FORM-1

for

PROPOSED EXPANSION OF DYE INTERMEDIATES PLANT IN EXISTING UNIT

of

M/s. MAYUR DYECHEM INTERMEDIATES LTD.

SURVEY NO. 327 to 334-A, 325, 326, 989, 990 & 991,

VILLAGE : KARKHADI- DUDHWALA, TAL. PADRA,

DIST: VADODARA.

Prepared By:

NABL Accredited Testing Laboratory
ISO 9001:2008 Certified Company

Aqua-Air Environmental Engineers P. Ltd.
403, Centre Point, Nr. Kadiwala School, Ring Road, Surat - 395002

APPENDIX I

(See paragraph - 6)

FORM 1

(I) Basic Information

Sr. No.	Item	Details
1.	Name of the project/s	MAYUR DYECHEM INTERMEDIATES LTD.
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	For detail Please refer **Annexure – I**
4.	New/Expansion/Modernization	Expansion
5.	Existing Capacity/Area etc.	--
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.	Survey No.: 327 to 334-A, 325, 326, 989, 990 & 991
	Village	Karkhadi- Dudhwala
	Tehsil	Padra
	District	Vadodara
	State	Gujarat
10.	Nearest railway station/airport along with distance in kms.	Vadodara – 45 Km
11.	Nearest Town, city, District Headquarters along with distance in kms.	Padra - 15 km
12.	Village Panchayats, Zilla Parishad, Municipal Corporation, local body (complete postal address with telephone nos. to be given)	Not applicable
13.	Name of the applicant	MAYUR DYECHEM INTERMEDIATES LTD.
14.	Registered Address	M/s. MAYUR DYECHEM INTERMEDIATES LTD. Survey No.: 327 to 334-A, 325, 326, 989, 990 & 991, Village: Karkhadi- Dudhwada, Tal: Padra, Dist: Vadodara, Gujarat
15.	Address for correspondence:	M/s. MAYUR DYECHEM INTERMEDIATES LTD. Survey No.: 327 to 334-A, 325, 326, 989, 990 & 991, Village: Karkhadi- Dudhwada, Tal: Padra, Dist: Vadodara, Gujarat
	Name	Mr. Bharatbhai Patel
	Designation (Owner/Partner/CEO)	Sr. Manager-Environment
	Address	M/s. MAYUR DYECHEM INTERMEDIATES

		LTD. Survey No.: 327 to 334-A, 325, 326, 989, 990 & 991, Village: Karkhadi- Dudhwada, Tal: Padra, Dist: Vadodara, Gujarat
	Pin Code	
	E-mail	Mayurdyechem017@gmail.com
	Telephone No.	9925019812
	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	
1.2	Clearance of existing land, vegetation and Buildings?	No	
1.3	Creation of new land uses?	No	The project site is located on level ground, which does not require any major land filling for area grading work.
1.4	Pre-construction investigations e.g. bore Houses, soil testing?	Yes	To be done as a part of the study.
1.5	Construction works?	Yes	For detail Please refer **Annexure – II**
1.6	Demolition works?	No	There will not be Demolition work at the site.
1.7	Temporary sites used for construction works or housing of construction workers?	No	
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	Areas for storage tank farm, raw materials and finished products will be developed for the proposed project.
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	Yes	Facilities for treatment or disposal of liquid effluents are given as **Annexure – V &** Facilities for treatment or disposal of solid waste is given as **Annexure –VI.**
1.16	Facilities for long term housing of operational workers?	No	The unit shall be running round the clock. The operational staff will be recruited locally and working in shift, hence no housing for the operational workers.
1.17	New road, rail or sea traffic during Construction or Operation?	No	There will not be any new road/rail or sea traffic during construction or operational phase.
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	There will not be said work at the site.
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?	Yes	Surface water.
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	By road only.
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?	No	During construction work local workers will be hired. In Operational phase 50 no. of workers/staff will require for the proposed expansion.
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	The land is of Industrial Use
2.2	Water (expected source & competing users) unit: KLD	Yes	Water Source – Narmada Water Supply For detail water balance is referred as **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	The power requirement of M/s. Mayur Dye Chem Intermediates Ltd. is met through 1200 KVA connecting load of MGVCL. After proposed expansion power requirement of M/s. Mayur Dye Chem Intermediates Ltd. will be met through the same source. Company is proposing (1.0 MW + 1.0 MW + 0.67 MW) Cogeneration Plant in proposed expansion. Natural gas & H.S.D. is used as fuel in Boiler, Furnce and Incinerator in Existing Scenario. Quantity of Natural gas is 5000 NM^3/day and H.S.D is 1.2 KL/day. Natural gas shall be used as fuel in Boiler, Furnce and Incinerator in Proposed Scenario. Quantity of Natural gas shall 22000 NM^3/day.
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 details 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?	Yes	Direct/Indirect employment
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	Please refer **Annexure –VI**
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	Stack emission will remain within the norms prescribed by CPCB. **Please refer as Annexure – VII.**
5.3	Emissions from materials handling storage or transport	Yes	For details Please refer **Annexure – VII.**
5.4	Emissions from construction activities including plant and equipment	No	
5.5	Dust or odors from handling of materials including construction materials, sewage and waste	No	Due to construction & vehicle movement dust emission is likely to occur.
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. Adequate preventive & control measures will be taken at noisy area. 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	Yes	Adequate Lighting is provided in unit and also local ventilation system is provided.
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 detail 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 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 – VIII**
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. lities, 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	

(II) 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	-	No protected area within 15 km from the proposed project boundary
2	Areas which important for are or sensitive Ecol logical reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	-	NA
3	Area used by protected, important or sensitive Species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	--	No protected area or sensitive species within 15 km from the proposed project boundary
4	Inland, coastal, marine or underground waters	-	NA
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	-	-
9	Area occupied by sensitive man-made land uses Hospitals, schools, places of worship, community facilities)	-	N.A.
10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	-	N.A.
11	Areas already subjected to pollution environmental damage. (those where existing legal environmental standards are exceeded)or	-	N.A.
12	Are as susceptible to natural hazard which could cause the project to present environmental problems (earthquake, subsidence, landslides, flooding erosion, or extreme or adverse climatic conditions)	-	N.A.

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: 15.03.2018
Place: Vadodara

FOR MAYUR DYECHEM INTERMEDIATES LTD.

BHARATBHAI C. PATEL
(GENERAL MANAGER)

NOTE:

1. The projects involving clearance under Coastal Regulation Zone Notification, 1991 shall submit with the application a C.R.Z. map duly demarcated by one of the authorized agencies, showing the project activities, w.r.t. C.R.Z. (at the stage of TOR) and the recommendations of the State Coastal Zone Management Authority (at the stage of EC). Simultaneous action shall also be taken to obtain the requisite clearance under the provisions of the C.R.Z. Notification, 1991 for the activities to be located in the CRZ.

2. The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief Wildlife Warden thereon (at the stage of EC).

3. All correspondence with the Ministry of Environment & Forests including submission of application for TOR/Environmental Clearance, subsequent clarifications, as may be required from time to time, participation in the EAC Meeting on behalf of the project proponent shall be made by the authorized signatory only. The authorized signatory should also submit a document in support of his claim of being an authorized signatory for the specific project.

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	Details of Water Consumption & Waste water Generation
V	Details of Treatment Scheme and Disposal
VI	Details of Hazardous /Solid Waste Generation, Handling and Disposal
VII	Details of Stack and Vent
VIII	Details of Hazardous Chemical Storage & Handling
IX	Socio-Economic Impacts
X	Proposed Terms of Reference for EIA studies

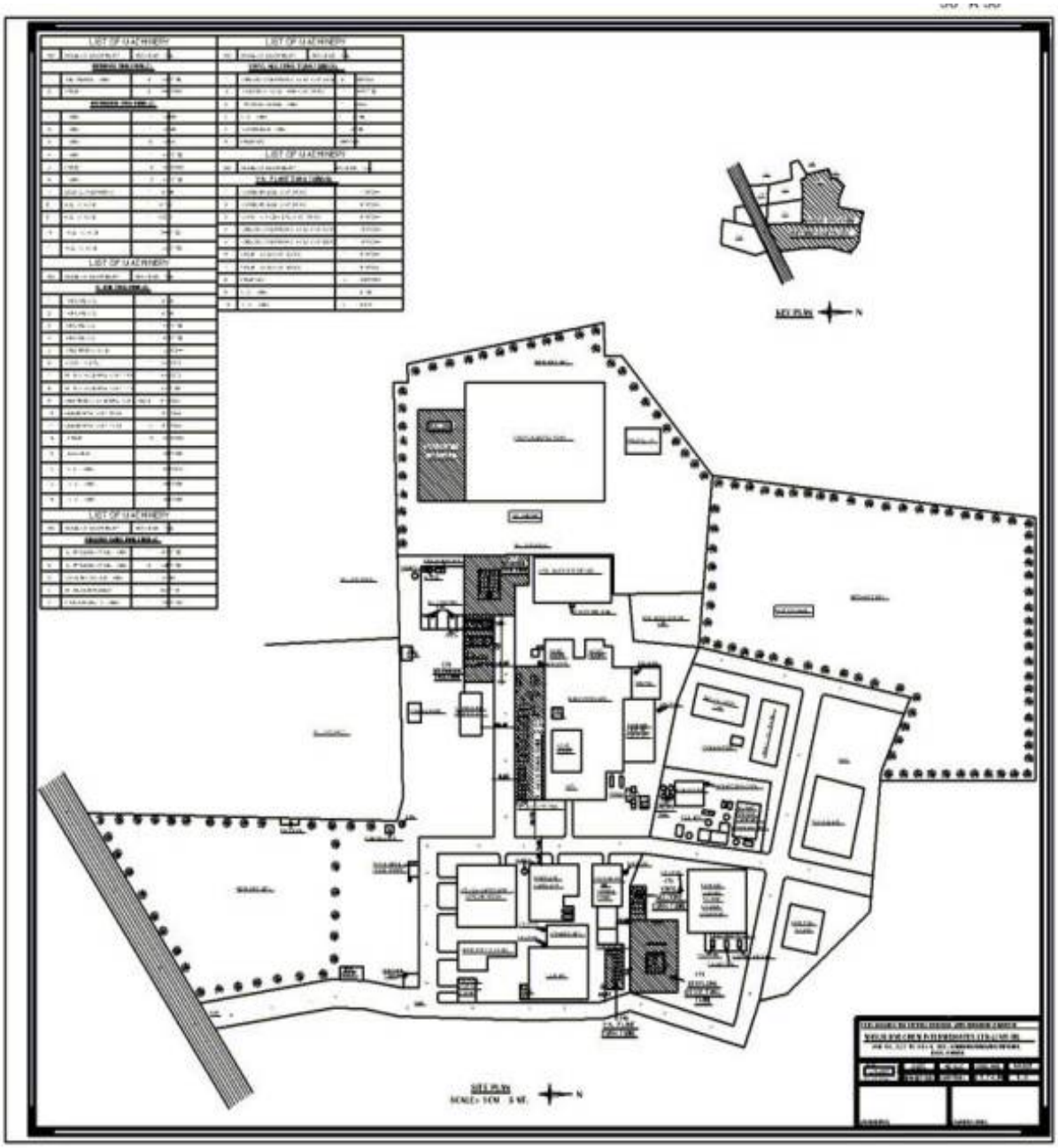
ANNEXURE-I

LIST OF PRODUCTS WITH THEIR PRODUCTION CAPACITY

SR. NO.	PRODUCT NAME	EXISTING (MT/Month)	TOTAL AFTER EXPANSION (MT/ Month)
1	H-Acid	200	400
2	Para base Vinyl Sulphon	150	450
3	DMA Vinyl Sulphon	---	90
4	PC Vinyl Sulphon	---	90
5	Ortho Anisidine Base Vinyl Sulphon	---	90
6	Sulpho Vinyl Sulphon	---	90
7	K Acid	---	90
8	Benzanilide Vinyl Sulphon	---	90
9	PMP Vinyl Sulphon	---	90
10	J Acid	---	90
11	NMJ Acid	---	90
12	Sulpho Tobias Acid	---	90
13	Synthetic Organic Dyes	---	2000
By Product (MT/Month)			
14	Glauber's Salt	900	900
15	Sodium bisulfate	180	180
16	Sulpanilic Acid	55	70
17	Acetic Acid	30	60
18	30% HCl	250	500
19	Spent sulfuric Acid	1500	3000

ANNEXURE-II

LAYOUT MAP OF THE PLANT



ANNEXURE-III

BRIEF PROCESS DESCRIPTION

2.4.1 H-ACID (EXISTING)

MANUFACTURING PROCESS

The process steps involve sulphonation, Nitration, Neutralization, Filtration, Reduction, concentration, Autoclaving and Isolation.

(a) Sulphonation: - Naphthalene is charged in the Cast Iron sulphonator and sulphuric acid with oleum is charged at low temperature to have reaction with monohydrated acid. The reaction mass is then heated to 170 degree centigrade and 65% Oleum is charged. The temperature is maintained for about 3 hours. On completion of the reaction it is taken for nitration.

(b) Nitration: - Nitration is carried out in CI vessels. The sulphonated mass is reacted with Nitric acid at controlled temperature. The mass is then taken to neutralizer.

(c) Neutralization :- This reaction is carried out in a MSRL brick lined vessel. The excess acid is reacted with limestone to get gypsum.

(d) Filtration: - The gypsum is then precipitated out and separated in horizontal vacuum filter and is thoroughly washed with water.

(**e) Reduction**:- The nitro mass thus obtained is reduced to amino compound by iron powder and HCL in hot condition.

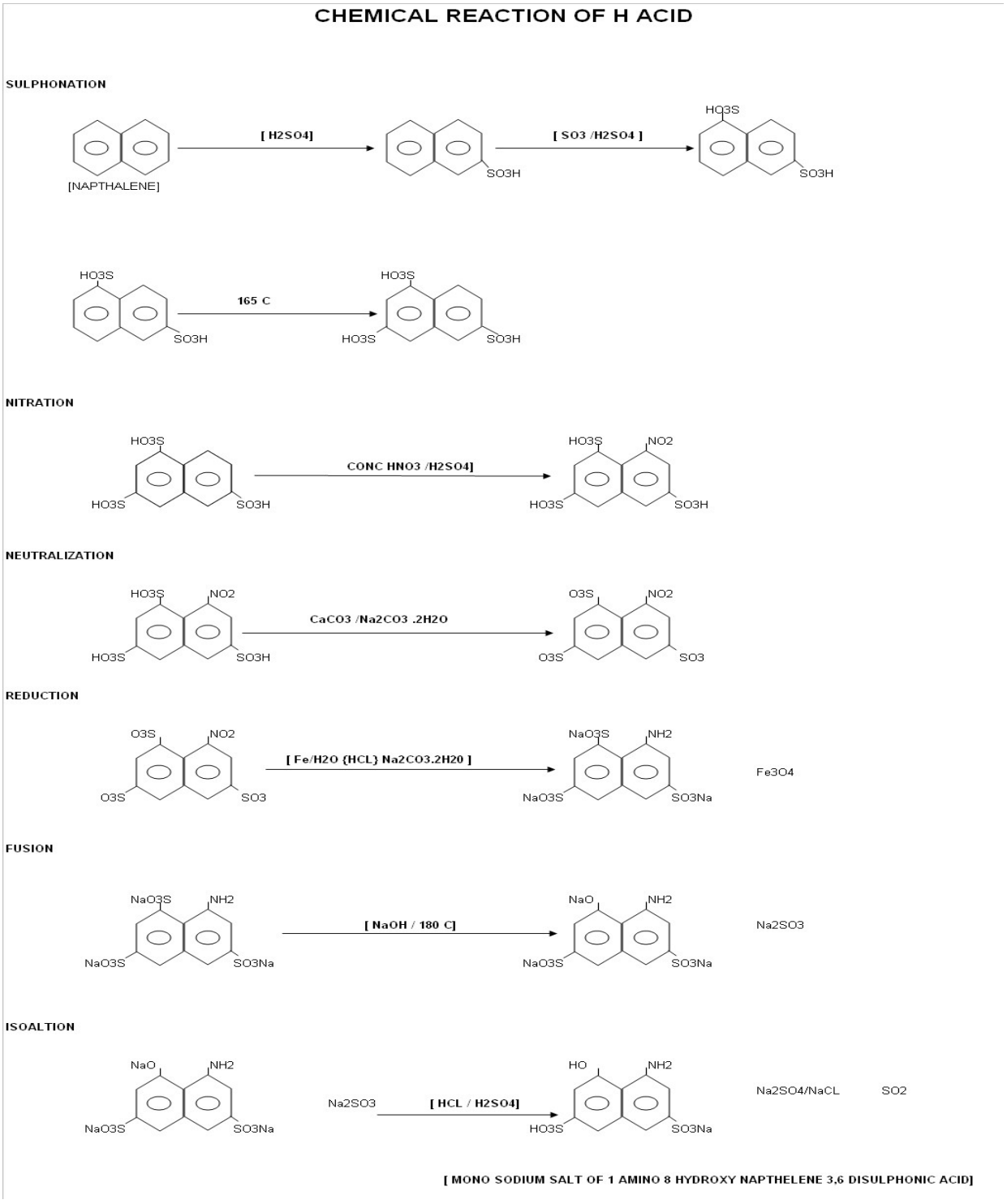
After completion of the reaction the mass is filtered to remove iron oxide sludge.

(f) Concentration: - The amino solution is concentrated in the multiple effect evaporators to a desired level for hydrolysis.

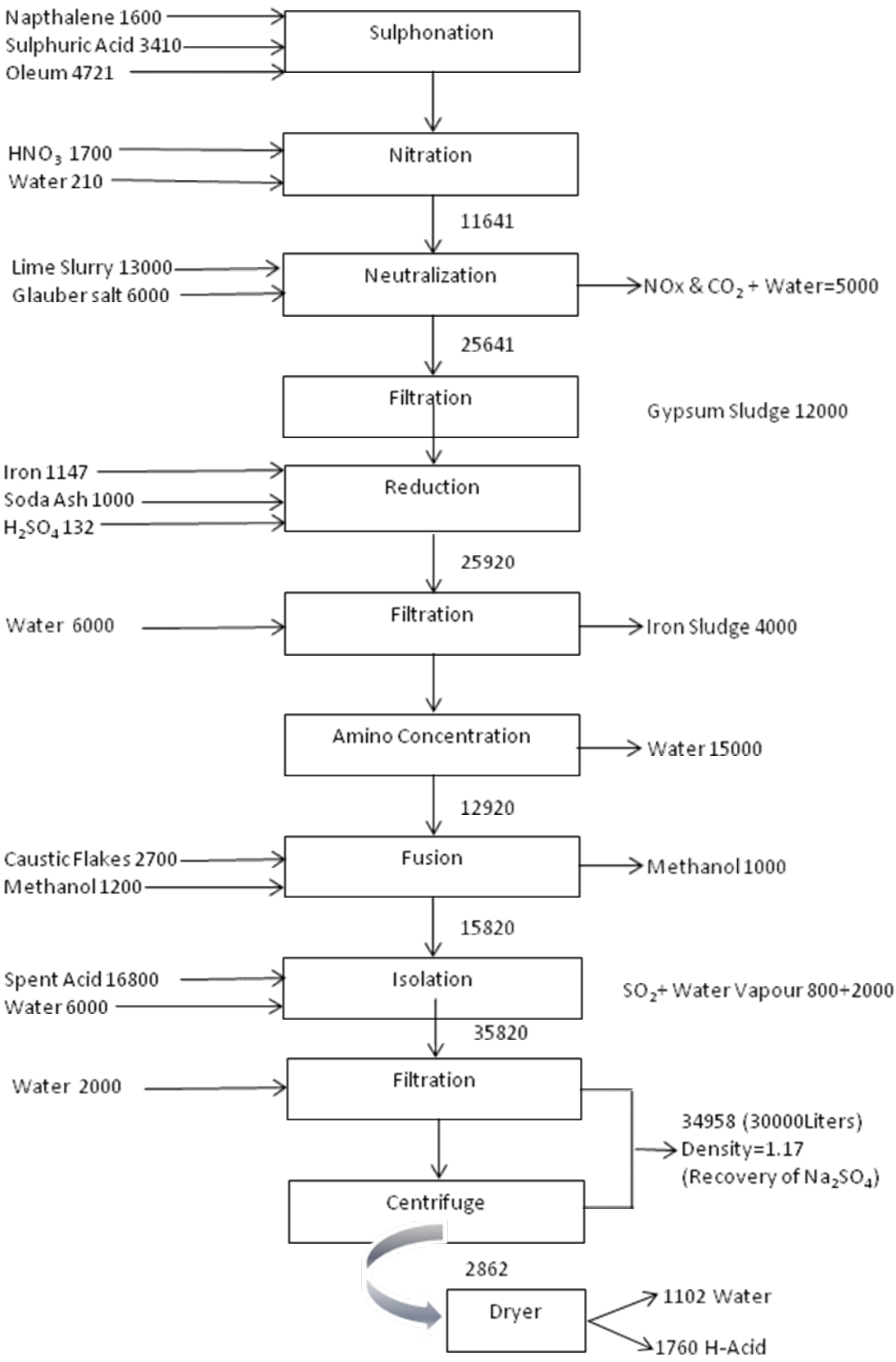
(**g) Autoclaving**: - The concentrated mass is hydrolyzed under pressure of 6-7 kg/cm2 with caustic soda at a temperature of 170 degree centigrade.

(h) Isolation: - The hydrolyzed product obtained from the autoclave is reacted with sulphuric acid or HCL for an acidic p H of about 2.Hacid is thereby precipitated and filtered through vacuum filters and washed to obtain wet cake of H acid. The wet cake is finally dried to get the product.

CHEMICAL REACTION



Material Balance for H-Acid in KG

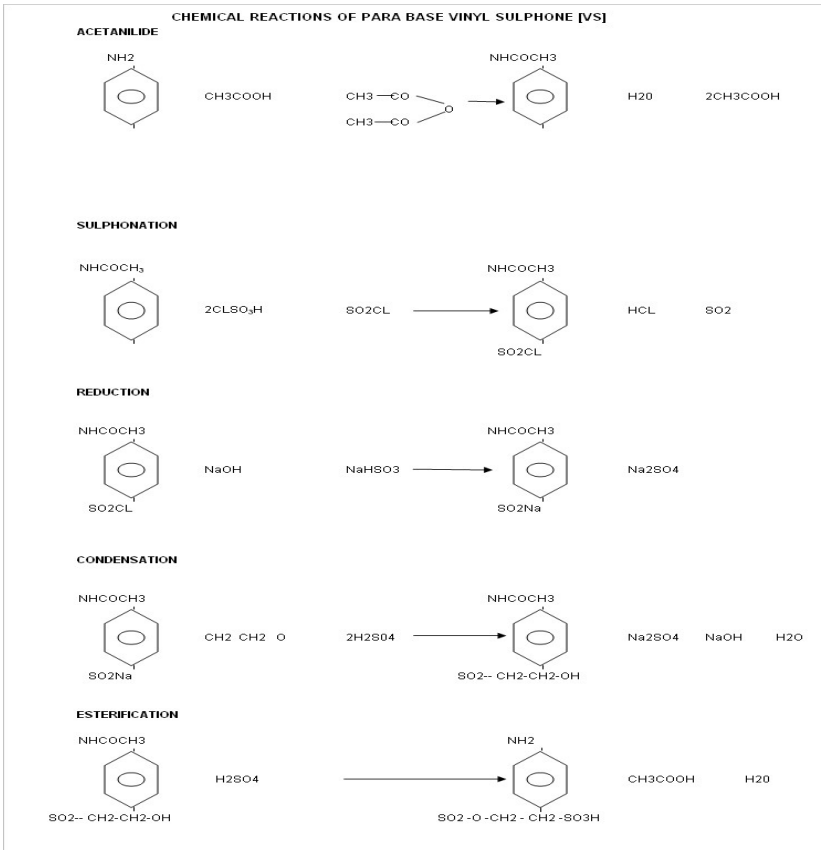


2.4.2 PARA BASE VINYL SULPHON (EXISTING)

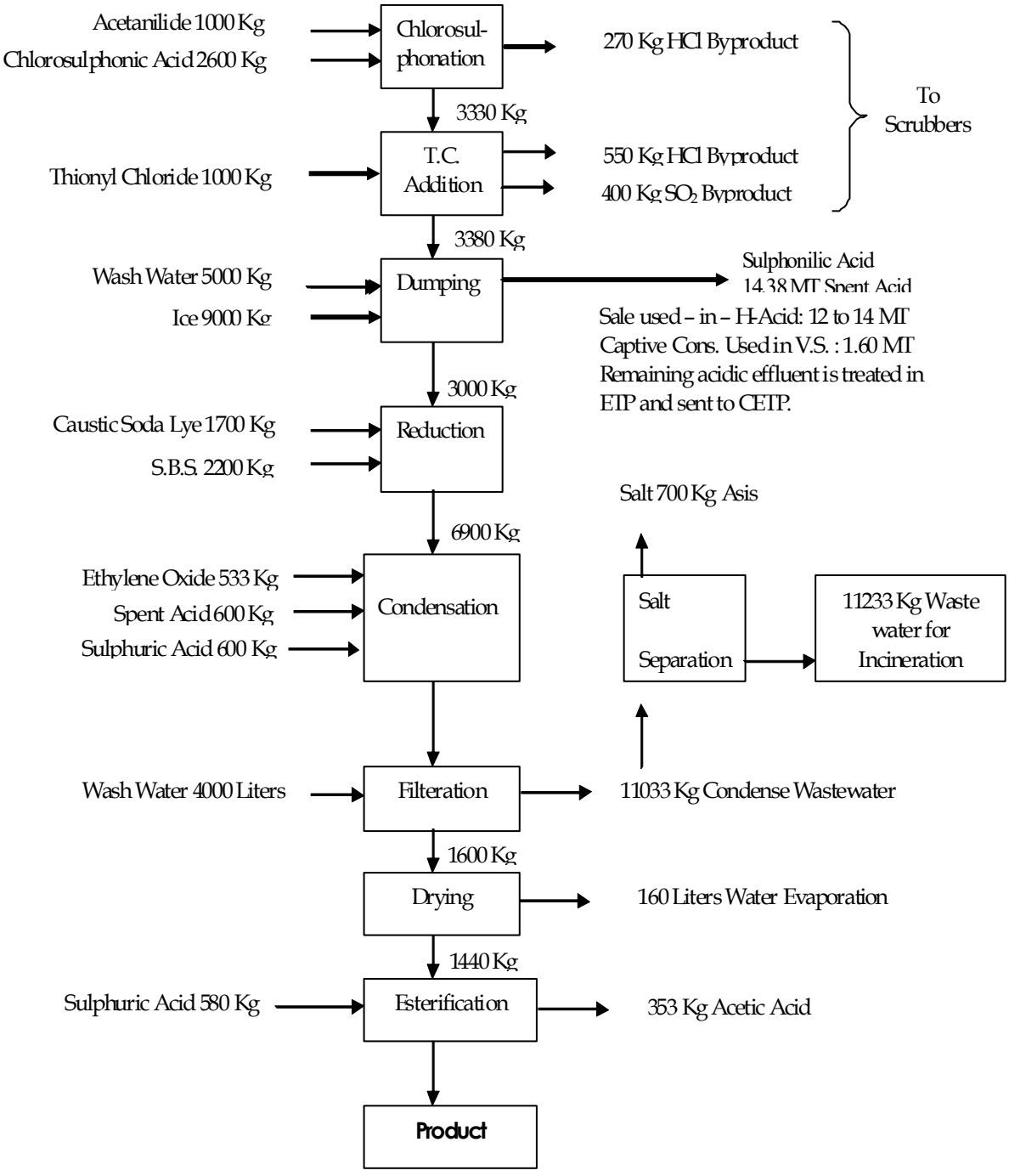
MANUFACTURING PROCESS

Acetanilide is charged into chlorosulphonic acid below 30 degree centigrade. After the addition the temperature is raised to 50-55 degree centigrade and maintained for 4 hrs. It is cooled and drowned over ice and filtered. The acetyl sulphochloride is charged into a slurry of sodium bisulphate and made neutral with caustic and the pH is maintained at 7.Eyhylene oxide is passed into the solution maintaining pH 7 by adding H2SO4.When the reaction is complete, it is filtered and dried .It is further clarified by heating with calculated quantity of H2SO4 and then pulverized. The final product is packed as Para base Vinyl Sulphone

CHEMICAL REACTION



MASS BALANCE



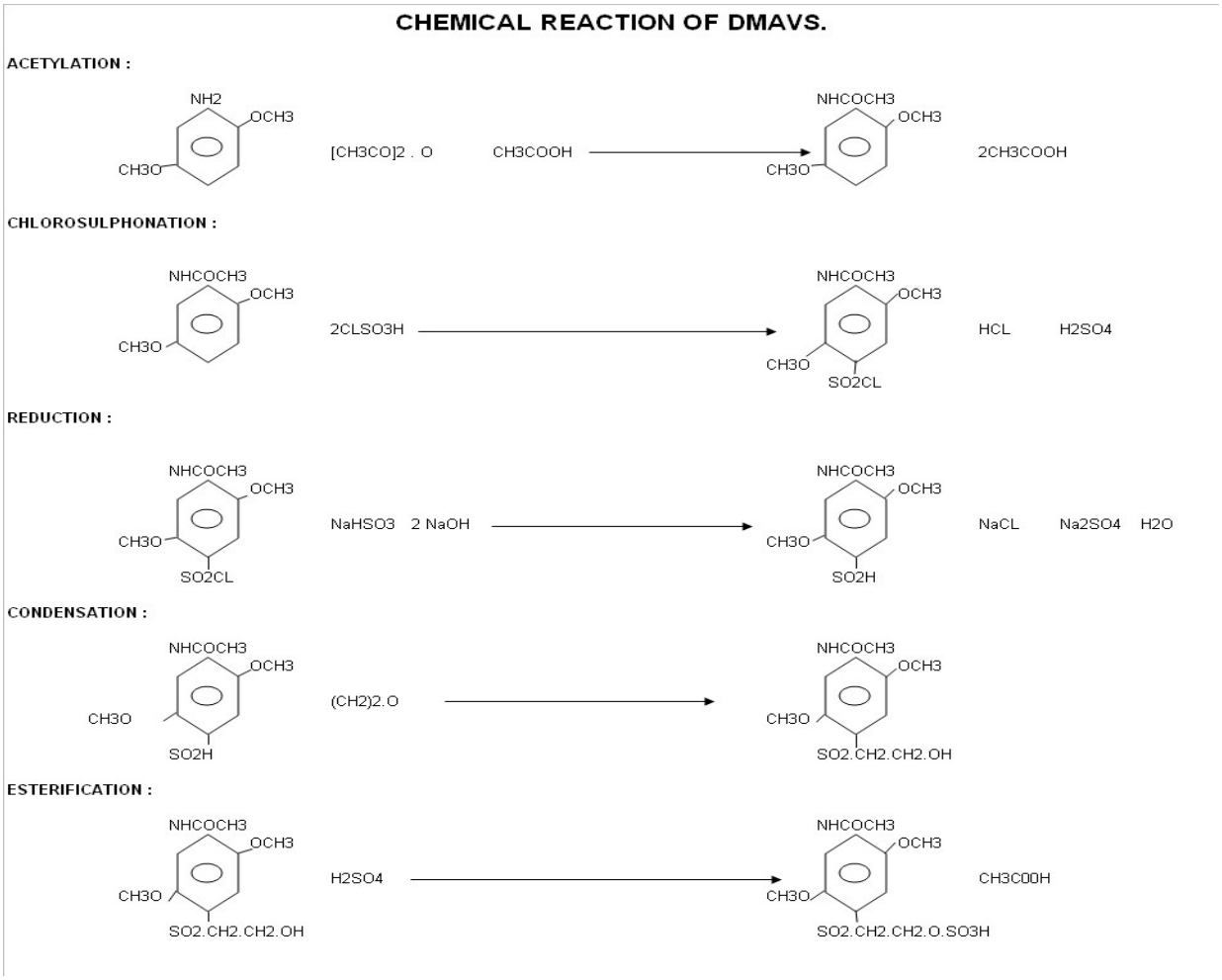
Vinyl Sulphone Ester 1667 Kg. (Asis)
or 1600 Kg on 100%

2.4.3 DMA VINYL SULPHON (PROPOSED)

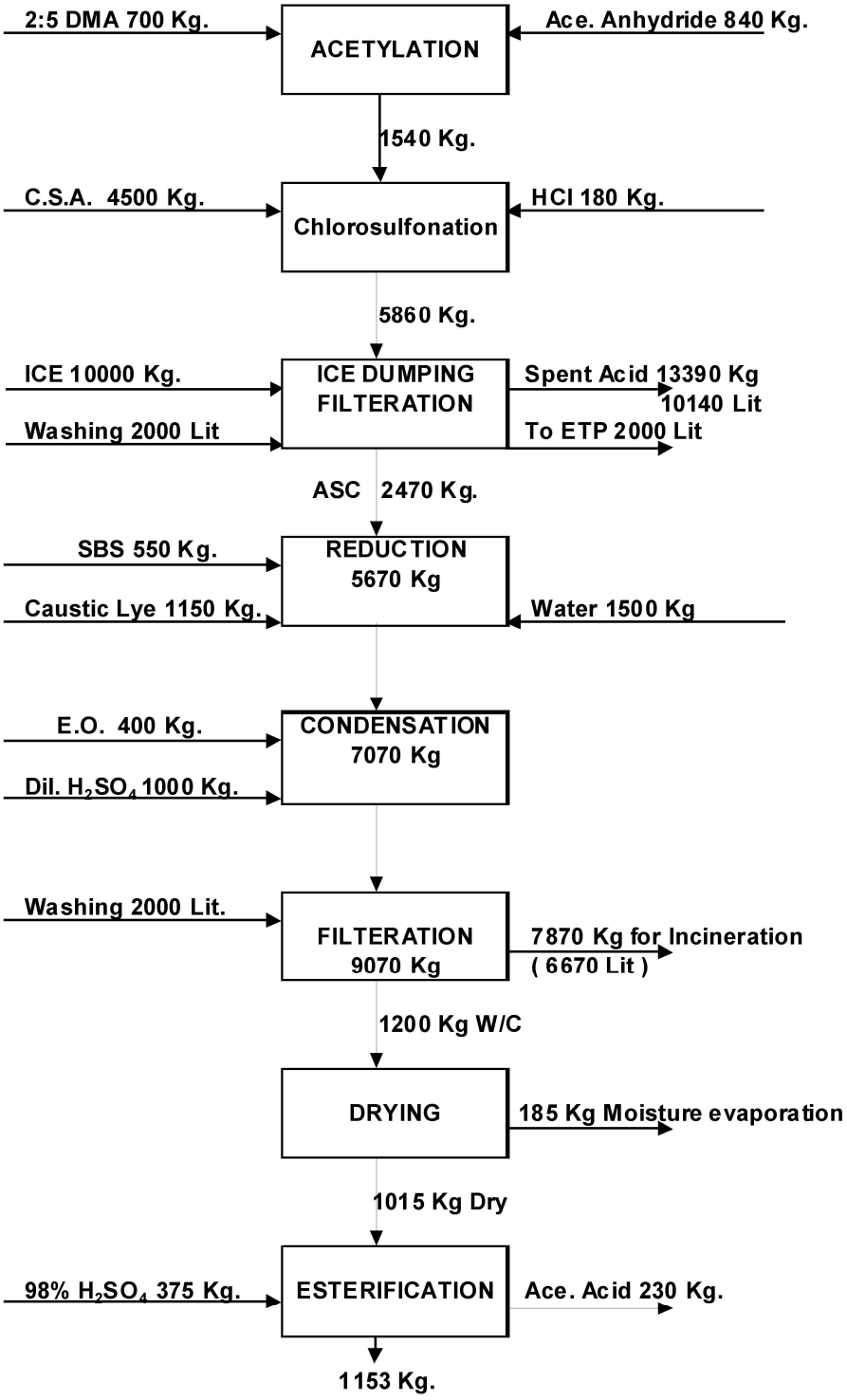
MANUFACTURING PROCESS

Dimethoxy Aniline is charged into chlorosulphonic acid below 30 degree centigrade. After the addition the temperature is raised to 50-55 degree centigrade and maintained for 4 hrs. It is cooled and drowned over ice and filtered. The sulphochloride is charged into a slurry of sodium bisulphate and made neutral with caustic and the p H is maintained at 7.Eyhylene oxide is passed into the solution maintaining p H 7 by adding H2SO4.When the reaction is complete, it is filtered and dried .It is further clarified by heating with calculated quantity of H2SO4 and then pulverized.

CHEMICAL REACTION



MASS BALANCE

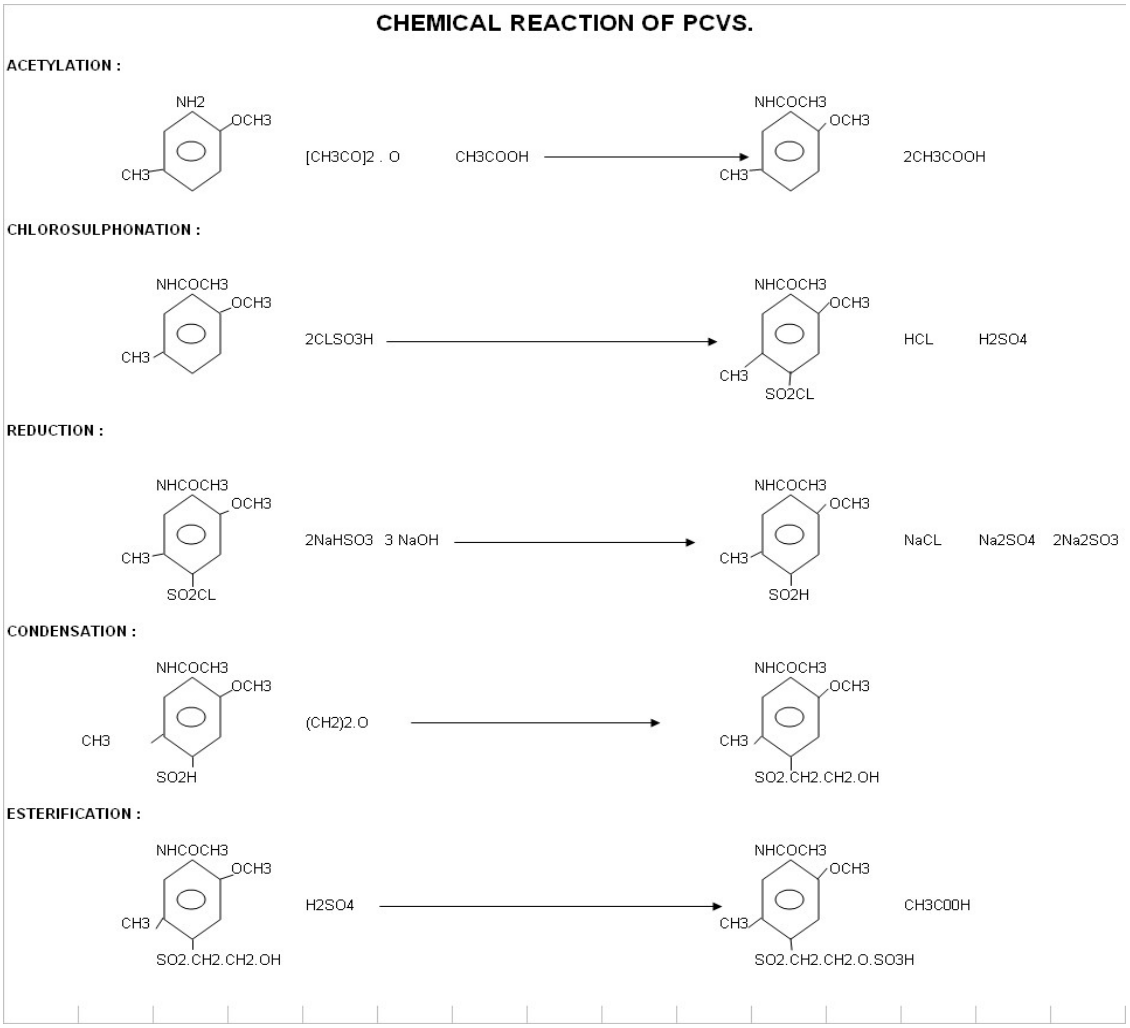


2.4.4 PC VINYL SULPHON (PROPOSED)

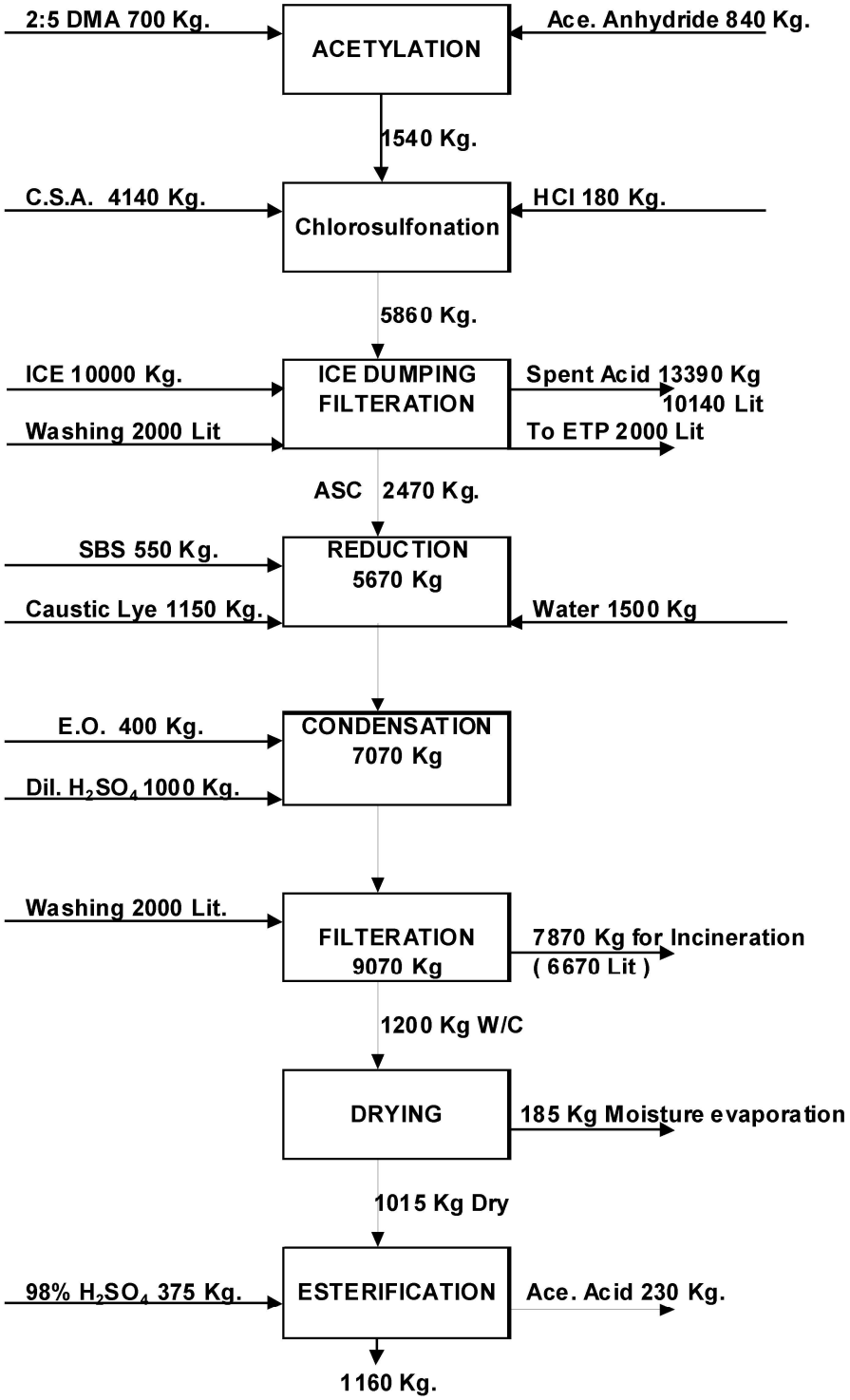
MANUFACTURING PROCESS

Acetyl paracresidine is charged into chlorosulphonic acid below 30 degree centigrade. After the addition the temperature is raised to 50-55 degree centigrade and maintained for 4 hrs. It is cooled and drowned over ice and filtered. The sulphochloride is charged into a slurry of sodium bisulphate and made neutral with caustic and the p H is maintained at 7.Eyhylene oxide is passed into the solution maintaining p H 7 by adding H2SO4.When the reaction is complete, it is filtered and dried .It is further clarified by heating with calculated quantity of H2SO4 and then pulverized.

CHEMICAL REACTION



MASS BALANCE

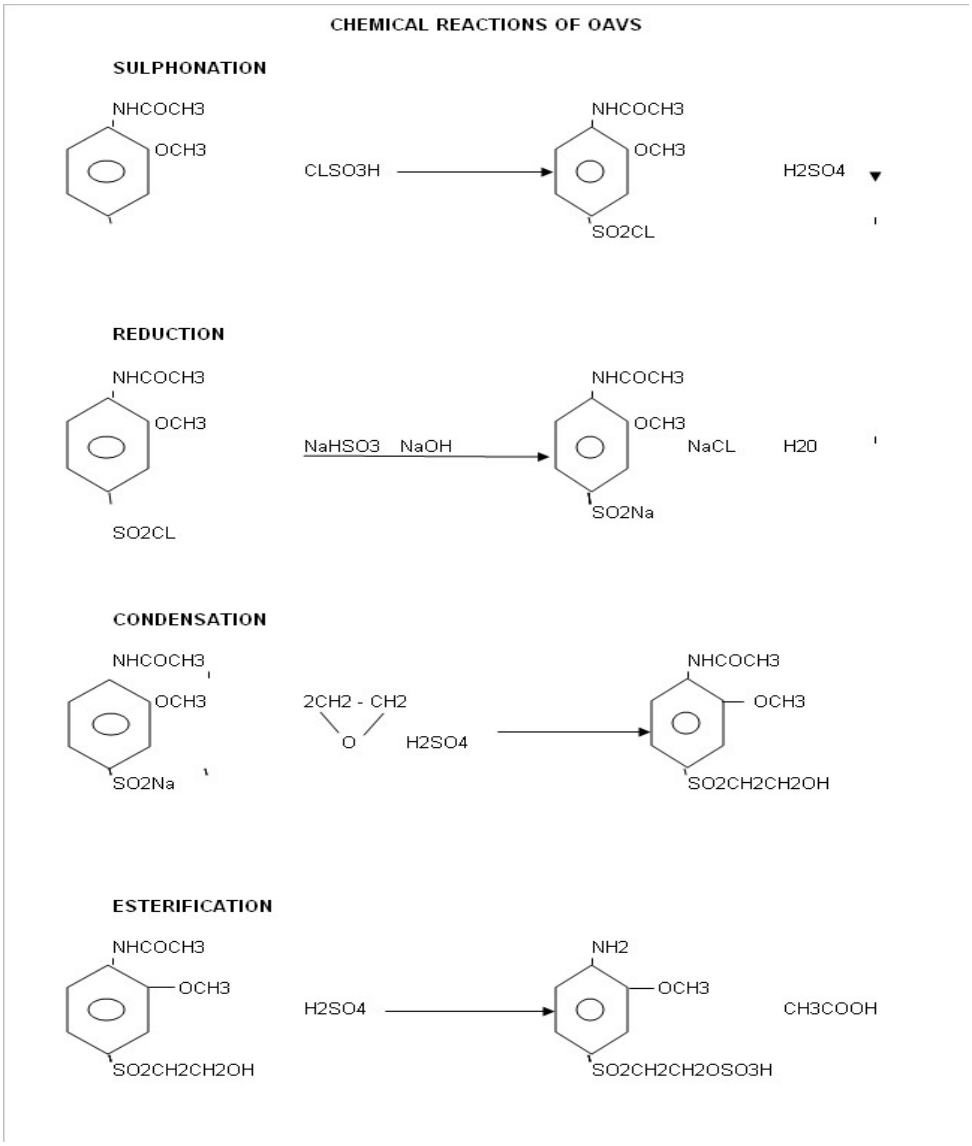


2.4.5 ORTHO ANISIDINE BASE VINYL SULPHON (PROPOSED)

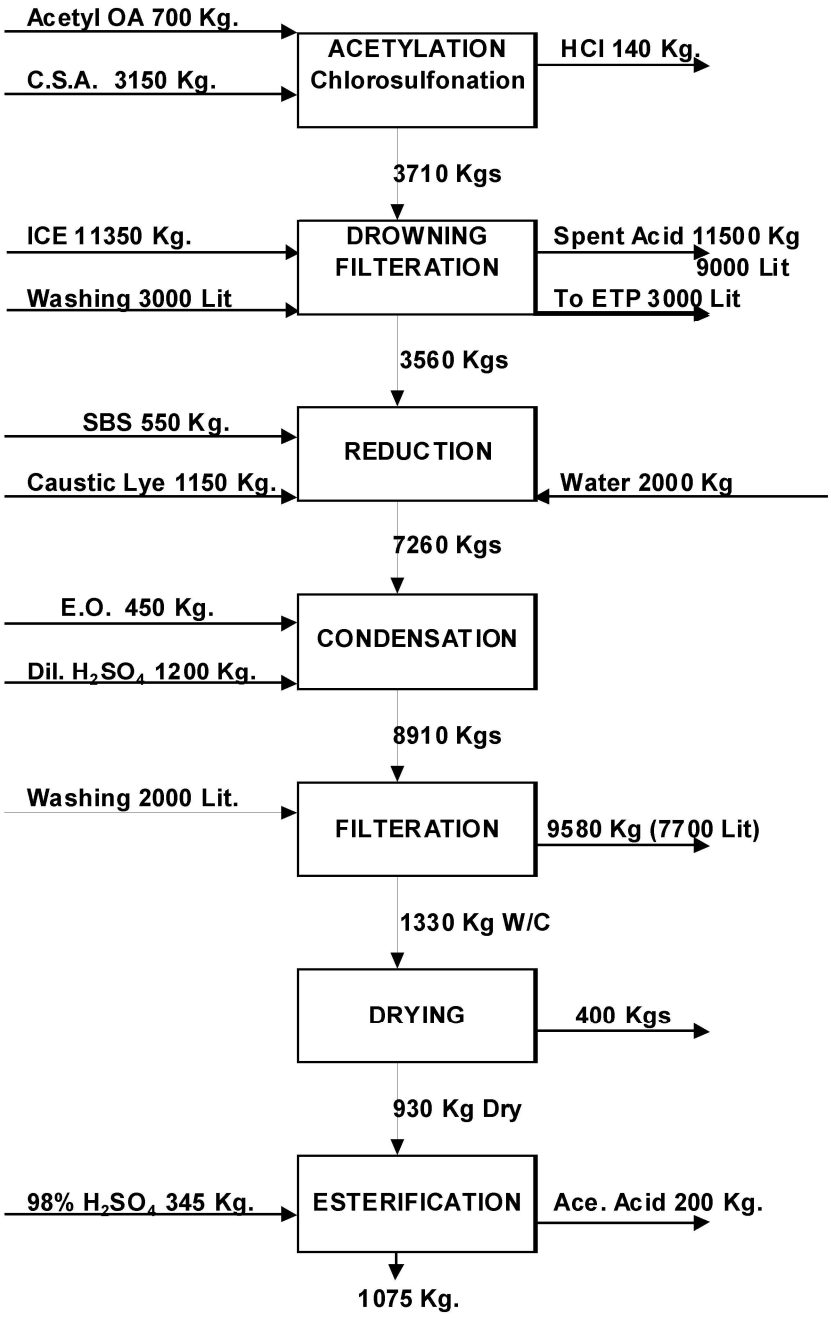
MANUFACTURING PROCESS

Acetyl orthoanisidine is charged into chlorosulphonic acid below 30 degree centigrade. After the addition the temperature is raised to 50-55 degree centigrade and maintained for 4 hrs. It is cooled and drowned over ice and filtered. The sulphochloride is charged into a slurry of sodium bisulphate and made neutral with caustic and the p H is maintained at 7.Eyhylene oxide is passed into the solution maintaining p H 7 by adding H2SO4.When the reaction is complete, it is filtered and dried .It is further clarified by heating with calculated quantity of H2SO4 and then pulverized.

CHEMICAL REACTION



MASS BALANCE

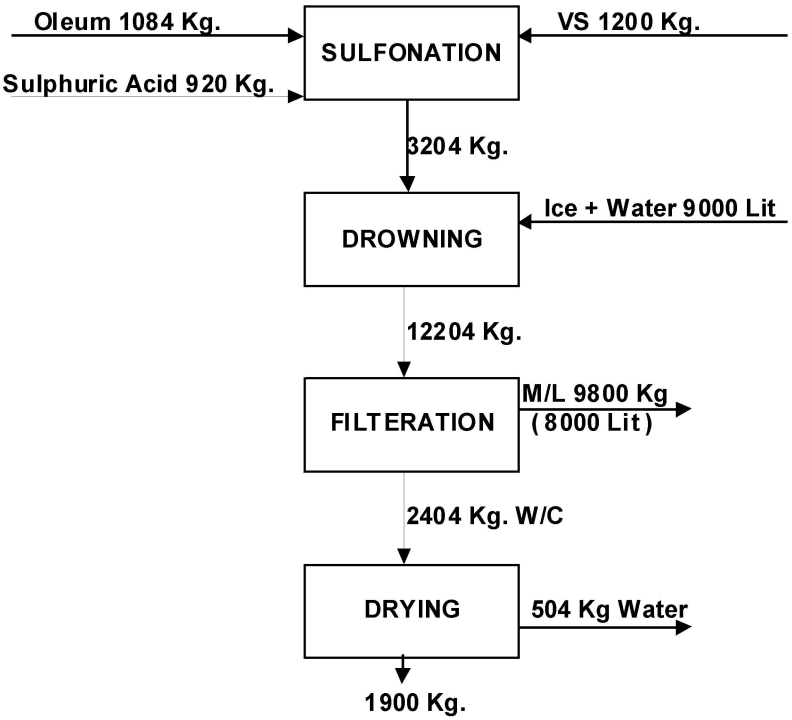


2.4.6 SULPHO VINYL SULPHON (PROPOSED)

MANUFACTURING PROCESS

Vinyl sulphone , sulphuric acid, Oleum will be sulphonated and thereafter the mass is dumped . The mass is partially neutralized and salting is done The mass is filtered and the cake is dried as final product.

MASS BALANCE



2.4.7 K – ACID (PROPOSED)

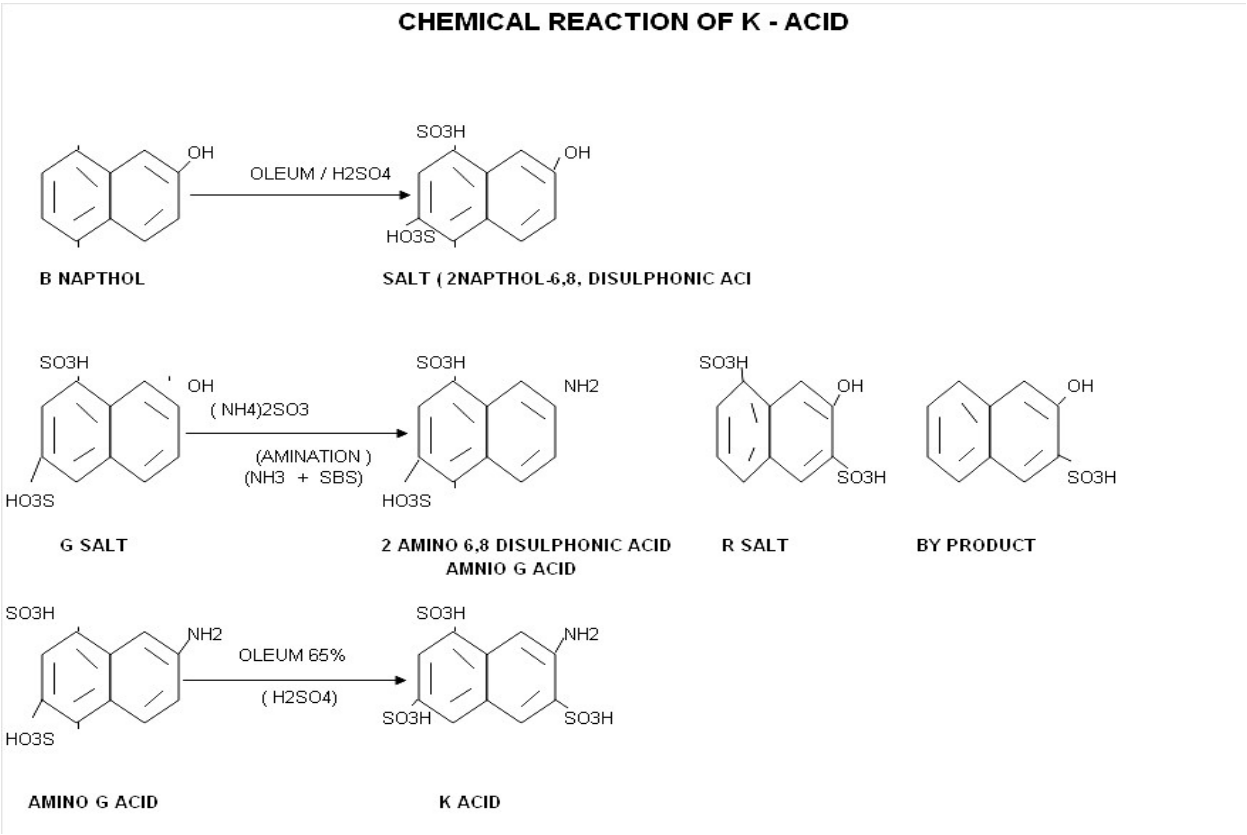
MANUFACTURING PROCESS

a) G salt preparation: Beta-naphthol is reacted with oleum and H2SO4 and maintained at 70-75 degree centigrade for 7 to 8 hrs. The mass is then taken for isolation with salt and water. This is followed by filtration and centrifuging.

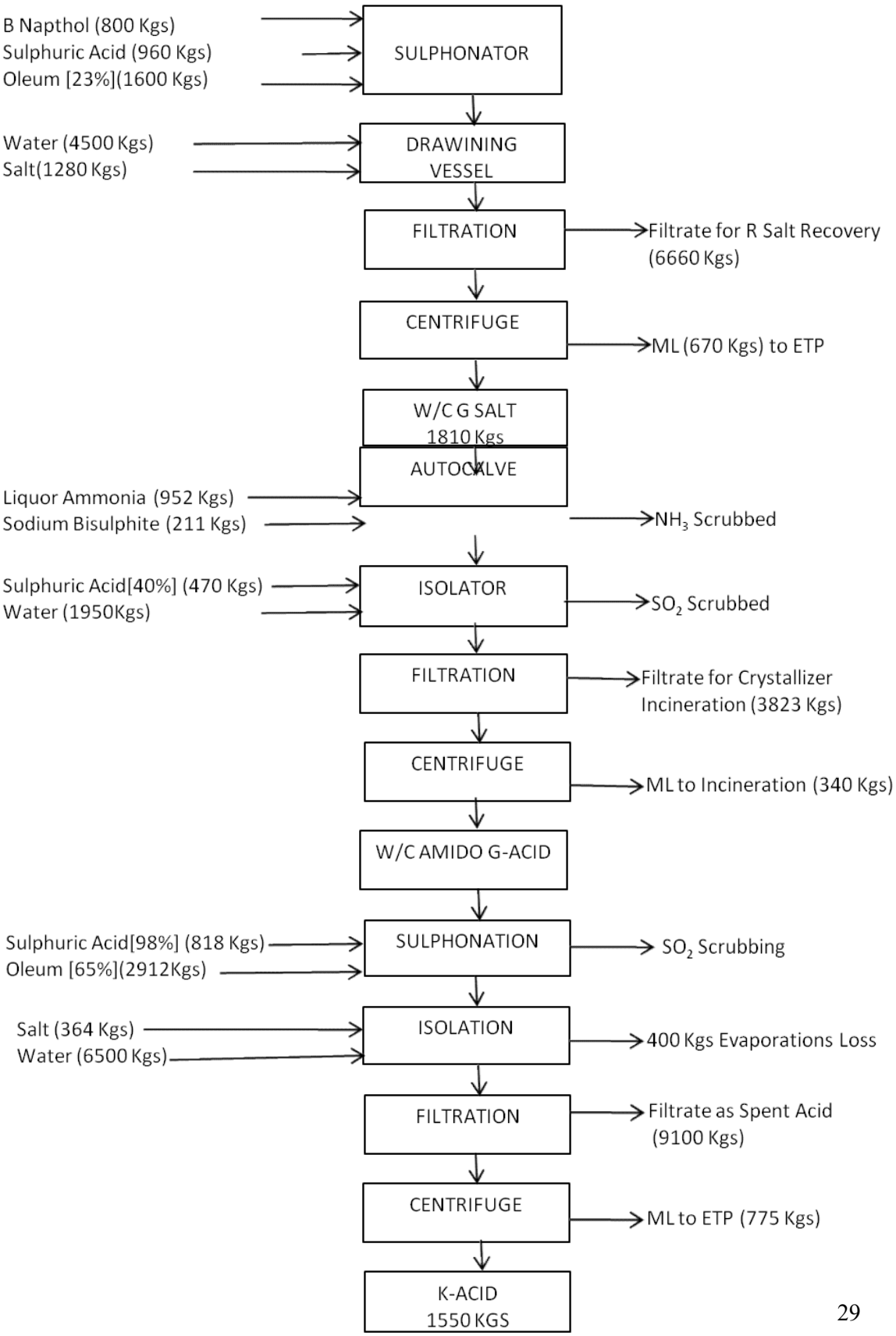
(b) Amino G acid step: Amination is carried out of G salt by reacting it with liquid Ammonia and Sodium bisulphate. The mass is taken then for isolation by H2SO4.This is followed by filtration to obtain Amino G acid.

(c) K acid step.: Amino G acid is sulphonated with the help of oleum and H2SO4.Ths is followed by isolation filtration and centrifuging to finally obtain k acid.

CHEMICAL REACTION



MASS BALANCE

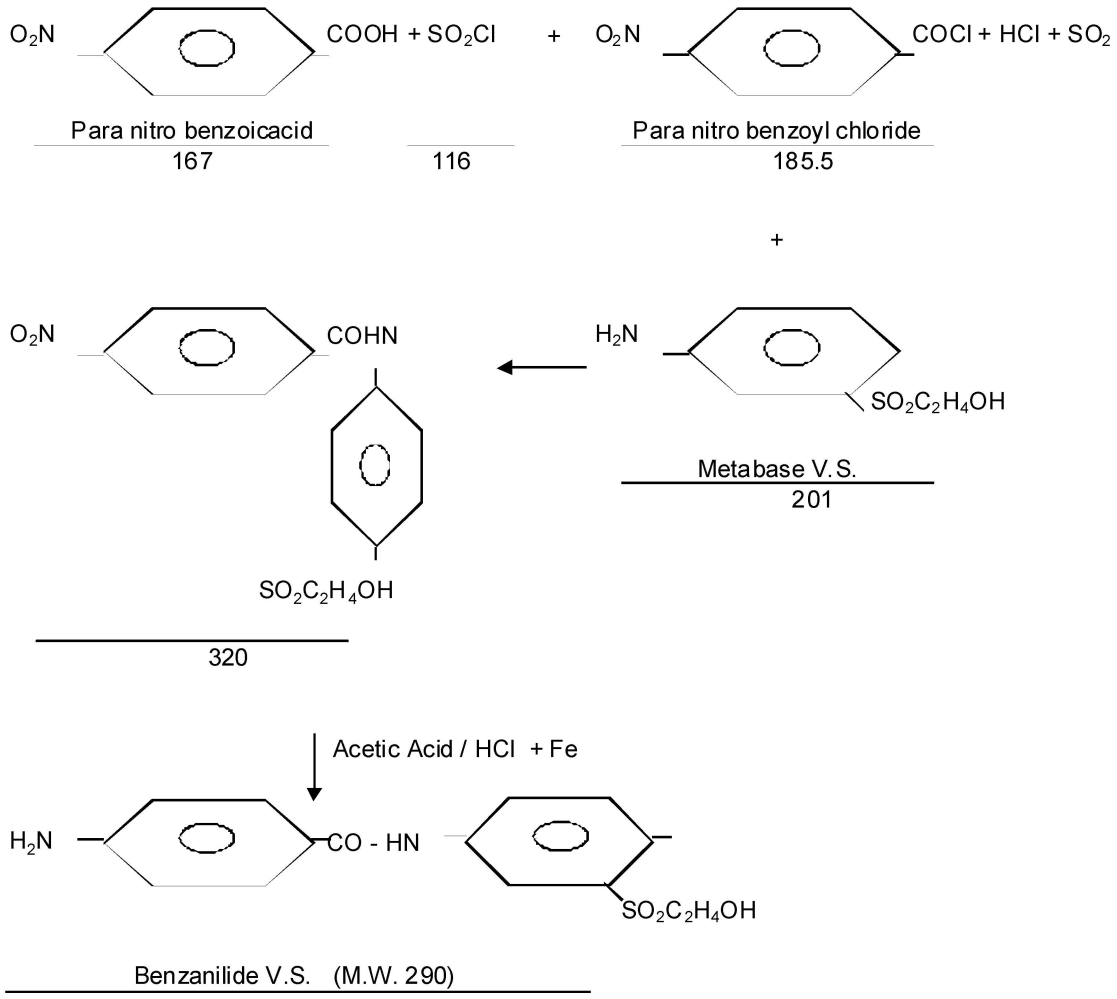


2.4.8 BENZANILIDE VINYL SULPHON (PROPOSED)

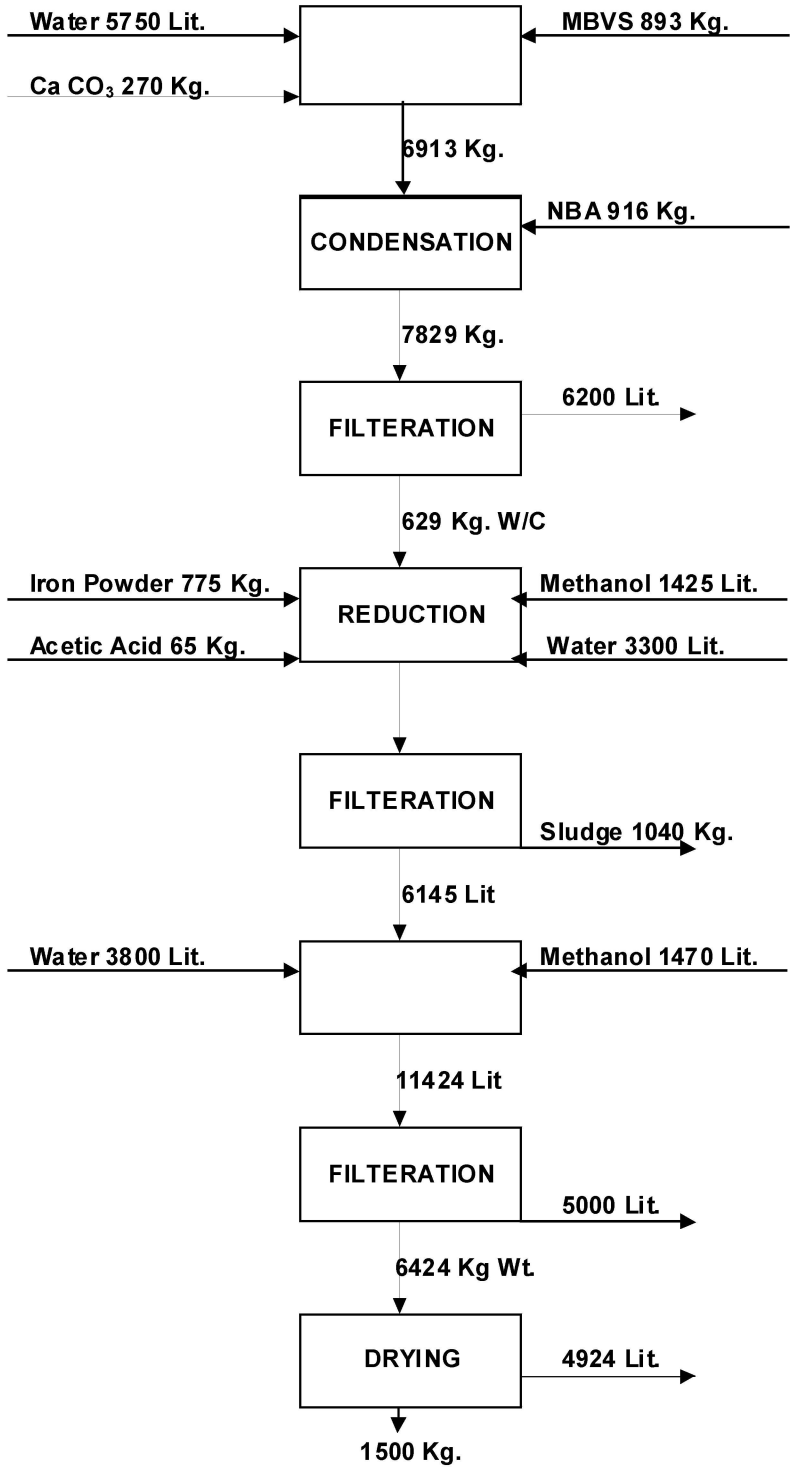
MANUFACTURING PROCESS

Metabase VS is dissolved in water and clarified through dicamal bed. The solution of Metbase VS is condensed with paranitrobenzoyl Chloride. Nitrobenanilide VS is isolated which is reduced by iron and acetic acid is presence of methanol as solvent. Then it is distilled out. Then menthanol is also separated and wet cake is obtained which is dired.

CHEMICAL REACTION



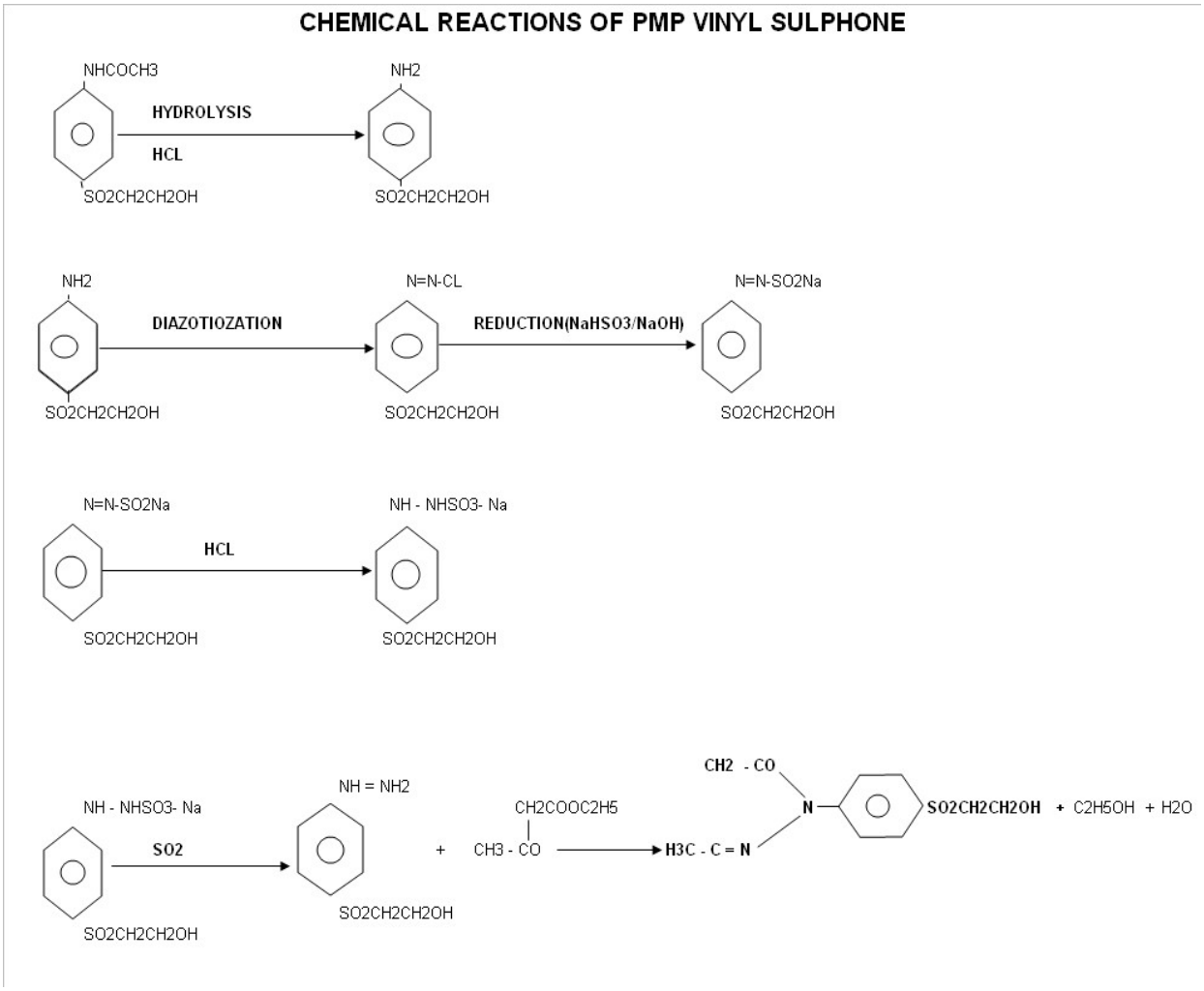
MASS BALANCE



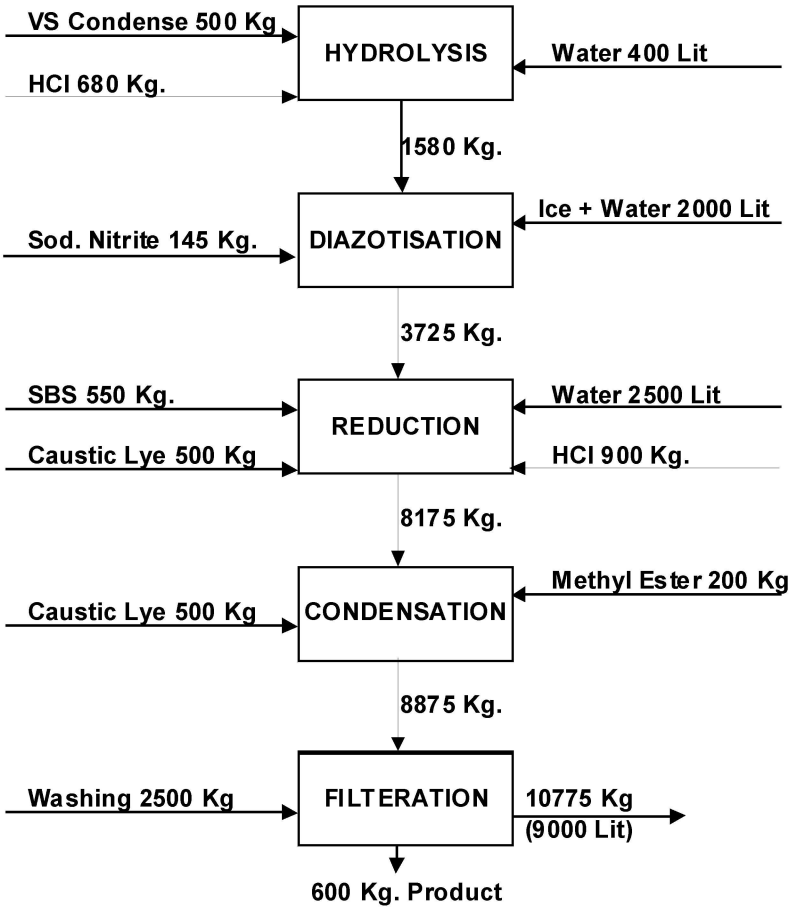
2.3.9 PMP VINYL SULPHON (PROPOSED)
MANUFACTURING PROCESS

The VS condense is hydrolyzed with HCl and then the reaction mass is diazotized with sodium Nitrite. The diazo mass is then reduced with SBS, Caustic lye, HCl. The reduction mass is then condensed with Methyl ester and caustic lye. The condensed mass is then filtered and the wet cake is centrifuged and packed.

CHEMICAL REACTION



MASS BALANCE

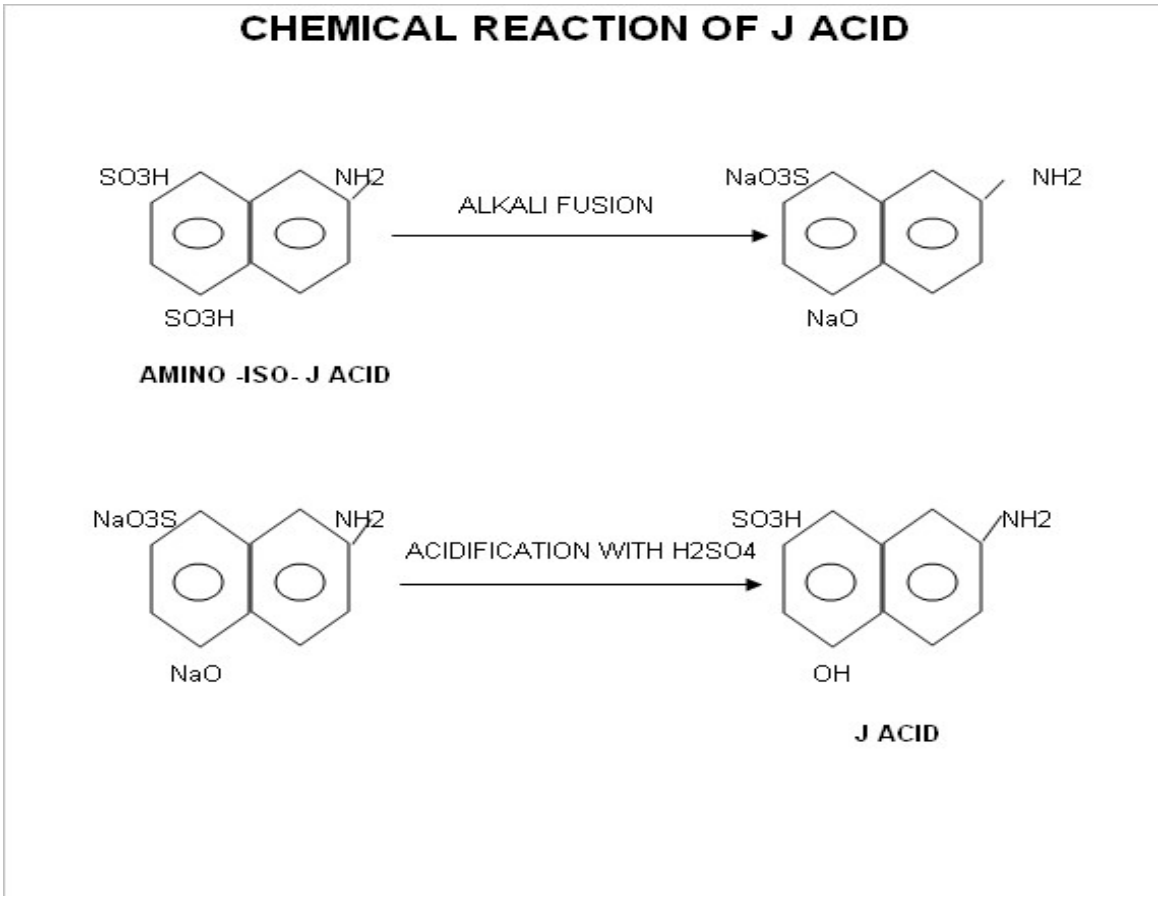


2.3.10 J-ACID (PROPOSED)

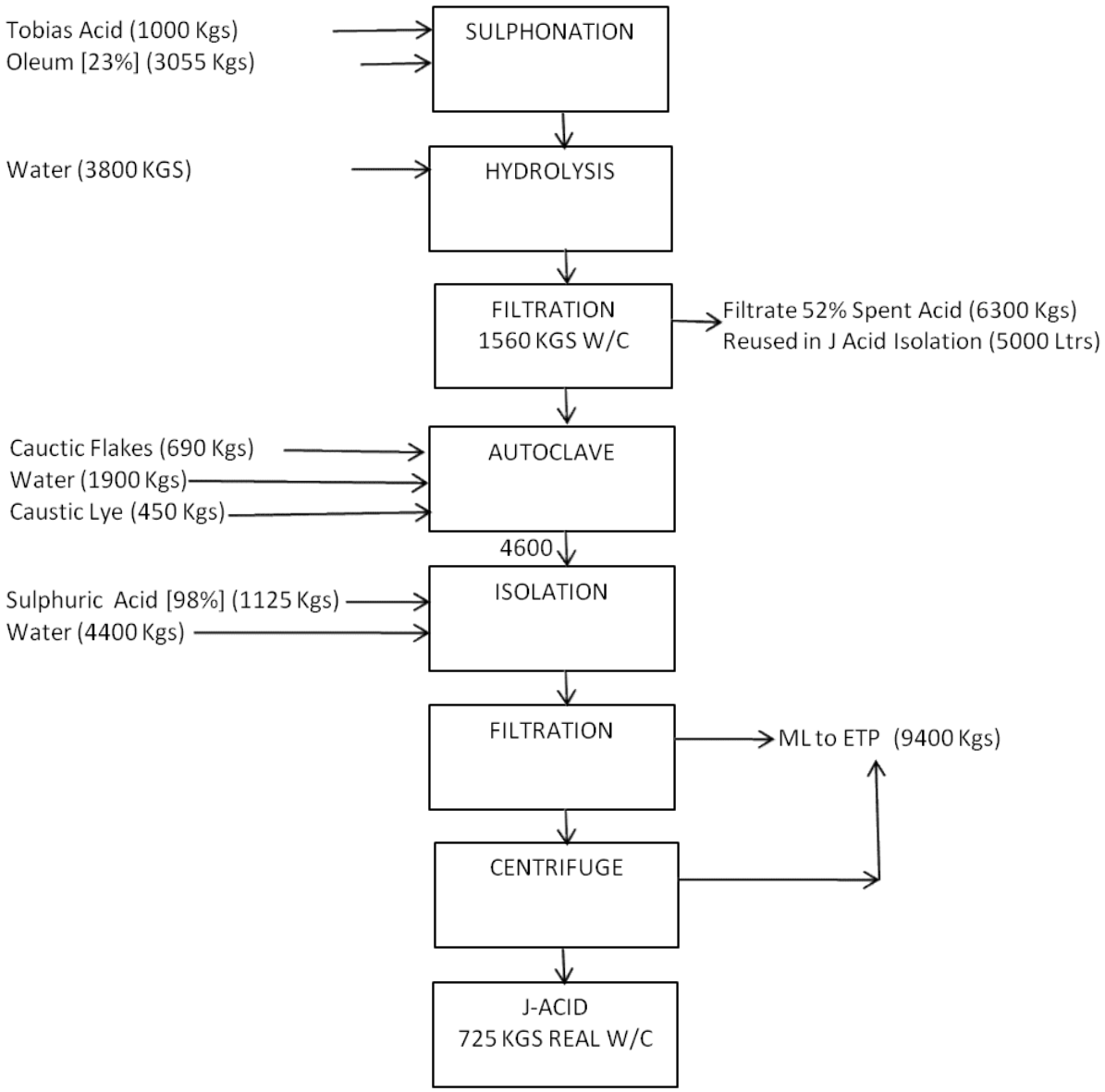
MANUFACTURING PROCESS

Tobias Acid is sulphonated by 23% Oleum, hydrolyzed by water and the wet cake is autoclaved with caustic flakes. After autoclaving the mass is isolated with the help of 98% H2SO4.It is then filtered, centrifuged and dried to obtain J acid.

CHEMICAL REACTION



MASS BALANCE

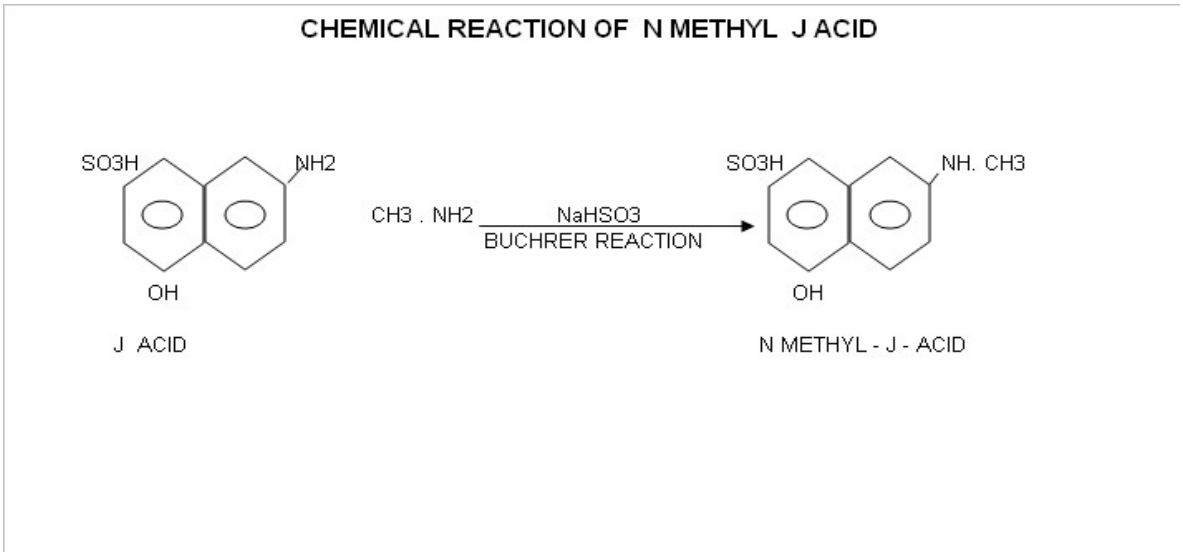


2.3.11 NMJ ACID (PROPOSED)

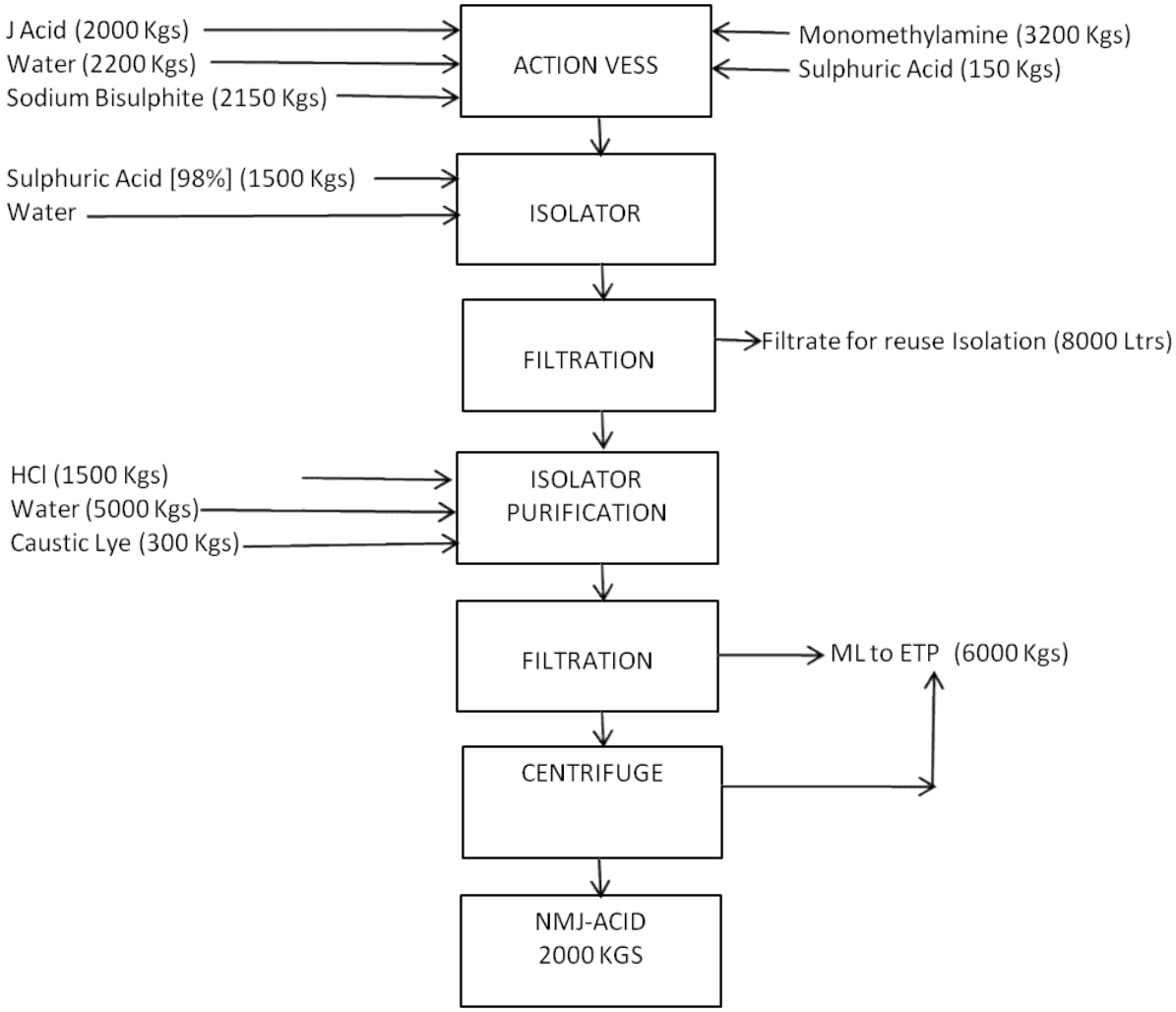
MANUFACTURING PROCESS

J acid is charged with monomethyl amine, H2SO4, water and sodium bisulphite in an SS reactor. The mass is then isolated with the help of 98% H2SO4.After filtration further purification is done by Caustic lye and HCL. The final mass is filtered in a filter netucsh and the wet cake is dried to get the product.

CHEMICAL REACTION



MASS BALANCE



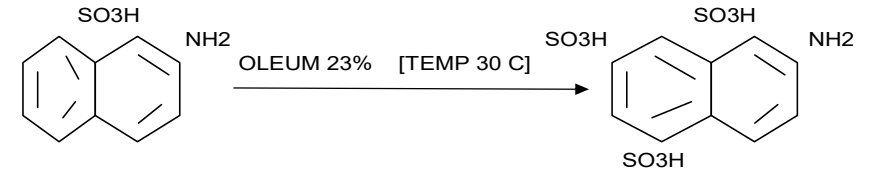
2.3.12 SULPHO TOBIAS ACID (PROPOSED)

MANUFACTURING PROCESS

Tobias Acid is sulphonated with 23% Oleum and the sulphonated mass is drowned in ice, common salt and water. The mass is then filtered; centrifuged and wet cake of sulpho Tobias is obtained.

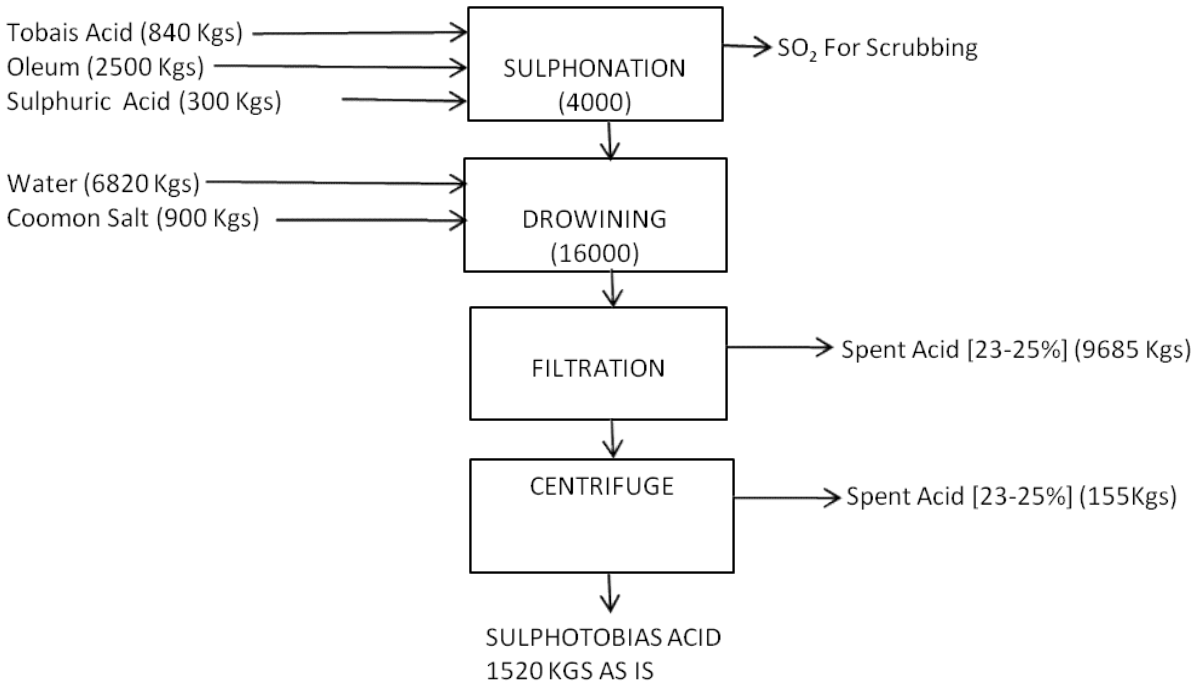
CHEMICAL REACTION

CHEMICAL REACTION OF SULPHOTOBIAS ACID



TOBIAS ACID **SULPHO TOBAIS ACID**

MASS BALANCE



2.3.13 SYTHETIC ORGANIC DYES (PROPOSED)

Suitable Amino compound is diazotized and coupled with suitable coupler to get the dye. If necessary the mass is isolated and filtered with the wet cake is made into the solution form by water and spray dryed.

REACTIVE DYES:

The reactive dyes are manufactured in the following steps. Depending on the tint to be obtained the Reactive Dyes would be manufactured with or without isolation stages. The isolation stage would follow the coupling stage whenever required.

1. Reactive blue BB (220)

Process Description:

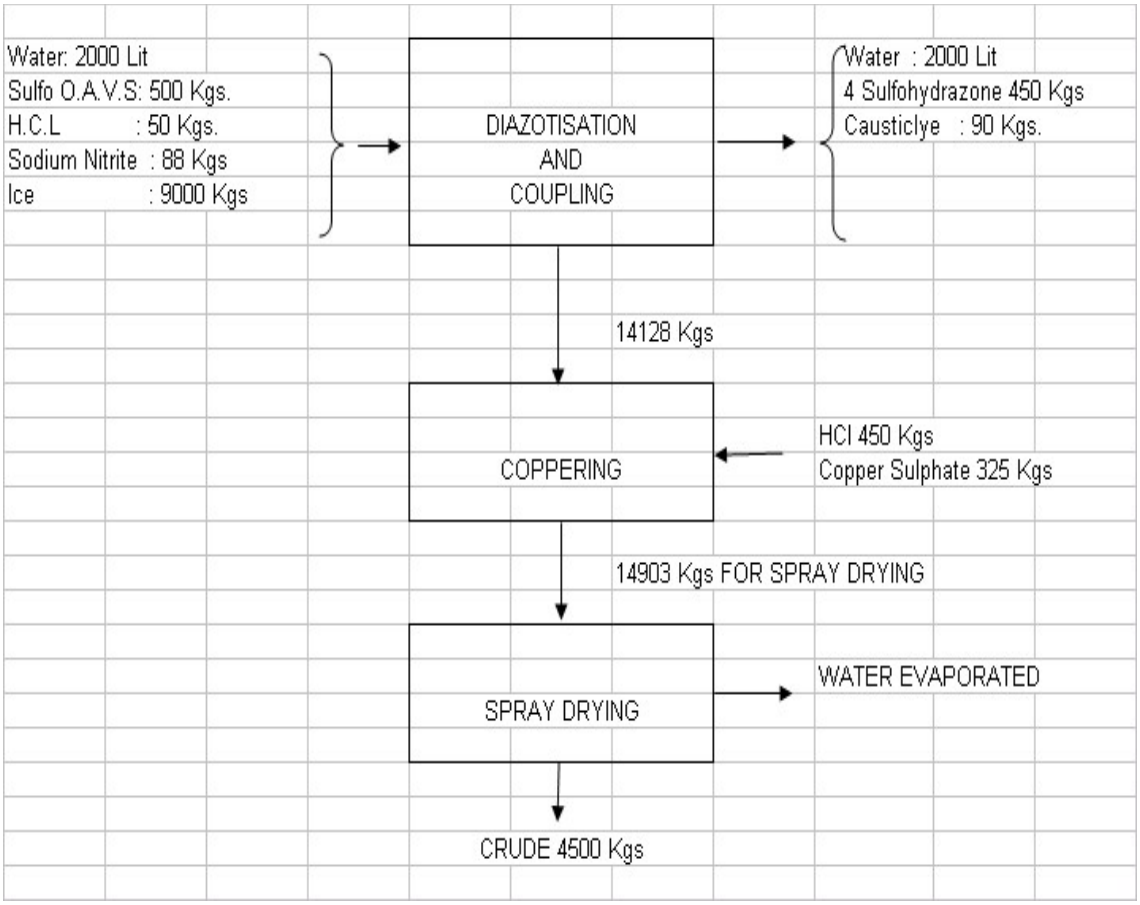
Diazotization :- Take water 2000lit in a reaction _____ prepare diazo by adding sodium Nitrite gradually keeping temperature between 5 and 8 C by charging ice prepare solution of 4 sulfo hydrazone (450 Kgs) by adding caustic lye (90 kgs real).

Coupling: - Add 4 sulfohydrazone solutions to diazo of sulfo O.A.V.S. Keeping temp. 5 to 7 C. by charging ice then charge HCL: (450kgs) and capper sulfate (325 kg) after coupling.

Spray drying: - Dye solution is transferred to spraydring tank for spray drying and crude is obtained crude.

Standardization: - Crude is charged in blender and Glauber Salt and dedusting is added for standardization of dyes and packed in packing as per requirement.

Mass Balance



2. Reactive Navy Blue RGB: 250

Process Description:

Diazotisation:-

Take water in reaction vessel (250 lit.). Charge Vinylsulfone 1.0 M.T + 450 Kgs HCL. Stirr for overnight Charge Ice: 35.0 MT. Charge sodium Nitrite 250 Kgs.(500 Lit) Slowly keeping temp between 8 to 5 C to complete diazo.

Coupling: - It can be confirmed. By starch to dide paper

Charge H.acid (1080 Kgs) Keeping temp 0 to 5 C

Charge soda ash to maintain PH: 5.5

Diazotisation of OA V.S:

Take water 2500 lit. Charge OAVS 1125 Kgs (Real)

Charge HCL 425 Kgs. Stirr for overnight

Charge sodiumnitrite (255 Kgs) to complete

Diazotisation it can be confirmed by starch iodide pater.

Second coupling:-

Add diazo od O.A.V.S. in coupled solution of V.S and H.Acid keeping temperature 0 to 5 C after completion. Completion of coupling maintain PH to 6.0

Spraydrying:-

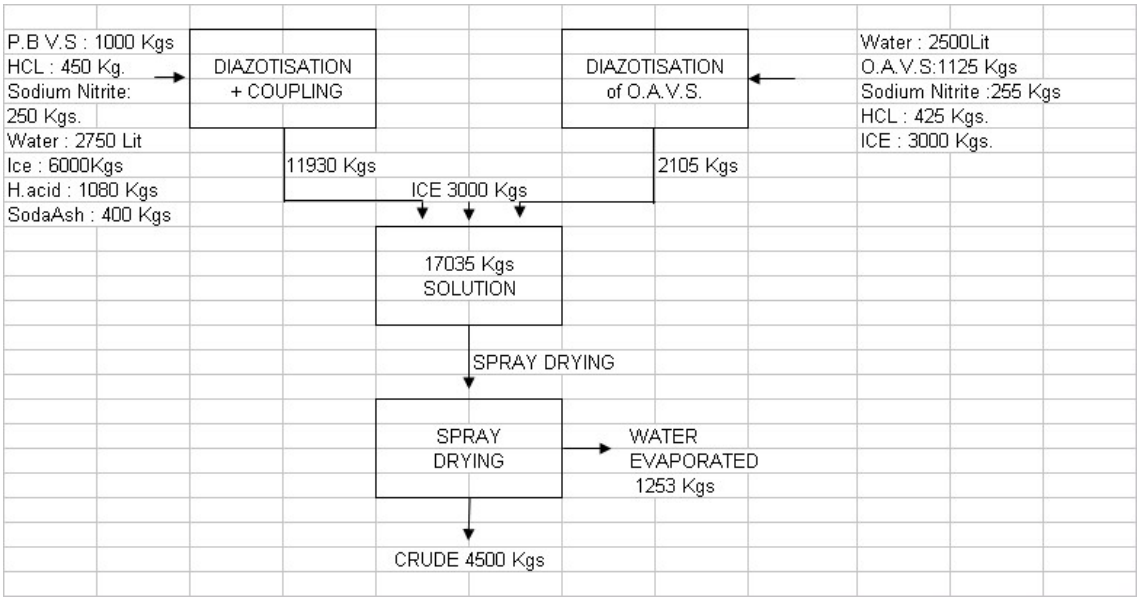
The standardised dye liquide will be transferred to apray drying process.

Crude product:-

Andarization:

Spraydried product is charged to blender or Ball mill and standrdized by adding Glaubersalt and dedusting Oil and packed in bags / drums as required

Mass Balance



3. Reactive Navy Blue GG: 203

Process Description:

Diazotisation:-

Take 2500 lit water charge 1.0 M.T V.S. Charge 450Kgs HCL charge Ice. 4000 Kgs.Charge sodium Nitrite 250 Kgs. Graduialy check diazotisation com[;etion on starch Iodide paper.

1st Coupling: -

Charge H.Acid (1080 Kgs.) temperature between 0 to 5 C charge.

Sodaash (400 Kgs.) to keep P H: 5.5

Diazotisation of 2:5 D.M.A.V.S

Take Water 2500 Lit in reaction vessal. Charg 2:5 DMAV.S (1200 Kgs Real).

Charge HCL 430Kgs, Charge Sodium Nitrite to complete diazotization

Keeping temperature 5 to 8 C charge Ice to maintain temperature,

Charge sodaash to raise PH to 5.5

Second coupling:-

Charge diazo of 2:5 DMAV.S to Coupled solution of V.S. and H.Acid Keeping temperature 5 C by charging Ice.

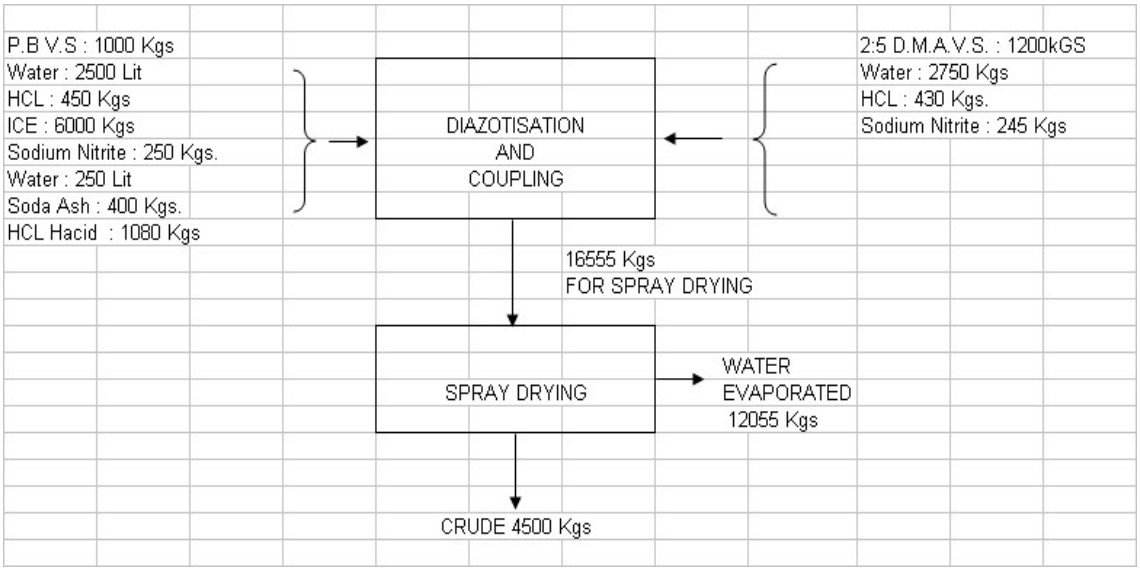
Spraydrying:

The standardised bdye liquid will be transferred for spraydrying.

Standardiztion:

The spray dried power is charged to ballmill or blender and standerdised by adding glauber salt and anti dusting oil. And packed as requirement.

Mass Balance



4. REACTIVE BLACK N-200

Process Description:

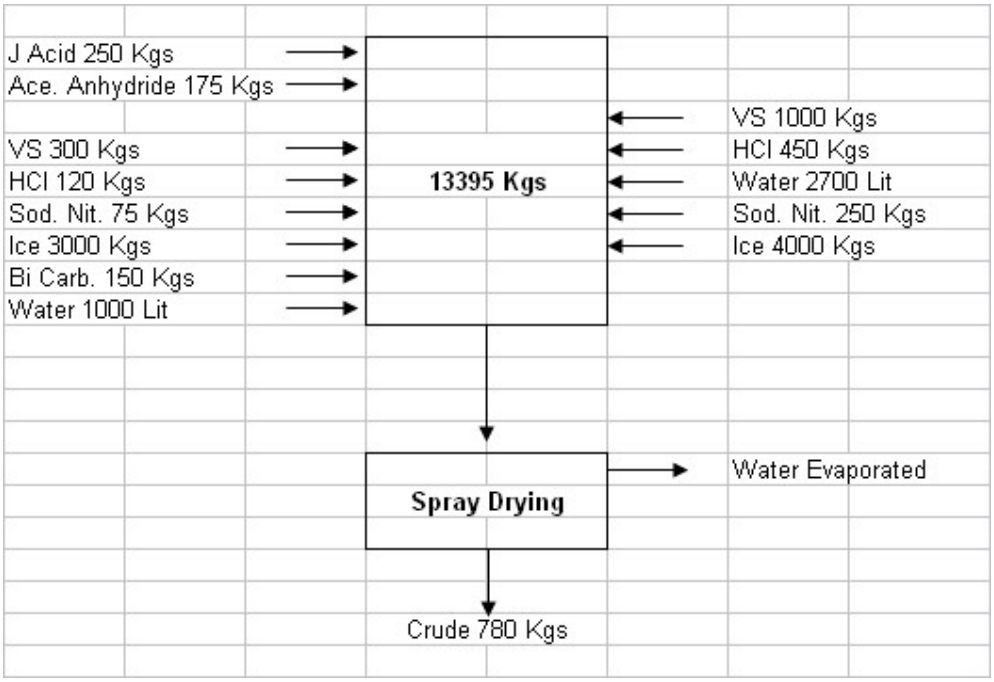
ACETYLATION OF J. ACID:-

Take Acetic Anhydride (175 Kgs) in a reaction vessel. Then charge J. Acid at temp. 25°c. Maintain upto completion of Acetylation.

DIAZOTIZATION:-

In a reaction vessel take 700 Lit water and charge 300 Kgs Vinylsulphone & 120 Kgs HCl. Then charge Sodium Nitite to prepare diazo of Vinylsulphone. Completion of Diazo is checked by starch Iodide paper. Keep temp. 5 to 7°c by ice. This is to be transferred for Spray Drying and then for Blending for uniform material.

Mass Balance:



PREPARATION OF BLACK B

Take 2500 Lit water and charge Parabase Vinylsulphone and stirr it. Charge 450 Kgs HCl and cool to 5°c by Ice. Charge Sodium Nitrite for Diazo preparation. Check on Satrch Iodide paper for completion of Daizo. Then Charge H. Acid 550 Kgs keeping temp. 7 to 9°c by Ice.

2nd Coupling:- Charge Acetyl J Acid in Diazotised mass and transfer Black B solution in it. Stirr to obtain required tone. Maintain pH 5.5 by Soda Bi Carbonate 150 Kgs. Then transfer for spray drying.

Yield: 1000 Kgs

5. Reactive Orange WNN

Process Description:

Diazotisation:-

Charge water 300 lit. Charge Sulpho Parabase V.S. 100 Kgs, stirr it. Charge HCl 35 Kgs and Sod. Nitrite Solu. 70 Lit (15%) slowly keeping the temp. 5 to 7oc by charging Ice. Check completion of diazotization on starch Iodide paper.

Take 150 Lit water and charge Caustic Lye 50 Kgs. Prepare solution of J.Acid 63 Kgs.

Daizo preparation of PBVS:

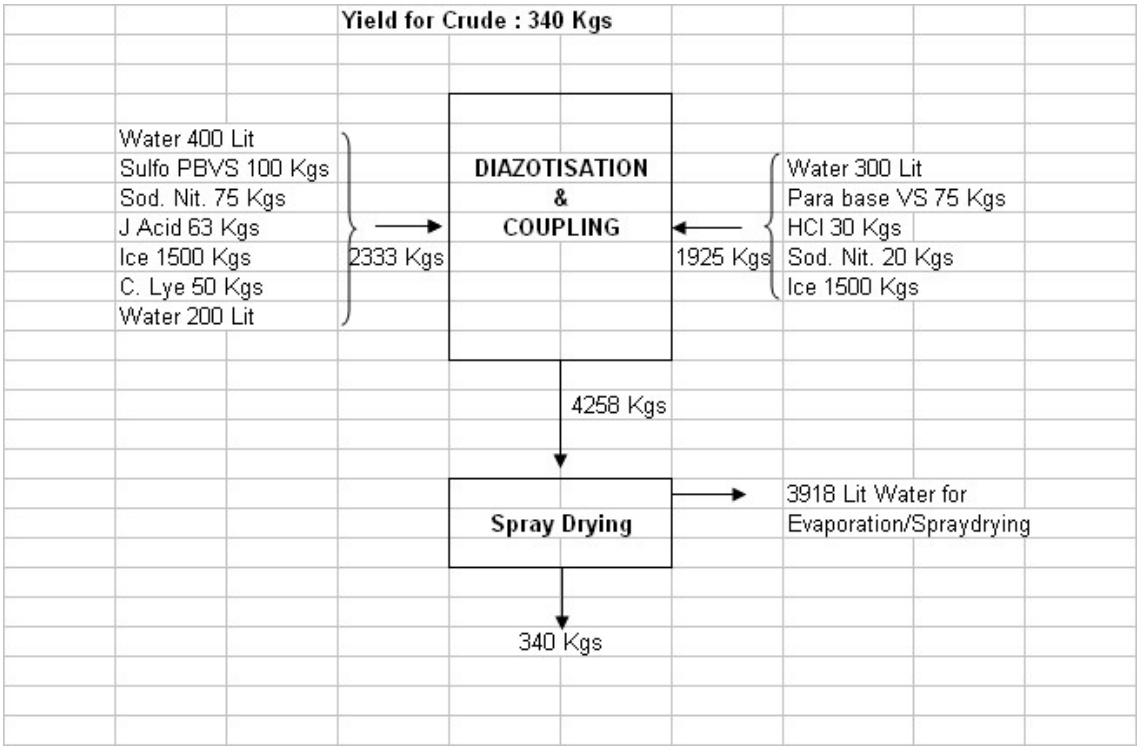
Take 200 Lit water. Charge 75 Kgs Vinyl Sulphone. Charge HCl 30 Kgs and Sod. Nitrite Solu. 40 Lit of 50%. Check on starch Iodide paper for the completion of Diazotisation.

Coupling:

Charge J.Acid solu. In Sulpho PBVS diazo and PBVS diazo in Sulpho PPVS Diazo keeping under stirring. Charge Soda Bi Carb. 50 Kgs to keep pH 5.5. Transfer the Solution for spray drying.

Spray dried material is standardised by adding Glouber Salt and the Packing.

Mass Balance:



6. Reactive Yellow WNN

Process Description:

Diazotisation:-

In a reaction vessel take 300 lit water charge 100Kgs. Sulfoparabase V.S. stirrit. Then charge HCL (35 Kgs) charge Sodium Nitrite Solution (Real 20 Kgs) slowly to keep temp. 5 to 7 C by charging Ice (1500 Kgs) Prepare diazo. Chech diazo by starch Iodide paper for completion.

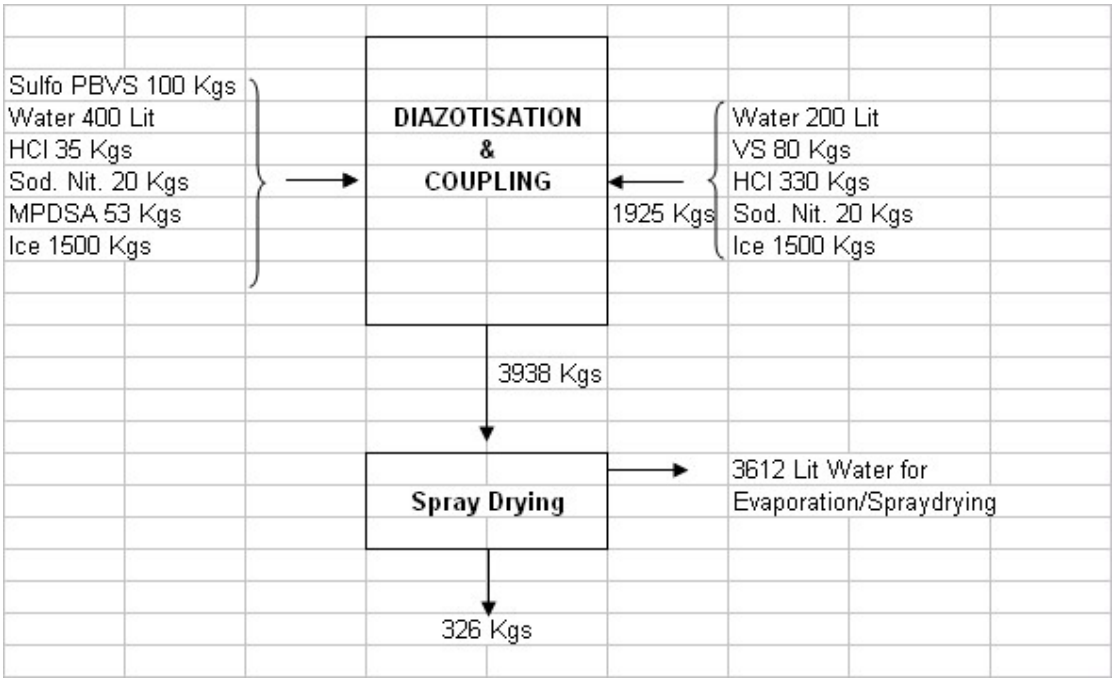
Charge MPDSA 53 Kgs it diazo.

Preparation of Parabase V.S. diazo:

In a reaction vessel take 200 Lit water charge 80 Kgs Para Base Vinyl Sulfone charge 30 Kgs HCL and slowly add sodium Nitrite Solution (20 Kgs Real) to prepare diazo check diazo on starch lodide paper for completion Transforr diazo of P.B.V.S. and M.P.D.S.A. stirr it and check to achieve adquate tone Dyes solution is prepared.

Solution of Dyes is transferred for spray drying and then for further blending to get adequate standardization by charging glauber's salt and dedusting Oil.

Mass Balance:



7. Reactive Black 5

Process Description:

Diazotisation:-

ACVS charged to a reaction vessel along with water and ice to maintain temperature between 0 to 5 C. Then Hydrochloric Acid will be added followed by Sodium Nitrite powder gradually till diazotization completed, which can be confirmed by starch iodide paper. Any excess nitrite will be removed by adding 1 to 2 kg Sulfamic Acid just before coupling. Keep temperature between 0 to 5 C throughout the diazotization reaction.

Coupling:-

Charge H Acid to the diazotized VS and stir it keeping the temperature between 0 to 5 C by adding of ice.

Spray Drying:-

The standardized dye liquid will be transferred to the spray drying holding tank and spray dry.

Crude Product: - 6965 Kg.

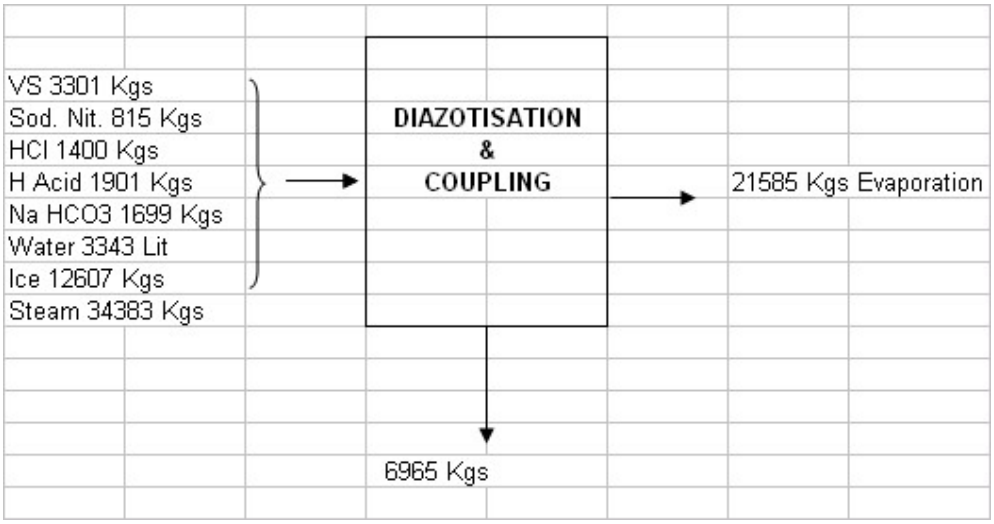
Standardization:-

The spray dried powder is then charged to the Ball - Mill and standardize be adding Glauger's Salt and anti - dusted by antidusting oil.

Packing:-

The final product is then packed in HDPE bags / M.S.Drums / Plastic Carboyes / Paper cartoon boxex.

Mass Balance:



8. Reactive Black HGR

Process Description:

Diazotisation:-

ACVS charged to a MSRL reaction vessel along with water and ice to maintain temperature between 0 to 5 C. Then Hydrochloric Acid will be added followed by Sodium Nitrite powder gradually till diazotization completed, which can be confirmed by starch iodide paper. Any excess nitrite will be removed by adding 1 to 2 kg Sulfamic Acid just before coupling. Keep temperature between 0 to 5 C throughout the diazotization reaction.

Cyanuration:-

Charge J Acid in cyanuric chloride and stir it keeping the temperature between 0 to 5 C by adding of ice.

First Coupling:-

Charge H.Acid to the diazotized VS and stir it keeping the temperature between 0 to 5 C by adding of ice.

Second Coupling;-

Charge cyanurated J Acid to the diazotized VS and stir it keeping the temperature between 0 to 5 C by adding of ice.

Spray Drying:-

The standardized dye liquide will be transferred to the spray drying holding tank and spray dry.

Crude Product: - 4467 kg.

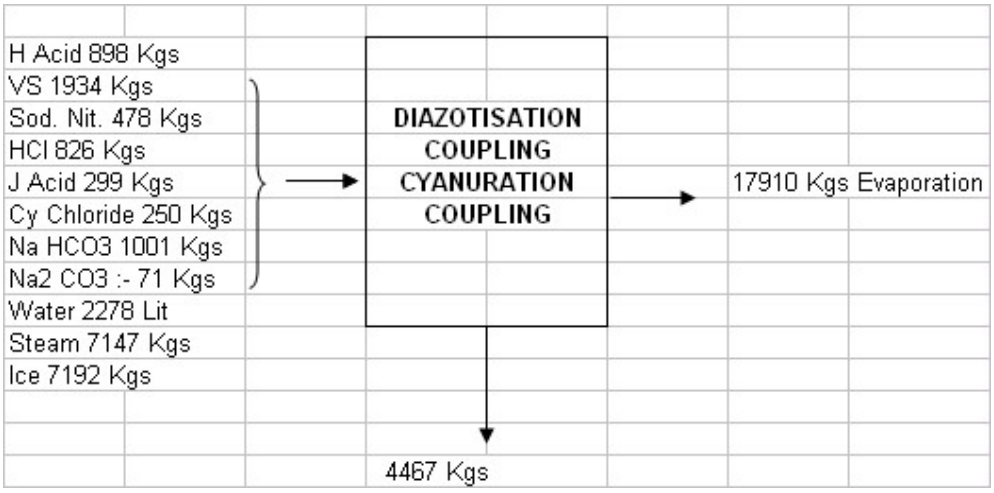
Standardzation:-

The spray dried powder is then charged to the Ball - Mill and standardize be adding Glauger's Salt and anti - dusted by antidusting oil.

Packing:-

The final product is then packed in HDPE bags / M.S.Drums /Plastic Carboyes / Paper cartoon boxes.

Mass Balance:



9. Acid Black 210

Process Description:

Diazotisation of PNA:-

Take water HCL (500 Lit + 320 Kgs) charge PNA (125 Kgs). Stirr and allow to clear the solution cool to 5 C by Ice charge Sodium Nitrite Solition (70 Kgs real) check completion of diazotization on starch lodide paper. Stirr for 2Hrs. To stabilise diazo charge coupling: charge H.Acid (280 Kgs) at temp 12 C Allow to stirr for 2 Hrs.

Diazotisation of DASA:

Take water 700 Lit

Charge DASA 214 Kgs

Charge HCL 480 Kgs

Cleav solution is obtained by freestirring change Ice to cool to 5 C charge Sodium Nitrite Solution (115 Kgs Real) to complete diazotisation. Check Reaction on starch lodide paper.

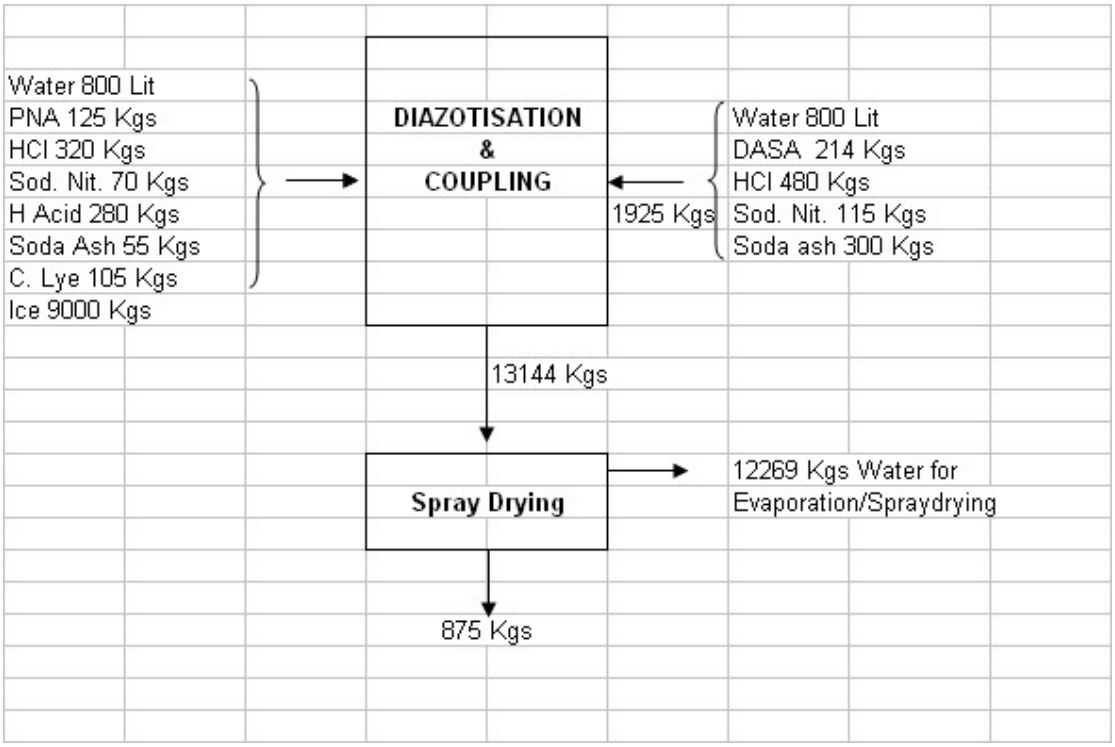
Second Coupling;-

Transfer Diazo of DASA to coupled Solution of PNA + H.Acid. Give free stirring to obtain

Tone:

Charge Soda ash to keep PH: 5.5 then charge MPD (90-90 Kgs) to obtain tone. Then charge Caustic lye to obtain PH: 7.0 Filter the Solution and spray dry. Then transfer the material to blending for standardisation by adding Glauber Salt and dedusting Oil.

Mass Balance:



ANNEXURE-IV

DETAILS OF WATER CONSUMPTION, WASTEWATER GENERATION AND TREATMANT

DETAILS OF WATER AND WASTEWATER

Section	Water Consumption (KL/day)			Wastewater Generation (KL/day)		
	Existing	Proposed	Total	Existing	Proposed	Total
A. Industrial						
Process+Washing	331	1100	1431	27.0	350	377
Boiler	182	180	362	---	15	15
Cooling	71	100	171	---	20	20
B. Gardening *	60	60	120	---	---	---
C. Domestic	20.2	60	80.2	20.20	55.0	75.2
Total	**584.0**	**1380**	**1964**	**27.0**	**385**	**412**
Grand Total	**664.2**	**1500**	**2164.2**	**47.20**	**440**	**487.2**

Note: * Gardening water in existing as well as in proposed scenario is process recycle water.

ANNEXURE-V

DETAILS OF TREATMENT SCHEME AND DISPOSAL

M/s. Mayur Dye Chem Intermediates Ltd. has two treatment schemes for effluent generated from the plant. High COD stream generated from H Acid Plant and EO condensate from VS Plant is evaporated after removing Glauber's salt and the concentrated effluent from the evaporator is completely incinerated in an incinerator. Effluent generated from other then H-acid and concentrated stream is treated in existing effluent treatment plant consisting of primary & secondary treatment units. The details of ETP are as follows. After proposed expansion company is proposing new Effluent Treatment plant consisting primary, secondary and tertiary treatment.

BRIEF DESCRIPTION OF ETP (EXISTING)

All the raw effluent streams containing low COD are collected in the Neutralisation Tank and then to Equalization Tank. Equalized effluent from this tank is pumped to Flocculation Tank. Here Alum or Poly-electrolyte is added for flocculation and then effluent is go to Primary clarifier where the sludge is formed by settling, this sludge is diverted to sludge drying beds and clear liquid is go to the Neutralisation tank . Treated water from primary clarifier is going to Aeration tank. In aeration tank, activated sludge shall be generated and maintained for biodegradation of organic matter. The aerator is supply air for biological degradation and overflow from here is go to secondary clarifier by gravity. The clarifier is remove biological sludge to sludge drying beds and partly is re-circulated to aeration tank to maintain biomass and overflow from secondary clarifier is go to settling tank. The treated effluent is then collected in holdup tank. Treated effluent is discharge into effluent channel project of M/s.ECPL and is ultimately conveyed up to the estuary of river Mahi for final disposal.

The sludge from Primary Clarifier and Secondary Clarifier is send into Filter press. From filter press sludge is sent to TSDF for final disposal.

ETP UNITS (EXISTING)

Sr. No.	NAME OF UNIT	Nos.	CAPACITY
1.	Neutralization Tank	2	10 m^3
2.	Neutralization Tank	1	10 m^3
3.	Equalisation Tank	1	100 m^3
4.	Flash Mixer	1	1 m^3
5.	Primary Clarifier	1	40 m^3
6.	Aeration Tank	1	200 m^3

7.	Secondary Clarifier	1	60 m^3
8.	Aeration Tank	1	60 m^3
9.	Settling Tank	1	27 m^3
10.	Holding Tank	1	15 m^3
11.	Filter Press	2	-----

ETP UNITS (PROPOSED)

Sr. No.	NAME OF UNIT	Nos.	CAPACITY
1.	Oil & Grease Tank	1	4.8 m^3
2.	Equalisation Tank cum Neutralization Tank	1	1000 m^3
3.	Neutralization Tank	2	40 m^3
4.	Flash mixer/ Flocculator	1	15 m^3
5.	Primary Clarifier	1	222.3 m^3
6.	Aeration Tank	1	3000 m^3
7.	Seconsty Settling Tank	1	28.6 m^3
8.	Aeration Tank	1	1000 m^3
9.	Secondary Settling Tank	1	26 m^3
10.	Sludge Holding Tank - 1	1	203 m^3
11.	Sludge Holding Tank - 2	1	20 m^3
12.	Filter Pump	---	---
13.	Sand Filter	2	17 m^3
14.	Carbon Filter	2	17 m^3
15.	Guard Tank	1	1000 m^3

CHARACTERISTICS OF TREATED EFFLUENT

Sr. No.	Parameter	Treated	
		Existing (GPCB Results)	Expected Proposed
1	pH	7.93	7.0
2	Temperature (^{0}C)	28	29
3	Colour (Pt.Co.Sc.)	60	60
4	TDS (mg/L)	8212	4800
5	Suspended Solids (mg/L)	82	80
6	Ammonical Nitrogen (mg/L)	3.36	-
7	Chloride (mg/L)	3600	2800
8	Sulphate (mg/L)	200	190
9	COD (mg/L)	60	60
10	Oil & Grease (mg/L)	4	4
11	Phenolic Compounds (mg/L)	0.91	-
12	BOD (mg/L) (3 days & 27^{0}C)	15	20

ECPL Inlet Norms:

PARAMETERS	INLET NORMS
pH	6.5 to 8.5
Temperature	40 ^{o}C
Color (pt.co.scale) in units	100 units
Suspended Solids	100 mg/l
Oil and Grease	10 mg/l
Phenolic Compounds	1 mg/l
Cyanides	0.2 mg/l
Fluorides	1.5 mg/l
Sulphides	2 mg/l
Ammonical Nitrogen	50 mg/l
Arsenic	0.2 mg/l
Total Chromium	2.0 mg/l
Hexavalent Chromium	0.1 mg/l
Copper	3 mg/l
Lead	0.1 mg/l
Mercury	0.01 mg/l
Nickel	3 mg/l
Zinc	5 mg/l
BOD (3 days at 27 ^{o}C)	100 mg/l
COD	250 mg/l
Chlorides	600 mg/l
Sulphates	1000 mg/l
Total dissolved solids	5000 mg/l
Insecticides/Pesticides	Absent
Bio-assay test	90 % Survival of fish after 96 hours in 100 % effuent

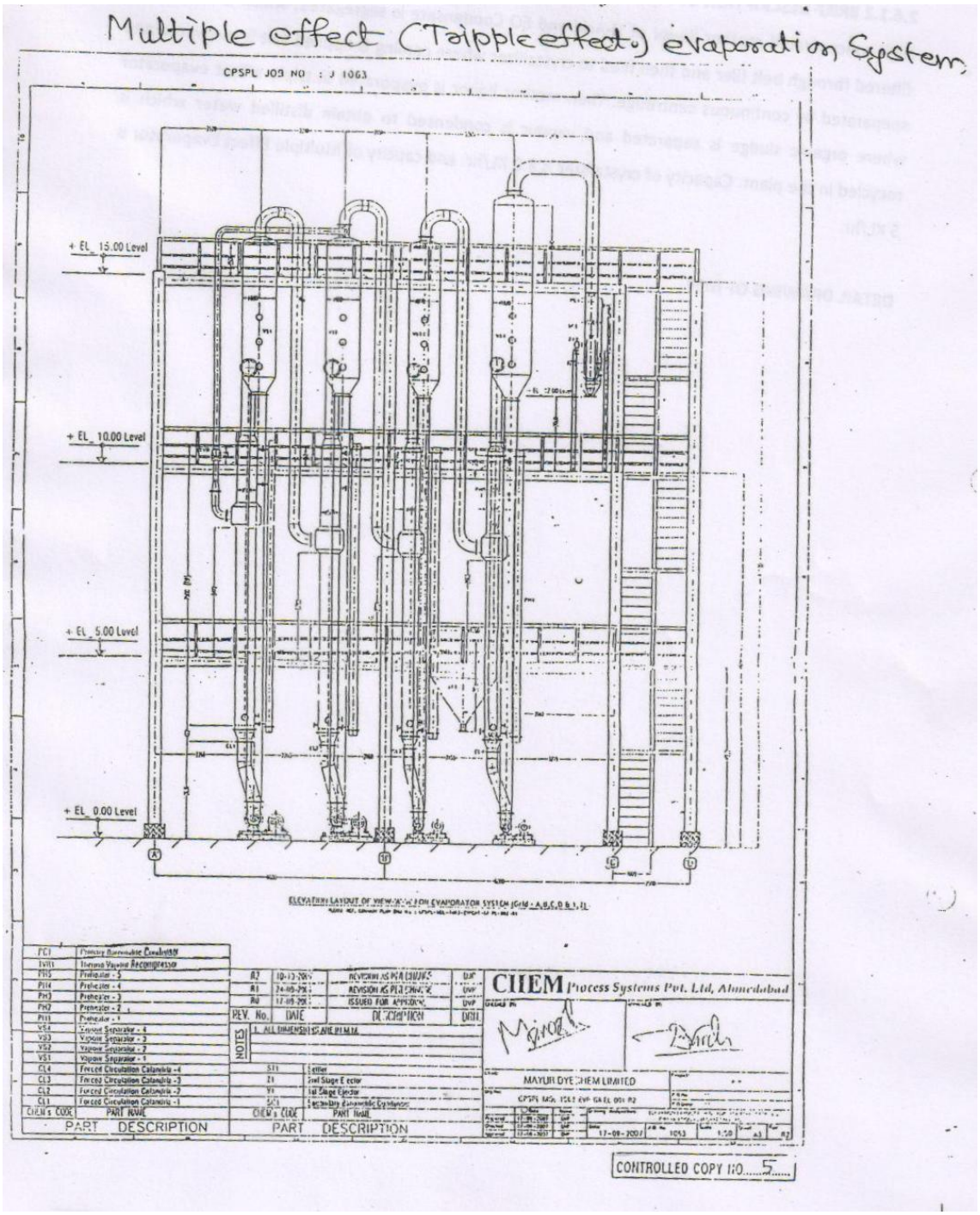
BRIEF DESCRIPTION OF MEE (EXISTING)

High concentrated mother liquor of H-Acid and EO Condensate is segregated, which is neutralized filtered through belt filer and then feed to crystallizer where cooling is applied salt is recovered and speparated by continuous centrifuge. Then mother liquor is evaporated in triple effent evaporator where organic sludge is separated and vapour is condensed to obtain distilled water which is recycled in the plant. Capacity of crystallizer is 8.0 KL/hr. and capcity of Multiple Effect Evaporator is 5 KL/hr.

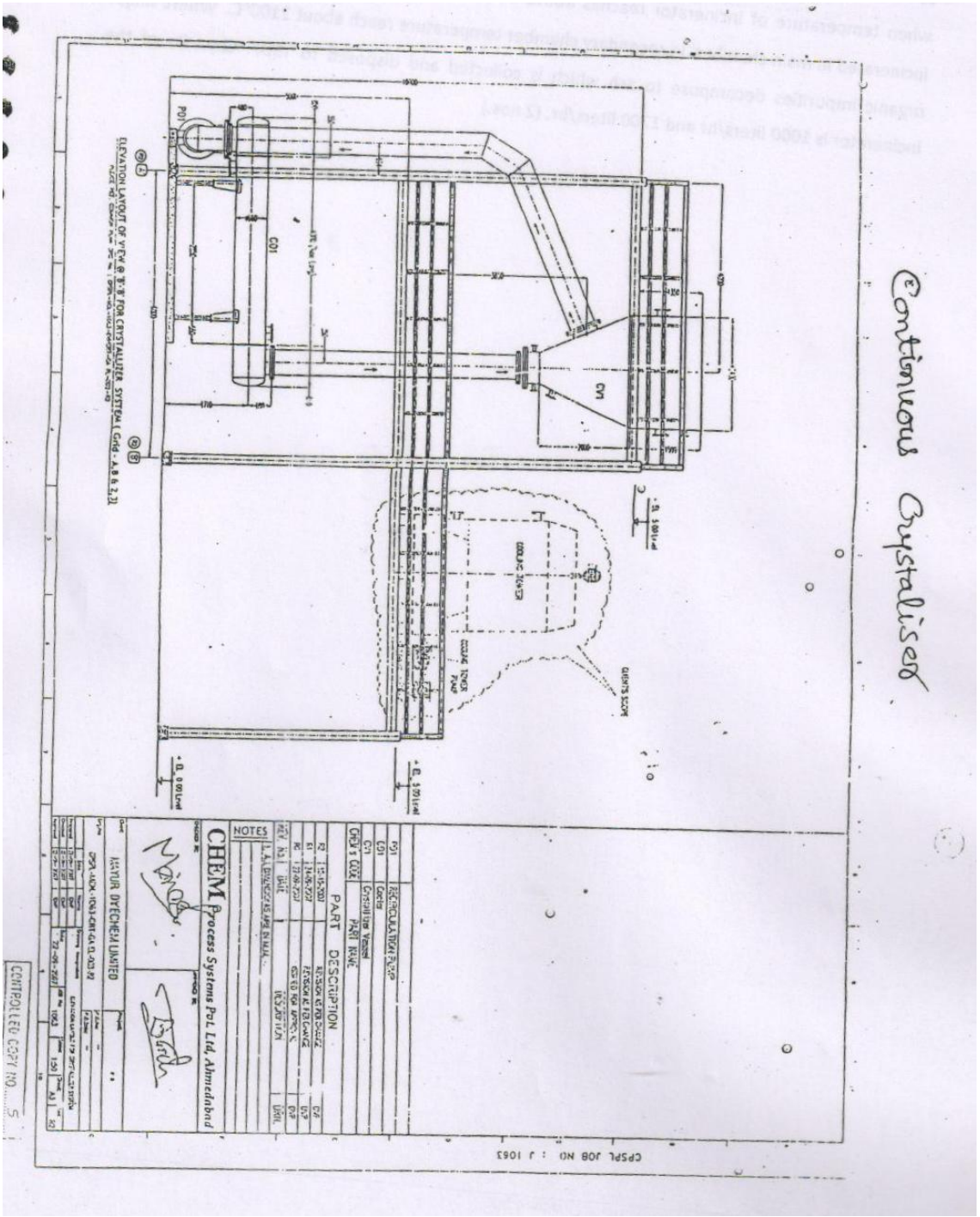
BRIEF DESCRIPTION OF MEE(NO.2) (PROPOSED)

High concentrated mother liquor of H-Acid and EO Condensate is segregated, which is neutralized filtered through belt filer. Then mother liquor is evaporated in triple effent evaporator where organic sludge is separated and vapour is condensed to obtain distilled water which is recycled in the plant. Capcity of Multiple Effect Evaporator-1 is 5 KL/hr. Capcity of Multiple Effect Evaporator-2 is 2 KL/hr

DETAIL DRAWING OF MEE

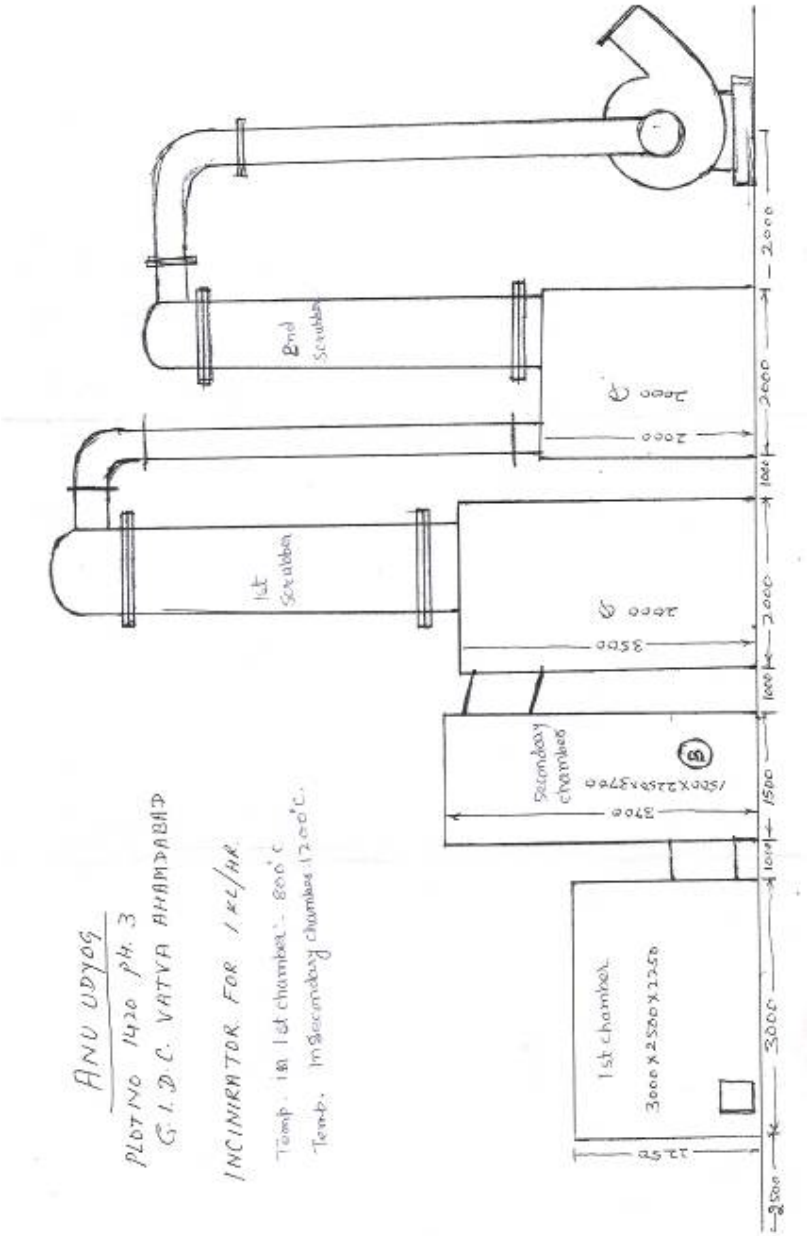


Continuous Crystalliser



BRIEF DESCRIPTION OF INCINERATOR

Effluent generated from H-Acid is first neutralized and filtred. Then it is fed to continous crystaliser to recover glauber salt which is centrifuged and recycled. Mother Liqour is sprayed in incinerator when temperature of incinerator reaches above 800°C. In primary chamber. Mother Liquour is incinerated in main chamber. In secondary chamber temperature reach about 1100°C. Where major organic impurities decompose to ash which is collected and disposed to TSDF. Capacity of the incinerator is 1000 liters/hr and 1200 liters/hr. (3 nos.)



ANNEXURE-VI

DETAILS OF HAZARDOUS WASTE GENERATION & DISPOSAL

The hazardous wastes generated are ETP Sludge from Effluent Treatment Plant, Incineration ash from Incinerator, gypsum sludge from power plant, Discarded Containers/Barrels/Liners used for handling of hazardous wastes/chemicals, Iron waste and spent sulphuric acid from process, spent oil from process. These Hazardous wastes are stored in scientifically designed and constructed hazardous waste storage area within the premises with leachate collection system. And send for disposal to secured land fill site at Nandesari.

Generation, utilization and disposal of all the solid/hazardous wastes including H_2SO_4 (1, 20,000 MTPA), waste gypsum and $ZnSO_4$ etc

Spent Acid:

Generation:

Total Generation of Spent Acid per Day: 300 MT/ Day

Utilization:

Consumption in Various Plants: 190 MT/Day

Quantity of Spent Acid treated – 110 MT/Day of Average 15%

Gypsum:

Generation:

Gypsum generation of various plants: 50 MT/Day

Gypsum generation of ETP of H.Acid: 26 MT/Day

Gypsum generation of H.Acid Process: 104 MT/Day

Disposal:

Sell to Cement Manufacturing Unit

Iron Sludge:

Generation:

Quantity of Iron Sludge generation: 25 MT/Day

Disposal:

Sell to Cement Manufacturing Unit

Spent Oil:

Generation:

Total Generation of Spent Oil per Day: 0.083 KL/ Day

Utilization:

Selling to CPCB approved reprocessor

ETP Sludge:

Generation:

Total Generation of ETP Sludge per Day: 11.66MT/ Day

Utilization:

Sent to TSDF site operated by M/s. NECL, Nandesari or M/s. GESCSL, Vatva, Ahmedabad

Discarded Containers/ Barrels/Drums:

Generation:

Total Generation of Discarded Containers/ Barrels/Drums per Day: 0.023 MT/ Day

Utilization:

Sell to authorize recycler

Incinerator Ash:

Generation:

Total Generation of Incinerator Ash per Day: 11.66 MT/ Day

Utilization:

Sent to TSDF site operated by M/s. NECL, Nandesari or M/s. GESCSL, Vatva, Ahmedabad

Storage of Solid Waste:

Proper storage for solid waste with adequate impervious floor and leachet system is provided.

Storage yard is covered with roof.

ANNEXURE-VII

DETAILS OF STACK AND VENTS

DETAILS OF SOURCE OF EMISSION (EXISTING & PROPOSED)

Sr. No.	Source of emission	Type of emission	Stack Height (meter)	Stack diameter (meter)	Pollution control equipment	Fuel name
1	Boiler-I & 2 (Existing)	PM, SO_2, NO_x	33	1.0	Stack height	Natural Gas
2	Termic Fluid Heater (Existing)	PM, SO_2, NO_x	12	0.3	Stack height	Natural Gas
3	Incinerator-1 (Existing)	PM, SO_2, NOx, HCL, CO	30	0.5	Alkali Scrubber + Stack Height	Natural Gas
4	Incinerator-2 (Existing)		33	1.0	Alkali Scrubber + Stack Height	Natural Gas
5	Incinerator-3 (Existing)		33	1.0	Alkali Scrubber + Stack Height	Natural Gas
6	Boiler-3 & 4 (Proposed)	PM, SO_2, NO_x	30	1.0	Stack height	Natural Gas
7	Thermopak (Proposed)	PM, SO_2, NO_x	16	0.3	Stack height	Natural Gas
8.	Cogen Plant 1 MW (Proposed)	PM, SO_2, NO_x	30	0.3	Stack height	Natural Gas
9.	Cogen Plant 1 MW (Proposed)	PM, SO_2, NO_x	30	0.3	Stack height	Natural Gas

10.	Cogen Plant 0.67 MW (Proposed)	PM, SO_2, NO_x	30	0.3	Stack height	Natural Gas
11.	Chlorosulphonator (Acetanilide Addn.) (Existing)	HCl, SO_2, CL_2	20	0.4	Water Scrubber + Alkali Scrubber	----
12.	Chlorosulphonator (Thionyl Chloride Addn.) (Existing)	HCl, SO_2, CL_2	20	0.4	Water Scrubber + Alkali Scrubber	----
13.	Neutralizer (Existing)	NO_x	20	0.6	Alkali Scrubber (3- Stage)	----
14.	Isolator (Existing)	SO_2	20	0.6	Water Scrubber + Alkali Scrubber (2- Stage)	----
15.	Spray Dryer (Proposed)	SPM	12	0.05	Bag Filter + MultiCyclone + Water Scrubber	---
16.	Sulfonator & Isolator (Naphthalene Base Plant) (Proposed)	SO_2	20	0.4	Water Scrubber + Alkali Scrubber (2- Stage)	---
17.	Chlorosulphonator (VS Plant) (Proposed)	HCl, SO_2	20	0.4	Water Scrubber + Alkali Scrubber	---
18.	Chlorosulphonator (VS Plant) (Proposed)	HCl	20	0.4	Water Scrubber + Alkali Scrubber	---

ANNEXURE-VIII

STORAGE DETAILS OF HAZARDOUS CHEMICALS

Name of the hazardous substance	Quantity		Place of its storage	State and operating pressure & temp.	Type of hazards possible (fire, explosion, toxic release, spill, etc) & Control Measure provided
	Maximum that can be stored	Actually stored (including in process & handling)			
A. Raw Material					
1. Ethylene Oxide	15 Ton	7.5Ton each, Licensed capacity	2 Nos. MS Tanks at the Tank farm, tanks are insulated with glass wool & covered by Gl. Sheets under a shed	Liquid stored below room temp. by chilled water circulation, under Nitrogen temp. 12 deg Centigrade Pressure: 3 kg/sq.cm	FIRE – EXPLOSION – TOXICITY Control Measures: Detached fence covered storage yard, approved by the Cf. Controller of Explosives, material constantly kept under N2 pressure, Earthing, grounding & jumpers to prevent static charges, Regular testing of Tanks & Safety Valves, Frequent inspections, no smoking-spark-ignition on open flame in the vicinity. Fire Hydrant & water monitor installed, hose reel with sound length to fight fire from distance, Coil to circulate chilled water to provide safe temperature. Water sprinklers line installed above the tanks to neutralize substance. Safe operating practices are formed. Storage of water & over head water tank to fight fire or accidental leak.
2. Chlorosulfonic Acid	50 Ton	25 Ton each tank	2 Nos. MS Storage tanks at acid storage yard	Liquid stored at ambient temperature & atmn. Pressure	TOXIC & CORROSIVE LIQUID Control Measures Provided: Detached acid storage area, Spare tank provided to transfer the material in case of leak, stock of dry sand & lime is kept near the storage area, provision of Respiratory protective equipments, Safety shower & eye wash unit installed. Strict supervision while unloading, regular testing & Inspection of tanks.
3. Sulfuric acid - 98%	75 KL	25 KL each tank	3 Nos. MS Tank at the acid storage yard (H. Plant & 1 at VS Plant)	Liquid stored at ambient temperature & atmn. Pressure	CORPOSIVE LIQUID Control Measures Provided : Detached acid storage area, Spare tank provided to transfer the material in case of leak, stock of dry sand & lime is kept near the storage area, provision of Respiratory protective equipments & personal protective equipments, Safety shower & eye wash unit installed. Strict supervision while unloading, regular testing & Inspection of tanks.
4. Caustic Soda Lye	25 KL	25 KL tank	1 Nos. MS storage Tanks at Storage yard (H. Plant & 1 at VS Plant)	Liquid stored at ambient temperature & atmn. Pressure	CORPOSIVE LIQUID Control Measures Provided: Detached acid storage area, Spare tank provided to transfer the material in case of leak, area, provision of Respiratory protective equipments & personal protective equipments, Safety shower & eye wash unit installed. Strict supervision while unloading, regular testing & Inspection of tanks.
5. Thionyl Chloride	5 KL	5 KL	1 Nos. MS, Lead Lined tanks	Liquid stored at ambient temp. & atmn. Pressure Connected to Ventury Scrubber	TOXIC & CORROSIVE LIQUID Control Measures Provided: Detached acid storage area, Spare tank for emergency transfer, Tank Vent is lead to scrubbing system to neutralize fumes generated from the contents. Safety shower & eye wash fountain provided. Dry sand near tank to contain leak. Respiratory protective equipments & PPEs. are provided., mechanical transfer-non manual handing

6. Acetic Acid	45 KL	15 KL each tank	3 Nos. HDPE tanks at acid storage yard	Liquid stored at ambient temp. & atmn. Pressure	Provided : TOXIC & CORROSIVE LIQUID Control Measures Storage & handling is restricted, only authorized persons are allowed. Handling wearing personal protective equipments Safety shower & eye wash unit installed. Strict supervision while unloading, regular testing & Inspection of tanks.
7. Methyl Alcohol	15 KL	15 KL	Underground MS storage tank, away from plant	Liquid stored at NTP	Flammable & Toxic Liquid Control Measures: Non manual handling, transfer by a flame proof electric pump. Tank farm detached from plant & fire, ignition sources. Mechanical handling. Transfer via measuring tank and overflow line for surplus return. Strict supervision during loading/unloading operation. Personal protective equipments are provided, fire extinguishers are provided.
8. Nitric Acid	25 Ton	25 Ton	Acid storage area, SS. tank under a weather shed	Liquid stored at NTP	Corrosive Liquid Control Measures: Detached acid storage area, provision of spare tank for emergency transfer, mechanical handling, dry sand stocked near the tank, Transfer Via measuring tank and overflow line for surplus return. Safety shower & Eye wash unit installed strict supervision during loading/ unloading operation. Personal protective equipments & SBA are provided.
9. Aniline	75 Ton	25 Ton each	3 Nos. MS Tanks	Stored at NTP	Corrosive & Toxic Liquid Control Measures Provided: Detached storage area, Non Manual handling. Transfer by pump to measuring tank and than by gravity to reaction vessel Strict supervision while charging. spare tank for emergency transfer.
10. Anhydrous Ammonia	2500 Kg	Stored in 50 Kg cylinder & 50 Nos. of Cylinder	Receivers are located at detached plant	Ambient Temp. & @ pressure 12.5 kg/sq.cm	Leakage, Explosion, cold Burns Control Measures : 1) Water Sprinklers line installed above the receiver to neutralize ammonia in case of an accidental leak. 2) Safe operating practices are formed. 3) Vent of safety valves dipped in water. 4) Storage of water & over head water tank to neutralize accidental leak. 5) Self contained breathing apparatus sets and other safety & protective equipments are provided to control leak 6) Stop valves at number of locations to control leak.
11. Naphthalene	50 Ton	50 Tons	50 kg Bags are kept in a godown	Solid stored at NTP	Flammable Substance Control Measures: Detached godown away from any source of open fire. Safe manual handling loading to charging level by a fork lift. Personal protective equipments & fire extinguishers are placed near godown.
12. Spent Acid	180 Ton	60 Tons each	3 Nos. MS Tanks	Stored at NTP	Corrosive & Toxic Liquid Control Measures Provided: Detached storage area, Non Manual handling. Transfer by pump to measuring tank and than by gravity to reaction vessel Strict supervision while charging. spare tank for emergency transfer.
13. Acetanilide	20 Ton	20 Ton	50 kg Bags are kept in a godown	Solid stored at NTP	Toxic substances Control Measures: Detached godown away from any source of open fire. Safe manual handling loading to charging level by a fork lift. Personal protective equipments & fire extinguishers are placed near godown.

14.Oleum	75 Ton	25 Ton each tank	3 Nos. MS Storage tanks at acid storage yard	Liq. Stored At ambient temp & atmn. Pressure	TOXIC & CORROSIVE LIQUID Control Measures Provided: Detached acid storage area, Spare tank for emergency transfer, Tank Vent is lead to scrubbing system to neutralize fumes generated from the contents. Safety shower & eye wash fountain provided. Dry sand near tank to contain leak. Respiratory protective equipments & PPEs. are provided., mechanical transfer-non manual handing

ANNEXURE-IX

SOCIO - ECONOMIC IMPACTS

1) EMPLOYMENT OPPORTUNITIES

The manpower requirement for the proposed project is being expected to generate some permanent jobs and secondary jobs for the operation and maintenance of plant. This will increase direct / indirect employment opportunities and ancillary business development to some extent for the local population.

This phase is expected to create a beneficial impact on the local socio-economic environment.

2) INDUSTRIES

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

3) PUBLIC HEALTH

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

4) TRANSPORTATION AND COMMUNICATION

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

ANNEXURE-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.
- Existing infrastructure facilities
- Water source and utilization including proposed water balance.
- List of Products and their capacity
- List of hazardous chemicals with their toxicity levels.
- Mass balance of each product along with the batch size
- 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.
- Study of Data from secondary sources.
- 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.**

- 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.
- Control of fugitive emissions

5. **Environmental Management Plan**

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

6. **Risk Assessment**

- Details on storage facilities

- Identification of hazards
- Consequence analysis
- Recommendations on the basis of risk assessment done
- Disaster Management Plan.

7. Information for Control of Fugitive Emissions

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

9. Occupational Health and Safety Program for the Project.