Scrap Tire NEWS

Vol. 35 No. 10 *Covering News & Developments in Tire and Rubber Recycling* October 2021

Molded recycled tire rubber ramps allow a car to drive up onto Carousel USA's surface mount turntable and give it a finished look.

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Nebraska Scrap Tire Business Back in Compliance

A stockpile of scrap tires that had grown to more than twice the size allowed under state environmental rules in Alvo, Nebraska now appears to be in compliance with the regulations.

The Nebraska Department of Environment and Energy said an inspection report released last month found that B-Rose Tire Recycling had made significant progress in coming into compliance with a Sept. 1 deadline to bring its inventory below 160,000 passenger tire equivalents.

The report also said that B-Rose had made "a good faith effort" in working toward compliance with a directive by the State Fire Marshal's Office to create fire lanes for emergency vehicles between the tire piles and at the borders of the property.

A spokeswoman for the State Fire Marshal's Office said the office had not yet conducted an inspection to determine whether the recycling operation was in compliance.

The State Department of Environment and Energy said the agency will continue to monitor the B-Rose operation to ensure it remains in compliance with state rules.

In April 2021, the business signed a consent agreement with state regulators to drastically reduce its pile of shredded tires or face fines or other sanctions. ◆

Ramped Up Turntables

Carousel USA's out-of-the-box thinking combined with CalRecycle's technical and testing support has created a new high value use for recycled tire rubber in the vehicle turntable and rotating platform market.

Carousel USA's primary business is manufacturing vehicle turntables. Starting with residential turntables in 2004, the Fontana, California company is a full-service turntable company designing, engineering and installing heavy-duty commercial and residential turnabout systems.

Recently the company took a new turn, becoming a tire-derived product (TDP) manufacturer with the addition of tire-derived rubber ramps for its vehicle turntables.

In a presentation during an August webinar in the 2021

Recycled rubber ramps helped Carousel's surface mount turntables expand in the popular vehicle photography market.

Turntables *continued on page 10...*

NCAT's Test Track Priorities in 2021

Recycled materials focus of current research

The NCAT Test Track is a national research proving ground for asphalt pavements located at the National Center for Asphalt Technology (NCAT) at Auburn University in Alabama.

The test track itself is a 1.7 mile oval with experimental sections sponsored by highway agencies and the transportation industry. It's the only high-speed, full-scale accelerated pavement testing facility in the world, NCAT said.

Highway agencies and industry sponsors fund research on the 1.7 mile oval in 200-foot sections.

NCAT, in partnership with the Minnesota Department of Transportation's MnRoad facility, focuses on pavement preservation and validation of cracking tests—two issues with national importance that impact each agency.

NCAT *continued on page 8...*

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On The Cover: Carousel USA, Fontana, California manufactures recycled tire rubber ramps for surface mount turntables using an in-house recipe and manufacturing method. **Photo Credit:** Carousel USA

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Atlantic P&I Adds New Board Member

Highly respected entrepreneur and recognized leader in charitable organizations, Thomas F. Alfredo has been appointed to Atlantic Power and Infrastructure' s (API) corporate Board of Directors.

Alfredo, owner of Alfredo LDC., a New York based Design/Build and Landscaping firm was introduced to API"s subsidiary KBI's Flexi®-Pave flexible porous paving in 2006. Recognizing the benefits that Flexi®-Pave offers engineering, construction and landscaping professionals, he began including Flexi®-Pave in many of his projects.

An accomplished landscape designer, Alfredo has received multiple landscape awards from industry associations in New England. Over the years he has been invited to sit on numerous boards, including the New York State Turf and Landscape Board.

"The introduction of Flexi®-Pave was a major benefit to my clients, not only did my clients benefit, but the environment also benefitted and personally our corporation became one of the most sought-after corporations in the industry," Alfredo said. " We've developed a strong bond with Kevin Bagnall API's CEO and welcome the opportunity to be a part of the extraordinary growth we jointly envision for API."

The markets for all the technologies under the API umbrella are exactly what this generation is seeking, he said. " I'm truly honored and excited to be a part of this exciting organization."

Alfredo also contributes his time as Chair of the National Adoption Foundation, that, through his involvement, has raised over $4 Million in loans and grants. In addition, he serves as a member of the board of Colletteys Cookies, a 'Down Syndrome' female owned organization (https://colletteys.com).

"With his knowledge, experience and drive Tommy will be a major asset for many years to come. We are honored to welcome him to our Board," Kevin Bagnall said. ◆

Repeat Performance For CM Tire Shredder in Virginia

CM's new high capacity shredder keeps SPSA on top of its daily tire flow.

On Broadway you know a show has met expectations when a repeat performance is called for.

That was the case when Sarasota, Florida-based CM shredders installed a new state-of-the-art, high-capacity automated tire shredding system for the Southeastern Public Service Authority (SPSA) in Suffolk, Virginia.

SPSA, the regional solid waste collection and disposal agency, has seen the inbound tire flow double and the percentage of truck tires increase significantly in the last four year, SPSA Deputy Executive Director Dennis Bagley, said.

The Authority's previous tire shredder, also a CM Tire Shredder, reliably operated for nearly 20 years. Last year, SPSA's management team decided to replace the original shredder and issued an Invitation for Bid. SPSA awarded the tire shredder replacement contract to CM Shredders.

The new high capacity tire shredding system can process passenger car, semi-truck, and light OTR (off-the-road) tires.

It features CM's new HT 250 (high torque) Hybrid Primary Shredder with a high-volume automatic infeed system. During the runoff test the system processed more than 30 tons per hour, CM Shredders Sales & Marketing Director Mario Vazquez, said.

"This CM shredder is the right shredder for the job," SPSA's Dennis Bagley said.

A custom programmed array of cameras and advanced sensors allow the machine to self-meter at high volumes. The machine keeps an optimal speed and capacity on its own, Vazquez said. Operators can view the live camera feeds remotely. Based on CM Shredders advanced electrical controls, the system provides a torque limiting function that can instantaneously detect and respond to an extreme impact, Vazquez said.

"I've dealt with machinery all my life, and this is the most impressive piece of equipment I've ever been a part of purchasing," SPSA's Bagley said."The new machine can shred and process four times as many tires as the old shredder, and the old shredder was no slouch. Every scrap of rubber will be recycled - mainly used for TDA or at the landfill," he said. ◆

Shoes For Sustainability

Seoul, Korea-based Hankook Tire and YASE leather shoe company recently embarked on a 'zero - leave nothing behind' project with commitment to sustainable material and environmental protection.

As part of its commitment to sustainability and environmental protection, Hankook chose footwear as collaboration item noting that both tires and shoes share common traits of playing a crucial role in mobility and touching the ground on a daily basis. They also protect people from possible dangers on the road with durability and stability.

YASE Derby dress shoe with recycled rubber outsole.

Not only the shoes themselves but also packaging is designed with sustainability initiative as well. Shoe box, tags and pamphlets are made of 100 percent sugarcane material. Hankook expects this will resonate with customers who are early adopters and are conscious about the environment.

Hankook has been at the frontier of innovation with its mission being 'future innovated, innovation realized'. It's not the first time that Hankook Tire participated in developing footwear through a cross-industry collaboration. In 2015 Hankook worked with Vibram, a premium outsole company, to create concept tires as well as shoes to garner recognition for its 'future innovated, innovation realized' mission.

"We are happy to announce the collaboration which leads to mutually inspired progressive innovation for both companies. " It's thrilling that we can help customers choose footwear that will contribute to making the world a greener place. It's also great to see our tires that have reached the end of their lives turning into outsoles of footwear to take people to where they want with comfortable, long wearing shoes that embody the same high quality materials and cutting-edge technologies found in our tires," Jimmy Kwon, Vice President of Hankook Tire's Brand Lab said.

Recycled rubber outsoles on trendy Chelsea boots.

In total, five products are being unveiled through collaboration: four dress shoes and one comfort insole. The dress shoes lineup is composed of Chelsea boots, square toe Chelsea boots, Derby shoes and square toe Derby shoes. They are sold online in Korea. Hankook Tire plans to continue collaboration with YASE to launch a line of running shoes in October. ◆

IMC Outdoor Living Expands in St. Louis

IMC Outdoor Living, a St. Louis, Missouri company that exports rubber mulch, landscape and playground products nationwide is expanding into more than 325,000 square feet of industrial space at the Gateway TradePort, in Pontoon Beach, Illinois, just northeast of St. Louis.

IMC Outdoor Living is a division of Liberty Tire Recycling previously known as International Mulch Co. before a 2018 rebranding.

IMC's landscape timbers show crumb rubber's versatility.

To enable growth in St. Louis, IMC leased 325,944 square feet of Building 2 of the 600-acre Gateway TradePort. The company will also continue operations and expand at its current production facility in Godfrey, Illinois.

The building is owned by Kansas City developer NorthPoint Development. Commercial real estate advisors Avison Young St. Louis and The White Co. , who represented IMC on the deal said the market has "extremely limited inventory for industrial tenants of this size".

"This was a difficult assignment with the constraints of the current industrial market," Steve Stradal of Avison Young said in a statement. "However, we were able to find a solution to help IMC Outdoor Living continue to service their clients throughout the U.S." ◆

Source: St. Louis Business Journal

Recircle Awards 2022

Sixteen key awards categories for Recircle Awards

The second edition of the Recircle Awards industry awards is officially underway.

Winners of the 2022 awards will be announced during a Digital Awards Ceremony Monday April 25, 2022.

Physical presentation of Recircle Awards, will be conducted at key tire industry events during 2022. Autopromotec, title sponsor of the Recircle Awards, will hold a physical award event on May 27, 2022 during the Autopromotec Show in Bologna, Italy. Other venues will be announced later.

The Recircle Awards 2022 will feature a total of 20 awards covering a wide and balanced range of categories. Sixteen of the awards announced last month are: Best Tread Rubber Supplier, Best Retreading Equipment Supplier, Best Retreading Accessory and Consumables Supplier, Best Tyre Recycling Industry Supplier, Best Tyre Derived Recycled Product, Employee of the Year - Best Tyre Retreader, Best Tyre Recycler, Best Company Director; Tyre Pyrolysis Award, Circular Economy Award, Best Tyre Recycling Research Project. Best EPR Scheme, Spirit of Retreading Award, Lifetime Achievement Award in the Tyre Retreading Sector, Lifetime Achievement Award in the Tyre Recycling Sector.

The final four award categories will be announced in the coming months. The nominations process began September 6.

Nominations, which can be made on line in multiple award categories, will close November 5, 2021. The shortlist will be announced December 1, 2021.

The shortlist of nominees will be selected by the fifteen-member Nominations Committee. Members of the committee to be announced November 8 will include the editors of Retreading Business and Tyre & Rubber Recycling plus thirteen individuals from the global tire retreading and recycling industries.

Voting for the 2022 Recircle Awards will open once the short lists are announce. Voting closes Friday, March 11, 2022. www.recircleawards.com ◆

NCAT *continued from 3...*

Working with MnRoad, the focus of the 2021 research is to quantify the impact of "premium mix additives" on pavement life, NCAT Assistant Director R. Buzz Powell said. In phase one of the project, which launched in Fall 2020, balance mix design work, mix performance testing and modeling of many different "premium mix additives" were performed and the results presented to states sponsoring the study and others providing funding, who then choose the products for the track build in 2021.

For the study, officially titled "Sustainable Resilient Pavement Technologies (SRPT), NACT built a five-inch thick control section and a series of similar five-inch treatment sections which will include fibers (possibly aramid fiber), plastics (different types), epoxies and several different ground tire rubber products.

In August, recycled rubber materials were installed on three segments of the test track—600 feet—as part of NCAT's 2021 Test Track research study. Indiana-based Entech supplied the rubber for the three different rubberized asphalt products that were installed in individual segments. The materials installed in each 200 foot section are: Liberty Tire's Smart Mix dry process product; Cactus Asphalt/Entech ground rubber products, and Asphalt Plus Elastiko dry process product.

Liberty's SmartMIX™ utilizes Reacted Rubber Particle Technology to pre-swell and react rubber with liquids such as asphalt binder, extender oils, warm-mix waxes, liquid anti-strip, rejuvenators, or other agents which are incorporated into the mix through a RAP collar, a cold feed bin, or via a modified fiber blower using the dry process.

One of three sections being paved with a recycled tire rubber asphalt product at NCAT's Tire Test Track.

Cactus Asphalt/Entech ground rubber products include rubberized chip seal and other asphalt rubber design mixes.

Asphalt Plus Elastiko is a chemically Engineered Crumb Rubber (ECR) product that is fed into the asphalt plant during mix production, similar to a fine aggregate. The heated binder reacts with the ECR during mixing, storage and transport. The delivered mix lays and performs like a polymer-modified pavement.

While the main product of the research study is a layer coefficient that state agencies can use for pavement that has recycled tire rubber or aramid fibers in it, for future products, researchers said they don't want to have to build test sections every time someone comes up with a creative new product that's intended to extend pavement the life of pavements in a sustainable way, Powell said.

The other big product of the research is lab framework that state agencies can use to subject products to as a way to predict performance. Powell said it will be a testing and modeling effort that will allow states to look beyond book value if they specify and invest in a product like fibers, for example, and ask "what effect am I getting from the fibers, how is it and is it extending performance life and is it worth the extra money I spent on this additive group experiment." The key takeaway, he said, is "what is the long-term performance of these premium mix additives." ◆

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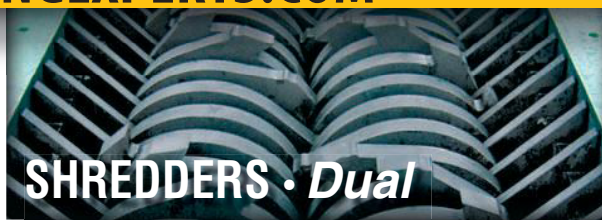

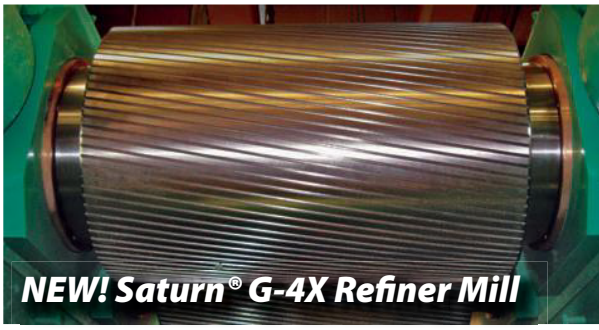

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Turntables *continued from 3...*

California Waste Tire Virtual Workshop Series, Carousel's Vice President of Manufacturing Ryan Rickabaugh spoke about the company's evolution from a residential application designed and developed by Carousel founder John Thompson to solve the problem of maneuvering a large SUV in his driveway with limited, tight space bordered by a large historic tree.

Seeing the potential for turntables and rotating platforms to solve space and mobility needs in other industries, led Thomson to launch a commercial division. Today, the company makes commercial turntables commonly used for trucks, big delivery trucks, eighty-foot semis, box trucks and garbage trucks or for "anytime you need to rotate a large item", Rickabaugh said.

Recycled rubber ramps provide safe access to Carousel's surface mount turntable for displaying early and antique Ford vehicles at the Early Ford Foundation Museum.

Carousel also makes motion control turntables typically used for deliveries in commercial buildings, surface mounted turntables and parking sliders and lifts.

The big space now, Rickabough said, is vehicle photography. "With the new autonomous cars, we use a lot of turntables for testing those. Surface mount turntables have become really popular in this space and demand is growing", Rickenbaugh said.

This is also where Carousel saw the need for rubber ramps. "Initially when we were developing our surface mount turntables we came across the problem of how to get vehicles onto the turntable," Rickenbaugh said.

The challenge was to come up with a solution that was affordable, safe and easy to use and was aesthetically compatible with the turntables. "This is a price-driven product, as opposed to our standard product which requires excavation and concrete work," he said.

"Molded rubber ramps allow the car to drive up onto it and gives a turntable finished look," Rickabaugh said.

At first, Carousel outsourced manufacturing of the ramps to a local molding company, but continual problems with product delivery as well as the lack of product quality and consistency, led the company to purchase its own press and bring manufacturing in-house.

At the same time, Carousel learned about testing and other technical services for companies wanting to use recycled tire rubber in product manufacturing available under the California Department of Resource Recycling and Recovery (CalRecycle) Feedstock Conversion Services (FCS) Contract.

Rickabaugh said by working with FCS contract manager Denise Kennedy of DKEnterprises and the consultant and other services provided as part of FCS , Carousel was able to develop the new recycled rubber molded ramps, get the proper testing and put a new mold manufacturing method in place that allows them to get "ramped up" turntables on the market in less time than traditional methods, he said.

Carousel recycled rubber ramp section.

The ramps are molded in sections using a large 410 ton press and a rubber blend consisting of recycled tire crumb rubber, binder and calcium carbonate, which is a byproduct of recycled carpet. The rubber mix is blended in mixing units designed by Carousel and poured into molds, two at a time, sealed by the 410 ton press and cured at 275 degrees for 24 minutes.

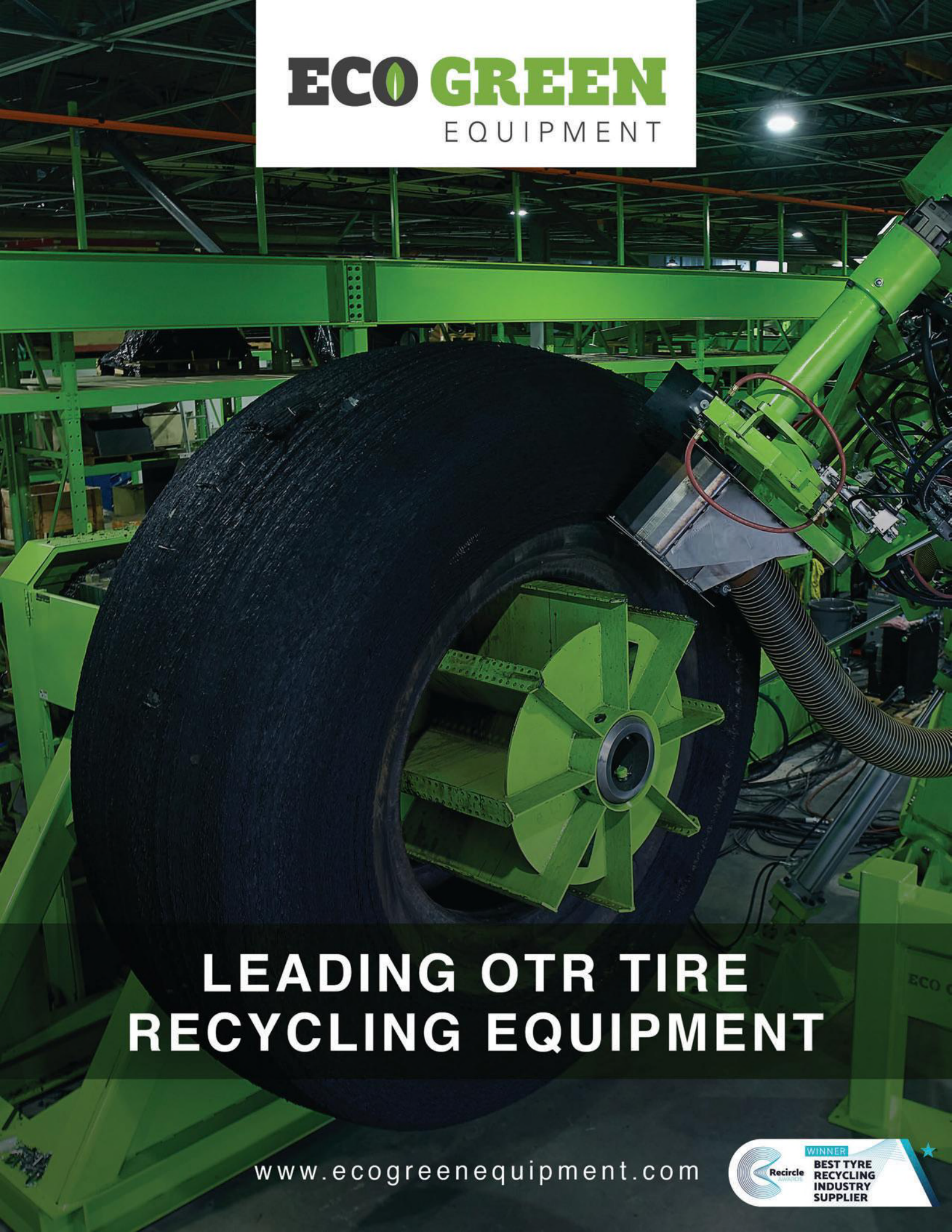
The ramps feature anchor holes with recycled rubber cover plugs that can be used if the unit is to be permanently secured. A locking "tongue" is molded on the right side of each ramp for joining the units around the base of the turntable.

Under CalRecycle's FCS contract and with testing and technical assistance from Denise Kennedy and the DK Enterprises team, Carousel developed its own mix recipe. "We now have the pounds of rubber that we use, the pounds of binder, the percentage of calcium carbonate. The temperature which we make the parts at and the amount of time that they cook," Rickabaugh said. However, those variables are constantly changing. Depending on the weather, the humidity, the rubber that we receive, we need to make minor manufacturing changes. But once it's set up for the day, it runs pretty consistently, he said.

"It was a long time getting where we are. We scrapped a lot of rubber, so it was nice to have the help," he said.

"The beautiful thing about using tire derived crumb rubber is that when the ramp part comes out of the mold its complete. There is very little waste/cleanup from the molds and the cool down takes only 30 minutes, which really improved our production efficiency, saving both money and time," Rickabaugh said.

The other important feature about this product is it's ready to ship. It's in stock all the time as opposed to the custom equipment we typically make…and it's very useful in many applications. ◆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California Waste Tire Market Report

The 2020 California Waste Tire Report chronicles an unsettled pandemic-influenced year in tire recycling. It peels back the immediate every day effects COVID-19 dealt to tire recycling operations in California, the rebound and long term operational, economic and market ramifications the industry continues to wrestle with well into 2021 and likely 2022.

While most California businesses were directly impacted by the Covid-19 pandemic with some temporarily suspending operations, the critical point came when the statewide stay-at-home order issued in March 2020 triggered an abrupt drop—by as much as 40 percent—in waste tire flows along with uncertainty and concern about future pandemic impacts, the report said.

Waste management firms were the first businesses deemed essential allowing them to continue operations. California's tire recycling companies quickly adapted putting new personal protection equipment and social distancing protocols in place as waste tire generation rebounded to near pre-pandemic levels by the end of 2020.

In actual numbers, an estimated 479,000 tons (47.9 million PTEs) of California-generated waste tires were managed in 2020, down eight percent from 2019. California waste tires flowed to nine different market segments with the greatest percentage—32 percent—going to landfill disposal, followed by fifteen percent exported tire-derived fuel (TDF) and in-state TDF (12 percent). The crumb/ground rubber and used tires market segments each accounted for 11 percent of the tires. Retreads used nine percent of the waste tires generated in 2020. Tire derived aggregate inched up slightly consuming 4 percent of California waste tires, while three percent of the tires went for alternate daily cover (ADC) and other beneficial reuse applications. The numbers rounded out with baled/cut waste tires and other recycling applications.

Most noteworthy, the 2020 report sets a new reporting protocol for crumb rubber and ground rubber that also impacts certain other categories, principal Waste Tire Report author Ed Boisson said. Previously in this report series the amount of waste tires in-bound to crumb rubber and ground rubber production facilities was reported. In this report and going forward, crumb rubber and ground rubber flows will now be reported as the amount shipped outbound by production facilities, with residual byproducts (i.e., wire and fiber) reported within other categories depending on how they are managed.

"This refined approach provides a more detailed and complete accounting of waste tire flows and is consistent with CalRecycle's goal to create a circular economy within California, " Boisson said.

For the 2020 report, the authors have adjusted all prior annual findings accordingly. The net effect of this change is to reduce crumb rubber and ground rubber flows, increase "other recycling" flows (due to recycled residual wire), increase in-state TDF (due to a portion of fiber/fluff being used as fuel at a California cement kiln), and to increase disposal (due to a portion of residual materials that is disposed). For these reasons, compared to the reporting protocol used in previous waste tire market reports, the revised approach will have somewhat lower recycling and diversion rates and somewhat higher disposal.

According to the report, the California waste tire recycling rate has slowly increased in recent years, reaching 37 percent in 2020. The 2020 recycling rate increase was a result of an eight percent drop in the total amount of waste tires managed, as recycling tons fell from 182,400 tons (18.2 million PTEs) in 2019 to 175,900 tons (17.6 million PTEs) in 2020. The California Department of Resources Recycling and Recovery (CalRecycle), which oversees management of waste and used tires in California, defines recycling to include retreading and reuse, but excludes landfill alternative daily cover and tire-derived fuel, which are considered "disposal related" activities.

Looking at California 2020 markets, used tires had a strong showing. Estimated shipments of California-generated used tires increased by 14 percent in 2020 compared to 2019. An estimated 51,000 tons of used tires (5.1 million PTEs) were culled from California waste tires flows and sold for reuse in 2020—accounting for 11 percent of all waste tires managed. A survey conducted by the report authors found that at least 13 percent of these used tires were exported, primarily but not exclusively to Mexico. Processors reported very strong demand and pricing for used tires and this historically strong segment is expected to continue at a particularly high level in 2021.

The volume of waste tires going to the retread market, which has been consistently strong in California over the years despite competition from imported, low-cost, low-tier truck tires, declined overall by about five percent in 2020. In California, this decline represented 45,500 tons (4.6 million PTEs), or 9.5 percent of all waste tires managed.

Retreaders are generally optimistic about strong growth in 2021. A strengthening economy means more

trucking, despite continuing driver shortages. New federal tariffs and duties are increasing the cost of imported new tires and many retreaders reportedly have high inventories and are well positioned to meet any increased demand, the report said.

Also, in 2021–2022, CalRecycle's Retread Tire Services Contractor will conduct education and training to public agencies and commercial trucking fleets on using retread truck, bus, heavy equipment, and off-road tires and will evaluate the growth potential for certain market segments.

Estimated shipments of California-generated crumb rubber and ground rubber declined by sixteen percent in 2020 compared to 2019, to 50,500 tons (5.1 million PTEs). This is 10.5 percent of all waste tires managed in California.

California defines crumb rubber as tire derived material (TDM) equal to or less than 1⁄4 inch in size and ground rubber is defined as TDM greater than 1⁄4 inch up to 1 inch in size.

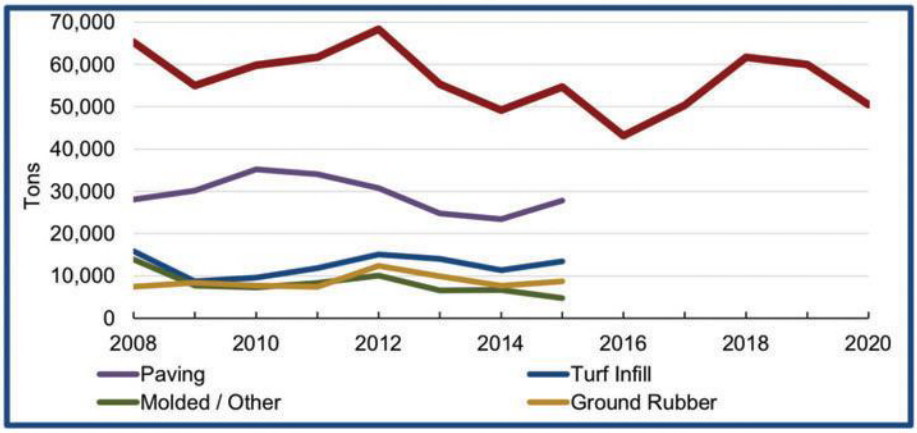
According to the report, crumb rubber and ground rubber flowed to four markets. California producers shipped 60-70 million pounds of crumb rubber for use in asphalt paving. An estimated 8–12 million pounds of crumb rubber was shipped for use as infill in new and replacement synthetic turf athletic fields in 2020, about 20 percent less than in 2019. About 20–25 million pounds of crumb rubber went to molded and other product manufacturers/installers in 2020, about 30 percent less than in 2019. California producers shipped 4–7 million pounds of ground rubber in 2020, about 25 percent less than in 2020. Ground rubber is used in outdoor surfacing, mulch, ballistics, and playground applications, among others.

While buffings from retreaders are excluded from these estimates, the report notes that well over 14 million pounds of buffings were sold by California retreaders in 2020 and buffings continue to be in high demand.

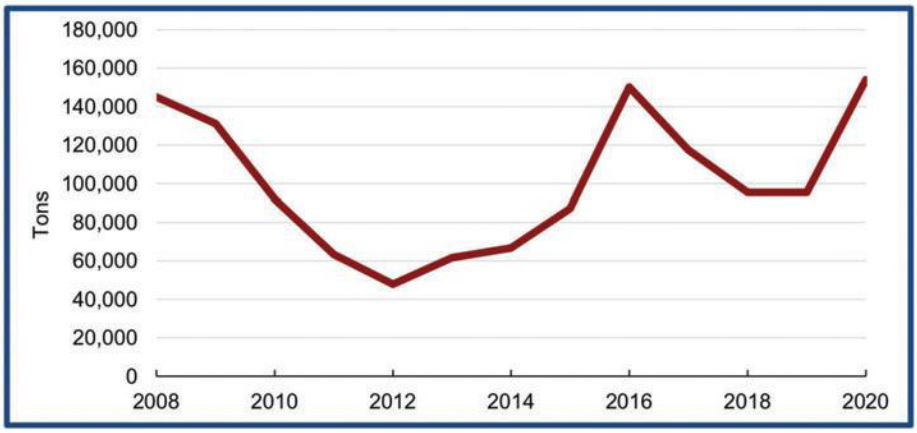
In 2020, tire derived aggregate (TDA) use was up 27 percent to 16,900 tons (1.7 million PTEs), four percent of all waste tires managed. Of this amount, four landfills received 16,300 tons (1.6 million PTEs) and the remaining 600 tons (600,000 PTEs) used to complete a landslide repair project. These projects received funding through CalRecycle's TDA Grant program, however, no new grant applications were received for Fiscal Year 2020-21.

About 16,784 tons of tire shreds (1.7 million PTEs) were used as ADC at three landfills in 2019, seven percent less than 2018.

Shipments of California-Generated Crumb Rubber and Ground Rubber, 2008–2020[8]



California-Generated Waste Tires Disposed in Landfills, 2008-2020[11]

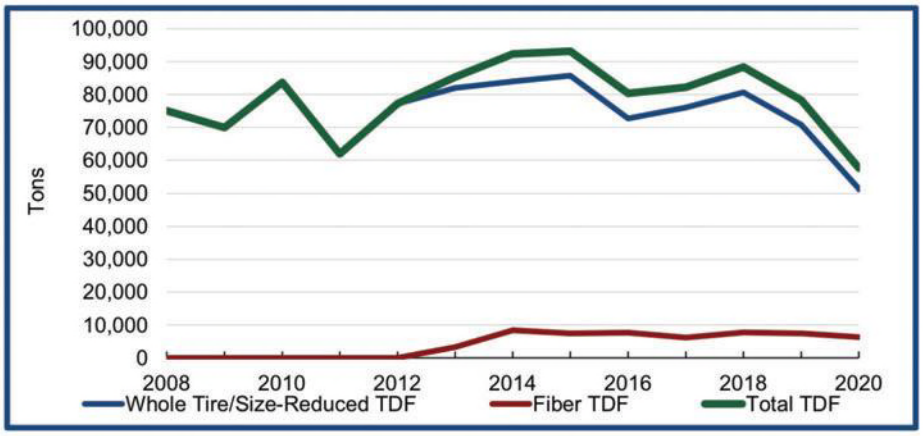


Four California cement kilns continued to consume TDF in 2020, but there were significant changes as well. Shipments of California-generated TDF sent to cement kilns declined markedly in 2020 by 26 percent, to 57,600 tons (5.8 million PTEs), 12 percent of all waste tires managed. This amount includes 57,900 tons (5.8 million PTEs) of whole waste tires and size reduced TDF and size reduced TDF and 6,300 tons (600,000PTEs) of tire fluff generated as residual by processors. An additional 3,500 tons of fluff and 9,200 tons (900,000 PTEs) of whole waste tires and size reduced TDF also consumed by California cement kilns, were sourced, or derived from waste tires imported from out-of-state.

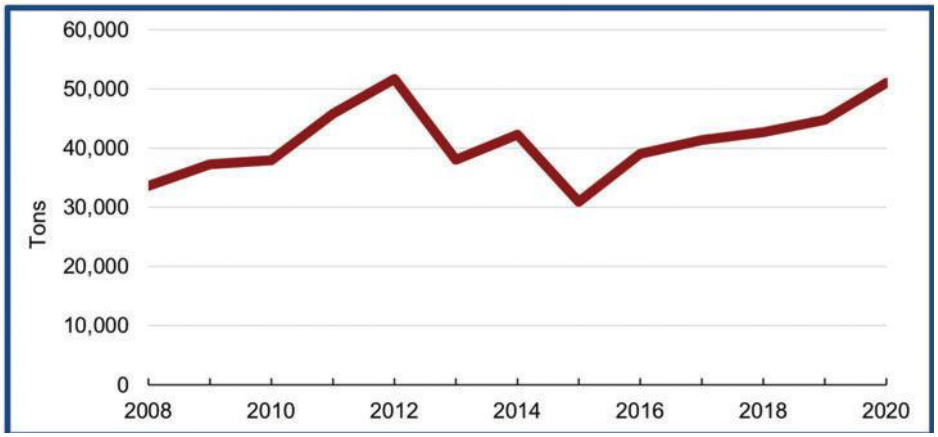
In 2020, one cement kiln that had previously used whole waste tires as TDF shifted to using size reduced.

California *continued from 13...*

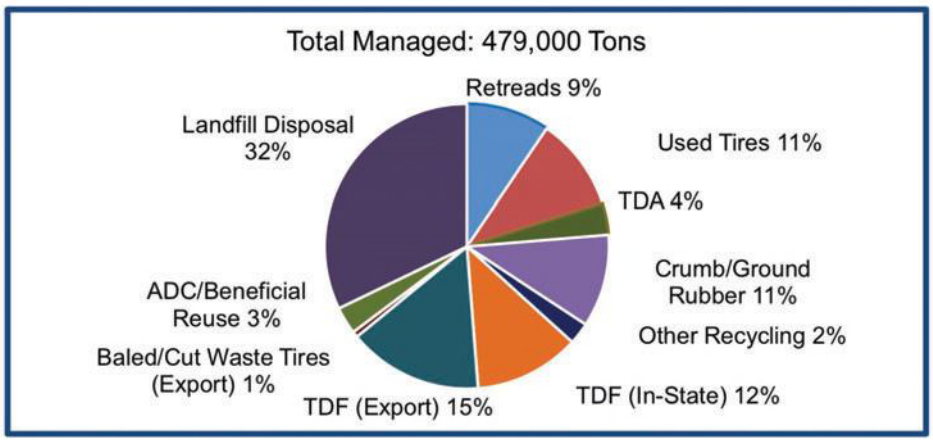
California Whole Waste Tires and TDF Consumed at California Cement Kilns, 2008-2020[10]



California-Generated Used Tire Shipments, 2008-2020



California Waste Tire Flows in 2020



Another cement kiln said they expected their use of TDF in 2021 to decline by up to 60 percent. Demand and pricing for cement are currently very strong, and historically TDF use often falls under such circumstances. It is unclear how long this reduced TDF consumption trend will last; however, shipments of TDF to in-state consumers are expected to drop again in 2021.

Export of California-generated TDF, including size-reduced TDF and baled or cut waste tires, declined markedly in 2020 by 47 percent to 76,600 tons (7.7 million PTEs). This is 16 percent of all waste tires managed. Export of size reduced TDF, primarily to Japan and Korea, dropped by 36 percent to 73,400 tons (7.3 million PTEs). An additional 5,900 tons (590,000 PTEs) of size reduced TDF was exported by California processors but was derived from imported whole waste tires. Export of baled and cut waste tires to destinations including India and Pakistan, was down by 90 percent to 3,200 tons (300,000 PTEs). Exporters report the primary use is as fuel.

In Early 2020, India abruptly halted waste tire bale imports, while TDF shipments to the rest of Asia continued until around August. By late 2020 and into 2021, shipping costs and logistical challenges for both trucking to ports and shipping overseas had deteriorated to the point that most exporters found it no longer economical, leadingto the rapid drop in exported TDF and bales and a rapid increase in landfill disposal of California-generated waste tires.

Landfill disposal of California-generated waste tires increased markedly by 61 percent in 2020 to 154,000 tons (15.4 million PTEs), 32 percent of all waste tires managed. This is the highest annual disposal percentage since 2002, the report said. Main causes of the disposal spike were the disrupted export economics and logistical feasibility. An additional cause was a reduction in TDF demand at California cement kilns. These factors caused TDF producers and exporters to redirect waste tire flows to landfills, including two landfills located in Nevada. Disposal is expected to remain very high in 2021 with further disruption expected in demand for TDF for cement kilns.

Still overriding the report, the clearly stated initial and ongoing effects of COVID-19 show how the pandemic has depleted the market in many areas and more importantly changed the flow and tenor of tire recycling operations in the state.

While California has a strong, diverse existing waste tire management infrastructure that achieves recycling levels on par with other states and countries, success may continue to be incremental until more challenges and barriers are addressed, the report concluded. ◆

Italian Navy Takes Tyrefield Surfaces on Regatta Tour

Ecopneus joins as sustainability partner

Recycled tire rubber tiles provide a durable, safe, non-slip surface at ports and other maritime applications.

Italy's Nastro Rosa Tour, the sailing tour of "the boot" that promotes the values of the Navy, launched its 2021 excursions from the Old Port of Genoa at the end of August is continuing through eight ports, that will touch some of the most beautiful Italian coastal resorts, from north to south.

Ecopneus, the main operating organization for management of end-of-life tires (ELTs) in Italy, and Sustainablity Partner for the tour and is providing recycled rubber surfacing for boating and marine use.

At each location a Village will be set up, incorporating Tyrefield surfaces for boating, made of recycled rubber by Casei Eco-Systems, a recycled rubber products manufacturer based in Molina dei Torti.

The recycled rubber surfacing plates were tested at the Yatch Club Italiano in Genoa, the oldest sailing club in the Mediterranean, in the 6×6 technical area and on the descent slides to the sea. Ecopneus and Casei Eco-Systems, instrumental in setting up the experimental testing carried out at the Italian Yacht Club, of Genoa, said the Tyrefield recycled rubber surfaces provide a concrete and sustainable response to safety needs and protection of both professionals and sea lovers. They significantly reduce the possibility of slipping in areas close to water or in humid areas and protect boats from shocks.

In addition, they reduce the use of virgin raw materials, providing both cost and environmental savings, Ecopneus said

The latest generation Tyrefield sports surfaces for boating made of recycled tire rubber are highly resilient, resistant to the most adverse weather conditions and have a high shock absorption capacity, make it a perfect material for the practice of different sports disciplines

ELT-derived recycled rubber is widely used all over the world for the construction of artificial turf football and rugby fields, athletics tracks, indoor and outdoor multi-purpose surfaces for basketball, tennis and volleyball, anti-shock flooring for gyms and play areas, Casei Eco-Systems said. ◆

Companies Partner For Sustainable Road Construction

Dry process rubberized asphalt successfully laid on Swiss roadway.

Firms representing Switzerland, Spain and the U.S. are collaborating on using the most advanced technologies and finely engineered recycled rubber materials to create modern new generation recycled tire rubber asphalt.

In the most recent development Swiss compounder and materials innovator TRS (Tyre Recycling Solutions S.A and Spain's RENECAL (Reciclado de Neumáticos de Castilla y León S.L.) recently celebrated the signing of their partnership and collaboration agreement at the TRS Engineering and Production Centre in Yvonand (Switzerland).

According to the Agreement, RENECAL, using end-of-life tires (ELTs) generated in Spain, will produce and distribute, under license, from its factory based at Guardo (Palencia), the Engineered Crumb Rubber (ECR) TyreXol™ MMA specifically designed for use in asphalt mixtures.

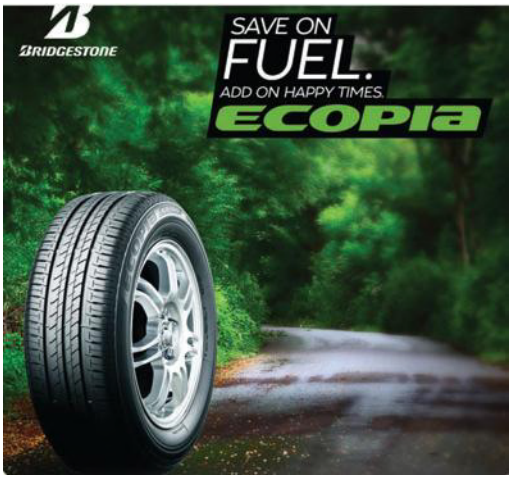
ECR is an Engineered Crumb Rubber additive for the rubberized asphalt process. Dry process rubber modification of asphalt allows the production of cost-effective rubber-modified mixes that perform under a wide range of harsh climate and road use conditions.

ECR has been developed by U.S.- based Asphalt Plus LLC and has been used extensively in paving projects over the past two decades. In 2020, TRS signed a Joint Development Agreement with Asphalt Plus with the aim of promoting the ECR technology outside North America.

With the TRS – RENECAL partnership, more and better options to use rubber in asphalt mixtures are now available to public administrations, road owners, asphalt mix companies, and project engineering offices in Spain, Renegal co-owner Juan Blanco said.

According to the companies, the partnership announcement drew congratulations and support from Europe's tire recycling industry. " This is great news for the European tire recycling market and for green procurement policies; two leading companies are joining forces to promote more sustainability and a circular economy in road construction, at a time when traditional output markets for recycled rubber products are coming under pressure," they said. ◆

Bridgestone India Plans For Sustainability



Bridgestone India is taking steps to ensure sustainable tire production. As part of its sustainability drive, Bridgestone India has established its own tire recycling facility, and supplements its power consumption from renewable sources.

The global plan for the tiremaker, is to reduce CO2 emissions by 50 per cent by 2030. According to Bridgestone, about 90 per cent of a tire's emissions come from its use and how it is used.

An ongoing strategy to reduce rolling resistance and improve economy can be seen in the firm's Ecopia tires.

Parag Satpute, Managing Director, Bridgestone India, says the company aims to achieve carbon neutrality by 2050. At its Pune and Indore plants, solar energy of 6.7 MW supplements conventional energy.

In the tire curing process, the company is using carbon-neutral biomass briquettes made from agriculture waste to fuel its boiler plants. The recently commissioned biomass boiler plant at Pune, built in collaboration with Thermax, can generate about 1,230 thousand tonnes of steam per annum, and cut 19,396 tonnes of carbon dioxide, says Satpute.

This saves about 69,000,000 Rupees in conventional energy usage in 2021, which is roughly what 11,326 urban households consume annually, he adds.

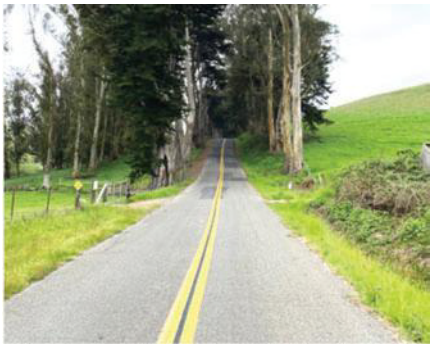
Bridgestone is also piloting some projects to put its end-of-life tires (ELTs) to good use.

The steel extracted can be used by steel plants; and crumb rubber derived from ELTs can be added to bitumen to increase the life of roads, used as construction material, and landscaping mulch, and incorporated in floor mats and rubber products, according to Bridgestone India. ◆

Source: The Hindu

Pavement Preservation in Marin County

CalRecycle grant funds secured for road maintenance using recycled tires



Recycled tire rubber being used as road sealant material in preventative maintenance project to extend pavement life.

California's Marin County Department of Public Works (DPW) began a road sealant project last month, conducting preventative maintenance on 19.6 miles of pavement in unincorporated areas of Marin County using recycled tire rubber.

The $2 million project will utilize recycled tires as one of the materials for the road sealant process. DPW was awarded a $250,000 rubberized pavement grant through the California Department of Resources Recycling and Recovery (CalRecycle). The remainder of the funding comes from the County's Road and Bridge Rehabilitation fund.

The CalRecycle grant is to encourage the use of recycled tire material in road sealant projects when they meet the technical specifications of the alternative material.

"Using techniques like rubberized paving is a great way to simultaneously improve our road quality and support our community wide efforts to reduce Marin's carbon footprint," Rachel Calvert, DPW Senior Civil Engineer, said

Preventative maintenance helps extend the useful life of pavement and can delay when a street needs to be repaved. This proactive approach calls for keeping good roads in good condition, rather than allowing them to fully deteriorate through their lifecycle.

"Deteriorating roadways have become a nationwide challenge and waiting to replace failed pavement results in tremendously expensive and disruptive projects," Eric Miller, Principal Civil Engineer for DPW, said. "In Marin, we are focusing on cost effective, sustainable pavement preservation work to help incrementally improve our overall pavement condition, while also striving to keep our maintenance backlog from increasing."

Improving roadway conditions across unincorporated areas of Marin has been an ongoing commitment of the County for years and a top priority for the Board of Supervisors. Each year, DPW aims to improve a balance of local, arterial and collector roads. ◆

Enviro's Recovered Oil and Carbon Black Receive ISCC Sustainability Certification

Scandinavian Enviro Systems has been accredited under the International Sustainability & Carbon Certification (ISCC) program for the recovery of oil and carbon black from end-of-life tires at its plant in Asensbruk, Sweden.

An ISCC certification of a raw material or product means that it receives a sustainability declaration based on the total energy consumption to produce the raw material or product through the entire value chain. ISCC is based on the European environmental directive Red II that was developed to ease the transition to a more sustainable and circular energy sector.

With the accreditation, Enviro has become the first company to receive ISCC certification for recovered carbon black. A certification in accordance with ISCC is reviewed annually for each individual recycling plant.

"The certification is a milestone in the company's development as it means that it will be easier for our customers to achieve their sustainability targets using our oil and carbon black. As a result, the customer benefit and commercial value of our technology and products will become even clearer," Thomas Sörensson, CEO of Enviro, said.

In addition, the ISCC certification of recovered pyrolysis oil from Åsensbruk enables it to be sold in the EU and the UK as a raw material for the production of sustainable fuel.

At the same time, interest in recovered carbon black is increasing in the global tire and automotive industries. Most major tire manufacturers have set very high targets in the past year when it comes to increased use of recovered material, including carbon black. The automotive industry is also evaluating how recovered carbon black could contribute to reduced environmental impact from vehicles.

"The automotive and tire industries are demonstrating a clear commitment to coming as close to zero as possible in terms of negative environmental impact and in this work, every single step and every individual component play a crucial role. Recovered carbon black will be one of several important elements in this endeavor," Enviro sales manager Fredrik Olofsson, said. ◆

Tire-derived Oil Shows Potential As An Advanced Fuel Pool Component

Researchers see promise in the use of tire-derived oil as an advanced fuel pool component.

This article gives an overview of recent development trends regarding options for upgrading the tire-derived oil (TDO) with chemical and physical techniques.

Pyrolysis processes are an efficient, viable and sustainable approach for converting end-of-life tires (ELT) into oil, value-added gas and recovered carbon black (rCB). Advances in industrial scale production, including product quality, production efficiency, operational costs, capital investment, and tipping fees, have allowed ELT pyrolysis to prove itself as technically mature and economically viable.

Besides being a valuable feedstock, TDO is an attractive source of renewable energy. Waste tires contain a fraction of biogenic carbon that mainly comes from their natural rubber content, allowing the tire-derived pyrolysis liquids (TDO) to be specified as advanced fuel pool components.

Raw waste tire-derived pyrolysis liquids are limited by a number of properties including their distillation characteristics, proportion of compounds having boiling point over 360°C, flash point, cetane number, density, PAH content, sulfur and chlorine content, storage stability, combustion properties and more. The presence of micro-carbon particles in the pyrolysis oil can also cause erosion or corrosion problems in engines.

Thus, the pre-treatment of pyrolysis feed and upgrading of raw tire-derived-oils (TDO) with chemical and physical techniques are being explored to further enhance the TDO properties.

Current options for upgrading TDO found that distillation/fractionation can enhance general properties of raw TDO, namely: density, viscosity, heating value and flash point. Desulfurization, hydrotreating has been found to reduce sulphur, chlorine and water content, while hydro-denitrification removes nitrogen compounds.

However, commercializing these upgrading processes is still in its infancy. There is a distinct lack of clarity on TDO quality gate limits for refineries. Also, there is no exact input data for TDO fractionation. Without these clear targets, financiers and investors become hesitant to invest without knowing how the products will comply with refinery criteria.

The article recommends a "round table" with stakeholders in the ELT pyrolysis industry and potential buyers of TDO fractions to develop uniform standards and gate limits. The ASTM D36 committee on recovered Carbon Black could serve as a good example, the article concludes. ◆

Weibold Academy article series www.weibold.com periodically discusses practical developments and scientific research findings in the ELT recycling and pyrolysis industry. To read the full article and other articles about TDO go to: https://weibold.com/tire-derived-oil-potentials-as-an-advanced-fuel-pool-component

Continental's Concept Tire Includes Renewable, Recycled Materials

Continental unveiled its Conti GreenConcept tire concept at the IAA MOBILITY show held in Munich, Germany last month. The goal of Continental's integrative and sustainable concept is minimizing resource consumption across every link in the tire's value chain. The result is a tire made with traceable, renewable, and recycled materials with an innovative, lightweight design that conserves valuable resources, and a renewable tread that extends service life.

Of all raw materials in Conti GreenConcept, about 35 percent are renewables, including bio- dandelion rubber, silicate from rice husk ash and vegetable oils and resins.

Another 17 percent is recycled materials, namely reclaimed steel, recovered carbon black and polyester yarn from recycled plastic bottles for the tire's casing. Continental is planning a gradual rollout of its ContiReTex technology in 2022 paving the way for the manufacture of tires using polyester yarn from recycled PET bottles.

Another part of the Conti GreenConcept sustainability equation is the special mix of materials made possible by COKOON – a technology for the eco-friendly bonding of textile reinforcements with rubber compounds developed by Continental in partnership with Kordsa. The two partners have been making this technology available to all tire industry players on a free-of-charge basis since 2019.

Conti's GreenConcept tire is up to 40 percent lighter than conventional tires, resulting in 25 percent lower rolling resistance than the highest-rated tires in the EU, the tiremaker said. ◆

STN News Briefs

..**Kal Tire** said its OTR (off road tire) recycling facility in Northern Chile will reach full production in 2021 as it accelerates its circular economy strategy. Speaking from MINExpo 2021 last month, the company said one of two reactors at the facility will have daily capacity to convert five 63" tires weighing approximately 20,000 kg into 6,500 liters of alternative fuel, 4,000 kg of steel and 8,000 kg of carbon black. It will also create enough synthetic gas to fuel the plant itself for seven hours. The thermal conversion process uses heat and friction to induce a reaction that converts tires into their base elements.

... **K & S Tire Recycling, Inc.**, Chicago Heights, IL has hired industry veteran Mike Lukavsky as its new President. Lukavsky's career in the tire industry spans 29 years starting with a job mounting tires in high school. He has worked for major tire retail outlets, manufacturers (Falken and Continental), and Liberty Tire for the last decade. K & S Tire Recycling, Inc. hauls and processes over 2 million scrap tires per year.

… A road in **Bradford, West Yorkshire, England** was recently resurfaced by Bradford Council's Highway Maintenance North team using Tarmac's ULTIPAVE R solution formulated with granulated rubber from recycled tires. Approved for use on motorways and the strategic road network, the material is a high-performance asphalt using SMA technology suitable for most locations. Using high grade aggregates, it delivers lasting texture, skid resistance and impressive reductions in road noise and surface spray. When used with Tarmac's ULTILOW warm mix technology, it saves an average 3.5kg of CO2e per ton compared to traditional asphalts, the company said.

…Industrial tire manufacturer, **Global Rubber Industries Pvt. Ltd**, Sri Lanka has launched the ULTIMATE GREEN XT, a solid tire built with pure natural rubber, silica, recycled carbon black and reclaimed rubber from used tires. The tread compound of the non-marking ULTIMATE GREEN XT contains highly dispersible silica and no carbon black, lowering abrasion loss and thereby reducing particle release into the environment. In the center and base of the tire, GRI has used recycled carbon black. Natural oil is used instead of petroleum-based oil and GRI has pioneered the use of carbon nanotubes in the black version of the tire.

…Sweden's **Trelleborg Group** has issued its first Green Bond. The nominal amount of the bond is SEK 1,000 M and will finance projects that continue to support and develop the Group's ongoing and future energy efficiency initiatives in production and administration. Issued in line with the Group's recently launched Green Finance Framework, the Green Bond contributes to the fulfillment of Trelleborg's climate target. The climate target, '50 by 25', means the Group will reduce its CO2 emissions by 50 percent relative to sales by 2025, combined with the vision of net zero emissions by the end of 2035. ◆

ETRA Conference Returns for 2022

The 27th ETRA Conference on Tire Recycling is scheduled for March 23-25, 2022 in Brussels.

The Plenary Sessions on Thursday will focus on issues confronting recyclers in 2020/2021 and beyond – including the changing roles of recyclers, ECHA findings regarding SBR and micro-plastics, the Basel Convention, and the impact of exports from the European Union. The afternoon will focus on the role of GPP (Green Public Procurement) in expanding municipal and commercial use of recycled tire materials in construction, transport infrastructure and maintenance for road, rail, tram and sea as well new opportunities in the automotive and consumer products sectors.

Friday plenaries will focus on new markets for innovative materials, applications and technologies. The afternoon will explore pyrolysis as it moves into an array of traditional markets. The final session will identify opportunities to develop strategies to make tire recycling a key contributor to the Circular Economy after 2020. There are many informal opportunities for delegates and speakers to meet and discuss common interests during matchmaking activities, cocktail receptions and meals, etc. and after-hours meetings

Speakers include EU and local government representatives, NGOs, industry professionals, researchers, material, product and application developers, representatives of support industries, investment groups, among others. ◆

Registration is via the ETRA website www.etra-eu.org

Retread Tire Workshop Series for Fleet Managers

Virtual Retread Plant Tours & Education

CalRecycle and DKEnterprises have scheduled five standalone 90-minute virtual workshops as part of the Retread Services Contract.

- GCR Tires & Service / Bandag - October 14, 2021, 9:00 -10:30am PDT.
- Border Recapping / Michelin Retreads - October 21, 2021, 9:00-10:30am PDT.
- Morgan Tire of Sacramento / Continental Tire - November 9, 2021, 9:00 -10:30am PST.
- Goodyear Commercial Tire & Service Centers / Goodyear Retread -December 2, 2021, 9:00 -10:30am PST.
- North State Tire Company / Oliver Rubber Company - December 9, 2021, 9:00 -10:30am PST.

With experts from the retreading industry, the organizers will walk attendees through retread plant videos of each step in the tire retreading process. It's a first hand opportunity to be "inside" a retread facility and experience how retreads are made and the benefits they provide. ◆

https://www.e-retreads.com/workshops/virtualtour/

STN Calendar

October

3-8 ASTM Fall Committee Week, Boston, MA (In Person)
Contact: www.astm.org
4-6 Virginia Recycling Association Annual Conference, Williamsburg, VA
Contact: 804-302-4231 www.vrarecycles.org
4-7 International Elastomer Conference, Pittsburgh, PA
Contact: www.rubberiec.org
6 Retreading Industry Benefits, Trends, Opportunities Webinar 9:00-11:00 PST Contact: Tomi Amundseh
Email: amundseh@csus.edu
12-13 Hose & Belt Mfg. Conference, Cuyahoga Falls, OH
Contact: rpnevents@crain.com
14 Virtual Retread Plant Tour & Education 9:00am-10:30am PST GCR Tires&Service/Bandag
Register:
https://www.e-retreads.com/workshops/virtualtour/
12-13 Northeast Recycling Council Conference, Virtual Event. Contact: 802-254-3636 www.nerc.org
18-20 Synthetic Turf Council Annual Meeting (In-Person) Tucson, Arizona Contact: www.syntheticturfcouncil.org
21 Virtual Retread Plant Tour & Education 9:00am-10:30 am PST Border Recapping/Michelin Retreads Register:
https://www.e-retreads.com/workshops/virtualtour/

November

1-4 WASTECON 2021 (In Person) Orlando, FL
Contact: www.swana.org
2-5 Global Tire Expo Las Vegas, NV
Contact: LaKisha Pindell
Email: lpindell@tireindustry.org
9-11 Virtual Event - XVI Latin American Conference on Rubber Technology Contact: Emanuel Bertalot
Email: emanuel.b@sltcaucho.org
17-19 Tyrexpo Asia 2021, Singapore. Hybrid Event.
Contact: www.tyrexpoasia.com
22-23 Recovered Carbon Black Conference, Amsterdam, The Netherlands. (In Person)
Contact: www.smithers.com

Special Announcement

Adaptations In The Recycled Tires Market
Webinar—October 6 11:00 am EST

This webinar will explore the question: What new methods of scrap tire reuse and recycling are in the works and how has the business of tire recycling changed?

Speakers: Amy Brackin, Liberty Tire Recycling; Jana White SC DHEC; Bruce Bart, Eco Green Equipment

Register Now

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Eco Green Equipment LLC	www.ecogreenequipment.com	11
Eldan Inc.	www.eldan-recycling.us	2
Emanuel Tire LLC	www.emanueltire.com	20
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Granutech Saturn Systems	www.granutech.com	9
Liberty Tire Recycling LLC	www.libertytire.com	15
M.A. Associates Inc.	www.matdf.com	7
Rubber Division, ACS	www.rubberiec.org	4
Unlimited Resources Corp.	www.urcrecycle.com	20