|| Jai Sri Gurudev ||

Sri Adichunchanagiri First Grade College

Channarayapatna

Department of Chemistry

Circular

Date - 02-11-2023

The Department of Chemistry is pleased to announce the opportunity for registered students to participate in a certificate project work on **"Plastic Pipe Production Process."** This project will include an industry visit where students will gain practical insights into the production process. During the visit, industry experts and our faculty will provide demonstrations, enriching your understanding of the subject. To receive the certificate, students must submit a completion report following the visit. This is a valuable opportunity to engage with industry professionals and enhance your academic experience. Please ensure that you are prepared for the visit and actively participate in all scheduled activities.

HOD of Chemistry
SAFG College
Channarayapatna-573116
Hassan Dist

2/11/2023.

Principal
Sri Adichunchanagiri First Grade College
Channarayapatna

|| Jai Sri Gurudev ||

SRI ADICHUNCHANAGIRI FIRST GRADE COLLEGE

CHANNARAYAPATNA-573116

DEPARTMENT OF CHEMISTRY

Plastic Pipe Production Process

Project Details

- **Introduction to Polymer Materials**
- **Industrial Visit**
- **Final Defence**

For registration/ enquiry please contact us at :
9606201568

Exclusively for B.Sc Students of SAFGC

Hurry up Limited Seats

Last date of Registration : 15-10-2024

Certificates will be awarded to individuals who successfully complete the project course.

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SRI ADICHUNCHANAGIRI FIRST GRADE COLLEGE

CHANNARAYAPATNA-573 116

Department of Chemistry

Project Course Protocol and Rules for B.Sc Students

Objective: To provide students with practical experience through field visits and project work, culminating in a comprehensive report and viva voce.

Title of the Project: Plastic Pipe Production Process.

Project Course Structure

1. **Field Visit:**
   - Each student must conduct at least one field visit relevant to their project topic.
   - The field visit should include a demonstration or practical activity at the site.
   - Duration: Minimum of 1 day (can be extended as per project needs).
2. **Report Submission:**
   - Students must prepare a detailed project report based on their field visit and project findings.
   - Report Format:
     - Title Page
     - Introduction
     - Methodology
     - Results and Discussion
     - Conclusion
     - References
   - Submission Deadline: End of the academic year 2023-24
3. **Viva Voce:**
   - A viva voce will be conducted to assess students' understanding and practical knowledge regarding their projects.
   - Each student/group will present their project findings and answer questions from the panel.

Mark Distribution

Component	Marks
Field Visit & Demonstration	20
Project Report Submission	50
Viva Voce	30
Total	**100**

Detailed Guidelines

Field Visit (20 Marks)

- **Planning and Preparation:** (5 Marks)
  - Clear objectives and relevance of the visit.
- **Execution:** (10 Marks)
  - Active participation and demonstration quality.
- **Feedback/Reflection:** (5 Marks)
  - Submit a brief reflection on the experience and learning outcomes.

Project Report Submission (50 Marks)

- **Content Quality:** (20 Marks)
  - Depth of research, data analysis, and relevance to the topic.
- **Structure and Clarity:** (15 Marks)
  - Adherence to the prescribed format, clarity of language, and organization.
- **Originality:** (10 Marks)
  - Plagiarism-free work and creative insights.
- **References:** (5 Marks)
  - Proper citation of sources used.

Viva Voce (30 Marks)

- **Understanding of Project:** (15 Marks)
  - Depth of knowledge regarding the project and its relevance.
- **Presentation Skills:** (10 Marks)
  - Clarity, confidence, and engagement during the presentation.
- **Q&A Session:** (5 Marks)
  - Ability to answer questions effectively and demonstrate critical thinking.

HOD of Chemistry
SAFG College
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Sri Adichunchanagiri First Grade College
Channarayapatna

|| JAI SRI GURUDEV ||



Sri Adichunchanagiri Shikshana Trust (R.)

SRI ADICHUNCHANAGIRI FIRST GRADE COLLEGE

Kuvempu Road, CHANNARAYAPATNA-573116 :: Hassan District

Permanent Affiliated to University of Mysore | Accredited with "B+" Graded by NAAC

Phone : 08176 252266 | Web: www.safgccrpc.org | Email Id: safgccrpc@gmail.com

No. SAFGC/ 168/**2023-24** **Date:** 04/07/2024

To

Mr. Nagarjuna.P.S
Guest Lecturer
Department of Chemistry
Government First Grade College
Channarayapatna - 573116

Sri Adichunchanagiri First Grade College Channarayapatna Est.1979

Subject: Invitation to Serve as Examiner for Project Work Assessment

Dear Dr.Nagarjuna

I hope this message finds you well. I am writing to formally invite you to serve as an examiner for the assessment of project work in Chemistry at our College. The project assessment is scheduled to take place on 10th July 2024 and will involve evaluating the projects entitled "**Plastic Pipe Production Process**" completed by our students. As an examiner, your responsibilities would include reviewing the project submissions, providing constructive feedback, and assessing the quality of the work based on predefined criteria. The assessment process will contribute significantly to the academic development and evaluation of our students.

Your participation as an examiner would be greatly appreciated and would contribute to maintaining the high standards of academic excellence at our institution. Please confirm your availability and willingness to serve as an examiner at your earliest convenience. Thank you very much for considering this invitation. We look forward to your positive response.

Thanking you,

Warm regards

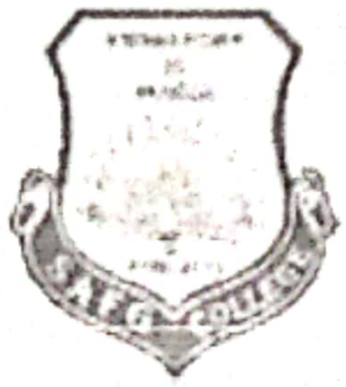
Principal
Sri Adichunchanagiri First Grade College
Channarayapatna

A project report on

Plastic Pipe Production Process

Project completion report submitted to

DEPARTMENT OF CHEMISTRY
SRI ADICHUNCHANAGIRI FIRST GRADE COLLEGE
CHANNARAYAPATNA-573116
KARNATAKA



By
Mr.Suhas.S.L
UUCMS number: U01GF21S0031
VI semester B.Sc; Chemistry & Zoology Combination
Sri Adichunchanagiri First Grade College
Channarayapatna-573116

Principal
Sri Adichunchanagiri First Grade College
Channarayapatna

HOD of Chemistry
SAFG College
Channarayapatna-573116
Hassan Dist

Mr.Suhas S. L
6th SEMESTER (B.Sc CZ)
Sri Adichunchanagiri First Grade College
Channarayapatna-573116
Email: suhassl072002@gmail.com

Declaration

I, **Mr. Suhas S. L.,** 6th Semester Chemistry-Zoology Combination (UUCMS: U01GF21S0031), Sri Adichunchanagiri First Grade College, Channarayapatna-573116, declare that the work embodied in this project report, entitled **"Plastic Pipe Production Process"**, is an original work carried out by me for the fulfillment of the project requirements offered by the Department of Chemistry, Sri Adichunchanagiri First Grade College, Channarayapatna.

Suhas S. L

Date: 10/07/2024

Place: **Channrayapatna**

Dr. B.N.Chandrashekar M.Sc.,Ph.D
Assistant Professor
Sri Adichunchanagiri First Grade College
Channarayapatna-573116
Email:chandrashekarbn1984@gmail.com

Sri Adichunchanagiri First Grade College
Channarayapatna
Est.1979

Certificate

This is to certify that **Mr. Suhas S.L.** (**UUCMS: U01GF21S0031**) has successfully submitted the assigned project work for the award of a Project Completion Certificate. This report represents bonafide and original work carried out by him under my guidance. The project, entitled **"Plastic Pipe Production Process"**, was undertaken as part of the requirements offered by the Department of Chemistry, Sri Adichunchanagiri First Grade College, Channarayapatna, and contributes to fulfilling one of the objectives of Skill India.

Date: 10/07/2024
Place: **Channarayapatna**

(Dr. B. N. Chandrashekar)

HOD of Chemistry
SAFG College
Channarayapatna-573116
Hassan Dist

Acknowledgement

I am pleased to acknowledge the completion of this project report and express my deepest gratitude to those who have contributed significantly to its success.

First and foremost, I extend my sincere thanks to **Dr. M.K. Manjunath**, Principal, for their unwavering support and encouragement throughout the course of this project. Your guidance and leadership have been invaluable.

I am profoundly grateful to **Dr. B.N. Chandrashekar**, Head of the Department of Chemistry, for his insightful feedback and constant support. Your expertise and advice have greatly enhanced the quality of this report.

My heartfelt thanks go to **Dr. N. Shankaresh**, Associate Professor, Department of Chemistry, for his invaluable assistance and constructive suggestions. Your contributions have been instrumental in the completion of this project.

Additionally, I would like to acknowledge **Deepu CN**, Co-founder of Renukamba Pipe Industry, Channarayapatna, for taking the time to describe the production process of polyethylene pipes. Your detailed explanation has been crucial for the practical understanding of this project.

I would also like to express my gratitude to my classmates for their support and collaboration throughout this endeavor. Your encouragement and shared insights have been invaluable in completing this report.

Thank you all for your exceptional support and contributions.

Mr.Suhas.S.L

Contents

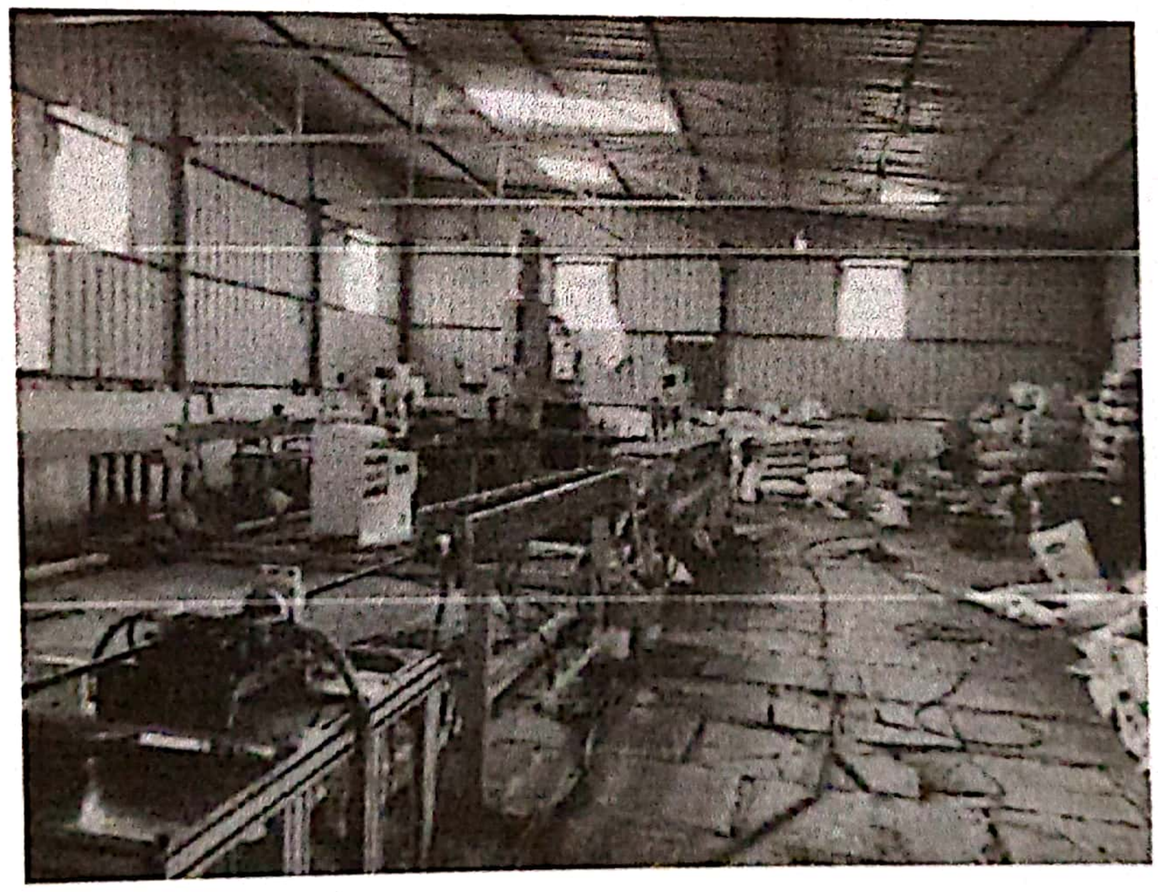
Company Overview

Factory Name : Renukamba Pipe Industry

Established : 2009

Introduction

Sri Renukamba Pipe Industry, located in Channarayapatna, Hassan, is well-regarded for effectively meeting the needs of its customers. Established in 2009, it has become a recognized name in its industry. The factory is situated near Sri Adichunchanagiri First Grade College on Mysore Road, Channarayapatna. The business is dedicated to providing a positive experience through its products and services.



Before entering the pipe manufacturing sector, they focused on the sales of pipes and agricultural equipment. They received training through the PMGP (Prime Minister's Employment Generation Programme) in Hassan. Subsequently, they began manufacturing pipes at a low cost, initially investing 5 lakhs into the business.

INTRODUCTION:

High-density polyethylene (HDPE) pipes have revolutionized the piping industry. Their unique blend of strength, flexibility, and durability has made them the preferred choice for a wide range of applications, from potable water supply and gas distribution to sewage systems and industrial processes. This report delves into the production process of HDPE pipes, exploring the various stages involved in transforming raw materials into reliable and long-lasting pipelines. Polyethylene, one of the most widely used plastics globally, is renowned for its versatility and durability. Its applications range from packaging materials to industrial components, highlighting its essential role in modern manufacturing and daily life [1-2].

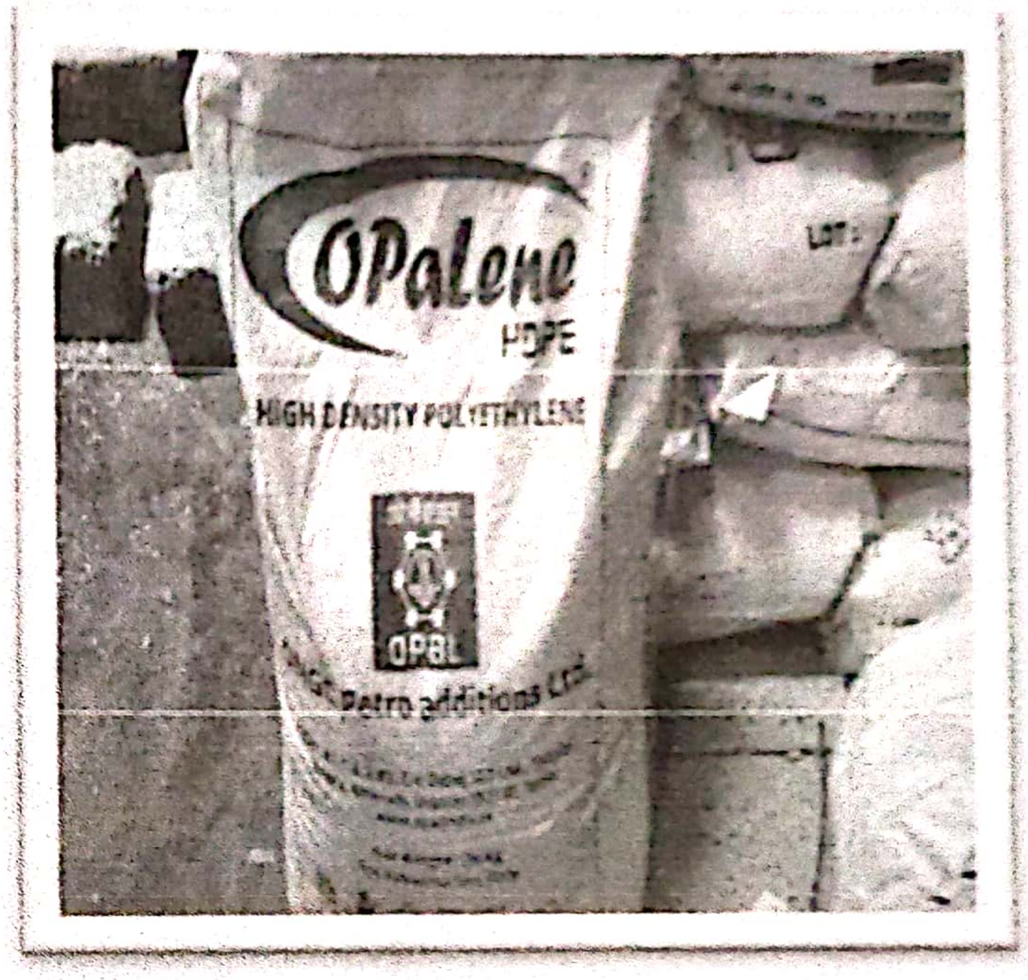
Exploring the advantages of HDPE pipes over traditional materials like metal, including their resistance to corrosion, ease of installation, and environmentally friendly properties, is beneficial for further work. Additionally, the report will provide insights into the different types of HDPE pipes available, catering to specific needs and pressure requirements.

By understanding the production process and the benefits of HDPE pipes, this report equips readers with valuable knowledge for making informed decisions in various industries that rely on safe and efficient piping systems.

Raw Material:-

High-Density Polyethylene (HDPE) as a Raw Material

High-density polyethylene (HDPE) serves as the fundamental building block for the pipes manufactured at this facility [3-4]. Here's a closer look at HDPE's properties that make it an ideal raw material:



- **Strength and Durability:** HDPE boasts a high strength-to-density ratio, meaning it's lightweight yet exceptionally strong. This translates to pipes that can withstand significant pressure and impact.

- **Chemical Resistance:** HDPE exhibits excellent resistance to a wide range of chemicals, including acids, bases, and solvents. This makes it suitable for transporting various liquids without degradation.

- **Low Friction:** The smooth surface of HDPE minimizes friction, leading to efficient flow within the pipes. This is crucial for applications like water transportation and irrigation.

- **Weather Resistance:** HDPE demonstrates exceptional resistance to harsh weather conditions, including UV radiation and extreme temperatures. This allows the pipes to function reliably for extended periods underground or exposed to the elements.

- **Versatility:** HDPE can be formulated with various additives to enhance specific properties, such as flexibility or UV protection. This allows for the creation of pipes tailored for diverse applications.

- **Recyclability:** HDPE is a recyclable plastic [5-6], contributing to sustainable practices. This characteristic aligns with the growing focus on environmental responsibility.

In essence, HDPE provides the foundation for robust, long-lasting, and versatile pipes that cater to a wide range of industrial and infrastructure needs.

Manufacturing Process of HDPE Pipes

The production of HDPE pipes involves a meticulous process that transforms plastic pellets into strong and dependable pipes. This section delves into the various stages involved:

1. Raw Material Storage and Handling:

- HDPE resin arrives at the facility in the form of plastic pellets stored in silos.
- These pellets are transferred to hopper dryers, which eliminate any moisture content that could affect the extrusion process.
- Depending on the desired pipe properties, virgin HDPE, recycled HDPE, or a blend of both might be used. Additives like colorants or UV stabilizers can also be incorporated at this stage.

2. Extrusion Process:

- The dried HDPE pellets are fed into an extruder, a large machine that resembles a giant screw conveyor.
- Inside the extruder, the pellets are subjected to high temperatures and pressure, causing them to melt and become a viscous liquid.
- The molten plastic is forced through a specially designed die, which shapes the molten plastic into the desired pipe profile.
- The die configuration determines the pipe's diameter, wall thickness, and any specific features like grooves or corrugations.

3. Cooling and Calibration:

- Exiting the die, the newly formed hot pipe enters a cooling tank.

- Water or air is used to rapidly cool the pipe down in a controlled manner, typically in stages to prevent warping or deformation.
- Following cooling, the pipe passes through a calibration tank, which ensures it maintains the precise dimensions specified.

4. Cutting and Coiling:

- Once cooled and calibrated, the continuous pipe is cut to the desired lengths using saws or laser cutters.
- Depending on the pipe diameter and application, it might be cut into straight sections or coiled onto reels for efficient storage and transportation.

5. Quality Control Procedures:

- Throughout the manufacturing process, rigorous quality control measures are implemented.
- This includes checking the raw materials, monitoring the extrusion process parameters (temperature, pressure), and inspecting the finished pipes for dimensional accuracy, surface quality, and any potential defects.
- Non-destructive testing methods like ultrasonic testing or X-ray inspection may be employed to ensure the pipe's integrity.

Additional Considerations:

- **Co-extrusion:** This technique involves using multiple extruders to create pipes with distinct layers. For instance, an outer layer with UV protection can be co-extruded with a core layer for added

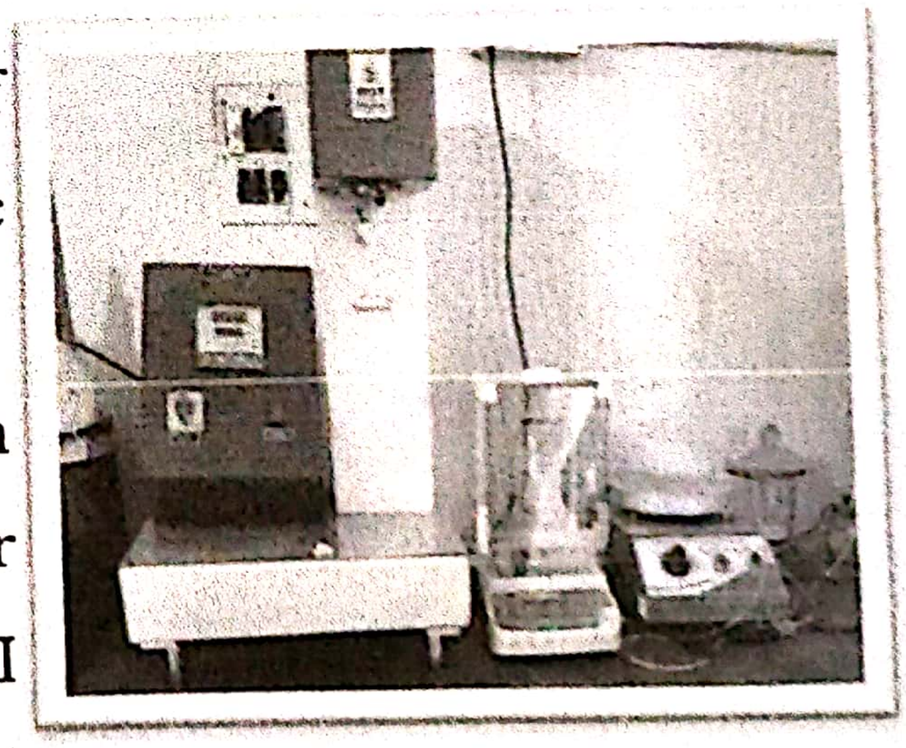
strength.

- **Printing:** The pipes might be printed with markings indicating the size, pressure rating, manufacturer's information, and other relevant details. By following these meticulous steps, manufacturers ensure the production of high-quality HDPE pipes that meet stringent industry standards and are suitable for a variety of applications.

Finished Goods Testing of HDPE Pipes:

The integrity and performance of HDPE pipes heavily rely on a comprehensive testing process conducted on finished goods. Here's a detailed look at how the equipment you mentioned plays a crucial role in ensuring quality:

1.**Melt Flow Index (MFI) Tester:**

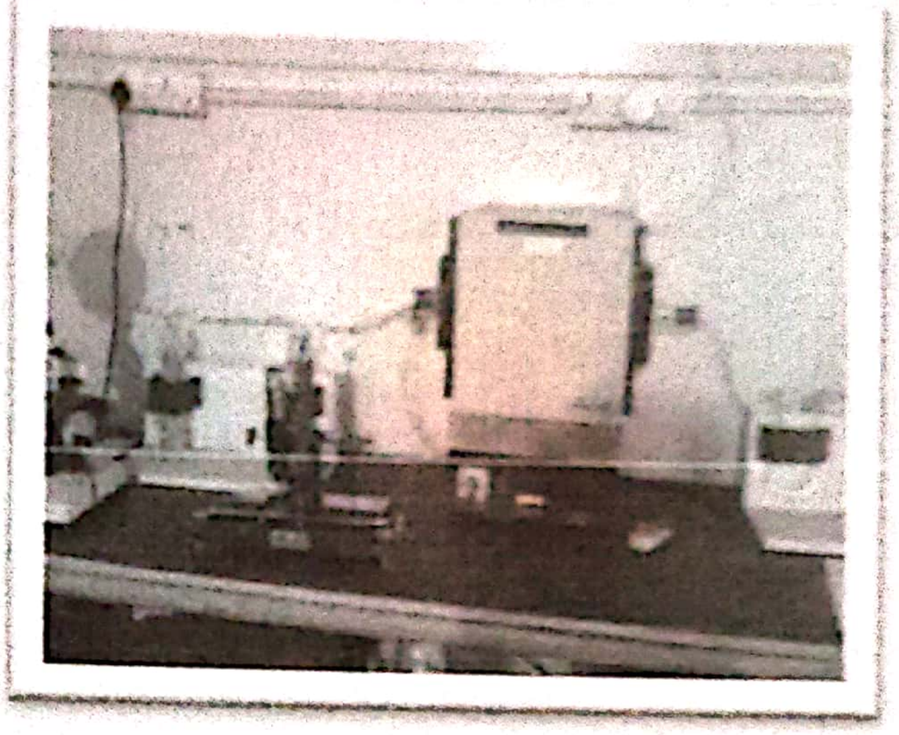


- **Function:** Measures the flow rate of molten HDPE resin at a specific temperature and load.
- **Importance:** MFI provides an indicator of the material's molecular weight and viscosity. A higher MFI suggests a lower molecular weight and faster flow rate, impacting factors like processing efficiency and pipe wall thickness consistency.
- **Testing Procedure:** The MFI tester forces molten HDPE through a standardized orifice at a set temperature and weight. The weight of

material extruded in a given time determines the MFI value.

- **Quality Control:** By comparing MFI values with established standards, manufacturers can ensure the HDPE resin meets the required processing characteristics for consistent pipe quality.

2. Carbon Black Content Tester:

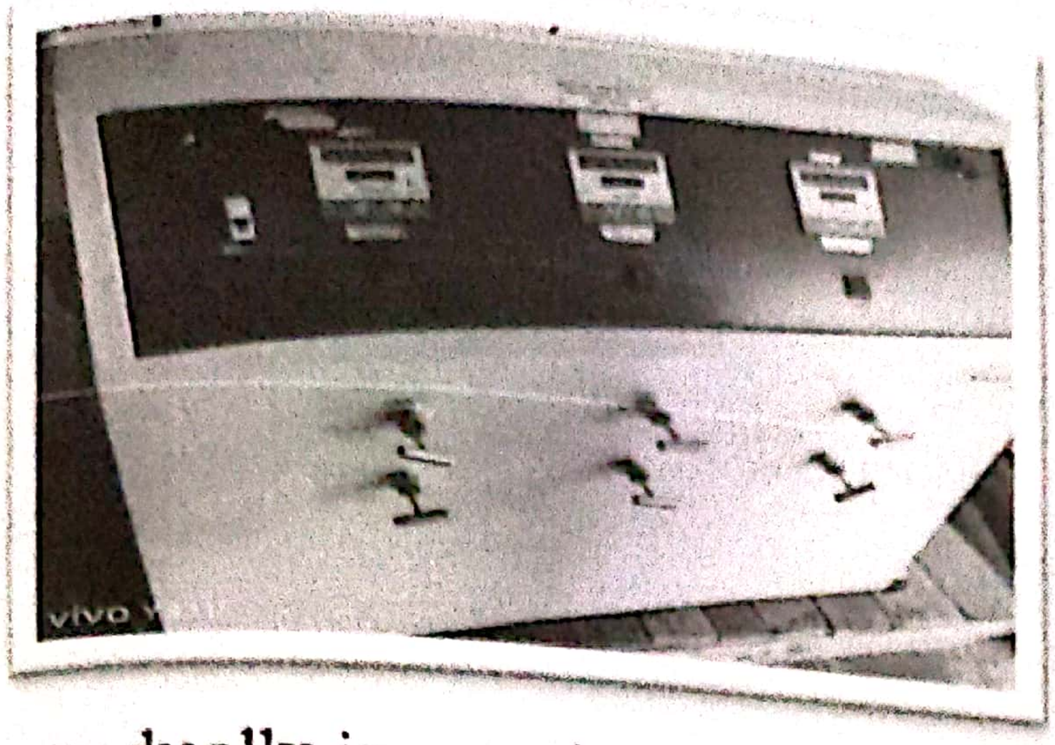


- **Function:** Determines the percentage of carbon black present in the HDPE material.
- **Importance:** Carbon black is often added to HDPE pipes to enhance UV resistance and mechanical strength. The amount of carbon black significantly impacts these properties.
- **Testing Procedure:** Various techniques can be employed, including thermogravimetric analysis (TGA) or combustion analysis. These methods involve heating a sample of the pipe material and measuring the weight loss attributed to carbon black decomposition.
- **Quality Control:** Maintaining the specified carbon black content ensures the pipes possess the desired level of UV protection and mechanical strength for their intended application.

3. Hydraulic Compression Press:

- **Function:** Evaluates the crushing strength and deformation characteristics of HDPE pipes under compressive load.

Importance: This test helps predict the pipe's ability to withstand external pressure from soil, traffic loads, or other

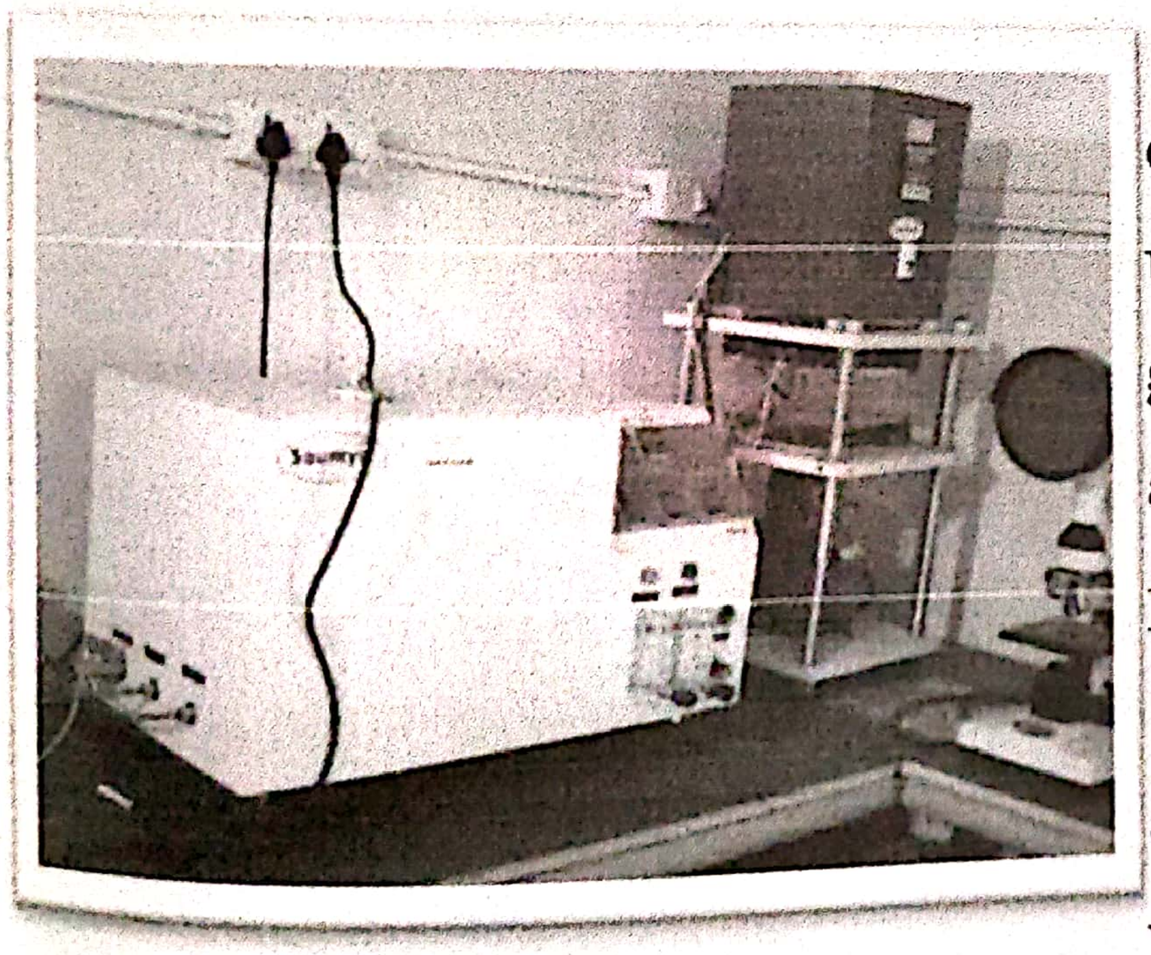


compressive forces during installation and operation.

- **Testing Procedure:** A pipe section is placed between two platens of the press, and a gradually increasing compressive load is applied.
- The force required to cause a specific amount of deflection or complete pipe failure is recorded.
- **Quality Control:** By comparing the results with established standards, manufacturers can ensure the pipes possess adequate crush resistance for their designated application.

Digital Hydrostatic Pressure Testing Machine:

- **Function:** Measures the ability of HDPE pipes to withstand sustained internal pressure.



- **Importance:** This test is crucial for pressure-rated pipes used for water transportation, gas distribution, or other applications involving internal pressure.
- **Testing Procedure:** A pipe section is sealed and filled with water or a pressurized liquid. The pressure is gradually increased until the pipe bursts or reaches a predetermined test pressure. The pressure at failure or the

sustained pressure level is recorded.

- **Quality Control:** Hydrostatic testing ensures the pipes meet the specified pressure rating and can safely handle the intended internal pressure without failure.

4. Universal Testing Machine (UTM):

- **Function:** Evaluates the mechanical properties of HDPE pipes, including tensile strength, elongation at break, and yield strength.

- **Importance:** These properties determine the pipe's ability to withstand pulling forces, impact, and overall structural integrity.
- **Testing Procedure:** A pipe section is gripped by the UTM, and a tensile load is applied at a controlled rate until the pipe breaks or reaches a predetermined strain level. The force and elongation at various points during the test are recorded.
- **Quality Control:** UTM testing ensures the pipes possess the necessary mechanical strength and flexibility for their designated application.

By employing these testing methods, manufacturers can ensure that HDPE pipes meet the required standards for performance, durability, and safety. This comprehensive testing regime fosters confidence in the quality and reliability of HDPE pipes for diverse applications.

Applications of HDPE Pipes: A Versatile Solution

HDPE pipes have revolutionized various industries due to their exceptional combination of strength, flexibility, durability, and cost-

effectiveness. Here's a glimpse into their widespread applications:

Water Infrastructure:

- **Potable Water Distribution:** HDPE pipes are the preferred choice for transporting drinking water due to their non-toxicity, resistance to corrosion, and minimal leaching.
- **Sewerage and Drainage:** HDPE's chemical resistance and smooth surface make it ideal for efficiently conveying wastewater and preventing blockages.
- **Irrigation Systems:** Lightweight and flexible HDPE pipes are perfect for sprinkler and drip irrigation systems, minimizing water loss and maximizing efficiency.

Industrial Applications:

- **Slurry Transportation:** HDPE's abrasion resistance allows it to handle the transportation of abrasive materials like slurries and mining waste.
- **Chemical Transportation:** Many HDPE formulations offer excellent resistance to various chemicals, making them suitable for transporting industrial chemicals and fluids.
- **Industrial Water Systems:** HDPE pipes are used in industrial plants for conveying process water, cooling water, and other non-potable liquids.

Civil Engineering:

- **Underground Utility Ducts:** HDPE's flexibility and durability make it ideal for protecting underground electrical cables, fiber optic cables, and other utilities.
- **Drainage Systems:** HDPE pipes are used for storm water drainage

systems, culverts, and French drains due to their excellent flow characteristics and resistance to corrosion.

Additional Applications:

- **Marine Applications:** HDPE pipes can be used for offshore applications like outfall pipes and saltwater intake lines due to their corrosion resistance and ability to withstand harsh marine environments.
- **Geothermal Systems:** HDPE pipes are used in geothermal energy systems to transport hot water or steam due to their high-temperature tolerance.
- **Recreational Applications:** HDPE pipes are used for piping in swimming pools, water features, and golf course irrigation systems.

The versatility of HDPE pipes extends to a vast array of applications, making them a cornerstone of modern infrastructure development and industrial processes. Their long lifespan, minimal maintenance requirements, and cost-effectiveness further solidify their position as a preferred piping material across numerous sectors.

Environmental Impact of HDPE Pipes: A Two-Sided Coin

The production and use of HDPE pipes present both potential benefits and drawbacks regarding environmental impact [7-8]. Here's a concise overview:

Benefits:

- **Durability:** HDPE pipes boast a long lifespan, typically exceeding 50 years. This translates to fewer replacements and reduced waste generation compared to traditional materials like metal pipes.
- **Leak Reduction:** HDPE pipes have superior leak resistance compared to traditional materials like cast iron or concrete. This minimizes water loss during transportation, a significant environmental concern.
- **Recyclability:** HDPE is a recyclable plastic. Scraps and used pipes can be reprocessed into new products, reducing reliance on virgin materials and promoting a more circular economy.

Drawbacks:

- **Energy Consumption:** The production of HDPE resin requires significant energy consumption. However, advancements in manufacturing technology striving to reduce this footprint.
- **End-of-Life Management:** Improper disposal of HDPE pipes at the end of their lifespan can lead to plastic pollution in landfills or the environment. Proper recycling infrastructure is crucial for maximizing environmental benefits.
- **Potential for Microplastics:** Deterioration of HDPE pipes over time, especially in exposed environments, can release microplastics into the environment. Further research is needed to understand the long-term implications.

Mitigating the Drawbacks:

- **Sustainable Manufacturing Practices:** Manufacturers can adopt energy-efficient processes and utilize recycled content in HDPE production to minimize environmental impact.
- **Responsible End-of-Life Management:** Developing robust recycling programs and promoting responsible waste disposal practices are essential for minimizing plastic pollution.
- **Innovation in Material Science:** Research into biodegradable or bio-based alternatives for HDPE pipes can offer more sustainable solutions in the future [9-10].

In conclusion, while there are environmental considerations associated with HDPE pipes, their benefits in terms of durability, leak reduction, and recyclability make them a compelling choice. By adopting sustainable practices throughout the lifecycle of HDPE pipes, we can maximize their environmental benefits and minimize their drawbacks.

Conclusion

The visit to the HDPE pipe manufacturing facility provided valuable insights into the intricate process of transforming plastic pellets into robust and dependable pipes. The meticulous attention to detail, from raw material selection to rigorous quality control procedures, underscores the commitment to producing high-quality HDPE products.

HDPE pipes offer a compelling solution across various applications due to their strength, durability, and versatility. Their long lifespan, minimal maintenance requirements, and cost-effectiveness make them a preferred choice in infrastructure development, industrial processes, and more. While there are environmental considerations regarding energy consumption and end-of-life management, advancements in manufacturing and responsible waste management practices can ensure a more sustainable future for HDPE pipes.

This field report serves as a valuable resource for understanding the production process, applications, and environmental impact of HDPE pipes. As these pipes continue to play a vital role in modern infrastructure, ongoing research and development efforts can further enhance their sustainability and ensure their continued success for generations to come.

References

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4. Singh, R., & Sharma, V. (2020). Advances in the processing and applications of high-density polyethylene. *Polymer Reviews*, 60(4), 501-525.

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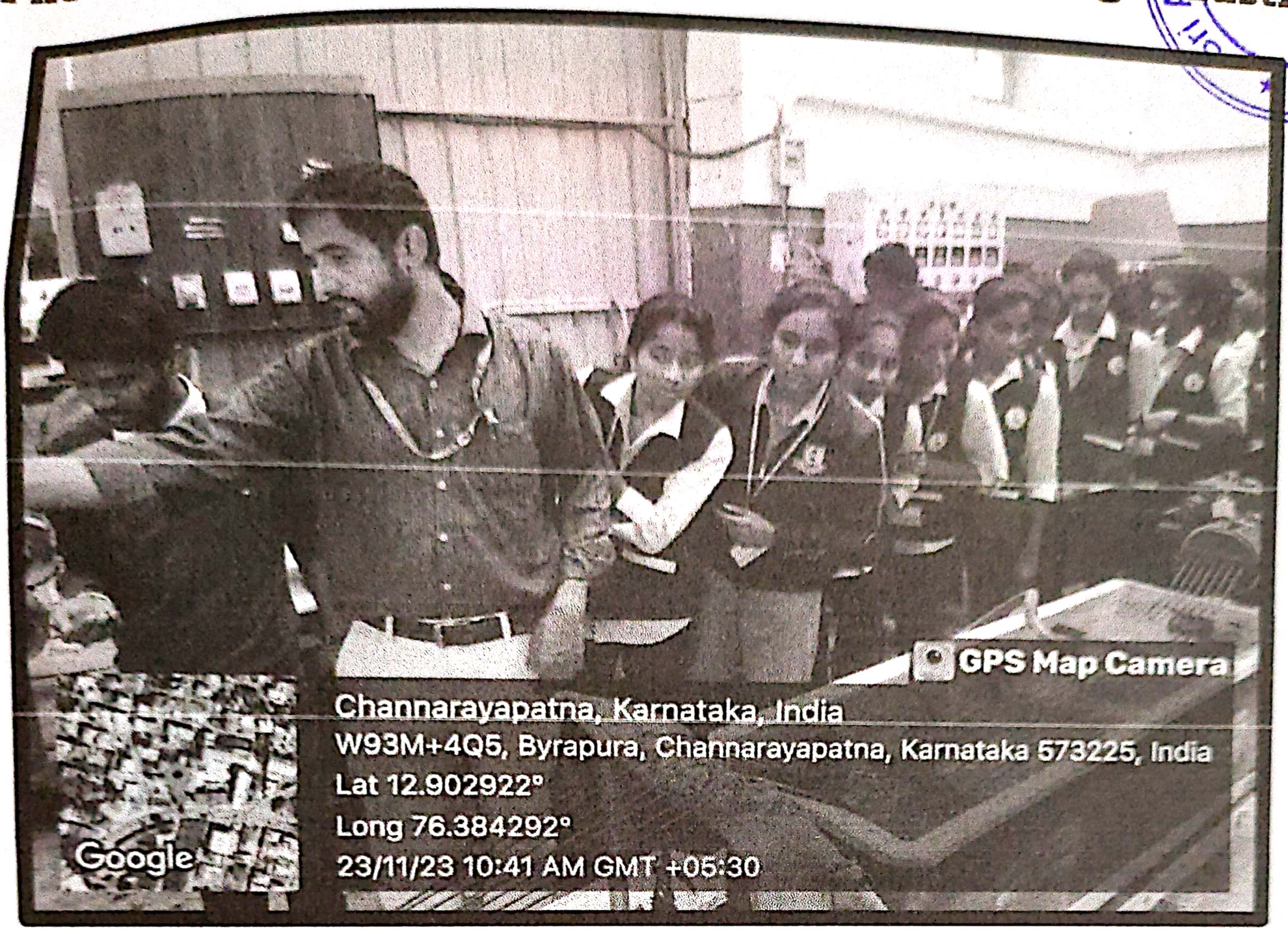
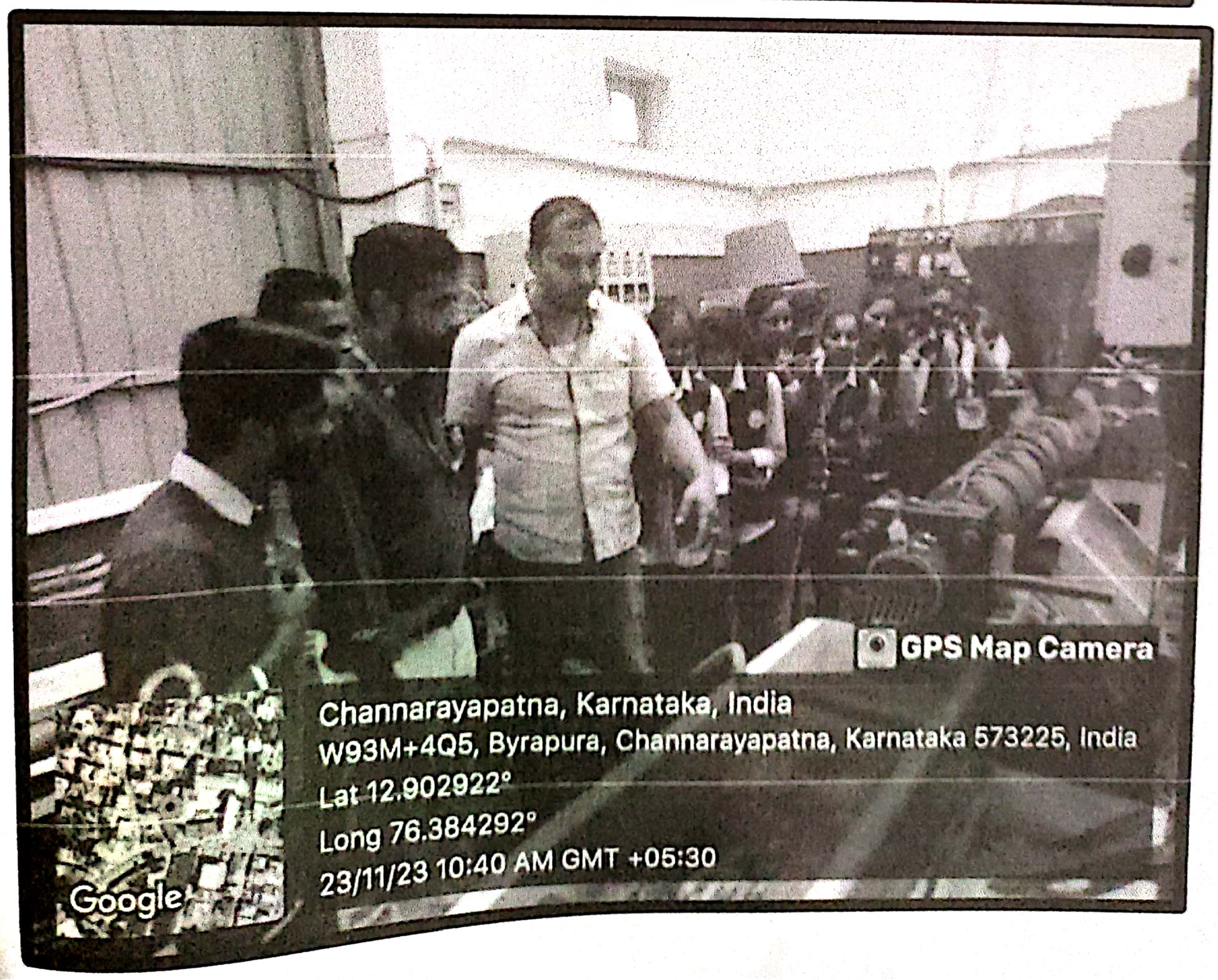
10. Zhu, J., & Wang, S. (2019). Bio-based materials and their applications in pipeline systems: A review. *Resources, Conservation & Recycling*, 146, 75-85.

Photos from the Visit to the Pipe Manufacturing Industry



Photos from the Visit to the Pipe Manufacturing Industry



|| Jai Sri Gurudev ||

Sri Adichunchanagiri First Grade College

Channarayapatna

Department of Chemistry

Attendance Register

Project Evaluation: "Plastic Pipe Production Process"

Date - 10-07-2024

Sl.No	Register Number	Name	Signature
1	U01FW21S0025	SUNITHA K M	SUNitha K.M
2	U01FW21S0042	Hemanth Kumar C M	Hem
3	U01GF21S0001	Sanjay B M	Sanj
4	U01GF21S0002	Shwetha B.S	Shwetha
5	U01GF21S0003	Harshitha D R	Harshitha
6	U01GF21S0005	Bharath Raj K P	Bharath
7	U01GF21S0007	Aishwarya K Y	Aishwa
8	U01GF21S0008	Shwetha B.S	Shwetha B.S
9	U01GF21S0010	Sona B N	Sona BN
10	U01GF21S0013	Suchithra K R	Suchi.
11	U01GF21S0018	Abhilasha C M	Abhilasha.
12	U01GF21S0019	Ruthic Gowda K R	Ruthic Gowda K.R
13	U01GF21S0020	Spandana K K	Spandana K.K
14	U01GF21S0021	Bindu K	Bindu K
15	U01GF21S0022	SPOORTHI C K	Sp
16	U01GF21S0024	Ranjitha C N	Ranjitha
17	U01GF21S0031	Suhas S L	Suhas S.L.

18	U01GF21S0033	Keerthana H S	Keerthana H S
19	U01GF21S0035	KOMAL G K	KOMAL G K
20	U01GF21S0046	Monika H A	Monika HA
21	U01GF21S0048	N.R.Muskan	N.R Muskan
22	U01GF21S0049	Pooja H K	Pooja H.K
23	U01GF21S0050	Swathi M M	Swathi M.M
24	U01GF21S0051	Suma M S	Suma M.S.
25	U01GF21S0054	Jayalakshmi A G	Jayalakshmi A G
26	U01GF21S0055	Keerthi K M	Keerthi. K.M
27	U01GF21S0057	Nisarga M R	nisarga
28	U01GF21S0058	Shreevarsha C S	Shreevarsha
29	U01GF21S0060	Tejaswini K R	Tejaswini K.R
30	U01GF21S0062	Mohanakumari K J	Mohanakumari
31	U01GF21S0064	Nischitha B S	Nischitha
32	U01GF21S0067	Saraswathi C N	Saraswathi.C.N
33	U01GF21S0070	Bindu S N	yeshwanthpura
34	U01GF21S0073	Nikhil D P	nikhil.D.P
35	U01GF21S0076	Kruthik Kumar K P	Kruthik Kumar KP
36	U01GF21S0078	Shambhavi Y S	Shambhavi.YS

Signature of the Examiners: 1) Dr. B. N. Chandrashekar

2)

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Channarayapatna – 573116, Hassan Dist.,

(Affiliated to University of Mysore) (Re-Accredited with 'B+' Grade by NAAC)

Certificate of Project Completion

This is to certify that Ms./Mr...Suhas. S. L.....has satisfactorily completed the project titled "Plastic Pipe Production Process" during the Sixth Semester of the academic year 2023-24, conducted by the Department of Chemistry.

Course Coordinator

IQAC Coordinator

Principal