



Scrap Tire **NEWS**


Vol. 35 No. 8

Covering News & Developments in Tire and Rubber Recycling

August 2021



Santa Barbara's Ortega Road Repair project is the first to combine TDA and a mechanically stabilized earth wall to strengthen and secure the road.



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CalRecycle Rubberized Pavement Grant Program Now Open

The California Department of Resources Recycling and Recovery (CalRecycle) has announced the availability of grant funding for rubberized pavement projects in the state. The grant is aimed at encouraging first-time/limited users of rubberized pavement in two project types – Rubberized Asphalt Concrete Hot-Mix and Rubberized Chip Seal.

Applications may include rubberized pavement (hot-mix and chip seal) projects for roadways, Class 1 bike-ways (as defined in Streets and Highway Code section 890.4(a)), greenways, and disability access at parks.

The grant requires that crumb rubber used in the projects be produced in California from California-generated scrap tires. Construction of the RAC portions of the projects must be completed by 2024.

Eligible applicants include: Cities and counties, other local governmental agencies, regional park districts, special districts, Joint Powers Authorities, qualifying Indian Tribes and state agencies. Applications due Sept. 29, 2021 with award announcements Dec. 2021. ♦

Contact:
tiregrants@CalRecycle.ca.gov

California Demonstrates New Use For TDA

First of its kind project uses tire-derived-aggregate fill for mechanically stabilized earth retaining wall

In California's Santa Barbara County, Ortega Ridge Road had been slowly failing for over a decade. Recurring settlement of the roadway surface and embankment required constant maintenance, county engineers and public works officials said.

The road was constructed in the late 1960s with clay shale. When it rains, the clay absorbs the water and expands. As the weather dries out, this clay shrinks and causes the road to crack and fail.

Every few years, the road would settle to the point that it required county maintenance crews to install a pavement over-



Workers install lightweight TDA fill to prevent the ground under the road from slipping.

See California page 13...

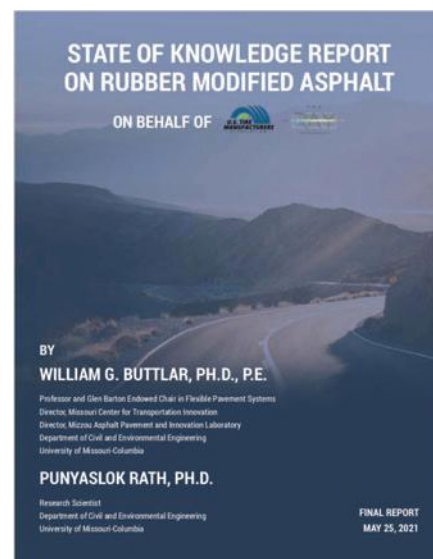
New Report Looks At Benefits Of Rubber Modified Asphalt As A Paving Solution

Report recommends additional research to ensure a comprehensive understanding of the technology's impact

The U.S. Tire Manufacturers Association (USTMA) and its partners have published a State Of Knowledge Report that assesses existing research on the benefits of using ground tire rubber (GTR) in asphalt.

USTMA together with its partners the University of Missouri and The Ray, a nonprofit proving ground for sustainable transportation technologies, introduced the joint report during a July 23 webinar.

The report finds that rubber modified asphalt is a resilient pavement solution to rebuild America's roadways and a promising sustainable and circular end-of-life market for scrap tires. The report also provides recommenda-



New Report continued on page 5...

IN THIS ISSUE:

New Use For TDA.....3	Fraunhofer rCB.....8	OTR Recycling.....16	Lafarge Alpena TDF.....18
Ecolomondo Update.....4	Ontario EPR Model.....12	MulchingOTRs.....17	News Briefs.....19
Testing Video.....6	ProductSales Up.....14	ADEM Project.....18	Calendar.....20

On The Cover: More than 81,000 scrap tires were used to manufacture tire derived aggregate used as lightweight fill to reconstruct a failed embankment and provide lateral support to Ortega Road in Santa Barbara, CA **Photo credit:** CalRecycle

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Ecolomondo Amends Agreement with Export Development Canada

Ecolomondo Environmental (Hawkesbury) Inc., a subsidiary of Ecolomondo Corporation has completed a Waiver and Amending (W&A) agreement to its original loan agreement with Export Development Canada (EDC).

The original loan was for an amount of \$32.1 million in project financing with EDC, executed on April 3, 2019, to finance the construction of the company's first of its kind new turnkey thermal decomposition facility in the Town of Hawkesbury, Ontario that will process end-of-life tires to produce re-usable resources.

The W&A Agreement updates the original loan to address among other things the consequences brought on by a challenging global COVID-19 pandemic that has and is still creating havoc in the labor markets and global supply chain.

The W&A Agreement encompasses estimated cost overruns of approximately \$1 million to the Hawkesbury Project of which Ecolomondo will contribute \$750,000 in additional equity, all payable in three equal installments of C\$250,000, the first already paid on July 14, 2021, while the next two are slated for September and October 2021, respectively.

The W&A Agreement also encompasses a revised commercial operation date now scheduled for December 2021, postponement of one year's principal repayment and the softening of loan covenants attached to the Debt Service Reserve Account (DSRA). These changes will ensure enough funds for the timely completion as well as additional working capital to fund the operations of the Hawkesbury facility.

"This agreement only confirms my long standing conviction that EDC could be an excellent contributor to Ecolomondo's success. During the pandemic, their co-operation and commitment were comforting," Eliot Sorella, Ecolomondo's Chairman & CEO said. ♦

New Report *continued from 3...*

tions for additional research to ensure a comprehensive understanding of the technology's environmental impacts and benefits.

Compared to traditional asphalt, rubber modified asphalt which incorporates ground tire rubber made from scrap tires, provides cost savings over the life of the asphalt, extends pavement life and reduces noise, CO2 emissions and tire and road wear particles. Rubber modified asphalt also leads to lower rolling resistance, which helps improve fuel economy, according to report findings.

Dr. Bill Buttlar, director of the Missouri Center for Transportation Innovation and the report's lead researcher, worked to answer a critical question: Can rubber modified asphalt help eliminate scrap tire stockpiles in the U.S., boost pavement sustainability and longevity, and allow more miles of roads to be repaired?

"This research provides those who make infrastructure decisions, road operators, state and federal regulators and legislators, pavement and road construction contractors and researchers, with important information on the effectiveness and environmental impact of rubber modified asphalt," Buttlar said. "It outlines why states should review and expand asphalt specifications to incorporate this proven alternative."

The State Of Knowledge Report also identified data gaps that should be addressed to better inform modern pavement design software programs, including the need for additional research on the life cycle impact of rubber modified asphalt and its properties and characteristics. The study reviewed more than 300 scholarly articles and reports and surveyed 26 state highway agencies to identify data gaps in knowledge and barriers to more widespread adoption of rubber modified asphalt nationwide. ♦

USTMA Praises Bipartisan Infrastructure Package

The U.S. Tire Manufacturers Association (USTMA) commended a deal reached by the White House and Senate on a bipartisan infrastructure package. The agreement comes after several weeks of negotiations between the Biden Administration and a bipartisan group of Senators and includes several provisions that will help advance research and integration of technologies derived from scrap tire rubber into future infrastructure projects.

"I applaud the important work produced by Senators on both sides of the aisle that will allow us to make the necessary investments in our infrastructure and advance technologies in pavement design and stormwater control," said Anne Foristall Luke, USTMA president and CEO. "This truly is a much-needed victory for our nation, proving that there are still willing partners who can come together when it matters and deliver solutions that affect every person in this nation." ♦

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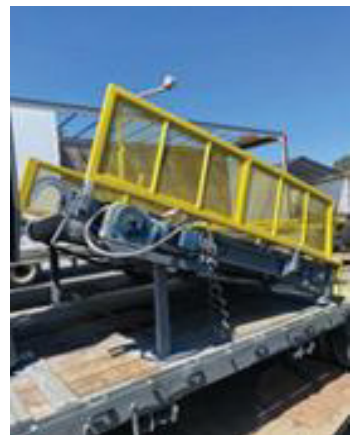
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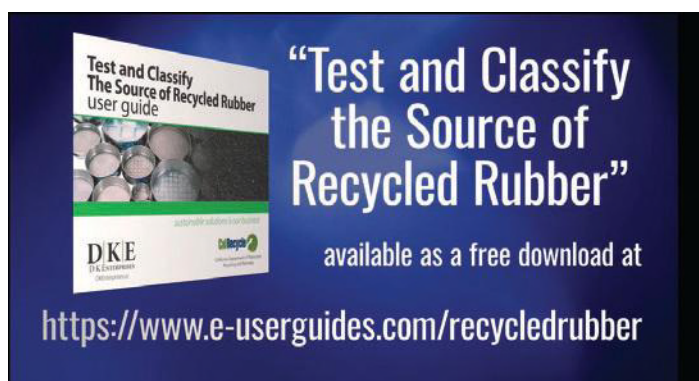
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Rubber Recycling NEWS

New Video and Users Guide Help Recyclers Produce High Quality Recycled Rubber

Recycled rubber has become a part of the circular economy where rubber is recycled and used in new products, technologies and uses. Today, more than ever, tire and rubber recyclers need to qualify and verify their material meets both industry standards and customer specification.



A new video and users guide on how to test rubber to determine and/or verify the particle size used by tire-derived-product manufacturers and tire-derived material feedstock suppliers, show why it is important to adhere to standards and best management practices.

These new resources, the Test and Classify Recycled Rubber Video Tutorial and the Test and Classify the Source of Recycled Rubber User Guide, were produced and funded under the purview of the California Department of Resources Recycling and Recovery (CalRecycle) Feedstock Conversion Technical Assistance and Material Testing Services (FCS) Contract. Since 2015, CalRecycle has awarded two FCS contracts, both to Sacramento, CA-based DK Enterprises—FCS1 in June 2015 and FCS2 in April 2019.

These unique, and perhaps only state contracts of their kind, support the CalRecycle Tire Incentive Program (TIP) which is designed to expand the demand for different and higher value-added tire-derived products (TDP) by providing an incentive to use, at least five percent, recycled tire rubber (crumb rubber) to partially replace virgin rubber, EPDM, plastic, or other raw material (also referred to as feedstock conversion") and to increase sales of products that already contain crumb rubber. Funding is provided to the technical and testing service providers, in part or in full, that assist the qualified California manufactur-

ers in the development of new or existing feedstock conversion products.

The FCS contract includes identifying and qualifying California rubber product manufacturers, rubber compounders, calendered rubber manufacturers, devulcanized crumb rubber manufacturers, and plastic product manufacturers using TIP eligibility criteria and, if necessary, potential volume and value-added use of crumb rubber. As the contractor, DK Enterprises coordinates the appropriate engineering, manufacturing, testing, and certification resources to formulate the optimum mix/size (mesh) of crumb rubber and provide the technical assistance to ensure the timely production and sale of the TDPs. To identify and qualify material, DK Enterprises performs on-site sampling (extraction and collection) and appropriate testing of crumb rubber including providing certification of the sieve analysis that is consistent with ASTM International D5644 Standard Test Method for Rubber Compounding and D5603 Standard for Classification for Rubber Compounding Materials. Since the FCS2 contract began, ASTM D8268-19 was created that includes practices that were previously found in D5603.

The new Test and Classify Recycled Rubber Video explains the importance of testing material for product development, technologies and uses, DK Enterprises President Denise Kennedy said.



New video and users guide provide an up-close look at all aspects of testing.

The video is a step-by-step demonstration on how to test rubber using the vibratory shaker system. The video tutorial also discusses the importance of ASTM standards in classifying the source of the rubber (e.g., car, truck, bus, off-road tires) and non-rubber; determining the particle size of rubber; and test method to ensure quality control in the design and development of recycled rubber products, new technologies and uses.

In conjunction with the video, DK Enterprises put together the Test and Classify the Source of Recycled Rubber Users Guide, which supplements the the information provided in the video and includes a Glossary of Terms and Acronyms, Guidelines and Test Methods and showcases a variety of tire-derived products and uses. ♦

Ecopneus Partners With Italian Festival Of Sport

For the fourth consecutive year, Ecopneus, the management company for end-of-life tires in Italy is Sustainability Partner of the Italian Festival of Sport

This year, Ecopneus partnered with sports floor specialist Mapei to install four playgrounds.

Basketball, in its "street" version of 3 against 3, tennis, and the new padel court, all constructed with recycled tire rubber, will be at the center of the activities in the square of the Festival of Sport, October 7-10 in Trento, Italy.

The surfaces will be created in partnership with Mapei, a leading company in chemical products for construction and specializing in cutting-edge solutions for the creation of acrylic resin sports floors for all types of sports.



Recycled rubber is the surfacing material of choice for padel courts in Italy.

In sports surfaces, recycled rubber is used as an elastic mat placed on the foundations, on which fillers and acrylic resins are then applied to form the outer surface layer, characterized by adequate adherence to the intended sporting discipline.

The company said thanks to this collaboration, a padel field will also be installed in Trento, a growing discipline recently officially to be included in the European Olympic Games in June 2023.



"The Sport Festival is a tremendous opportunity for us to make

Resilient recycled rubber surfacing improves safety and playability on street basketball courts.

more and more people aware of the characteristics and advantages that recycled rubber allows for sports surfaces" Federico Dossena, Ecopneus General Manager said. "The sports sector is the sector that currently absorbs the largest amount of recycled rubber produced by the Ecopneus supply chain. A constant trend but still with margins for growth, which is why our commitment to research and development and high-profile collaborations such as that with Mapei for the development of solutions in step with the evolution of sports practice and habits are never ending." ♦



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Fraunhofer Team Develops Process to Recycle Carbon Black From Car Tires

In conjunction with RCB Nanotechnologies GmbH from Munich, Germany researchers at Fraunhofer IBP in Valley, Germany, have developed a demineralization process for releasing the recycled carbon black from its mineral load.

The recovered carbon black treated in this way is nearly free of mineral residues, allowing it to be used up to 100 percent for the sidewalls of tires, for example. In other words, there is no need to add any primary carbon black. It can therefore completely replace the original industrial materials, Dr. Severin Seifert, Group Manager at Fraunhofer IBP said.

To purify the carbon black/ash mixture created during the pyrolysis process to the extent required, the researchers use a wet chemical method, Christian Kaiser, Project Manager at Fraunhofer IBP said. To put it simply: We place the (raw) carbon black/ash mixture



Top, primary product from left to right: raw rCB, clean rCB (96+), pearitized clean rCB (96+). Bottom, secondary products recovered from the ash, from left to right: liquid sodium silicate or "water glass", precipitated SiO₂, precipitated ZnSO₄.

together with various additives in a reactor, blend it with fluid and run a defined pressure and temperature curve.

The individual substances are selectively extracted from the mixture, Kaiser said.

The parameters and additives must be set in such a way that only one particular mineral, as homogeneous as possible, is extracted from the mixture at a time.

Temperature and pressure have to remain at a moderate level, so that the process is technically feasible without any major limitations.

The researchers recuperate a portion of the additives, closing the material cycle here as well.

The result of the demineralization process is high-purity recycled

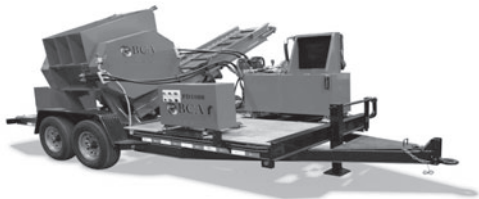
carbon black for use in tires and other rubber products, as well as colorants (master batch) for plastic applications, silicates, which can be used in the building materials industry or for dyes, for example, and also zinc salts for a broad range of applications.

One pilot plant with a reactor volume of 200 liters exists already and will be in operation for further research at Fraunhofer IBP in Valley for the next two years. The aim is to make recovered carbon black usable for other industrial applications as well.

The basic process has already been patented, RCB Nanotechnologies GmbH being the exclusive licensee. The company is currently working on scaling-up the process for industrial use.

The reactor volume for one production line is expected to be around 4000 liters. Every hour, one production line will release 400 kilograms of recycled carbon black from the ash—2500 tons per year. In the final expansion stage, the plant as a whole will have an annual capacity of just on 30,000 tons.

Over the longer term, the idea is to make the transition from a batch process to a continuous process. Potential stakeholders have already expressed an interest. ♦



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Valerie Shulman — A Remembrance and Farewell



On behalf of the U.S. tire recycling industry, Scrap Tire News joins members and board members of the European Tyre Recycling Association (ETRA) in mourning Valerie Shulman.

Valerie was Secretary General of the European Tyre Recycling Association for 30 years, and for many was the face and voice of the Association.

I met Valerie Shulman in 1989 when tire recycling in the U.S. was very young and Valerie had a vision for launching something similar in Europe. She was researching what was happening in the U.S. in conjunction with studying tire recycling in the European Union (EU). Valerie's passion, enthusiasm and drive in those early meetings were her hallmark and brought her vision to life in the founding of ETRA in 1992 and in the vibrant, active tire recycling industry operating throughout Europe today.

She developed the ETRA annual conference now in its 27th year, bringing together experts from industry, finance and government to try and forge new ways ahead for recycling. And she did it with flair and a style that were hers alone.

CM Shredders, a founding member of the European Tyre Recycling Association, said it best "Valerie will be greatly missed but never forgotten". Her lust for life and her passion and commitment to the tire recycling industry was unparalleled. Our hearts go out for her family and friends. A contributor to the Basel Convention guidelines on used tires, she represented the European Tyre Recycling Association at EU and international conferences, always making sure the voice of tire recyclers was heard.

Valerie used her passion and strong beliefs about what would help the tire recycling industry to engage and inspire new and better solutions. The industry has lost a champion, DK Enterprises, who worked with Valerie in recent years in developing international standards for tire recycling, said Valerie contributed over 100 journal articles, authored, co-authored or contributed to a dozen books on tire recycling - with the latest due from Elsevier (Tyre Waste and Recycling) in April 2021.

She led the Association with professionalism and enthusiasm, winning everyone's trust and esteem. "We are grateful to Valerie for the incredible job done along the years and remember Valerie for her drive, selflessness and many kindnesses," ETRA said.

Valerie Shulman was awarded the First RECIRCLE Lifetime Achievement Award in the Tyre Recycling Sector in 2021. ♦

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Ontario's EPR Model Program For Tires

By Steve Meldrum, eTracks Tire Management Systems

Over the last two years, the Ontario government has experimented with a new model that shifted government-driven tire programs to an industry-owned framework to try and fit the desired paradigm of reduce, reuse and recycle.



New survey finds most Ontarians are unaware of where end-of-life tires go.

This model is called the Individual Producer Responsibility (IPR) and Ontario became the first province in Canada to embrace it. Under IPR, companies who sell tires into the Ontario marketplace take full responsibility for their end-of-life collection, management, recycling and, ultimately, turn them into a valued resource. This is significant for a circular economy as it places responsibility on tire manufacturers and automakers to manage the waste produced by their

products. By giving end-of-life tires (ELT's) a second life, they become potential raw materials for other products and promote a shared responsibility for waste diversion.

eTracks, a not-for-profit tire management system, recently conducted a province-wide survey surrounding people's perceptions of the circular economy and what that means for Ontarians.

Each year there are over 12 million new tires sold in Ontario alone. While the province has taken great strides towards sustainability in the last two years, not enough Ontarians are actually aware of where end-of-life tires go or how they are disposed of. In fact, nearly half of Ontarians do not know whether scrap tires are recycled or thrown into landfills, and 14 percent - which accounts for 1.5 million adults - do not believe tires are recycled at all. In reality, producers are responsible for recycling every single tire they sell in Ontario, yet only 32 percent are aware of this fact.

Rather than solely relying on new materials, a circular economy means materials are recycled into new products. Given that 81 percent of Ontarians agree that purchasing recycled products helps to combat climate change, we can optimistically continue to see byproducts made from end-of-life tires used in our day-to-day lives, from the commonly known playgrounds and sports fields to welcome mats and patio tiles.

Overall, Ontarians are quite positive towards recycling and the future of a more circular economy. Most agree that it makes sense for tire producers to be responsible for recycling end-of-life tires and giving them a second life by turning them into a sustainable resource. In turn, this wouldn't just improve the future of the environment but the future of the economy as 84 percent agree that investing in green technologies would help create jobs in Ontario.

These continued efforts help increase awareness about end-of-life tires as a resource, and encourage innovation through research and development programs that find new and environmentally sound uses for a post-pandemic economy, sustainable practices and combating climate change. ♦

Giving Tires A Second Life

Companies plan sorting and reconditioning center for passenger car tires

BRIDGESTONE

Mobivia

Black-Star
PNEUS RECONDITIONNÉS FABRIQUÉS EN FRANCE

With support from Bridgestone, multi-brand car maintenance company Mobivia and Black-Star, a French retreading specialist, have signed an agreement to create a collection, sorting and retreading unit for passenger car tires within the former Bridgestone factory in Béthune.

The companies will develop the Béthune industrial site into an integrated tire recycling ecosystem whose circular economy approach will give tires a second life, providing consumers a wider range of eco-responsible tires at a cost-effective price point.

Tires will be collected at Mobivia auto centers and then transported, sorted and retreaded before being put back onto the market. For each reconditioned tire, 80 percent of the original material will be saved, including up to 9kg of rubber and steel.

The project will capitalize on the skills base and equipment already at the Béthune site and is expected to create jobs for former Bridgestone employees. Work at the site is scheduled to start in January 2022, with operations ramping-up as the business develops.

"I am delighted that this project has come to fruition," Agnès Pannier-Runacher, French minister delegate to the ministry of the economy, finance and recovery said. ♦

lay to maintain the profile. In 2015, the extent of road settlement forced county engineers to realign the road and close it down to one lane of alternating traffic. It remained the sole access to Toro Canyon for several years until road and bridge work on nearby State Route 192 was repaired or replaced. After their completion the county was able to close the road and construct the project. In coordination with CalRecycle, a pilot project to reconstruct the road with the tire derived aggregate (TDA) produced from scrap vehicle tires was funded and public works officials received the technical know-how to develop and construct the project.

In 2019, Santa Barbara County Public Works Department completed the Ortega Ridge Road Slide Repair MS-TDA Wall Project which uses tire-derived aggregate (TDA) as lightweight fill material to prevent the ground under the road from slipping.

This pilot project, a partnership between CalRecycle and the County, is the first in the state to combine the use of TDA and a mechanically stabilized earth retaining wall (MSE wall). The TDA is separated from the earth in a way that strengthens the ground and helps to prevent it from moving and the MSE wall is created with stone-filled wire baskets that stabilize the road.

More than 30 inches of asphalt had been placed on the roadway over the years in attempts to fix the road. Officials said a traditional, long-term repair solution was expected to be costly and challenging, as a conventional project would require the acquisition of an additional easement for construction. The 28-foot deep failed embankment and utilities within the embankment presented a challenge for construction crews.

In addition, the site is located in a coastal zone, where permitting large retaining structures is costly and time consuming. The TDA lightweight fill reduced the need for a large footprint, while also eliminating the need for a retaining wall and permitting requirements. The California State Association of Counties praised the project for its streamlined design and construction, reduced envi-

ronmental impacts, smaller construction footprint and cost savings.

UC San Diego conducted research on the road repair techniques, which provided the engineering data for the project design. Researchers determined that TDA is seismically safe for a retaining wall and road repairs and it will not degrade due to poor underlying soils or saturated conditions.

Santa Barbara County was awarded the top honor in the 2020 Outstanding Local Streets and Roads Project Awards.

The county was recognized for innovations in sustainability with the Ortega Ridge Mechanically Stabilized Tire Aggregate Wall, in which the reconstruction of the 225-foot section of roadway diverted 81,000 tires from the state's landfills in the form of tire-derived aggregate fill.

Funding for the \$665,000 construction project was provided by CalRecycle TDA grant funding (\$110,000), TDA pilot project funding (\$330,000), the county's general fund (\$43,000), and the State Transportation SB1 Fund (\$182,000). Additional construction engineering costs were reimbursed by CalRecycle's TDA grant funding in the amount of \$36,000. The project was constructed by Raminha Construction and the roadway was officially reopened in August of 2019.

"This CalRecycle grant project is a new model for how communities can transform

recycled waste tires into a valuable resource to improve local infrastructure and protect public safety," CalRecycle officials said. "This has been a collective effort with the cooperation of Santa Barbara County to be part of this first-of-its-kind project. We hope this is the first of many statewide projects that will make use of this new civil engineering technique."

Santa Barbara public works officials also gave thumbs up to the project saying it gave them departmental support to venture out away from past tried and true techniques to go for something different. This program's success means Santa Barbara can solve more problems with these new materials and techniques in future projects. ♦



Engineers identified road conditions prior to repair (top). Completed road (bottom) after embankment reconstruction using TDA.

Sales Up At U.S. Rubber Recycling

Change in consumer buying habits helped drive major growth in 2020



Demand for recycled rubber fitness and gym flooring continues to grow.

and sound-reducing underlayment, has accomplished all of that amid the COVID-19 pandemic, no less.

CEO Jeff Baldassari attributes the company's 2020 sales increase to a few factors:

"People changed their buying behavior in 2020 because of the virus," he said. "They weren't going to stores as much, but online sales went up. We've had a longtime partnership with Rubber Flooring, which sells rubber mats and flooring, and their sales exploded because of online buying."

That alone would have put the company well ahead of its 2019 performance. But U.S. Rubber also inked a deal with Home Depot.

"It usually takes a business nine months to onboard with Home Depot, but we did it in a week," he said. "Their online purchasing has accelerated quickly and they needed flooring."

With fitness centers and gyms closed during much of the pandemic, Home Depot customers were clamoring for rubber flooring to outfit home gyms in their basements, garages and bedrooms, Baldassari said.

And as COVID-19 restrictions continue to ease, fitness centers and gyms are reopening with some upgrading their facilities, so demand for rubber flooring is higher than ever.

"We doubled our workforce since April of 2019," Baldassari said. "Now we have 62 people in the company, including about 50 who work in the factory. The way we're growing, I expect to add 20 more jobs this year."

Needless to say, all of that momentum has fueled some growing pains.

U.S. Rubber Recycling's Colton facility is 50,000 square feet, but the company is looking for a bigger space with 100,000

When a company boosts sales by 40 percent, diverts waste from landfills and helps ex-felons rebuild their lives by putting them to work, it must be doing something right.

U.S. Rubber Recycling Inc., a Colton, California business that converts used truck tires into rubber flooring

to 150,000 square feet to expand its production lines.

The factor that sets U.S. Rubber apart from its competitors is "the people part," according to Baldassari.

"There's a lot of competition for employees right now and we've hired ex-felons to help us grow our workforce," he said. "Most employers won't even talk to them once they've checked that box, but some of them have incredible skills."

Because labor shortages abound in the Inland Empire, U.S. Rubber Recycling's Bounce Back second chance hiring program gives it a competitive advantage, according to Baldassari. About 50 percent of the company's current workforce is composed of formerly incarcerated people.

The company hired a psychiatric rehab counselor who conducts a screening process for hiring ex-felons to gauge their mental maturity and mindset and is on staff to help ex-felons adjust to the working world.

"We don't want to have turnover," Baldassari said. "If we give them some guidance to make better choices they are less apt to go down the wrong path again."

Finally, there's the environmental component.

U.S. Rubber diverted more than 9 million pounds of post-consumer tire rubber from local landfills in 2020 alone, and the company gets 70 percent of its source material from tire processing facilities within 15 miles of the factory, giving it a low-carbon supply chain.

That makes its products appealing to green builders and companies with sustainability goals. There's a financial advantage as well.

"When we get the rubber it's already been ground up and granulated," Baldassari said. U.S. Rubber created a management team that has rejuvenated the company over the past couple of years by streamlining operations, empowering personnel and promoting shared goals. That has resulted in a 30 percent increase in worker output. ♦

Source: Kevin Smith, Orange County Register





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Columbian Tire Recycler To Process OTRs

Colombian tire recycler, Duramos, located in the mining region of Colombia, is establishing the first tire recycling plant for processing OTR mining tires in the country.

The open-pit Drummond, Colombia coal mine has been in operation since the early 1990s. The massive R57 tires on the earthmovers used at the mine are the primary tires Duramos aims to recycle. Rather than being discarded, the rubber salvaged from these tires will become rubber mulch for export and tire-derived fuel (TDF), which will be sold to one of the largest cement companies in the world, the company said.

Because OTR mining tires cannot be processed whole, Duramos selected machinery manufactured by U.S.-based ECO Green Equipment designed to handle large mining and other off road tires.

The recycling process will require a series of five distinctive ECO Green machines. ECO Green's ECO Razor and

ECO Extractor will be employed remove rubber from the tread and sides of OTR mining tires and downsize the material into 30lb chunks to be furthered processed. The ECO Shear will cut the thick rubber into pieces manageable by the ECO Green Giant, a dual shaft shredder, which can reduce it to 2-6-inch shreds. The final step is a trip through the ECO Grater, resulting in 20mm wire-free chip at a rate of up to 12 metric tons of input an hour.



"OTR tires present a unique problem. They are much too big for a primary shredder, but when they reach end of life, they still have massive amounts of rubber to be recovered," Brad Swenson, ECO Green Equipment President said.

Built to maximize running time and product output, ECO Green shredders and grinders have low energy needs compared with other recycling equipment. They are easy to maintain, which minimizes downtime for repairs and maximizes profits. ♦

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Mulching OTRs

Eagle International develops machine to peel mulch from OTR tires

Eagle International, Lyons, Nebraska, known in the tire recycling world for decades for its hydraulic tire sheers and off-the-road (OTR) tire downsizing capabilities, has introduced their first machine capable of producing rubber mulch from off road tires.



The Eagle Edge 360 is designed to remove high-quality mulch from the treads and sidewalls of OTR tires ranging in sizes from 33-inch through 63-inch rim size.

Eagle's unique design features rasp heads in three locations at varying angles. Multiple rasp heads increase the surface area that can be claimed as mulch and speeds up cycle time. In addition, operators can shred rubber mulch from the tread and sidewall simultaneously.

"Our goal with this machine was to incorporate automation," said Joe Brehmer, president of Brehmer Mfg., Inc., the parent company of Eagle International. "Once the machine has been set up, and you tell it how wide the tire tread is, the programmable logic controls (PLCs) take over."

The Edge 360 uses semi-automation through PLCs that adjust for speed and rasp pressure. The PLCs maximize efficiency by providing consistent pressure and tire rotation to remove mulch evenly across the whole surface of the tread. Operators can also control rasp angle and depth with a remote function.

The entire system includes the Edge 360, a high-efficiency vacuum, cyclone, magnet, conveyor, hopper, and bag stand. Brehmer continues, "I wanted the Edge 360 to have an element of transportability that Eagle International equipment is known for. We designed this machine to come apart in sections so you can transport it to different locations," Brehmer said. Recyclers can set up where the stock tires are being stored, recover mulch, and tear down to move on to the next location, he said. ♦

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FIGURE 1
Rogers, Arkansas:
SmartMIX parking
lot application.



FIGURE 2
East Lansing, Michigan
(L) Superpave SE Mix
(R) Same recipe utilizing SmartMIX



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(602) 751-6039 or dcarlson@libertytire.com
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*SmartMIX is produced under license by the R.O.A.D. Company, inventor of Mix-Maxer



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- ⊗ Increase RAP Content – Simply add to the Mix with RAP
- ⊗ Fine Grind – Dense Graded Mixes
- ⊗ Closed-Loop Recycling – 10 lbs. of Recycled Tire Rubber for every Ton of Mix

SmartMIX utilizes Sustainable Materials & Asphalt Rubber Technologies to produce high-performing paving materials with greater durability and flexibility.

ADEM Funds Asphalt Rubber Projects At Two State Parks



Governor Kay Ivey joined the Alabama Department of Environmental Management and the Alabama Department of Conservation and Natural Resources (ADCNR) in announcing an \$829,080 state grant to repave roads at Lake Guntersville and DeSoto state parks using asphalt containing rubber from recycled tires.

The money for this demonstration project comes from the state's Scrap Tire Fund, administered by ADEM. One dollar from the sale of each tire in the state goes into the fund.

ADEM Director Lance LeFleur presented the check to Ivey and ADCNR Commissioner Chris Blankenship at a ceremony in the State Capitol. The grant will cover the costs of repaving parking areas and 4.8 miles of roads at Lake Guntersville State Park as well as DeSoto State Park's access road to DeSoto Falls with the rubber-modified asphalt. In addition, ADCNR's State Parks Division will pay for additional roads to be repaved at Lake Guntersville State Park using rubberized asphalt.

"This is a wonderful use of the Scrap Tire Fund, LeFleur said, calling the project and the partnership with State Parks as "a win, win, win."

"We have invested a lot of resources and work to improve the campsites, cottages and other amenities at the parks, including repairing damages from storms," he said. "This complements what we have done and what we are continuing to do to upgrade these beautiful parks. The longer-lasting rubber-modified asphalt, will help keep the roads and parking areas in good shape for many years to come."

In addition to lasting up to three times as long as regular asphalt, rubber-modified asphalt is less prone to cracking, pot-holing and degradation, and can handle a wider temperature range, which also could mean less icing during freezing weather.

Blankenship said the repaving work should begin later this year and expects the project to be completed in about 60 days. ♦

Action Equipment Shaking Things Up

Action Equipment has taken its classic long stroke Taper-Slot® Screen and turned it on its head. Putting the balancer on top and the screen mass below, allowed Action to remove the bottom



Sub-Pan Free™ Taper-Slot® Screen surface of the traditional conveyor pan, creating a flat pan surface for material build-up that may cause issues with the screener's performance.

The new screener combines the strengths and benefits of the Sub-Pan Free™ Taper-Slot® Screen with the versatility and effectiveness of the Dense-Out® Vibratory Air Separator, allowing recyclers to screen and separate in one unit.

Recyclers can now select a Sub- Pan Free™ long stroke Taper-Slot®/Dense-Out® with classified fraction discharge directly into a bunker or onto a take-away conveyor. The new sub-pan eliminates material build-up, wear, and related sub-pan maintenance items. Applications include C&D material, scrap tires, compost and more. ♦

Lafarge Alpena To Use Tires As Fuel

State grant to help fund tire handling equipment

By mid-2023, Lafarge Alpena is expected to have capacity to burn 2 million tires a year to heat kilns used in the cement-making process.

The Michigan Legislature approved a \$3 million grant through the state's Scrap Tire Regulatory Fund to cover half the cost of the equipment needed to burn tires whole, according to Kirstin Clemens, scrap tire coordinator for the Michigan Department of Environment, Great Lakes, and Energy.

Most companies burning tires as fuel require chipped tires, but Lafarge's kiln sizes allow the plant to burn whole tires, eliminating processing costs. No one has to remove steel belts within the tires before burning, as at other businesses, because Lafarge can add the metal to cement to strengthen the end product, Clemens said.

Lafarge already uses filtration equipment to meet state and federal standards to protect against emission of nitrous oxide, sulfur dioxide, and other chemicals of concern when burning tires, according to Melissa Byrnes, the environmental engineer specialist for EGLE's Air Quality Division who reviewed Lafarge's application for the project. ♦

STN News Briefs

...**Nokian Tyres PLC's** plant in Dayton, TN has received the Tennessee Governor's Environmental Stewardship Award for Sustainable Performance. Nokian is the first winner from Rhea County, Tennessee in the 35-year history of the program. The honor is the "most prestigious environmental and conservation award in the state," the company said. Production at the plant started in early 2020 with capacity to produce up to 3,000 tires per day.

...**Bridgestone Corporation** announced it has switched all the electricity sourced from external sources to renewable energy including hydro, geothermal, solar, and wind energy to power four domestic tire plants in Japan – in Hikone, Tosu, Shimonoseki, and Kitakyushu. The first plant to adopt renewable energy to power manufacturing operations was the Hikone Plant, on June 1. The other three plants made the change on July 1, 2021. This change of energy source is expected to reduce approximately 11 points in annual CO2 emissions produced by Bridgestone domestic tire plants, and the total reductions of CO2 emission including initiatives done by 2020 will be approximately 30 percent when compared to 2011.

...**Orion Engineered Carbons S.A.** has partnered with RISE Research Institutes of Sweden to develop and produce renewable carbon black. This collaboration represents an important step towards more climate-neutral carbon black production by replacing traditional carbon black feedstock with pyrolysis oil from biomass oil. Orion plans to convert the biomass oil into carbon black using its small-scale furnace reactor in Kalscheuren, Germany and will explore ways to upscale the process to match market demands. Additionally, using a pilot-scale reactor at its site in Piteå, Sweden, RISE will evaluate the use of electrofuels, such as plasma or hydrogen from electrolysis, as sustainable heat sources for the carbon black process.

...Waste disposal pricing continues to increase as the economy recovers and prices catch up after stalling somewhat during the pandemic. According to the **Waste Business Journal**, the average price to landfill a ton of MSW is nearing \$60 per ton—up 9.4 percent from a year ago and nearly 8 percent since December 2020. Average tipping fees rose almost 3 percent in 2020 to \$54 per ton from \$52.37 in 2019, despite COVID and declines in 2020 tonnages. The Journal also reported the most expensive and least expensive states to landfill. Massachusetts is the highest at \$122.63/ton and Idaho the lowest at \$27.83/ton.

...**Greentec 3R** has announced the grand opening of a new tire recycling plant, located in Villa Nueva, Guatemala. Greentec 3R is a fully integrated

plant that collects waste tires and produces products from 100 per cent recycled material. The company selected equipment from Eco Green Equipment, for its shredding, processing and downsizing needs and to recover rubber and steel from the tires for use in other products.

...**Black Bear Carbon ("BBC")**, the Dutch technology provider for upcycling end-of-life tire rubber into recovered carbon black and renewable petrochemicals, has successfully completed a first closing of €7.5M, in a fundraising campaign of €78M for its new BBC flagship plant at Chemelot Industrial Park, the Netherlands. The investment round was led by Capricorn Partners from the Capricorn Sustainable Chemistry Fund, with support from Invest-NL, joined by current investors; Brightlands Venture Partners, Siam Cement Chemicals and others.

...The **Nebraska Department of Environment and Energy** continues to monitor a tire recycling business in Alvo, Nebraska that is cleaning up tires at its tire recycling facility but has not yet come into full compliance. The company was under a legal agreement to reduce the tire pile by July 1 to 240,000 passenger tire equivalents (PTEs), but fell short of that mark, reporting 247,706 PTEs "on the ground." The business also hasn't yet come into full compliance with an agreement to provide fire lanes between tire piles and exterior fences to improve fire safety, according to the State Fire Marshal's Office.

...The **Allegany County (Maryland) Board of Commissioners** voted to extend a 15-year lease to MNM& D, Inc. of Pasadena, Maryland to locate a tire recycling facility in the McCoole Business Park. According to county officials, the company recycles commercial truck tires and is planning an expansion of the business at the eight acre site.

...**TireHog** a completely mobile machine that uses microwave renewable technology to recycle up to 1,200 tires per day is now available from Lubrication Specialties, Inc. (LSI). With the TireHog technology, microwaves break down tires in a continuous process along a conveyor belt, reclaiming valuable end products, including carbon black, oil, and natural gas.

...**Hatko**, a Turkey-based manufacturer of noise barriers from recycled end-of-life tire rubber reports its barriers are being used on the Dardanelles Bridge, the longest mid-span suspension bridge in the world. The barriers decrease traffic noise, even at maximum levels, in high traffic residential or intercity settings. The barriers feature an aesthetic natural vegetative look, are reinforced with a rigid backbone for extra stability, are abrasion resistant and non-flammable. Bridge construction officials selected Hatko sound barriers for their high noise resistance—up to 20 dB—in all weather conditions. The low maintenance, easy to install barriers can be recycled at the end of their useful life, Hatko said. ♦

STN Calendar

August

4-5 Resource Recycling Conference Virtual
10:00 am- 7:00 pm Contact: jef@resourcerecycling.com
8-11 Southeast Recycling Conference and Trade Show,
Orlando, FL. Contact: www.southeastrecycling.com
11-13 Forest Products Machinery & Equipment Expo
2021, Atlanta, GA Contact: www.sfpaexpo.com
19 California New Tire-Derived Product Showcase
Webinar 9:00-11:00 PST
Contact: Tomi Amundseh
Email: amundseh@csus.edu

September

13-14 Carbon Black World 2021, Charlotte, NC
Contact: 330-762-7441. www.smithers.com
14-15 Clemson 2021 Global Tire Conference,
Hilton Head, SC Contact: Sally P. Quелlette 864-656-2200
E-Mail: palmer4@clemson.edu
23 Master Class on Compression Rubber Molding
(Virtual) 8:30 am -5 pm EST.
Contact: www.knowhowwebinars.com

October

3-8 ASTM Fall Committee Week (In-Person) Boston, MA
Contact: www.astm.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
18-20 Synthetic Turf Council Annual Meeting (In-Person)
Tucson, Arizona Contact: www.syntheticurfCouncil.org

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: emmanuel.b@sltcaucho.org



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