

# Skill Upgradation Training Programme on 'Plastics Recycling Process and Waste Management'

## Training Schedule

Day	Course Curriculum
<b>1</b>	<p><b>Plastic recycling: Indian context and Global Scenario</b> Understanding global impact of plastic pollution; Statistics on plastic waste generation and its environmental consequences; Solutions &amp; Strategies for Plastic Waste Management; Effective waste segregation and collection methods; Composting options for organic waste.</p>
	<p><b>Polymer Materials, Classification &amp; Applications</b> Introduction to polymers - Natural &amp; synthetic; Terminology of polymers; Classification of polymers – thermoplastics &amp; thermosets, recyclable, compostable &amp; biodegradable; Polymer properties and applications etc.</p>
<b>2</b>	<p><b>Plastics Processing Techniques</b> Introduction to plastics processing; Plastics product manufacturing - Injection &amp; Blow moulding, Extrusion process etc.; Plastics compounding, blends, alloys and composites.</p>
	<p><b>Introduction to Testing &amp; Characterization of Plastics</b> Test standards; Mechanical, electrical, chemical &amp; thermal testing.</p>
<b>3</b>	<p><b>Identification of Plastics</b> Understand various Plastics Materials; Basic plastics identification techniques.</p>
	<p><b>Circular Economy</b> Definition of circular economy; Benefits of circular economy; Circular economy in waste management.</p>
<b>4</b>	<p><b>Plastics Waste &amp; its Sources</b> Introduction to plastics waste; Difference sources of plastics waste; Types of plastics waste; Challenges is plastics waste.</p>
	<p><b>Sorting and Cleaning of Recyclable Plastic Waste</b> Standard method to identify and remove non-plastic contaminants from the mixed plastic waste; Ways to identify the plastic waste material and procedure to separate recyclable plastic materials; Process to operate balers to compress recyclable PET materials into bundles or bales; Importance of maintaining the cleanliness of the die, pelletizer, other auxiliary tools, and work area, as well as following the Do's and Don'ts of the production area; Types of plastic and additives, grades and fillers used in plastic recycling process.</p>
<b>5</b>	<p><b>Plastics Recycling Techniques / Study of Recycling Process</b> Mechanical recycling; Chemical recycling; Biological recycling; Feed stock recycling</p>
	<p><b>Material and Product Development from Plastics Waste</b> Value addition of recyclates - Compounding, Melting and Pelletization Process &amp; its Challenges - development of products from waste plastics</p>
<b>6</b>	<p><b>Plastics Waste Recycling Plant (Sorting &amp; Grinding equipment) - Operation &amp; Working Principles</b> Manual Sorting – Methods and function Automatic sorting - Ballistic separator; Components and its functions</p>

	<p>Film grabber – Different components and its importance Grinder/shredder – Types and function Zig-zag air classifier – Uses and function</p>
	<p><b>Plastics Waste Recycling Plant (Washing, Cleaning &amp; Drying) - Operation &amp; Working Principles</b> Conveyor belt – Metal separator - Wet grinder - Screw conveyor 1- Friction Washer - Floating tank 1 - Screw conveyor 2 - Continuous pressure wash - Floating tank 2 Squeezer &amp; densifier (for films) – Dewatering machine (for rigid plastics)</p>
	<p><b>Plastics Waste Recycling Plant (Extruder) - Operation &amp; Working Principles</b> Conveyor belt – Cutter compactor – Mother Extruder – Baby Extruder – Die face cutter and dryer</p>
7	<p><b>Quality Control &amp; Characterization of Recyclates</b> Necessity of quality control. Evaluation of recyclates through colour, mechanical and thermal performance. Validation of test material through different standards. Practical demonstration of test methods.</p>
	<p><b>Plastic Waste Management Rule and its Guidelines &amp; EPR</b> Introduced guidelines on EPR for plastic packaging. Mandatory guidelines to achieve set targets for EPR, recycling of plastic packaging waste, reuse of rigid plastic packaging, and the use of recycled plastic content. Responsibilities of local bodies, gram panchayats, waste generators, retailers and street vendors to manage plastic waste.</p>
8	<p><b>Municipal Solid Waste (MSW) Handling and Challenges</b> Type of wastes on basis of its source- Municipal solid waste characterization in India- Physical &amp; Chemical characteristics of MSW- Future projections of MSW generation in India- Gap analysis of MSW- Waste quantification- Measurement of quantity of transported waste- Impact of municipal solid waste on environmental and human health- Greenhouse gas emissions from solid waste sector- Rules and regulations of MSW management in India- Methods/technologies for MSW management in India- Integrated solid waste management system (ISWM)- Potential challenges and opportunities of municipal solid waste organic management.</p>
	<p><b>Safety Concepts and Practice</b> Basic components &amp; working of the machines; Comprehend the basic knowledge of Safety procedures (firefighting, first aid) within the organization; Comprehend the personal hygiene and importance of safe and clean working environment</p>
9	<p><b>Waste to Energy (Battery Recycling, Pyrolysis)</b> Energy recovery from plastic waste. Co-processing methods and utilization Plastic Waste in Cement Kilns. Energy content of plastics. Waste disposal methods. Energy generation from pyrolysis methods. Constituents in battery. Battery recycling.</p>
	<p><b>E-Waste Recycling</b> Introduction to E-waste, Constituents of E-waste, Classification of E-waste, Environmental effect of E-waste, Effect &amp; Control Measures, E-waste Management and handling rules, E-waste processing and disposal, Technologies for recovery of resources from E-waste.</p>
10	<p><b>Discussion &amp; Valedictory Function</b> Discussion on the Topics Covered, Feedback Collection &amp; Certificate Distribution</p>

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