GARBAGE TO GARDEN

Agenda

- We see a lot of awareness in society about waste plastic and its effects on environment.
- We see agitations on dumping of same in landfills.
- We see various initiatives being taken for proper disposal of this waste.
- We see cleanliness drives, column in newspapers, but there is very less knowledge about how it is processed further and its end products.
- We need to make the entire process simple and explain to public in a way that they understand its value. if any article is perceived as waste we dump it, but if you make people aware that it is worth something and they are going to be monetarily benefitted by it then they will take due care of the same.

FACTORS EFFECTING BIOMINING

SUCCESS AND EFFICENCY OF BIOMINING DEPENDS ON VARIOUS FACTORS SOME OF WHICH ARE DISCUSSED BELOW

1) CHOICE OF BACTERIA , This is the most important factor that determines the success of bio mining . The bacteria used for odor elimination , organic waste conversion, suitable bacteria that can survive and active under any circumstances.

TOTAL SOLUTION FOR DRY WASTE DISPOSAL

- As per the Planning commission guidelines in India the number of ways suggested for disposal of waste as per MSW 2016 act are:

Biomethanation for wet biodegradable wastes

Conventional microbial windrow/mechanized/ vermi composting for wet biodegradable wastes

Preparation of briquette/ pellets/ fluff as Refuse Derived Fuel (RDF) from dry high-calorific value combustible waste

Incineration / Gasification / Pyrolysis for dry high-calorific value combustible wastes

Plastic wastes to fuel oil

Our methodology for dry waste disposal

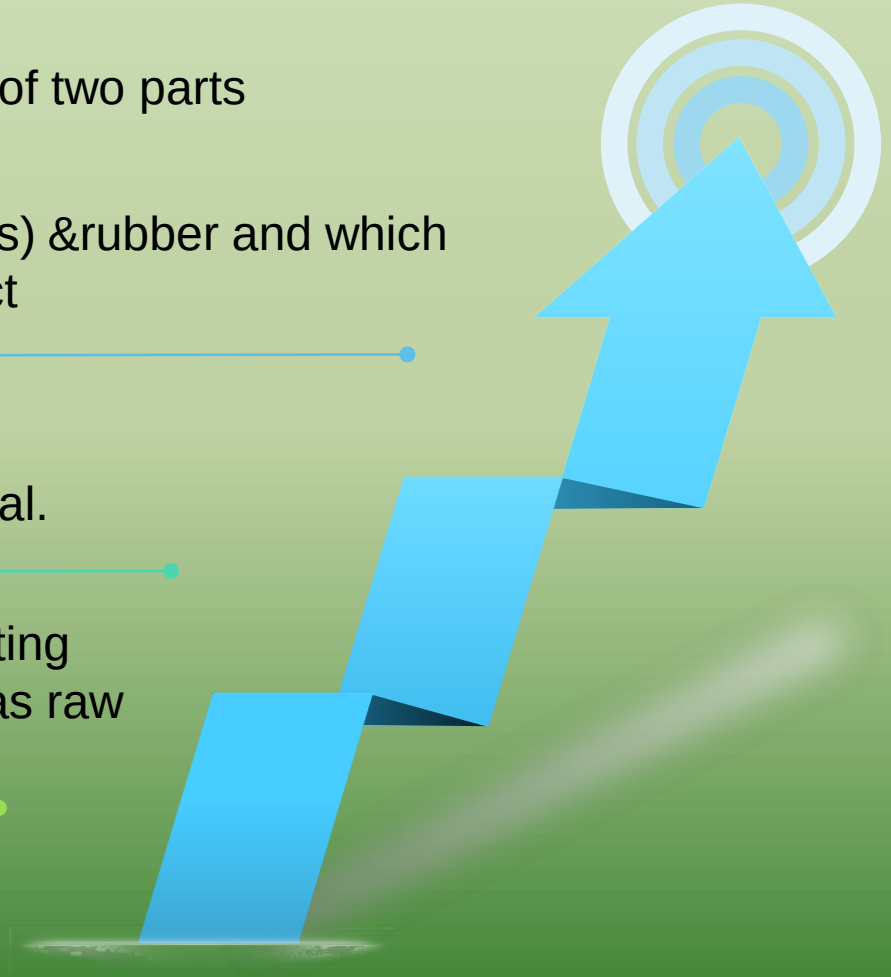
The dry waste consists of two parts

One Which is plastic (pp,pe,ps) &rubber and which gives rdf oil as end product

Dry waste with calorific value >1500 Kcal.

We use the dry waste with calorific value for melting plastic or generation of electricity by using it as raw material for the Gasifier.

The melted plastic is fed to pyrolysis plant to turn it into oil,syngas and carbon.



BIOMINING

BIO MINING IS A LOW COST , SIMPLE,LESS TIME CONSUMING AND ECO FRIENDLY METHOD OF TREATING OPEN WASTE DUMPS TO ACHIEVE NEAR ZERO EMISSION OF LAND FILLS GASES AND LEACHATE. THE PROCESS INVOLVES ONSITE TREATMENT ABOVE GROUND OF WASTE AND EXTRACTING ORGANIC MANURE AND OTHER RECYCLABLES. IT ALSO CAN CREATE MARKET FOR HIGHLY NEEDED BIO FERTILIZERS APART FROM HELPING URBAN POPULATION IN TERMS OF TRATING MSW (MUNCIPAL SOLID WASTE MANAGEMENT) AND FINALLY RECLAIMING VALUABLE LANDS TO LSGD 'S.

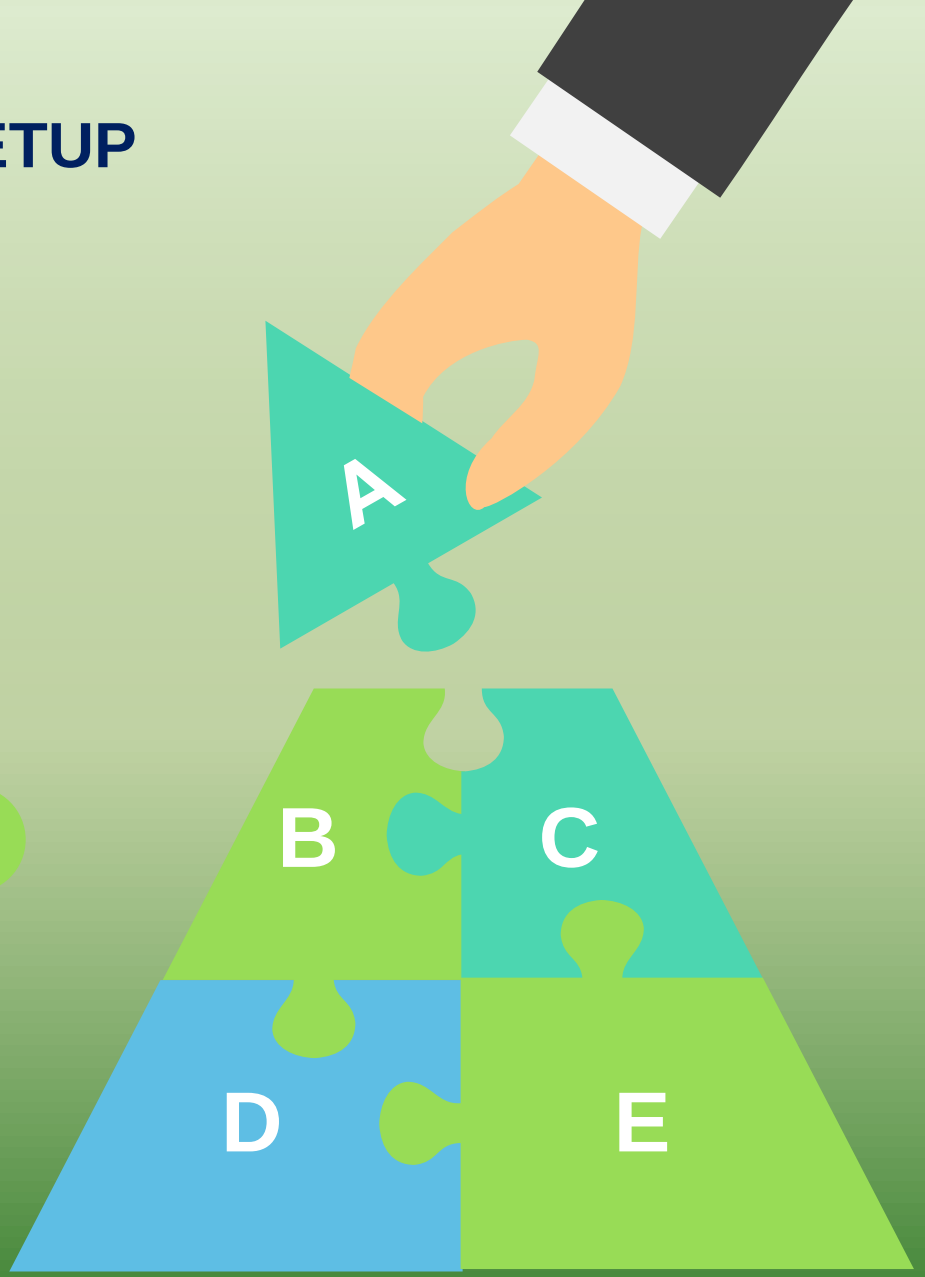
DRY WASTE SETUP

DRY WASTE INCINARATION

Non Recyclable Dry Waste A

Polyester Packaging (Aluminum Foil Packaging B

D



DRY WASTE SETUP

PYLORISIS

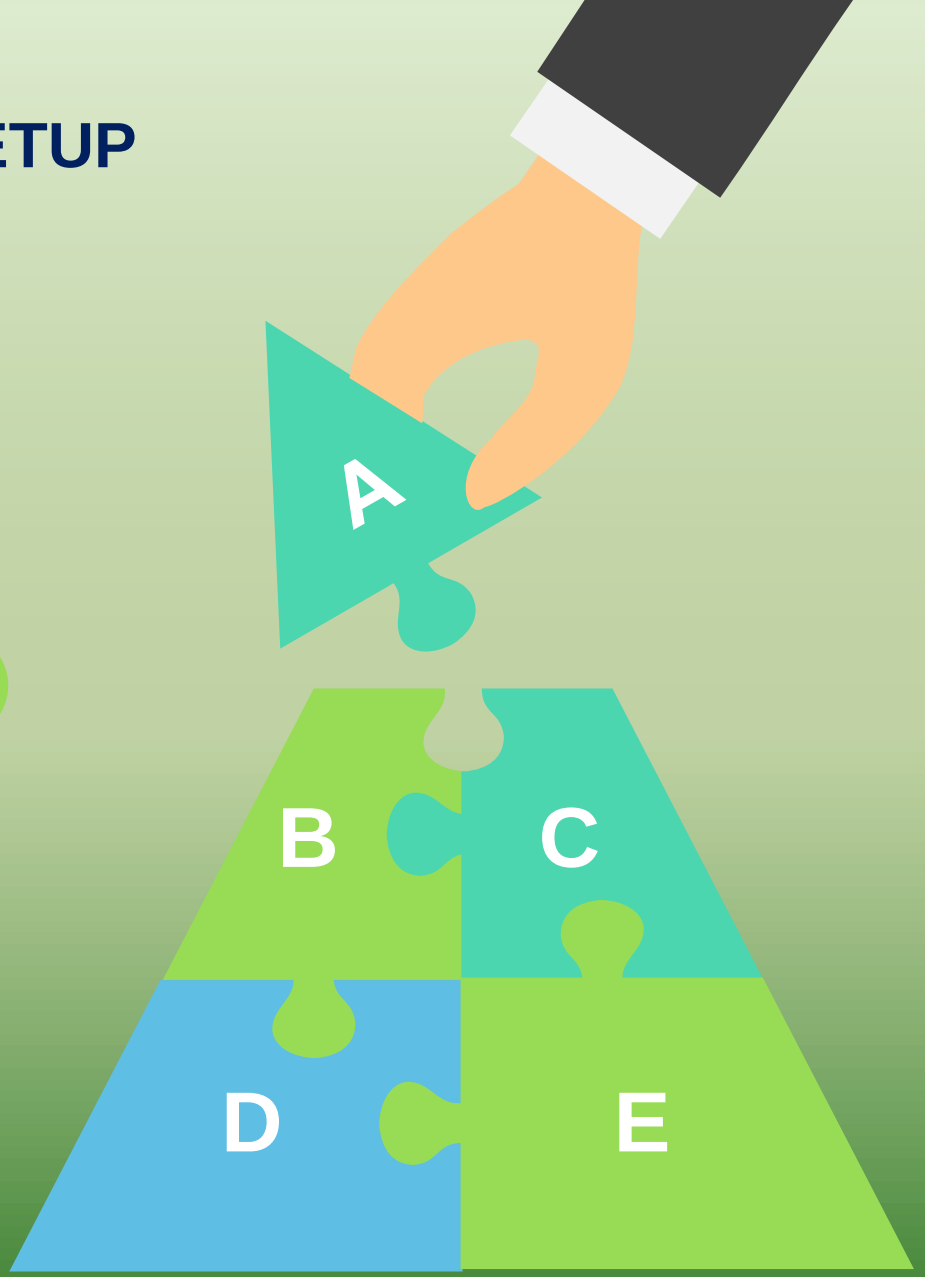
Mixed Bags A

Garbage Bags B

Cement & Grain Bags C

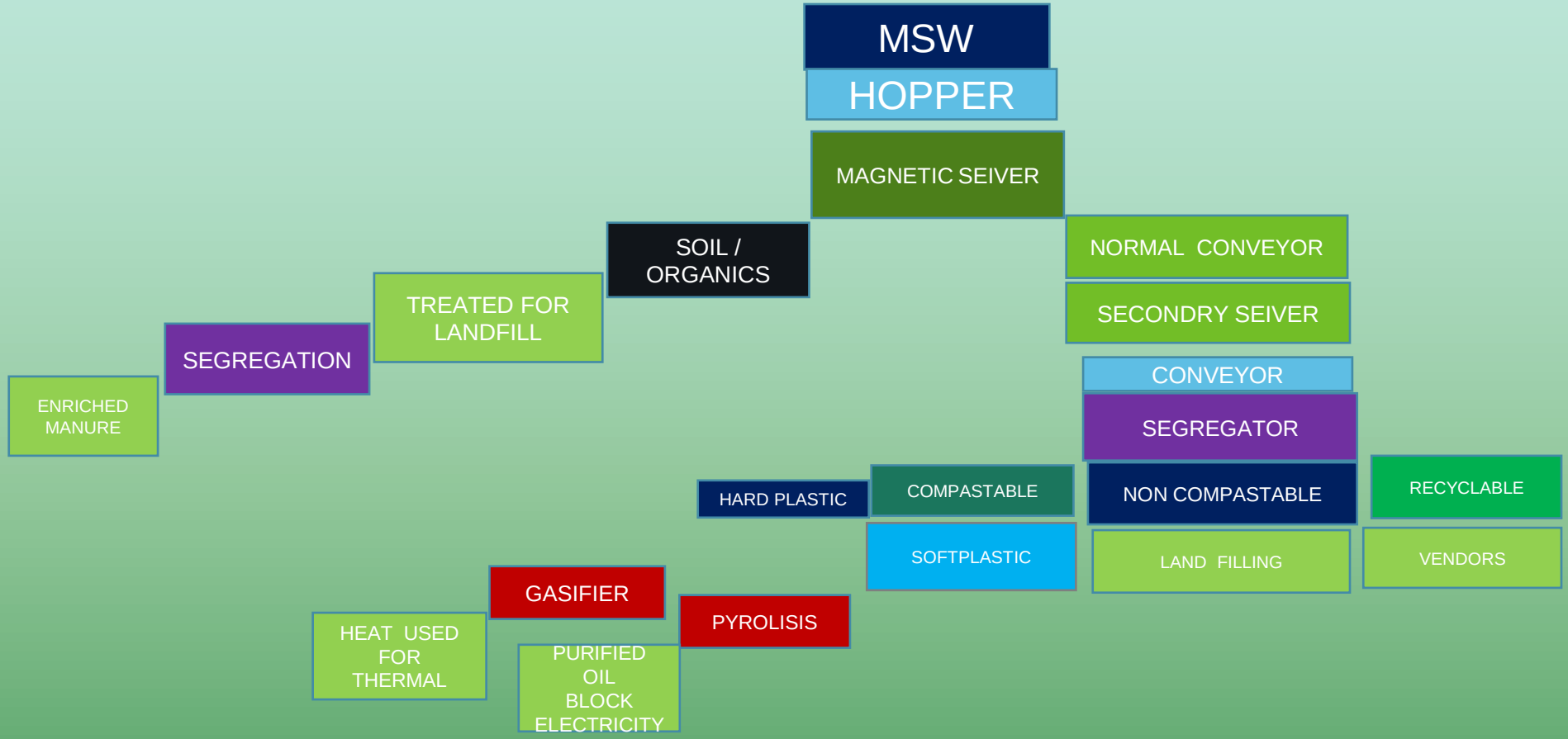
Plastic below 50 Micron OR Carry Bags D

Thermocol (Polystyrene) E



MSW (MUNICIPAL SOLID WASTE)

FLOW CHART


MSW
HOPPER
MAGNETIC SEIVER
SOIL / ORGANICS
NORMAL CONVEYOR
TREATED FOR LANDFILL
SECONDRY SEIVER
SEGREGATION
CONVEYOR
ENRICHED MANURE
SEGREGATOR
HARD PLASTIC
COMPASTABLE
NON COMPASTABLE
RECYCLABLE
SOFTPLASTIC
LAND FILLING
VENDORS
GASIFIER
PYROLISIS
HEAT USED FOR THERMAL
PURIFIED OIL BLOCK ELECTRICITY

MAGNETIC SEIVERS

MAGNETIC SEIVERS BEEN USED TO SEGREGATE METAL ITEMS FROM MOOVING TO THE SEGREGATOR , WHICH CAN DAMAGE THE SYSTEM AND SHUT DOWN THE PROCEDURE .

SEGREGATOR

THE SEGREGATOR IS BEEN USED TO SEGREGATE DIFFERENT TYPES OF MIXED MATERIALS FROM SOILD WASTE.

GASSIFICATION OF DRY WASTE

THE GASSIFICATION OF DRY WASTE IS DONE ABOVE 950 DEGREE CENTIGRADE AND THE HEAT GENERATED IS USED TO MELT PLASTIC,GENERATE ENERGY FOR PYROLYSIS PLANT AND ELECTRICITY

PYROLYSIS

- **Pyrolysis** is a **process** of chemically decomposing organic materials at elevated temperatures in the absence of oxygen.
  The **process** typically occurs at temperatures above 430°C (800°F) and under pressure. It simultaneously involves the change of physical phase and chemical composition, and is an irreversible **process**.

TEST REPORTS OF AIR MONITORING OF GASIFIER FROM CERTIFIED LABS

Polytest Laboratories
22 Sonace Industrial Estate, Pirangut, Pune 412 115, India.
Tel: +91 20 6676 3918, 6676 3919
Email: polytest@polytestlabs.net
Website: www.polytestlaboratories.com

POLYTEST LABORATORIES

Test Report
No. 85376-18

SAMPLE DATA

Sample	GASIFIER Stack		
Container details	3 no(s) Plastic Bottle GFA Thimble	Plastic Bottle	
Collected on	07-Apr-18 at 15:30 hrs with grab method		
Received at lab on	09-Apr-18 at 09:00 hrs	Testing completed on	11-Apr-18
Sender	G. D. Environmental Pvt. Ltd. Kamla Shankar Industrial Complex, Shed No. A-7, Pirangut, Tal: Mulshi, Dist: Pune - 412 115		

TEST DATA

	Test	Unit	Result	Method
1	Particulate Matter	mg/Nm3	21.33	IS:11255 (P 1)
2	Sulphur Dioxide (as SO2)	mg/Nm3	9.56	IS:11255 (P2)
3	Oxides of Nitrogen (as NO2)	mg/Nm3	4.29	IS:11255 (P 7)
4	Cadmium (as Cd)	mg/Nm3	<0.005	Intersociety Committee 822, Ed.3rd
5	Mercury (as Hg)	mg/Nm3	<0.001	APHA 23rd Edition, 3112 B
6	Antimony (as Sb)	mg/Nm3	<0.02	Intersociety Committee 822, Ed.3rd
7	Arsenic (as As)	mg/Nm3	<0.001	Methods of Air Sampling & Analysis 822, AWMA, Ed.3rd
8	Lead (as Pb)	mg/Nm3	<0.02	Intersociety Committee 822, Ed.3rd
9	Total Chromium	mg/Nm3	<0.05	APHA 23rd Edition, 3111 B
10	Copper (as Cu)	mg/Nm3	<0.005	Intersociety Committee 822, Ed. 3rd
11	Nickel (as Ni)	mg/Nm3	<0.1	Methods of Air Sampling & Analysis 822, AWMA, Ed.3rd
12	Vanadium (as V)	mg/Nm3	<0.01	Intersociety Committee 822, Ed.3rd
13	Manganese (as Mn)	mg/Nm3	<0.01	APHA 23rd Edition, 3111 B
14	Carbon Monoxide	mg/Nm3	<12	NIOSH 6604

END OF TEST RESULTS

OPINIONS, INTERPRETATIONS & REMARKS

- The results expressed as '<' are below Method Detection Limit.
- The sampling is done by Polytest Laboratories as per procedure PL.WI.705.
- Above analysis results pertain only to 'as received' sample and without prejudice to its source / process.
- The contents of this Test Report shall not be reproduced in part or in full in such a way that it will distort the findings.

END OF OPINIONS, INTERPRETATIONS & REMARKS

Verified by
Analyst

Authorized by
Mrs. S. A. Kapadne
AGM - Testing

ENalyse*

Source Emission Monitoring Report REPORT NO. AB/GDE/04/2018-19/08

Name of Client & Address: M/s. GD Environmental Pvt. Ltd. Gat .No. 146/A1, Pirangut, Tal – Mulshi, Dist-Pune-412108	Sample Code	AB/GDE/04/2018-19/08
	Sample Location/Attached To	WASTE GASIFIER
	Sample Collected By	Aavanira Biotech Pvt. Ltd.,
	Sample type	Stack
	Method of Sampling	As per IS : 11255 (Part – 1) : 1985
	Date of Sampling	09/04/2018
	Analysis Date	09/04/2018 to 10/04/2018
	Reporting date	10/04/2018
	Instrument Details	Stack Monitoring Kit , AB/Tech/Instr/140
Sample returned /stored	Stored at 4°C for 1 week from the date of reporting	

STACK DETAILS

Sr.	Particulars	Details	Unit
1	Material of Stack	MS	--
2	Stack Height from G.L.	6.72	mtr.
3	Type of Stack	Round	--
4	Fuel Type	--	--
5	Flue Gas Temperature	359	°K
6	Differential Pressure	3.8	mmWG
7	Velocity	7.01	m/s
8	Diameter of Stack	0.48	mtr.
9	Stack Area	0.18086	m^2
10	Gas Volume	3790.40	Nm^3/Hr

TEST PARAMETERS

Sr. No.	Parameter	Result	Unit	Limits As Per MPCB Consent	Standard Method
1	Total Particulate Matter (TPM)	52.0	mg/Nm^3	≤ 150	IS:11255 (Part -1)-1985
2	Sulphur Dioxide(SO_2)	41.1	mg/Nm^3	--	IS:11255 (Part -2)-1985
		3.74	Kg/day	N.S.	
3	Oxides of Nitrogen (NOx)	2.3	mg/Nm^3	--	IS:11255 (Part -7)-2005
4	Volatile Organic Compounds(VOCs)	1.4	ppm	--	GC Method

REMARK / OBSERVATIONS:

- Total Particulate Matter (TPM) parameter is within the MPCB Limits.

Verified By - Dr. Neeta Zatakia **Authorized By - Sarita Upadhye**

OTHER GUIDELINES FOR THERMAL TECHNOLOGIES

Waste to be incinerated shall not be chemically treated with any chlorinated disinfectants.

The CO_2 concentration in tail gas shall not be more than 7%.

Incineration of chlorinated plastics shall be phased out within two years

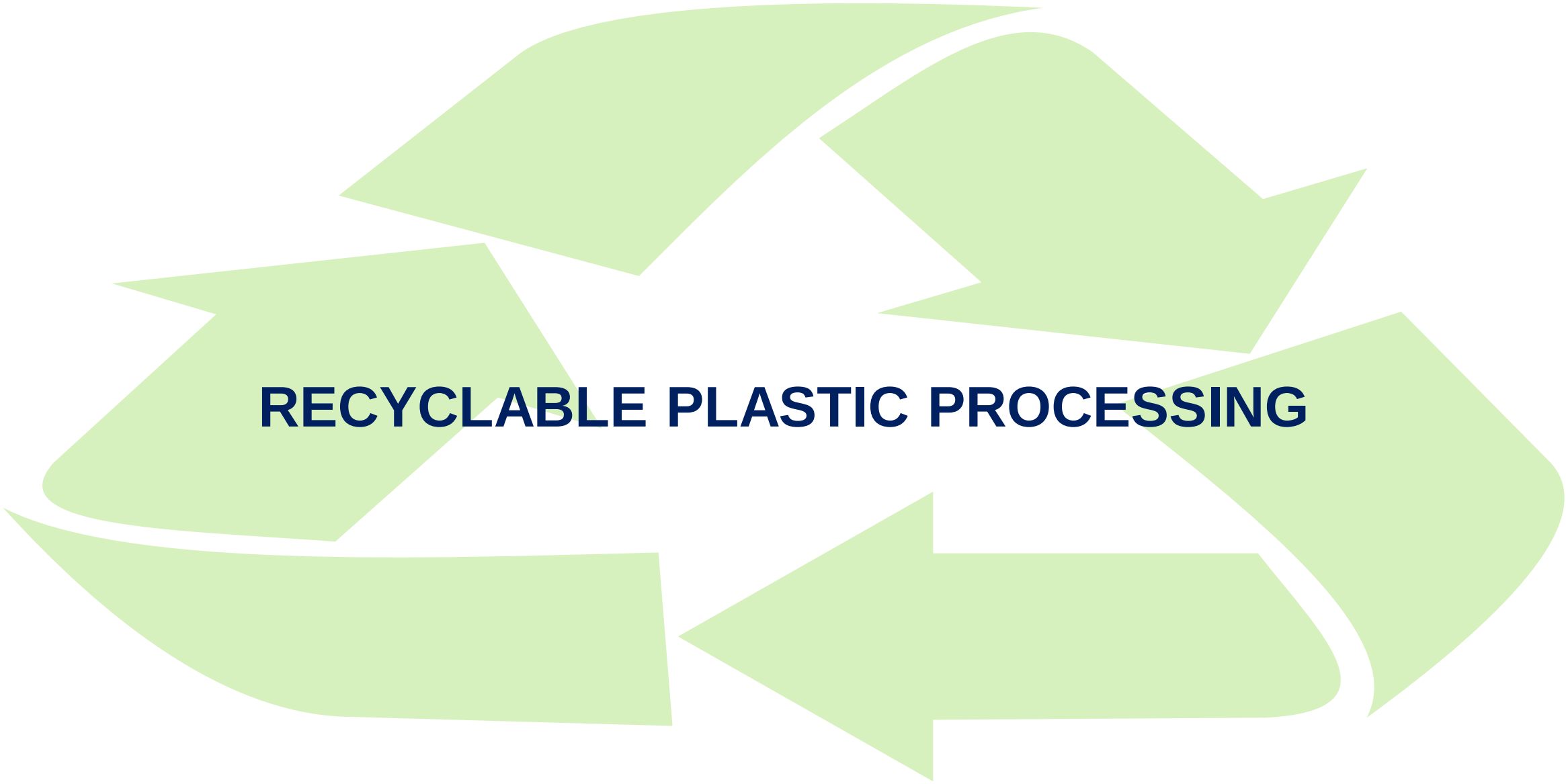
All the facilities in twin chamber incinerators shall be designed to achieve a minimum temperature of 950^{0}C in secondary combustion chamber and with a gas residence time in secondary combustion chamber not less than 2 (two) seconds.

If the concentration of toxic metals in incineration ash exceeds the limits specified in the Hazardous Waste (Management, Handling and Trans boundary Movement) Rules, 2008, as amended from time to time, the ash shall be sent to the hazardous waste treatment, storage and disposal facility

Incineration plants shall be operated (combustion chambers) with such temperature, retention time and turbulence, as to achieve total Organic Carbon (TOC) content in the slag and bottom ash less than 3%, or the loss on ignition is less than 5% of the dry weight.

Only low sulphur fuel like LDO, LSHS, Diesel, bio-mass, coal, LNG, CNG, RDF and bio-gas shall be used as fuel in the incinerator.

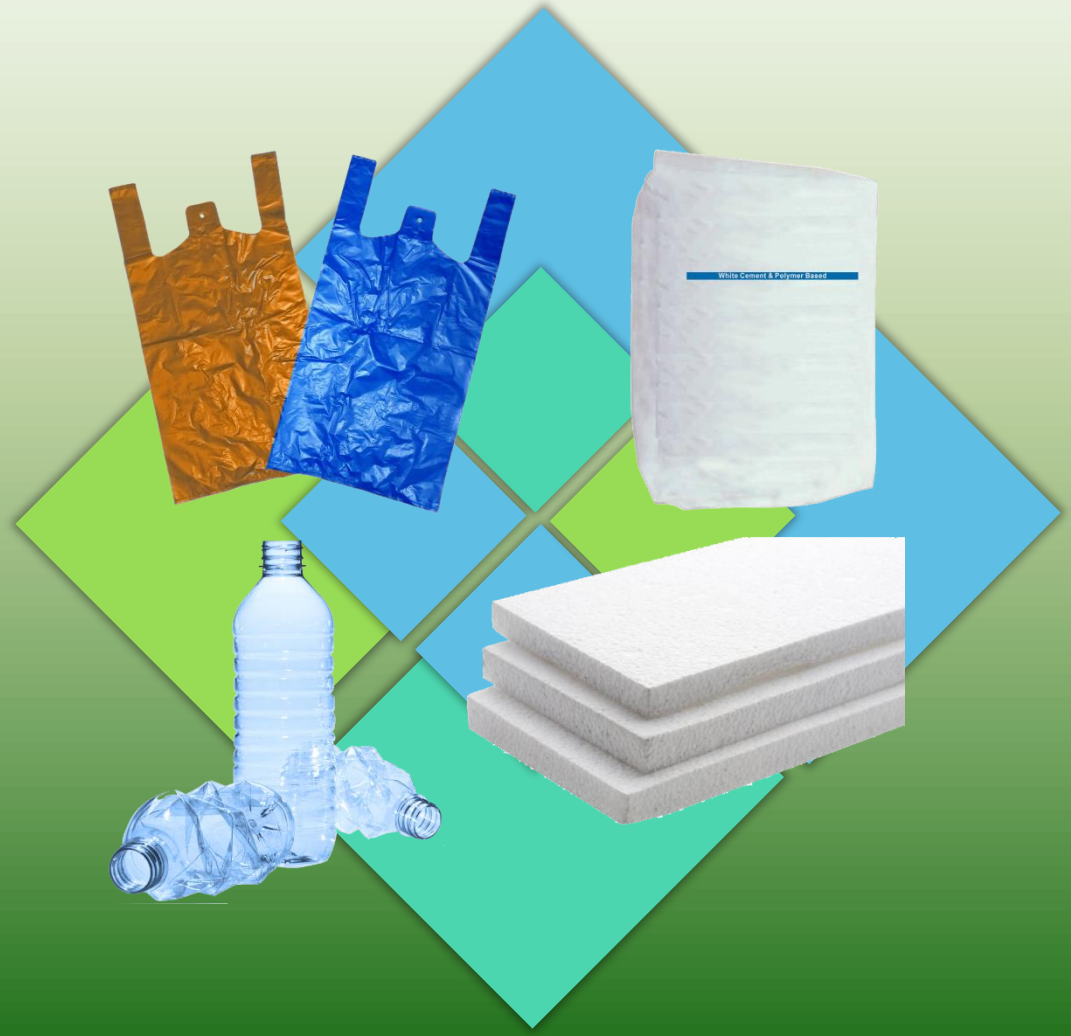
Odour from sites shall be managed as per guidelines of CPCB issued from time to time.



RECYCLABLE PLASTIC PROCESSING

FARMS raw material

- Mixed Bags
- Garbage Bags
- Cement & Grain Bags
- Plastic below 50 Micron OR Carry Bags
- Polyester Packaging
- Thermocol
- Non Recyclable Dry Waste



FARMS Products
Solvent Oil & LDO

The products in the slides are end products of pyrolysis and find use in Generator’s or as fuel in Diesel fired furnaces, as substitute for LDO.

FARMS Products
SYN Gas

The gas generated is mixture of Propane, Propene, Butane, Di-Butane, Methane and other gases with calorific value of approximately 1.5 Kg/m^3 this is reused back in system.

Specification

PROPOSED VALUE ADDED PRODUCT: SOLVENT FROM PYROLYSIS SOLVENT TO BE MADE IN PROPOSED 1000 KLPD REFINARY AND FOR EXPORT:

PETROLEUM SOLVENT AS PER IS 1745									
SR NO	CHARACTERISTICS	SOLVENT 60/80	SOLVENT 50/120	SOLVENT 90/135	SOLVENT 125/240	SOLVENT 145/205 LOW BOILING AROMATIC	SOLVENT 145/205 HIGH BOILING AROMATIC	SOLVENT 150/300	METHOD OF TEST (REF TO IS 1448)
1	COLOR:SAYBOLT(MIN)	+25	+25	+25	+21	+20	+20	------	P:14
2	COLOUR ASTM (MAX)	----------	----------	------	----------	----------	----------	3.5	P:12
3	DENSITY AT 15 ^C gm/ml	NOT LIMITED BUT TO BE REPORTED							P:16
4	FLASH POINT (ABEL)min	----------	----------	----------	30	35	35	35	P:20
5	DISTILLATION RANGE								P:18
	INITIAL BOILING POINT (MIN)	60	50	90	125	145	145	150	
	50% BY VOLUME RECOVERED AT IN ^C	NOT LIMITED BUT TO BE REPORTED							
	95% BY VOLUME RECOVERED AT IN ^C	NOT LIMITED BUT TO BE REPORTED							
	FINAL BOILING POINT (MAX)IN ^C	----------	----------	----------	240	205	205	300	
	DRY POINT (MAX) IN ^C	80	120	135					
6	AROMATIC CONTENT % BY VOLUME	6	35	20	40	40	45	50	P:23 OR P:48
7	SULPHUR TOTAL % BY MASS,(MAX)	0.05	----------	----------	----------	----------	----------	----------	P:34 OR P:83
8	COPPER STRIP CORROSION FOR 3 HOURS AT 50 ^C	NOT WORSE THEN NO 1							P:15
9	RESIDUE ON EVAPORATION mg/100 ml,MAX	5	5	5	5	5	5	----------	P:29 (AIR JET)
	APPLICATIONS			manufacturing varnish, thinner and wood primers. In addition, our range is also used for manufacturing liquid shoe polish and metal pretreatment chemicals.	Adhesive industries Paint and resin industries Thinner industries Agrochemicals, households' insecticides, fungicides industries. Paint catalysts, driers, coating and industries Textiles, cloth, paper, printing processing industries Degreasing and cleaning purpose in machineries, machine spares manufacturing industries As ideal blending oil for industrial, automotive, specialty oil industries At low Viscosity, low density applications At slow drying with good solvency applications	Adhesive industries Paint and resin industries Thinner industries Agrochemicals, households' insecticides and fungicides industries Paint catalysts, driers and coating, industries Textiles, cloth, paper, printing processing industries Degreasing and cleaning purpose in machineries, machine spares manufacturing industries As ideal blending oil for industrial, automotive, specialty oil industries At low Viscosity, low density applications At slow drying with good solvency applications	Agrochemical or Pesticide formulations, Insecticide Formulations, Fungicide Formulations, Paint & Coating Industries, Ink Manufacturing Industries, Fuel additives. Advantages : Low Density (More Economical), Higher evaporation rates, Good Solvent Power		

Specification

GDEPL

Polytest Laboratories
22 Sevam Industrial Estate,
Pirangut, Pune 412 115, India.

Since 1985

POLYTEST LABORATORIES

Test Report
No. 61742-16

SAMPLE DATA

Sample	**Diesel Sample**
Container details	1 no(s) Plastic Can - 2 lit
Collected on	Not Known
Received at lab on	03-May-16 at 15:16 hrs
Testing completed on	13-May-16
Sender	**G. D. Environmental Pvt. Ltd.** Kamla Shankar Industrial Complex, Shed No. A-7, Pirangut, Tal: Mulshi, Dist: Pune - 412 115
Std. Reference	IS:1460 - 2005

TEST DATA

	Test	Unit	Result	Standard Value	Method
1	Inorganic Acidity	mgkOH/g	**0.152**	Not Specified	IS:1448 (Part 2)
2	Total Acidity	mgkOH/g	**0.199**	Not Specified	IS:1448 (Part 2)
3	Ash Content, by mass	%	**<0.01**	<0.01	IS:1448 (Part 4)
4	Carbon Residue (Ramsbottom) on 10% Residue, by weight	%	**0.2**	<0.30	IS:1448 (Part 8)
5	Cetane Index	-	**60**	>51	ASTM D4737
6	Pour Point	°C	**6**	<15 C	IS:1448 (Part 10)
7	Copper Strip Corrosion For 3 hr at 50°C	-	**1a slight tarnish**	<1	IS:1448 (Part 15)
8	Distillation Recovery at 360°C, by volume	%	**90**	>95	IS:1448 (Part 18)
9	Flash Point, by Abel	°C	**48**	>35	IS:1448 (Part 20)
10	Kinematic Viscosity at 40°C	cSt	**2.72**	2.0 to 4.5	IS:1448 (Part 25)
11	Sediments by extraction, by weight	%	**< 0.01**	Not Specified	IS:1448 (Part 30)
12	Density at 15°C	g/cc	**0.816**	820 - 845	IS:1448 (Part 16)
13	Water Content, by weight	mg/kg	**156**	<200	IS:2362

END OF TEST RESULTS

OPINIONS, INTERPRETATIONS & REMARKS

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END OF OPINIONS, INTERPRETATIONS & REMARKS

S.A.Kapadne

Verified by
Analyst

Authorized by
Mrs. S. A. Kapadne
Technical Manager

ISO 9001 | OHSAS 18001 | NABL

Test Report No. 61742-16 1 of 1

Issue no: 02/01-Dec-14 Rev. no: 00/01-Dec-14 Pg. 02 of 2/2

When reliability matters the most

Processing chart

MIXED DRY WASTE

COMPOSITION	30% WET WASTE 65 % RDF 5% PLASTIC WASTE

SO FOR 100 TON WASTE ONLY 5 TON USEABLE PLASTIC OTHER IS ONLY FOR HEAT VALUE

GASSIFICATION

2TON : 1 TON CALORIFIC WASTE + 1 TON PLASTIC WASTE

REST ALL WET AND DRY WASTE USED FOR HEAT GENERATION WITH CURRENT DEMO PLANT.

BYPRODUCTS CAN BE ELECTRICITY ,BRICKS OR GAS,OIL

THERE IS NO UPPER LIMIT ON CAPACITY OF PLANT ,BUT DECENTRALISED PLANTS ARE PREFFERED AND WE CAN MAKE PLANT FROM 500 KG PER DAY WHICH CAN GENERATE HOT WATER,ELECTRICITY ON SOCIETY LEVEL.

FEATURES OF OUR SETUP

GASSIFICATION HEAT WILL BE USED FOR RUNNING PYROLYSIS PLANT.SO NO NEED OF EXTERNAL FUEL.

THE SECONDARY HEAT WILL BE USED TO MELT PLASTIC ,RUN FILTER PLANT AND GENERATE ELECTRICITY.

WE HAVE PATENTED OUR TECHNOLOGY FOR GENERATION OF DROP IN FUEL WHICH AFTER IMPLEMENTATION OF BIOFUEL POLICY CAN BE USED AS SUBSTITUTE TO HSD.

BIG CONCEPT

Bring the attention of all LSGD over a key concept which can be revelution in wastemanagement

THANK YOU