PARISHI CHEMICALS LLP

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Date: 14th November 2016

To,
The Chairman
State Level Expert Appraisal Committee (SEAC)
Gujarat Pollution Control Board,
Paryavaran Bhavan, Sector 10-A,
Gandhinagar - 382 010.

SUB.: ADDITIONAL DETAIL SUBMISSION FOR OUR APPLICATION FOR ENVIRONMENT CLEARANCE FOR PROPOSED DYE MANUFACTURING UNIT AT PLOT NO. 8105/2, ROAD -2, NEAR SHREE SIDHDHANATH INDUSTREIS, GIDC, SACHIN, SURAT, BY M/S. PARISHI CHEMICALS LLP.

CAT.: B, 5(f) SYNTHETIC ORGANIC CHEMICAL INOUSTRY

REF.: 1. TOR LETTER NO.: EIA-L0-2014-6960-E.7363 DATED 05-12-2015
2. 303RD SEAC MEETING HELD ON DATED 31-08-2016.

Dear Sir,

With reference to above subject matter and 303rd SEAC meeting held on dated 31-08-2016.

We are submitting the additional data required by committee attached herewith.

We hope you would find the same in order and request your kind self to guide us for further procedure and oblige.

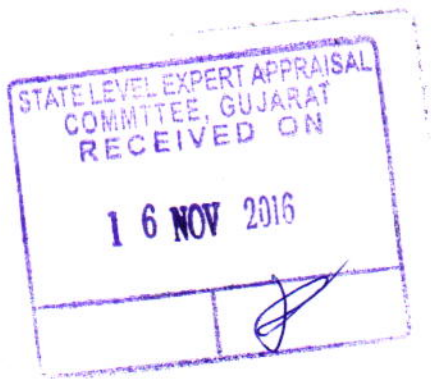
Thanking you.

Yours faithfully,

For *Parishi Chemicals LLP*

G. J. Lekhadia

Mr. Garshil Lekhadia
(Director)



HARDIK SHAH, IAS
SECRETARY
State Level Expert Appraisal Committee

STATE LEVEL EXPERT APPRAISAL COMMITTEE, GUJARAT.
Office : Gujarat Pollution Control Board,
"Paryavaran Bhavan", Sector 10-A,
Gandhinagar-382010, GUJARAT
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Ref. No.: EIA-10-2014-6960-E. 4363

R.P.A.D

05 DEC 2015

To,
Mr. Garshil Lekhadia
Parishi Chemicals L.L.P.
Plot No:8105/2, Sachin,
Choryasi, Surat.

Sub: Environment Clearance under the EIA Notification 2006 for your proposed project at Plot No:8105/2, Sachin, Choryasi, Surat.

Dear Sir,

This refers to your application on the subject mentioned above and the meeting held with the State Level Expert Appraisal Committee, Gujarat, on 16th September 2015. The relevant information furnished in Form I, Prefeasibility report and presentation made before the SEAC was considered and the Terms of Reference prescribed was communicated to you by the SEAC immediately after the said presentation. However, a copy of the same is attached herewith for further necessary action at your end. You may please furnish the desired information / documents to enable us to process the application further.

With regards,

Yours sincerely,

(Hardik Shah)
Secretary, State Level Expert Appraisal Committee

Encl : As above.

Parishi Chemicals L.L.P.	Plot no:8105/2, Sachin, Ta.: Choryasi, Dist.: Surat	Screening & Scoping

Project / Activity No.: 5(f)

- M/s: Parishi Chemicals L.L.P (herein after Project Proponent – PP) has submitted application vide their letter dated 21/02/2015.
- The project was taken up in the SEAC meeting held on 19/05/2015.
- During the meeting on 19/05/2015, Committee noted that total area available for the proposed project is only 999 sq. meter and looking to the proposed activities with ETP, green belt, raw materials & products storage area, hazardous waste storage area, admin area, internal roads, open space etc., proposed area found inadequate. PP could not justify the area for the activities they proposed. Unit has proposed only 50 sq. m area for proposed storage tanks of Sulphuric acid, Oleum, Caustic lye, Methanol, Hydrochloric Acid, DMF etc., which is not possible with respect to safety aspects. On asking about the banned Azo dyes, PP informed that there is no any banned product in the list of proposed products, however PP assured that they will submit undertaking in this regard. After detailed deliberations, It was unanimously decided to consider the project for TOR/Scoping only after submission of the following: (1) Revised Form-1 with all relevant details and corrected data. (2) Legal undertaking stating that they will not manufacture any Azo Dyes which are banned by Govt. of India.
- PP has submitted additional details with Revised Form-1 on dated 28/07/2015.

Project status: New

Project / Activity Details:

This is a new unit proposes the manufacturing of Synthetic Organic Chemicals as tabulated below:

Sr. no.	Products Name	Production Capacity (MT/Month) on Dry Basis
1	Disperse Azo Dyes (All colours)	50
2	Coumarine Dyes (All colours)	25
3	Methine Dyes (All colours)	25
	Total	**100**

The project falls under Category B of project activity 5(f) as per the schedule of EIA Notification 2006.

Total plot area is 999 sq. m & unit has proposed 351 sq m area for the green belt development/Tree plantation. Expected project cost is Rs.2.62 Crores. Total water consumption for proposed project will be 40 KL/day (30 KL for processing, 4.5 for domestic, 3 KL for Utilities, 1.5 KL for Gardening, 1.5 KL for floor and drum Washing). Fresh water will be sourced from GIDC water supply. Condensate recovered from the MEE (16.5 KL/Day) will be reused. Total industrial waste water generation will be 33.5 KL/Day. Dilute stream waste water (17 KL) will be treated in proposed ETP and concentrated effluent (16.5 KL) will be sent to proposed MEE. After treatment in ETP, effluent will be sent to CETP of M/s. Globe Enviro Care Ltd, Sachin for further treatment & disposal. Condensate generated from MEE will be reused. Flue gas generation will be from one Steam Boiler (0.8 TPH), one TFH (8 Lac Kcal/hr) and one D.G. set (125 KVA). Bio-fuel (15 MT/day) will be used as fuel for Boiler & TFH. Unit has proposed MDC followed by Bag filter as APCM. No process gas emission is envisaged.

technical parameters. Details regarding provision of online continuous pH meter, TOC analyser and flow meter at the final outlet of the ETP.

13. Details of provisions to be made for Spray drying of industrial effluent stream. Technical details of Spray drying system including capacity, fuel required for spray drying etc. Techno-economical viability of the spray drying system. Details of Air pollution control system.

14. Details of CETP- Sachin including (1) Total capacity of the CETP (2) Total booked capacity and actual load received at present (Qualitative and Quantitative) (3) CETP Up gradation scheme, if any (4) Last 2 years analysis reports of GPCB for Inlet and outlet of CETP (5) Spare capacity of CETP with treatability and feasibility report. (6) Recommendations and suggestions of the last two Environment Audit reports of CETP-Sachin and its compliance report.

15. Plans for management, collection and disposal of waste streams to be generated from spillage, leakages, vessel washing, used container washing etc. Measures proposed for preventing effluent discharge during unforeseen circumstances.

16. One season Site-specific micro-meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall should be incorporated.

17. Anticipated environmental impacts due to the proposed project/production may be evaluated for significance and based on corresponding likely impacts VECs (Valued Environmental Components) may be identified. Baseline studies may be conducted within the study area of 5 km for all the concerned/identified VECs and likely impacts will have to be assessed for their magnitude in order to identify mitigation measures.

18. One complete season base line ambient air quality data (except monsoon) to be given along with the dates of monitoring. The parameters to be covered shall be in accordance with the revised National Ambient Air Quality Standards as well as project specific parameters. Locations of the monitoring stations should be so decided so as to take into consideration the pre-dominant downwind direction, population zone and sensitive receptors. There should be at least one monitoring station in the upwind direction. There should be at least one monitoring station in the pre dominant downwind direction at a location where maximum ground level concentration is likely to occur.

19. Modelling indicating the likely impact on ambient air quality due to proposed activities. The details of model used and input parameters used for modelling should be provided. The air quality contours may be shown on location map clearly indicating the location of sensitive receptors, if any, and the habitation. The wind rose showing pre-dominant wind direction should also be indicated on the map. Impact due to vehicular movement shall also be included into the prediction using suitable model. Results of Air dispersion modelling should be superimposed on satellite image / geographical area map.

20. Base line status of the noise environment, impact of noise on present environment due to the project and proposed measures for noise reduction including engineering controls.

21. Specific details of (i) Process gas emission from each unit process with its quantification, (ii) Air pollution Control Measures proposed for process gas emission, (iii) Adequacy of the air pollution control measures for process gas emission, measures to achieve the GPCB norms (iv) Details of the utilities required (v) Type and quantity of fuel to be used for each utility (vi) Flue gas emission rate from each utility (vii) Air Pollution Control Measures proposed to each of the utility along with its adequacy (viii) List the sources of fugitive emission along with its quantification and proposed measures to control it.

22. An action plan to control and monitor secondary fugitive emissions from all the sources.

23. Technical details of APCM along with its adequacy, details of its operational controls with

each raw material & product etc. How the manual handling of the hazardous chemicals will be minimized?

36. Details of the separate isolated storage area for flammable chemicals. Details of flame proof electrical fittings, DCP extinguishers and other safety measures proposed. Detailed fire control plan for flammable substances and processes showing hydrant pipeline network, provision of DG Sets, fire pumps, jockey pump, toxic gas detectors etc.

37. Submit checklist in the form of Do's & Don'ts of preventive maintenance, strengthening of HSE, manufacturing utility staff for safety related measures.

38. Detailed five year greenbelt development program including annual budget, types & number of trees to be planted, area under green belt development [with map], budgetary outlay; along with commitment of the management to carry out the tree plantation activities outside the premises at appropriate places in the nearby areas and elsewhere.

39. Detailed socio-economic development measures including community welfare program most useful in the project area for the overall improvement of the environment. Submit a detailed plan for social corporate responsibilities, with appropriate budgetary provisions for the next five years and activities proposed to be carried out; specific to the current demographic status of the area.

40. (a) Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.(b). Does the Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions ? If so, it may be detailed in the EIA.

41. What is the hierarchical system or administrative order of the company to deal with the environmental issues and for ensuring compliance with the EC conditions? Details of this system may be given.

42. Does the company have a system of reporting of non compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism should be detailed in the EIA Report.

43. An undertaking by the Project Proponent on the ownership of the EIA report as per the MoEF&CC OM dated 05/10/2011 and an undertaking by the Consultant regarding the prescribed TORs have been complied with and the data submitted is factually correct as per the MoEF&CC OM dated 04/08/2009.

44. Certificate of accreditation issued by the NABET, QCI to the environmental consultant should be incorporated in the EIA Report.

45. A tabular chart with index for point-wise compliance of above TORs.

The above mentioned project specific TORs/additional TORs and the model TORs available on the MoEF&CC's website for Synthetic Organic Chemical industry shall be considered as generic TORs for preparation of the EIA report in addition to all the relevant information as per the generic structure of EIA given in Appendix III in the EIA Notification, 2006. The project shall be appraised on receipt of the final EIA report.

TOR No. 4: Details of manufacturing process / operations of each product along with chemical reactions, mass balance, consumption of raw materials etc. Details on strategy for the implementation of cleaner production activities. (Give specific details about source of effluent generation).

Manufacturing Process attached in Annexure-1, spent solvent generated from the processes will be sent to nearby unit M/s. Shree Sidhdhanath Industries for recovery. Copy of MoU & Consent Copy is attached as Annexure -2.

REQUIREMENT OF RAW MATERIAL

S. NO.	RAW MATERIAL	QUANTITY (TONS/MONTH)
1.	Acetic acid	5.0
2.	Acetic Anhydride	7.5
3.	Ammonium per Sulphate	3.0
4.	Ammonium Thiocyanate	3.0
5.	Aniline Derivatives	25.0
6.	Benzoyl Chloride	5.0
7.	Bromine	3.0
8.	Caustic Flakes	10.0
9.	Cuprous Cyanine	3.0
10.	Dimethyl Sulfate	4.0
11.	Dimethylformamide (DMF)	10.0
12.	Ethyl Cyano Acetate	6.0
13.	Hydrochloric Acid	20.0
14.	Isopropyl alcohol (IPA)	7.5
15.	Lime	5.0
16.	Malodinitrile	5.0
17.	Methanol	10.0
18.	Ortho Pheneline Diamine	6.0
19.	Para Nitro Aniline Derivatives	25.0
20.	Phosphorus Oxy Chloride	7.5
21.	Phosphorous Penta Chloride	7.5
22.	Soda Ash	15.0
23.	Sodium Chloride	3.0
24.	Sodium Cyanide	3.0
25.	Sodium Nitrite	3.0
26.	Sulfamic acid	3.0
27.	Sulphuric Acid	20.0
28.	Zinc Chloride	3.0
29.	Zinc Cyanide	3.0
30.	Meta- Toluidine	4.0
31.	Ice	546.0

TOR No. 5: Chemical name of each proposed product to be manufactured. Details on end use of each product. Give specific name of each product in respective group of products.

S. No.	Product Name	Production Capacity (Tons/ month) on Dry Basis
I.	Disperse Azo Dyes (All colours)	50
II.	Coumarine Dyes (All colours)	25
III.	Methine Dyes (All colours)	25
	Total	**100**

S.No.	I. Disperse Azo Dyes	II. Coumarine Dyes	III. Methine Dyes
1.	Disperse Blue 165	Acid Yellow 184	Disperse Blue 354
2.	Disperse Blue 183	Acid Yellow 250	Disperse red 356
3.	Disperse Blue 366	Basic Yellow 40	Disperse Red 367
4.	Disperse Blue 79	Disperse Red 277	Disperse Sport Red SF
5.	Disperse Brown 1	Disperse Red 374	
6.	Disperse Brown 4	Disperse Red J	
7.	Disperse Orange 25	Disperse Yellow 184:1	
8.	Disperse Orange 288	Disperse yellow 82	
9.	Disperse Orange 30	Solvent Yellow 172	
10.	Disperse Red 145		
11.	Disperse Red 152		
12.	Disperse Red 153		
13.	Disperse Red 167		
14.	Disperse Red 279		
15.	Disperse Red 343		
16.	Disperse Violet 63		
17.	Disperse Violet 93		
18.	Disperse Yellow 114		
19.	Disperse Yellow 211		
20.	Disperse Yellow 235		

Each product will be utilized for dyeing and printing purpose in textile industry.

Specific name of each product is given in following table.

Sr. No.	TRADE NAME	CAS No.	Chemical Name	Commercial Name
I. Azo Dyes				
1.	Disperse Blue 165	41642-51-7	N-(2-((2,6-Dicyano-4- nitrophenyl) diazenyl)- 5-(diethylamino) phenyl) acetamide	Disperse Blue GSL
2.	Disperse Blue 183	2309-94-6	N-[2-(2-bromo-6-cyano-4-nitro-phenyl) azo-5-diethylamino-phenyl] propanamide	Disperse Blue SE-2R
3.	Disperse Blue 366	84870-65-5	1,3-Benzenedicarbonitrile,2-((4- (diethylamino)-2-methylphenyl)azo)-5-nitro-	Disperse Blue DBR
4.	Disperse Blue 79	3618-73-3	Acetamide, N-(5-(bis(2-(acetyloxy) ethyl) amino)-2-((2-chloro-4,6-dinitrophenyl) azo)-4-methoxyphenyl)-	Disperse Navy Blue 3G
5.	Disperse Brown 1	23355-64-8	2,2'-[[3-Chloro-4-[(2,6-dichloro-4-nitrophenyl) azo] phenyl] imino]bisethanol	Disperse Brown 3RD
6.	Disperse Brown 4	17464-91-4	Ethanol,2,2'-((4-(2-(2-bromo-6-chloro-4-nitrophenyl) diazenyl) -3-chlorophenyl) imino)bis-	Disperse Fast Brown D3R
7.	Disperse Orange 25	68391-42-4	3-[[2-(acetyloxy)ethyl] [4-[(4-nitrophenyl) azo]phenyl] amino] propiononitrile	Disperse Orange RL
8.	Disperse Orange 288	69472-19-1	Propanenitrile,3-(butyl(4-(2-(4-nitrophenyl) diazenyl) phenyl)amino)-	Disperse Orange SE-RH
9.	Disperse Orange 30	5261-31-4	Propanenitrile, 3-[[2-(acetyloxy)ethyl] [4-[(2,6-dichloro-4-nitrophenyl) azo] phenyl]amino]-	Disperse Yellow Brown S2RFL
10.	Disperse Red 145	25510-81-0	3-[Ethyl[4-[(6-nitrobenzothiazol-2-yl)azo] phenyl]amino]propiononitrile	Disperse Red 2BLS
11.	Disperse	78564-86-0	3-[[4-[[5,6(or 6,7)-Dichloro-2-benzothiazolyl]	Disperse Red

	Red 152		azo] -3-methylphenyl] ethylamino] propanenitrile	BS
12.	Disperse Red 153	78564-87-1	3-[[4-[[5,6(or 6,7)-Dichloro-2-benzothiazolyl]azo]phenyl] ethylamino]-propanenitrile	Disperse Scarlet GS
13.	Disperse Red 167	1533-78-4	N-[5-[Bis[2-(acetyloxy)ethyl] amino]-2-[(2-chloro-4-nitrophenyl)azo] phenyl]-acetamide	Disperse Dark Red 2B
14.	Disperse Red 279	63833-78-3	3-Pyridinecarbonitrile,5-[2-(2-cyano-4-nitrophenyl) diazenyl] -3,6-methoxypropylamino-4-methyl	Disperse Scarlet XF
15.	Disperse Red 343	68385-96-6	N-[2-[(2,6-dicyano-p-tolyl)azo] -5-(diethylamino) phenyl] methane sulphonamide	Disperse Red F3BS
16.	Disperse Violet 63	52583-54-7	N-[2-[(2-cyano-4-nitrophenyl)azo] -5-(diethylamino) phenyl] acetamide	Disperse Violet 3RL
17.	Disperse Violet 93	66557-45-7	Acetamide,N-[2-[2-(2-Chloro-4,6-dinitrophenyl) diazenyl] -5-(diethylamino) phenyl]-	Disperse Dark Blue 5R
18.	Disperse Yellow 114	59312-61-7	3-Pyridinecarbonitrile, 1,2-dihydro-6-hydroxy-1,4-dimethyl -2-oxo-5-(2-(3-((phenylsulfonyl)oxy) phenyl)diazenyl)-	Disperse Yellow 6GL
19.	Disperse Yellow 211	70528-90-4	5-[2-(4-Chloro-2-nitrophenyl)diazenyl]-1-ethyl-1,2-dihydro -6-hydroxy-4-methyl-2-oxo-3-pyridinecarbonitrile	Disperse Yellow 4G
20.	Disperse Yellow 235	75511-91-0	2-[7-(Diethylamino)-2-oxo-2H-1-benzopyran-3-yl] -5-benzoxazolesulfonamide	Solvent Fluorescent Yellow AA223
II. Coumarin Dyes				
1.	Acid Yellow 184	70267-73-1	sodium 2-[7-(diethylamino)-2-oxo-2H-1-benzopyran-3-yl] -1H-benzimidazolesulphonate	Acid Brilliant Yellow 8G
2.	Acid Yellow 250	93859-32-6	Benzoxazolesulfonicacid, 5-(aminosulfonyl)-2-[7-(diethylamino) -2-oxo-2H-1-benzopyran-3-yl]-,sodium salt (1:1)	Acid Brilliant Yellow AA 225
3.	Basic Yellow 40	29556-33-0	1H-Benzimidazolium,2-[7-(diethylamino)-2-oxo-2H-1-benzopyran-3-yl]-1,3-dimethyl-, chloride (9CI)	Basic Brilliant Yellow 10GFF
4.	Disperse Red 277	52372-39-1	3-(Diethylamino)-7-imino-7H-[1]benzopyrano [3',2':3,4] pyrido[1,2-a]benzimidazole-6-carbonitrile	Disperse Fluorescent Red G
5.	Disperse Red 374	52372-36-8	3-(Diethylamino)-7-oxo-7H-1]benzopyrano [3',2':3,4] pyrido[1,2-a] benzimidazole-6-carbonitrile	Disperse Fluorescent Red B
6.	Disperse Red J	70546-12-2	3-(5-Chlorobenzoxazol-2-Yl)-7-(Diethylamino) -2-Oxo-2H-1-Benzopyran-4-Carbonitrile	Disperse Red J
7.	Disperse Yellow 184:1	34564-13-1	7-(Diethylamino)-3-(5-methylbenzoxazol-2-yl)-2-benzopyrone	Disperse Fluorescent Yellow 10GN
8.	Disperse yellow 82	27425-55-4	3-(2-Benzimidazolyl)-7-(diethylamino)coumarin]	Disperse Yellow 8GFF
9.	Solvent Yellow 172	68427-35-0	2-[7-(Diethylamino)-2-oxo-2H-1-benzopyran-3-yl] -5-benzoxazolesulfonamide	Solvent Fluorescent Yellow AA223
III. Methine Dyes				
1.	Disperse Blue 354	74239-96-6	Propanedinitrile,2-[2-[[4-(dihexylamino)-2-methylphenyl]methylene]-1, 1-dioxidobenzo[b]thien-3(2H)-ylidene]-	Disperse Blue SR
2.	Disperse	79694-17-0	Benzo[1,2-b:4,5-b']difuran-2,6-dione,3-phenyl-7-	Disperse Red

	red 356		(4-propoxyphenyl)-	CBN
3.	Disperse Red 367	147014-52-6	2-ethoxyethyl-2-(4-(2,6-dihydro-2,6-dioxo-7-phenyl -1,5-dioxaindacen-3-yl)phenoxy)acetate	Disperse Brilliant Scarlet DSF
4.	Disperse Sport Red SF	126877-06-3	Acetic acid, 4-2,6-dihydro-2,6-dioxo-7-(4-propoxyphenyl)benzo 1,2-b:4,5-bdifuran-3-ylphenoxy-, 2-ethoxyethyl ester	Disperse Sport Red SF

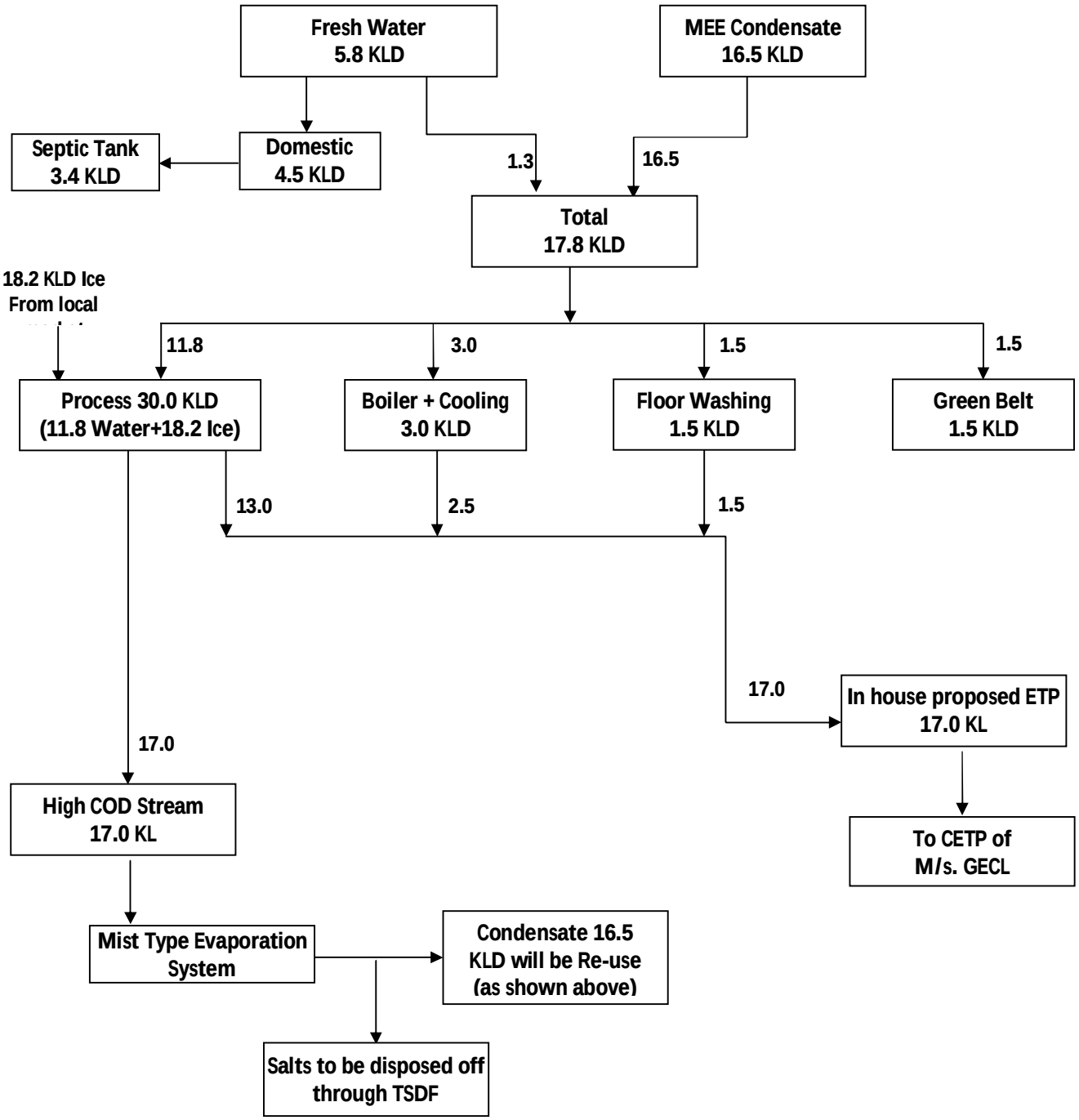
TOR No. 6: Detailed mass balance and water balance (including reuse-recycle, if any) along with qualitative and quantitative analysis of the each waste stream from the processes.

Effluent Treatment Plant design is done considering worst case scenario in terms of high Organic load generating products and high hydraulic load generating products at a time. Considering One batch (2000 kg/day) of Disperse red 167 (Azo Dyes) and one batch (2000 kg/day) of Disperse Yellow 82 (Coumarine Dyes), bench scale study in pilot plant and based on detailed treatability study, we came to the following conclusion on effluent characteristic as shown in below table.

S.NO.	PARAMETERS	INLET NORMS OF CETP	QUALITY	
			BEFORE TREATMENT mg/L	AFTER TREATMENT mg/L
1	pH	6.5-8.5	5.28	7.5-8.0
2	Suspended solids	300 mg/L	3316 mg/L	< 300 mg/L
3	BOD	1500 mg/L	6300 mg/L	< 1500 mg/L
4	COD	4000 mg/L	18440 mg/L	< 4000 mg/L

Water balance diagram shown in following figure.

WATER BALANCE DIAGRAM



TOR No. 7: Assessment of source of the water supply with adequacy of the same to meet with the requirements for the project. Permission obtained from the GIDC for supply of raw water. Undertaking stating that no bore well shall be dug within the premises.

The total water requirement for Disperse Dyes manufacturing plant is 22.3 KLD (5.8 KLD Fresh Water +16.5 KLD Recycle (condensate) water and 18.2 Kg/day, ice will be used in process which will be outsourced from local supplier. Total water requirement of Disperse Dyes plant will be met from GIDC water supply**.** We hereby undertake that we will not dug bore well in our premises for ground water abstraction. An undertaking for the same is attached as Annexure-3. Details of water requirement and wastewater generation are given in following Table, while water balance diagram are given in Figure-1. In Disperse Dyes plant, 3.0 KLD of water is required per day in Boiler & cooling tower as make up water due to evaporation and drift losses and onetime cooling tower water required is 2.5 KL. The 4.5 KLD water required for Domestic purpose. Domestic wastewater of 3.4 KLD will be discharged through septic tank/ soak pit.

TOR No. 10: Segregation of waste streams and details on specific treatment and disposal of each stream.

High COD stream and low COD stream will be separated at source. Low COD stream will be treated in in-house ETP before sending it to CETP of M/s. GECL.

High COD Stream will be evaporate in Mist Type Evaporation System while 16.5 KLD condensate will be recycled.

TOR No. 11: Stream wise qualitative & quantitative analysis of each waste stream (including process water, cooling tower blow down, boiler blow down, washing effluent etc.) to be generated. Characteristics of untreated and treated wastewater. A detailed effluent treatability study vis-à-vis the adequacy and efficacy of the treatment facilities proposed for the wastewater to be generated. The characteristic on which treatability is based shall also be stated.

WATER POLLUTION

Details of Domestic and industrial Wastewater generation from project are given in following table.

DETAILS OF WASTE WATER GENERATION

S. No.	Section	Water Consumption (KL/Day)	Losses (KL/Day)	Waste Water Generation (KL/Day)
1.	Domestic	4.5	0.8	3.4 (septic tank)
2.	Process			
	Stream segregation	11.8 (Water) 18.2 (Ice)	--	17.0 (High COD stream)
			--	13.0 (Low COD stream)
3.	Boiler & Cooling Tower (Daily makeup water)	3.0	0.5	2.5
4.	Green Belt	1.5	1.5	--
5.	Floor and Drum washing	1.5	0.0	1.5
	Total	**22.3**	**2.8**	**34.0**

WASTE WATER TREATMENT, RECYCLE AND UTILIZATION

Domestic wastewater of 3.4 KL/Day generated will be discharged through septic tank/ soak pit system. There shall be 34.0 KL/Day of industrial waste water generated from the proposed plant which will be treated in in-house ETP of 40.0 KLD capacity. Part of the treated water (17.0 Liters/day) will be discharged in to CETP of M/s. GECL, Sachin and 16.6 KL/Day of treated water shall be evaporated using Mist Type Evaporation System. The MTES condensate will be reused in the process as shown in water balance diagram and residue will be sent to BEIL, Ankleshwar for incineration. Detailed treatability study as well as adequacy and efficacy certificate are attached as Annexure-4 and Annexure-5 respectively.

S.NO.	PARAMETERS	INLET NORMS OF CETP	QUALITY	
			BEFORE TREATMENT mg/L	AFTER TREATMENT mg/L
1	pH	6.5-8.5	5.28	7.5-8.0
2	Suspended solids	300 mg/L	3316 mg/L	< 300 mg/L
3	BOD	1500 mg/L	6300 mg/L	< 1500 mg/L
4	COD	4000 mg/L	18440 mg/L	< 4000 mg/L

27. Complete Management plan for By-products/Spent acids to be generated, (if any) from the project including their quantity, quality, characteristics, end use etc. along with the name and address of end consumers to whom the by-product will be sold. Copies of agreement /MoU / letter of intent from them, showing their willingness to purchase said by-product from the proposed project. Also give characteristics of the byproducts and feasibility of their actual use in respective products as a raw material.

Spent solvent generated from the processes will be sent to nearby unit M/s. Shree Sidhdhanath Industries for recovery. Copy of MoU & Consent Copy is attached as Annexure-2.

28. Name and quantity of each type of solvents to be used for proposed production. Details of solvent recovery system including mass balance, solvent loss, recovery efficiency. Feasibility of reusing the recovered solvents etc. for each type of solvent.

Considering the worst case scenario the maximum spent solvent will be generated during the production of Disperse Blue 165, 366 and Disperse Red 343.

Name and quantity of solvent to be used

Sr. No.	Name of Solvent	Quantity (Ton/Month)
1	Dimethylformamide (DMF)	10.0
2	Methanol	10.0
3	Isopropyl alcohol (IPA)	7.5

No in-house solvent recovery system will be proposed. Spent Solvent generate will be given to M/s. Shree Sidhdhanath Industries, an authorized solvent recovery unit by GPCB vide their consent order No. AWH-62479 valid up to 06/02/2019.

Copy of MOU with M/s. Shree Sidhdhanath Industries is attached herewith.

Raw material for Disperse Dyes unit will be purchased from the different sources and it will be stored in chemical storage area in Carboys, Drums, bags and some are in storage tanks. Only following chemicals are to be stored in tanks. Dimension, Numbers and Capacity of Tanks, table given in tor point no. 30.

S. NO.	NAME & MOC	DIMENSIONS	NO.OF TANKS	MONTHLY REQUIREMENT (TON)	TANK CAPACITY PROPOSED (TON)
1.	SULPHURIC ACID TANK (MS)	2.5 M DIA. 2.1 M HEIGHT	1	20.0	8.0
2.	METHANOL TANK (MS)	2.0 M DIA. 1.4 M HEIGHT	1	10.0	4.0
3.	HYDROCHLORIC ACID	2.0 M DIA. 1.4 M HEIGHT	1	20.0	8.0

30. Permission from PESO, Nagpur for storage of solvents, other toxic chemicals, if any.

Proposed use of chemicals in M/s. Parishi Chemicals L.L.P. Details of hazardous characteristics of raw. Permission from PESO, Nagpur for storage of solvents, other toxic chemicals will be obtained.

Proposed Tank-farm facility in M/s. Parishi Chemicals Limited.

Technical details of MEE including evaporation capacity, steam required for evaporation, adequacy of the proposed boiler to supply steam for evaporation in addition to the steam required for the process etc. Techno-economical viability of the evaporation system. Control measures proposed for the evaporation system in order to avoid/reduce gaseous emission/VOC from evaporation of industrial effluent containing solvents & other chemicals.

Reply: Mist Type Evaporation System will be installed for high COD stream. Details has given in Annexure-VI. It will required very less steam as compared to conventional MEE system that will be fulfil from proposed boiler, meanwhile we have tied up with M/s. Sanjoo Dyeing & Priniting Pvt. Ltd. for steam requirement copy of permission letter attached as Annexure-VII.

ANNEXURE-I

S. No.	Product Name	Production Capacity (Tons/ month) on Dry Basis
I.	Disperse Azo Dyes (All colours)	50
II.	Coumarine Dyes (All colours)	25
III.	Methine Dyes (All colours)	25
	Total	**100**

S.No.	I. Disperse Azo Dyes	II. Coumarine Dyes	III. Methine Dyes
1.	Disperse Blue 165	Acid Yellow 184	Disperse Blue 354
2.	Disperse Blue 183	Acid Yellow 250	Disperse red 356
3.	Disperse Blue 366	Basic Yellow 40	Disperse Red 367
4.	Disperse Blue 79	Disperse Red 277	Disperse Sport Red SF
5.	Disperse Brown 1	Disperse Red 374	
6.	Disperse Brown 4	Disperse Red J	
7.	Disperse Orange 25	Disperse Yellow 184:1	
8.	Disperse Orange 288	Disperse yellow 82	
9.	Disperse Orange 30	Solvent Yellow 172	
10.	Disperse Red 145		
11.	Disperse Red 152		
12.	Disperse Red 153		
13.	Disperse Red 167		
14.	Disperse Red 279		
15.	Disperse Red 343		
16.	Disperse Violet 63		
17.	Disperse Violet 93		
18.	Disperse Yellow 114		
19.	Disperse Yellow 211		
20.	Disperse Yellow 235		

ANNEXURE-I

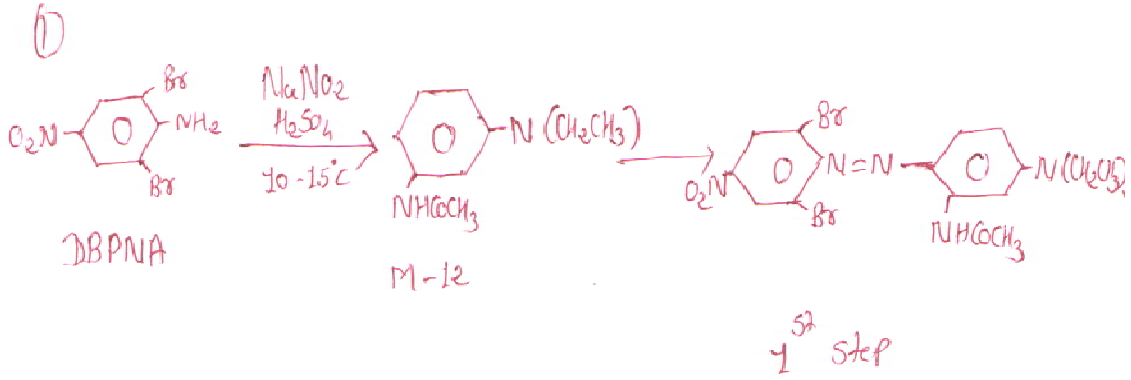
REQUIREMENT OF RAW MATERIAL

S. No.	Raw Material	Quantity (Tons/month)
1.	Acetic acid	5.0
2.	Acetic Anhydride	7.5
3.	Ammonium per Sulphate	3.0
4.	Ammonium Thiocyanate	3.0
5.	Aniline Derivatives	25.0
6.	Benzoyl Chloride	5.0
7.	Bromine	3.0
8.	Caustic Flakes	10.0
9.	Cuprous Cyanine	3.0
10.	Dimethyl Sulfate	4.0
11.	Dimethylformamide (DMF)	10.0
12.	Ethyl Cyano Acetate	6.0
13.	Hydrochloric Acid	20.0
14.	Isopropyl alcohol (IPA)	7.5
15.	Lime	5.0
16.	Malodinitrile	5.0
17.	Methanol	10.0
18.	Ortho Pheneline Diamine	6.0
19.	Para Nitro Aniline Derivatives	25.0
20.	Phosphorus Oxy Chloride	7.5
21.	Phosphorous Penta Chloride	7.5
22.	Soda Ash	15.0
23.	Sodium Chloride	3.0
24.	Sodium Cyanide	3.0
25.	Sodium Nitrite	3.0
26.	Sulfamic acid	3.0
27.	Sulphuric Acid	20.0
28.	Zinc Chloride	3.0
29.	Zinc Cyanide	3.0
30.	Meta- Toluidine	4.0

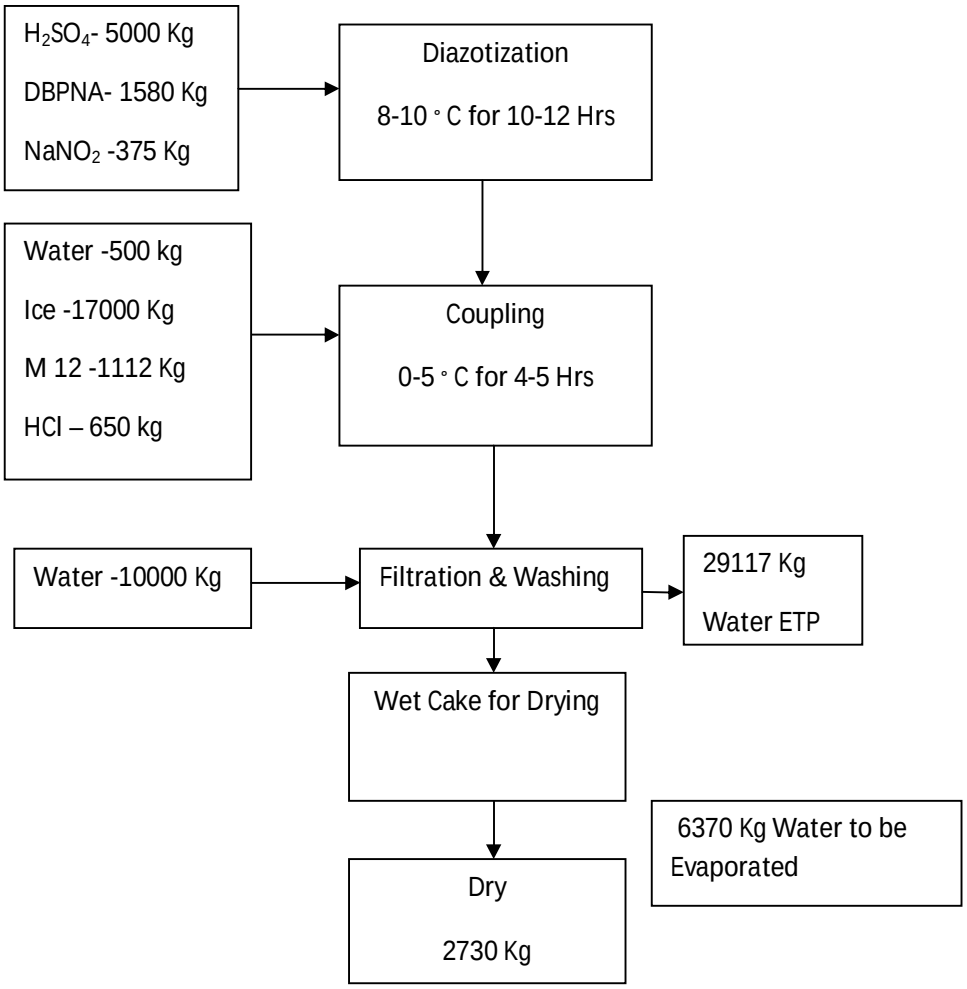
I. Disperse Azo Dyes

1) Disperse Blue 165

Chemical Reaction Step- 1

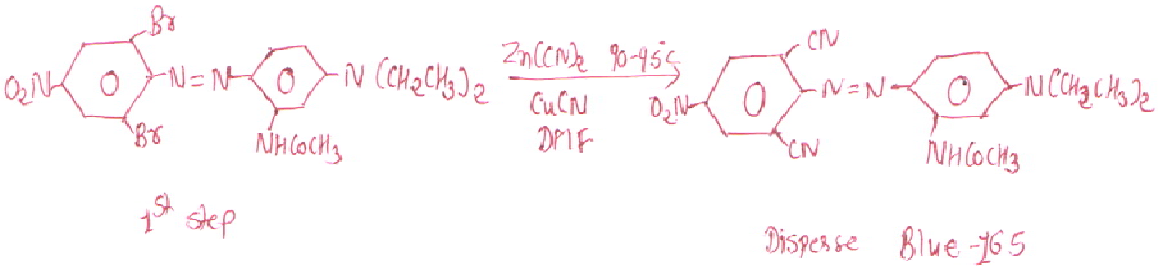


Batch Size: 2000 Kg

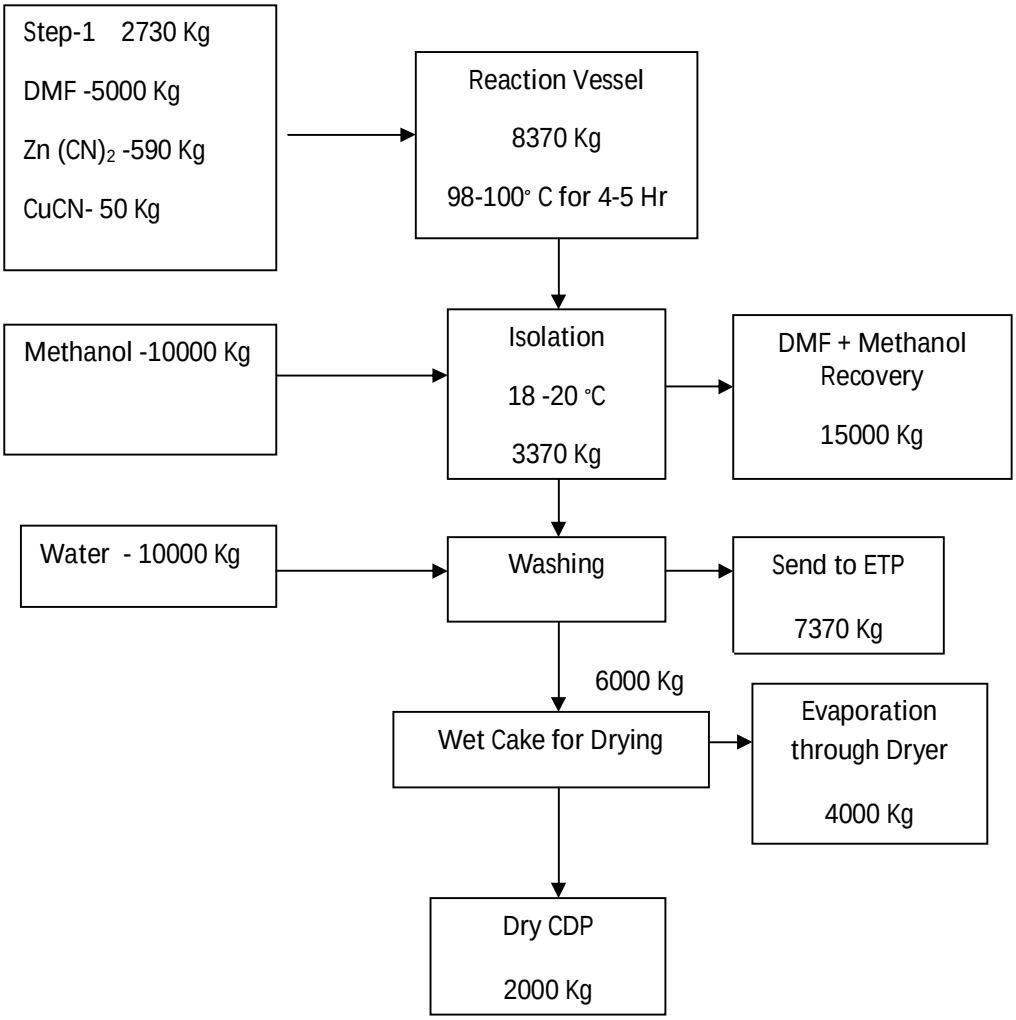


Step-2

Chemical Reaction

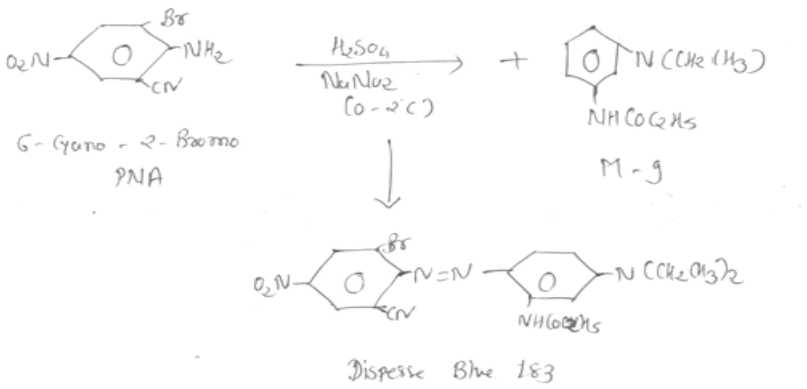


Mass Balance

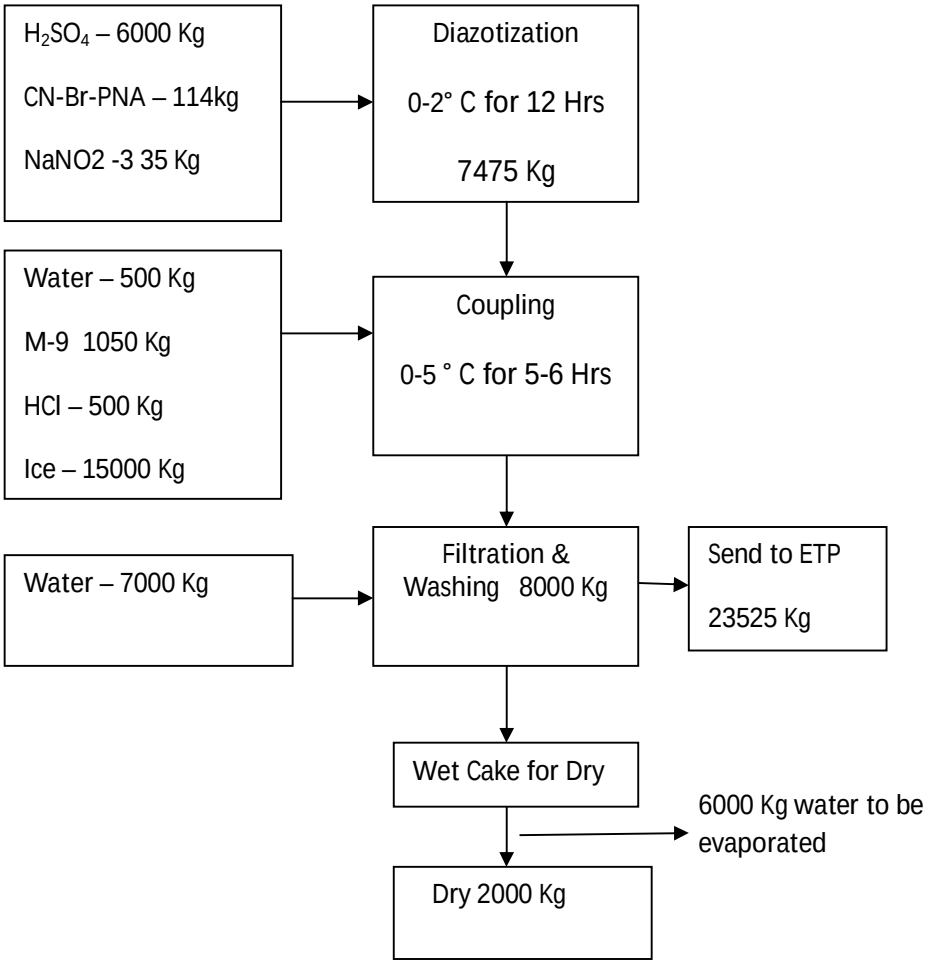


2) Disperse Blue 183

Chemical Reaction

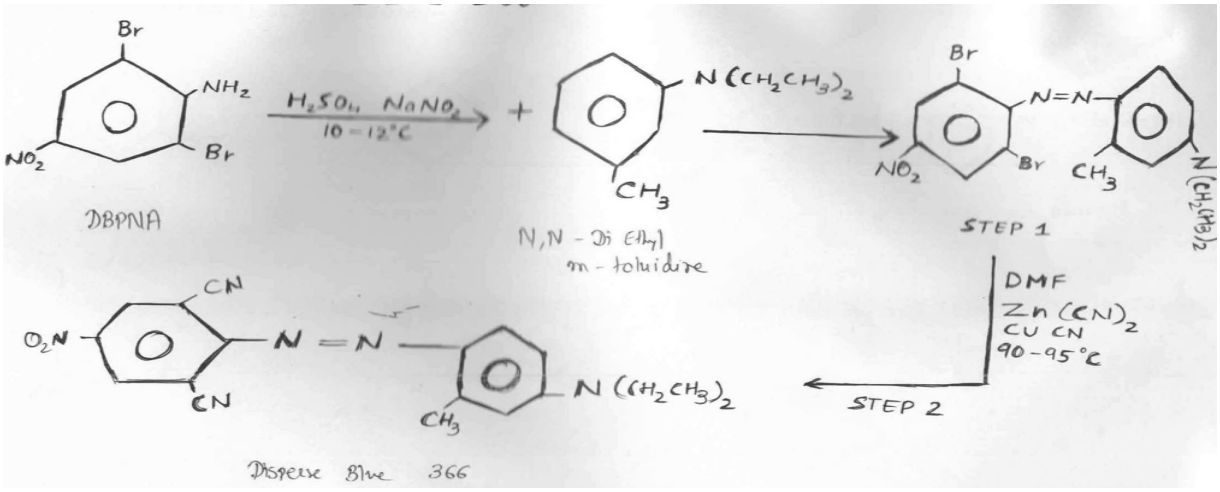


Batch Size: 2000 Kg



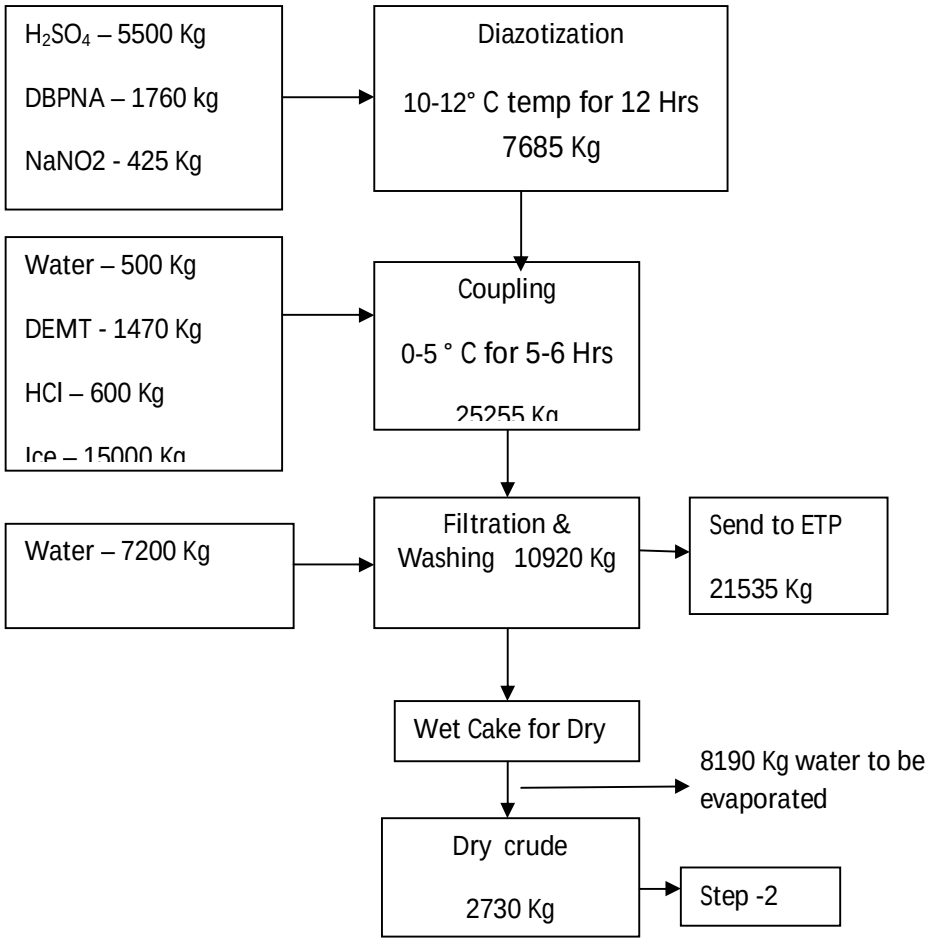
3) Disperse Blue 366

Step -1 Chemical Reaction



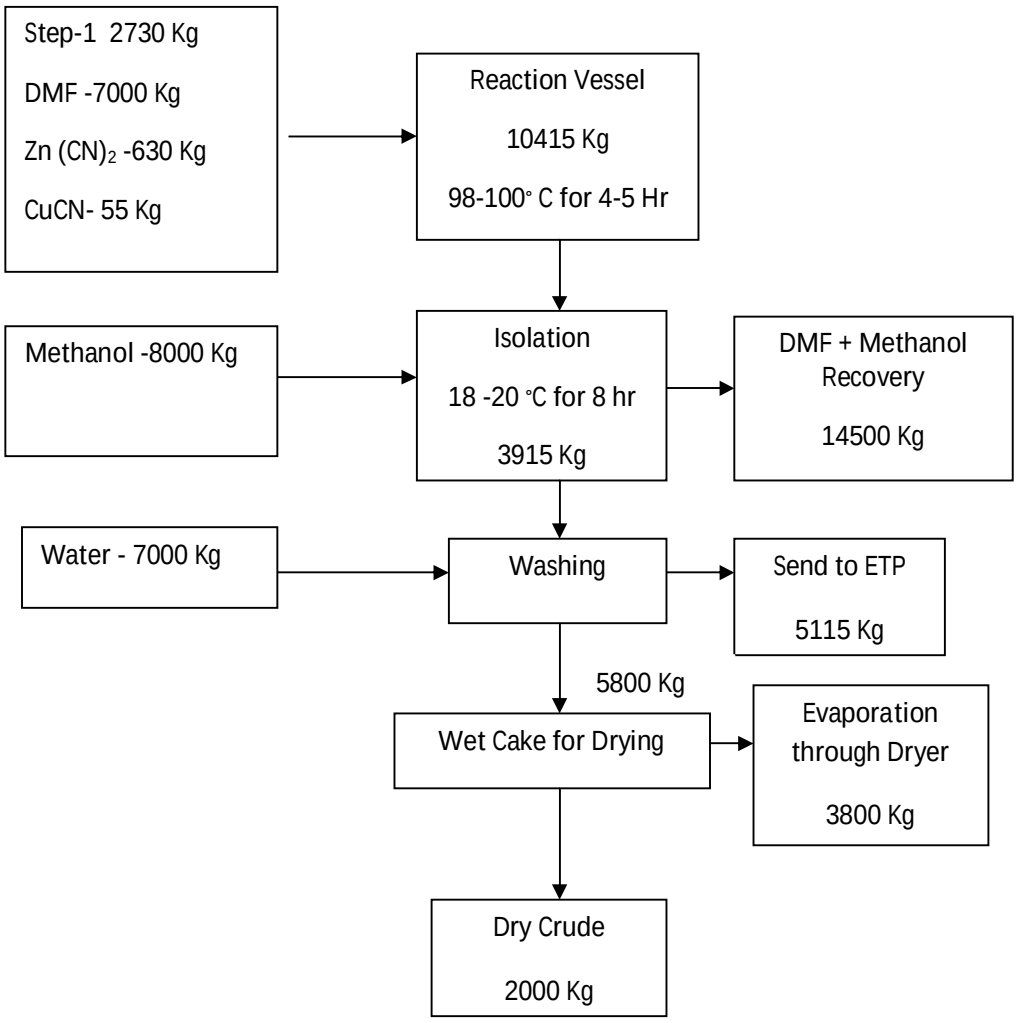
Mass Balance

Batch Size-2000 Kg

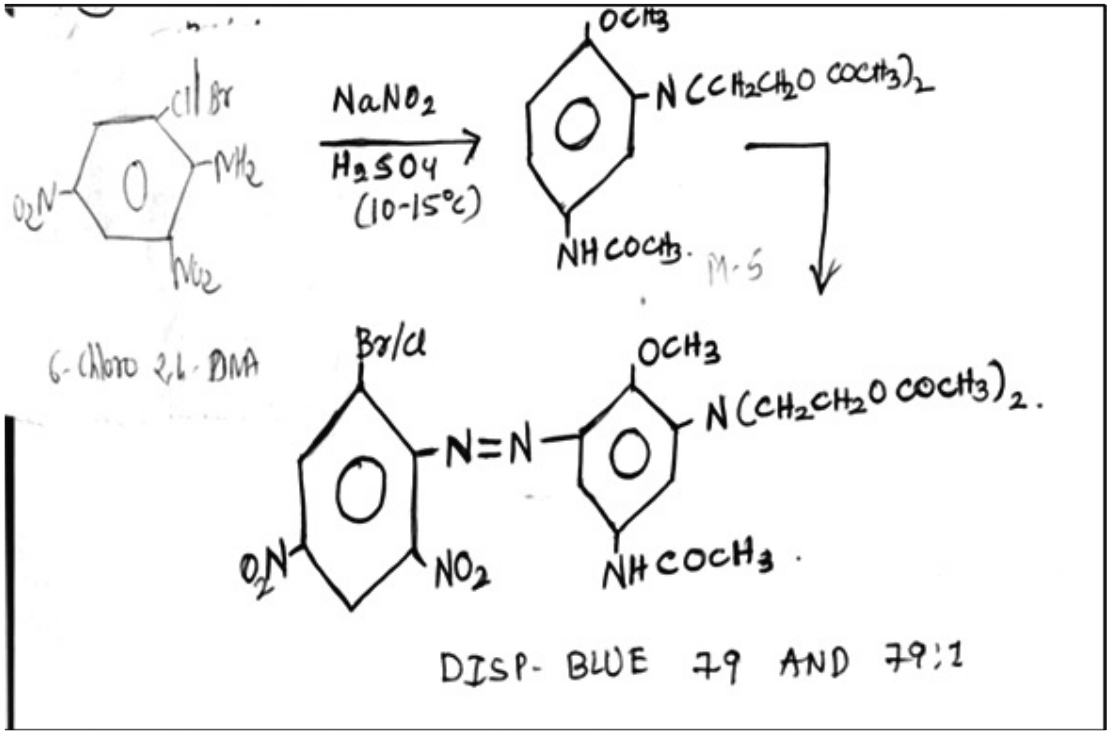


ANNEXURE-I

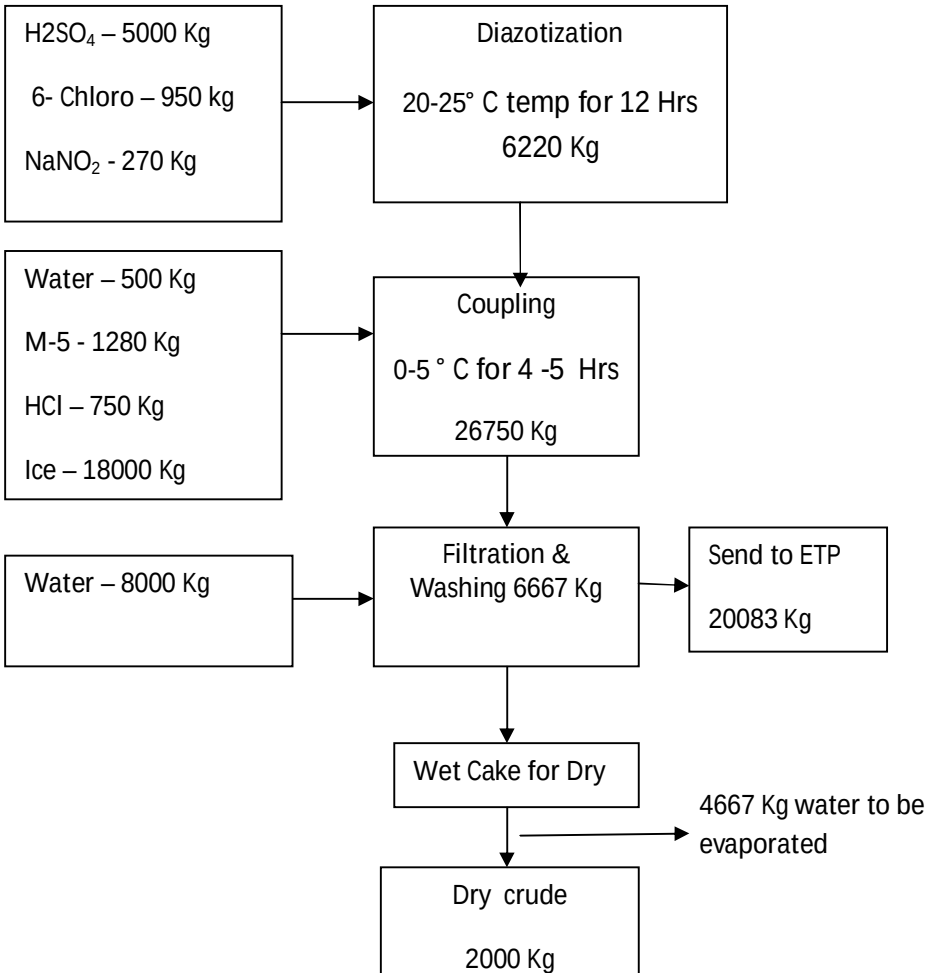
Step- 2 Mass Balance



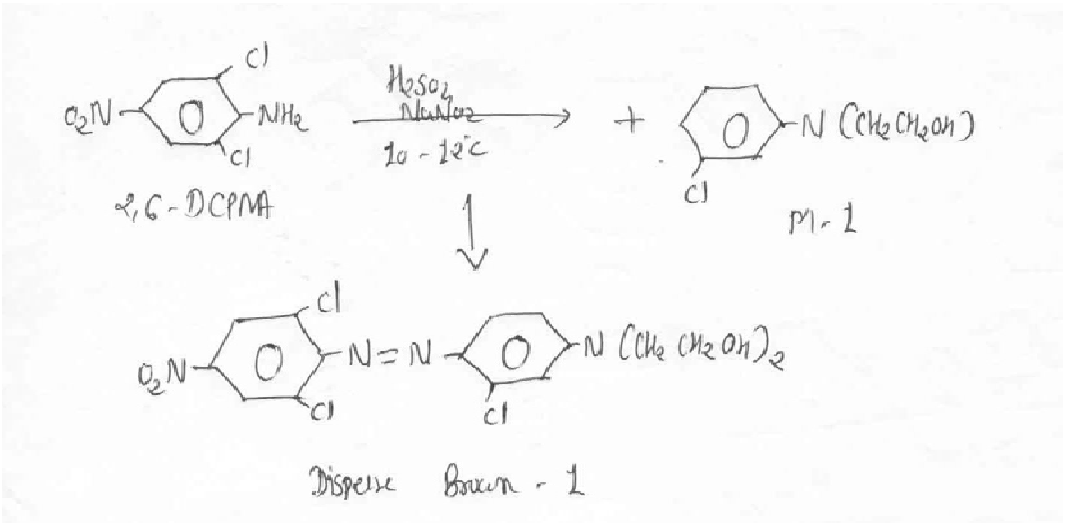
4) Disperse Blue 79



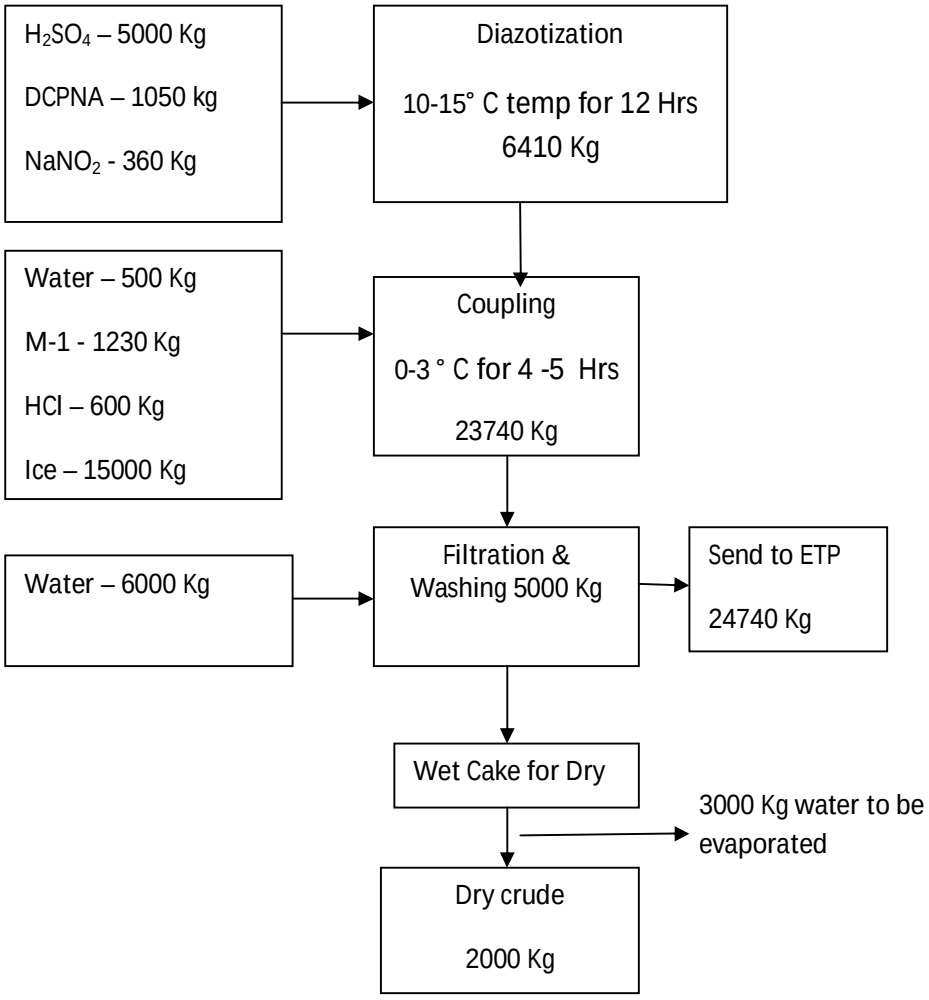
Mass Balance Batch Size: 2000 Kg



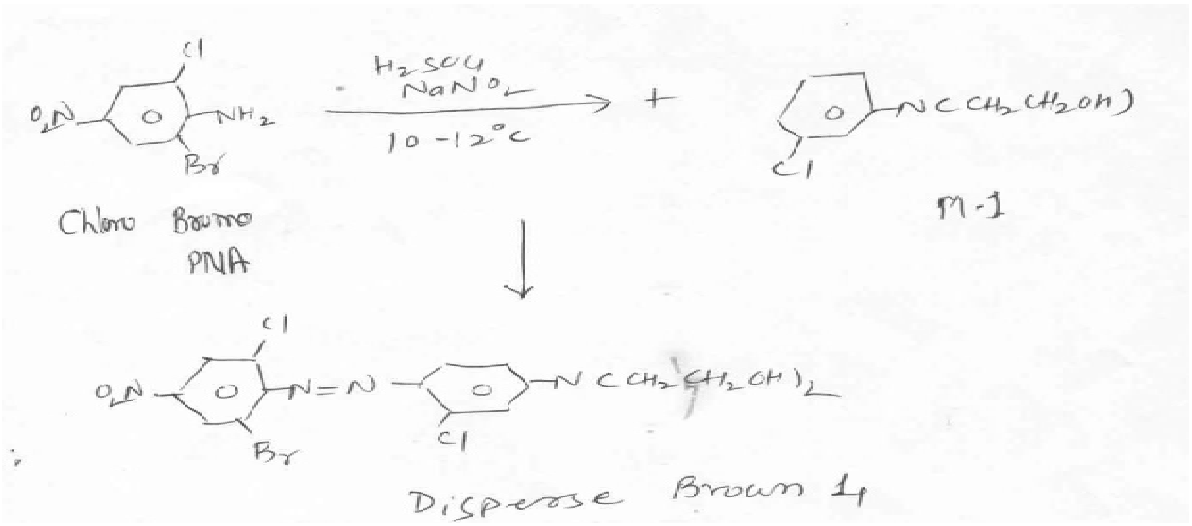
5) Disperse Brown 1



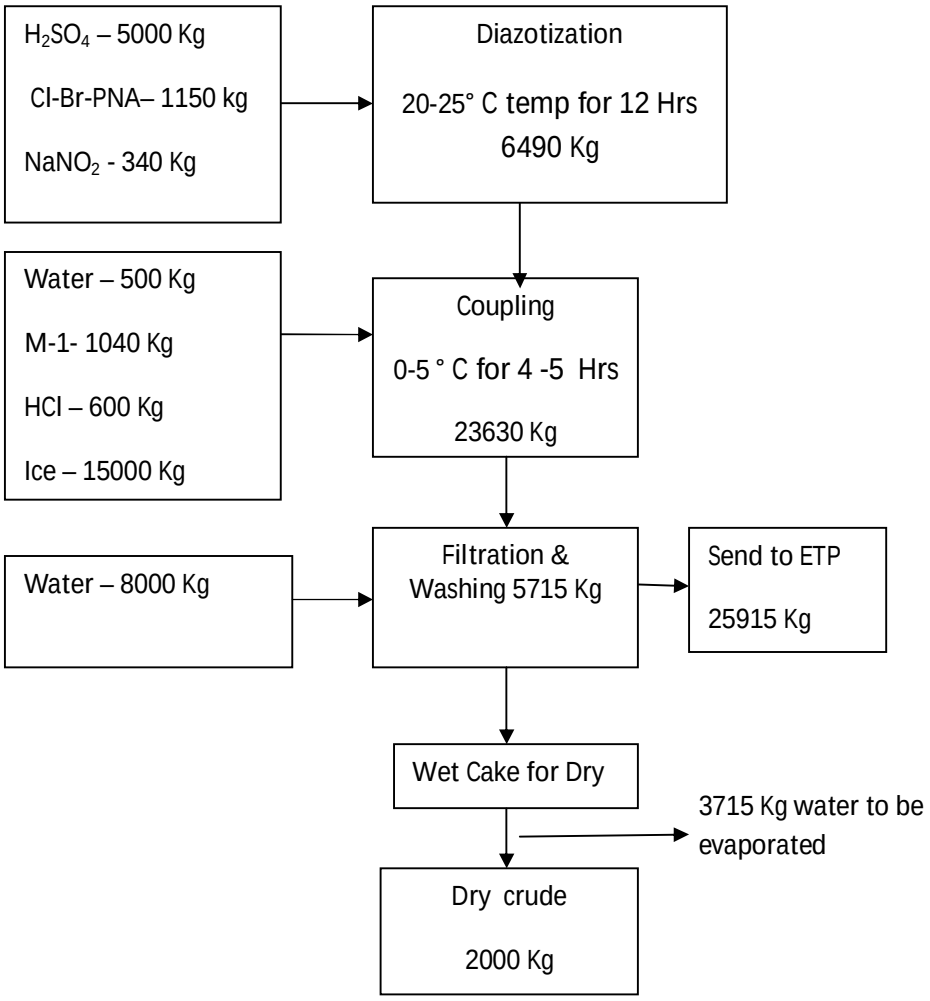
Mass Balance



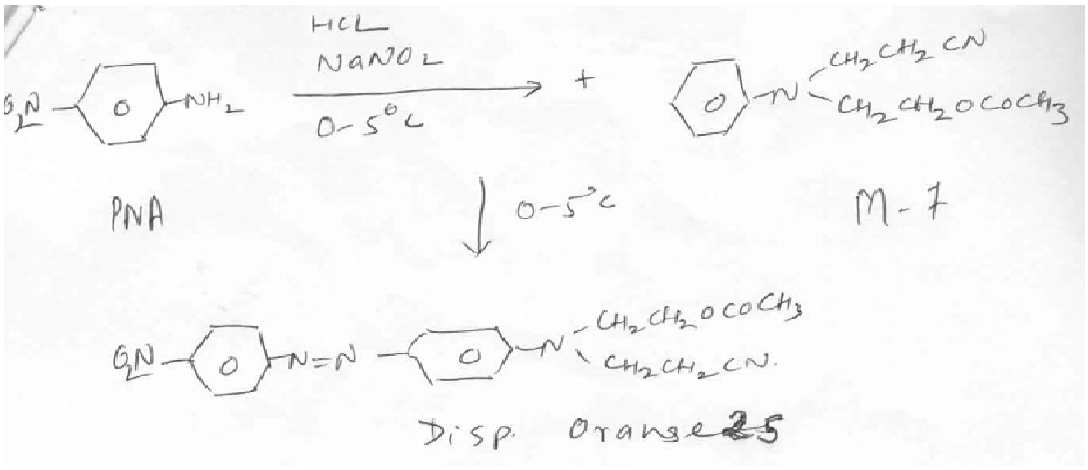
6) Disperse Brown 4

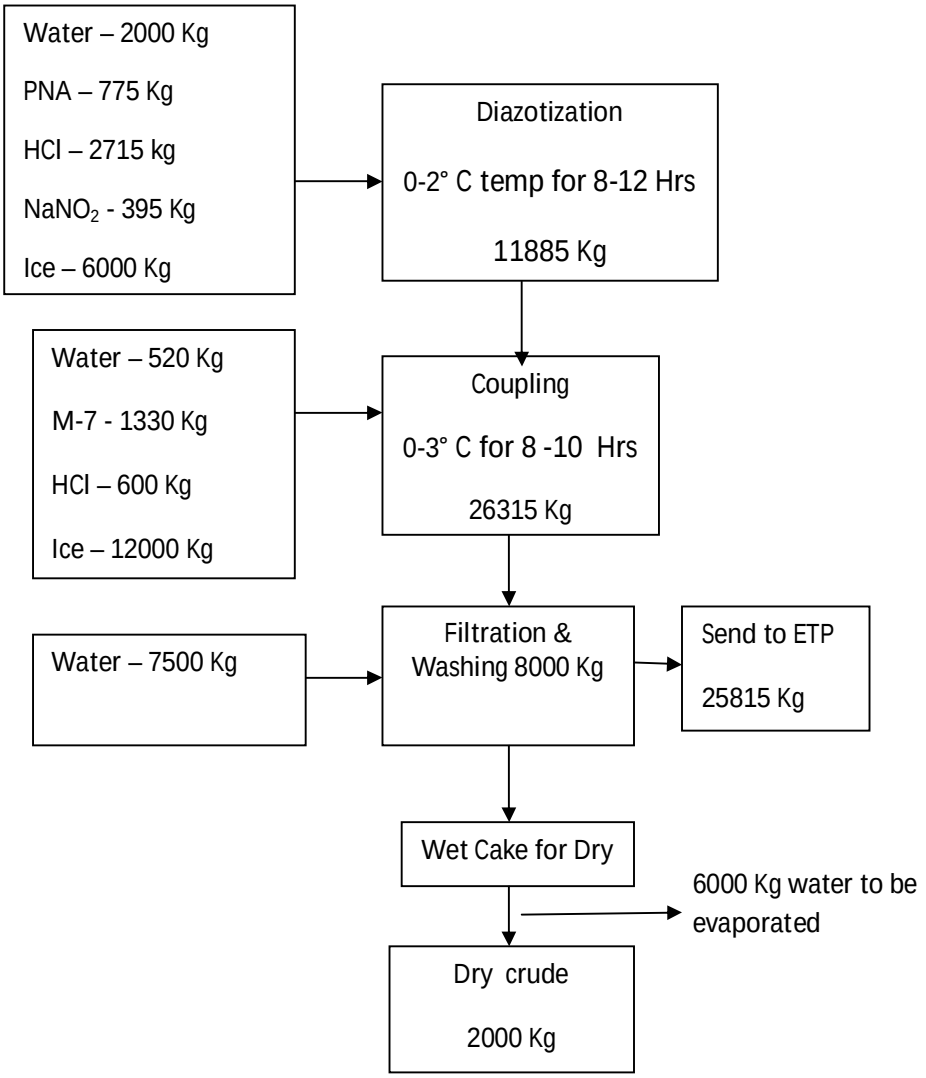


Mass Balance

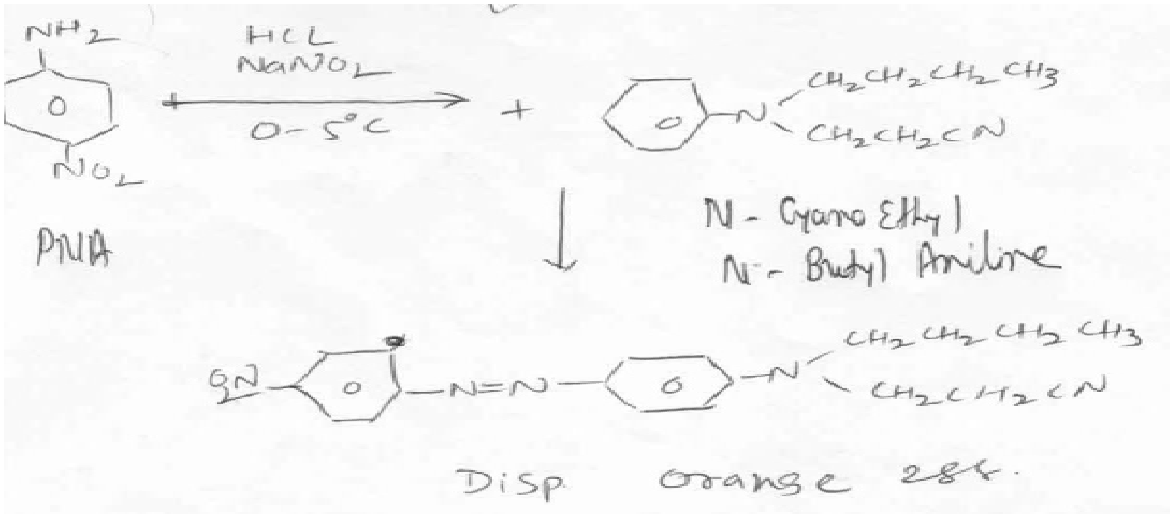


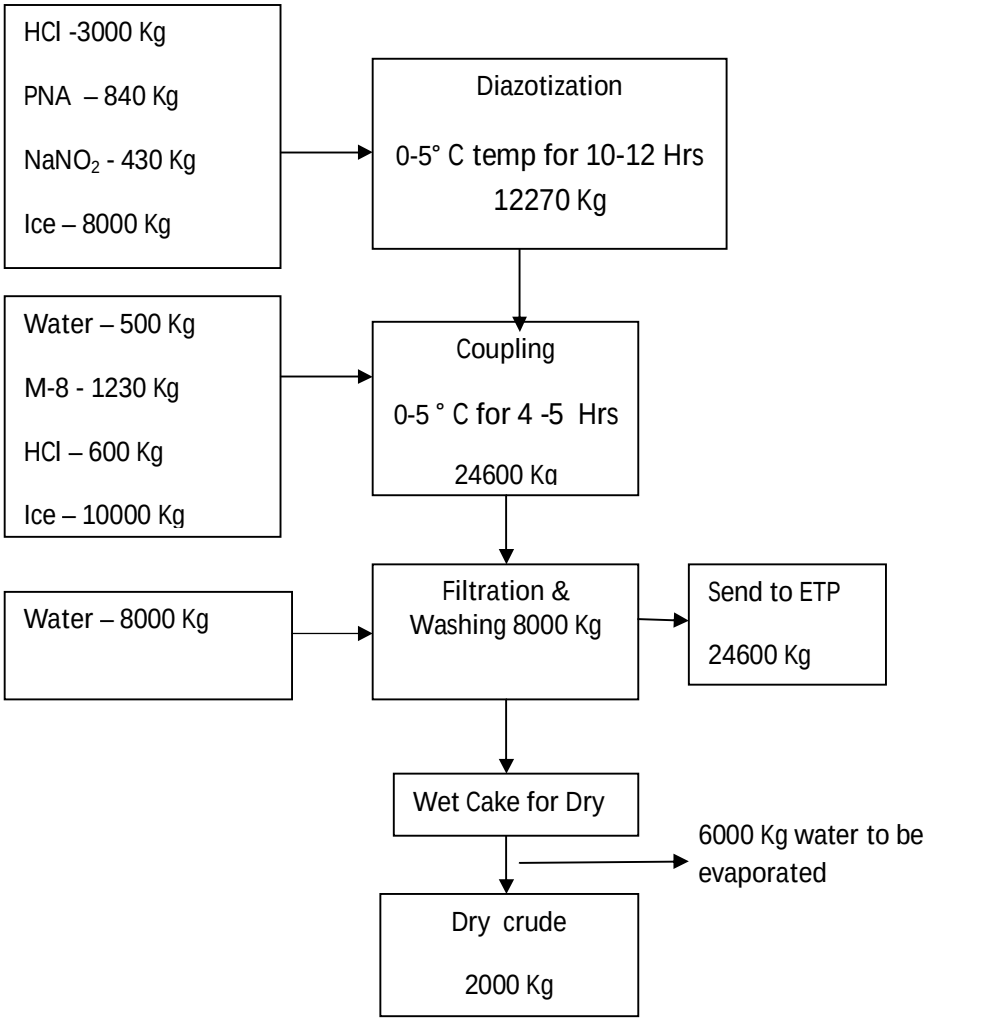
7) Disperse Orange 25



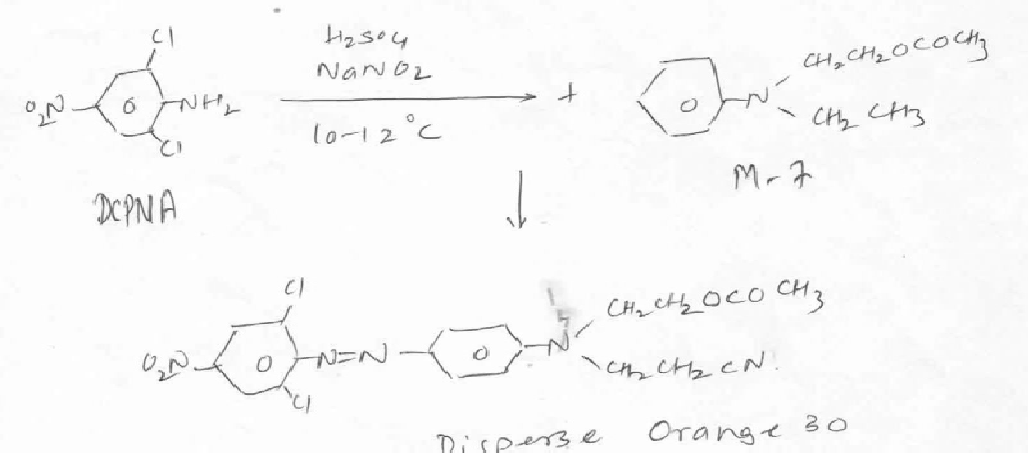


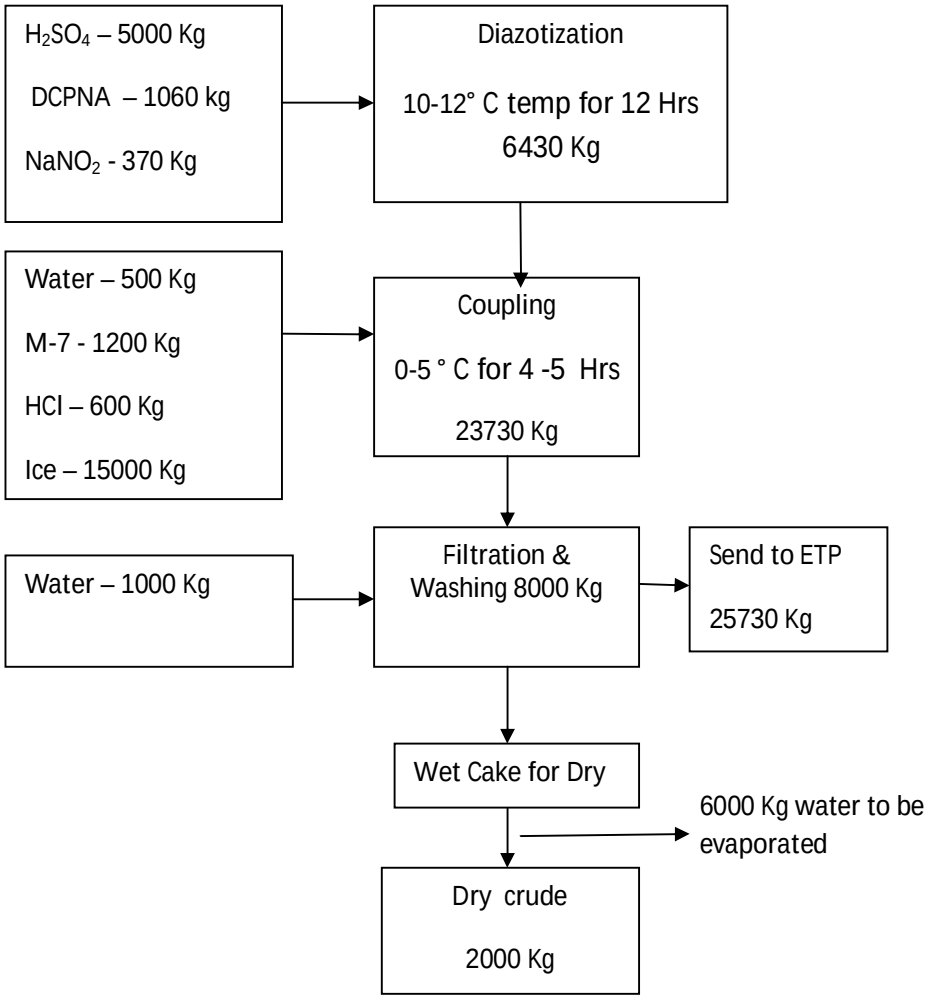
8) Disperse Orange 288





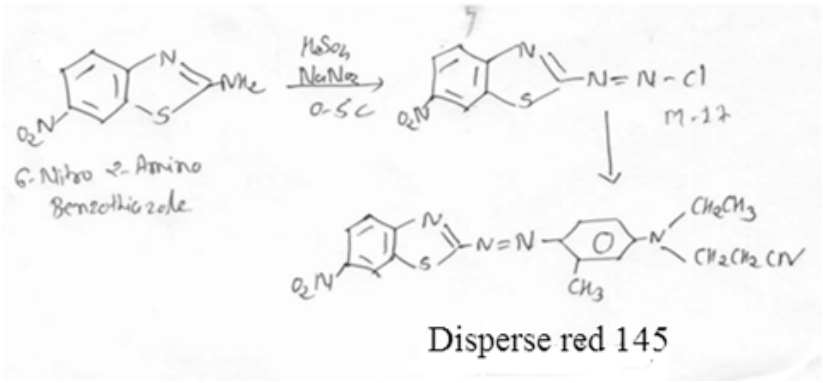
9) Disperse Orange 30



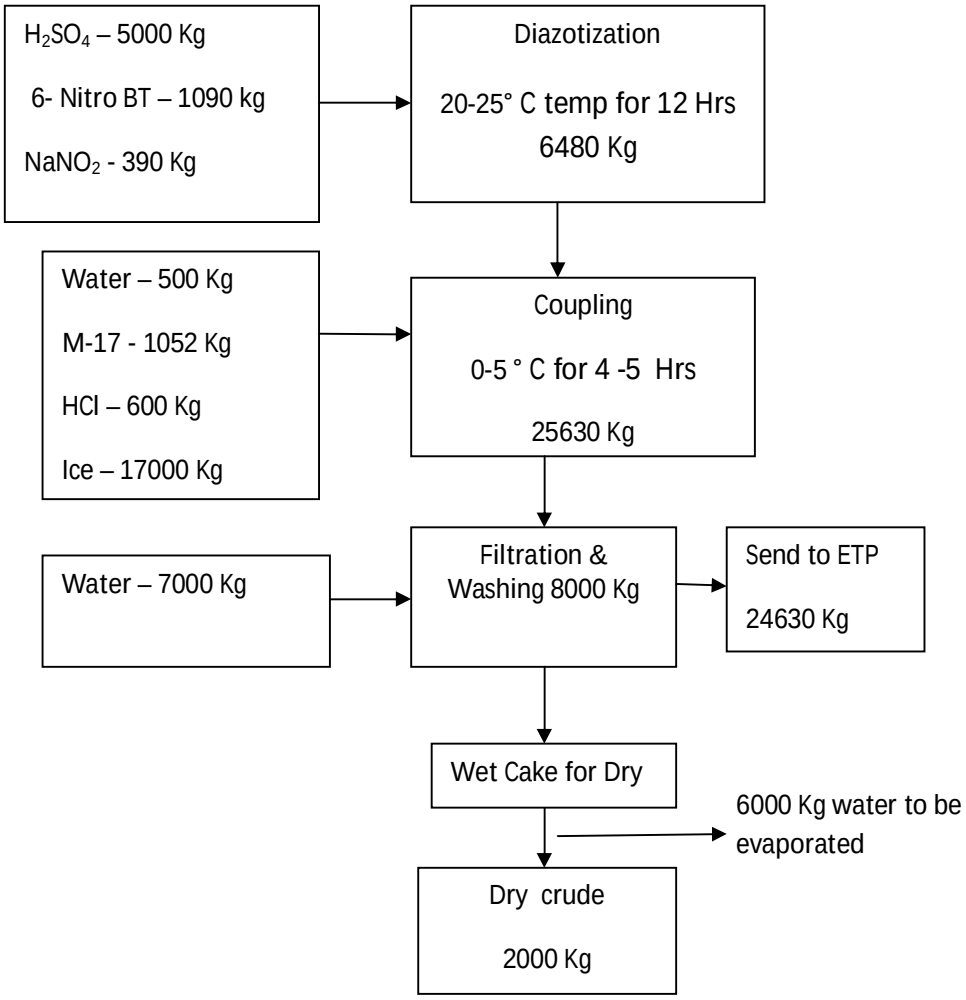


10) Disperse Red 145

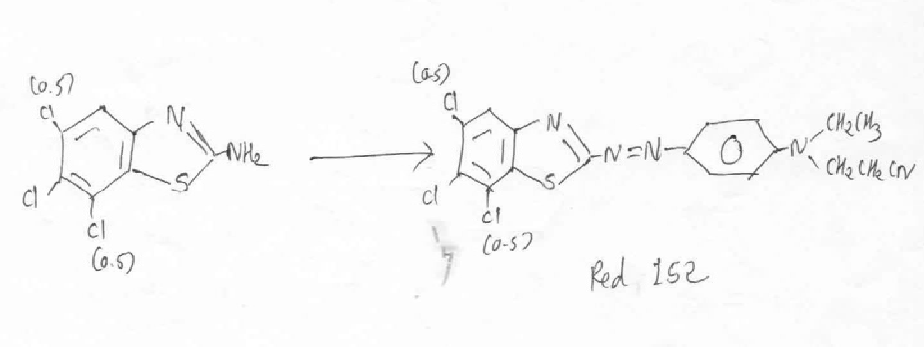
Chemical Reaction

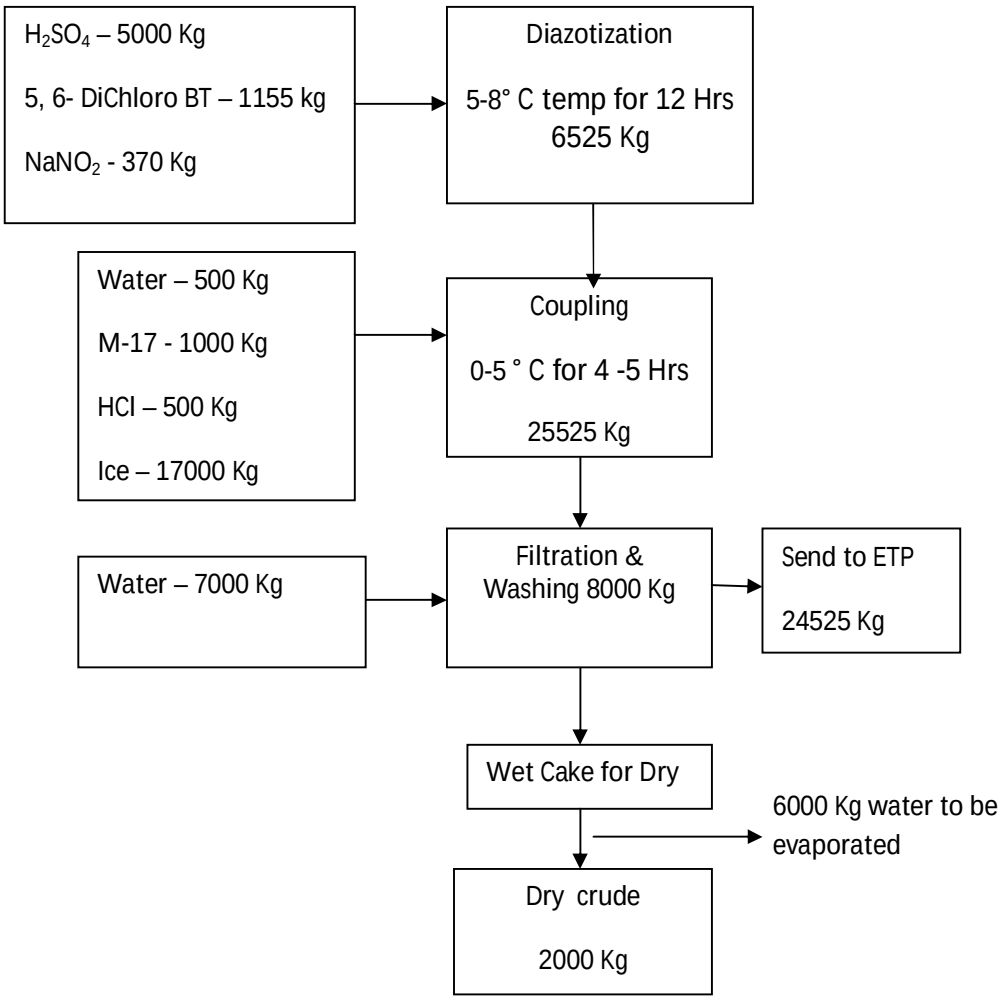


Mass Balance

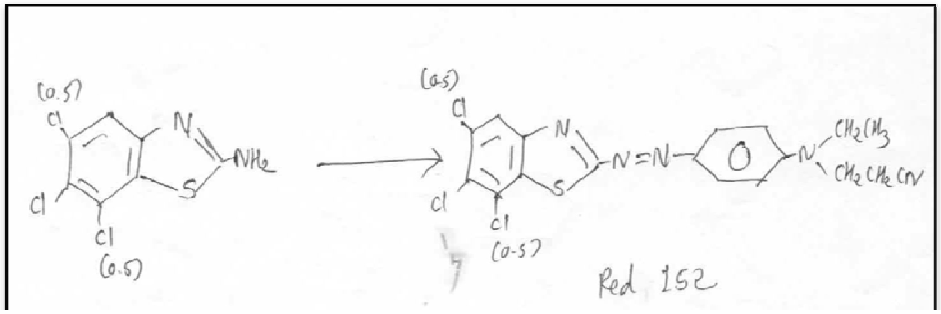


11) Disperse Red 152

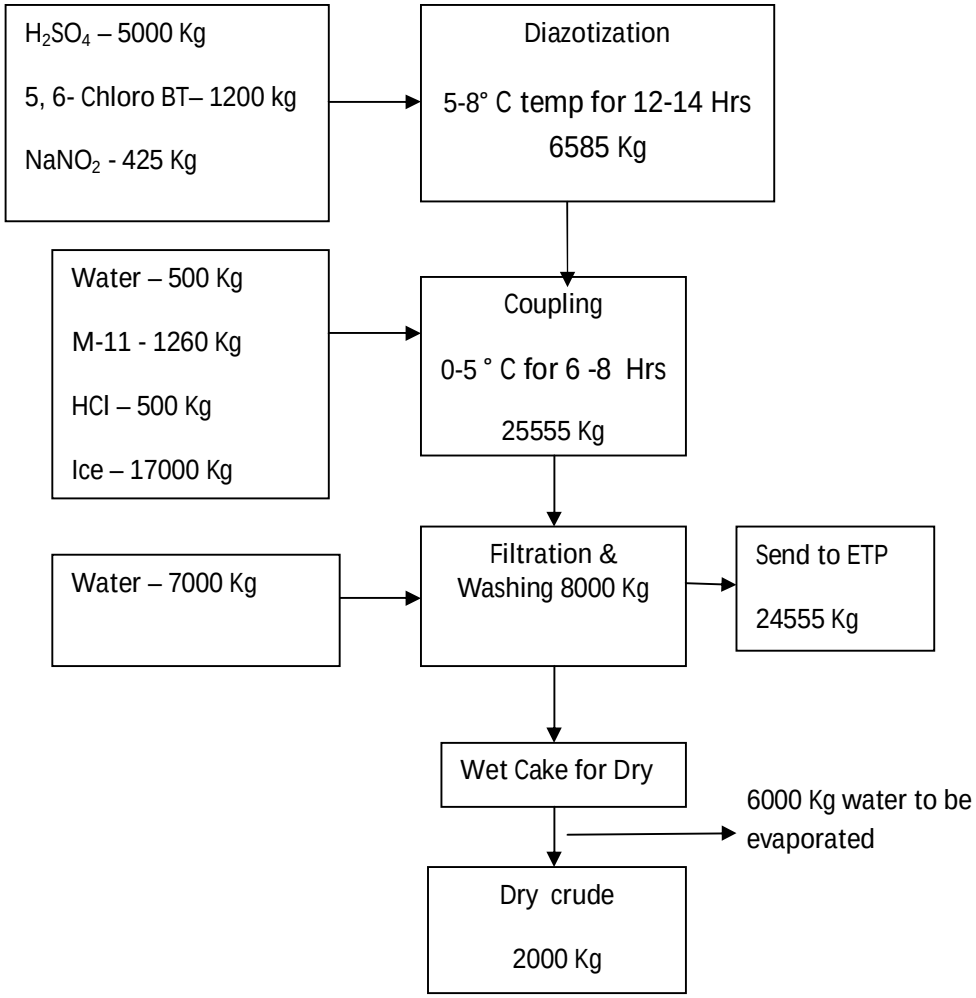




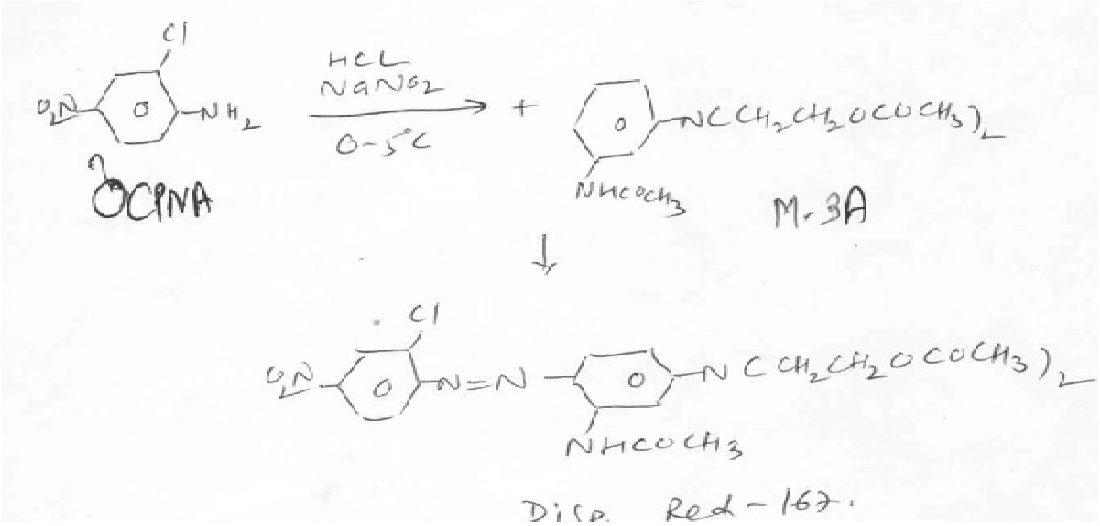
12) Disperse Red 153

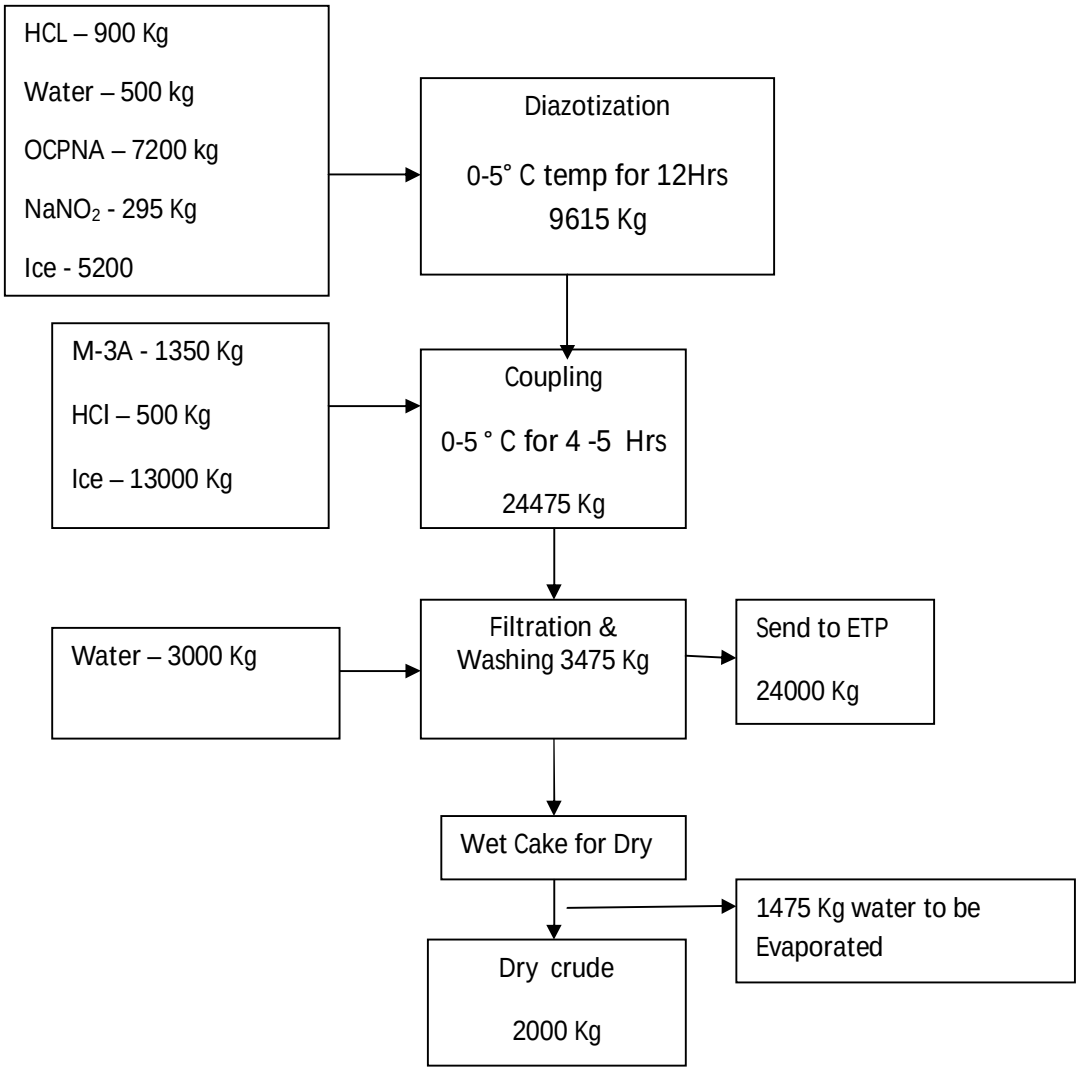


Mass Balance

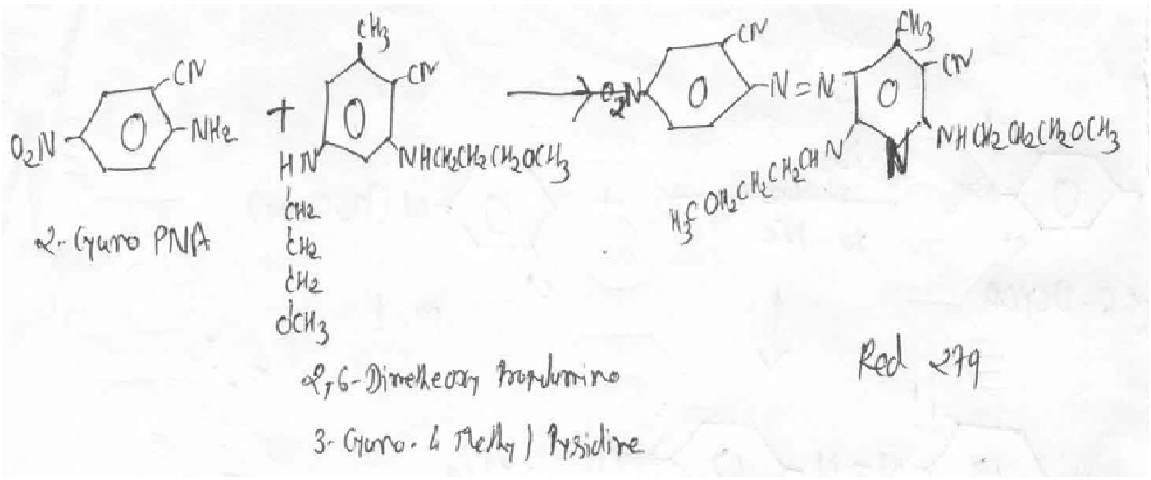


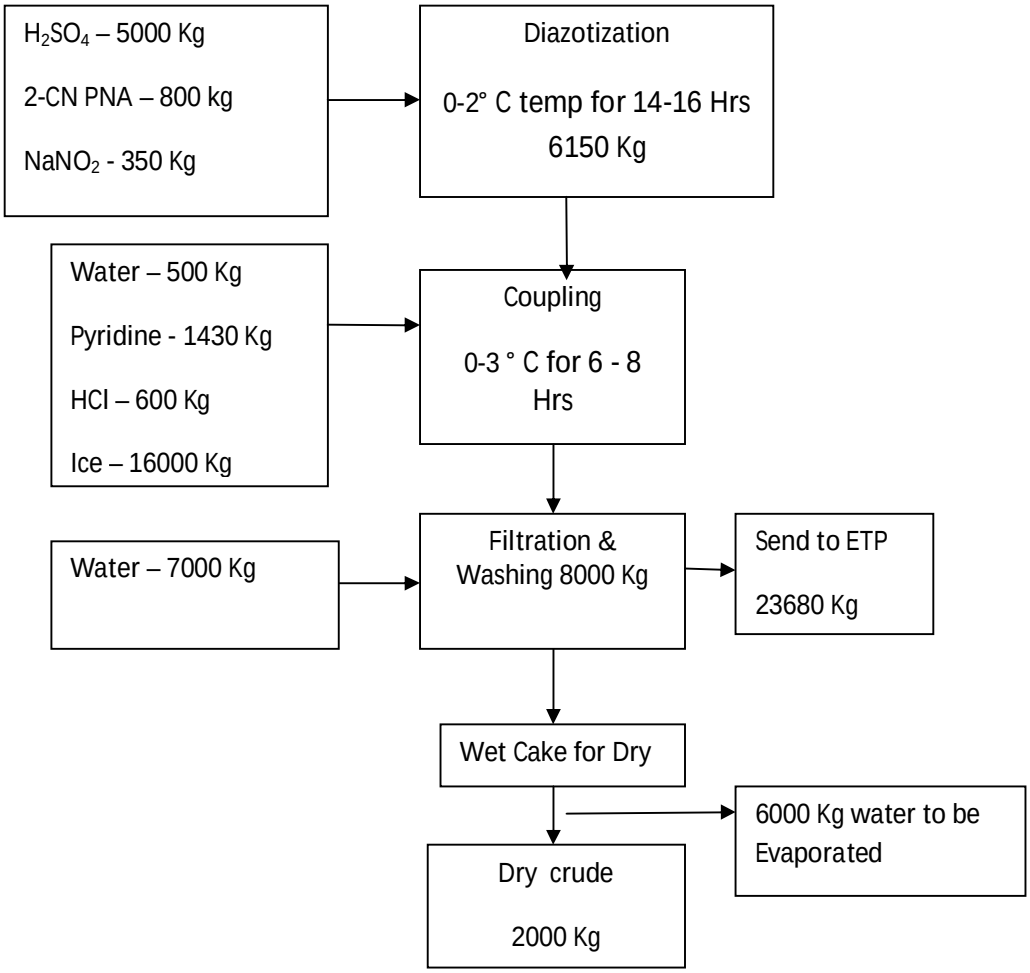
13) Dispersed Red 167



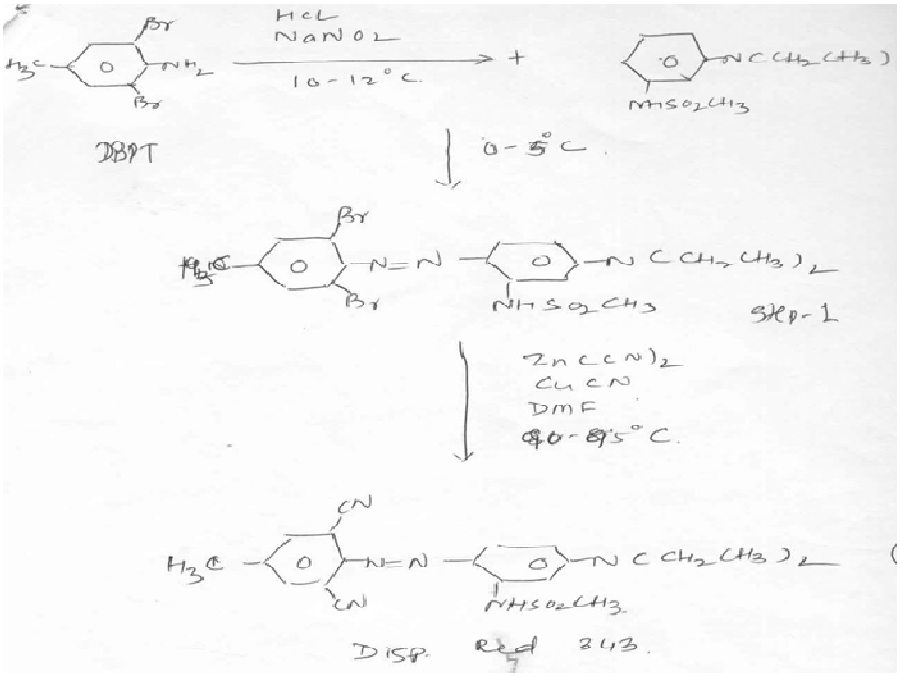


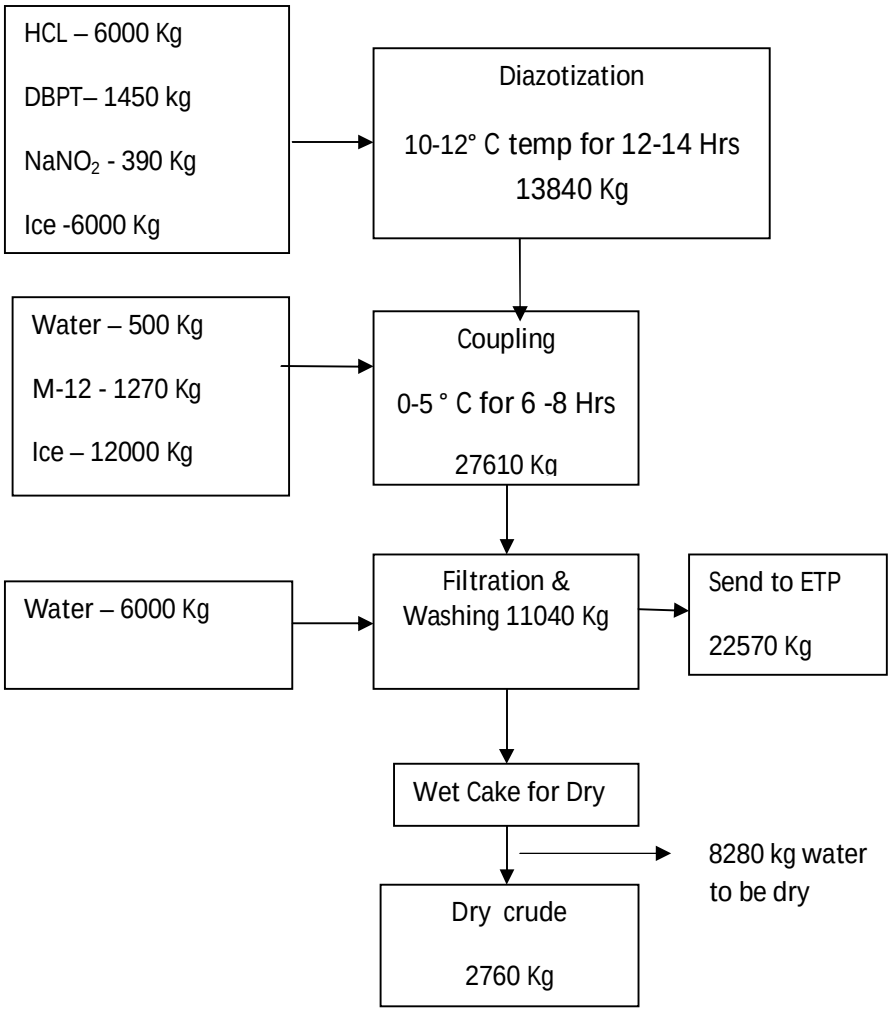
14) Dispersed Red 279





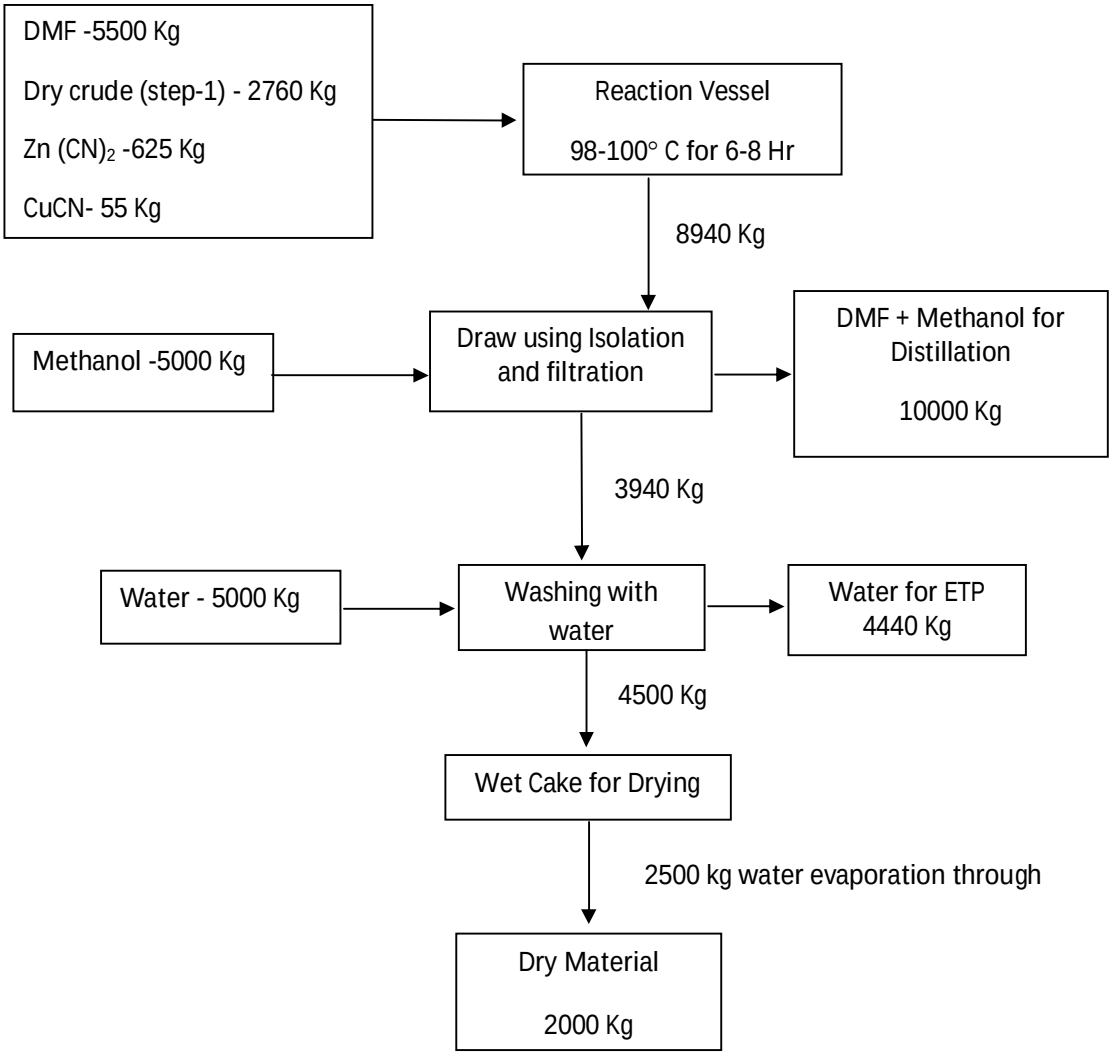
15) Disperse Red 343



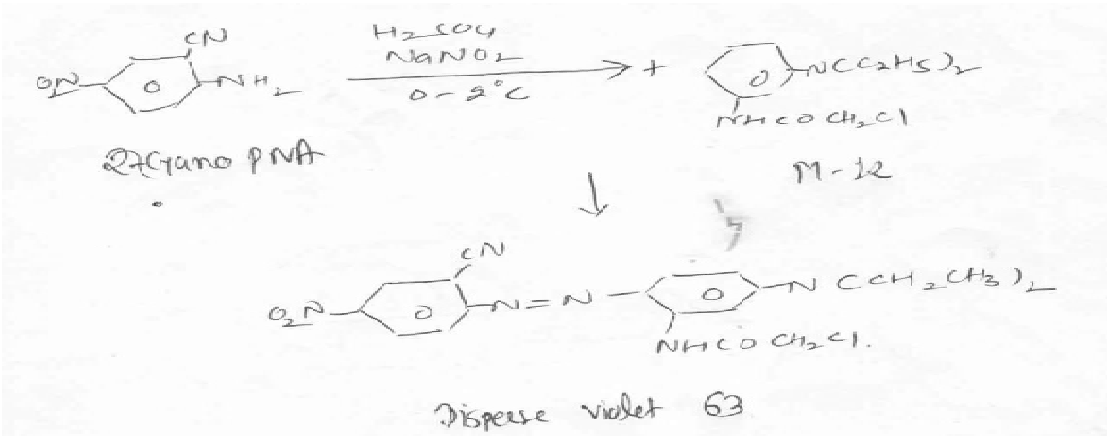


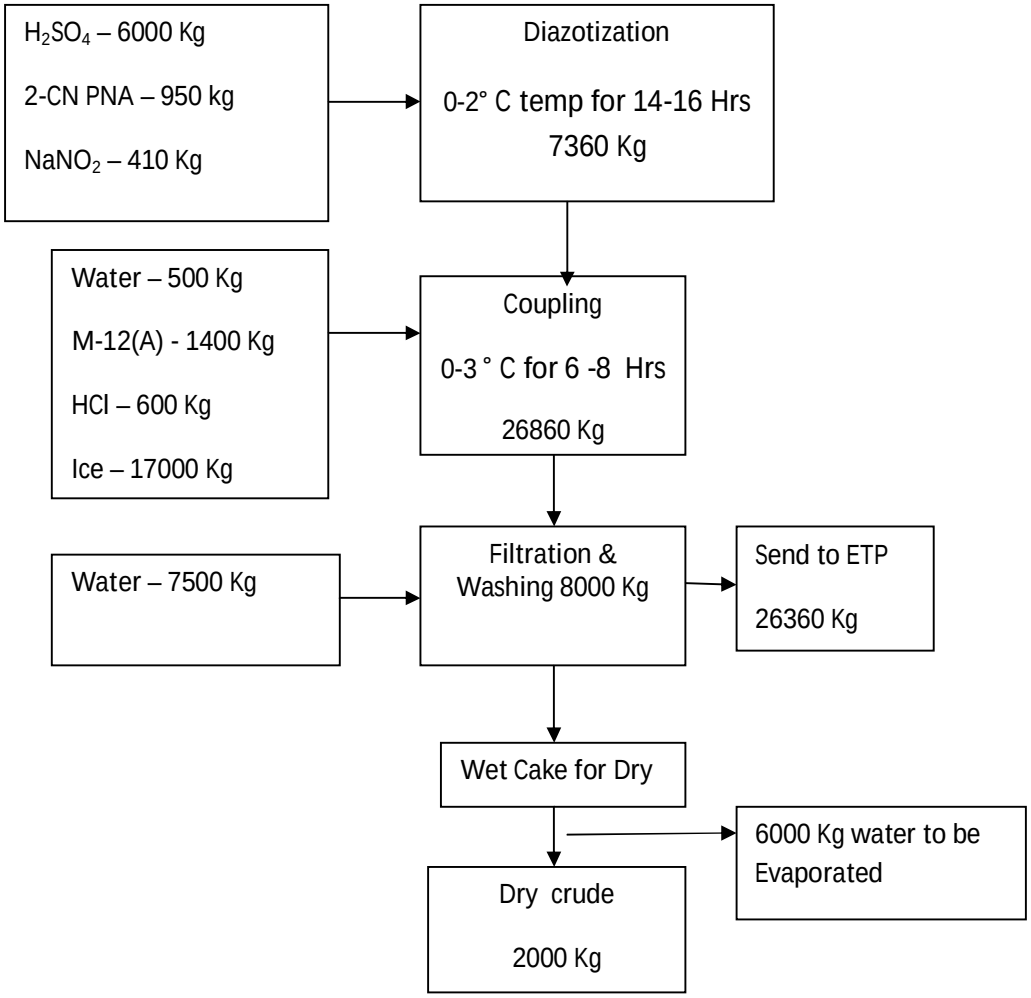
ANNEXURE-I

Step-2

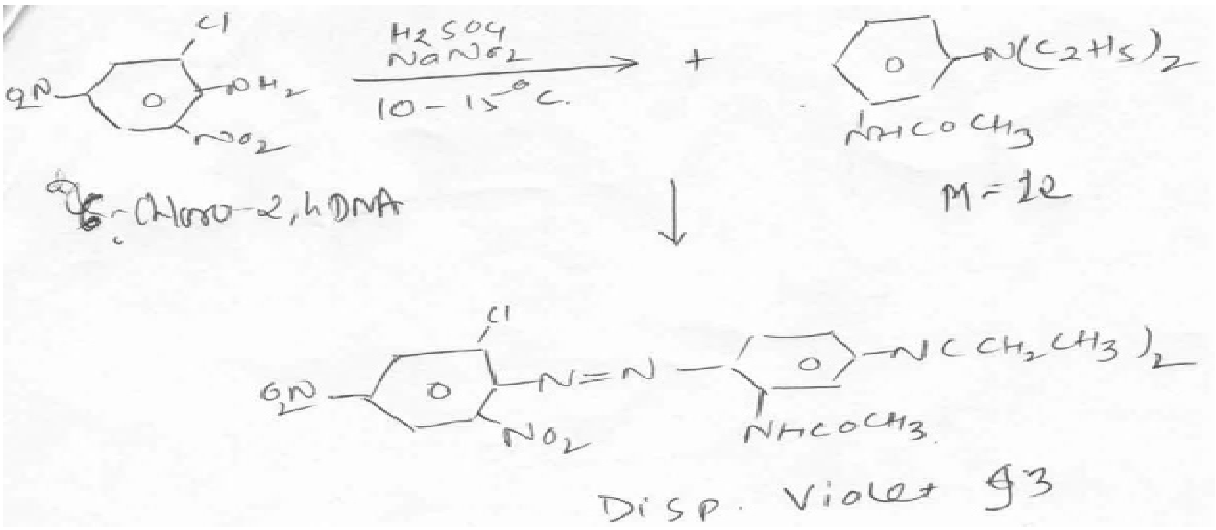


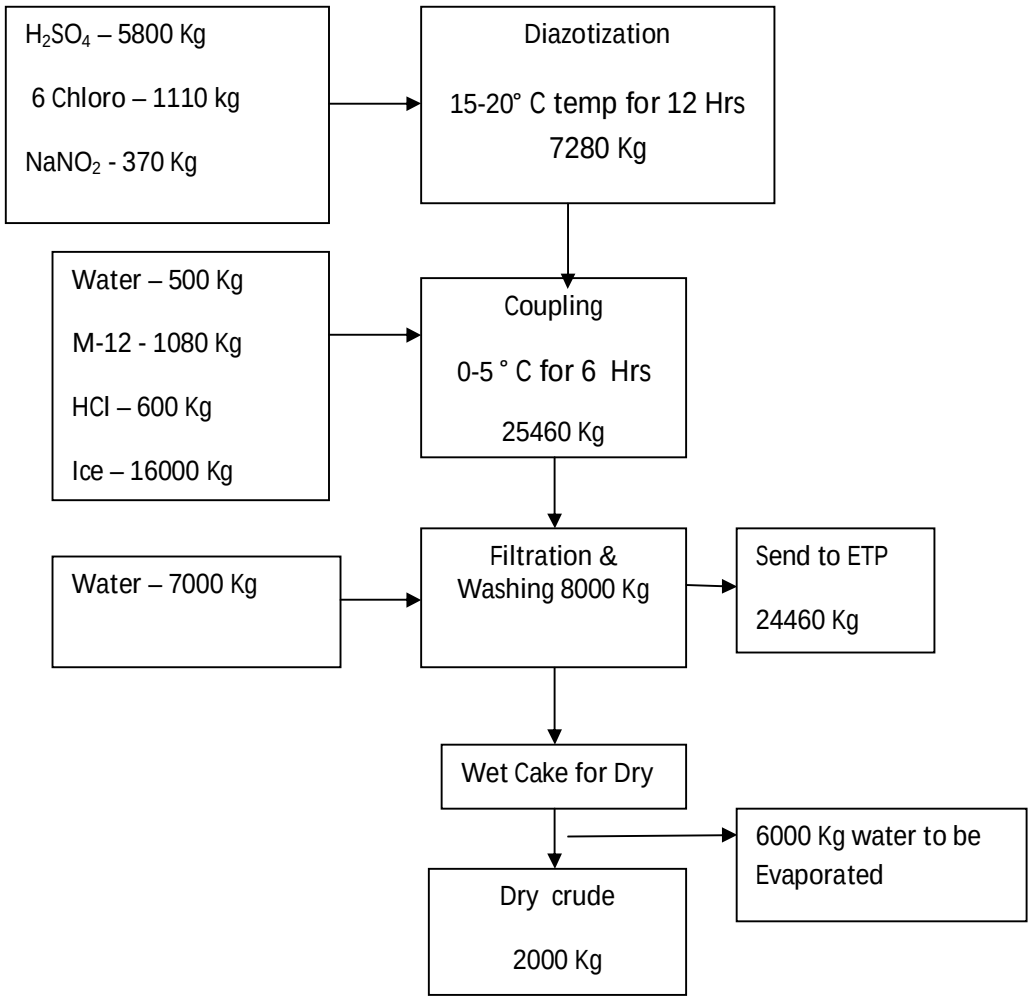
16) Disperse Violet 63





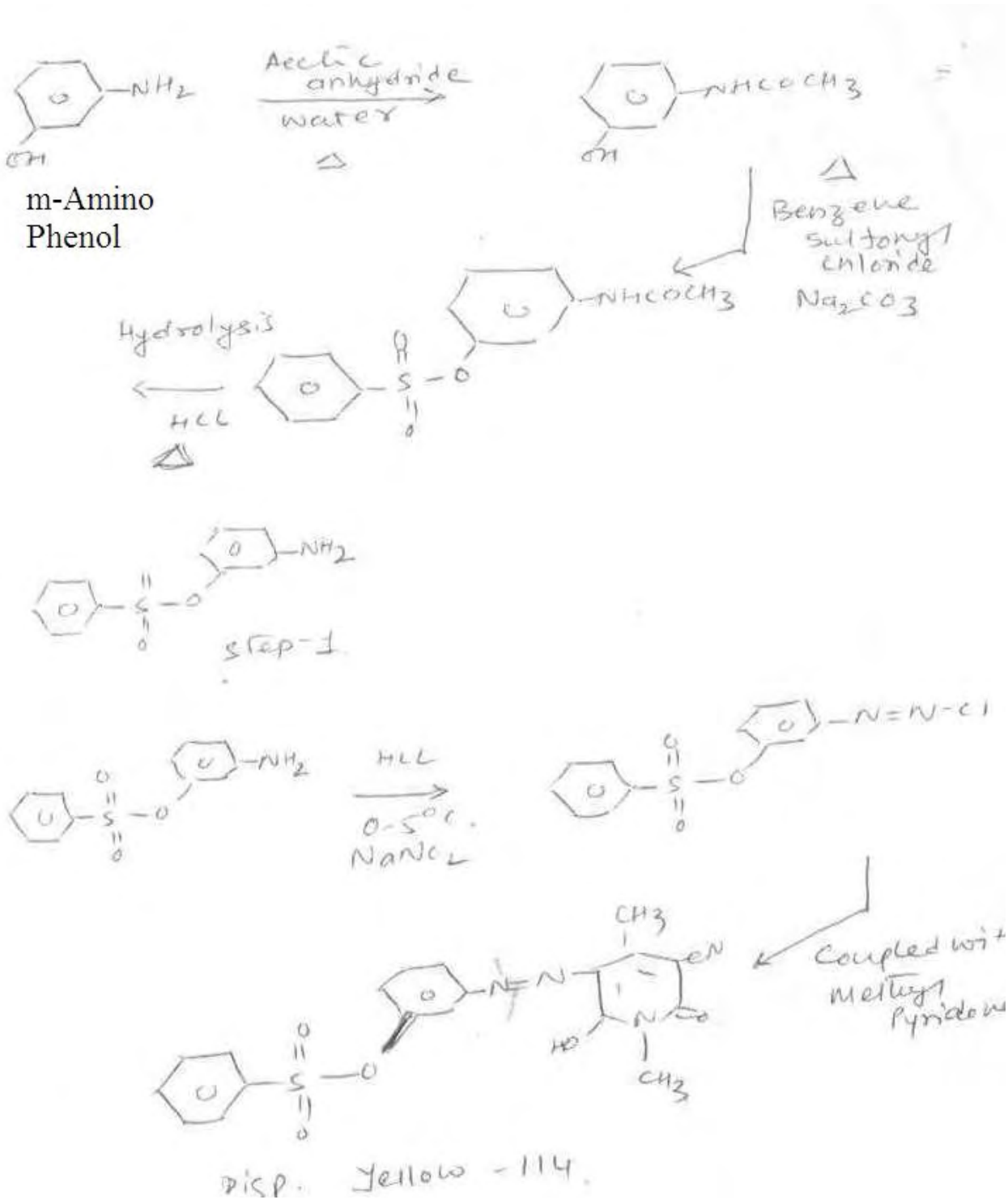
17) Disperse Violet 93





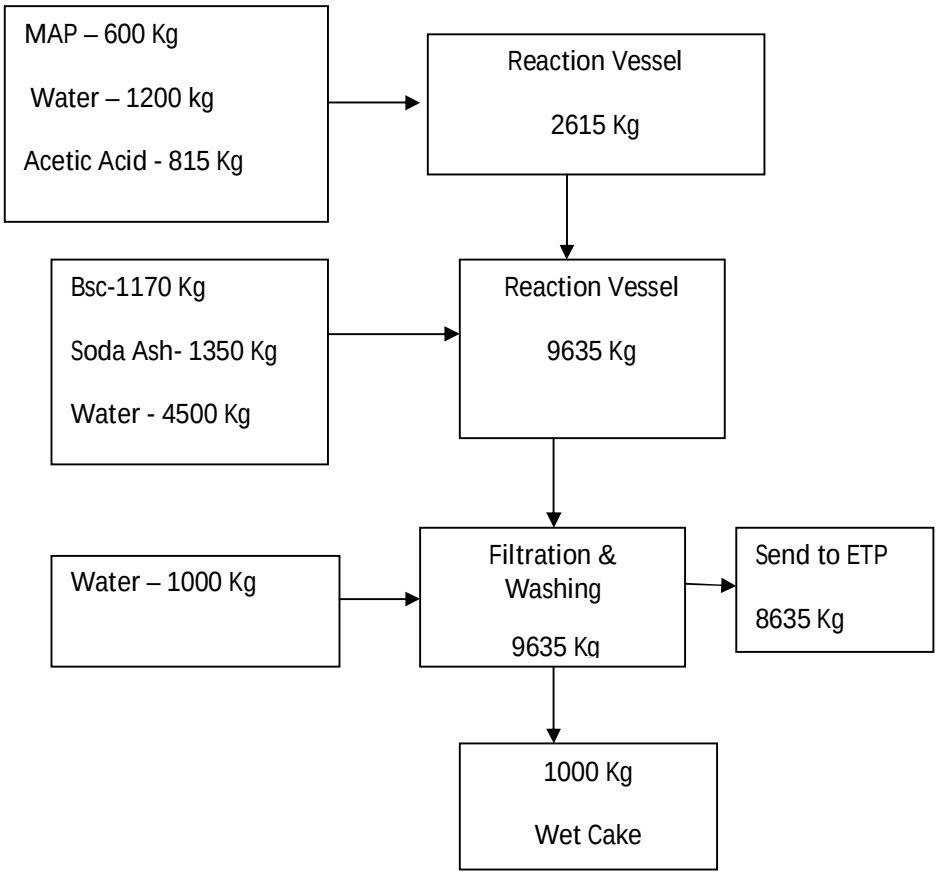
18) Disperse Yellow 114

Step- 1

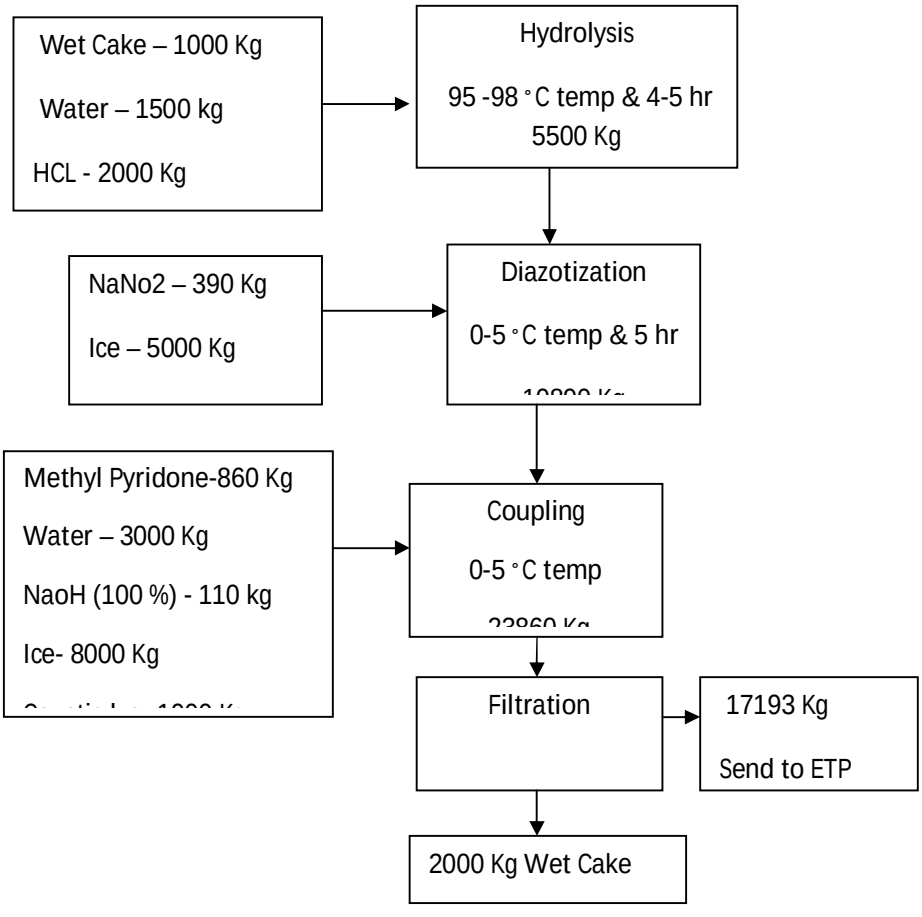


ANNEXURE-I

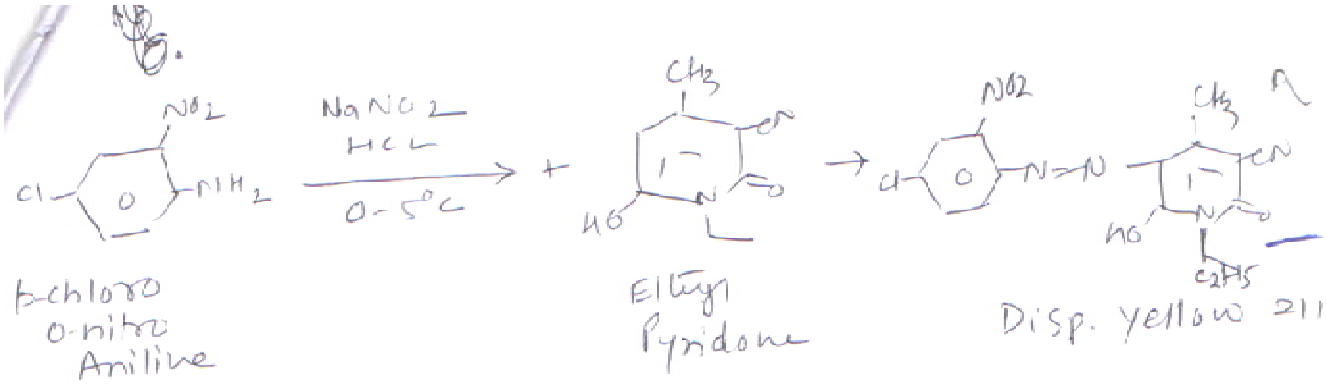
Step-1

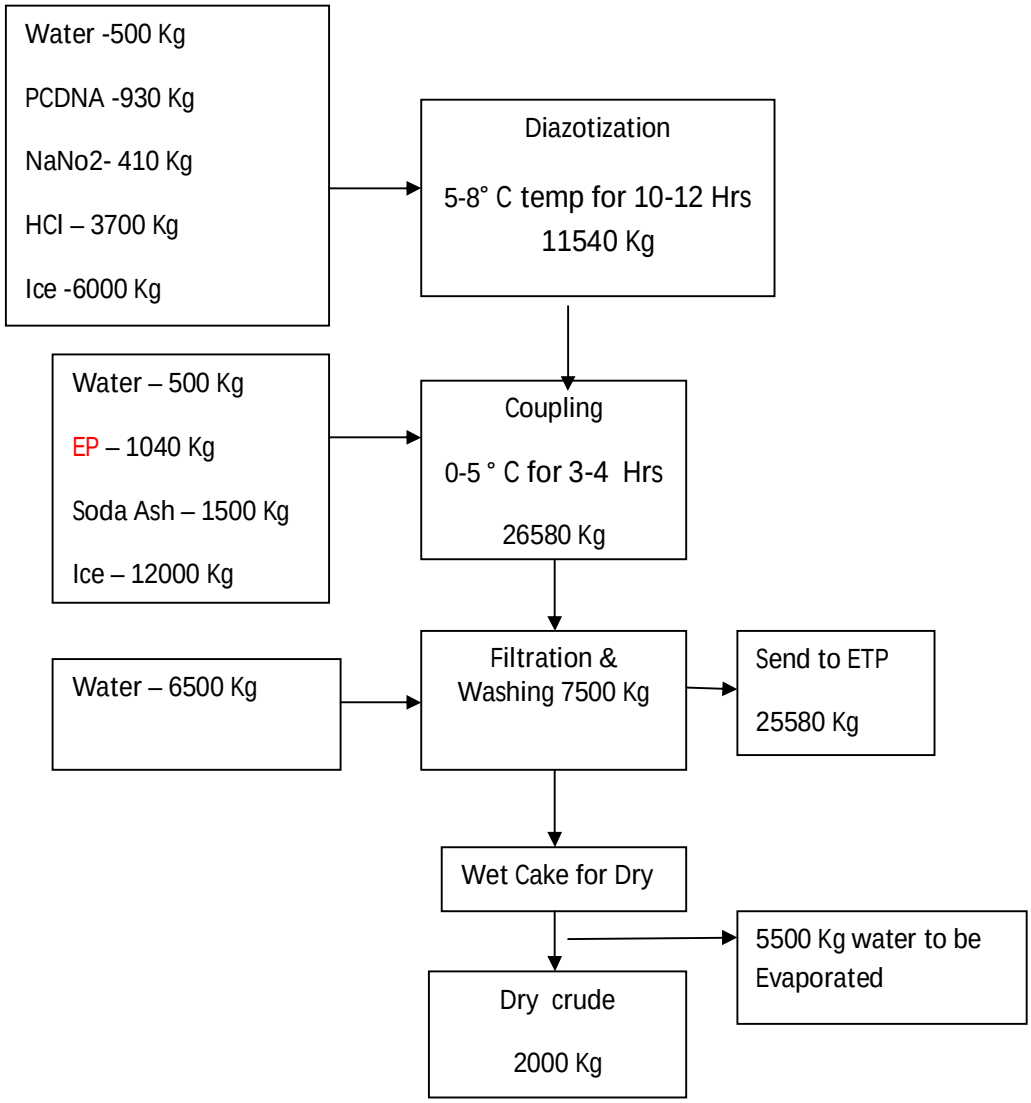


Step-2

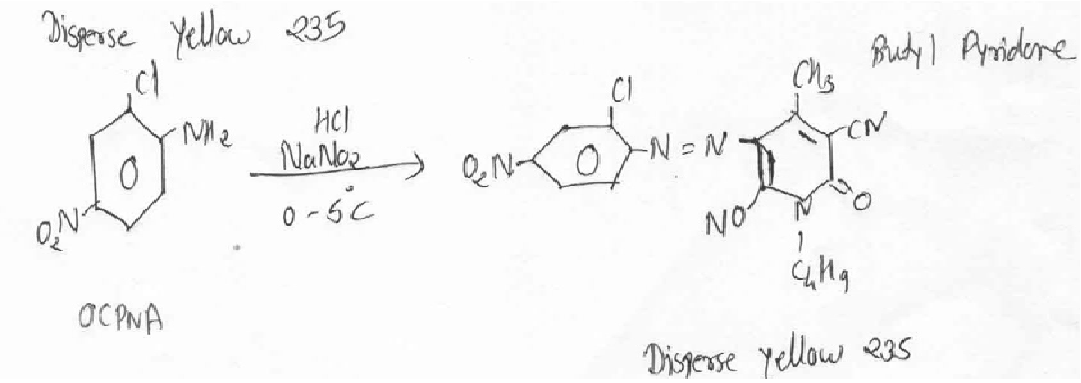


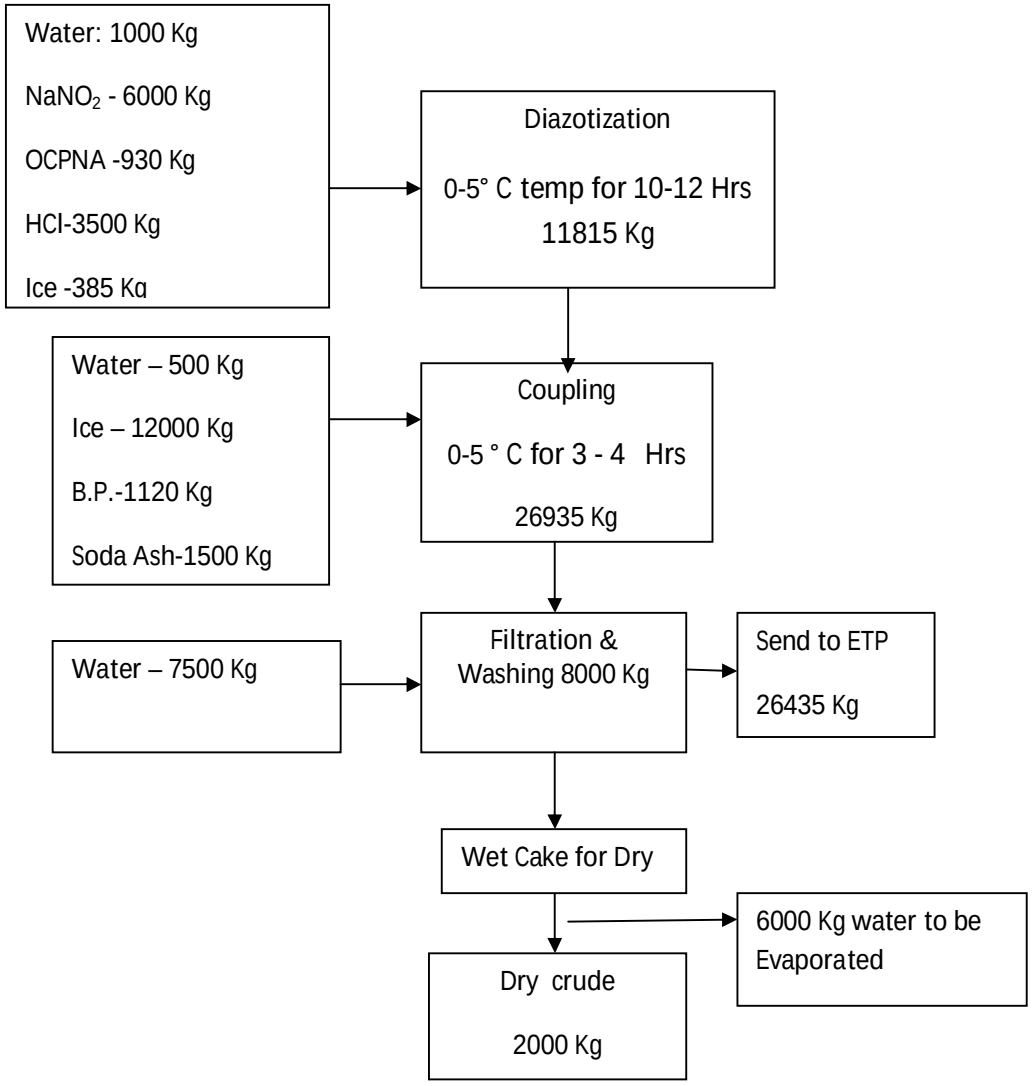
19) Disperse Yellow 211





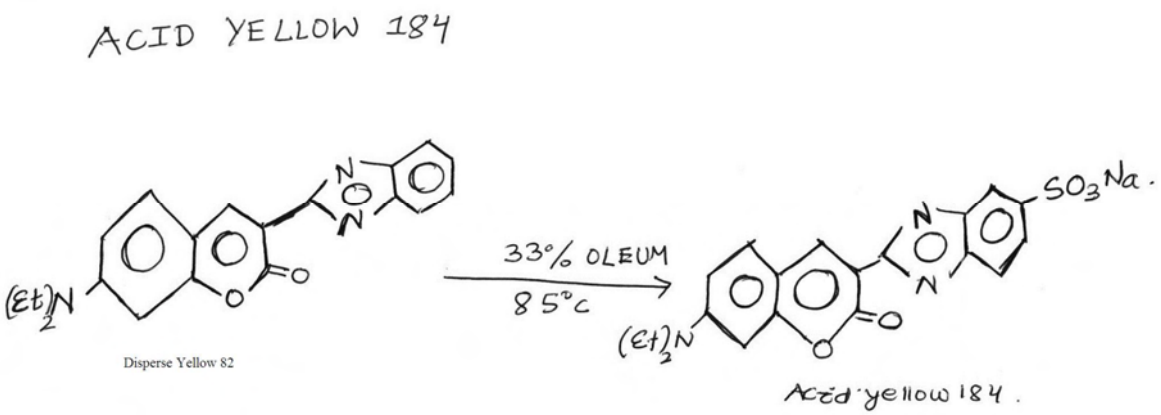
20) Disperse Yellow 235

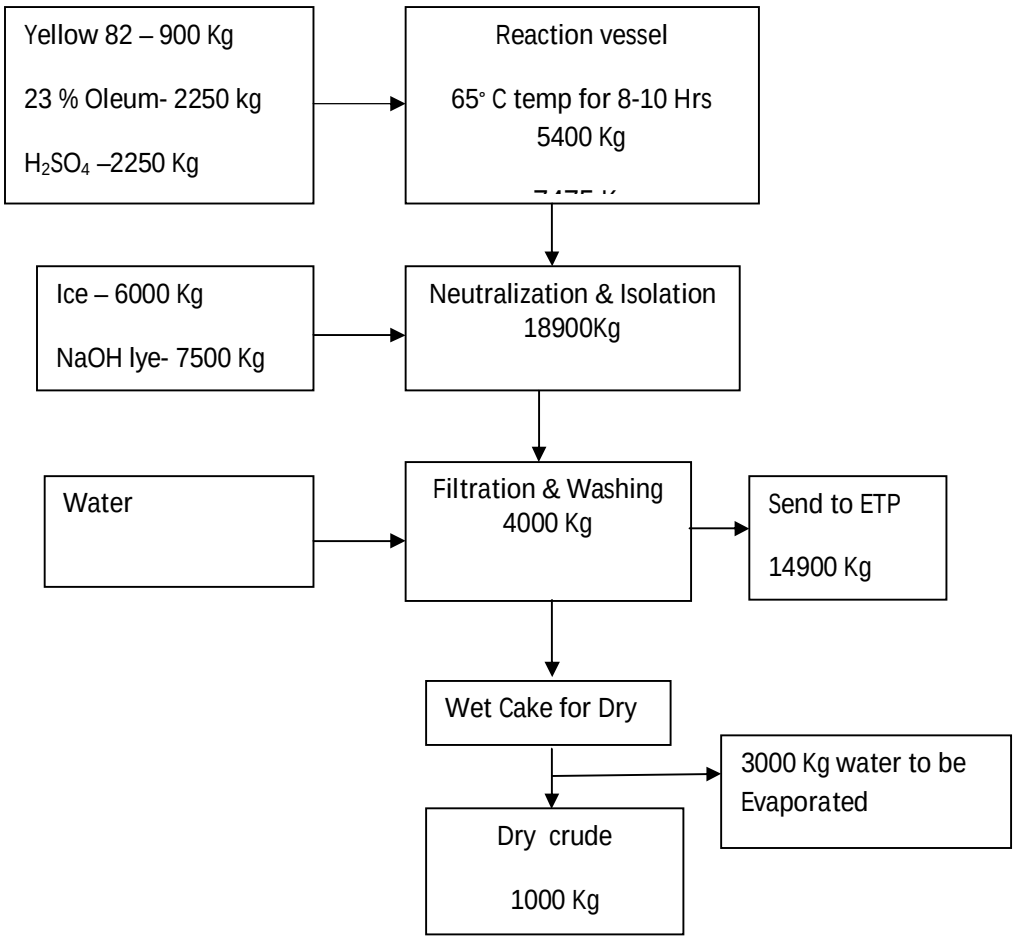




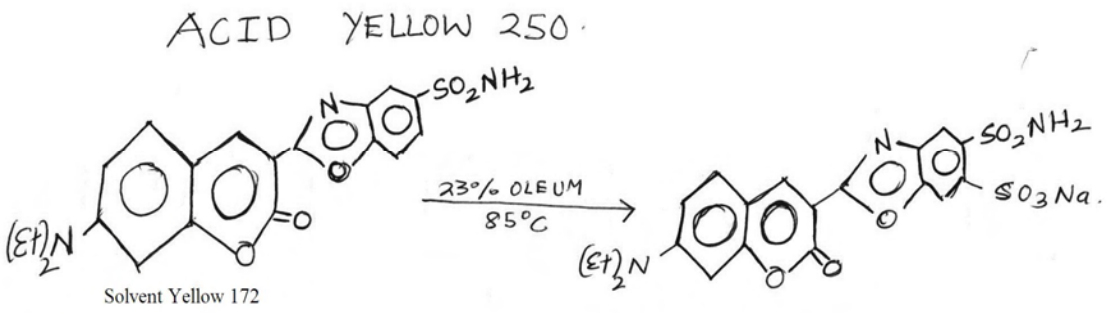
II. Coumarine Dyes

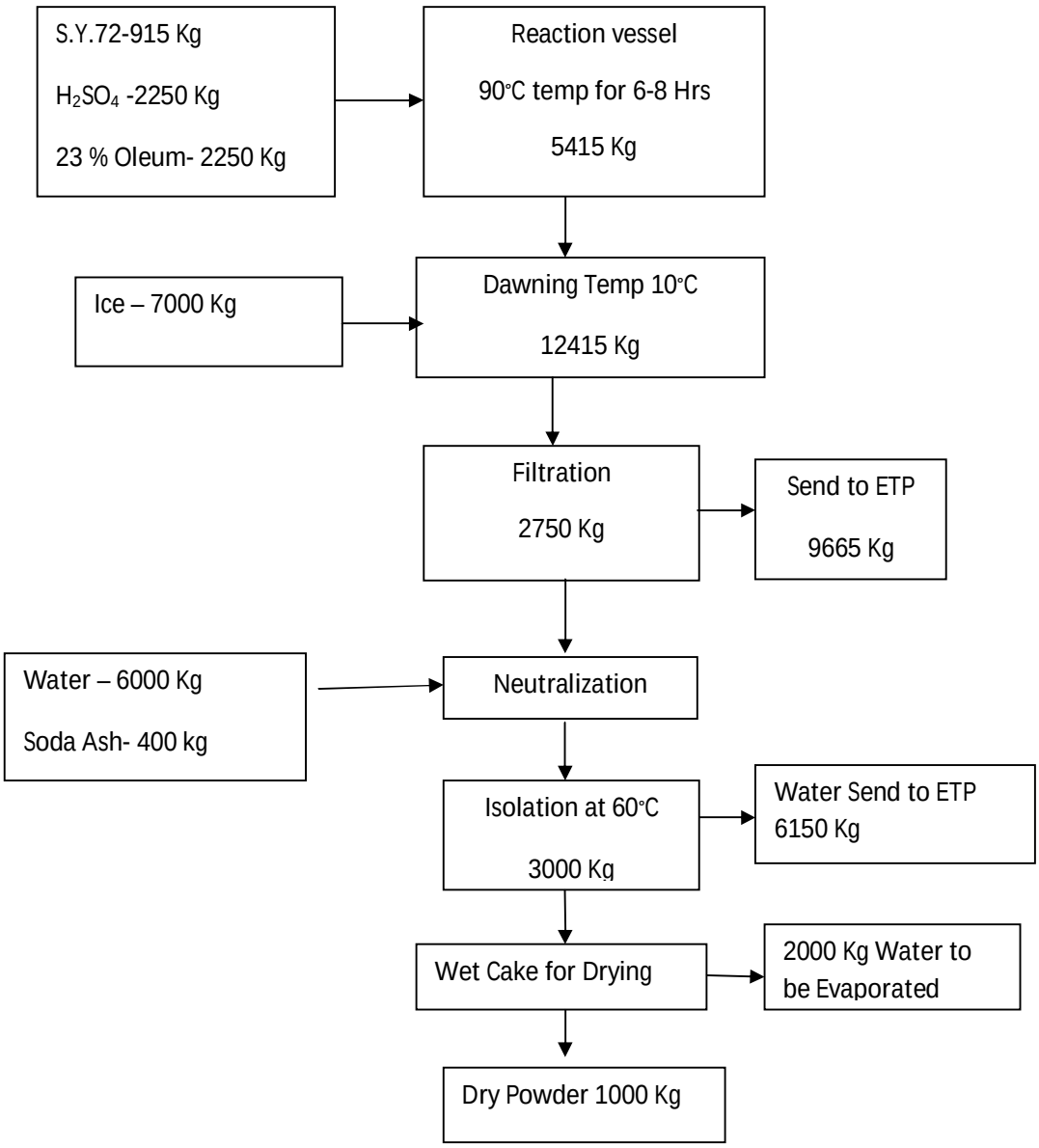
1) Acid Yellow 184



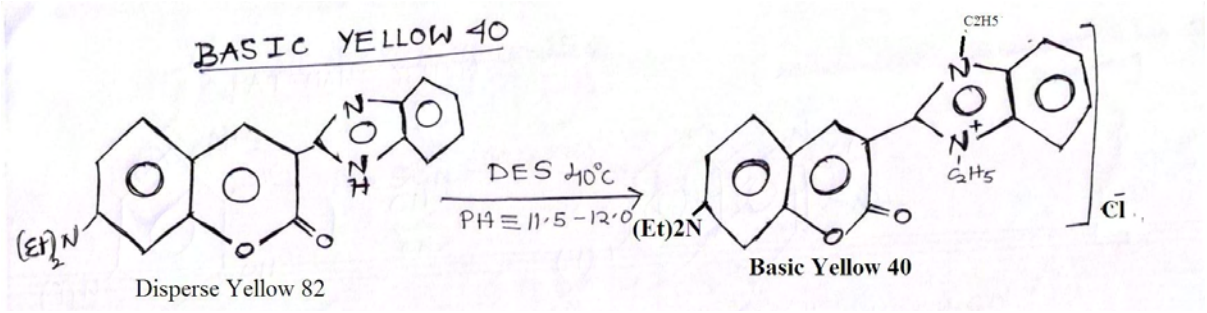


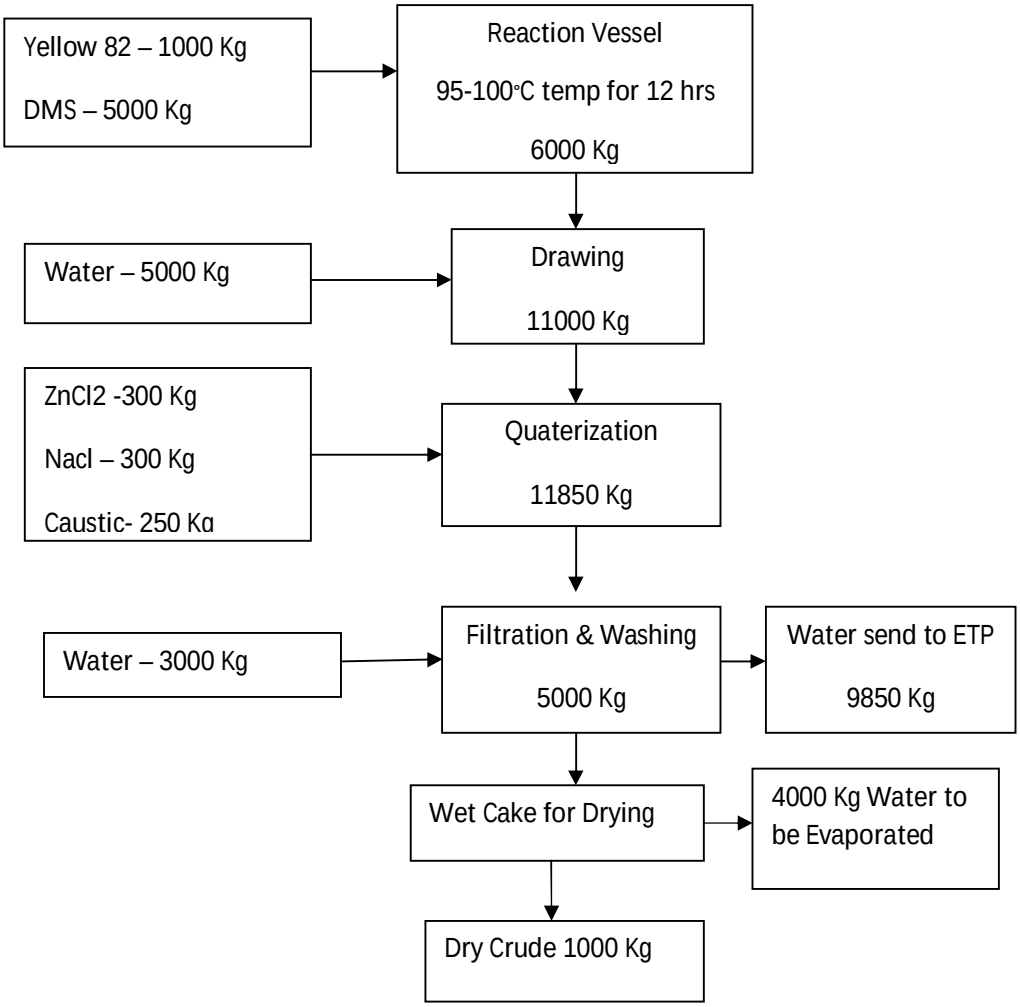
2) Acid Yellow 250



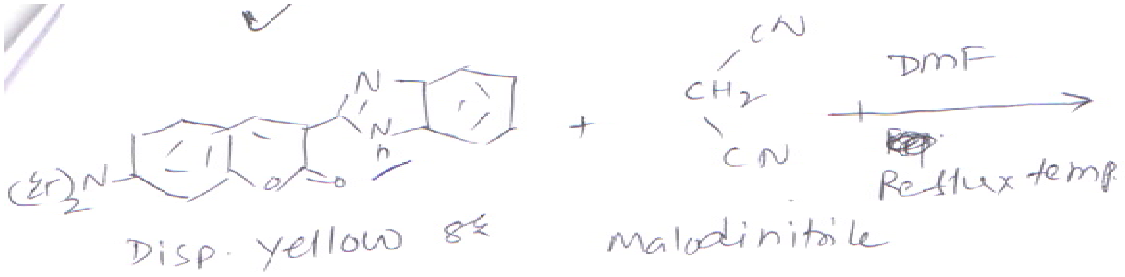


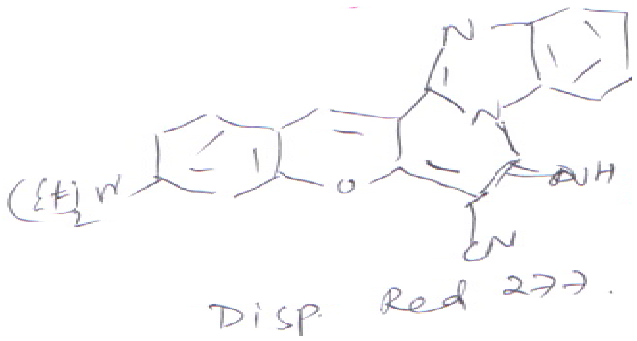
3) Basic Yellow 40

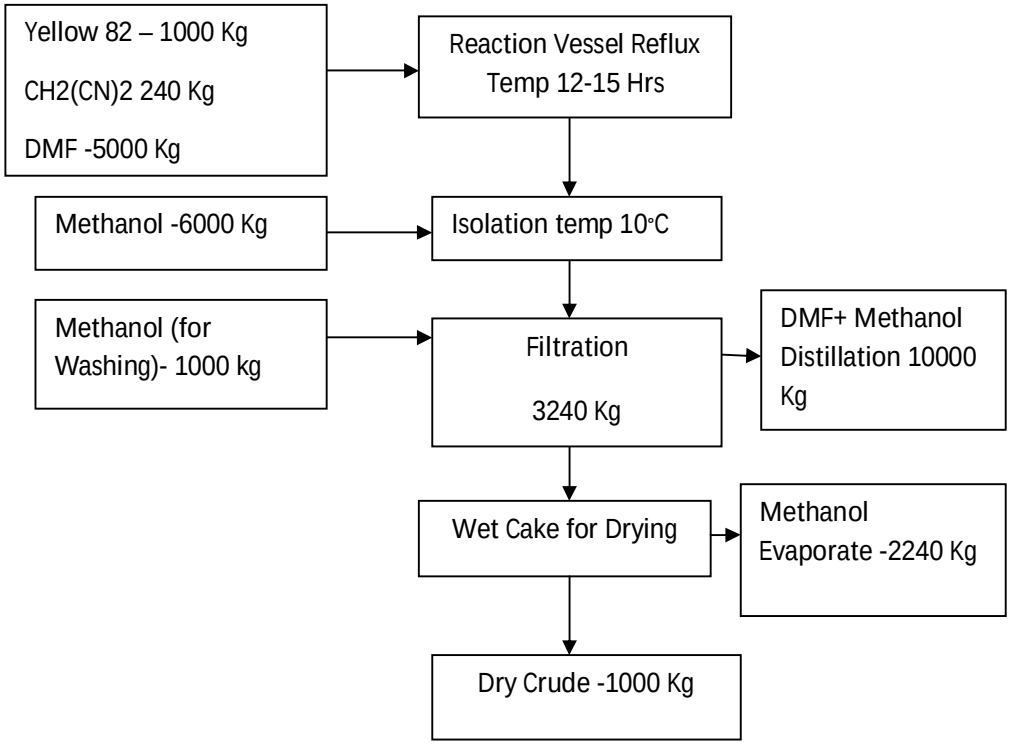




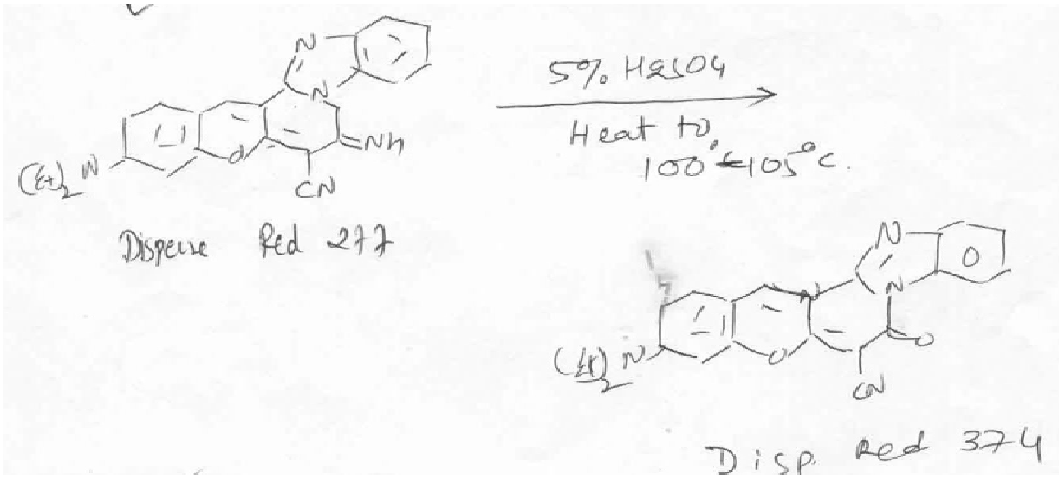
4) Disperse Red 277

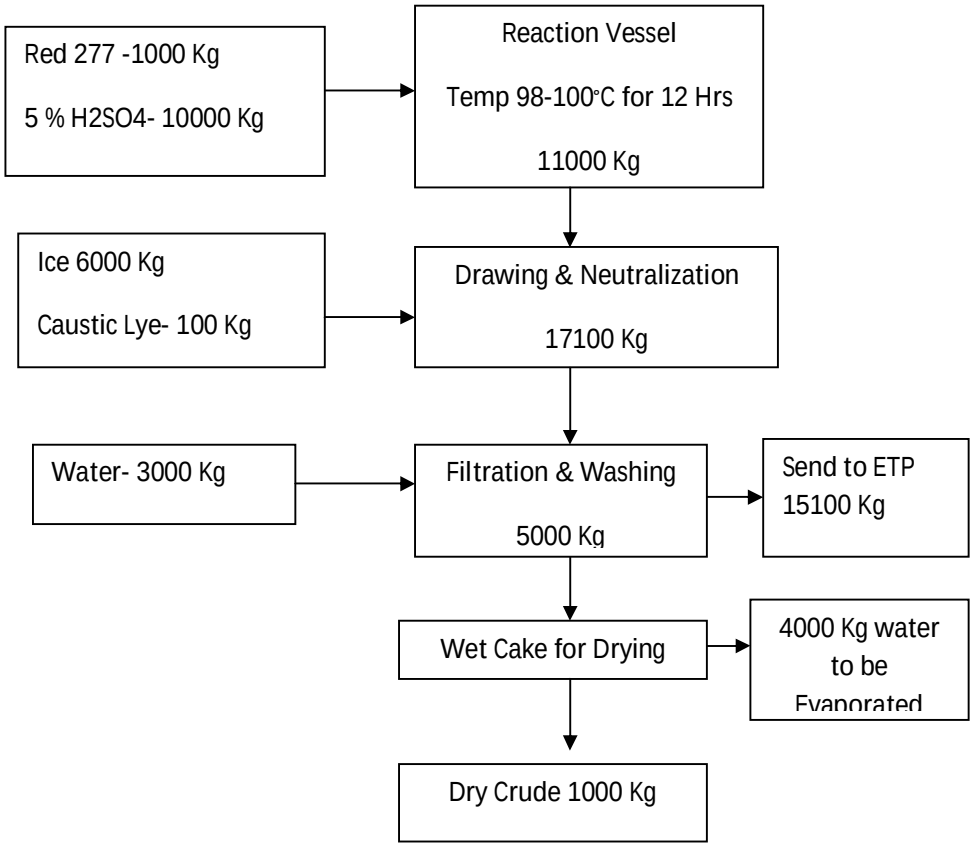




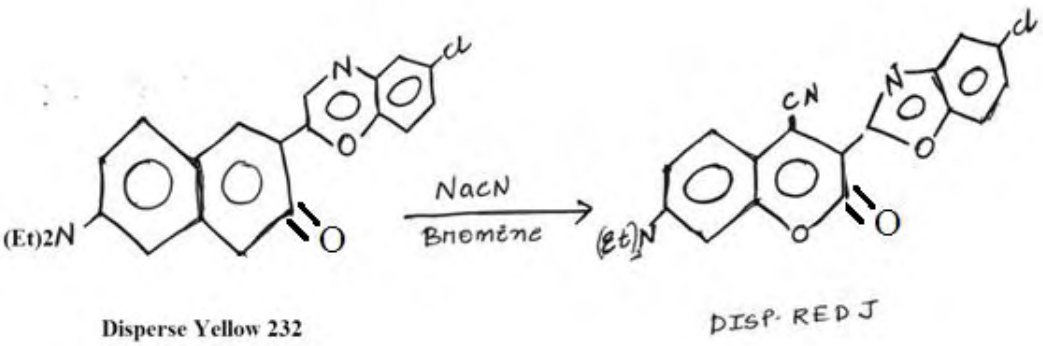


5) Disperse Red 374

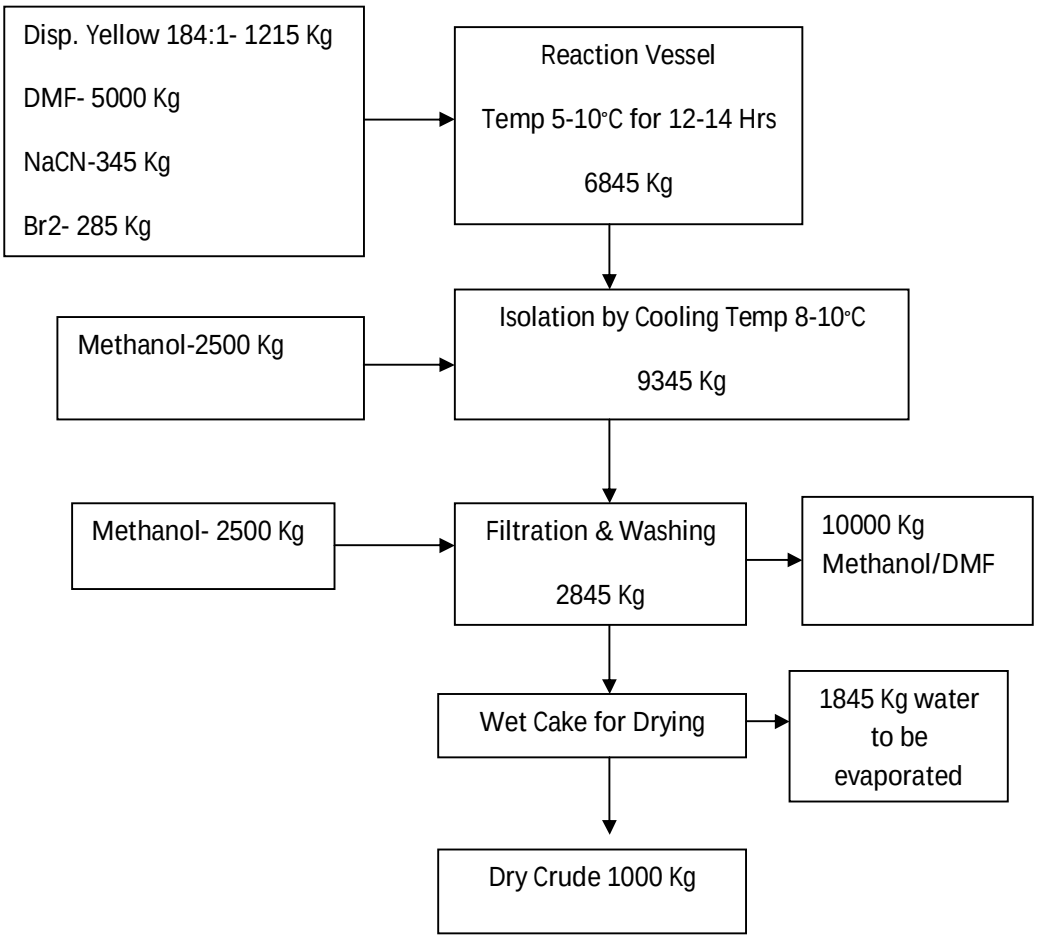




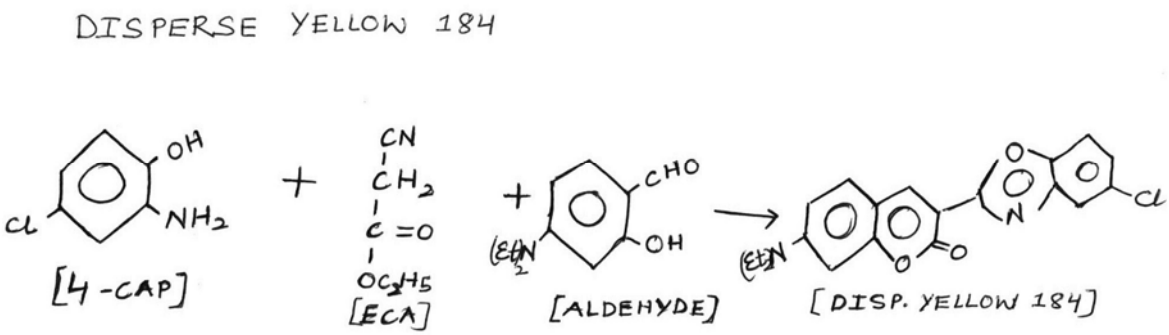
6) Disperse Red J

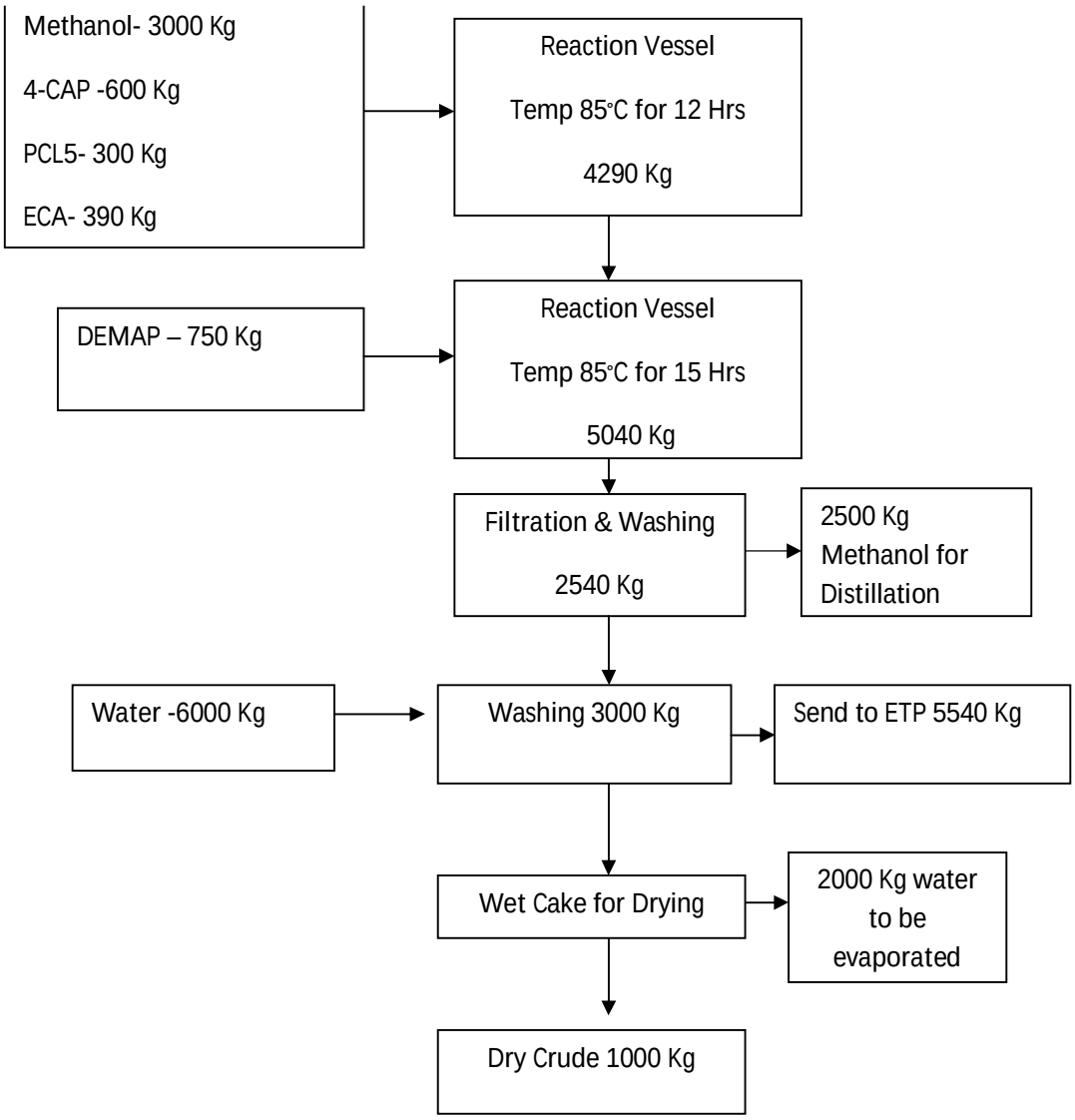


Disperse Yellow 232 DISP. RED J

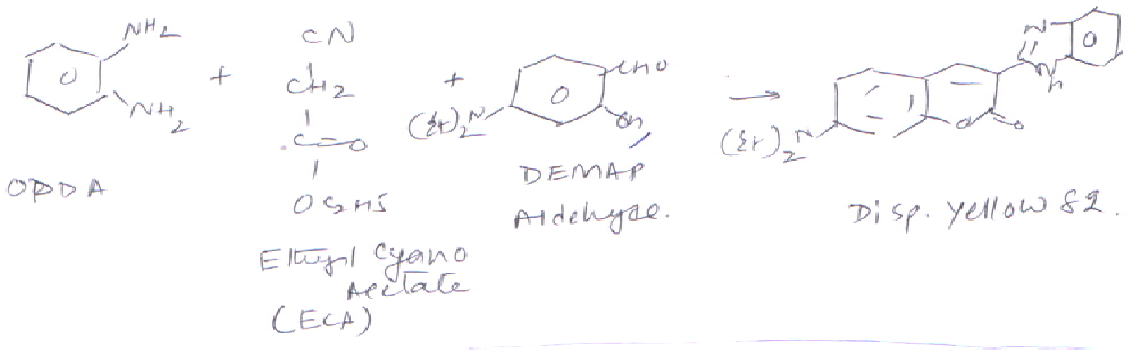


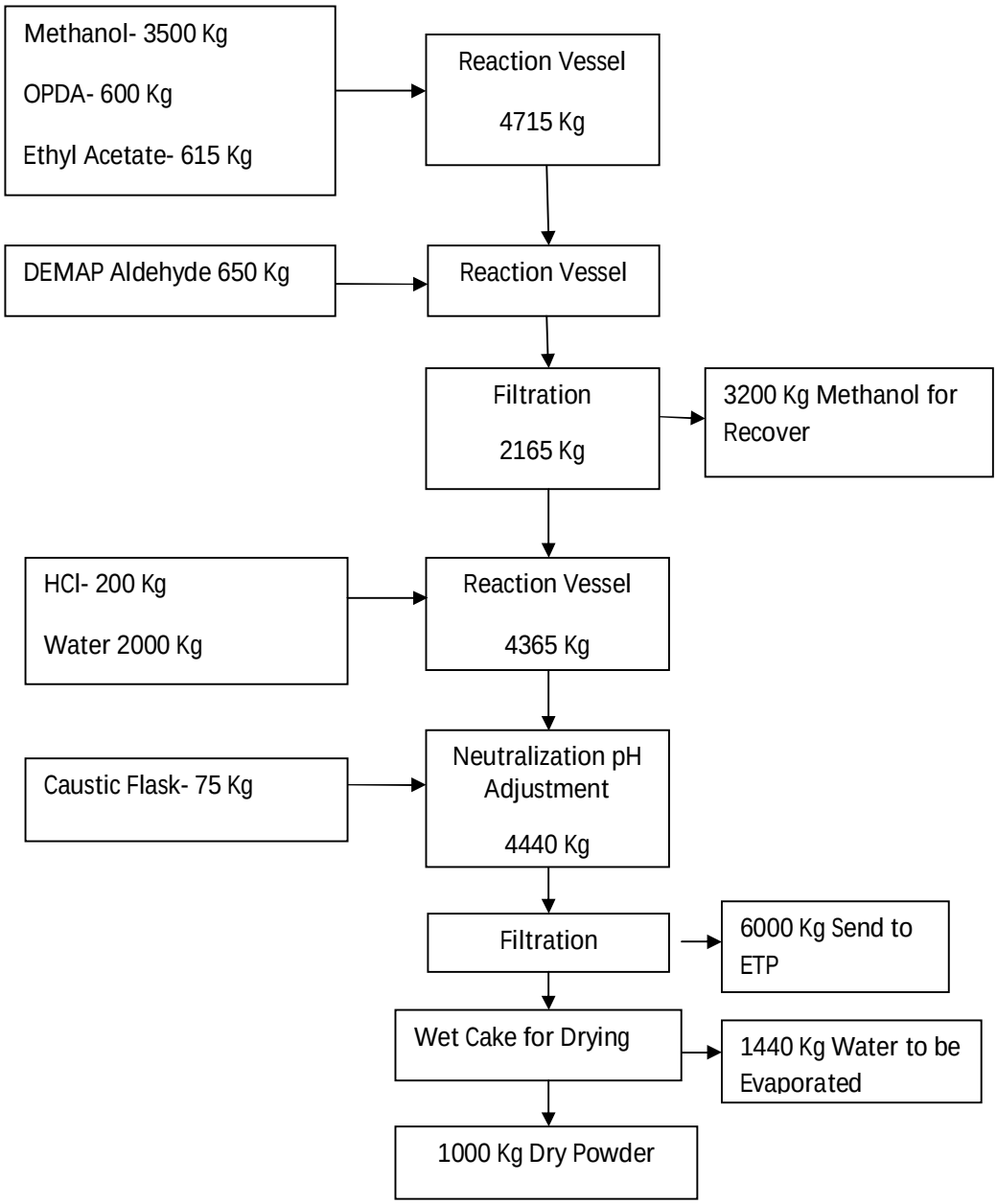
7) Disperse Yellow 184:1



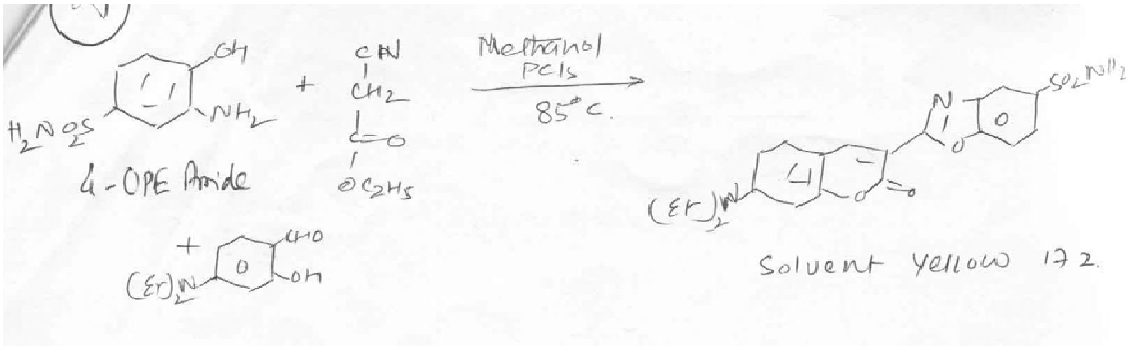


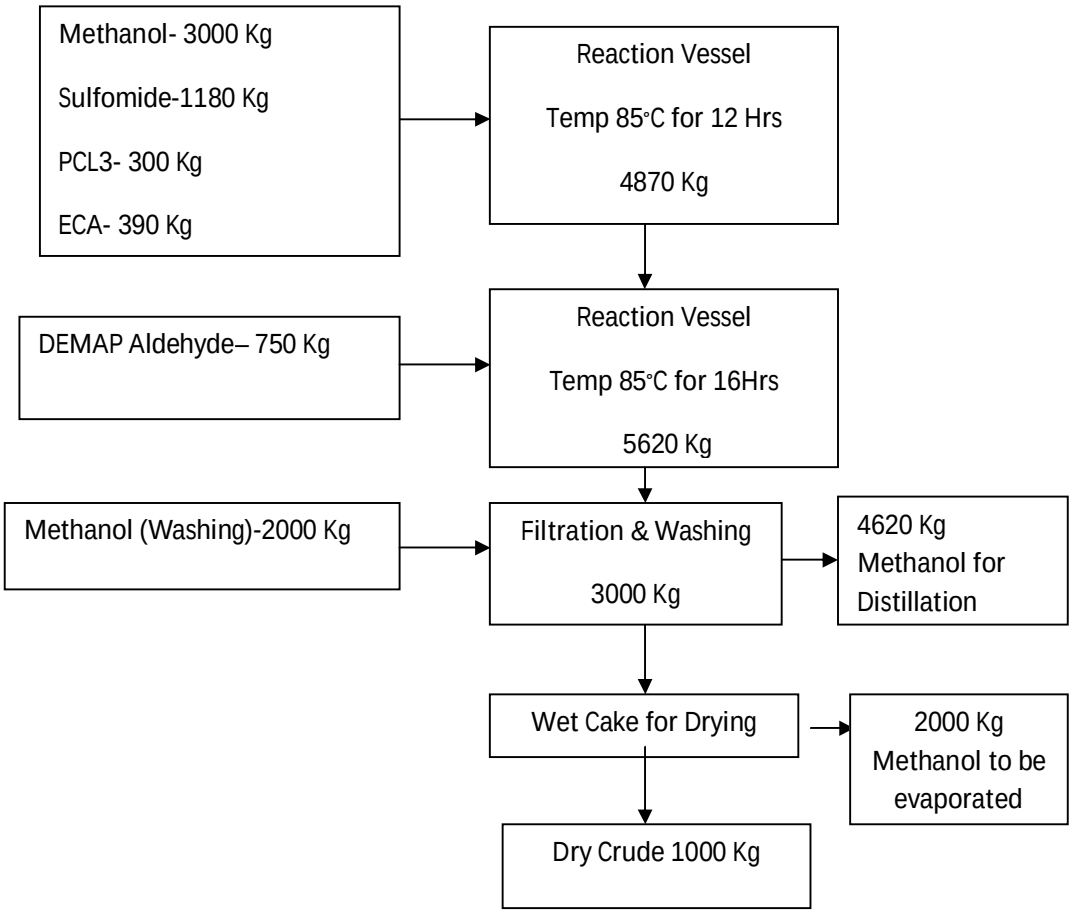
8) Disperse Yellow 82





9) Solvent Yellow 172

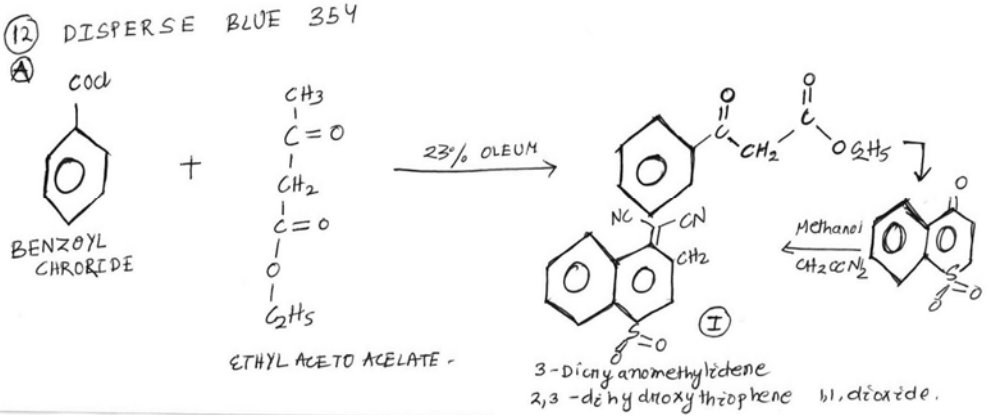




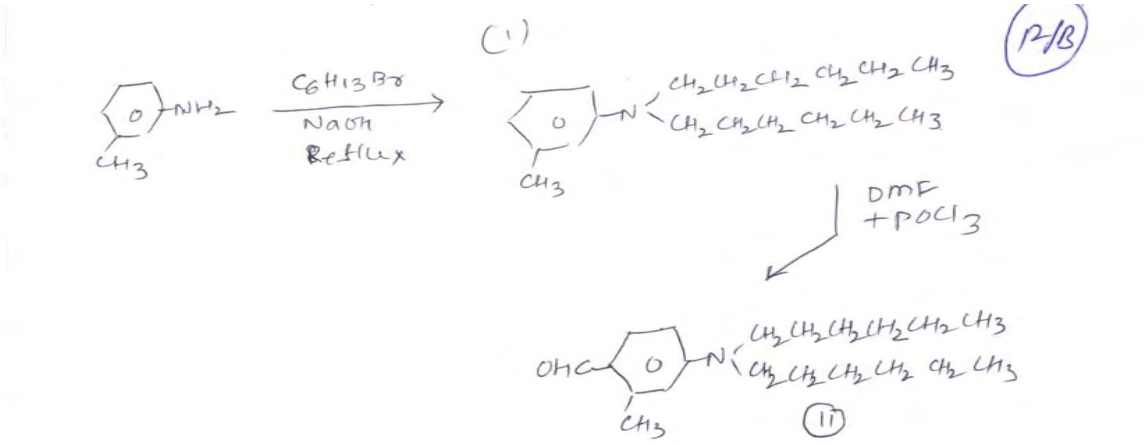
III. Methine Dyes

1) Disperse Blue 354

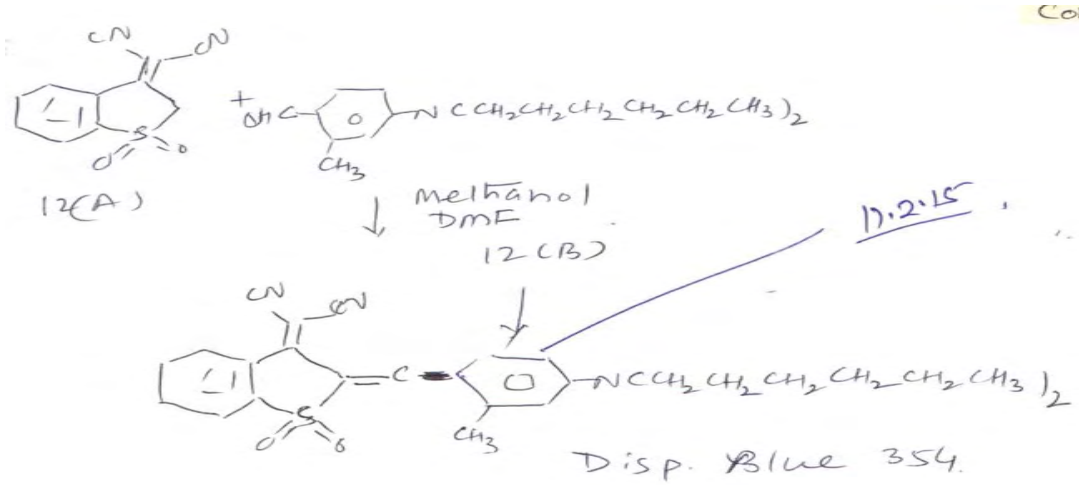
A



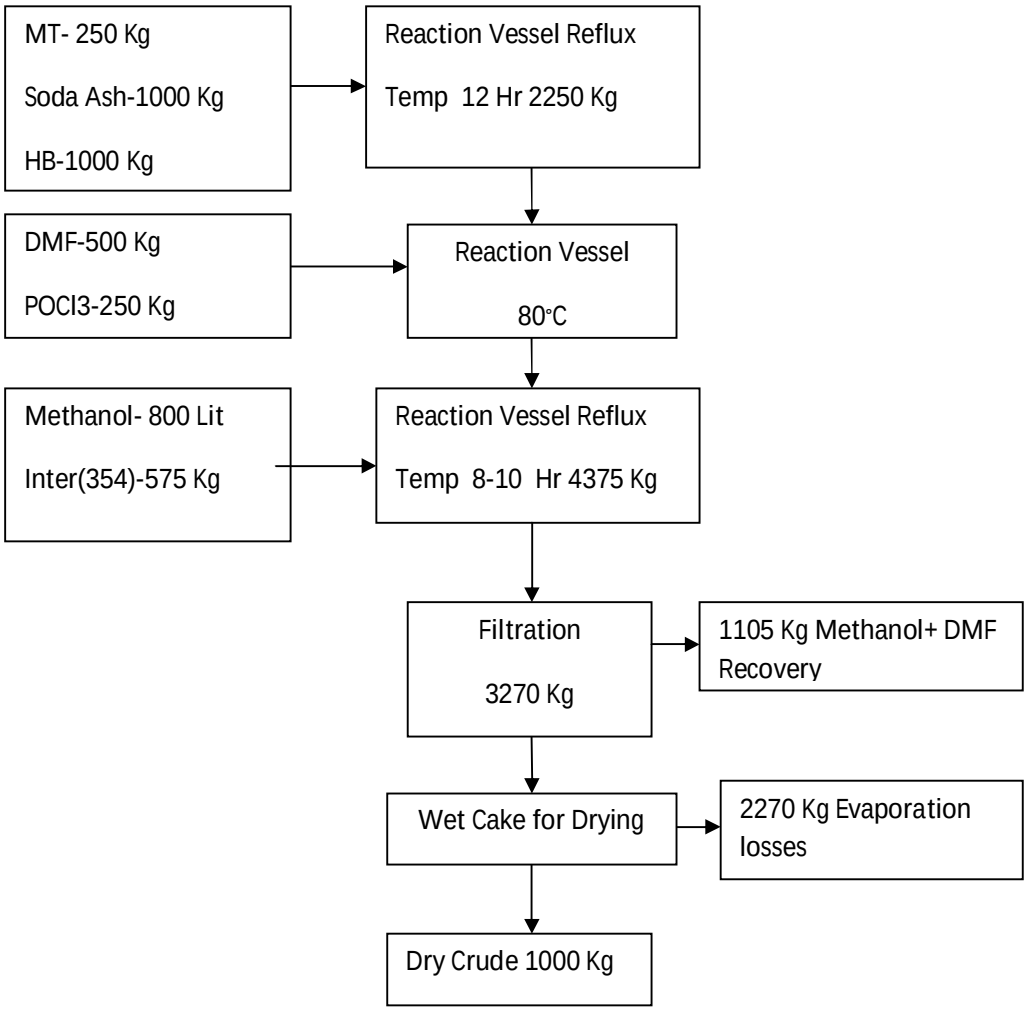
B



A+B

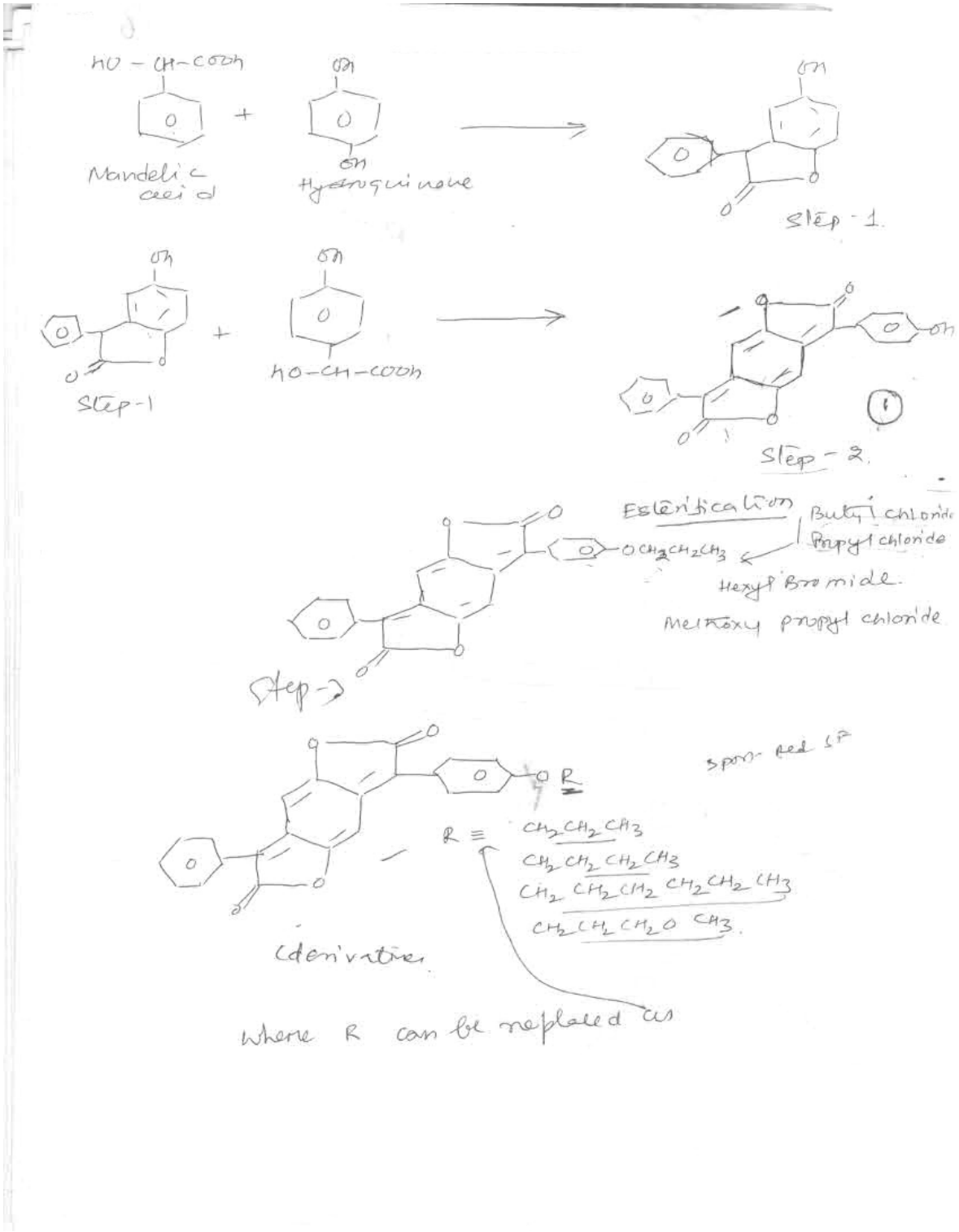


ANNEXURE-I


MT- 250 Kg
Soda Ash-1000 Kg
HB-1000 Kg
Reaction Vessel Reflux
Temp 12 Hr 2250 Kg
DMF-500 Kg
POCl3-250 Kg
Reaction Vessel
80°C
Methanol- 800 Lit
Inter(354)-575 Kg
Reaction Vessel Reflux
Temp 8-10 Hr 4375 Kg
Filtration
3270 Kg
1105 Kg Methanol+ DMF Recovery
Wet Cake for Drying
2270 Kg Evaporation losses
Dry Crude 1000 Kg

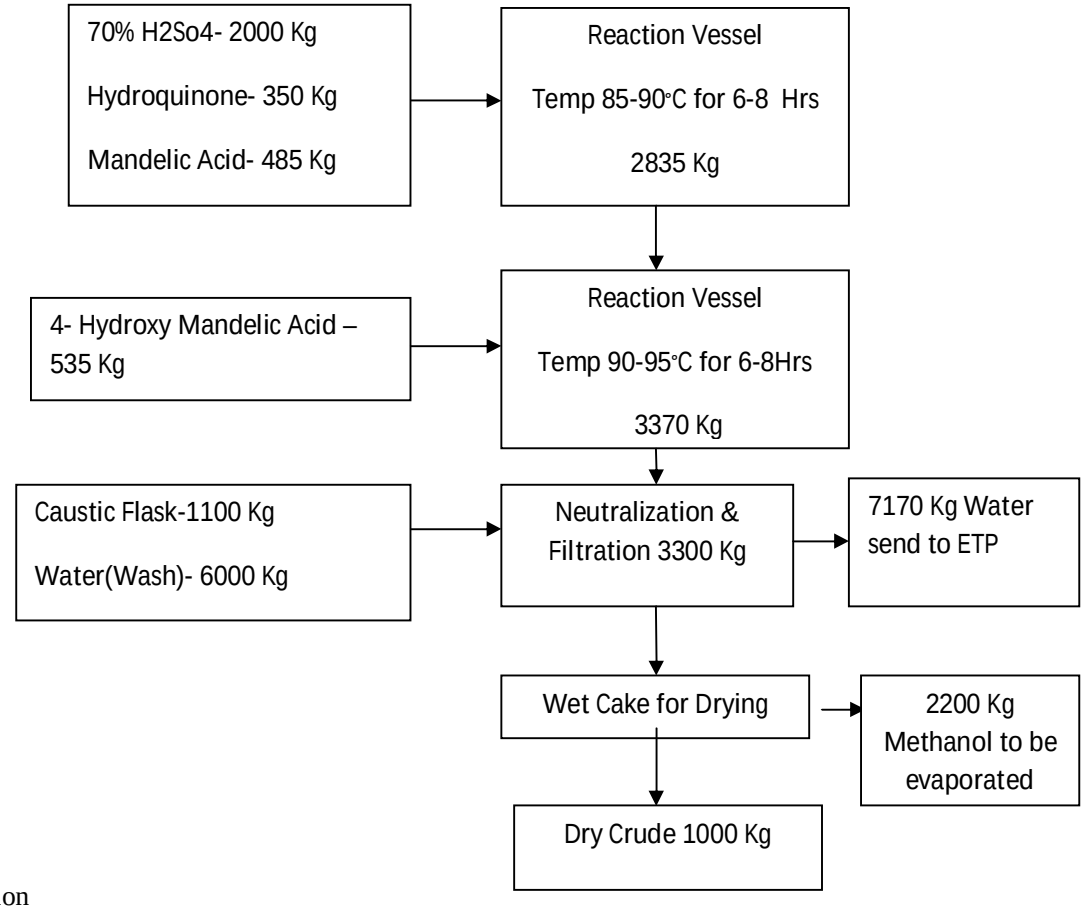
2) Disperse Red 356

Chemical Reaction of Disperse Red 356,357 & Sport Red SF

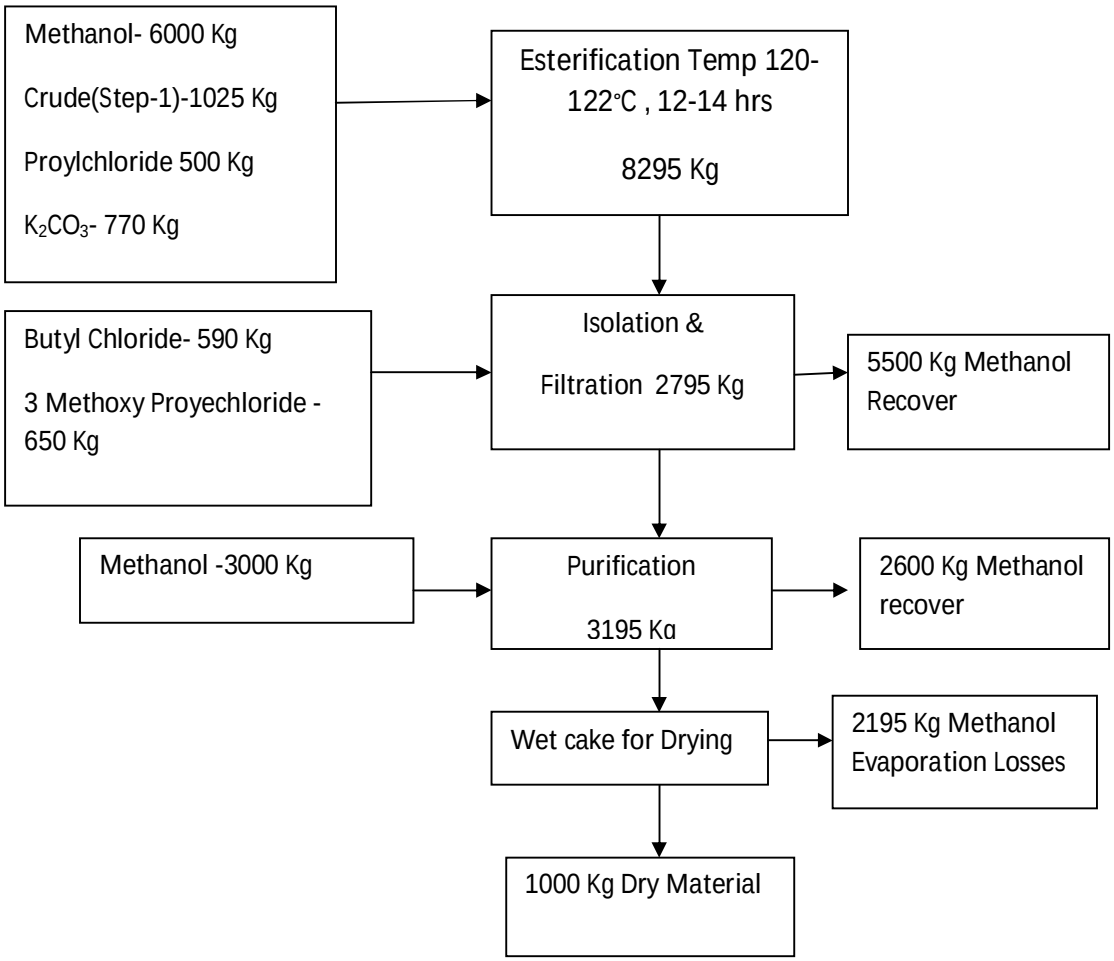


ANNEXURE-I

Step-1

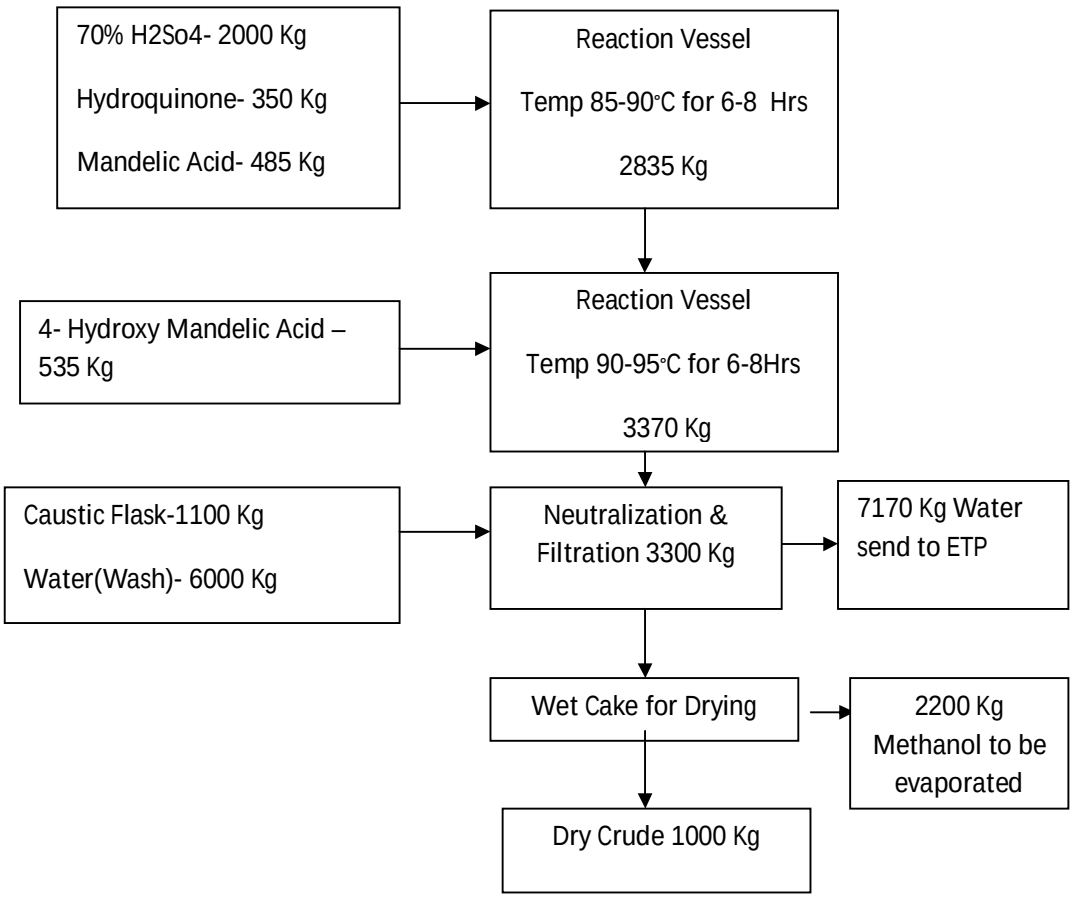


Step-2 Esterifiction

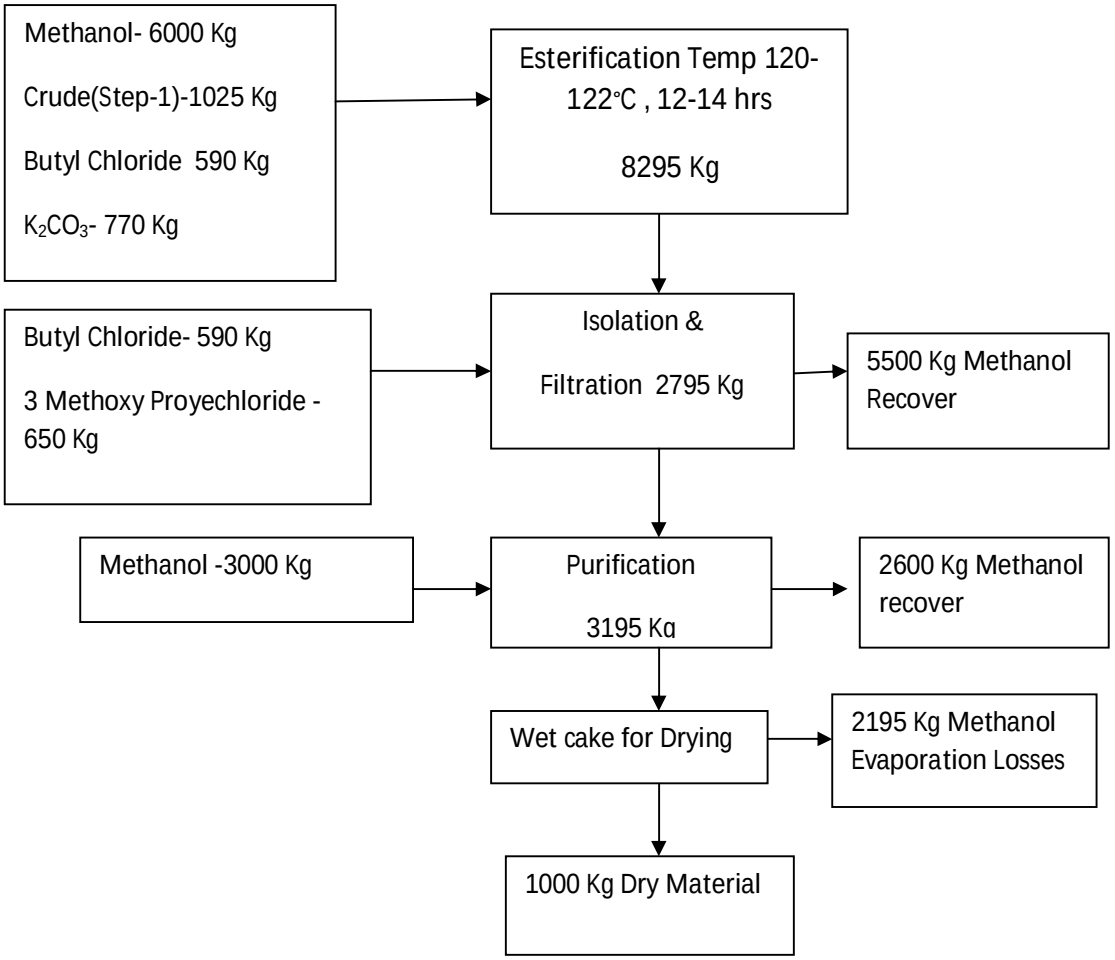


3) Disperse Red 367

Step-1

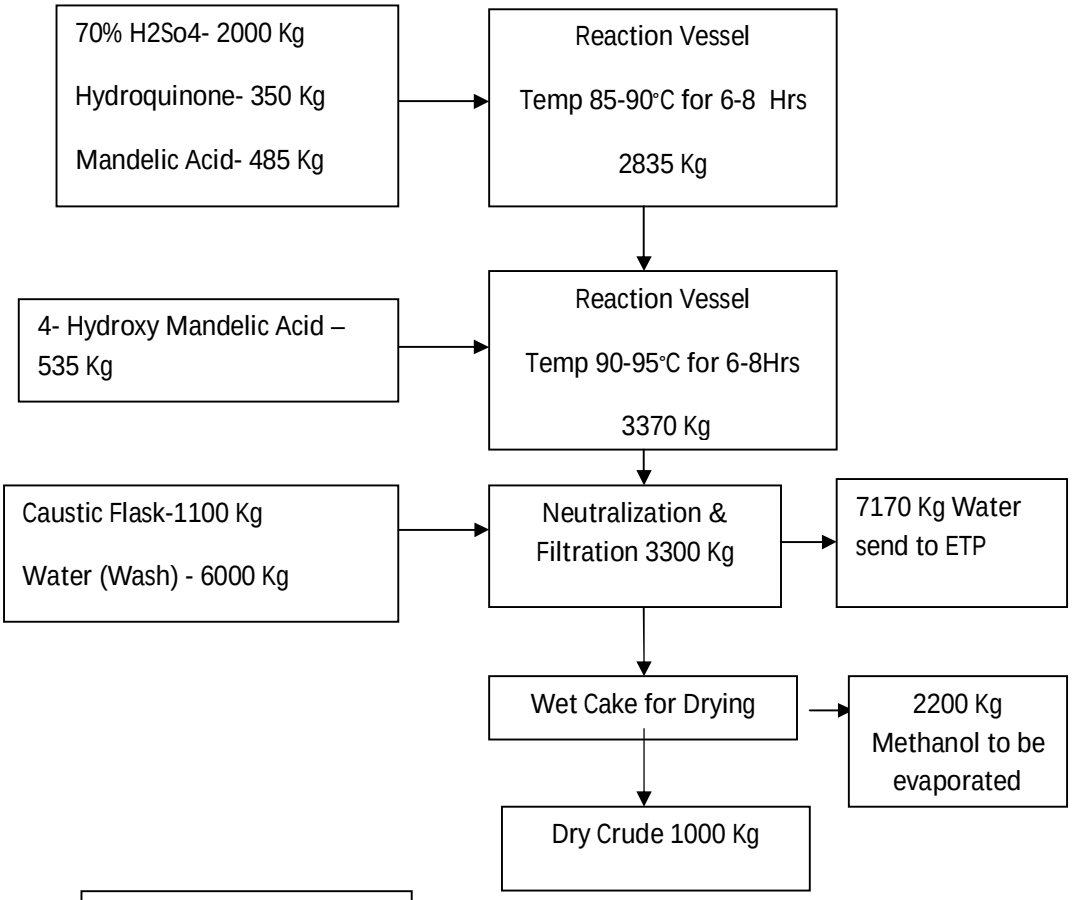


Step-2

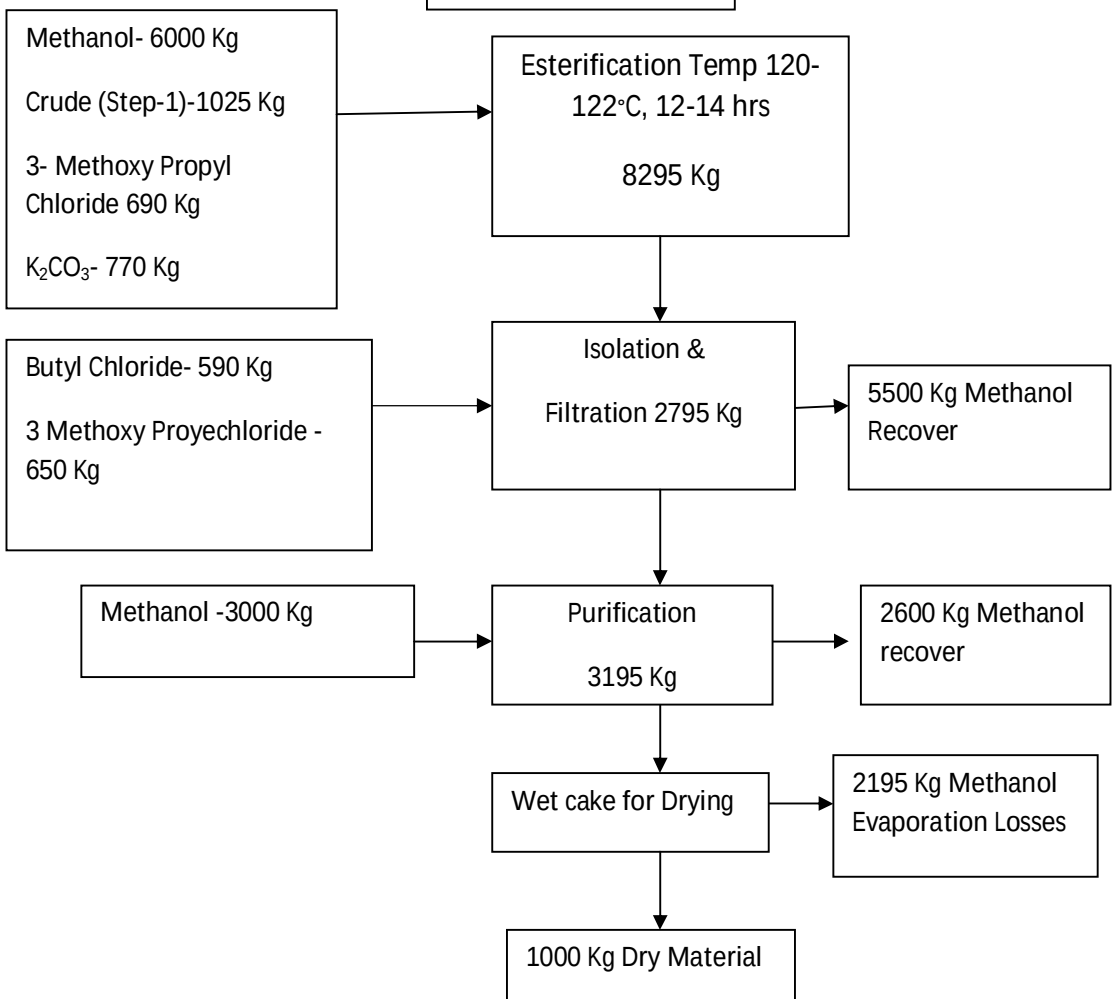


4) Disperse Sport Red SF

Step-1



Step-2



ANNEXURE-II

SHREE SIDHDHANATH
INDUSTRIES
MFRS. OF DYES & INTERMEDIATES

TO WHOMSOEVER IT MAY CONCERN

This is to certify that we will accept spent solvent maximum up to 4500 kg/day for distillation from propose unit of **M/s. Parishi Chemicals LLP**, Plot No. 8105/2, GIDC Sachin, Dist. Surat, Gujarat.

Our GPCB Consent No. GPCB/CCA-SRT-329(2)/ID_21339/218908 dated 18/07/2014 valid up to 06/02/2019.

Thanks & Regards,

For, **SHREE SIDHDHANATH INDUSTRIES**

PRAMODKUMAR PATEL
(PARTNER)

Fact. : 8105, G.I.D.C., Sachin-394 230
Dist. : Surat (India)
Ph. : (F) 2399285 Fax : 2371987
Web : www.ssichem.com
email : sidhnath@worldgatein.com
email : info@ssichem.com

ANNEXURE-II

GPCB

GUJARAT POLLUTION CONTROL BOARD

PARYAVARAN BHAVAN
Sector 10-A, Gandhinagar 382 010
Phone : (079) 23226295
Fax : (079) 23232156
Website : www.gpcb.gov.in

By R.P.A.D

In exercise of the power conferred under section-25 of the Water (Prevention and Control of Pollution) Act-1974, under section-21 of the Air (Prevention and Control of Pollution)-1981 and Authorization under rule 3(c) & 5(5) of the Hazardous Waste (Management and Handling & Trans boundary Movement) Rules'2008 framed under the Environmental (Protection) Act-1986. This Board is empowered to Grant CC&A.

And whereas Board has received consolidated consent application letter no. **77229 dated 7/2/2014** for the **Consolidated Consent and Authorization** (CC & A) of this Board under the provisions / rules of the aforesaid Acts. Consents & Authorization are hereby granted as under:

CONSENTS AND AUTHORISATION:

(Under the provisions /rules of the aforesaid environmental acts)

To,
M/s. Shree Sidhdhanath Industries(21339),,
Plot No:- 8105,
GIDC, Estate,
Sachin:- 394230,
Tal:- Chorasi, Dist:- Surat.

1. **Consent Order No. AWH-62479 Date of issue: 26/05/2014**

2. The consents shall be **valid upto 6/2/2019** for the use of outlet for the discharge of treated effluent & air emission and to operate industrial plant for manufacture of the following items/ products:

Sr. No.	Product	Quantity
1	MCA/OCA/PCA (by distillation only)	50 MT/Month
2	Mixture of Dichloro Benzene Compound/Chloro Nitro Compound (by distillation only)	200 MT/month
3	Pyrozolone	15 Mt/Month
4	Solvents:- (by distillation only)	800 Mt/Month
	Acetone	
	Methanol	
	Tetra Hydro Furan (THF)	
	Ethyl Acetate	
	Iso Propyl Alcohol	
	Toluene	

	Acetic Acid	
	Nitro Benzene	
	Aniline Oil	
	Di Methyl Sulphoxide (DMSO)	
	Methlene DI Chloride	

Note:- Product (1),(3) & (4) shall be recovered through distillation process only.

3. CONDITIONS UNDER THE WATER ACT:

3.1 The quantity of trade effluent to be generated from the manufacturing process and other ancillary industrial operations shall not exceed **9 KL/day.**

3.2 The quantity of Domestic wastewater from the factory shall not exceed **1.6 KL/day.**

3.3 TRADE EFFLUENT:

3.3.1. The applicant shall provide adequate effluent treatment system so that effluent from the industrial unit shall conform to the CETP inlet norms mentioned below however the final discharge of treated effluent from CETP shall adhere to the prescribed standards for CETP of M/s. Globe Enviro Care Limited.

PARAMETERS	CETP NORMS
PH	6.5 TO 8.5
Temperature	40^0 C
Colour (pt.co.scale) in units	100 units
Suspended Solids	300 mg/l
Oil and Grease	10 mg/l
Phenolic Compounds	1 mg/l
Sulphides	2 mg/l
Ammonical Nitrogen	50 mg/l
Total Chromium	2 mg/l
Hexavelent Chromium	0.1 mg/l
BOD (5 days at 20^0C)	1500 mg/l
COD	4000 mg/l
Total Dissolved Solids	2100 mg/l
Copper	3 mg/l
Nickel	3 mg/l
Zinc	5 mg/l
Lead	0.1 mg/l

3.3.2 The final treated effluent confirming to the above standards shall be fully conveyed into CETP of M/s. Globe Enviro Care Limited(GECL) through underground drainage system of **GECL** & in no case effluent shall be discharged in to Environment by any means.

3.3.3 In case of failure of CETP, applicant shall have to treat the trade effluent of their unit fully so as to achieve the quality of the treated effluent from their industrial premises as per the GPCB norms mentioned below:-

PARAMETERS	GPCB NORMS
PH	6.5 TO 8.5
Suspended Solids	100 mg/l
Oil and Grease	10 mg/l
Total Dissolved Solids	2100 mg/l
Phenolic Compounds	1 mg/l
Sulphides	2 .0 mg/l
Ammonical Nitrogen	50 mg/l
Total Chromium	2 mg/l
Hexavelent Chromium	0.1 mg/l
BOD (5 days at 20^{0}C)	30 mg/l
COD	100 mg/l
Chlorides	600 mg/l
Sulphate	1000 mg/l
Copper	3 mg/l
Nickel	3 mg/l
Zinc	5 mg/l
Lead	0.1 mg/l

OR

The applicant shall either stop or curtail its production activities if the effluent is not adequately treated by the CETP of GECL to conform to the standards specified by G.P.C.B.

3.3.4 The applicant shall be responsible for conveyance of entire treated effluent to the CETP of M/s. GECL & due care shall be taken to avoid any leakage or spillage of effluent during conveyance of treated effluent through drain.

3.3.5 Unit shall provide flowmeter at ETP.

3.3.6 The applicant shall inform renewal/termination of CETP membership well in advance to GPCB.

3.3.7. Domestic effluent shall be disposed off through septic tank/soak pit system.

3.3.8. The applicant shall be required to make storage facilities to store the primary treated effluent for at least 48 hours by providing acid proof brick lined impervious tanks/HDPE tanks.

3.3.9. The applicant shall make fixed arrangement for loading the effluent after primary treatment to the effluent. The unit shall not keep any by-pass line or system or loose or flexible pipe line for discharging effluent into the under ground drainage system of GECL.

3. 3.10. Leachate from the hazardous solid waste, if any shall also be connected into a collection tank through leachate collection facilities and shall be conveyed alongwith industrial effluent to the CETP of GECL.

3.3.11 Magnetic flow meters shall be installed at the inlet & outlet of effluent collection tanks/ETP to measure the quantity of effluent discharging in to underground drainage system of GECL.

3.3.12. The ENTIRE quantity of industrial effluent shall have to be conveyed by GECL. In no circumstances the effluent either treated or untreated shall be discharged any where else.

3.3.13. Disposal system for storm water shall be provided separately. In no circumstances storm water shall be mixed with the industrial effluent.

3.3.14. GECL member unit have to modify / improve performance of existing Effluent treatment facilities for efficiency & adequacy in order to comply with prescribed in let standards.

3.3.15. The applicant shall keep accurate records of quantity of production of each product, quantity of water consumption, quantity of effluent generated and consumption of electricity on day to day basis and required to submit the complied record of one month to GPCB & GECL on or before fifth day of the succeeding month.

3.3.16. In case of shut-down of plant for more than three days for any reason, the SIEL unit member shall intimate to GECL authority & GPCB well in advance for the better operation & management of CETP.

3.3.17. The authorized representative of GECL may have right of entry at any time for the purpose of inspection and monitoring the effluent collection facilities/ETP (if required) of the applicant.

3.3.18. If the GECL authority terminates the membership of the applicant for CETP, the GECL member unit shall have to close down the manufacturing activities/industrial operation of the process plant immediately until the PEPL membership is resumed.

3.3.19. The applicant shall put up at the entrance a board displaying SIEL membership number & date of joining of GECL, the name of unit, particulars of the products/ process and the name of proprietor/partners /directors of the unit and the electricity consumer number as on the record of GSECL.

4. CONDITIONS UNDER THE AIR ACT:

4.1 The following shall be used as fuel.

Sr. No.	Fuel	Quantity
1	LDO	10 Lit/Hr
2	Natural Gas	750 NM^3/Day

4.2 The applicant shall install & operate a comprehensive adequate air pollution control system in order to achieve prescribed norms.

4.2.1 The flue gas emission through stack attached to Boiler/DG. Set shall conform to the following standards:

Stack No.	Stack attached to	Stack height in Meter	Parameters	Permissible Limit
1.	Baby Boiler	12	Particulate Matter SO_2 NO_x	150 mg/Nm^3 100 ppm 50 ppm
2.	D.G.Sets (125 KVA) Stand by	11 (from GL)		

4.2.2. There process emission through various stacks/vent of reactors, process, vessel shall conform to the following standards.

Stack No.	Stack attached to	Stack height in Meter	Air Pollution Control System	Parameters	Permissible Limit
1.	Sulphonator	12	SO_2 Scrubber	SO_2 NO_x	40 mg/NM^3 25 mg/NM^3

4.2.3 The concentration of the following parameters in the ambient air within the premises of the industry and a distance of 10meters from the source other than the stack/vent) shall not exceed the following levels.

PARAMETER	PERMISSIBLE LIMIT
Particulate matter $_{10}$	100 Microgram Per cubic meter
PM $_{2.5}$	60 Microgram Per cubic meter
Oxides of Sulphur	80 Microgram Per cubic meter
Oxides of Nitrogen	80 Microgram Per cubic meter

4.3 The applicant shall provide portholes, ladder, platform etc at chimney(s) for monitoring the air emissions and the same shall be open for inspection to/and for use of Board's staff. The chimney(s) vents attached to various sources of emission shall be designed by numbers such as S-1, S-2, etc. and these shall be painted/displayed to facilitate identification.

4.4 The industry shall take adequate measures for control of noise levels from its own sources within the premises so as to maintain ambient air quality standards in respect of noise to less than 75dB(a) during day time and70 dB (A) during night time. Daytime is reckoned in between 6a.m. and10 p.m. and nighttime is reckoned between 10 p.m. and 6 a.m.

5. GENERAL CONDITIONS: -

5.1 Any change in personnel, equipment or working conditions as mentioned in the consents form/order should immediately be intimated to this Board.

5.2. Applicant shall also comply with the general conditions given in Annexure I.

5.3. If it is established by any competent authority that the damage is caused due to their industrial activities to any person or his property .in that case they are obliged to pay the compensation as determined by the competent authority.

6. AUTHORISATION FOR THE MANAGEMENT & HANDLING OF HAZARDOUS WASTES Form-2 (See rule 3 (c) & 5 (5))

6.1 Number of authorization: **AWH-62479** Date of issue: **26/05/2014**

6.1.1. M/s. Shree Sidhdhanath Industries(21339) is hereby granted an authorization to operate facility for following hazardous wastes on the premises situated at **Plot No:- 8105,GIDC, Estate,Sachin:- 394230,Tal:- Chorasi, Dist:- Surat.**

Sr. No.	Waste	Quantity	Schedule-I Process No.	Facility
1	ETP Waste	22.00 MT/Year	34.3	collection, storage, transportation disposal at GPCB Approved TSDF Site.
2	Used Oil	0.030 MT/Year	5.1	Collection, storage, transportation disposal by selling to Registered re-refiners.
3	Discarded Containers/ Barrels/Liners	1.440 MT/Year	33.3	Collection, storage, decontamination
4	Distillation Residues	96.00 MT/Year	20.3	collection, storage, transportation disposal at GPCB Approved CHWIF.

6.1.2 The authorization is granted to operate a facility for collection, storage, within the factory premises transportation and ultimate disposal of Hazardous Waste to approved TSDF site.

6.1.3 The authorization shall be valid up to five year i. e. **6/02/2019**

6.1.4 The authorization is subject to the conditions stated below and such other conditions as may be specified in the rules from time to time under the

6.1.4 The authorization is subject to the conditions stated below and such other conditions as may be specified in the rules from time to time under the Environment (Protection) Act-1986 and Haz. Waste (M & H and T M) Rules 2008.

6.1.5 TERMS AND CONDITIONS OF AUTHORIZATION:

a) The applicant shall comply with the provisions of the Environment (Protection) Act - 1986 and the rules made there under.
b) The authorization shall be produced for inspection at the request of an officer authorized by the Gujarat Pollution Control Board.
c) The persons authorized shall not rent, lend, sell, transfer of otherwise transport the hazardous wastes without obtaining prior permission of the Gujarat Pollution Control Board.
d) Any unauthorized change in personnel, equipment or working conditions as mentioned in the authorization order by the persons authorized shall constitute a breach of this authorization.
e) It is the duty of the authorized person to take prior permission of the Gujarat Pollution Control Board to close down the facility.
f) An application for the renewal of an authorization shall be made as laid down in rule 5 (6) (ii).
g) Industry shall have to manage waste oil, discarded containers etc. as per amended rules 2003.
h) Industry shall submit annual report within 15 days and subsequently by 31st January every year.

7. Industry shall have to display the relevant information with regard to hazardous waste as indicated in the Supreme Court's order in W.P. No.657 of 1995 dated 14th October 2003.

8. Industry shall have to display on-line data outside the main factory gate with regard to quantity and nature of hazardous chemicals being handled in the plant, including wastewater and air emissions and solid hazardous wastes generated within the factory premises.

For and on behalf of
Gujarat Pollution Control Board

D. M. Thaker 9/7

(D. M. Thaker)
Environmental Engineer
Date: 18/7/2014

NO:GPCB/CCA-SRT-329(2)/ID_21339/21908
Issued to:
M/s. Shree Sidhdhanath Industries,,
Plot No:- 8105,
GIDC, Estate,
Sachin:- 394230,
Tal:- Chorasi, Dist:- Surat.

ANNEXURE-III

Reg. No 4690
Date 3-3-2016

भारतीय गैर न्यायिक

एक सौ रुपये

Rs. 100

रु. 100

ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

ગુજરાત गुजरात GUJARAT

AV 125138

ઈલાબેન પુનમચંદ જુમખાવાલા
૪/૪૧૦૨-અ, બેગમપુરા ભુલાખોડી-
ચકલા પાસે, ઝાંપા બજાર, સુરતનાં
સ્ટાંપ વેન્ડર લા.નં. ૧/૮૨, ૬/૮૯

NOTARY DHIRAJ J. RANA SURAT CITY (GUJ.) Reg. No. 6817 GOVT. OF INDIA

UNDERTAKING

I, **Garshil J. Lekhadia**, aged about 54 years, Director of **M/S. Parishi Chemicals L.L.P,** having registered office at 3/1, Khatodra Industrial Estate, Near Khatodra Wadi, B/h. Sub Jail, Ring Road, Surat-395002, Gujarat, do here by solemnly affirm an undertake as stated herein under;

NOTARIAL NOTARIAL NOTARIAL NOTARIAL

ANNEXURE-III

1. That we are proposing the Dyes manufacturing unit at plot no. 8105/2, GIDC Sachin, Dist. Surat.
2. That we shall not dug borewell within our premises.

What is stated herein is true to the best of my Knowledge and the same I believed to be true.

Date : 02/03/2016

For **Parishi Chemicals L.L.P**

G. J. Lekhadia

Garshil J. Lekhadia

(Director)

Place : Surat

BEFORE ME

DHIRAJ J. RANA
NOTARY
SURAT CITY (Gujarat)
Govt of India

Reg. No. 5690
Date 3-2016
My Commission Expires On 29-09-2018

NOTARY DHIRAJ J. RANA SURAT CITY (GUJ.) Reg. No. 6817 GOVT. OF INDIA

ATTESTED COPY

DHIRAJ J. RANA
NOTARY
SURAT CITY (Gujarat)
Govt. of India

TREATABILITY STUDY

FOR

PROPOSED EFFLUENT TREATMENT SCHEME

OF

M/s. PARISHI CHEMICALS L.L.P.

Located at

Plot No.: 8105/2491-492/B, G.I.D.C.-Sachin,
Dist.: Surat 394 230,
Gujarat

Prepared by

M/s. En-vision Environmental Services
201-301, Union Trade Center (UTC)
Near Apple hospitals, Udhana Darwaja,
Surat 395 002
Phone No.: 0261-2344773/4
Website: **www.en-vision.co.in**

Report No.: 160112_1516A017

CONTENTS

TREATABILITY STUDY

1.0 INTRODUCTION: -

Wastewater derived from the production of dyes & it's Intermediates are highly variable in composition, and contains a large number of different compounds such as raw materials, intermediate products, and even the dye itself.

The Present studies include the characterization of Wastewater, containing impurities will be generated in the industry from different processing steps and units of Effluent Treatment Plant. The main attention is given on treatability study of various parameters like COD & BOD, Colour etc. and compares the effect of coagulants with different pH. Due consideration is also given to the comparison of effluent characteristics parameters of Effluent Treatment Plant with the State Pollution Control Board Effluent Quality standards discharged in different receiving bodies/**CETP**.

Type of Industry:	Synthetic Organic Chemical Industry (5f), Category: B
Type of Products:	Dyes and it's Intermediates
Effluent Stream:	Processing, Cooling & Boiler blow down and Floor Washing
Major Pollutants:	COD, BOD, Colour and SS
Effluent Temp.:	40 °C (max.)

2.0 METHODOLOGY: -

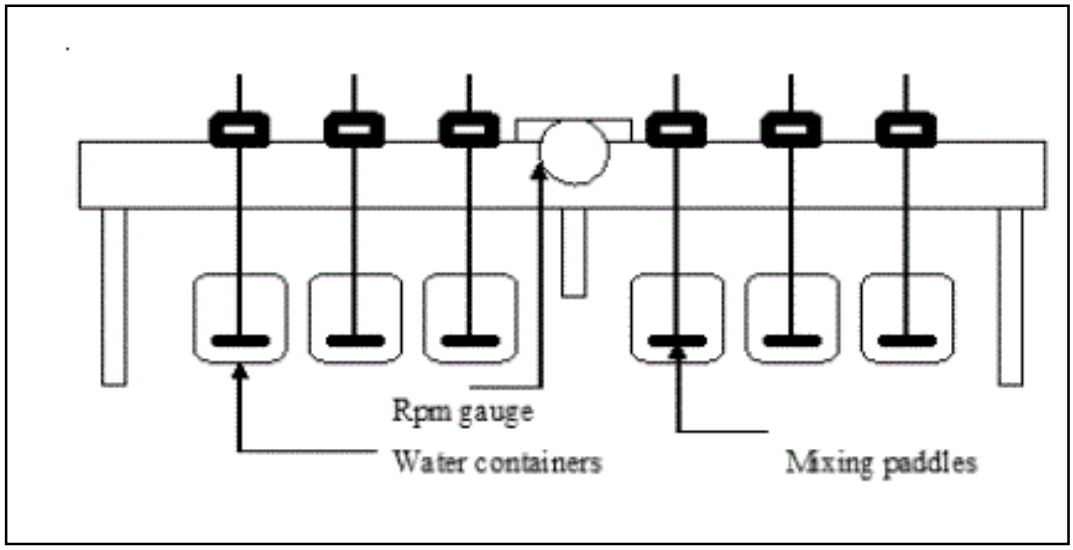
2.1 Wastewater and analytical methods:

Physico-chemical analyses of 20 hr. composite samples were carried out according to APHA. The analysis covered pH, Chemical Oxygen Demand (COD), Biochemical Oxygen Demand (BOD_3, @ 27 ºC), Suspended Solids (SS), Colour etc. All the parameter was determined according to APHA. In this study, we compare the effect of different coagulants (like Ferric Chloride, Ferrous Sulphate, $AlCl_3$) on Wastewater parameter.

2.2 Treatment processes:

To develop design parameters for treatment of wastewater, **Coagulation–Sedimentation-Aeration-Filtration** treatment schemes were studied. The coagulants used were Ferric Chloride, Alluminium chloride, and Ferrous Sulfate. The optimum pH values and coagulant dose were determined for each coagulant. All coagulants were aided with Lime, which has many positive effects. It adjusts the pH to the optimum value, acts as a coagulant aid, and improves sludge settle ability and stability. However, it may increase the dry solids content of the sludge by 10-15%.

Chemical coagulations were performed in Jar test apparatus. Effluent sample was taken in 500–1,000 ml Beaker. After this, the calculated amounts of coagulants were aided and its pH was adjusted. When the desired pH was maintained, it was kept for stirring in jar-test experimental set up. The effluent sample with coagulants was rapid mixed (RM) at 80 rpm for 5 minutes followed by 20 min slow mixing (SM) at 20 rpm and 2.0 hr. quiescent settling. The supernatants were analyzed for COD. Effect of initial pH (pH_0) and mass loading of Coagulants at optimum pH were performed. Other Parameters like BOD and Suspended Solids were also studied.



[Fig 2.0: Schematic diagram of Jar test instrument]

3.0 RESULTS AND DISCUSSION: -

3.1 Wastewater characteristics:

Major Wastewater will be produced from process of Dyes & it's intermediates. Main characteristics of Wastewater are presented in Table-1. The BOD_3/COD ratio averaged 0.35.

Table – 1

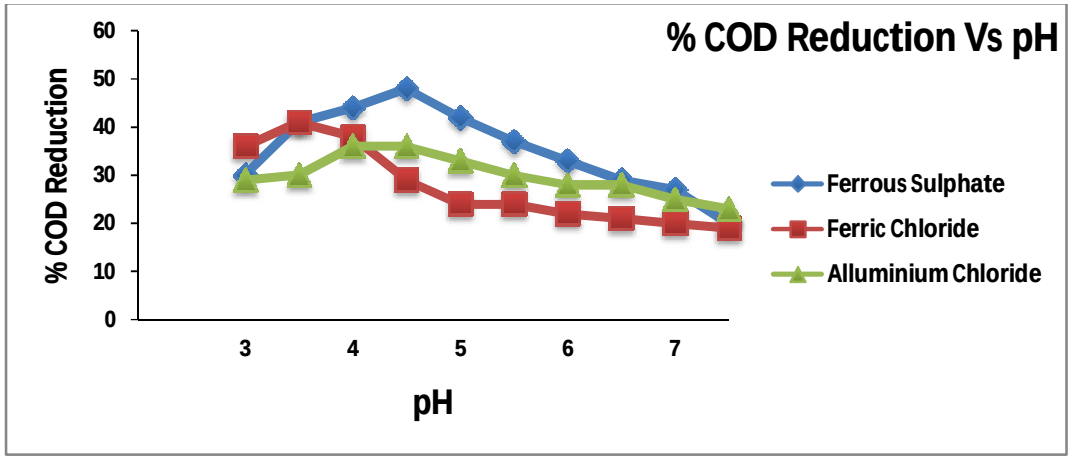
Initial Effluent Characteristics	Laboratory Analysis
pH	5.2 – 5.5
COD, mg/lit	17,000 – 18,500
BOD_3, mg/lit	5,500 – 6,500
Suspended Solids, mg/lit	3,000 – 3,500

3.2 Coagulation-Sedimentation/Settling Process:

3.2.1 Effect of pH and various coagulants:

The COD reduction of Effluent as the function of the initial pH for various coagulants is presented in Fig. (3.1). A doze of 250 ppm: $FeCl_3$, $FeSO_4$, & $AlCl_3$ gives COD reduction of 40%, 45% and 38% respectively at optimum pH of 3.5 and 4.5. The coagulant dozes kept constant of 250 ppm. The iron based compounds have given

maximum reduction in COD as compared to $AlCl_3$. However, coagulation/flocculation for a particular functional groups taking part in the co-ordination and complexation with metal cations depends on amount and types of functional groups.



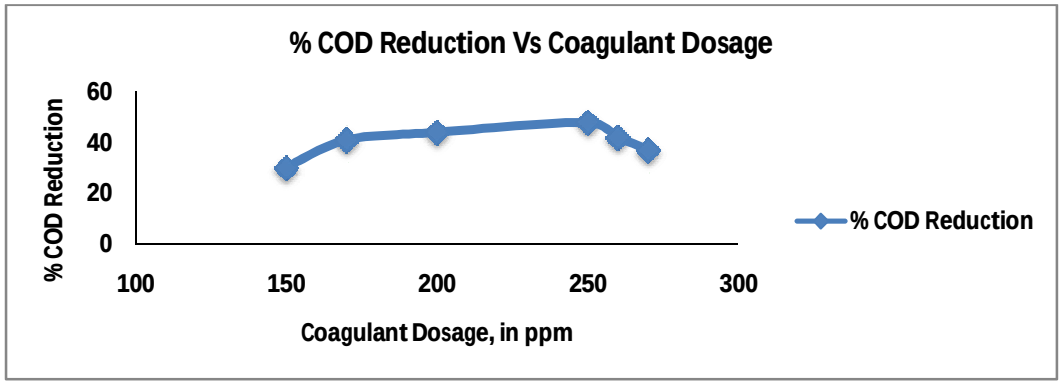
[Fig 3.1: Determination of optimum pH value at fixed dose of coagulants]

3.2.2 Comparison of different coagulant for COD removal:

The effect of different coagulants, such as, Ferrous Sulphate, Ferric Chloride, Aluminum Chloride, on the COD reduction of the wastewater at room temperature. The addition of different coagulant in the effluent and its flash mixing creates proper coagulant condition. Gentle mixing, thereafter-initiated flock formation, complexation and settling of the insoluble solids. In order to determine the optimum dosage of the three coagulants for the removal of COD and other parameter from effluent, different dosage of $FeCl_3$, $FeSO_4$ and $AlCl_3$ were used in experiments.

3.2.3 Effect of FeSO4 coagulant dosage on COD removal:

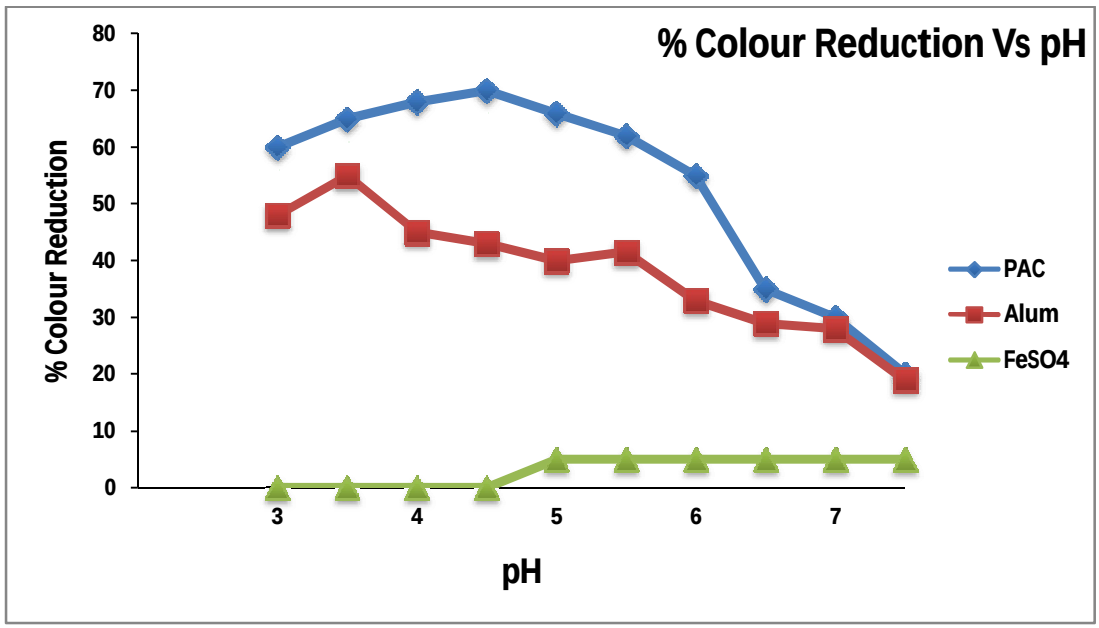
The effect of $FeSO_4$ dosage on COD reduction is presented in (Fig 3.2). It can be seen that the rate of COD reduction increase considerably till 250 ppm-$FeSO_4$ loading. After this loading, COD reduction does not increase much. $FeSO_4$ coagulant dosage is optimum giving a COD reduction of 48% at optimum pH 4.5;



[Fig 3.2: Determination of optimum dose of Ferrous Sulfate at constant pH value of 4.5]

3.2.4 Effect of PAC-coagulant dosage on Colour removal/reduction:

The effect of PAC dosage on Colour reduction is presented in (Fig 3.3). It can be seen that the rate of Colour reduction increase considerably till 200 ppm-PAC loading. After this loading, Colour reduction does not increase much. PAC coagulant dosage is optimum reduction giving (70 %) at optimum pH 4.5;



[Fig 3.3: Determination of optimum dose of PAC at constant pH value of 4.5]

When PAC is used as a coagulant for this type of effluent containing dyes, following were the observation made:

1. Below 200 ppm dose of coagulant less colour removal
2. At 200 ppm dose of PAC nearly 70 – 75 % colour removal was observed.
3. It was also observed that sensitivity of colour removal efficiency with change in coagulant dose above 250 ppm was negligible.
4. In case of alum it can be seen that the colour removal efficiency increases very slowly with increase in coagulant concentration. The optimum coagulant concentrations lie above 500 ppm. The quantity of alum required as compared to PAC is very high.
5. Ferrous sulphate was found to be largely ineffective in removal of colour of this effluent. The colour removal is almost Zero/near to Zero at all concentrations of Ferrous sulphate.

3.3 Aeration Process:

In Aeration Process, air is being supplemented through fine bubble diffusers by means of blowers. Aeration tank shall be designed on the principal of Activated Sludge Process wherein with the help of Oxygen supplied and additional nutrients, biomass will digest and reduce the organic load. The bioflocs so formed in the process will be settled in the Secondary settling Tank/Clarifier.

3.4 Filtration Process:

After Laboratory Analysis through different media, [i. e. Granule Activated Carbon (900 IV) and Sylex, Sand], it is observed that It can remove SS particles of effluent and found good COD reduction. After Aeration, effluent characteristics are given in Table – 2.

Table – 2

Effluent Characteristics	Duel Media Filter (Filtration)	
	Inlet	Outlet
pH	6.5 – 7.5	6.5 – 7.5
COD, mg/lit	4,500 – 5,000	3,000 – 3,500
BOD_3, mg/lit	1,600 – 1,800	1,000 – 1,200
SS, mg/lit	600 – 800	200 – 250

3.5 Final Effluent Characteristics:

From Pilot plant study @ Laboratory scale, it is observed that efficient COD reduction was achieved by **"Coagulation–Sedimentation–Aeration–Filtration"** process. Outlet characteristics of effluent are mentioned in Table–2, which shows that CETP inlet norms are fulfilled by this treatment.

4.0 CONCLUSION: -

- The Coagulation process for treatment of effluent is effective.
- A doze of 250 ppm – $FeSO_4$ gives COD reduction of 48 % at optimum pH of 4.5
- COD reduction was found to extremely depend on pH. The total COD reduction was depending on coagulation pH and functional groups present in effluent.
- The pH of effluent was found to decrease with adding of coagulants. pH decreasing order was $FeCl_3 > FeSO_4 > AlCl_3$.
- Based on all the experimental results (Settling rate of sludge, pH, dosage), it is concluded that the Ferrous Sulphate coagulant gives the good results as compared to the Ferric Chloride and Aluminium Chloride coagulants.
- PAC concentration of 200 ppm is required for the good colour removal/reduction.
- The colour removal efficiency was also found to be strongly dependent on the dosage of the coagulant. The optimum dose of a particular coagulant was, however, dictated by the effluent type. In general, dose of inorganic coagulant was more as compared to organic coagulant.
- The inorganic coagulants were found to be highly sensitive to pH as far as removal of effluent colour is concerned and optimum pH for most cases was found to be pH 5. Thus, these coagulants mostly work in limits pH range.

en-VISION
ENVIRONMENTAL SERVICES
Pollution Control Consultants & Engineers

201 & 301, Union Trade Center (UTC)
Nr. Apple Hospital, Udhana Darwaja,
Surat - 395 002

T : 0261-2344773, 2344774
e : info@en-vision.co.in
e : envision.es@hotmail.com

ANNEXURE-V

THE ENVIRONMENTAL MANAGEMENT SYSTEM ADEQUACY CERTIFICATE

This is to inform that, **M/s. PARISHI CHEMICALS L.L.P.**, proposes manufacturing of Dyes at Plot no. 8105/2, Road -2, GIDC Sachin, Dist- Surat, Gujarat. Details of the same are as mentioned below:

A) Manufacturing products as under:

SR. NO.	NAME OF THE PRODUCT	QUANTITY(MT/MONTH)
1.	Disperse Azo Dyes (All colors)	50
2.	Coumarine Dyes (All colors)	25
3.	Methine Dyes (All colors)	25
	Total	**100**

B) Liquid effluent : **Total Quantity (M^3/Day)**

Industrial	33.6
Domestic	03.4

Industrial Effluent: **-** It will be treated in their own proposed ETP and after achieving the CETP inlet norms, **17.0** m^3/Day of water will be discharged to **CETP** of Global Enviro Care Ltd, Sachin for further treatment and disposal & remaining **16.6** m^3/Day water will be treated in **Multi Effect Evaporator**.
Domestic Effluent: - It will be discharged into the Soak pit/Septic Tank.

C) Details of Air Pollution control measures:

Details of Fuel:

SR.NO	TYPE OF FUEL	QUANTITY
1.	Bio-Fuels(Pellets)	6.0 Ton/Day
2.	Diesel (in emergency during power failure only)	40 Lit/Hr.

Details of Stack, Boilers and Air Pollution Control System:

SR. NO.	STACK ATTACHED TO	HEIGHT OF STACK	AIR POLLUTION CONTROL SYSTEM	FINAL CONCENTRATION
1.	Steam Boiler **(0.8T/hr)**	30 (meters)	Multi Cyclone Separator (Each)	SPM ≤ 150 mg/NM^3 SO_2 ≤ 100 ppm NO_X ≤ 50 ppm
	Thermic Fluid Heater (8,00,000 Kcal/hr)		Bag Filter (Common)	
2.	D. G. set of 125 KVA (In emergency only)	11 (meters)	Acoustic Enclosure	

Based on the above mentioned details, we certify that the Environmental Management System to be provided by this industry for the products and capacity as stated above will be adequate to achieve the prescribed norms by the board (Air + Wastewater)

DATE: 06/07/2016

PLACE: Surat

For, **EN-VISION ENVIRONMENTAL SERVICES.**

KUNHAL SHAH
(PARTNER)

MIST RESSONANCE ENGG. (P) LTD.

MFRS OF MIST COOLING & VACUUM SYSTEMS FOR
PROCESS INDUSTRIES & POWER PLANTS

www.mistcreation.com

Anandi, 1304-1/7, Shukrawar Peth, Bajirao Road, Pune- 411002 Tel: 020-24472726, 24471184, 24474972
Email: mistcool@vsnl.com , mistcreation@gmail.com

CIN : U29299PN1990PTC 057034

Mist Type Evaporation System for Zero-Liquid Discharge

Introduction

This system is called Mist Type Evaporation System (MTES) for Zero-Liquid discharge.

It uses a highly efficient Mist Type vacuum condensing system and highly effective Mist Cooling system for separation of pure process water and dissolved solids from the treated effluent stream.

Description

MTES for ZLD is the system for recycling the pure water from the treated effluent stream. This system extracts pure water by a single effect evaporator assisted by high efficiency MIST TYPE Water Jet Vacuum Condenser to separate pure water as the top product and dissolves solids (Salts) as bottom products from a single effect evaporator. Please refer the GA Drawing for the same.

The Treated effluent with high TDS is taken into a stirred tank evaporator reactor and vacuum is applied to it to lower the boiling point of the liquid. The vacuum is generated to the degree of 700 mm of Hg by the use of just cooling water through the application of Mist Type Water JET Vacuum Condenser which creates a high vacuum and condensation rates. This is due to the high efficiency Mist creation technology applied in the MTWJVC thus saving on huge energy as compared to the traditional Steam Jet Ejectors or Water Ring Vacuum Pump.

Continuation sheet

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Salient Features and Advantages of MTES over traditional MEE

1. We can get pure water as recycled stream and separate solid product as bottoms which is not possible in MEE system
2. Energy efficiency due to highly efficient condensing system
3. Easy to install, operate and maintain
4. Low capital cost, hence a boon for small and medium scale industries

For Mist Ressonance Engg. Pvt. Ltd.

Madhuttam Kulkarni
Head Operations & Business Development

क्रमांक : 022 4316
Sl. No. :

सत्यमेव जयते

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS

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GOVERNMENT OF INDIA
पेटेंट कार्यालय
THE PATENT OFFICE
पेटेंट प्रमाणपत्र

Patent Certificate

(Rule 74 of Patents Rules)

Patent No. : **211652**

Application No. : **298/MUM/2004**

Date of Filing : **10/03/2004**

Patentee : **CHITALE MAKARAND ARVIND**

It is hereby certified that a patent has been granted to the patentee for an invention entitled AN IMPROVED MIST PRODUCING NOZZLE as disclosed in the above mentioned application for the term of 20 years from the 10 day of MARCH 2004, in accordance with the provisions of the Patents Act,1970.

Date of Grant: 06/11/2007

Controller of Patents

Note.-The fees for renewal of this patent,if it is to be maintained , will fall / has fallen due on 10 day of MARCH 2006 and on the same day in every year thereafter.

PRESENTATION ON USE OF MIST COOLING SYSTEM AND MIST TYPE WATER JET VACUUM SYSTEMFOR REDUCTION IN ENERGY CONSUMPTION OF CONVENTIONAL ZERO LIQUID DISCHARGE SYSTEM.

By

MIST RESSONANCE ENGINEERING PVT. LTD.

'Anandi', 1304/1/7, Shukrawar Peth, Bajirao Road, Pune 411002 INDIA

Tel :(+91 20) 24472726, 24471184, mistcreation@gmail.com/mistcool@vsnl.com

COMPANY PROFILE

The MCS technology was developed by our founder Late Mr. Arvind S. Chitale in 1980 and was recognized at various international platforms. Now we have a growing family of satisfied clients spread across various countries in many industries. They are benefited by the technology rooted in eco-friendly base, energy conservation and quality production. The systems are eco-friendly and Energy conservation is achieved at the highest level.

Board of Directors

The present Directors of the Company are :

- Mrs. Madhuri A. Chitale : Managing Director
- Mr. Makarand A. Chitale : Director – Technical
- Mr. Bhupendra P. Shroff : Director

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Member : CTI

COOLING TECHNOLOGY INSTITUTE

PO Box 73383, Houston, TX 77273 / 2611 FM 1960 Rd., W, Ste A-101 / Houston, TX 77068
Phone: 281.583.4087 / Fax: 281.537.1721 / email: vmanser@cti.org / http://www.cti.org

June 19, 2007

Mr. Makarand Arvind Chitale
Mist Ressonance Engg. (P) Ltd.
1304-1/7, Shukrawap Peth, Bajirad Road
Pune 411002 Maharashika INDIA

Dear Mr. Chitale:

It is indeed a pleasure to inform you that your application for Corporate Membership in the **Cooling Technology Institute** has been acknowledged and approved by the **Cooling Technology Institute**.

A complimentary set of **CTI** Standard Specifications and Research Reports, a membership directory, and the Bylaws are enclosed. You are now eligible to receive the updated pages of the directory once a year. Your firm will be listed in the manufacturers section of the directory with you as the voting delegate.

All employees of your firm will receive member discounts on publications and meeting fees. We encourage you to use the **CTI** logo on your letterhead, business cards and sales brochures. A copy is enclosed. The word "member" must accompany the logo.

An attractive walnut membership plaque engraved with your company name is available.

We look forward to your active participation in the meetings and committees. The next CTI Committee Workshop is scheduled for July 7-12, 2007, at The Westin, La Cantera, San Antonio, Texas. Information is posted on our website www.cti.org We hope that you will find it convenient to attend. Please call me if you have any questions, or if we may be of service to you.

Sincerely,

CTI Administrator

VAM/
Enclosures

cc: w/o enclosures
Steve Chaloupka, President
Thomas Bugler, Vice President
Ken Kozelski, Board Member
Frank Foster, Membership Chairperson
File

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Patented Technology

क्रमांक : 022 4316
Sl. No. :

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THE PATENT OFFICE
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Patent Certificate
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MIST TECHNOLOGY

- **MIST CREATION SYSTEM** is a high efficiency system, which ensures an approach of 1°C to Wet bulb temperature. MCS is the only system which ensures a ΔT of 50°C in one stroke. No other cooling system can operate with such efficiency & it makes cooling tower/spray pond systems obsolete.

- **MCS** induces water to intensive atomization- i.e. water particles are sub-divided to around 5 microns. The atomized particles shoot out of MIST-CREATOR nozzles at immense speed and rise to a height of 5-6 meters above the nozzles.

This ensures extensively large surface area for a longer interval and at high velocity providing a mist formation. Surface evaporation is very fast, faster than the time needed for reaching equilibrium.

This is similar to phenomenon of formation of hailstone, when rainwater reaches temperatures much lower than wet-bulb.

- **MCS** simulates nature and temperature as low as wet bulb temperature is achieved. This is just not possible in conventional spray or cooling towers - where ultimate temperatures are 5-7^{o}C higher than prevailing wet-bulb temperature.

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MIST TECHNOLOGY

MIST TYPE WATER JET VACUUM SYSTEM

- **These are Multi-tasking condensers which perform multiple function of vapour condensation and vacuum creation in the same unit by water alone. By the virtue of our unique design, our condensers produce mist inside the condenser thus condensing the vapours at an extremely fast rate. Our special Mist creator nozzles form Mist up to a size of 5 Microns. Also, specially designed pencil beam shooter nozzles are used to create vacuum by removing air and other non-condensible gases at very fast rate.**

- **Due to this marvelous design, use of steam jet ejector or vacuum pump is nullified, thus saving huge amount of Steam/ Power.**

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WRITEUP ON HOW TO REDUCE ENERGY CONSUMPTION OF CONVENTIONAL ZERO LIQUID DISCHARGE SYSTEM BY USE OF MIST COOLING SYSTEM AND MIST TYPE WATER JET VACUUM SYSTEM.

- Conventional Zero Liquid Discharge Systems use single/multiple effect evaporators to burn/evaporate the water content in RO reject/effluent discharge stream and the solid waste remains are disposed off. The process is carried out under the vacuum requirement of 650 mm of Hg (110 Torr abs)in order to reduce the boiling point of water and in turn reduce consumption of steam required for evaporation.

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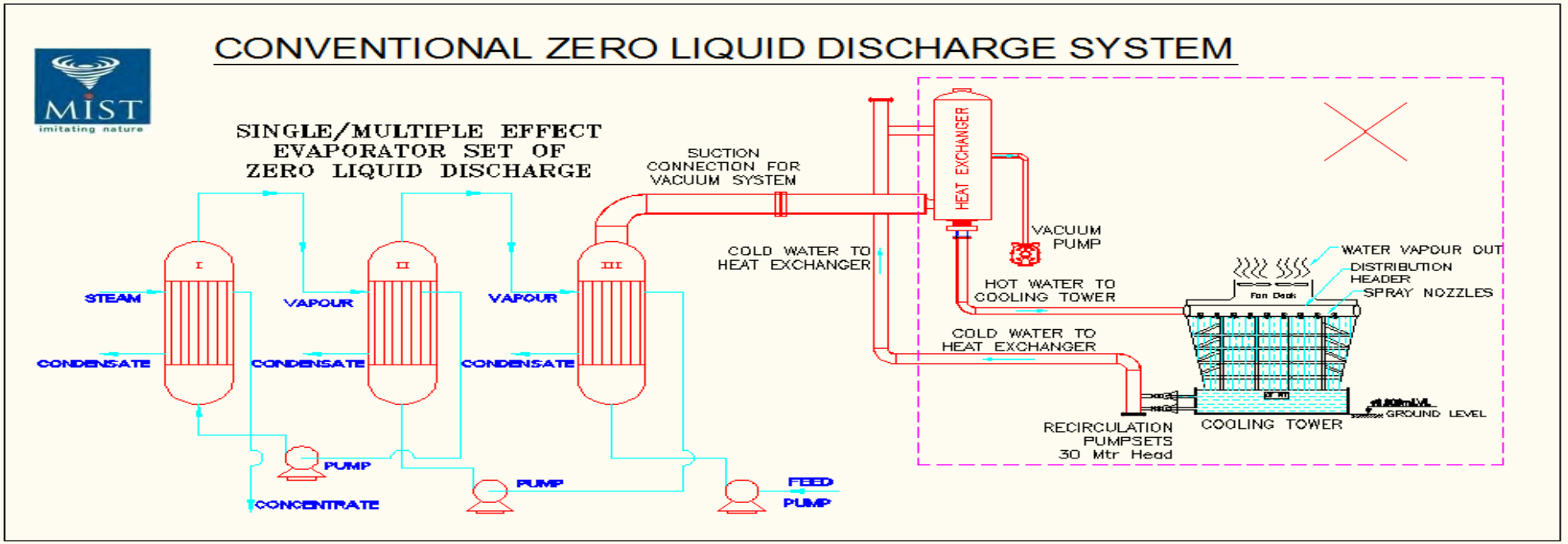
CONVENTIONAL ZERO LIQUID DISCHARGE SYSTEM
MIST
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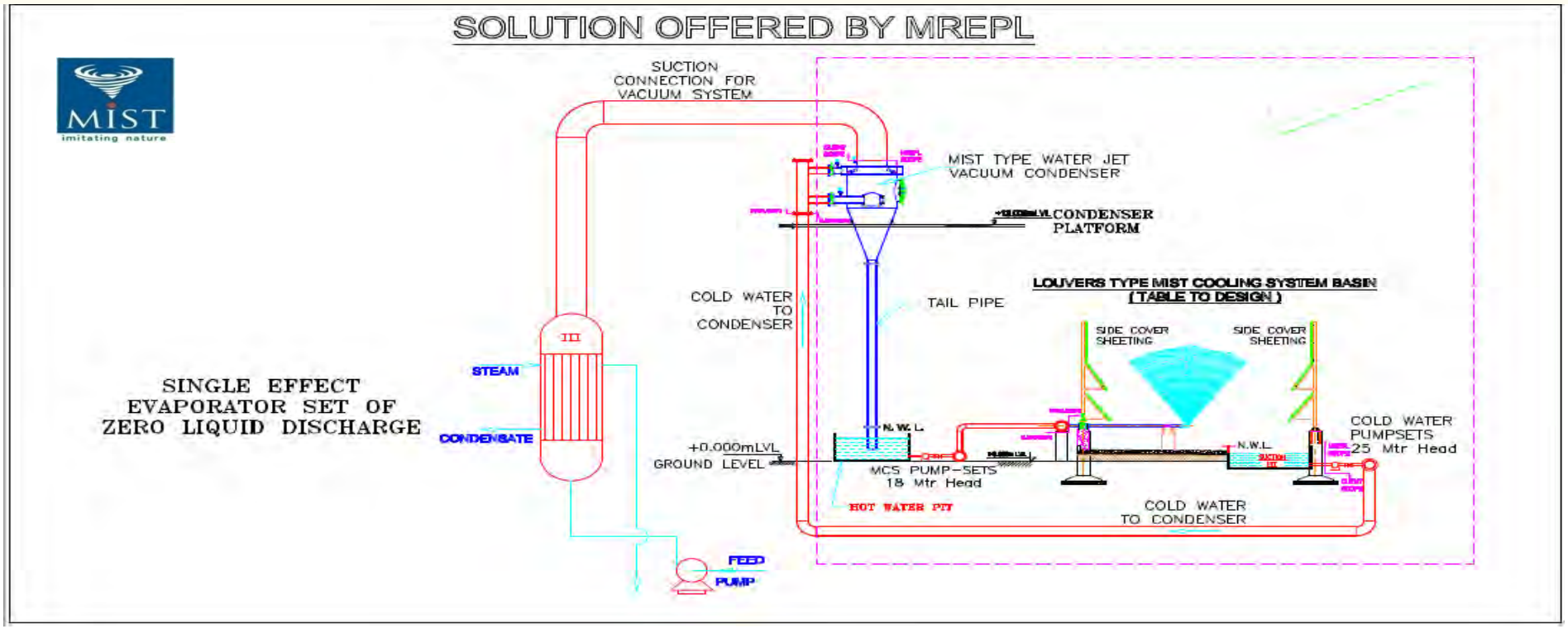
SINGLE/MULTIPLE EFFECT EVAPORATOR SET OF ZERO LIQUID DISCHARGE
SUCTION CONNECTION FOR VACUUM SYSTEM
HEAT EXCHANGER
VACUUM PUMP
COLD WATER TO HEAT EXCHANGER
HOT WATER TO COOLING TOWER
WATER VAPOUR OUT
DISTRIBUTION HEADER
SPRAY NOZZLES
COLD WATER TO HEAT EXCHANGER
STEAM
VAPOUR
VAPOUR
CONDENSATE
CONDENSATE
CONDENSATE
I
II
III
PUMP
PUMP
FEED PUMP
CONCENTRATE
RECIRCULATION PUMPSETS 30 Mtr Head
COOLING TOWER
GROUND LEVEL


SOLUTION OFFERED BY MREPL
MIST
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SUCTION CONNECTION FOR VACUUM SYSTEM
MIST TYPE WATER JET VACUUM CONDENSER
CONDENSER PLATFORM
LOUVERS TYPE MIST COOLING SYSTEM BASIN (TABLE TO DESIGN)
COLD WATER TO CONDENSER
TAIL PIPE
SIDE COVER SHEETING
SIDE COVER SHEETING
SINGLE EFFECT EVAPORATOR SET OF ZERO LIQUID DISCHARGE
STEAM
CONDENSATE
III
N.W.L.
+0.000mLVL GROUND LEVEL
MCS PUMP-SETS 18 Mtr Head
HOT WATER PIT
COLD WATER TO CONDENSER
N.W.L.
COLD WATER PUMPSETS 25 Mtr Head
FEED PUMP

- MREPL has come out with a solution by replacing the Conventional Vacuum and Cooling Tower by Mist Type Water Jet Vacuum Condenser (MTWJVC) and Mist Cooling System (MCS) for ZLD. This will nullify the vacuum pump and fan power required in Conventional System as MTWJVC does not require any vacuum pump or steam jet ejector to create vacuum, as it is done by water alone. Also, MCS does not require any fan power to atomize water particles as it is done by creating MIST in MCS. Added advantage of MTWJVC & MCS is it does not have any moving part hence the maintenance is negligible as compared to Cooling Tower.

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Click Here for **TABULAR COMPARISON SHOWING AUXILIARY CONSUMPTION BETWEEN CONVENTIONAL VACUUM AND COOLING SYSTEM AND MIST TYPE COOLING AND VACUUM SYSTEM FOR A 25KLPD ZERO LIQUID DISCHARGE SYSTEM**

CONCLUSION

- It can be seen from above that total savings on initial investment due to installation of MCS and MTWJVC as compared to conventional system will be around Rs.5 Lakh, while savings on recurring expenses will be around Rs. 14 to 15 Lakh Per Annum, year after year.

Hence the payback period shall be less than 1 year only.

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We are here

MIST RESSONANCE ENGG. PVT. LTD.
'Anandi', 1304/1/7, Shukrawar Peth,
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Tel :(+91 20) 24472726, 24471184
E-mail : mistcreation@gmail.com/mistcool@vsnl.com
Website : http://www.mistcreation.com/

THANK YOU

COOLING TECHNOLOGY INSTITUTE

PO Box 73383, Houston, TX 77273 / 2611 FM 1960 Rd., W, Ste A-101 / Houston, TX 77068
Phone: 281.583.4087 / Fax: 281.537.1721 / email: vmanser@cti.org / http://www.cti.org

June 19, 2007

Mr. Makarand Arvind Chitale
Mist Ressonance Engg. (P) Ltd.
1304-1/7, Shukrawap Peth, Bajirad Road
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Dear Mr. Chitale:

It is indeed a pleasure to inform you that your application for Corporate Membership in the **Cooling Technology Institute** has been acknowledged and approved by the **Cooling Technology Institute**.

A complimentary set of **CTI** Standard Specifications and Research Reports, a membership directory, and the Bylaws are enclosed. You are now eligible to receive the updated pages of the directory once a year. Your firm will be listed in the manufacturers section of the directory with you as the voting delegate.

All employees of your firm will receive member discounts on publications and meeting fees. We encourage you to use the **CTI** logo on your letterhead, business cards and sales brochures. A copy is enclosed. The word "member" must accompany the logo.

An attractive walnut membership plaque engraved with your company name is available.

We look forward to your active participation in the meetings and committees. The next CTI Committee Workshop is scheduled for July 7-12, 2007, at The Westin, La Cantera, San Antonio, Texas. Information is posted on our website www.cti.org We hope that you will find it convenient to attend. Please call me if you have any questions, or if we may be of service to you.

Sincerely,

CTI Administrator

VAM/
Enclosures

cc: w/o enclosures
Steve Chaloupka, President
Thomas Bugler, Vice President
Ken Kozelski, Board Member
Frank Foster, Membership Chairperson
File

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To

Parishi Chemicals LLP

GIDC,

Sachin.

Dear Sir,

We are able to supply you steam as per your requirement to your factory Plot no. 8105/2, G.I.D.C., Sachin,

Thank You

Regards.

For Sanjoo Dyeing & Printing Mills P. Ltd.

Director / Autho.