2003 in O.A.No.1617/1999.

Value of Plant & Machinery - : Rs.223.00 Lakhs

Given under my hand and the seal of this Tribunal at Hyderabad on 5th July ,2004.

Hyderabad Debts Recovery Tribunal

(S.M.HUSSAIN)
Recovery Officer,
Debts Recovery Tribunal
HYDERABAD.

Photographs and Fingerprints As per Section 32A of Registration Act, 1908

S.No	Photo of the Executant (Left Thumb)	Photo of the Executant	Name & Permanent Postal Address of Presentant/Seller Buyer
			S. M. HUSSAIN, Recovery Officer, Debts Recovery Tribunal HYDERABAD.
			M. JAYANT THOSS MANAGING DIRECTOR Synthokem Labs Private Limited P.B. No: 1911, B-6, I.D.A. Sanathnagar HYDERABAD-500 015.
		Photo	
		Photo	

SIGNATURE OF WITNESSES

1.

2.

SIGNATURE OF THE EXECUTANT/S

S. M. HUSSAIN
Recovery Officer,
Debts Recovery Tribunal
HYDERABAD.

For Synthokem Labs Pvt. Ltd.,

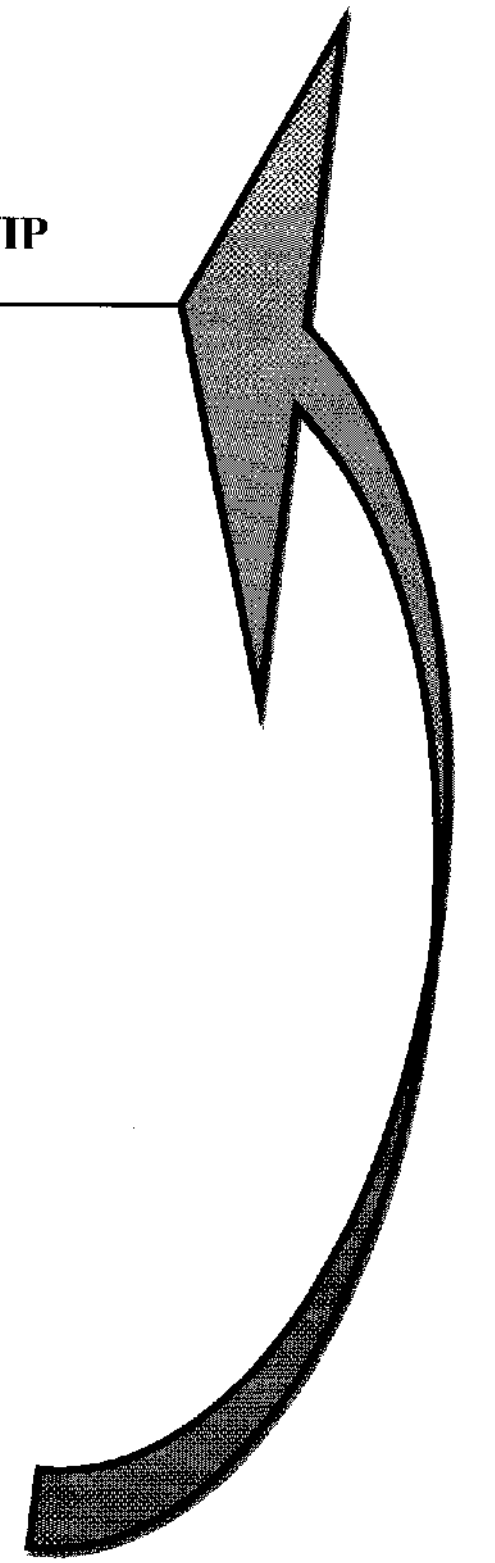
Managing Director
M. JAYANT THOSS

For Synthokem Labs Pvt. Ltd.

Managing Director

8/4/05

TSDF MEMBERSHIP



HYDERABAD WASTE MANAGEMENT PROJECT

(A DIVISION OF RAMKY ENVIRO ENGINEERS LTD.)

Treatment Storage Disposal Facility (TSDF)

LABORATORY
ISO 17025 CERTIFIED

Survey No. 684/1, Dundigal Village, Qutbullapur Mandal - 500 043, Rangareddy Dist., A.P., India
Tel. : 08418-255424, 255425

Managing Hazardous Wastes

Membership Certificate

This is to certify that M/s. *Synthokem Labs Pvt. Ltd., Unit II*

Plot No.222 to 224 & 235 to 237, Phase II, IDA Pashamylaram, Medak Dist.,

is a member of Hyderabad Waste Management Project with Membership No. *MDKPASS007*

Date : *13/06/2008*

AUTHORISED SIGNATORY

ENCLOSURE - 13

ACCREDITATION DETAILS

ENCLOSURE - 14

QCI – NABET Scheme for Accreditation of EIA Consultant Organizations

Annexure I-A

Name of the Consultant: **Rightsource Industrial Solutions Pvt. Ltd.**

2nd Floor, "Sri Laxmi Srinivasa Nilayam", Plot No. 7,
Road No. 1, Czech Colony, Sanathnagar,
Hyderabad - 500018

Sectors Approved – 01 No.

Sl. No.	Sector No.	Name of Sector	Category A/B
1	21	Synthetic organic chemicals industry (dyes & dye intermediates; bulk drugs and intermediates excluding drug formulations; synthetic rubbers; basic organic chemicals, other synthetic organic chemicals and chemical intermediates)	A

Total = 01 Sector*

****Sectors allocated to individual EIA Coordinators are mentioned in Annexure I-B***

(Vipin Sahni)
Director