Leveraging Bale Specs as a Parameter for Defining Recyclability

Speakers
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Transitioning toward a circular economy with molecular recycling

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A materials innovation company

• Celebrating more than **100 years of vital innovations** that enhance people’s lives every day.
• A Fortune 500 company with approximately **14,500 employees and approximately 8.5 billion USD** in revenue
• Dedicated to **enhancing the quality of life in a material way**
• Sustainability strategy commitment to **mitigating climate change, mainstreaming circularity** and **caring for people and society**
MECHANICAL AND MOLECULAR RECYCLING

MECHANICAL RECYCLING

PET BOTTLE → CHOPPED-UP BOTTLE → REMELTED INTO NEW APPLICATIONS → LANDFILL

PRODUCT DEGRades WITH EACH CYCLE

MOLECULAR RECYCLING

MIXED WASTE PLASTIC → BROKEN DOWN TO MOLECULAR LEVEL → MADE INTO NEW PRODUCTS USING EXISTING PROCESSES

INFINITE CYCLES

Extends useful life of material but eventually must be downcycled or landfilled

Equal or better end-use applications
EASTMAN’S ADVANCED CIRCULAR RECYCLING TECHNOLOGIES

Carbon renewal technology (CRT)

MIXED PLASTIC WASTE

REFORMING (NOW)

MOLECULES

CO, H₂ (syngas)

Cellulosic Plastics, Textile Fibers & Acetyl Chemicals (20-100% recycle content)

20-50% LOWER GHG (syngas)
EASTMAN’S ADVANCED CIRCULAR RECYCLING TECHNOLOGIES

Carbon renewal technology (CRT)
- MIXED PLASTIC WASTE
  - REFORMING (NOW)
  - CO, H₂ (syngas)
  - Cellulosic Plastics, Textile Fibers & Acetyl Chemicals (20-100% recycle content)
  - 20-50% LOWER GHG (syngas)

Polyester renewal technology (PRT)
- PET PLASTIC WASTE
  - GLYCOLYSIS (NOW)
  - METHANOLYSIS (2023)
  - recycled DMT, recycled EG
  - Copolyesters, Specialty Plastics, & Plasticizers (30-100% recycle content)
  - 20-80% LOWER GHG (rDMT, rEG)
Eastman Advanced Circular Recycling Technologies: carbon renewal & polyester renewal will process over

250 million pounds of waste annually by 2025 and 500 million pounds by 2030

Eastman.com/circular
Collect More

Sort Better

Recycle More

Collect More

Sort Better

Recycle More
Chemical companies make materials/plastics used to make stuff

These materials/plastics are made mostly from carbon, hydrogen, and oxygen.
Advanced or Chemical or Molecular Recycling

These materials/plastics are made mostly from carbon (C), hydrogen (H), and oxygen (O).
Robin Wiener
President
Institute of Scrap Recycling Industries
(ISRI)
The Role of Bale Specs as a Parameter for Defining Recyclability

AMERIPEN Webinar
March 2, 2021

Robin Wiener
President
Institute of Scrap Recycling Industries, Inc.
ISRI’s Mission is to promote safe, economically sustainable & environmentally responsible recycling through networking, advocacy & education.
Recycling Industry Snapshot

Internationally recognized guidelines used by buyers and sellers of recycled materials and products

• Form the common language used globally for transactions of these materials/products for purposes of recycling
• Applicable across commodities, sources, and end markets
• In 2017, added inbound specs for curbside recyclables (single and dual stream)

Contain—

• 100s of “grades”
• Preamble language for each commodity with specific terms defined

www.isri.org/recycling-commodities-old/scrap-specifications-circular
• Initially published in 1919, have become the universal language for recyclable buyers and sellers in domestic and international trades.

• A means to promote consistency & quality in the buying & selling of recyclable commodities.

• Terminology and standards within specs provide a common language for global recycling communities so spoken language is not a barrier.

• Updated continuously to reflect technology innovations, changing markets, new consumer demands

• All proposed changes, additions and modifications go through a standard open and transparent process
Open & Transparent Process for Modification/Additions

Members/non-members submit request to rwiener@isri.org

Commodity Division or Council

ISRI Board of Directors

Not Approved

Board Approval Effective 30 Days After Passage

Specification Subcommittee

Public Notice

Returns to Division or Council for further revision and review

Approved request is sent to ISRI Board for final approval.

Returns for division/council approval

Approve/reject request

Public notices for comments and to announce approval.
Uses of Specifications (intended & unintended)

**Intended Use: Commercial transactions & therefore voluntary**
- Deviations from a listed specification must be agreed upon, in writing, between the parties
- Must comply with all national/international regulations

**Assist in distinguishing between what is a recyclable commodity and what is waste**
- Customs clearance (e.g., in India)
- Factor in distinguishing sham recycling from legitimate recycling (EPA)

**Tool for helping one to define recyclability**
- The Recycling Partnership’s Pathway to Circularity Recyclability Framework
- ISRI’s own Recyclability Protocol
- Stina’s Circularity in Action Platform

**Important Distinctions:**
- Voluntary as maintained by ISRI
- Applies to recycling only (vs other sustainable options such as waste to energy)
Definition Passed by ISRI Board on July 19, 2019:

Recycling is the series of activities during which obsolete, previously used, off-specification, surplus, or incidentally produced materials are processed into specification-grade commodities, and consumed as raw-material feedstock, in lieu of virgin materials, in the manufacture of new products. The series of activities that make up recycling may include collection, processing, and/or brokering, and shall result in subsequent consumption by a materials manufacturer.

A “Recyclable” material is an obsolete, previously used, off-specification, surplus, or incidentally produced material for processing into a specification-grade commodity for which a market exists.

Recycled Material is material that was initially obsolete, previously used, off-specification, surplus, or incidentally produced and that has been processed into a specification-grade commodity for use in materials manufacturing.

Processing is any mechanical, manual, or other method that transforms a recyclable material into a specification-grade commodity. Processing is often multi-step, with different steps at different locations.

Materials Recovery Facility (MRF) is a recycling facility where primarily residential recyclables, diverted from disposal by the generator and which are collected separately from municipal solid waste are mechanically and/or manually sorted into commodities for further processing into specification-grade commodities and/or sale to end users. A solid waste management facility which may process municipal solid waste to remove recyclable materials is not a Materials Recovery Facility.
Thank you!

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Q&A

Please use the chat button on the bottom of your Zoom screen, or take yourself off mute to submit questions for our speakers.

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