FORM-I

for

PROPOSED FINE CHEMICALS & PESTICIDES INTERMEDIATES MANUFACTURING PLANT IN DAHEJ-II GIDC

of

M/s. F.K. FINE CHEMICALS

PLOT NO. D-2/CH/121, GIDC ESTATE,

DAHEJ, TAL: VAGRA, DIST: BHARUCH-392130 (GUJ.)

APPENDIX I

(See paragraph - 6)

FORM 1

Sr. No.	Item	Details
1.	Name of the project/s	M/s. F.K. FINE CHEMICALS
2.	S. No. in the schedule	5(f) & 5(b)
3.	Proposed capacity/area/length/tonnage to be handled/command area/lease area/number of wells to be drilled	Please refer **Annexure –I**
4.	New/Expansion/Modernization	New
5.	Existing Capacity/Area etc.	NA
6.	Category of Project i.e. 'A' or 'B'	'A'
7.	Does it attract the general condition? If yes, please specify.	No
8.	Does it attract the specific condition? If yes, please specify.	No
9.	Location	
	Plot/Survey/Khasra No.	Plot No. D-2/CH/121
	Village	GIDC - Dahej
	Tehsil	Vagra – 392 130
	District	Bharuch
	State	Gujarat
10.	Nearest railway station/airport along with distance in kms.	Railway Station: Bharuch (40 km) Airport: Vadodara (90 km)
11.	Nearest Town, city, District Headquarters along with distance in kms.	Sayakha Village (2 km) Bharuch (40 km)
12.	Village Panchayats, Zilla Parishad, Municipal Corporation, local body (complete postal address with telephone nos. to be given)	Village: Dahej, Taluka: Vagra – 392 130, Dist: Bharuch (Gujarat)
13.	Name of the applicant	M/s. F.K. FINE CHEMICALS
14.	Registered Address	Plot No. D-2/CH/121 , GIDC Estate, Dahej, Tal: Vagra, Dist: Bharuch-392130, Gujarat
15.	Address for correspondence:	2-D1, Ideal Shopping Centre, Opp : Hotel Lord's Plaza, Ankleshwar – 393001, Dist: Bharuch (Guj.)
	Name	Mr. Faruqahmed Mohmedhayat Khan
	Designation (Owner/Partner/CEO)	Partner
	Address	M/s. F.K. FINE CHEMICALS, 2-D1, Ideal Shopping Centre, Opp : Hotel Lord's Plaza, Ankleshwar, Dist: Bharuch (Guj.)
	Pin Code	393001
	E-mail	fkfinechemicals@yahoo.com

	Telephone No.	Mob. : +919537865786
	Fax No.	-
16.	Details of Alternative Sites examined, if any. Location of these sites should be shown on a topo sheet.	NA
17.	Interlinked Projects	NA
18.	Whether separate application of interlinked project has been submitted?	NA
19.	If yes, date of submission	NA
20.	If no, reason	NA
21.	Whether the proposal involves approval/clearance under: if yes, details of the same and their status to be given. (a) The Forest (Conservation) Act, 1980? (b) The Wildlife (Protection) Act, 1972? (c) The C.R.Z. Notification, 1991?	No
22.	Whether there is any Government Order/Policy relevant/relating to the site?	No
23.	Forest land involved (hectares)	NA
24.	Whether there is any litigation pending against the project and/or land in which the project is propose to be set up? (a) Name of the Court (b) Case No. (c) Orders/directions of the Court, if any and its relevance with the proposed project.	NA

- *Capacity corresponding to sectoral activity (such as production capacity for manufacturing, mining lease area and production capacity for mineral production, area for mineral exploration, length for linear transport infrastructure, generation capacity for power generation etc.,)*

(II) Activity

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

Sr. No.	Information/Checklist confirmation	Yes/No	Details thereof with approximate quantities frates, wherever possible) with source of information data
1.1	Permanent or temporary change in land use, land cover or topography including increase intensity of land use (with respect to local land use plan)	No	Proposed project site is within the GIDC Dahej-II. Expected cost of the project is Rs. 6 Crore.
1.2	Clearance of existing land, vegetation and Buildings?	Yes	Minor site clearance activities shall be carried out to clear shrubs and weed.
1.3	Creation of new land uses?	No	It is Notified Industrial Estate for chemical industries.
1.4	Pre-construction investigations e.g. bore Houses, soil testing?	No	
1.5	Construction works?	Yes	For detail Please refer **Annexure – II**
1.6	Demolition works?	No	--
1.7	Temporary sites used for construction works or housing of construction workers?	Yes	Some land portion on the plot will be provided for temporary housing of construction workers during construction stage.
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations	Yes	For detail Please refer **Annexure – II**
1.9	Underground works mining or tunneling?	No	--
1.10	Reclamation works?	No	--
1.11	Dredging?	No	--
1.12	Off shore structures?	No	--
1.13	Production and manufacturing processes?	Yes	For detail Please refer **Annexure –III**
1.14	Facilities for storage of goods or materials?	Yes	Tank Farm Area, Raw Material Storage Area & Finished Products Area will be developed for proposed project.
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	Yes	For detail please refer **Annexure – V & VI.**
1.16	Facilities for long term housing of operational workers?	No	
1.17	New road, rail or sea traffic during Construction or operation?	No	--
1.18	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	No	--
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 form ground or surface waters?	No	--
1.24	Changes in water bodies or the land surface Affecting drainage or run-off?	No	--
1.25	Transport of personnel or materials for construction, operation or decommissioning?	Yes	The construction material including cement, structural steel, stones, sand, bricks, tiles, etc. will be transported via trucks, trailers on the site. Also the construction job will be given on contract basis thus manpower will be arranged by the same party. The separate project team will be allocated for this project.
1.26	Long-term dismantling or decommissioning or restoration works?	No	--
1.27	Ongoing activity during decommissioning which could have an impact on the environment?	No	--
1.28	Influx of people to an area either temporarily or permanently?	Yes	As the construction party will be on contract basis, it will temporary increase population. But after construction stage, the new recruitment of the employees will be done from local area which can have minor impact on the population.
1.29	Introduction of alien species?	No	--
1.30	Loss of native species or genetic diversity?	No	--
1.31	Any other actions?	No	--

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

Sr. No.	Information/checklist confirmation	Yes/No	Details there of (with approximate quantities frates, wherever possible) with source of information data
2.1	Land especially undeveloped or agricultural land (ha)	No	
2.2	Water (expected source & competing users) unit: KLD	Yes	The entire water requirement will be met through GIDC water Supply. For detail please refer **Annexure – IV**

2.3	Minerals (MT)	No	--
2.4	Construction material – stone, aggregates, and / soil (expected source – MT)	Yes	Construction materials, like steel, cement, crushed stones, sand, rubble, etc. required for the project shall be procured from the local market of the region.
2.5	Forests and timber (source – MT)	No	--
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)	Yes	For detail please refer **Annexure – IV**
2.7	Any other natural resources (use appropriate standard units)	No	--

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

Sr. No.	**Information/Checklist confirmation**	**Yes/No**	**Details there of (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	For detail please refer **Annexure –VIII.**
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	No	
3.3	Affect the welfare of people e.g. by changing living conditions?	No	
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.	No	
3.5	Any other causes	No	

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

Sr. No.	Information/Checklist confirmation	Yes/No	Details there of (with approximate quantities/rates, wherever possible) with source of information data
4.1	Spoil, overburden or mine wastes	No	--
4.2	Municipal waste (domestic and or commercial wastes)	No	--
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	Yes	Please refer **Annexure – VI**
4.4	Other industrial process wastes	No	--
4.5	Surplus product	No	--
4.6	Sewage sludge or other sludge from effluent treatment	Yes	Please refer **Annexure – VI**
4.7	Construction or demolition wastes	No	--
4.8	Redundant machinery or equipment	No	--
4.9	Contaminated soils or other materials	No	--
4.10	Agricultural wastes	No	--
4.11	Other solid wastes	Yes	Please refer **Annexure – VI**

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

Sr. No.	Information/Checklist confirmation	Yes/No	Details there of (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	For details Please refer **Annexure – VII**
5.2	Emissions from production processes	Yes	For details Please refer **Annexure – VII**
5.3	Emissions from materials handling storage or transport	Yes	The construction materials such as stones, cements, bricks & coal may pollute the air by dust particles. But it will be controlled by covering the trucks & trailers by clothes during transportation.
5.4	Emissions from construction activities including plant and equipment	Yes	During construction work, the Nearby buildings area will be covered by sheets or clothes to avoid dust Contamination in air.
5.5	Dust or odours from handling of materials including construction materials, sewage and waste	No	--
5.6	Emissions from incineration of waste	No	--

5.7	Emissions from burning of waste in open air e.g.slash materials, construction debris)	No	-- --
5.8	Emissions from any other sources	No	--

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

Sr. No.	Information/Checklist confirmation	Yes/No	Details there of (with approximate quantities/rates, wherever possible) with source of information data with source of information data
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	Yes	The Noise level will be within the prescribed limit. At noisy area, adequate preventive & control measures will be taken. No significant noise, vibration or emission of light & heat from the unit.
6.2	From industrial or similar processes	Yes	-do-
6.3	From construction or demolition	No	--
6.4	From blasting or piling	No	--
6.5	From construction or operational traffic	No	--
6.6	From lighting or cooling systems	No	--
6.7	From any other sources	No	--

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

Sr. No.	Information/Checklist confirmation	Yes/No	Details there of (with approximate quantities/rates, wherever possible) with source of information data
7.1	From handling, storage, use or spillage of hazardous materials	Yes	For details please refer **Annexure – VIII**
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	No	--
7.3	By deposition of pollutants emitted to air into the and or into water	No	--
7.4	From any other sources	No	--
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	No	

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

Sr. No.	Information/Checklist confirmation	Yes/No	Details there of (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	For detail please refer **Annexure –VII.**
8.2	From any other causes	No	--
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc)?	No	--

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

Sr. No.	Information/Checklist confirmation	Yes/No	Details there of (with approximate quantities/rates, wherever possible) with source of information data
9.1	Lead to development of supporting. utilities, 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 industry • supply industry • other	Yes	For detail please refer **Annexure – IX**
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	

10. Environmental Sensitivity

Sr. No.	Areas	Name/ Identity	Aerial distance (within 15km.) Proposed project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	-	Proposed project site is within the Dahej-II GIDC.
2	Areas which important for are or sensitive Ecol logical reasons – Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	Narmada River	Narmada River: 13.0 km (approx.) away from Project Site
3	Area used by protected, important or sensitive Species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	No	
4	Inland, coastal, marine or underground waters	-	Narmada River is around 13 Km away from the project site.
5	State, National boundaries	-	N.A.
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	-	N.A.
7	Defense installations	-	N.A.
8	Densely populated or built-up area	Bharuch	Bharuch is around 40 km (approx.) East from the proposed project site.
9	Area occupied by sensitive man-made land uses Hospitals, schools, places of worship, community facilities)	No	
10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	No	
11	Areas already subjected to pollution environmental damage. (those where existing legal environmental standards are exceeded)or	-	NA
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence ,landslides, flooding erosion, or extreme or adverse climatic conditions)	-	NA

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

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

Date: 6/7/2016
Place: Dahej-II

For F. K. FINE CHEMICALS

Partner

LIST OF ANNEXURES

SR. NO.	NAME OF ANNEXURE
I	List of Products with their Production Capacity
II	Layout Map of the Plant
III	Brief Manufacturing Process Description
IV	Water, Fuel & Energy Requirements
V	Description of Effluent Treatment Plant with flow diagram
VI	Details of Hazardous Waste
VII	Details of Stacks and Vents
VIII	Details of Hazardous Chemicals Storage & Handling
IX	Socio-Economic Impacts
X	Proposed Terms of Reference for EIA studies

ANNEXURE-I

LIST OF PRODUCTS AND THEIR CAPACITY

SR. NO.	PRODUCT NAME	PROPOSED CAPACITY (MT/MONTH)
FINE CHEMICALS		
1	4-Methoxy Benzaldehyde	100
2	4-Methoxy benzyl Alcohol	35
3	4-Methoxy Benzyl Acetate	5
4	4-Methyl Phenyl Acetate	5
5	4-Methoxy Benzyl Acetone	1
6	4-Methoxy Phenyl Acetic Acid	20
7	4-Methoxy Phenyl Acetone	2
8	4-Methoxy Benzyl Amine	2
9	4-Methoxy Toluene	10
10	Tyramine Base	5
11	Tyramine Hydrochloride	5
12	3-Benzyloxy Propio Nitrile	2
13	3-Amino Propyl Imidazole	10
14	Triacetin	120
15	Cyclohexyl Ethyl Methoxy Phenyl Acetamide	10
PESRTICIDE INTERMEDIATES		
1	2,4,6-Trimethyl Benzaldehyde	15
2	4, 4'-Dihydroxy benzophenone	15
3	2,4-Dichloro Meta Cresol	15
	TOTAL	**377 MT/Month**

LIST OF RAW MATERIAL

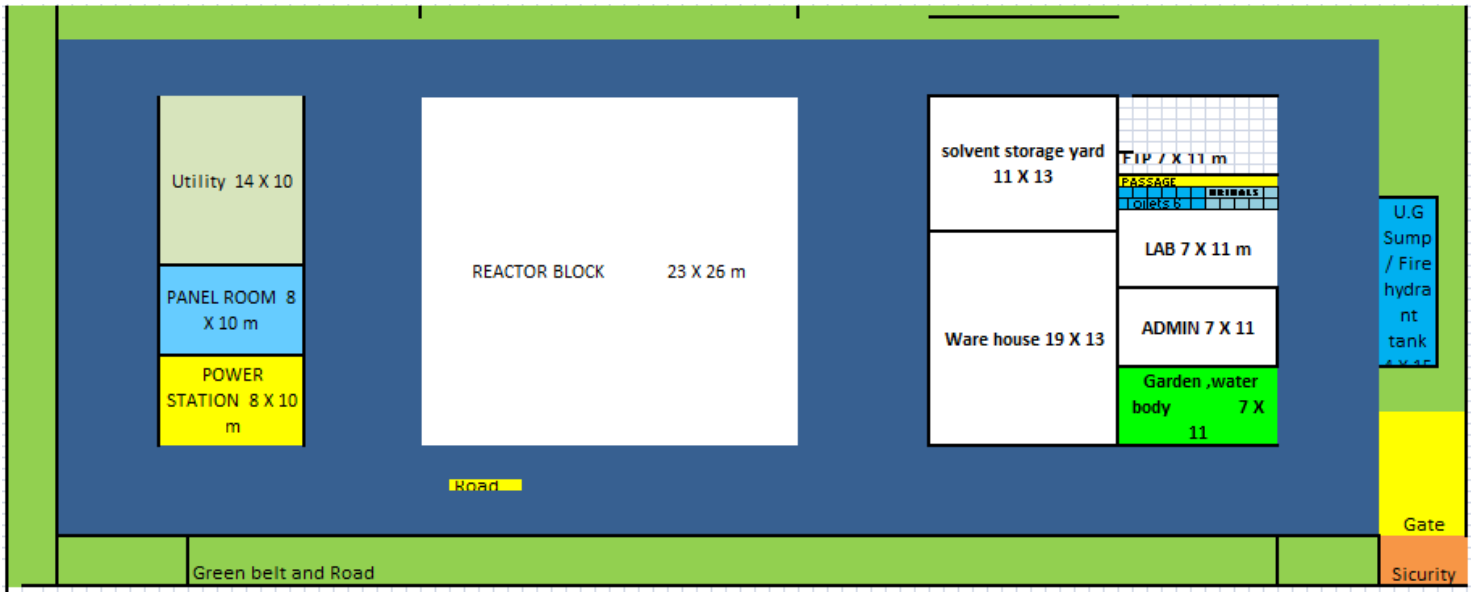
SR. NO.	PRODUCT NAME	PROPOSED CAPACITY (MT/MT)
FINE CHEMICALS		
1)	**4-Methoxy Benzaldehyde - 100 MT**	
1	p-Cresol	1.11
2	Caustic Soda	0.85
3	Dimethyl Sulfate	0.703
4	MnO2	2.2
5	Sulfuric Acid	4.28
6	Toluene	2
2)	**4-Methoxy Benzyl Alcohol- 35 MT**	
1	4-Methoxybenzaldehyde	1
2	Ra-Ni Catalyst	0.01
3	Hydrogen Gas	0.02
3)	**4-Methoxy Benzyl Acetate-05 MT**	
1	Anisaldehyde	0.83
2	Acetic Anhydride	0.78
3	Sodium acetate	0.1
4	Toluene	1.67
4)	**4-Methyl Phenyl Acetate-05 MT**	
1	p-Cresol	0.77
2	Acetic Anhydride	0.94
3	Sodium Acetate	0.06
4	Toluene	1.92
5)	**4-Methoxy Benzyl Acetone-01 MT**	
1	4-Methoxybenzaldehyde	0.88
2	Acetone	0.43
3	Caustic Soda	0.05
4	Hydrochloric Acid	0.16
5	Methanol	0.58
6	Ra-Ni Catalyst	0.01
7	Hydrogen Gas	0.01
6)	**4- Methoxy Phenyl Acetic acid-20 MT**	
1	4-Methoxyphenylacetonitrile	0.95
2	Caustic Soda	0.29
3	Hydrochloric Acid	0.87
7)	**4-Methoxy Phenyl Acetone - 2 MT**	
1	4-Methoxybenzaldehyde	1.11
2	Methyl Chloropropionate	1.14
3	Sodium Methoxide	0.53
4	Toluene	3.08
5	Caustic Soda	0.49
6	Sulfuric Acid	0.85

8) 4-Methoxy Benzyl Amine - 2 MT		
1	p-Anisaldehyde	0.98
2	Ra-Ni Catalyst	0.01
3	Hydrogen Gas	0.02
4	Methanol	0.49
5	Ammonia	0.25
9) 4-Methoxy Toluene - 10 MT		
1	p-Cresol	0.91
2	Caustic Soda	0.35
3	Dimethyl Sulfate	0.55
10) Tyramine-Base -5 MT		
1	p-Methoxyphenylacetonitrile	1.15
2	Ra-Ni Catalyst	0.02
3	Hydrogen Gas	0.03
4	Methanol	3.46
5	Ammonia	0.26
6	Hydrobromic Acid	2.51
7	Caustic Soda	0.59
8	Acetic Acid	0.47
9	Caustic Soda	0.29
11) Tyramine-Hydrochloride - 5 MT		
1	p-Methoxyphenylacetonitrile	1.15
2	Ra-Ni Catalyst	0.02
3	Hydrogen Gas	0.03
4	Methanol	3.46
5	Ammonia	0.26
6	Hydrobromic Acid	2.51
7	Caustic Soda	0.59
8	Acetic Acid	0.47
9	Caustic Soda	0.29
12) 3-Bezyloxy propio nitrile- 2 MT		
1	Benzyl Alcohol	0.71
2	Acrylonitrile	0.35
3	Toluene	0.71
4	Caustic Soda	0.003
13) 3-Amino Propyl imidazole -10 MT		
1	Imidazole	0.68
2	Acrylonitrile	0.53
3	Ra-Ni Catalyst	0.03
4	Hydrogen Gas	0.04
5	Methanol	4.08
6	Ammonia	0.34
14) Triacetin-120 MT		
1	Glycerol	0.5
2	Acetic Acid	0.97

3	Toluene	0.21
15) Cyclohexyl Ethyl Methoxy Phenyl Acetamide-10 MT		
1	p-Methoxyphenylacetic Acid	1.61
2	Thionyl Chloride	1.11
3	2-(1-cyclohexenyl)ethylamine	1.27
4	Sodium Carbonate	0.21
6	Methanol	1.08
PESTICIDE INTERMEDIATES		
1) 2,4,6-Trimethyl Benzaldehyde		
1	Mesitylene	3.36
2	Charcol	1.13
3	$TiCl_4$	1.46
4	Methanol	0.30
5	Water	4.52
6	Ice	2.00
7	Soda Ash	0.67
8	TEBAC	0.01
9	Acetone	0.16
2) 4,4'- Dihydroxy Benzophenon		
1	4-Chloro,4'-hydroxy benzophenone	1.5
2	NaOH	1.2
3	CuSo4	0.07
4	HCl	3.65
5	Methanol	2.64
6	Activated Charcol	0.03
3) 2,4-Dichloro Meta Cresol		
1	2-Tert Butyl-5-Methyl Phemol	1.15
2	Sulphuryl Chloride	1.9
3	Toluene	3
4	Aluminium Chloride	0.47
5	NaOH	0.45
6	HCl	0.57

ANNEXURE –II

LAYOUT MAP OF THE PLANT



ANNEXURE –III

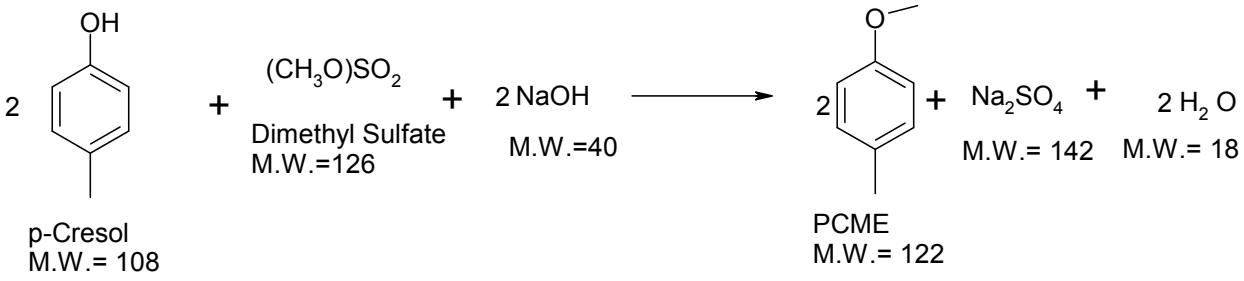
BRIEF MANUFACTURING PROCESS DESCRIPTION

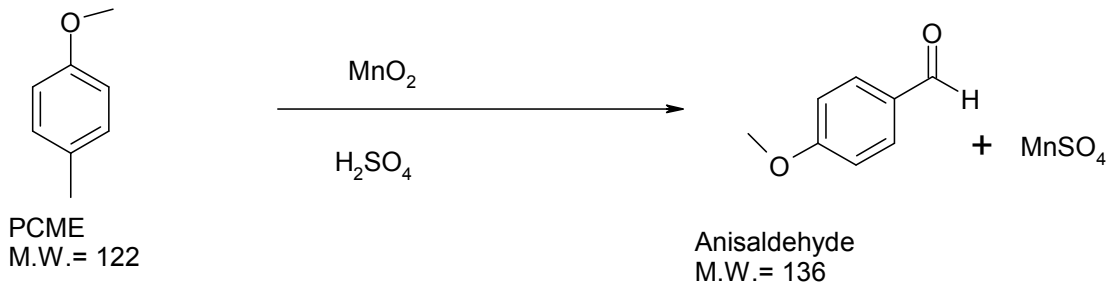
1. 4-Methoxy Benzaldehyde

Short process

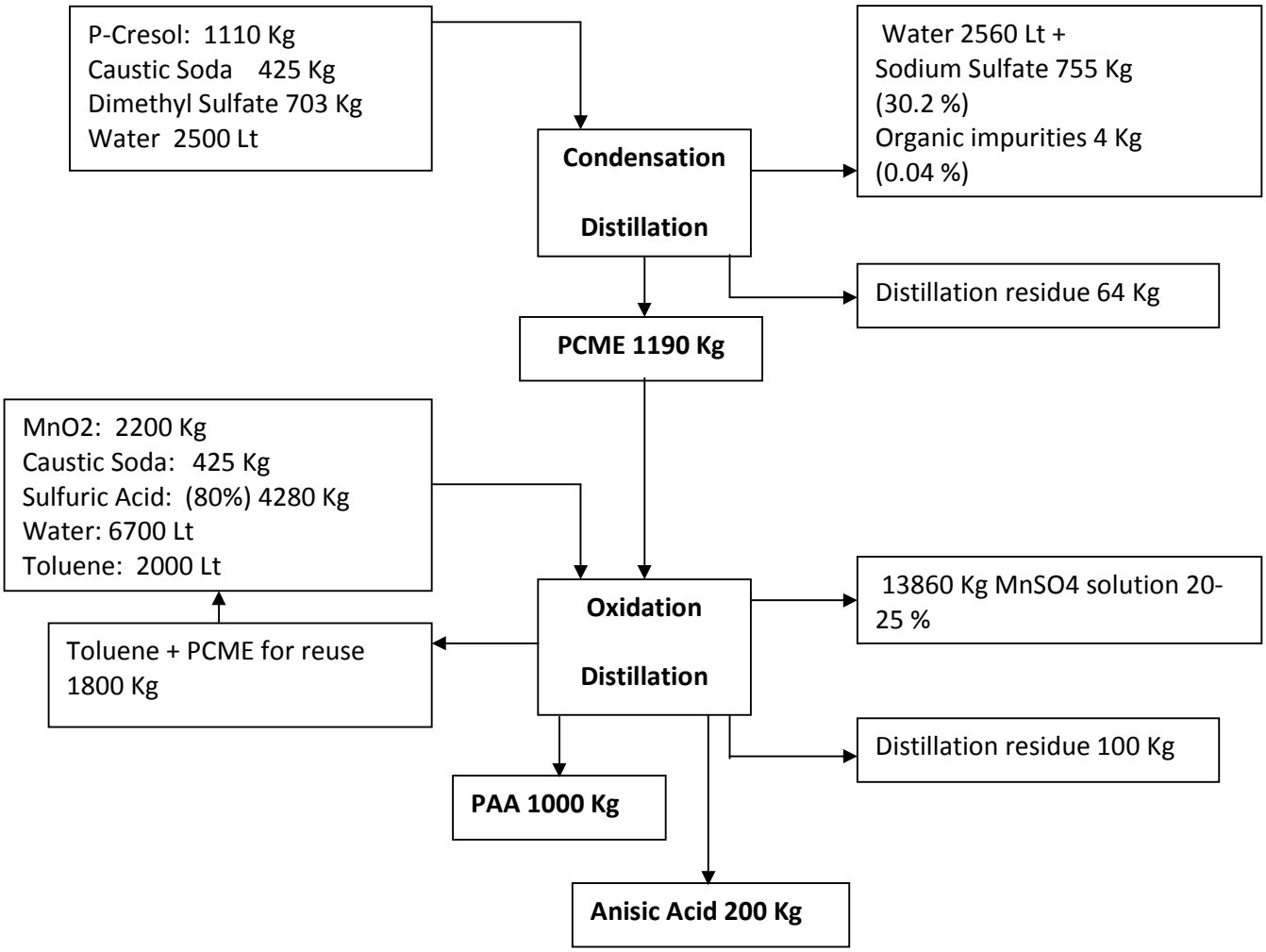
p-Cresol, Dimethyl Sulfate and Sodium Hydroxide are reacted and PCME is isolated by distillation.
PCME further oxidized by MnO2 / Sulfuric Acid and product isolated by distillation.
Generated MnSO4 / Sodium Sulfate and Anisic Acid is sold.

Chemical Reaction





Mass Balance

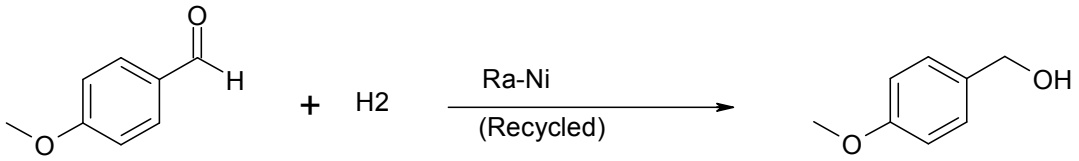


2. 4-METHOXY BENZYL ALCOHOL

Short process

4-MethoxyBenzaldehyde is reduced by hydrogen in presence of catalyst. Required product is isolated by filtration / distillation and recovered catalyst is reused

Chemical Reaction

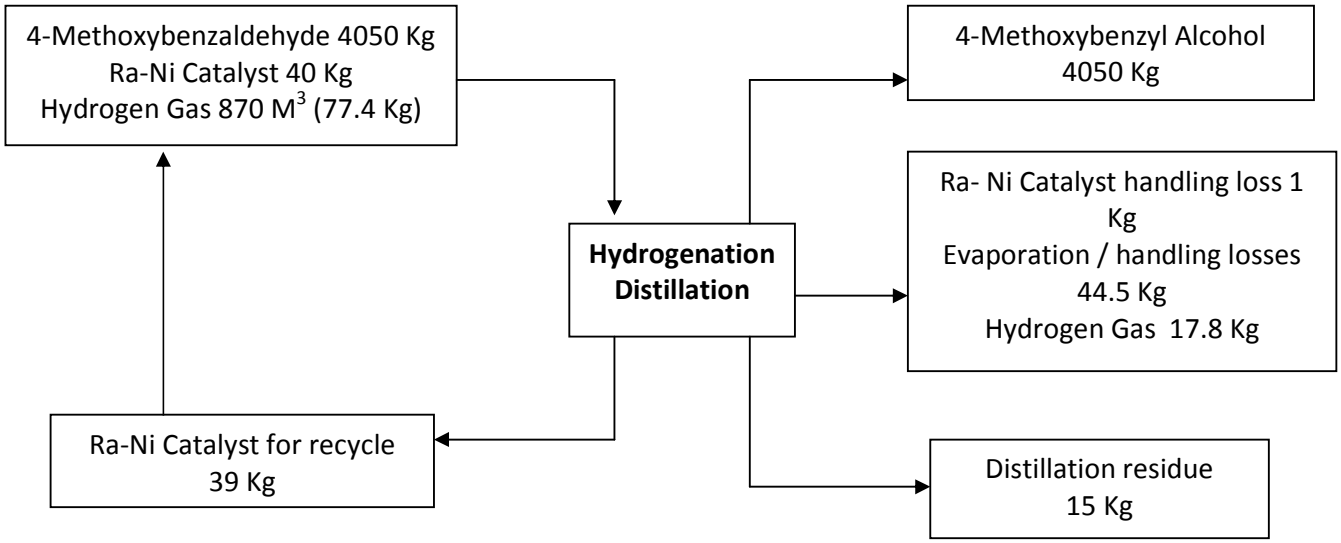


Anisaldehyde
M.W.= 136

Hydrogen
M.W. = 2

Anisic Alcohol
M.W= 138

Mass Balance



3. 4-Methoxy Benzyl Acetate

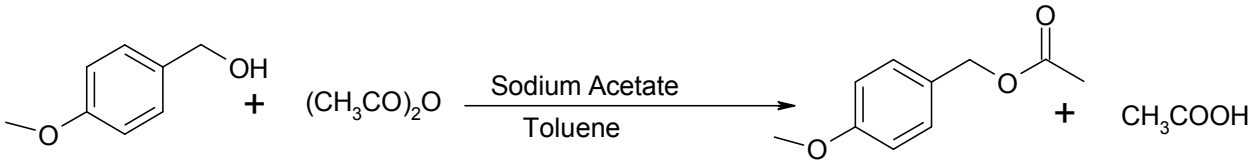
Short process

Anisic Alcohol is reacted with Acetic Anhydride in the presence of Toluene Solvent and Sodium Acetate as A catalyst .

Product is recovered by distillation and Solvent / Sodium Acetate is recycled.

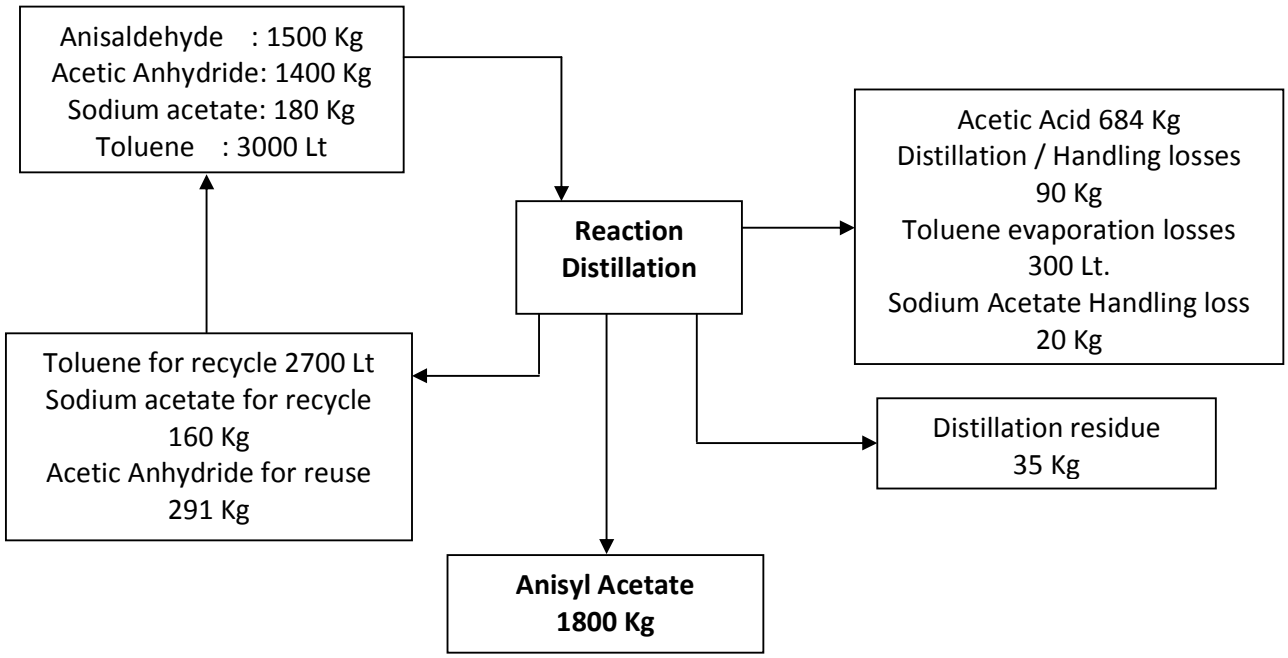
Recovered Acetic Acid is used in other products

Chemical Reaction



Anisic Alcohol	Acetic Anhydride	Anisyl Acetate	Acetic Acid
M.W. = 138	M.W.= 102	M.W= 180	M.W.=60

Mass Balance



4. 4-Methyl Phenyl Acetate

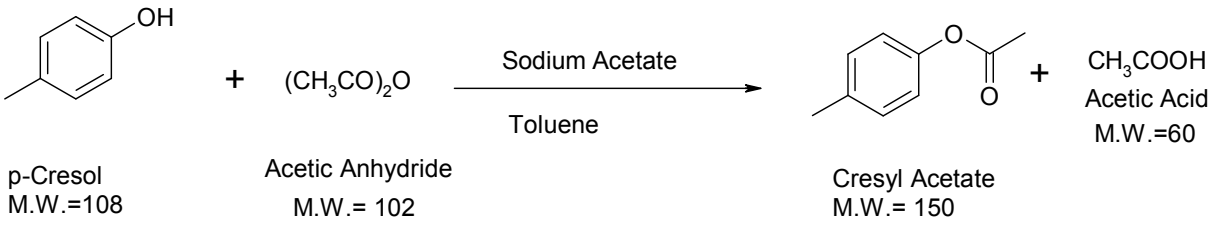
Short process

p-Cresol is reacted with Acetic Anhydride in the presence of Toluene Solvent and Sodium Acetate catalyst .

Product is recovered by distillation and Solvent / Sodium Acetate is recycled.

Recovered Acetic Acid is used in other products.

Chemical Reaction

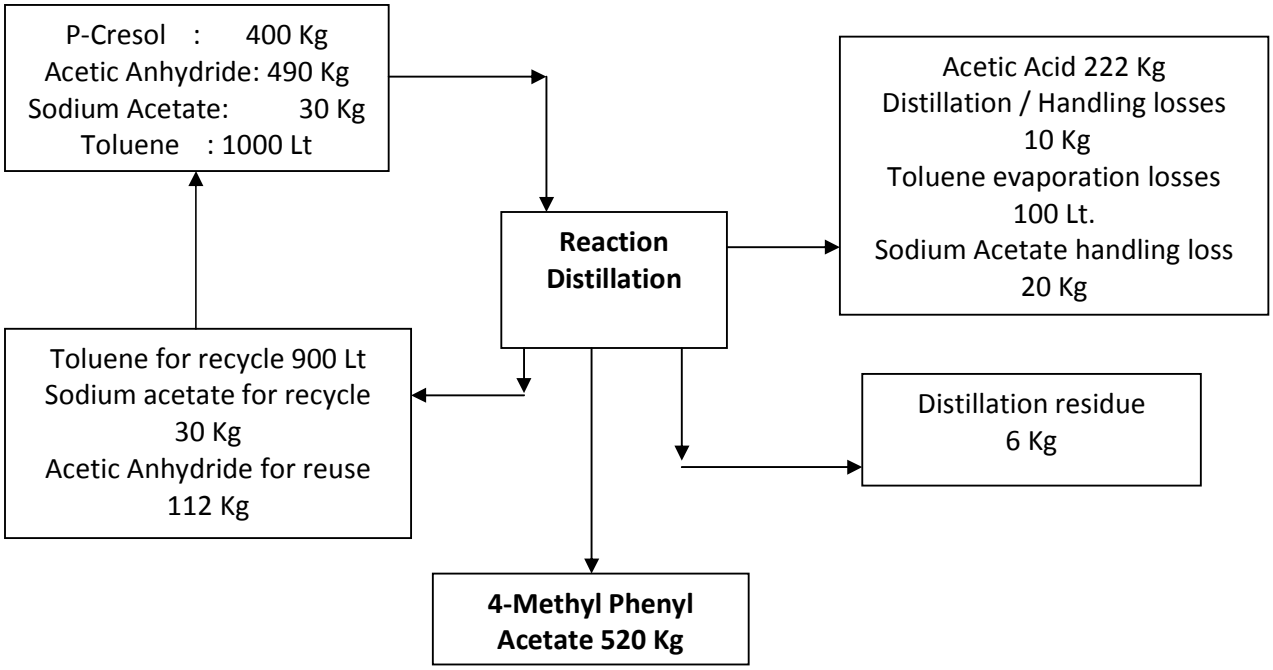


p-Cresol
M.W.=108

Acetic Anhydride
M.W.= 102

Cresyl Acetate
M.W.= 150

Mass Balance



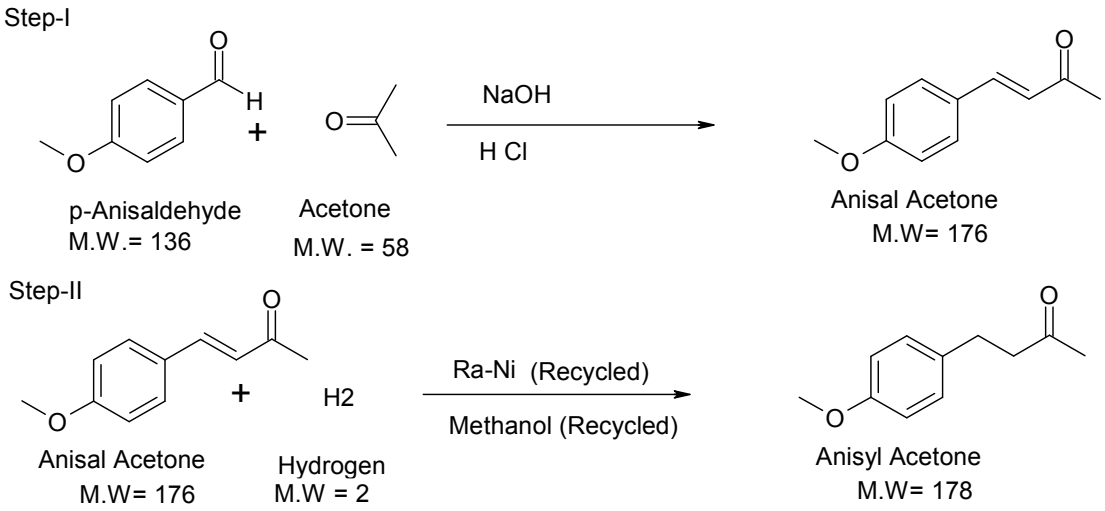
5. 4-Methoxy Benzyl Acetone

Short process

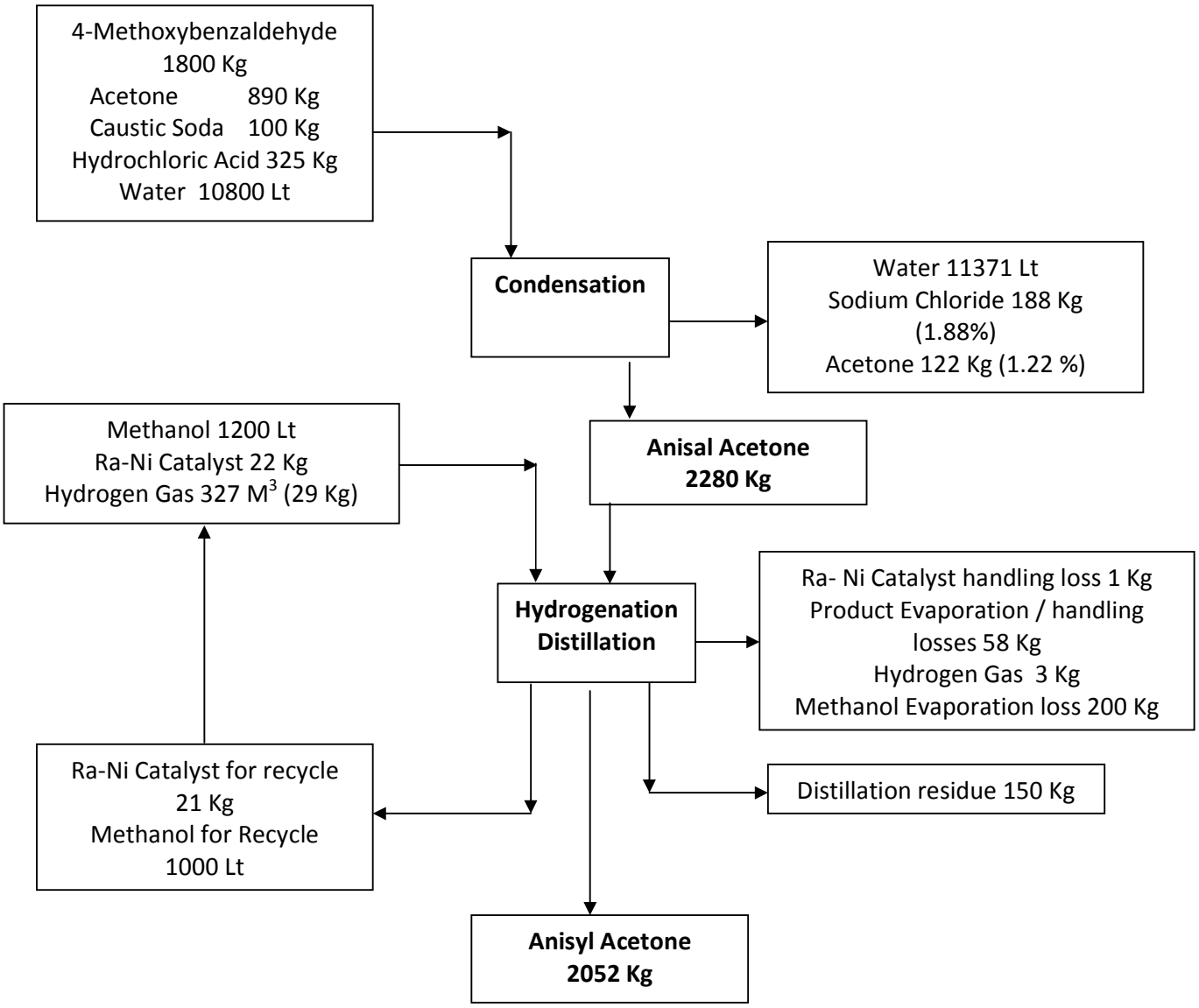
Step-I : 4-Methoxybenzaldehyde and Acetone are reacted in presence of Sodium Hydroxide;
Intermediate product is neutralized with Hydrochloric acid and isolated by filtration.

Step-II : Intermediate product is reduced by hydrogen in presence of catalyst & solvent.
Required product is isolated by filtration / distillation. Recovered catalyst and solvent are reused

Chemical Reaction



Mass Balance

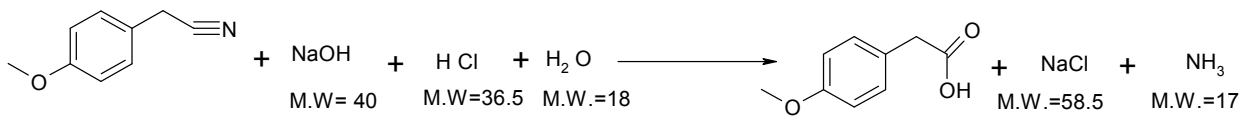


6. 4-Methoxy Phenyl Acetic Acid

Short process

4-Methoxyphenylacetonitrile is reacted with Sodium Hydroxide and reacted mass is neutralized with Hydrochloric Acid to obtain required product.

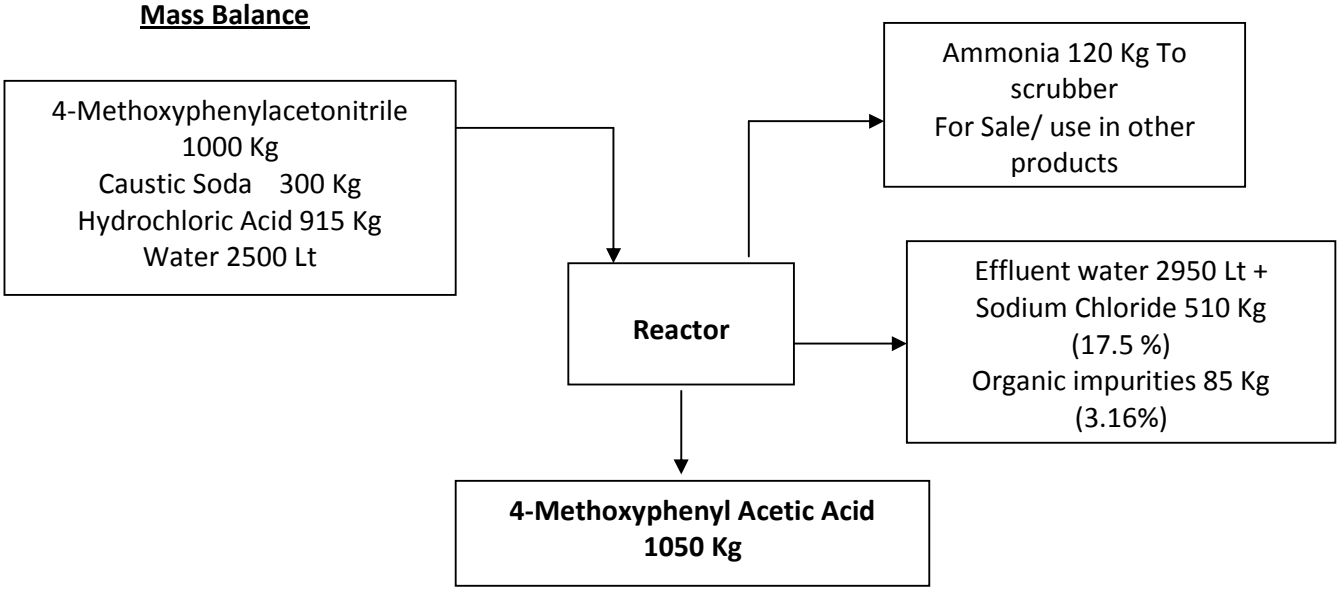
Chemical Reaction



p-Methoxyphenylacetonitrile
M.W.= 147

p-Methoxyphenyl acetic Acid
M.W.= 166

Mass Balance



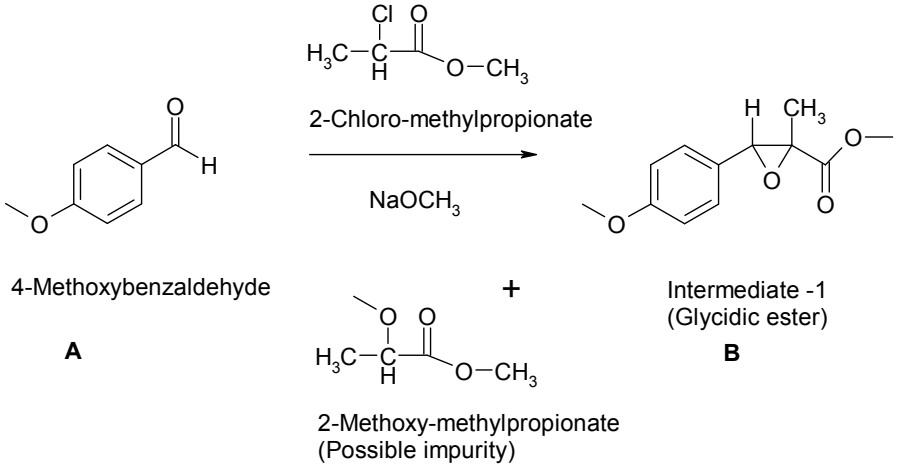
7. 4-Methoxy Phenyl Acetone

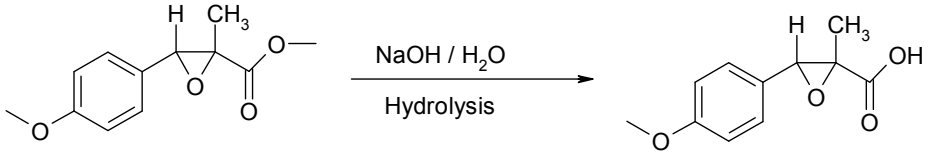
Short process

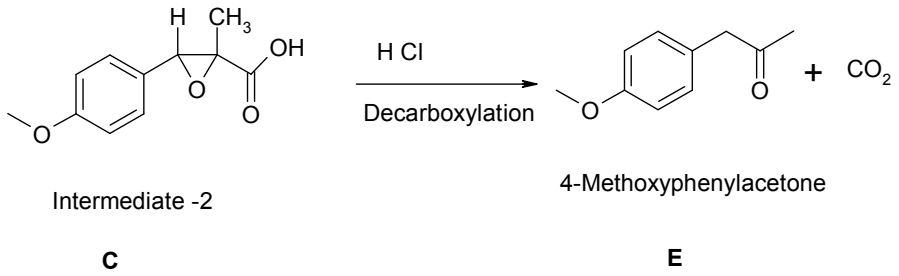
1-(PARA-METHOXYPHENYL)-2-PROPANONE

Short process

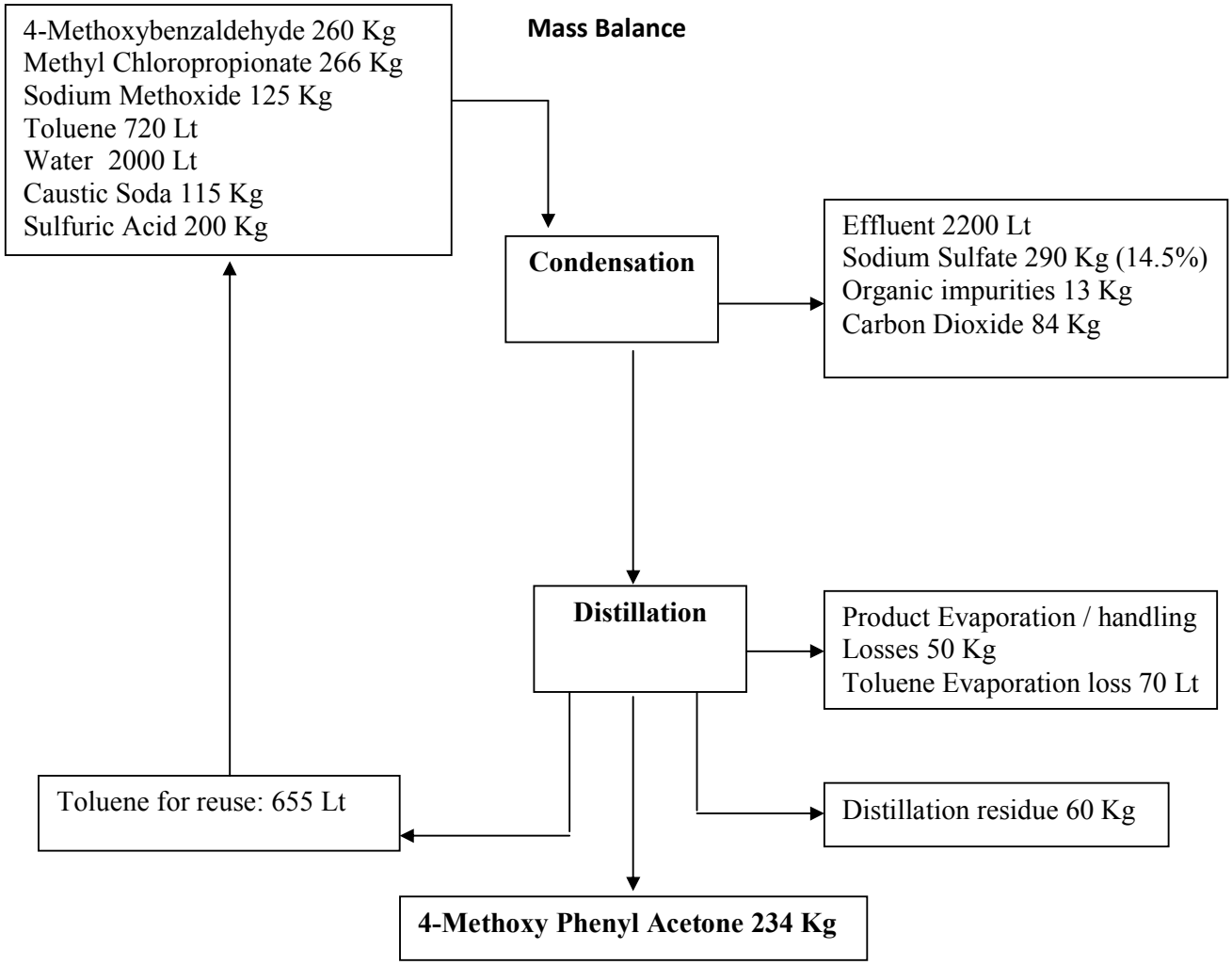
4-Methoxy Benzaldehyde reacted with Sodium Methoxide and 2-Chloromethylpropionate in solvent, Further reaction mass Hydrolyzed by the addition of Caustic soda and Sulfuric acid. Required product is isolated distillation and solvent is reused.







Mass Balance

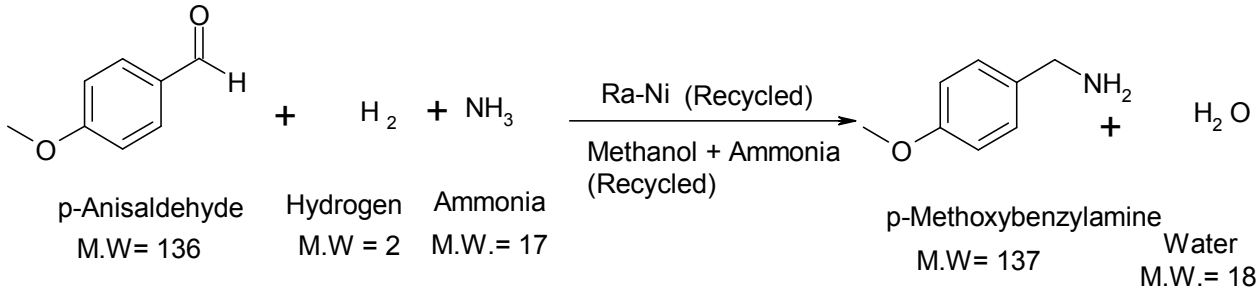


8. 4-Methoxybenzylamine

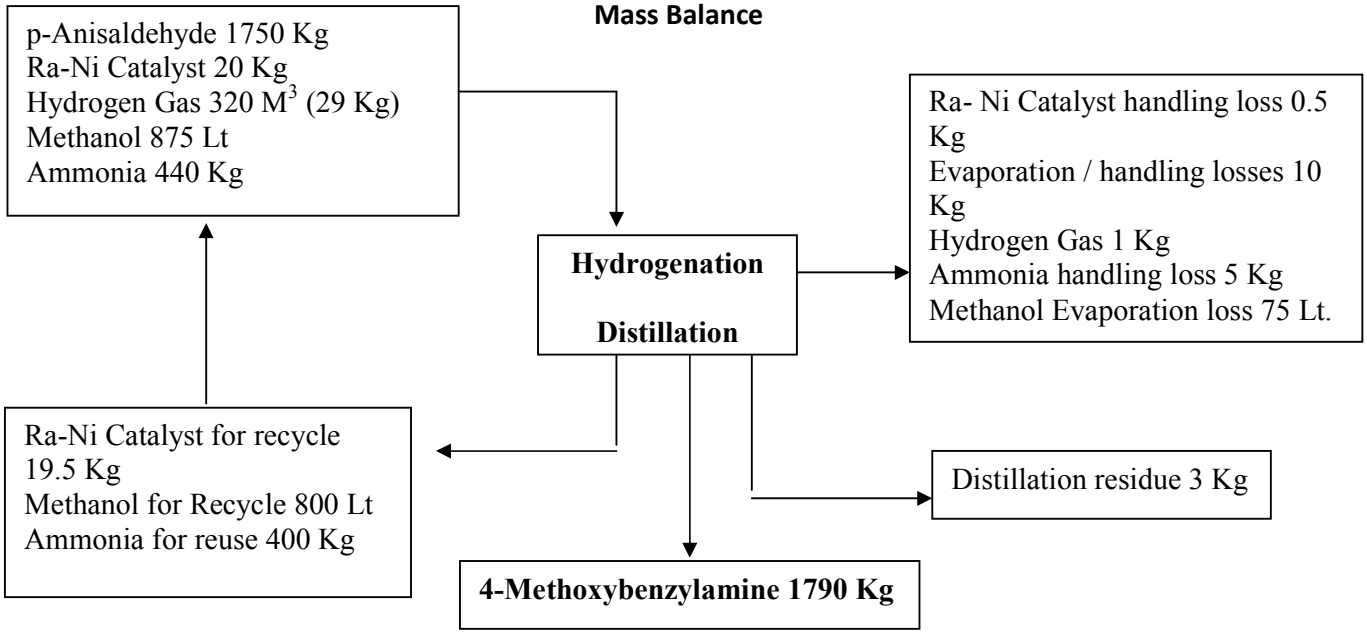
Short process

p-Anisaldehyde is reacted with Ammonia and reduced with Hydrogen in presence of Ra-Ni Catalyst

Product is isolated by distillation and Catalyst / Solvent is reused.



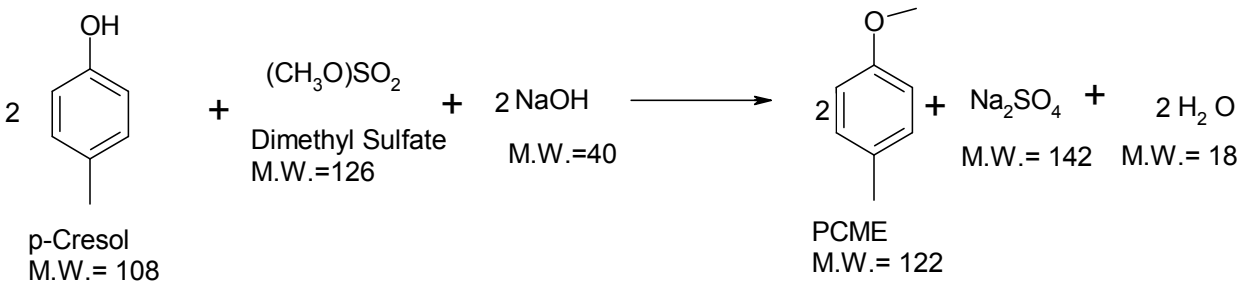
Mass Balance



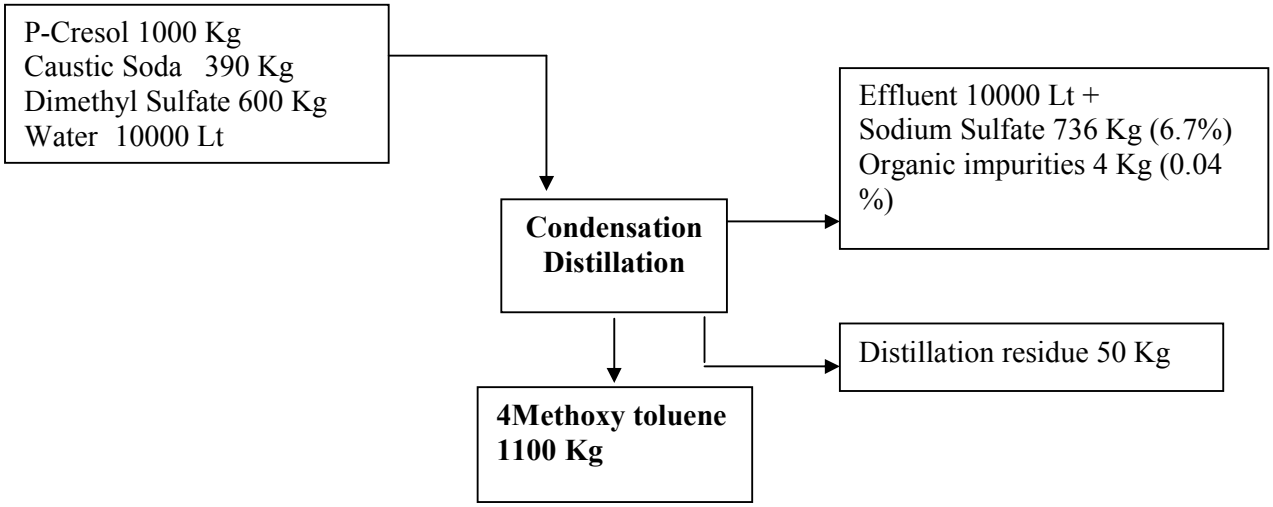
9. 4-Methoxy toluene

Short process

p-Cresol, Dimethyl Sulfate and Sodium Hydroxide are reacted and product is isolated by distillation.



Mass Balance



10. Tyramine Base

Short process

Step-1

4-Methoxyphenylacetonitrile reduced by hydrogen in presence of catalyst + Ammonia in Methanol.

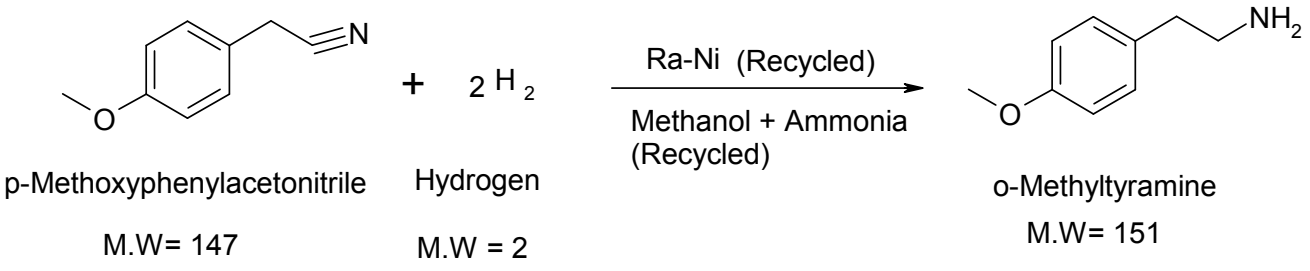
O-Methyl Tyramine is isolated by filtration / distillation and recovered catalyst / solvent recycled

Step-2

O-Methyl Tyramine is reacted with Hydrobromic Acid resulted mass is neutralized with Caustic Soda.

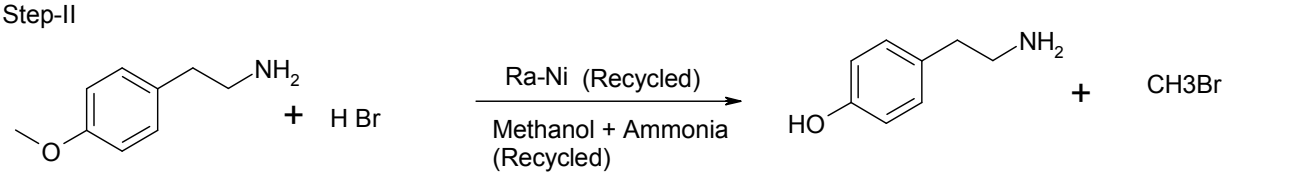
Tyramine is isolated by the addition of Acetic Acid and Filtration.

Step-I



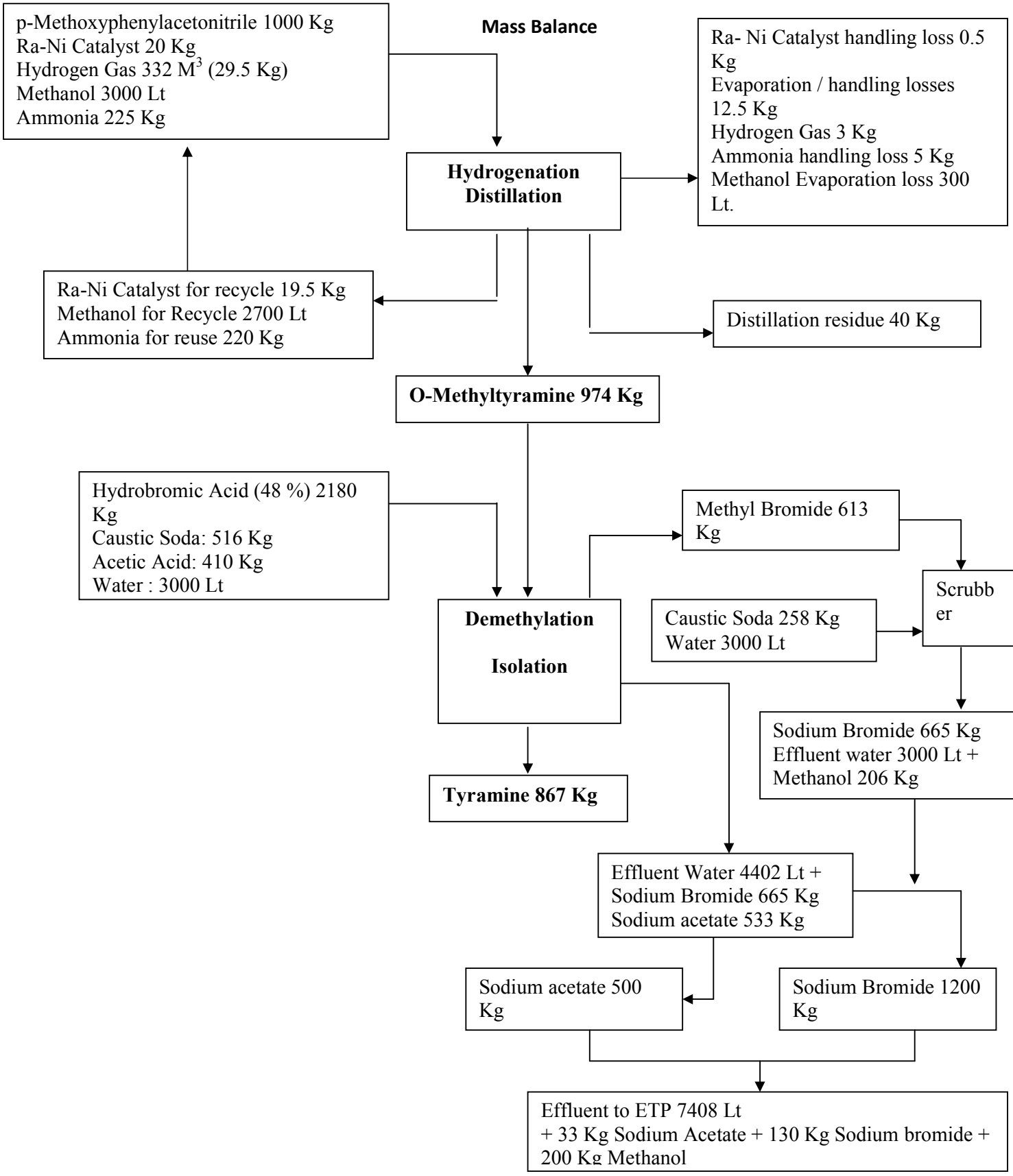
p-Methoxyphenylacetonitrile M.W= 147 | Hydrogen M.W = 2 | o-Methyltyramine M.W= 151

Step-II



o-Methyltyramine M.W= 151 | Hydrobromic Acid M.W.= 81 | Tyramine M.W= 137 | Methyl Bromide M.W=95

Mass Balance



11. Tyramine Hydrochloride

Short process

Step-1

4-Methoxyphenylacetonitrile reduced by hydrogen in presence of catalyst + Ammonia in Methanol.

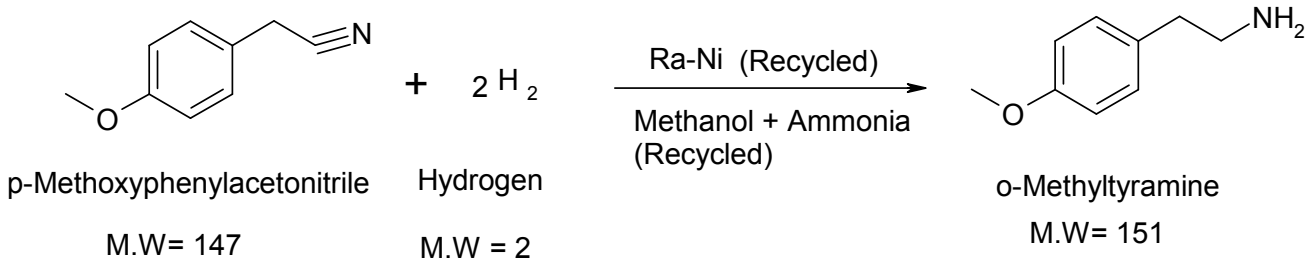
O-Methyl Tyramine is isolated by filtration / distillation and recovered catalyst / solvent recycled

Step-2

O-Methyl Tyramine is reacted with Hydrobromic Acid resulted mass is Neutralized with Caustic Soda.

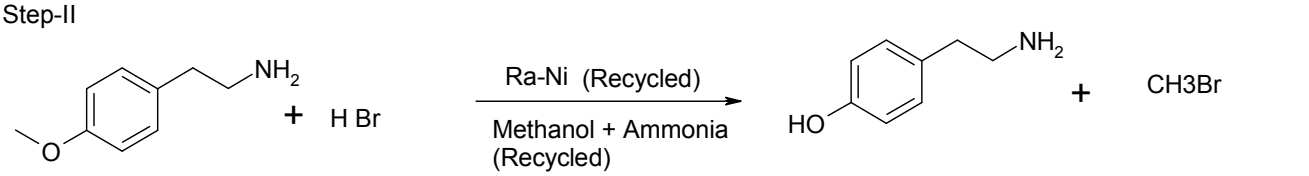
Tyramine is isolated by the addition of Acetic Acid and Filtration.

Step-I



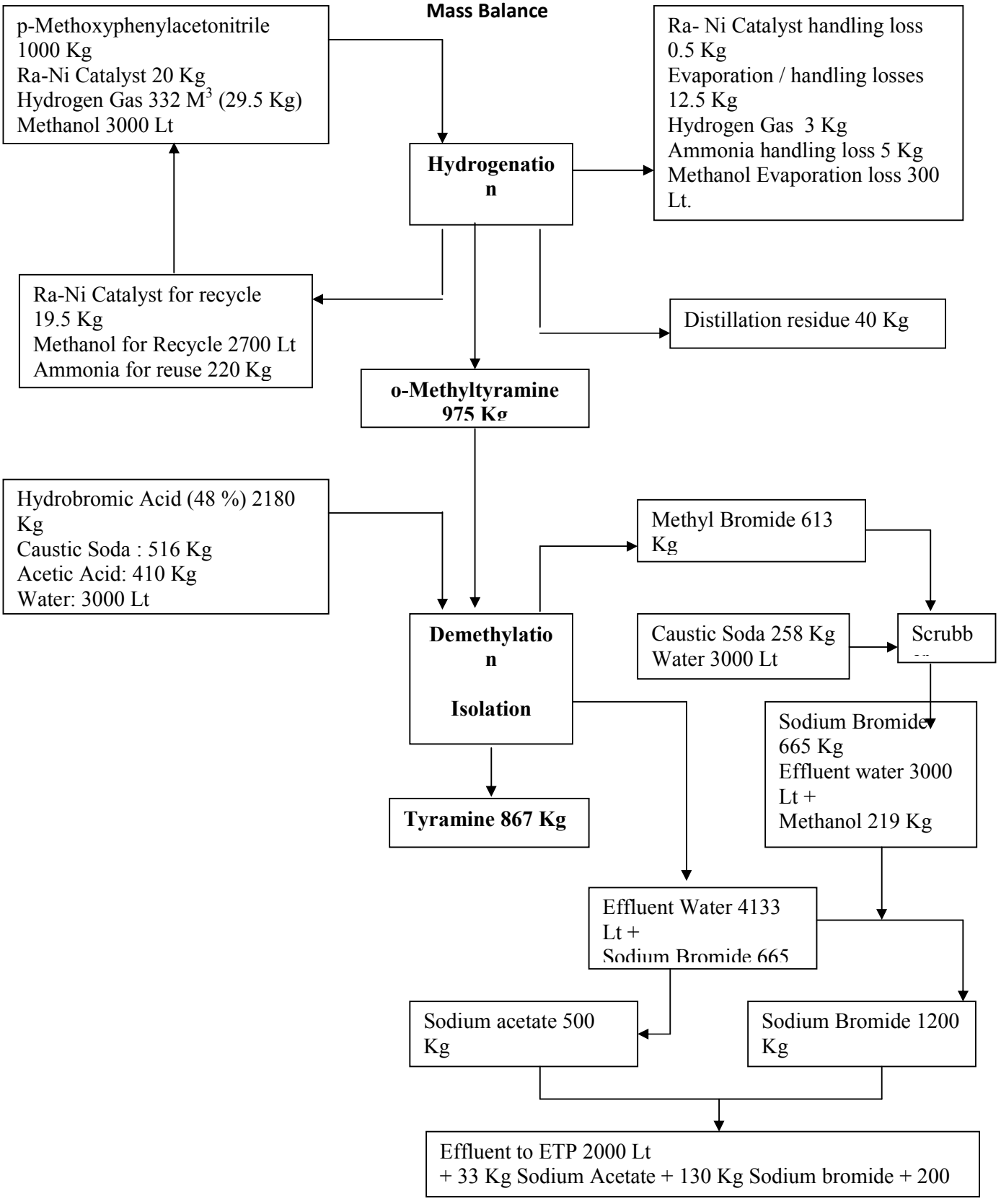
p-Methoxyphenylacetonitrile M.W= 147 | Hydrogen M.W = 2 | o-Methyltyramine M.W= 151

Step-II



o-Methyltyramine M.W= 151 | Hydrobromic Acid M.W.= 81 | Tyramine M.W= 137 | Methyl Bromide M.W=95

Mass Balance

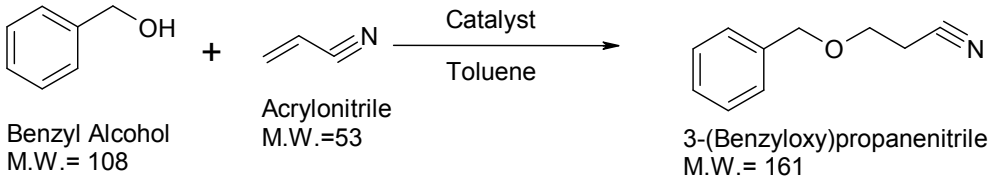


12. 3-Benzyloxy Propionitrile

Short process

Benzyl Alcohol is reacted with Acrylonitrile in the presence of Catalyst and Toluene Solvent .

Product is recovered by distillation and Solvent is recycled.



Benzyl Alcohol
M.W.= 108

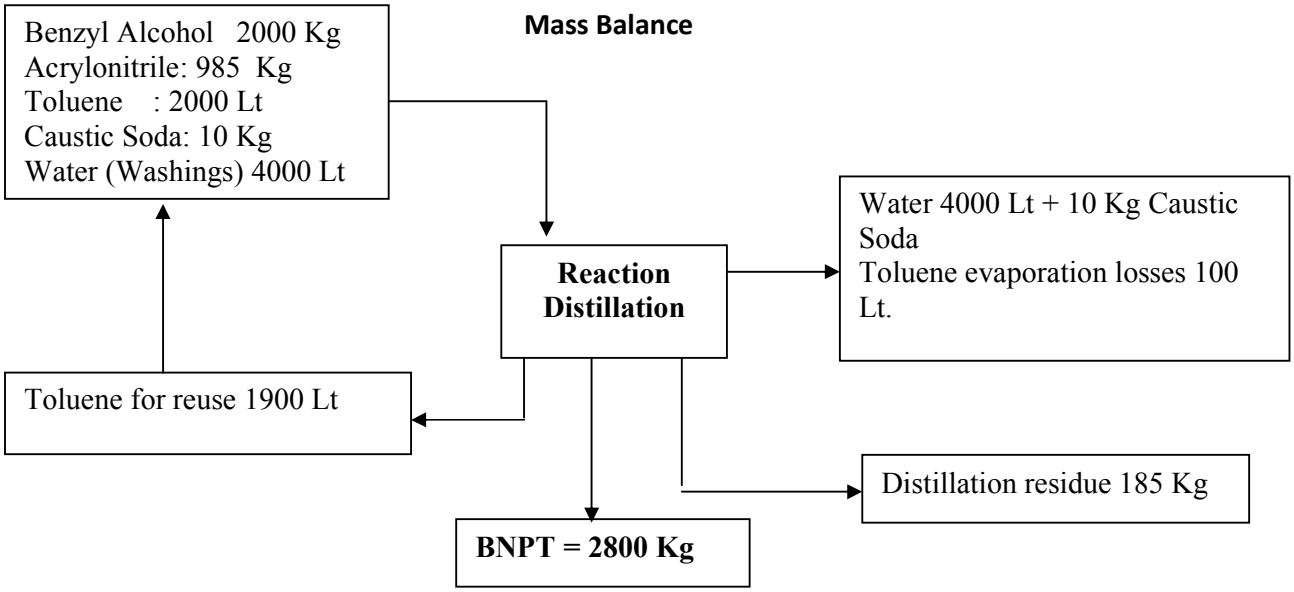
Acrylonitrile
M.W.=53

3-(Benzyloxy)propanenitrile
M.W.= 161

Raw Materials for 1 Kg

- Benzyl Alcohol 0.714 Kg
- Acrylonitrile 0.352 Kg
- Toluene 0.035 Lt
- Sodium Hydroxide 0.003 Kg

Mass Balance



13. 3-Aminopropylimidazole (API)

Short process

Imidazole is reacted with Acrylonitrile to obtain intermediate product.
Further this intermediate is hydrogenated in Ammonia + Methanol solvent in presence of Ra-Ni catalyst.
Product is recovered by distillation and Methanol + Ammonia is recycled.

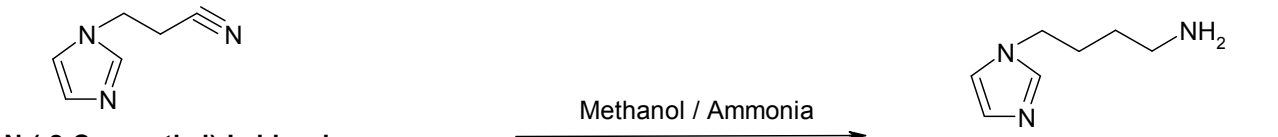
Step-1

1H-Imidazole
M.W. = 68.078

Acrylonitrile
M.W. = 53.06

N-(-2-Cyanoethyl)-Imidazole
M.W. = 121.14

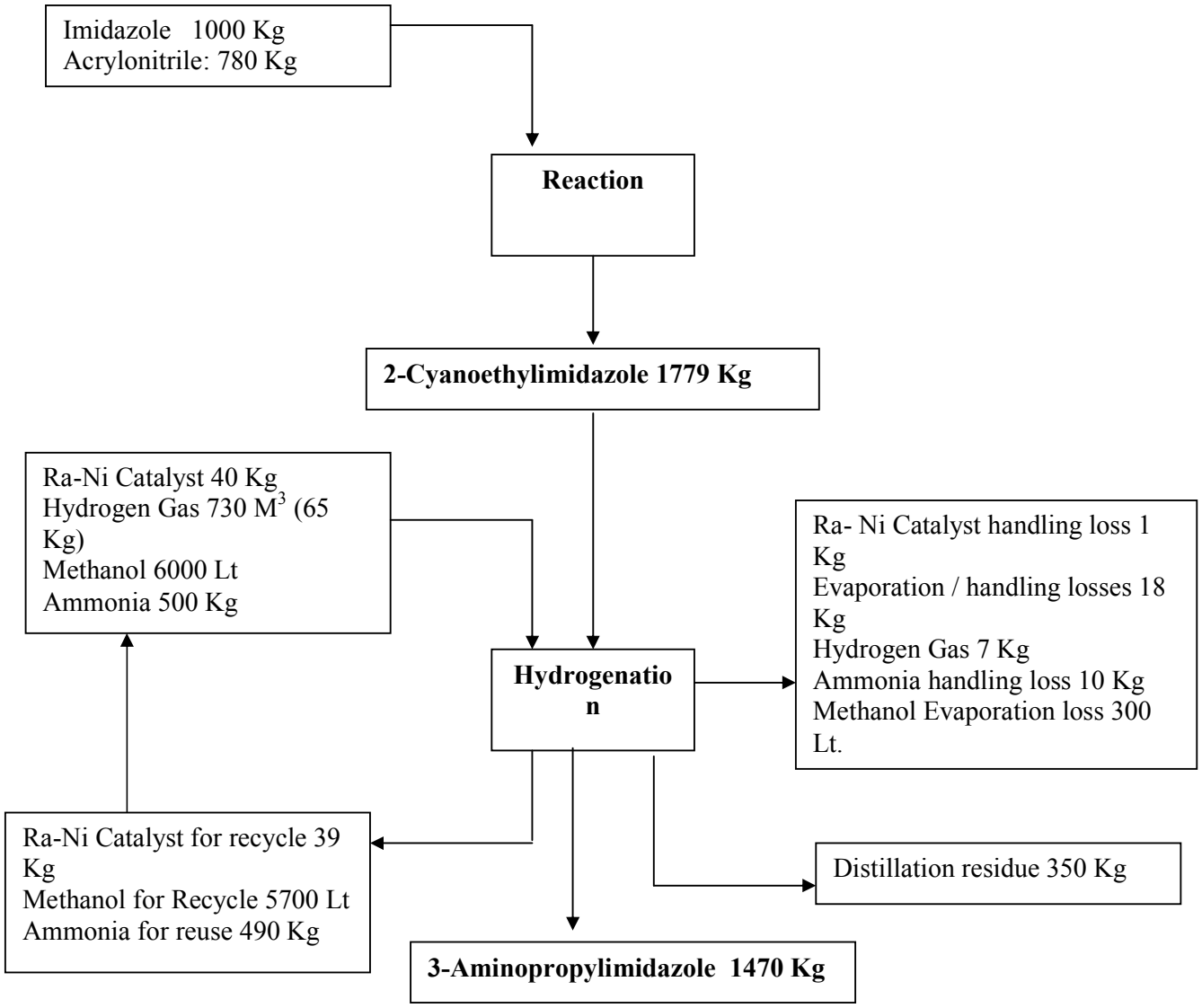
Step-2



N-(-2-Cyanoethyl)-Imidazole
M.W. = 121.14

N-(-3-Aminopropyl)-Imidazole
M.W. = 125.2

Mass Balance



14. Triacetin

Short process

Glycerol is reacted with acetic Acid in the presence of Toluene Solvent and Product is recovered by distillation and Solvent recycled.

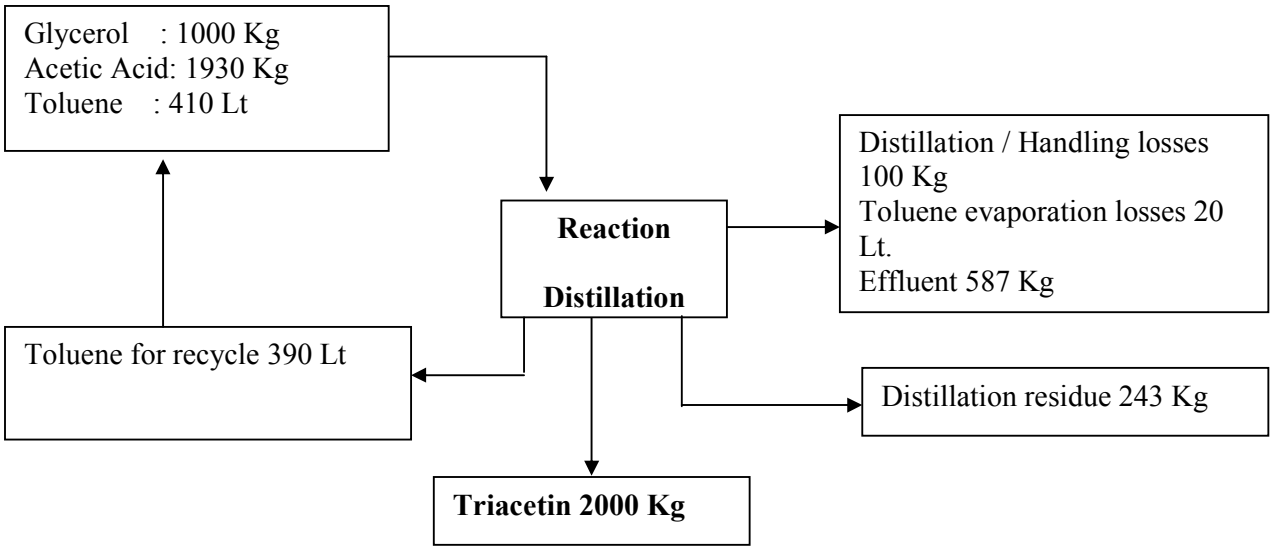
$CH_2 – CH_2 - CH_2$ + $3CH_3 – COOH$ = $CH_2 - CH_2 - CH_2$ + H_2O
OH OH OH OCO-CH_3 OCO-CH_3 OCO-CH_3

Glycerol	Acetic Acid	Triacetin	Water
M. W =92	M.W = 60	M.W = 218	M.W = 18

Raw Materials for 1 Kg

- Glycerol 0.44 Kg
- Acetic acid 0.85 Kg
- Toluene 0.18 Lt

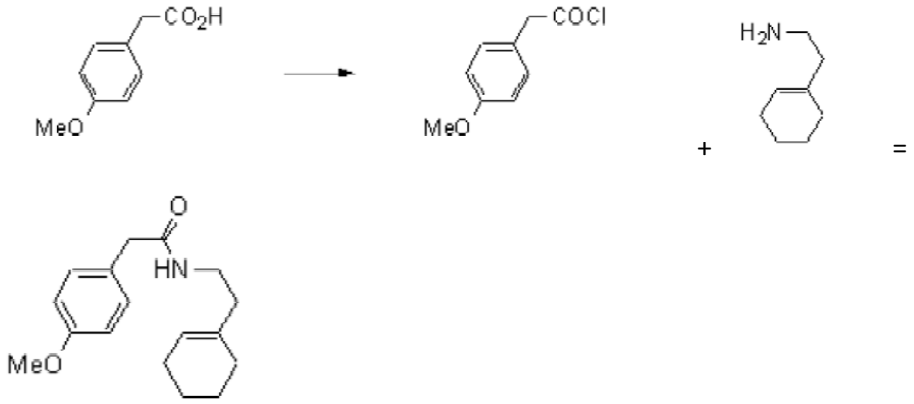
Mass Balance

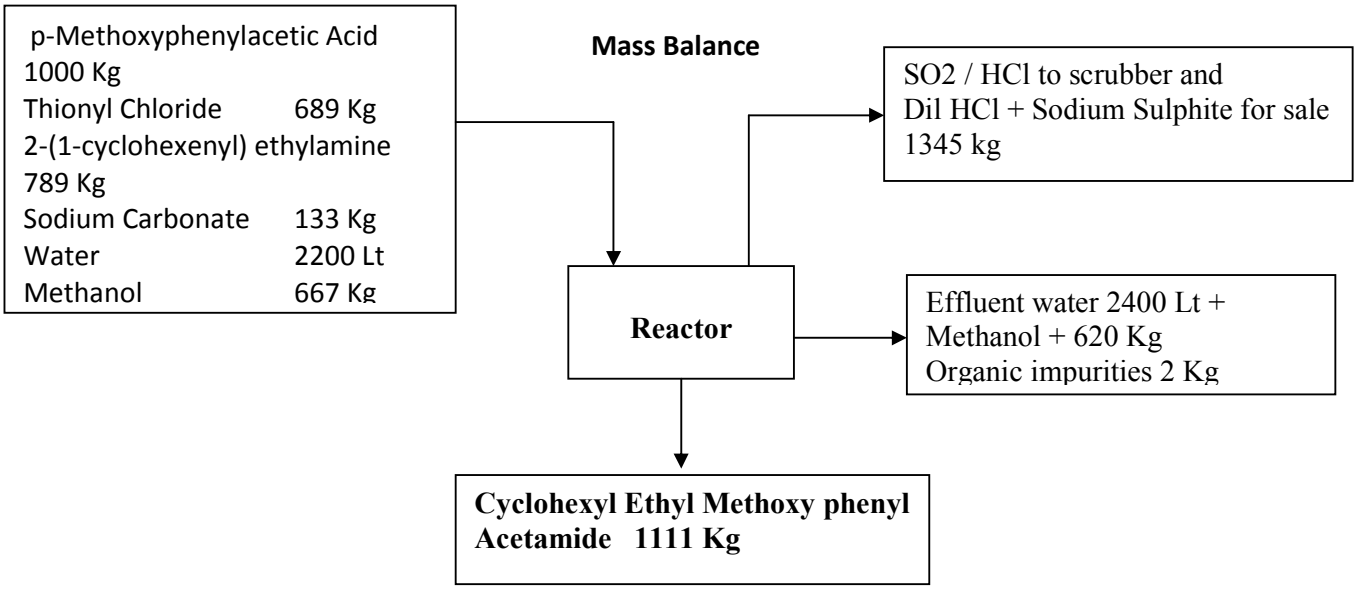


15. Cyclohexyl ethyl Methoxy phenylacetamide

Short process

p-Methoxyphenylacetic Acid is reacted Thionyl Chloride and this intermediate further reacted with 2-(1-cyclohexenyl)ethylamine and reacted mass crystallized in solvent to obtain required product.





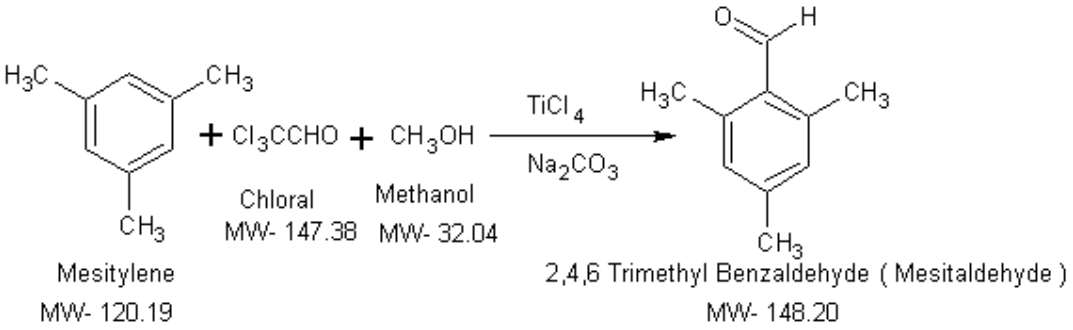
Pesticide Intermediates

1. 2,4,6-Trimethyl Benzaldehyde (Mesitaladehyde)

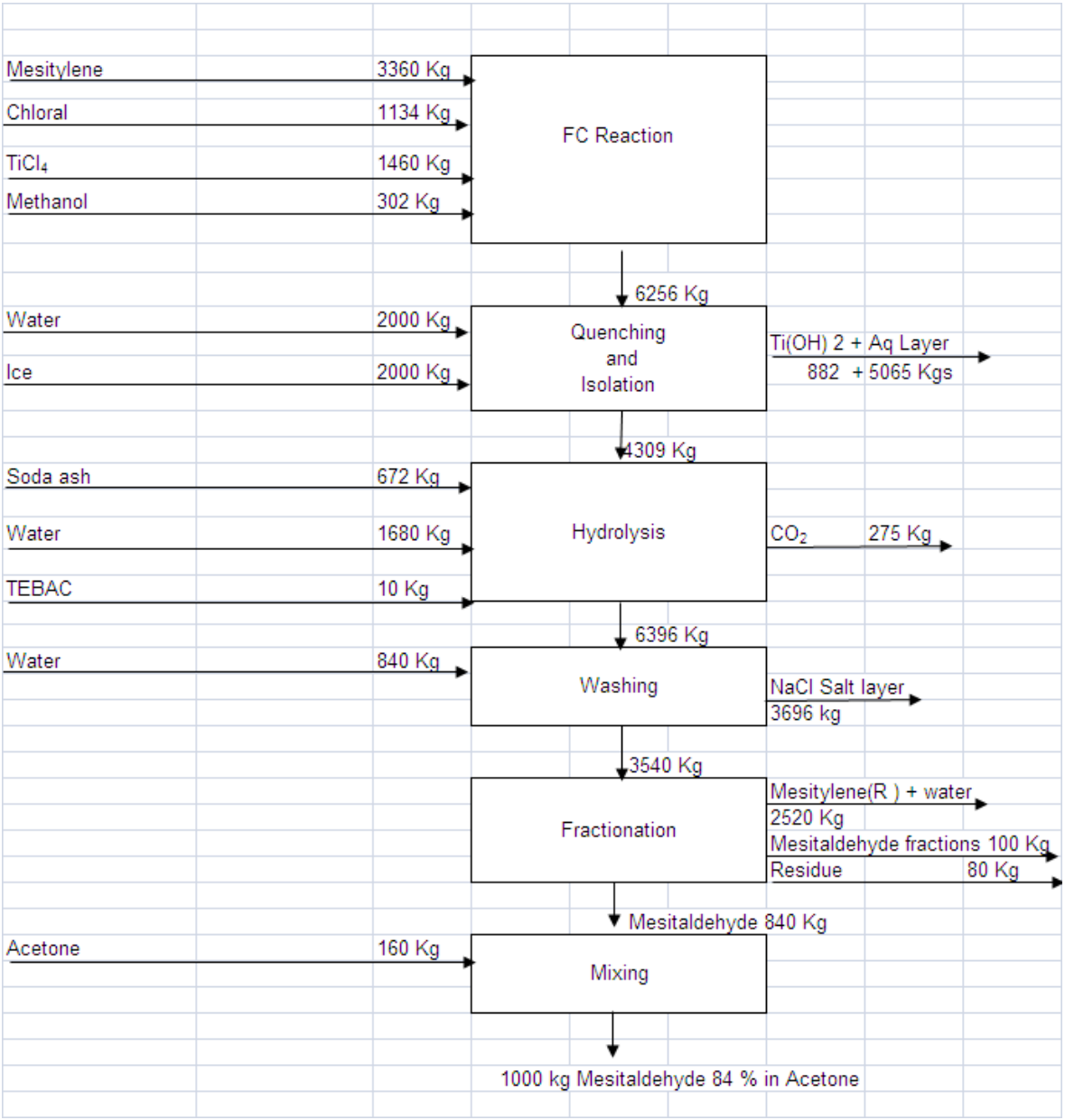
Process Description:

Chloral and mesitylene are reacted in presence of Titanium chloride. Product obtained is isolated after quenching, mass is hydrolyzed with soda ash to make product mesiatldehyde. Distilled mesitsldehyde is mixed with acetone to get 84 % concentration.

Chemical Reaction:



Mass Balance:

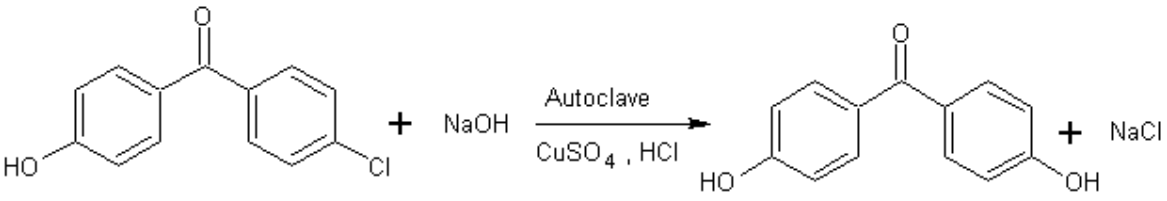


2. 4,4'-Dihydroxy Benzophenone

Process Description:

4-Chloro, 4'-hydroxy benzophenone is hydrolyzed with caustic solution under pressure in autoclave to make 4, 4'-Dihydroxy benzophenone.

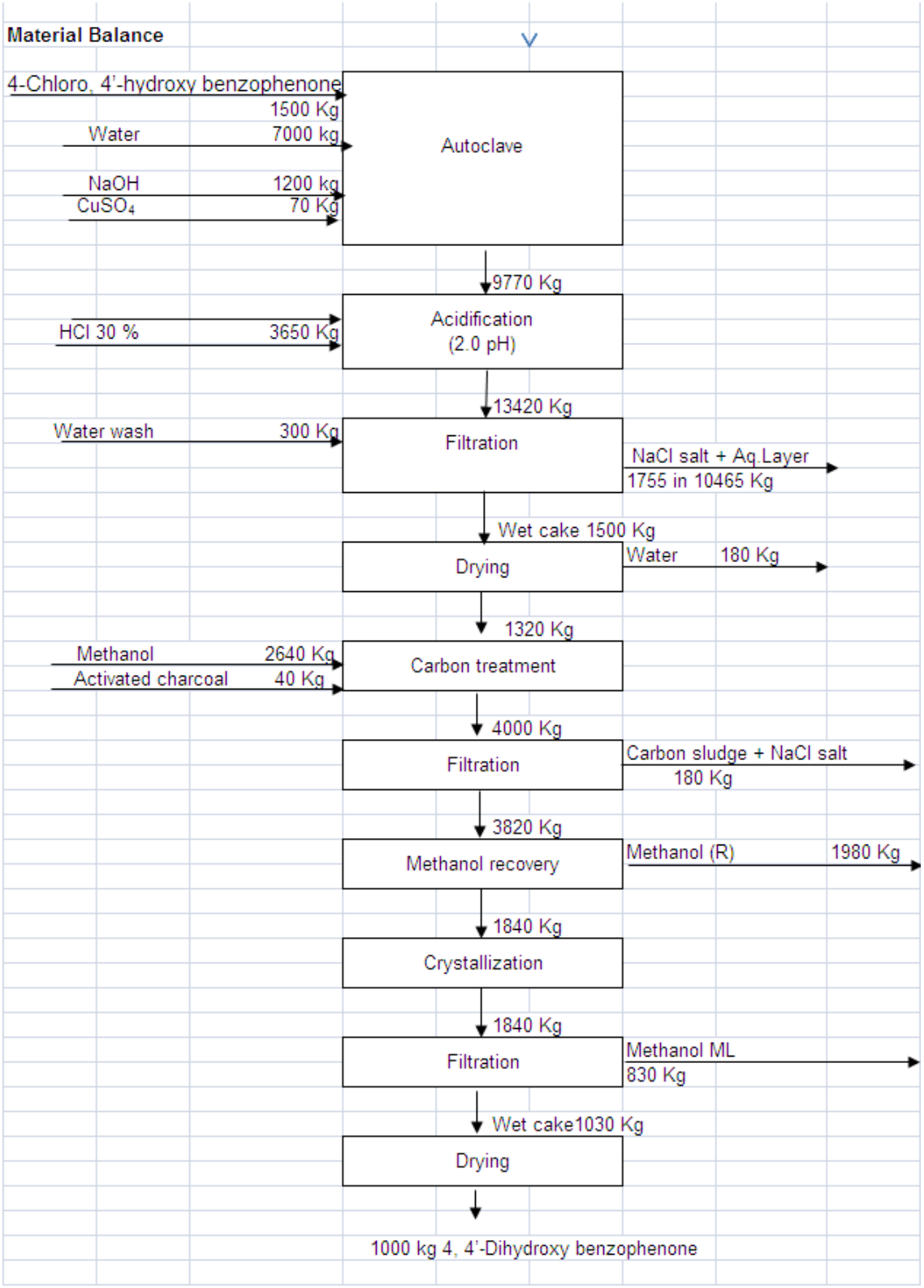
Chemical Reaction:



4-Chloro,4'-Hyhydoxy benzophenone
MW: 232.66

4,4'-Dihydoxy benzophenone
MW: 214.21

Mass Balance:

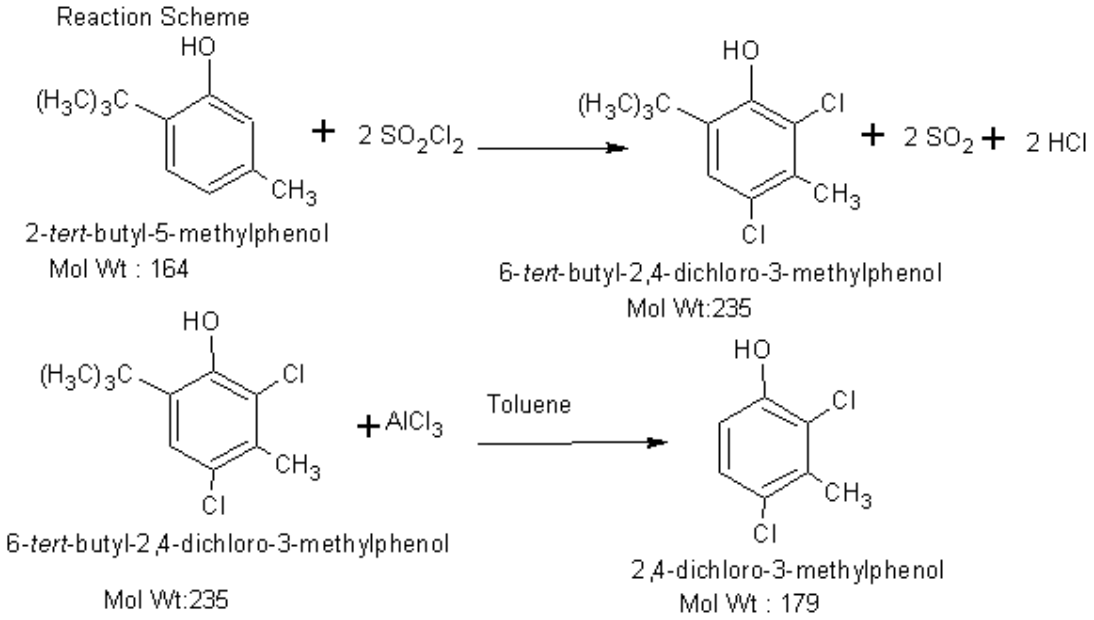


3. 2,4-Dichloro Meta Cresol

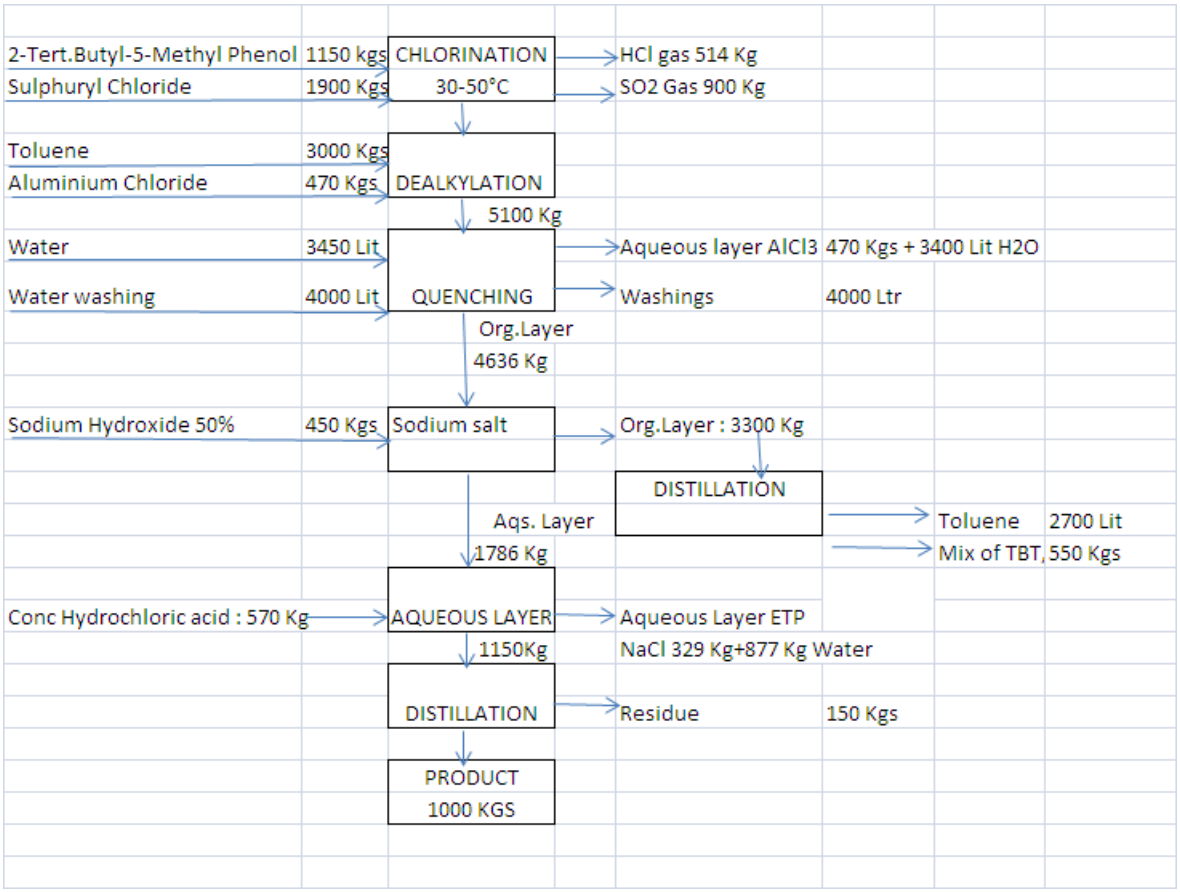
Process Description:

2-tertiary Butyl -5-Methyl is chlorinated with Sulphuryl chloride and Dichloro compound is dealkylated using aluminium chloride and distilled to get the 2,4 di Chloro meta cresol.

Chemical Reaction:



Mass Balance:



ANNEXURE –IV

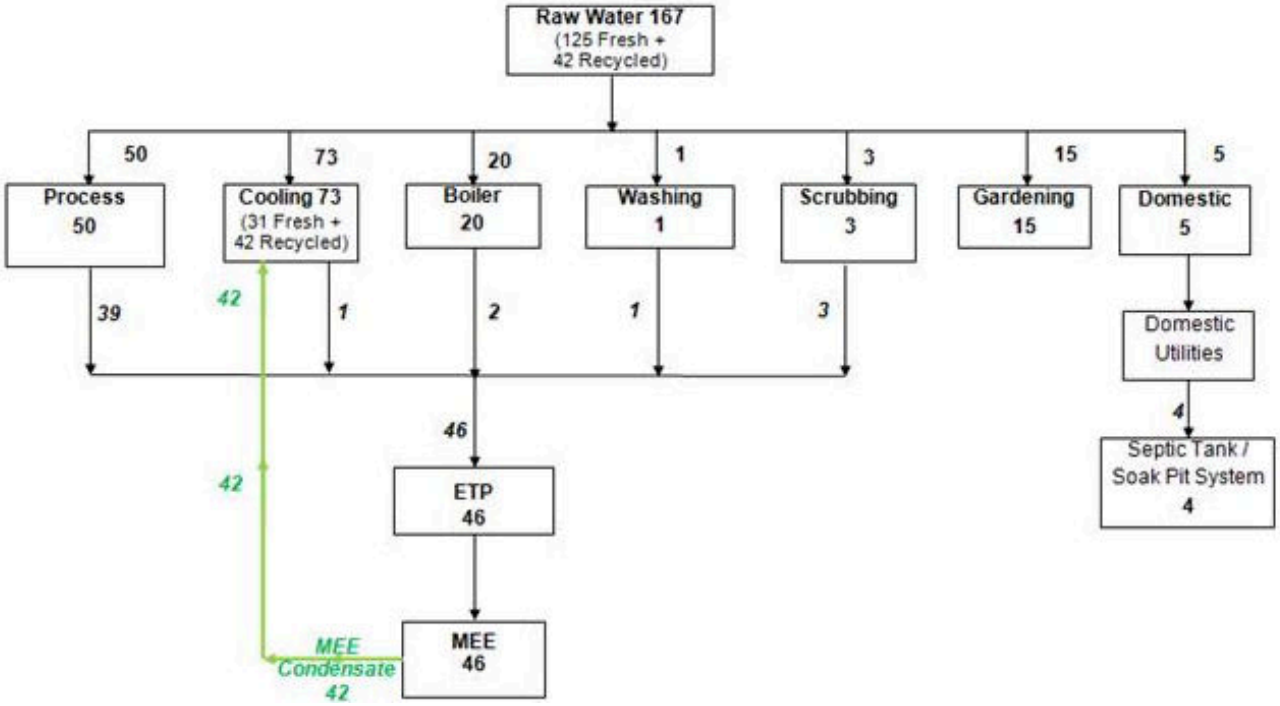
WATER, FUEL AND ENERGY REQUIREMENT

- **WATER CONSUMPTION & WASTEWATER GENERATION**

SR. NO.	CATEGORY	WATER CONSUMPTION (m^3/day)	WASTE WATER GENERATION (m^3/day)
1.	Domestic	5	4
2.	Other (Gardening)	15	-
3.	Industrial		
	Process	50	39
	Boiler	20	2
	Cooling	73	1
	Scrubbing	3	3
	Washing	1	1
Total Industrial		**147**	**46**
Grand Total		**167**	**50**

- **WATER BALANCE DIAGRAM**

SOURCE OF WATER: G.I.D.C
Basis: m^3/Day



- **SOURCE OF POWER (KVA)**

SR. NO.	REQUIREMENT	SOURCE
1.	300 KVA	DGVCL

Note: 1 No. of 300 KVA DG set will be kept for emergency power back up.

- **FUEL REQUIREMENT**

SR. NO.	FUEL	REQUIREMENT
1	Solid Fuel (Coal, Bio-fuel, Agrowaste, Wood Braquete)	8 MT/day

ANNEXURE –V

EFFLUENT TREATMENT PLANT

M/s.F.K. Fine Chemicals shall have a ZLD Effluent treatment plant consisting of primary and advance treatment units.

PROCESS DESCRIPTION:

The details of ETP are as follows:

1. First wastewater from factory shall be collected in Collection cum Equalization Tank (CET). Pipe grid is provided at bottom of the CET to keep all suspended solids in suspension and to provide proper mixing. Air Blowers (B-01) shall supply air through diffusers to pipe grid.

2. Then after, equalized wastewater shall be pumped to Neutralization Tank (NT) where the continuous addition and stirring of Lime/Caustic solution is done to maintain the pH of wastewater from Lime/Caustic Dosing Tanks (LDT/CDT) as per requirement by gravity. Then after, neutralized wastewater shall go to Flash Mixer (FM). Alum and Poly shall be dosed from Alum Dosing Tank and Poly Dosing Tank (PDT) respectively by gravity into FM to carry out coagulation by using a Flash Mixer. Then after, coagulated wastewater shall be collected in Primary Tube Settler (PTS) where solids shall be settled.

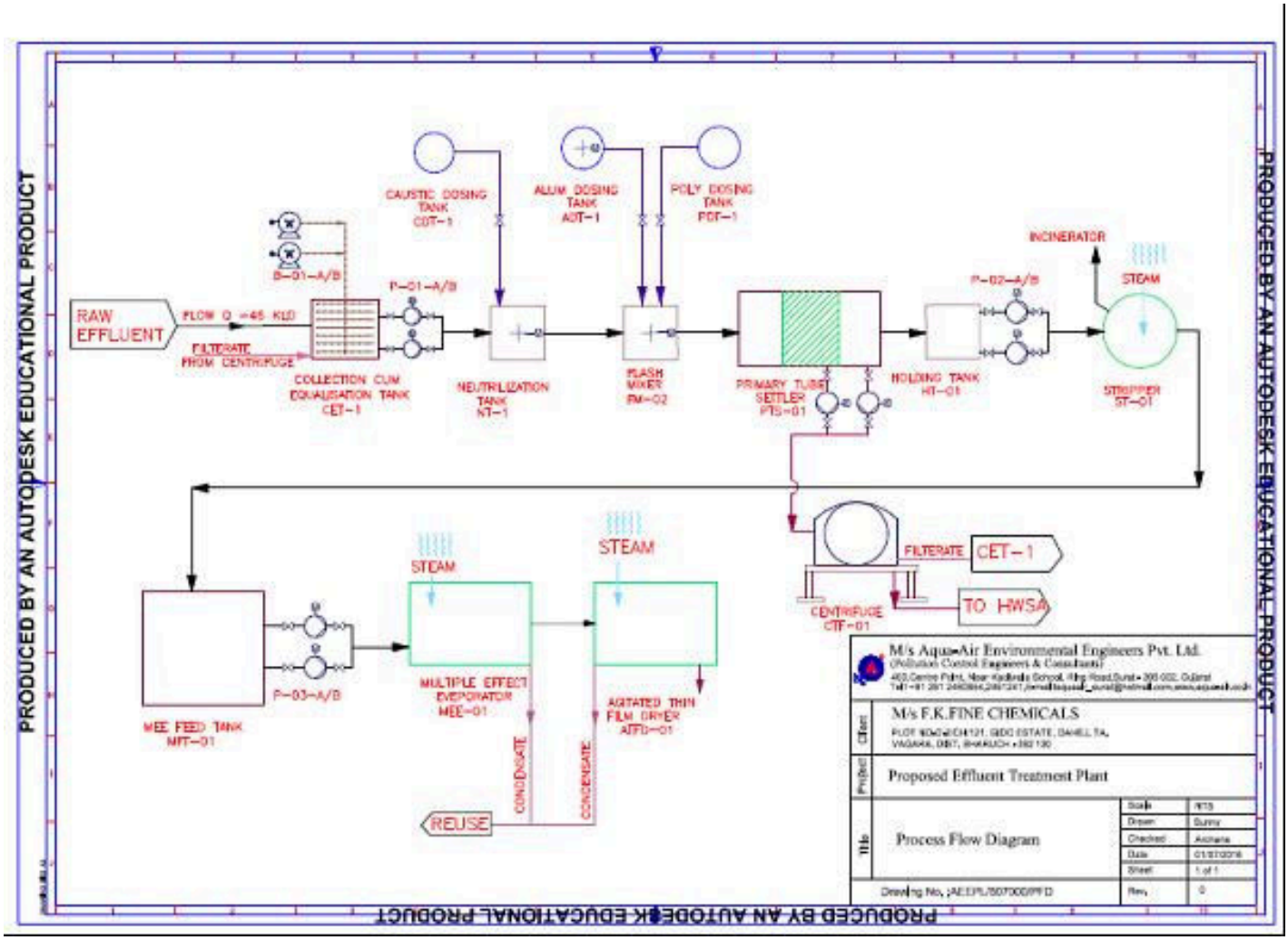
3. Solids settled in PST shall be pumped to Centrifuge (CTF-1) for dewatering. Filtrate from Centrifuge shall be sent back to CET for further treatment and solid shall be stored in HWSA for ultimate disposal to HWSA.

4. Clear supernatant from Primary Tube Settler (PTS-1) shall be collected in Holding Tank (HT-1). Then effluent shall be pumped to Stripper (S) for removal of solvent. After that effluent shall collected in MEE Feed Tank (MFT-1). Then effluent shall be sent to four stages Evaporator (MEE-1). Condensate from MEE shall be collected in Condensate Tank and then reused in Cooling. Solid from Agitated Thin Film Dryer (ATFD-1) shall be collected and stored in HWSA for ultimate disposal to TSDF.

Details of ETP Units (46 m^3/day)

Sr. No.	Name of Unit	Nos.	Size L x B x (LD+FB)	MOC
1	Collection Cum Equalization Tank (CET-1)	1	3.0 x 3.0 x (2.5+0.5)	RCC M25 with A-A Bk. Lining
2	Neutralization Tank (NT-1)	1	1.0 x 1.0 x (2.5+0.5)	RCC M25 with A-A Bk. Lining
3	Lime Dosing Tank (LDT-1)	1	1500 lit	HDPE
4	Alum Dosing Tank (ADT-1)	1	1000 lit	HDPE
5	Poly Dosing Tank (PDT-1)	1	500 lit	HDPE
6	Flash Mixer (FM-1)	1	1.0 x 1.0 x (2.3+0.7)	RCC M25
7	Primary Tube Settler (PTS-1)	1	2.5 x1.8 x (1.5 + 0.5 +0.5)	RCC M25
8	Holding Tank(HT-1)	1	4.0 x 4.0 x (2.5+0.5)	RCC M25
9	Centrifuge (CTF-1)	1	12 m3/d	SS
10	Stripper (ST-1)	1	46 m3/day	SS 316L
11	ME Feed Tank (MFT-1)	1	4.0 x 4.0 x (2.5+0.5)	RCC M25
12	Multiple Effect Evaporator (MEE) with strippers & Agited Thin Film Dryer (ATFD)	1 Set	46 m3/d	SS 316 L

BLOCK DIAGRAM FOR EFFLUENT TREATMENT PLANT



ANNEXURE-VI

HAZARDOUS WASTE GENERATION AND DISPOSAL

Category No.	Name of Waste	Total Quantity (MT/M)	Mode Of Disposal
5.1	Used Oil	0.2	Collection, Storage, Transportation and Sent to GPCB approved recycler
35.3	ETP Sludge	20	Collected, Storage, Transported and Disposed at nearest TSDF site.
33.1	Discarded containers	5	Collected, Storage, Decontaminated & sold to GPCB authorized vendors.
33.1	HDPE Bags	1	Collected, Storage, Decontaminated & sold to GPCB authorized vendors.
36.1	Distillation Residue	36	Collection, Storage, Transportation & Sent to Cement Industry for co-processing or Sent to nearest CHWIF.
-	Organic Impurities	2	Collection, Storage, Transportation & Sent to Cement Industry for co-processing or Sent to nearest CHWIF.
29.6	HCl (32%)	31	Collection, Storage, Transportation and Reuse in plant premises.
-	Sodium Sulfate	85	Collection, Storage, Transportation and sell to Sodium Sulfate powder manufacture.
-	MnSO4	1386	Collection, Storage, Transportation and sell to Manganese Sulfate powder manufacture.
-	Anisic Acid	20	Collection, Storage, Transportation and sell to Complex Organic compound manufacturer.
29.4	Toluene	181	Collection, Storage and Reuse in Plant premises.
29.4	Acetic Acid	4	Collection, Storage, Transportation and Reuse in plant premises.
-	Acetic Anhydride	2	Collection, Storage, Transportation and sell to Pharmaceutical industry or Cellulose Acetate manufacturer.
-	Sodium Acetate	7	Collection, Storage, Transportation and sell to Textile Industries or Food Industries.
29.4	Methanol	79	Recover, Collection, Storage and Reuse in Plant premises.
-	NaCl	10	Collection, Storage, Transportation and Disposed at nearest common TSDF site
-	Sodium Hypochloride	26	Collection, Storage and Reuse in 4-Methoxy Phenyl Acetonitrile.
-	Sodium Bromide	15	Collection, Storage, Transportation and sell to Bromide compound manufacturer or Bromine recovery unit.
-	Sodium Sulphite	6	Collection, Storage, Transportation and sell to Pulp and Paper industry or chemical manufacturing

			industry.
-	Carbon Sludge	3	Collection, Storage, Transportation & Sent to Cement Industry for co-processing or Disposed at nearest common TSDF site
-	Mesitylene	38	Collection, Storage, Transportation and sell to lacquers, paints, and varnish manufacturer.
29.5	Spent Catalyst (Ra-Ni)	1	Collection, Storage, Transportation and return back to supplier for regeneration.

ANNEXURE-VII

DETAILS OF STACKS & VENTS (PROPOSED)

1) FLUE GAS STACK

SR. NO.	STACKS ATTACHED TO	STACK HEIGHT (m)	FUEL	STACK DIAMETER (m)	POLLUTANTS	AIR POLLUTION CONTROL SYSTEM
1.	Boiler (3 TPH) & Thermo pack Unit (6 Lac K Cal)	15	Coal, Bio-fuel, Agrowaste, Wood Braquete	0.5	SPM SO_2 NOx	Cyclone Separator + Bag Filter + Scrubber

2) PROCESS STACK

SR. NO.	PROCESS STACK ATTACHED TO	STACK HEIGHT (m)	STACK DIAMETER (m)	AIR POLLUTION CONTROL SYSTEM	POLLUTANTS
1.	Process Vent-1	20	0.3	Two Stage Scrubber (Water + Alkali)	HCl
2.	Process Vent-2	20	0.3	Two Stage Scrubber (Water + Alkali)	Cl_2

ANNEXURE-VIII

STORAGE DETAILS OF HAZARDOUS CHEMICALS

Sr. No.	Name of the material	Mode of Storage	Max Quantity To Be Stored (MT)
1	Acetic Acid	Tank	24 x 4
2	Acrylonitrile	Tank	10
3	Caustic Soda Lye	Tank	25 x 2
4	Di Methyl Sulphate	Tank	15 x 2
5	Glycerol	Tank	30 x 2
6	H.C.L.	Tank	15 x 2
7	Methanol	Tank	10
8	Para Hydroxy Toluene	Tank	20
9	Sulphuric Acid	Tank	25 x 2
10	Toluene	Tank	20
11	Anhydrous Ammonia	Cylinder	1
12	Hydrogen gas	Cylinder	0.3
13	Methyl 2 - Chloro propionate	Drum	3
14	Acetone	Drum	2
15	Benzyl Alcohol	Drum	2
16	Tetra Butyl Ammo Bromide	Drum	0.5
17	Cyclohexanone	Drum	2
18	Acetic Anhydride	Carboy	2
19	Formic Acid	Carboy	1
20	Hydrogen Peroxide	Carboy	3
21	Raney Nickel catalyst	Carboy	1
22	Sodium Hypo chloride	Carboy	10
23	Dicamol 474	Bags	0.5
24	Ferrous Sulphate	Bags	0.5
25	Imidazole	Bags	25
26	Manganese dioxide	Bags	500
27	Soda Ash	Bags	2
28	Sodium Acetate	Bags	0.5
29	Sodium Formate	Bags	5
30	Sodium Methoxide Powder	Bags	5
31	Sodium Sulphate	Bags	2
32	Sodium Chloride	Bags	0.5
33	Cyno acetic acid	Bags	2
34	Ammonium acetate	Bags	1

ANNEXURE-IX

SOCIO - ECONOMIC IMPACTS

1) EMPLOYMENT OPPORTUNITIES

During construction phase, skilled and unskilled manpower will be needed. This will temporarily increase the employment opportunity. Secondary jobs are also bound to be generated to provide day-to-day needs and services to the work force. This will also temporarily increase the demand for essential daily utilities in the local market. The manpower requirement for the proposed expansion is expected to generate some permanent jobs and secondary jobs for the operation and maintenance of plant. This will increase direct / indirect employment opportunities and ancillary business development to some extent for the local population. This phase is expected to create a beneficial impact on the local socio-economic environment.

2) INDUSTRIES: During construction phase, skilled and unskilled manpower will be needed. This will temporarily increase the employment opportunity. Secondary jobs are also bound to be generated to provide day-to-day needs and services to the work force. This will also temporarily increase the demand for essential daily utilities in the local market. The manpower requirement for the proposed expansion is expected to generate some permanent jobs and secondary jobs for the operation and maintenance of plant. This will increase direct / indirect employment opportunities and ancillary business development to some extent for the local population. This phase is expected to create a beneficial impact on the local socio-economic environment.

3) PUBLIC HEALTH: During construction period, workers will be provided with basic amenities like safe water supply, low cost sanitation facilities, first aid, required personal protective equipment, etc. Otherwise, there could be an increase in diseases related to personal hygiene. The company will regularly examine, inspects and tests its emission from sources to make sure that the emission is below the permissible limit. Hence, there will not be any significant change in the status of sanitation and the community health of the area, as sufficient measures have been taken and proposed under the EMP.

4) TRANSPORTATION AND COMMUNICATION: Since the proposed factory is having proper linkage for the transport and communication, the development of this project will not cause any additional impact. In brief, as a result of the proposed there will be no adverse impact on sanitation, communication and community health, as sufficient measures have been proposed to be taken under the EMP. The proposed project is not expected to make any significant change in the existing status of the socio - economic environment of this region.

ANNEXURE-X

PROPOSED TERMS OF REFERENCE FOR EIA STUDIES

1. **Project Description**

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

2. **Description of the Environment and Baseline Data Collection**

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

3. **Socio Economic Data**

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

4. **Impacts Identification And Mitigatory Measures**

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

5. **Environmental Management Plan**

- Details of pollution control measures
- Environment management team
- Proposed schedule for environmental monitoring including post project

6. **Risk Assessment**

- Objectives and methodology of risk assessment
- Details on storage facilities
- Process safety, transportation, fire fighting systems, safety features and emergency capabilities to be adopted.
- Identification of hazards

- Consequence analysis through occurrence & evaluation of incidents
- Disaster Management Plan.

7. Information for Control of Fugitive Emissions

8. Post Project Monitoring Plan for Air, Water, Soil and Noise.

9. Information on Rain Water Harvesting

10. Green Belt Development plan