

Scrap Tire Recycling Update

May 6, 2025

New Jersey Waste Wise Webinar

Presenter

Mary B. Sikora



Tire Recycling Markets & Trends

- Nearly 300 million end-of-life tires (ELTs) generated annually in the U.S. (2023)
- 79 percent of ELTs reclaimed or recycled –up from 71 Percent in 2021
- This reflects a 10.5% increase in overall utilization, reinforcing that end-of-life tires remain one of the most recycled and reclaimed consumer products, outpacing materials like metal, glass, aluminum, plastic, and paper.
- Challenges remain. Markets haven't kept pace with annual generation

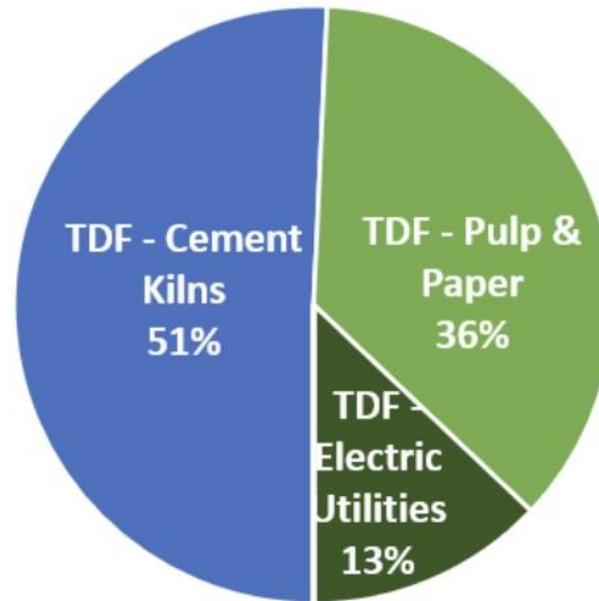
A Look At The Markets

Tire Derived Fuel

- Tire Derived Fuel (TDF) is the largest reclaim and recycle market for ELTS
- 33 percent of ELTs are shredded and used as an alternative to coal or other materials in cement kilns and boilers.
- 84 million ELTs used as tire-derived-fuel:
 - Cement kilns: 43 million
 - Pulp & paper mills: 31 million
 - Electric utilities :11 million



U.S. Tire Derived Fuel Markets 2023



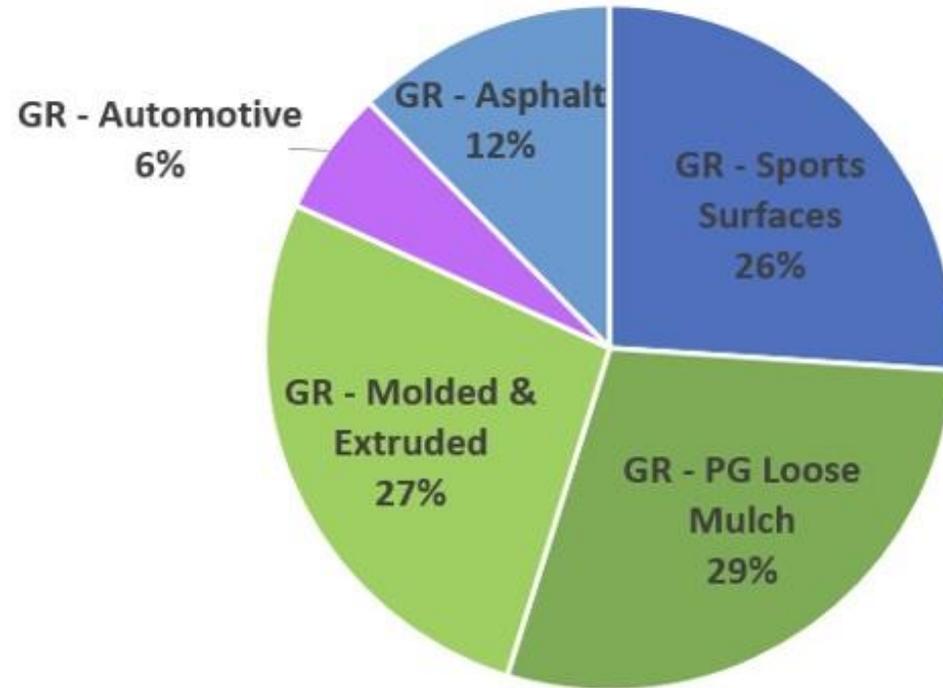
A Look At The Markets

Ground Rubber/Crumb Rubber

- Ground rubber, also called crumb rubber, has become the second largest market for end-of-life tires.
- Ground rubber markets consumed 28 percent of ELTs in 2023
- Mulch consumed 29 percent of ELTs. Largest users: playground surfacing and landscape applications
- Molded and extruded products consumed 27 percent. Mats, flooring, sign bases, highway safety products largest users.
- Sport surfacing consumed 26 percent.
- Asphalt Rubber consumed 12 percent
- Automotive uses consumed 6 percent



U.S. Ground Rubber Markets 2023



A Look At The Markets

Rubber Modified Asphalt (RMA)

- Ground tire rubber (GTR) is a key component in RMA
- RMA markets consumed 12 million ELTs in 2023
- Not new. RMA has been used in U.S. since 1960s
- RMA has seen a resurgence in U.S. in last ten years
- Years of testing, modifying and refining processes driving interest and acceptance
- 21 states have specification for RMA
- Industry trend/goal: expand the use of RMA

A Look At The Markets

Big News: RMA Expanding The Use

- State of Knowledge Report on Rubber Modified Asphalt

Up-to-date review of RMA, including historical development and use, production methods, field performance, economics, safety, driver comfort, environmental impact, and sustainability benefits, knowledge gaps, future research and investment.

- Collaboration between University of Missouri Researchers, U.S. Tire Manufacturers Association (USTMA), The Ray, a philanthropic organization dedicated to the discovery and implementation of sustainable transportation technologies.



A Look At The Markets

Big News: RMA: Expanding The Use

- Recent federal infrastructure stimulus – more opportunities exist to expand the use of RMA in the U.S. than ever before
- U.S. tire manufacturing, retailing and recycling industries jointly submitted a funding proposal to U.S. EPA through the Tire Recycling Foundation and were awarded a \$ 3.8 million grant which will provide the essential data needed to significantly accelerate the adoption of GTR into the asphalt paving industry including:
 - independent assessment of rubber asphalt field data verifying the performance and economic benefits of pavement modification
 - collection of ground tire rubber production (EPD) data necessary for GTR integration into the national asphalt industry supply chain.



A Look At The Markets Tire Derived Aggregate (TDA)

- 56 million tires or 19.4 percent of annual ELT generation being used in TDA or civil engineering applications
- Traditional uses include retaining walls, bridge abutments, vibration mitigation, foundation backfill, and stormwater management.
- New and ongoing research and testing advancing use of TDA in stormwater management.

Captures potentially harmful roadway runoff including micro-plastics and heavy metals

- Expanding TDA use: State of Knowledge Report on Tire Derived Aggregate expected later this year.



A Look At The Markets

Exports

- Record growth in export of scrap tires and tire-derived material
- USTMA reports ELT exports have almost tripled since 2021. 14 million U.S. end-of-life tires exported in 2023 representing a 189.4 percent increase from 2021 to 2023.
- California, which traditionally has been the largest exporter of tire derived material. In 2023 exported tire derived material (TDM) increased by 183.7 percent totaling 10 million ELTs or 18.4 percent of all tires managed in the state in 2023.
- California saw its most dramatic increase in the export of TDF by 111,721 tons or a 270 percent increase over 2022.

A Look At The Market Exports

- More processors in more states baling tires/tire derived material for export
- TDF exports going to established regulated markets Japan and South Korea
- Growing majority of exports (shreds, baled tires) going to India, Malaysia. Unregulated markets causing concern
- Global concern. BBC expose documents problems. UK government now looking into ELT exports

A Look At The Markets

Sustainability and Circularity

- Tire manufacturers are increasingly incorporating sustainable and recycled materials in tires by using recycled rubber, recycled plastic, and other bio-based materials
- Developing/supporting new technologies like pyrolysis and devulcanization for material recovery.
- Example : Bridgestone, Continental have introduced tires with 70 percent recycled content. Michelin working on 85 percent recycled materials tire



A Look At The Markets

Good News: Crumb Rubber

- Two major long-awaited reports find crumb rubber poses no significant health risks to players, coaches, referees or spectators
- In April 2024, the Federal Research Action Plan on Recycle Tire Crumb Used on Playing Fields and Playgrounds found no significant difference in exposure to certain chemicals, metals or air emissions from playing on fields with crumb rubber infill.
- In April 2025, CalEPA Office of Environmental Health Hazard Assessment (OEHHA) its study which found no significant health risks from crumb rubber in synthetic turf fields.



Building Markets/ Advancing Tire Recycling More Good News

- Tire Recycling Foundation
- In May 2024 the U.S. Tire Manufacturers Association (USTMA) and the Tire Industry Association (TIA) announced the formation of The Tire Recycling Foundation (TRF)
- Goal: to recycle 100 percent of end-of-life tires into circular, sustainable markets.
- Initiative to secure funding, allocate grants for research, education, intervention, and demonstration projects to advance tire recycling
- consists of 15 industry leaders in tire manufacturing, recycling, and transportation, including Bridgestone, Goodyear, and Michelin.

A Fun Look At Expanding The Markets Into Recycling: Scrap Tires

- Check out the latest Into the Outdoors video, Into Recycling:Scrap Tires an educational video designed for viewers of all ages that highlights scrap tire recycling successes in Michigan and across the United States.
- Into Recycling:Scrap Tires sponsors Colorado Department Public Health and Environment (CDPHE), Michigan Department Energy Environment & Great Lakes (EGLE), and TDA Manufacturing, Inc.
- Total views from all sources to date are 1,251,325 and Total Media impressions number 4,139,693 (YouTube). PBS view data will be available later this year.
- Link: <https://youtu.be/p2zqvqqNVY4>

A Fun Look At Expanding The Markets Into Recycling:Scrap Tires

