Rubber & Plastics News®

February 25, 2019 | The Rubber Industry's International Newspaper | $99 per year. $4.50 per copy

Small mixers think big

Elite finds its niche in rubber industry

By Bruce Meyer
Rubber & Plastics News Staff

RIPLEY, Miss.—After spending more than 15 years in the rubber industry, Steve Glidewell came to a point in his life and career in the early 2000s where he got the entrepreneurial urge.

He had worked for Dana Inc. from 1986 to 2002 and he wanted to start his own company. "I like to tell people I reached that magic age of 39 where I was still stupid enough to start a company," Glidewell said. "I feel if I had waited too much longer I probably wouldn't have had the guts to do that."

So he formed Elite Elastomers Inc. and things have grown from there. Fast forward to 2019, and Elite Elastomers boasts four buildings at its headquarters site in Ripley. That includes the main mixing facility, along with a warehouse for raw materials, as Elite's main business is as a custom mixer focusing on higher-end compounds. Adjacent to that is a standalone research and development center, and two separate plants (only one that currently is being used) for the Engineered Products business established in 2016.

In addition, last fall's purchase of Wayne County Rubber brought Elite Elastomers a second mixing location in Wooster, Ohio. The operation was renamed Elite Elastomers of Ohio.

All told, Elite employs 50 in Ripley and another 20 in Ohio.

RPN photo by Bruce Meyer

Steve Glidewell serves as president of Elite Elastomers, while his wife, Ginger, is technical director of the Ripley, Miss.-based mixer and product maker.

Coming home

It took Glidewell a bit of time deciding where to locate Elite after the company was incorporated. He had worked about a decade in Paragould, Ark., at what was then Dana's Industrial Products Division. He liked the area and there were people wanting to help him get started, but there wasn't much economic support to be had.

He then looked at Tennessee before deciding on coming back to his original home in Ripley.

"It just happened to hit at a good time, the hometown boy coming back," said Glidewell, who serves as Elite Elastomers president. "The big thing there is furniture and they were looking to diversify their manufacturing base. It

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Our special report on Custom Mixing begins on Page 10.

Smooth spinoff leads to success for QPoly

By Chris Sweeney
Rubber & Plastics News Staff

GRANGER, Ind.—"Mutually beneficial" is often an overused phrase. But for QPoly L.L.C., establishing itself as its own company has provided a stronger identity within the custom rubber compounding industry.

Formerly the fluoroelastomer business of Specialty Products & Polymers Inc., QPoly now stands on its own two feet as an independent entity solely focused on custom mixing FKM compounds. The firm employs five people at a 5,000-sq.-ft. site in Granger, with offices in South Bend, Ind.

Being independent from Specialty Products, a custom compounder with a primary focus on silicone, has allowed QPoly to make FKMs the priority.

"We've been able to really focus on this product and seek out specific FKM users," President Michael Shaul said. "The biggest benefit has been in marketing. We now have a brand name in QPoly that is an FKM mixer. This is what we do day in and day out now. It's our specialty.

Shaul

"We're a dedicated polymer mixer with a real focus on customer service and helping the small and medium customers that aren't necessarily buying truckload quantities."

Shaul had worked at Specialty Products for about 11 years, starting as a process engineer. About the same time he started with the company, it was approached by one of its customers—who Shaul identified Specialty Products as its best mixer—to try its hand at FKM compounds.

Specialty originally said no because of its focus on silicone. Its operation is completely white, Shaul said, and adding in a product that uses carbon black didn't fit its vision. However, when the customer came back, sat down and outlined its problem for Specialty, the firm agreed to take on the production.

Shaul said to keep the FKM business separate from the silicone side, the firm dedicated a portion of its carbon black room for its conductive products to mix the FKM compounds.

"It was a combination of their support and input, plus the suppliers that we had," Shaul said. "We reached out to some of the FKM suppliers, their technical services, to get the right product for them."

The success led to some organic

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Bridgestone will expand its plant in Cuernavaca, Mexico, in the next two years.

Bridgestone plans two-year project at Mexico facility

By Kyle Brown
Rubber & Plastics News Staff

CUERNAVACA, Mexico—Bridgestone de Mexico S.A. de C.V. will be expanding manufacturing capabilities in Mexico with an investment up to $100 million during the next two years.

The investment will add manufacturing space to accommodate new tire assembly machines, material handling systems, curing presses and associated equipment at the company's Cuernavaca car and light truck tire plant, according to a company spokesman.

The expansion will enable the 38-year-old plant to consolidate its installed capacity, in addition to increasing that capacity by 3,000 tires per day, serving original equipment manufacturers and local market clients as well as exports, the spokesman said.

The plant has an installed capacity of about 25,000 tires per day, Bridgestone said.

The project also will enable Cuernavaca to meet the growing demand for high value added tires, including run-flats, as well as further improve quality and productivity while developing and implementing new processes and technologies, he said.

"In addition to its critical and strategic role in the Bridgestone Americas manufacturing group, the Cuernavaca plant is one of the most important industrial employers in the state of Morelos, Mexico, employing more than 1,000 workers," the spokesman said. The company did not comment on the expansion's effect on employment.

Bridgestone operates two plants in Mexico, including its Monterrey plant opened in 2007, which produces car and light truck tires, predominately for export.

In 2008-09, Bridgestone invested $90 million in the Cuernavaca plant to expand capacity for ultra-high-performance tires.

Eastman's Cure Pro, part of the firm's Crystex line, is up for an innovation award at the Tire Technology Expo. Story on Page 6.


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Goodyear plans layoffs at Alabama manufacturing plant

GADSDEN, Ala.—Goodyear has confirmed it intends to lay off an undisclosed number of employees at its tire manufacturing facility in Gadsden.

A company spokeswoman said in an email that the firm intends to reduce its work force at the plant sometime in the second quarter of 2019. The firm said it doesn't know how many or what positions will be impacted, but it will "keep associates informed and share accurate information as soon as we can."

The facility, represented by United Steelworkers Local 12, employs about 1,600 people, according to data from *Rubber & Plastics News'* 2018 Global Tire Report. The USW declined to comment.

"The company continually adjusts schedules to maximize capacity at all plants, increase operational efficiencies and best serve our customers with the tires they need, when and where they need them," the spokeswoman said. "This move is part of that process."

Kraton considers divesting its Cariflex polyisoprene business

HOUSTON—Kraton Corp. is contemplating the sale of its Cariflex polyisoprene rubber materials business.

The firm said its board of directors have initiated a process to review strategic alternatives for its Cariflex business. Kraton said it is focusing on enhancing its core businesses to drive value creation and strengthen its balance sheet.

"We believe that the high-margin Cariflex business and its attractive growth prospects are not appropriately valued as part of Kraton," CEO and President Kevin Fogarty said in a statement.

According to Kraton's website, Cariflex polyisoprene products are ideal for applications such as medical goods that require extreme purity, comfort, exceptional protection and consistent high quality.

USW ratifies labor deal with Cooper Tire in Mississippi

CLARKSDALE, Miss.—United Steelworkers Local 556 in Clarksdale has ratified a new four-year labor agreement with Cooper Tire & Rubber Co.

Cooper said in a statement the deal covers more than 40 USW members. Details of the agreement were not disclosed. The factory makes bladders and does mixing, according to Cooper Tire's website.

The USW and Cooper have had a busy February, also reaching an agreement with Local 752 covering 1,440 unionized employees at the tire maker's Texarkana, Ark., factory. That contract also spans four years.

Cooper operates another manufacturing facility in Findlay, Ohio, represented by USW Local 207. That agreement runs through Feb. 28, 2020.

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DEPARTMENTS

Vol. 48, No. 15. Feb. 25, 2019—*Rubber & Plastics News* (ISSN 0300-6123) is published bi-weekly by Crain Communications Inc. Periodical postage paid at Akron and at additional mailing offices. Address all subscription correspondence to: Circulation Department, Rubber & Plastics News, 1155 Gratiot Ave., Detroit, Mich. 48207-2912. Postmaster: Send address changes to: Rubber & Plastics News, Circulation Dept., 1155 Gratiot Ave., Detroit, Mich. 48207-2912.

Tenneco names spinoff Driv Inc.

By Lindsay Chappell
Automotive News

LAKE FOREST, Ill.—The $6 billion-plus spinoff of last year's merger of Tenneco Inc. and Federal-Mogul L.L.C. will be called Driv Inc.

Known for the past few months as Spinco, the mashup of advanced suspension systems and storied aftermarket brands is preparing for a public stock offering in the second half of 2019.

Driv will be headquartered near Chicago in Lake Forest.

The new corporate name echoes the brand name of one of the spinoff's fastest growing products, the patented road-smoothing electronic suspension technology it markets through its Monroe line under the trade name Driv.

But Driv Inc. will operate as a catalog of well-known brand names in markets around the world. Five of the brands are more than a century old. The lines include Clevite Elastomers, Fel-Pro, Monroe, Champion, Oehlins, Moog, Walker, Wagner, Ferodo, Sealed Power and others.

Driv CEO Brian Kesseler, formerly CEO of Tenneco, said the combined stable of brands and business lines represent annual sales of about $6.4 billion. He said the volume is 56 percent aftermarket business and 44 percent original equipment sales to auto makers.

Tenneco and Federal-Mogul announced their merger in April, with a plan to immediately divide the combined activities into two companies: Tenneco would survive as a producer of chiefly powertrain and emissions products, with revenue of about $10.7 billion.

The bulk of the companies' aftermarket operations, plus Tenneco's ride-performance activities, would be spun off into a separate company with expected annual sales of about $6.4 billion.

Last month, the Spinco side of the merger closed on another deal to acquire the Swedish performance suspension supplier Oehlins Racing.

Smithers expands testing site in China

By Kyle Brown
Rubber & Plastics News Staff

SUZHOU, China—Smithers Rapra is building on its presence in China with a new product testing facility, opened in the same site as its tire and wheel testing lab in Suzhou.

The new 4,000-sq.-ft. facility is part of the company's effort to grow and evolve with its clients in the changing local automotive market, said Derek Read, vice president, global development, Asia region. Financial details of the investment were not disclosed.

The laboratory provides for air leak and burst, cleanliness, material properties, salt spray, and pressure, vibration and temperature testing, Smithers said. It will work alongside the company's existing product testing labs in Akron; Lansing, Mich.; and Shawbury, England, for validation testing for original equipment manufacturer fluid transfer systems.

It can test products such as brake lines and coolant hoses to international and OEM standards as well as custom benchmarking programs to support research and development. The lab, which employs 23 split about 70-30 across tire testing and product testing, is ISO 17025-certified.

Smithers has added a new product testing facility in Suzhou, China, which will allow it to better serve its customers in the region. The site will be able to test products like brake lines and coolant hoses to international and original equipment manufacturers' standards.

The product testing laboratory will share resources with the wheel and tire testing laboratory, including several senior engineers and some equipment, Read said.

"For example, our salt spray chamber is commonly used as part of our wheel testing services, and now will also be used to conduct corrosion testing on various automotive components, such as metal hose fittings and clamps," Read said. "Equipment such as our tensile tester, which has been used to test physical properties on rubber tire components, will now be used to test the resilience of hoses and their components."

Read

Within the past year, Smithers has hired engineers that come from the automotive fluid transfer space, bringing that experience to the testing laboratory as well, he said.

Smithers installed new environmental chambers into the Suzhou facility, along with equipment with pressure, temperature and vibration capabilities, and testers for leaks and cleanliness in hoses, Read said.

"In addition, we have acquired a wide variety of test fixture components that can customize test setups based on unique requirements," he said.

One reason for the expansion is the potential of electric vehicles in the Chinese marketplace, Read said.

"For many reasons, China's electric vehicle market is expanding rapidly, even though overall auto sales volume in 2018 declined," he said. "This transition changes the types of components used in vehicle manufacturing as well as the performance expectations for those components."

For example, tire noise will be an even more significant consideration once engine noise is eliminated, he said.

"Battery components need to remain cool during operation. This will be accomplished via coolant hose assemblies, requiring slightly different operating parameters from today's fuel hoses," Read said. "These types of engineering challenges will help drive research and development as well as testing requirements going forward."

Read said the Chinese market has seen high single- to double-digit growth over the last 10 years. Despite a general slowdown over the last few years, Smithers still sees a lot of local investment in R&D activities as manufacturers make improvements to product lines and look for lucrative export markets.

The Suzhou facility has been Smithers' base of operations since 2011, located near many tire and automotive suppliers in China, Read said.

"It continues to be a great location to grow and evolve with our clients," he said. "The support we have seen in Asia for Smithers' services has been amazing."

While Smithers isn't announcing any other expansions of capabilities or services at the Suzhou plants for the near future, the company has several projects in the works for 2019, he said. The addition of the product testing laboratory makes the 22,000-sq.-ft. facility "nearly full." About 2,000 square feet of the space is dedicated to offices, with the remaining 16,000 square feet making up the tire and wheel lab. Smithers anticipates continued growth in testing requirements over the next several years, and is looking into expansion. The company is looking to hire up to eight more employees at the location in 2019.

Smithers also has been investing in expanding its capabilities in other locations, Read said. The company added analytical instrumentation and scientists to its material chemistry labs in the U.S. and England; new facilities and equipment at its Ravenna, Ohio, tire and wheel testing facility; and additional track space and buildings at its proving grounds in Brimley, Mich.

Smithers has laboratories in North America, Europe and Asia, and cover testing services such as material chemistry, product durability testing, tire testing and winter testing.

Toyoda Gosei opens fifth plant in India

By Chris Sweeney
Rubber & Plastics News Staff

DEKAVADA, India—Toyoda Gosei Co. Ltd. continues to strengthen its presence in India.

The firm, through its joint venture Toyoda Gosei Minda India Pvt. Ltd., celebrated the opening of its fifth manufacturing plant in India, located in Dekavada.

A company spokesman said in an email that the firm intends to invest about $27.2 million through fiscal year 2021, which includes securing the land, buildings and production equipment. The site spans about 194,000 square feet and sits on about 807,300 square feet of land.

Toyoda Gosei intends to employ about 330 by the end of March 2021.

The company said the site became operational in October and will produce airbags, weatherstrips and other automotive parts. The spokesman said the site will help Toyoda Gosei capitalize on what is projected to be a growing region and to help better serve one of its largest customers, Suzuki Motor Gujarat Pvt. Ltd., which he said is expanding capacity in India.

"Production volume in India will grow from 4 million to 10 million units per year by 2030," he said. "Especially Suzuki Motor Gujarat, which is one of the main customers of TG and has the largest share in the market."

India and China are two focus markets for Toyoda Gosei as part of its 2025 business plan, which has the goal of generating about $317 million in sales in India by 2025. While the firm would not disclose its current sales level in the region, it said its 2025 goal would be more than double its current business.

The spokesman said demand for air bags, TG's primary product line, is driving growth forward, as well as increased automotive demand.

TG operates four other facilities in India: Toyoda Gosei South India Pvt. Ltd., located in Banadur, employs about 500 people; Minda TG Rubber Pvt. Ltd. is located in New Delhi and employs about 200; its Neemrana site employs about 1,200; and its factory in Bawal employs about 400.

Executives and stakeholders gather for the inauguration of Toyoda Gosei Minda's fifth plant in India, located in Dekavada.

In June, TG opened a development center there in a suburb of New Delhi tasked with increasing sales in the region, and also located engineering and sales operations at the site. The firm said these operations were previously situated at TGMIN's head office in its Neemrana Plant. The site currently employs 10, but TG said when the move was disclosed in June that it intends to increase employment to 20 by 2020.

Naoki Miyazaki, president of Toyoda Gosei Co. Ltd., addresses the crowd for the opening ceremony of its new manufacturing plant in Dekavada, India.

Culture key to APS reaching 10-year milestone

By Kyle Brown
Rubber & Plastics News Staff

ROMULUS, Mich.—Alliance Polymers & Services Elastomers, a distributor of thermoplastic elastomers including its own private label products, reached a business milestone in celebrating its 10th year.

The company's culture and philosophy played a role in reaching that mark, but a major part was its ability to move quickly and make decisions to meet customers' needs, according to Stephane Morin, one of the company's two owners and principals.

Morin

Huarng

Morin and APS's other principal, Roger Huarng, came together while working at BASF Corp.'s Wyandotte, Mich., location. Morin had arrived at BASF with a background as a mechanical engineer with processing experience, and Huarng as a chemical engineer, Morin said. Both worked for BASF's thermoplastic urethanes business for about 15 years. Before going out on their own, Morin was a sales and product manager, and Huarng was a marketing and project manager.

"When (BASF) did not have, at that point, a distributor for their small and medium-size accounts, we made a proposal to the business to become their exclusive distributor of TPU, which they agreed to," Morin said. "They eventually added another distributor, but we started the business by being only a TPU distributor, and only a BASF elastomer distributor."

Starting small

The company started with just the two of them, housed in a 5,000-sq.-ft. building in Romulus. Right away, they realized how much more quickly the company could move as a lean organization to make decisions for customers, Morin said.

"The thing that really amazed me when Roger and I started this company is the amount of time that we did not have to spend in meetings," he said.

Their accumulated knowledge of how corporations worked gave them insight into the best ways to develop and support customers, Morin said. Eventually, APS got into thermoplastic vulcanizates and thermoplastic elastomers to give customers a one-stop shop for elastomeric materials. But more than providing products, they realized that their customers needed education and recommendations about elastomers.

"Our biggest strength is to be technically knowledgeable enough to make very quickly the right assessment on the material that is needed," Morin said. "We've become not only a supplier of material, but a technical resource for our customers."

On top of some compounding and blending in-house, APS can do tool and part design, and has the ability to run trials for smaller parts in-house, as well as produce new samples. Morin said it amazes him how many design shops, engineering firms and new customers call because they can't get that kind of information from OEMs.

"Elastomers is unique in itself, so it's important to find the right people to solve problems, or keep people from falling into problems," he said. "Roger and I, our background is technical, so we know what we're talking about."

In time, Morin and Huarng decided that the company should make its own materials, alongside the others it distributed, he said. Working with producers under private labels in both Asia and Europe, APS developed its own products, such as Viprene TPV, Zythane TPUs and Maxelast TPEs. With their industry knowledge, they've been able to recognize the strengths and weaknesses of suppliers in chemistry and processes. Volume in that business has grown to the point that APS is evaluating the potential of a supplier stateside.

"Right now, we're at the crossroad of having enough volume to start looking at a partnership in the U.S., or a manufacturing facility in the U.S., to start something over here, just to cut down on the long lead time on the supply-chain side," Morin said.

Building a network

APS relies on independent agents and sub-distributors to reach markets across North America, he said. The company has five employees working between the warehouse and administrative space in its headquarters, and a network of between 30 and 40 individuals representing its products across the country.

"We obviously have direct accounts, but it's a lot easier for us to rely on people of quality that have the relationship with the molder or the extrusion house to come in and say, 'You're using elastomers, I know this company that's pretty good.' Then we can interact to say what we can do, and we've been very successful in doing this," Morin said.

APS, which uses its small size to focus on smaller orders on tight turnaround, has market coverage for most of the U.S. in its network, Morin said. It has agents on both coasts, as well as the Southwest, and covers the Midwest from its now 20,000-sq.-ft. Romulus headquarters, in the same building it started in. It partners with distributors on both coasts to maintain inventory in warehouses on both ends of the country to keep shipping times down. APS does some work with Canadian customers, and with Mexican customers as long as the paying company is based in the U.S.

Maintaining supply

APS's margins aren't there to support salespeople traveling across the country for a box of material, he said. But in the last two years, the market has started requesting larger orders as supply has tightened.

"There were a lot of issues in the last year with *force majeure* in the industry and people not being able to get their materials on time," Morin said. "We operate in a very different manner, where we have the inventory on the floor at all times. A small customer that wants a few bags or even a box, if they call by noon, we can ship."

Where distributors often don't want to keep inventory, and have long lead times and credit processes, APS doesn't operate that way, Morin said. If a customer is looking to buy a small, specific amount of a material because of a contract, he'll sell them that quantity.

"I don't have a problem with that, and I'm not going to gouge them because of it," Morin said. "My previous life was as a molder, so I understand that when you have a contract, you have a job to do. You don't know when that job is going to repeat itself. You don't want to sit on material for six months or a year because there was a minimum quantity of a box, and you only needed 100 pounds out of that box."

Morin said APS has maintained its own supply levels during higher scarcity by working with more international suppliers that don't already have a presence in the U.S.

"Believe me, we don't put all our eggs in one basket," he said. "We have multiple suppliers of materials, and we're still looking at qualifying others, too."

In the last year, APS came close to doubling its business because it had already qualified suppliers in other locations as supply lines tightened, Morin said.

"We've done this long enough that we're not going to get caught with our pants down," he said.

As the volume of business has increased, APS has started to scale along with it, Morin said. Looking for a partner in the U.S. for domestic compounding and synthesis of TPU is one step. The company is also potentially searching for a larger space to work with beyond its headquarters, though it does also have the option to expand for a third time in its current building.

While APS is putting its efforts toward future development, it isn't doing anything special to mark the occasion of its 10th anniversary, Morin said. As some smaller companies struggle to make it through their second year, let alone their fifth, APS's agility and philosophy have pushed it past 10 years with more to come.

"We celebrate every day," he said. "We're doing our 10th year and we're profitable. We know what we're doing, and we can do this for a long time."

Cure Pro next innovation in Eastman Crystex line

By Bruce Meyer
Rubber & Plastics News Staff

RPN photo by Bruce Meyer

Ajit Joshi (left) and Fred Ignatz-Hoover were on hand at the recent International Elastomer Conference to discuss Eastman Chemical's Crystex Cure Pro insoluble sulfur additive.

AKRON—For several years Eastman Chemical Co. has been working on the latest addition to its Crystex-brand family of insoluble sulfur additives, and now the new product is up for an award at an upcoming industry event.

The firm's Crystex Cure Pro is a nominee for the 2019 Tire Technology International Awards for Innovation and Excellence, with the winners being announced at the Tire Technology Expo March 5-7 in Hanover, Germany.

Eastman's Cure Pro product builds on prior Crystex products, including Crystex HS and Crystex HD, yielding an even more dispersible, thermally stable product than has been offered in the past, Fred Ignatz-Hoover, an Eastman technology fellow, said during a recent interview.

"For this customer, this means improved handling, ease of material transfer, ease of weighing and less headaches in manufacturing products," he said.

Decades of history

This year marks the 75th anniversary of the Crystex line of insoluble sulfur. The importance of insoluble sulfur in the rubber industry was first recognized in 1932 by a Goodyear chemist named Herbert Endres, according to Ignatz-Hoover.

Endres patented a blend of soluble sulfur with insoluble sulfur to prevent bloom during mixing. In that time period Stauffer Chemical Co. bought National Sulfur, he said, and the use of insoluble sulfur started to take off because of its beneficial features.

"The insoluble sulfur allows tire companies and rubber manufacturers to compound materials to higher loadings of sulfur and have an opportunity to manufacture without the interference of bloom," Ignatz-Hoover said. "The goals of the product for 80-plus years now have been to improve the thermal stability and the dispersibility of insoluble sulfur."

The Crystex brand itself has been through a number of ownership changes over the years. Ignatz-Hoover—who has been with Eastman and predecessor companies Monsanto, Flexsys and Solutia since 1986—said he believes it was Stauffer Chemical that first trademarked the brand.

And as tire manufacturing has evolved over the years, so have the Crystex offerings. In 1975, the high stability Crystex HS was introduced, followed by Crystex HD, a high dispersion version, in 1998.

"In the tire industry, mixing and calender operations at production scale are extraordinarily difficult to simulate in the laboratory."
Fred Ignatz-Hoover

Next step forward

Crystex Cure Pro is the next evolution of a brand that has endured over the years, Ignatz-Hoover said. Its dispersion characteristics are significantly faster than Crystex HD, allowing manufacturers to optimize cycle times.

"We've also engineered into the product improved thermal stability characteristics," he said. "We estimate that customers can expect to see improvements in processing temperatures on the order of 4°C to 6°C. In some cases we've seen customers able to improve their processing by as much as 10°C."

Combining the thermal stability with the improved dispersion, he added customers can mix at higher RPM, which can cause higher heating in the mixing process but results in shorter mixing times and increased throughput. In addition, customers can run downstream processes such as calendering faster, with some reporting improvements of 10-15 percent in actual line speed rates—all without issues related to sulfur bloom.

"This allows for higher productivity and significant cost savings, while still producing very high quality products that are associated with the Crystex name," Ignatz-Hoover said.

Another Cure Pro feature that benefits customers, he said, is that the additive is roughly 10 percent oil products, compared to other grades that can be 20 or 33 percent oil. That means the customer sees more sulfur in the compound, saving floor space and storage areas and resulting in operational savings.

The first public presentation on Crystex Cure Pro was in October 2017 at the ACS Rubber Division International Elastomer Conference in Cleveland. Ignatz-Hoover said Eastman has been working with its alpha partners in developing the new line for about the past four years, work he said was invaluable to the product's development.

"In the tire industry, mixing and calender operations at production scale are extraordinarily difficult to simulate in the laboratory," he said. "So we designed and worked on engineering the product in the laboratory, and then we took those features which we felt were important, trialed them in the factory and learned what works and what doesn't work."

That was helpful in streamlining the development process, having access to production-scale equipment and operations so that Eastman and its partners could run tests in real time and perform long-term trials as well.

The company first began commercial production of Cure Pro at its factory in Nienburg, Germany, in 2017, and then began making the additive at a facility in Malaysia last year. Investment and development costs weren't disclosed.

"We strongly believe in the technology and it's already seen a lot of commercial use by customers," said Ajit Joshi, an Eastman Chemical segment market manager.

Ignatz-Hoover said Eastman has commercialized the product with customers beyond its alpha partners, and feedback has been extremely positive.

"It's not just for tires," he said. "It can be used anywhere insoluble sulfur could be used, such as hoses and belts. ... We feel this is going to be a very important product in our portfolio and we think customers are going to be very excited at the benefits they will see using the product."

When asked about the price point for Cure Pro, Joshi said it is a premium product that will help customers gain more value from their end goods, and both parties can then gain a fair share of this value. "That makes investment in new innovations possible," he said.

Global NR platform establishes governance structure

By Miles Moore
Rubber & Plastics News Staff

SINGAPORE—Stakeholders have agreed to a governance structure for the Global Platform for Sustainable Natural Rubber and are ready to approve it, according to the organization.

More than 50 attendees, including founding members of the GPSNR and other natural rubber stakeholders, approved the structure and a plan for priority actions at a Jan. 22-23 workshop in Singapore, according to a GPSNR news release.

GPSNR Director Stefano Savi said the move is a significant development in the establishment of the organization.

"We've seen compromises from all parties," Savi said. "There's a spirit of cooperation and inclusivity that shows there's real commitment to make this work."

The GPSNR has its first General Assembly scheduled for March 21 in Singapore, in conjunction with the World Rubber Summit. At that time, the governance structure will be proposed for adoption, the firm said.

"Some details remain that will need to be worked out in the drafting of the statutes and Code of Conduct documents," Savi said. "I am confident we are in a good position to see these documents approved."

Established in November 2017 by the Tire Industry Project of the World Business Council for Sustainable Development, the GPSNR is a multi-stakeholder initiative designed to improve the socio-economic and environmental performance of the natural rubber value chain, according to the GPSNR.

"The GPSNR will work to harmonize standards to improve respect for human rights, prevent land-grabbing and deforestation, protect biodiversity and water resources, improve yields, and increase supply chain management and traceability," it said.

As presented in the press release, the GPSNR board of directors will be comprised of 30 percent rubber producers, processors and traders; 30 percent tire makers, rubber product makers and rubber buyers; 30 percent "civil society;" and 10 percent auto makers, other downstream users and financial institutions.

The board will have 10 members, and the term of office for board members will probably be two years, according to Savi.

The enrollment of smallholders in the GPSNR will be a priority of the organization, the release said.

While direct participation by smallholders in the GPSNR is possible, the sheer number of smallholders makes that infeasible, according to Savi.

"For this reason, the platform has set itself the target of defining criteria for smallholders' representation," he said.

A smallholders' working group will work out the criteria for smallholders' participation, and they will be represented within the Producers category, Savi said.

The GPSNR also will work on recruiting rubber processors, non-tire rubber product makers and non-government organizations specializing in social issues relevant to rubber production, according to the press release.

Details of the GPSNR's outreach activities will be released soon, according to Savi.

The GPSNR will be based in Singapore, the release said. The TIP will support the GPSNR financially during its start-up and its first two years while the organization works out a long-term revenue model, it said.

Opinion

Smaller mixers make big impact in rubber market

It's no big secret that the rubber custom mixing business has a handful of large players at the top of the food chain, players that look for large volumes and can operate on a wide scale, sometimes globally.

At the same time, however, custom mixing also remains a business where the small shops can still find a niche in the business, and a profitable one at that. They're the firms that believe that relationships and working closely together can make them invaluable to a certain breed of customer.

Elite Elastomers and QPoly are two examples of smaller mixers that are making a living at being an invaluable partner to their customers. It's probably no accident that both are located in small communities. Elite is in Ripley, Miss., the hometown of company founder Steve Glidewell, while QPoly, a spinoff from Specialty Products & Polymers, is located in Granger, Ind., just 10 miles across the Michigan border from SP&P.

Both also are aiming to make their marks in the high end of the business, with Elite gaining a good share of its business mixing fluoroelastomers and HNBRs for critical applications in the oil and gas market, and QPoly focusing exclusively on FKMs.

Glidewell's story itself has some "American Dream" qualities built into it. He had worked for conglomerate Dana Inc. for 16 years when the entrepreneurial urge hit him. He knew that he'd come to the point where if he didn't act then, the dream of starting his own company probably never would happen. He's also a pragmatist, as economics played as much or more of a role in him establishing Elite in Ripley as did the fact that it was his hometown.

Glidewell and his wife, Ginger, Elite's technical manager, also know where Elite falls in the business equation. "We're not the star of this show, our customer is," Steve Glidewell said. They know that Elite's mission is to identify where a customer has a problem, and the mixer will lead them to the solution. That's the company's role, rather than being in the spotlight.

The Elite team also believes in the power of small groups. That's evidenced by its acquisition last fall of Wayne County Rubber, a small mixer in Ohio. The two were put in contact with each other by an Ohio-based rubber goods maker, and Steve Glidewell sees the Wayne County purchase as a perfect match with leaders who share the same value system.

At QPoly, the story is similar to one you hear over and over. Michael Shaul had worked at Specialty Products, a mixer of silicone compounds, for about 11 years when a customer asked it to consider mixing its FKM goods. Specialty Products turned down the request, but the customer was persistent.

When that relationship became a success, Specialty Products realized some organic growth with its existing customers that needed both silicones and FKMs.

The problem was the FKM business always was going to be in the shadow of the silicone mixing, and didn't have its own identity.

So Shaul approached Specialty Products founder Rick Rey with a proposal to purchase the FKM business and start up a separate mixing firm. The process took about a year, but resulted in QPoly moving to its own facility with its own name and the ability to forge its own path.

These stories are reminders that companies don't have to be large to have a big impact.

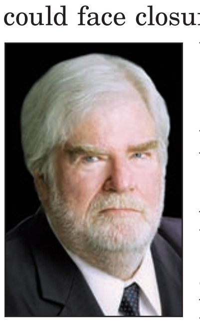
VIEWPOINT

Pondering EV fallout

By Keith Crain

Amid the euphoria surrounding electric vehicles, I have wondered what would happen to the huge economic structure that has been built around our interstate highway system if EVs grow in popularity.

Thousands of gasoline stations that dot our highways could face closure. And how would other businesses along the routes—fast-food restaurants, stores and motels, for instance—be affected?



Certainly, we'd have lots of businesses that not only would offer charging stations but many other amenities for EV users.

But would we also have to convert our highways to pay-as-you-go toll roads?

Without the enormous amount of tax revenue collected on the sale of gasoline, we'd have to come up with another system to raise the billions of dollars needed to build and maintain roads, bridges and other infrastructure.

I suppose we could use a licensing setup not unlike the British have adopted to support their noncommercial TV system—consumers buy a license that allows them to install or use TV receiving equipment.

Already, many states, including ones that have zero-emission vehicle mandates, are recognizing this gap and imposing higher annual registration fees and surcharges on EVs and hybrids in lieu of gasoline taxes. But there's still nothing similar in place at the federal level.

At some point, policymakers will have to replace the tax on gasoline and diesel with a more equitable funding mechanism so we can continue to enjoy the infrastructure that we have today.

Most EV fans would be unhappy about losing the tax subsidy attached to the purchase of the vehicles.

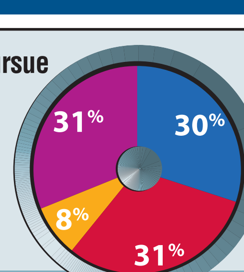
I also expect them to be unhappy when they face heftier payments every year to support the highway system.

Crain is chairman of Crain Communications Inc., which publishes Rubber & Plastics News.

WEB POLL RESULTS

Q: Would you advise someone close to you to pursue a career in the tire and rubber industry?

- Absolutely. I've had a rewarding career.
- Yes. But go in with your eyes open.
- I wouldn't take a stance one way or the other.
- No. There are better opportunities elsewhere.



Graphics by Michael McCrady

Total Votes:184 Poll Date: Feb. 7 - 21, 2019. Vote at www.rubbernews.com

QUOTE OF THE WEEK

"We've been identified as a group that can handle intellectual discussions and property in a fashion that is comfortable moving forward. ... It's very nice to have that reputation."

—Ginger Glidewell, technical director of Elite Elastomers, on the company's industry reputation.

Rubber&PlasticsNews
Vol. 48 No. 15

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Rubber & Plastics News is published bi-weekly by Crain Communications Inc.
Subscriptions: U.S., one year $99; two years, $178. Group rates, $79 each for five or more copies. Air mail and first class delivery to U.S., U.S. possessions, Mexico and Canada, $164; the Middle East and Europe, $219; all other regions, $293. For surface delivery to Canada, $138 (including GST); Mexico and all other foreign countries, $140. Single copy, $4.50.
Rubber Directory & Buyers Guide, $89 per copy plus $6 for first class postage and handling in the U.S. and Canada. Four weeks' notice required for change of address. GST #136760444.
Printed in the U.S.
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SPECIAL REPORT — Custom Mixing

AirBoss adds innovation lab

By Mike McNulty
Rubber & Plastics News Correspondent

NEWMARKET, Ontario—Continual innovation and expanded capabilities have been the driving forces within AirBoss of America Corp. for the last several years.

Now, as part of an extensive growth program, the company is taking both to a new level, according to officials within the firm.

On the innovation front, the Newmarket-based, multi-faceted company is in the process of adding a new state-of-the-art laboratory and development center in a building located adjacent to the firm's main mixing facility, which spans a million square feet in Kitchener, Ontario. The building is connected by a corridor to the compounding facility.

At the same time, AirBoss is installing a new mixer at its mixing plant in Scotland Neck, N.C., to double the site's capacity. The new line is expected to be operational in July.

It also is adding a new color and specialty polymer mixing line at the Kitchener facility—with the startup planned for February—that will allow the firm to focus on more specialty products, Chris Bitsakakis, the firm's chief operating officer, said in a recent interview.

In addition, he said the company has plans in the works to install another large volume mixing line at its Kitchener complex. Currently, it estimates the line will be in place at the end of December, he said.

New development center

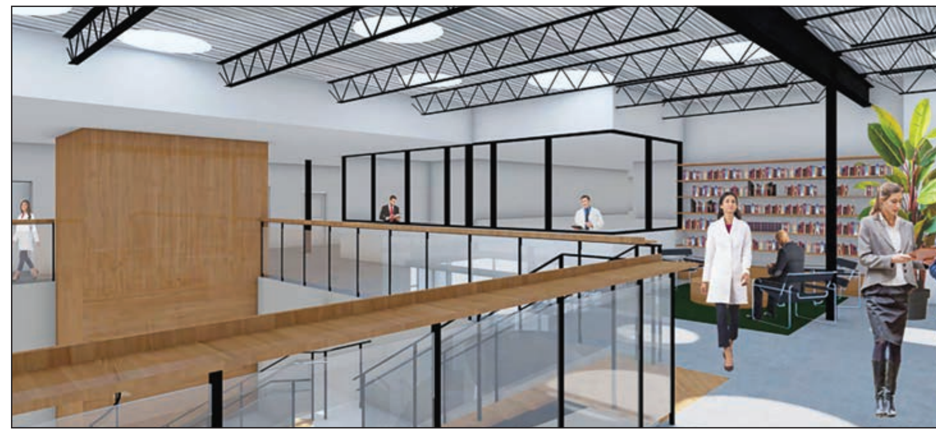
AirBoss launched a multimillion dollar project that involves gutting and renovating an existing building adjacent to the Kitchener facility that will house the laboratory and development center, according to Bitsakakis. The structure previously was used to house administration offices and a smaller research and development lab on the second floor and the maintenance department on the first floor, he added.

"We moved the maintenance department into the main building and freed up the first floor," he said. "We are building a main entrance into the first floor with a reception area and lobby for customers and suppliers.

"Adjacent to the reception area there will be offices for our sales department and purchasing department. There also will be large conference rooms available for suppliers and customers to work with our staff on new business development on the main floor without needing to progress to the upper floor."

From the first floor, a hole in the ceiling is being cut to allow for the construction of a staircase that connects both levels. "Upon arriving upstairs from the staircase there will be a technical library and seating area for the brainstorming of ideas

See **AirBoss**, *page 12*



An artist's rendering of the new lab and development center that AirBoss is putting adjacent to its mixing facility in Kitchener, Ontario.

ADVERTISEMENT

Why tire plants of the future require Thinking Small

CUYAHOGA FALLS, OH — In recent years tire industry professionals have started to observe a dramatic change happening in tire manufacturing. In 2013 Modern Tire Dealer Magazine ran an article detailing a nearly four-fold increase in the number of unique tire sizes fitted to U.S. vehicles, alone, since 1983. The number of SKUs had almost doubled in just the previous decade.

A year later Pelmar Engineering's presentation at the 2014 Future Tire Conference, explored six challenges facing modern tire manufacturers: (1) Rising land costs, worldwide. (2) Global politics that often impede imports. (3) Increasingly expensive logistics costs to ship across vast distances. (4) Growth in specialty products. (5) Stricter environmental requirements. (6) Increasing labor costs. The sum of these challenges influenced many tire manufacturers to consider a different manufacturing model. Tires would be made local to the consuming market, utilizing smaller, more agile plants capable of producing multiple SKUs with minimum downtime.

In subsequent years, research studies by knowledgeable industry resources, including well-known market research firms, Black Donuts and others, came to similar conclusions about the future of tire manufacturing.

Meeting the challenges of the future

Around the same time the Steelastic team was carrying out a detailed market evaluation which included modeling of the entire component preparation process. They realized that a plant, with legacy calendering and offline processing equipment, had to produce upwards of 3.5 million tires per annum to make this type of equipment and space commitment have a viable return on investment. Steelastic also began to observe a large and growing desire in the market for plants capable of profitably manufacturing 1-3 million tires per annum in multiple SKUs. To service the needs of these smaller plants, calendering, and its associated offline processing, had to be replaced by extrusion-based component manufacturing machines similar to the Steelastic equipment already used to produce steel belt and cap strip. These new machines would also have to offer greater automation and unrivaled flexibility.

With this knowledge in hand, Steelastic pursued an aggressive product development-based strategy aimed at producing a new range of tire component preparation machines ideally suited to these smaller, more versatile plants. These machines were specifically designed to eliminate the requirement for large, inflexible calendering machines, and associated processes, in the tire manufacturing process.

In order to fully enable the switch from the calendering to the extruded process a solution for extruding, high quality, textile body ply material had to be found. This had long being the missing piece in the 'calenderless' tire plant puzzle. Significant development work was undertaken by Steelastic. Two leading industry partners were secured for the critical in tire validation testing required. Over a period of 18 months extrusion and splicing technology was optimized to achieve a fully viable alternative to producing textile body ply components for passenger car tires.

See the final piece of the 'Calenderless' puzzle at TireTech 2019

Last year Steelastic introduced its next generation of Extruded Steel Belt Machine featuring full closed loop control. At Tire Technology Expo 2019, Steelastic is rolling out a new Extruded Textile Body Ply System, the missing piece in a "calenderless" manufacturing environment of the future. As with all Steelastic equipment, the Extruded Textile Body Ply System offers unparalleled versatility and rapid changeover between SKU's. Advanced extrusion and splicing technology reliably produces uniform material for quality tire manufacturing at a fraction of the capital outlay and ongoing running cost of large, inflexible, calendering and offline processing equipment.

By Ian Dennis
President, Steelastic, Inc.

Stop by Booth 8014 at Tire Technology Expo 2019 to see how the future of tire manufacturing is changing forever.

AirBoss

Continued from page 10

in a casual setting," Bitsakakis said. "Beside the library we are building a new, much larger state-of-the-art laboratory for research and development."

All of the firm's chemists and technical staff will be located in offices directly around the new technical center and will be separated into two groups, he said.

Part of the group will focus on segment customers and the development of products required to solve day-to-day problems.

"The other part will be dedicated in a broader sense to the pure research of new technologies—such as nano technologies—that could affect rubber applications or rubber processing," he said. "We are creating stronger relationships with local universities and looking toward collaborating with customers, suppliers and university research departments to bring the level of innovation in rubber compounding to another level.

"We feel that by focusing on this path we will be able to better differentiate ourselves from competitors and provide advanced solutions to our customers, making us the compounder of choice."

Bitsakakis said the firm, which also operates a compounding plant in Acton, Quebec, hopes to complete the project and have everything up and running by June. He added that parts of the operation likely will move in by March or April.

Broadening capabilities

AirBoss' Kitchener complex added and has been preparing to use a new color and specialty mixing line in February. That addition aligns with the company's greater emphasis on R&D, according to Bitsakakis.

"We are replacing an old large volume mixer that we were using for high volume, less critical formulations in Kitchener," he said.

He said that by replacing it "with a new state-of-the-art large scale mixer, we will be able to focus our growth on large volume customers but do it with a super efficient mixing line. This will allow us to scale up in volume while improving quality and efficiency."

Meanwhile, work is underway in preparation for the addition of a new mixing line in Scotland Neck.

"Last year we filled the North Carolina plant with work on all three shifts and we had more opportunities available to continue growing in that region," Bitsakakis said.

He anticipates the line will be operational in July.

By the end of December, he said the company will have installed three new mixing lines, a new laboratory and development center at the Kitchener site, and a reception and meeting area for customers in Kitchener.

"I do think that all these investments will help us grow by broadening our capabilities in a way that we can address a larger part of the market we serve," Bitsakakis said.

Listing of North American custom mixers

A

A. Schulman Inc.
Advanced Polymer Compounding
400-A Maple Ave.
Carpentersville, IL 60110
847-426-3350
www.aschulman.com

Ace Elastomer Corp.
320 Bryant Blvd.
Rock Hill, SC 29732
803-324-7979
www.aceelastomer.com

AirBoss of America Corp.
16441 Yonge St.
Newmarket, ON, Canada L3X 2G8
905-751-1188
www.airbossofamerica.com

AirBoss Engineered Products Inc.
970 rue Landry
Acton Vale, QC, Canada J0H 1A0
450-546-2776
www.airbossofamerica.com

AirBoss Rubber Compounding
101 Glasgow St.
Kitchener, ON, Canada N2G 4X8
519-576-5565
www.airbossofamerica.com

AirBoss Rubber Compounding N.C.
500 AirBoss Pkwy.
Scotland Neck, NC 27874
252-826-4919
www.airbossofamerica.com

Akron Dispersions Inc.
3291 Sawmill Road
Akron, OH 44321
330-666-0045
www.akrondispersions.com

Akron Rubber Development Laboratory
2887 Gilchrist Road
Akron, OH 44305
330-794-6600
www.ardl.com

Alloy Polymers A division of RTP Co.
3310 Deepwater Terminal Road
Richmond, VA 23234
804-232-8000
www.alloypolymers.com

Alltran Inc.
5285 Hudson Drive
Hudson, OH 44236
330-650-2223
www.alltran.com

American Biltrite (Canada) Ltd.
200 Bank St.
Sherbrooke, QC, Canada J1H-4K3
819-829-3300
www.american-biltrite.com

American Phoenix Inc.
800 Wisconsin St., No. 11
Eau Claire, WI 54703
715-831-0966
www.apimix.net

Ampacet Corp.
660 White Plains Road
Tarrytown, NY 10591-5130
914-631-6600
www.ampacet.com

B

Barco L.L.C.
P.O. Box 216
280 Pequanoc Drive
Tallapoosa, GA 30176
770-574-2272

Brandywine Rubber Mills L.L.C.
1704 North Park Drive, Suite 508
Wilmington, DE 19806
267-499-3993
www.brandywinerubber.com

Britannia Rubber Mfg. Ltd.
1676 Britannia Road East
Mississauga, ON, Canada L4W 1J2
905-564-0582
www.britanniarubber.com

Bruckman Rubber Co.
101 S. St. Joseph Ave.
Hastings, NE 68901
402-463-3129
www.bruckmanrubber.com

Burke Industries Inc.
2250 S. 10th St.
San Jose, CA 95112-4197
800-669-7010
www.burkeind.com

C

Central Rubber Co.
844 E. Jackson St.
Belvidere, IL 61008
815-544-2191
www.centralrubbercompany.com

Chardon Custom Polymers L.L.C.
373 Washington St.
Chardon, OH 44024
440-285-2161
www.chardoncp.com

Chem Technologies Ltd.
14875 Bonner Drive
Middlefield, OH 44062
440-632-9311
www.chemtechnologiesltd.com

Colonial Diversified Polymer Products L.L.C.
2055 Forrest St.
P.O. Box 930
Dyersburg, TN 38025-0930
800-303-3606
www.colonialdpp.com

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Biddeford, ME 04005
207-283-6422; 800-290-9192
www.crisil-silicones.com

Cri-Tech Inc.
85 Winter St.
Hanover, MA 02339
800-826-5699
www.critechinc.com

D

Datwyler Sealing Solutions USA
875 Center Drive
Vandalia, OH 45377
800-227-3539 (within U.S.)
937-890-7464 (outside U.S.)
www.datwyler.com

Dow Performance Silicones Corporate Center
2200 W. Salzburg Road
Auburn, MI 48611
989-496-4400
www.consumer.dow.com

D.S. Brown Co.
300 E. Cherry St.
North Baltimore, OH 45872
419-257-3561
www.dsbrown.com

Dyna-Mix Inc. (Texas)
705 S. Lyons
Tyler, TX 75702
800-527-8403
www.dyna-mix.com

Dyna-Mix Inc. (West Virginia)
State Route 310
1879 Country Club Road
Grafton, WV 26354
800-255-2681
www.dyna-mix.com

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Eagle Elastomer Inc.
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Peninsula, OH 44264
330-923-7070
www.eagleelastomer.com

Elite Elastomers Inc.
200 CR 565
P.O. Box 496
Ripley, MS 38663
662-512-1770
www.eliteelastomers.com

Elite Elastomers of Ohio
1205 E. Bowman St.
Wooster, OH 44691
330-264-5553
www.eliteelastomers.com

F

Finite Fiber
1374 Markle St.
Akron, OH 44306-1801
330-773-6654
www.finitefiber.com

Fulflex Subsidiary of the Moore Co.
32 Justin Holden Drive
Brattleboro, VT 05301
802-257-5256
www.fulflex.com

G

Gendon Polymer Services Inc.
38 Nixon Road
Bolton, ON, Canada L7E 1W2
905-951-6118
www.gendon.com

GoldKey Processing Inc. —a Hexpol Company
14910 Madison Road
Middlefield, OH 44062
440-632-0901
www.hexpolcompounding.com

Goldsmith & Eggleton Inc.
300 First St.
Wadsworth, OH 44281
330-336-6616
800-321-0954
www.goldsmith-eggleton.com

Goodyear Rubber Co. of Southern California
9615 Feron Blvd.
Rancho Cucamonga, CA 91730
909-987-1774
www.goodyearrubber.com

Graphic Arts Rubber Inc.
101 Ascot Pkwy.
Cuyahoga Falls, OH 44223
330-923-4101
www.graphicartsrubber.com

Great Lakes Rubber Co. Inc.
30573 Beck Road
Wixom, MI 48393
800-893-3645
www.greatlakesrubberco.com

H

Hawkins Industrial Resource Co.
1001 E. 18th St.
Muncie, IN 47302-4324
765-282-6021

Hexpol Compounding Burton Rubber Processing
14330 Kinsman Road
Burton, OH 44021
440-834-4644
www.hexpolcompounding.com

Hexpol Compounding Burton Rubber Processing
260 Old State Route 34; P.O. Box 377
Jonesborough, TN 37659
423-753-2196
www.hexpolcompounding.com

Hexpol Compounding—Kennedale, TX
635 Tower Drive
Kennedale, TX 76060
817-483-9797
www.hexpolcompounding.com

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SPECIAL REPORT — Custom Mixing

Preferred acquires Valley Rubber Mixing assets

By Mike McNulty
Rubber & Plastics News Correspondent

Preferred gained a custom mixing operation in Whitewater, Wis., from its acquisition of Trostel in 2016.

COPLEY, Ohio—After a short hiatus, Preferred Compounding Corp. is back on the acquisition trail.

The company has purchased the assets of Valley Rubber Mixing, some machinery and its proprietary mold cleaning technology and products, sold under the trade name Glo-Mold, from a private owner, said Marc Pignataro, the company's vice president of sales and business development.

Terms of the transaction, which closed Jan. 14, were not disclosed.

Preferred also is relaunching Glo-Mold's line of mold cleaning products as GloMoldPlus. The firm said in a Feb. 20 news release that the rebranding effort is to highlight recent product improvements and Glo-Mold's positioning under the Preferred umbrella.

It is Preferred's third acquisition in a little more than three years. During that span, the Copley-headquartered firm also added a warehousing and production facility in Mexico.

A custom rubber compounder with mixing and calendering capabilities, Valley Rubber Mixing is based in Akron. Preferred did not acquire the firm's production plant, which was leased and also was located in Akron, according to Pignataro.

He said many employees at Valley Rubber Mixing will be retained, but the exact number was not released. Equipment acquired will be moved to some of Preferred's compounding facilities, but a determination has not been made as to which locations will get which machinery, he said.

However, Pignataro said the company plans to move the GloMoldPlus product production operation to its plant in Barberton, Ohio.

"Valley Rubber Mixing is a nice bolt-on acquisition," Ken Bloom, CEO and president of Copley-based Preferred, said in a statement.

He said the purchase will broaden the company's customer base and give it new markets for potential growth. The addition of the GloMoldPlus proprietary mold cleaning technology also adds to the firm's product portfolio.

"We feel our commercial channels will help grow the Glo-Mold business significantly," Bloom said.

He added that the firm plans to work closely with Valley Rubber Mixing customers to assure a smooth transition.

Preferred has been successful with the acquisitions and additions it has made in the last three years, Pignataro said, while at the same time it has continued to experience solid organic growth.

Currently, the company, which is owned by members of the firm's management team and Audax Private Equity, operates production facilities in Barberton and Wadsworth, Ohio, along with sites in Wisconsin, Georgia, Tennessee and Mexico.

Preferred added the Whitewater, Wis., plant when it acquired rubber compounder Trostel Ltd. in 2016, and the Wadsworth factory became part of its fold in 2017 when Preferred bought Kleen Polymers Inc., a custom rubber compounder specializing in non-black elastomeric compounds.

Both acquisitions expanded Preferred's mixing capabilities, the company said.

In addition to buying Trostel's compounding business, Preferred also purchased the firm's parts molding operation. In December 2017 it sold the molded products business, based in Lake Geneva, Wis., to ParkOhio but retained the mixing operation. The latter is now called Preferred Compounding Whitewater.

Included in the sale of the molded products operation were manufacturing plants in Reynosa, Mexico, and McAllen, Texas, along with the facility in Lake Geneva, which serves as the technical center for the business.

Pignataro said Preferred sold the molded products business "because our focus is on elastomer compounding. It may have been perceived that we were potentially competing with some of our molding customers if we would have continued to operate that business."

Other key moves made in 2016 included adding another compounding and warehousing facility that spans 57,000 square feet adjacent to the company's mixing plant in San Luis Potosi, Mexico; purchasing a new F-270 mixer for its mixing facility in Huntington, Tenn.; and leasing a new headquarters in Copley, freeing up space at its Barberton compounding plant, where it was previously based.

Preferred added the building in San Luis Potosi because additional space was needed to handle the company's continuing growth, Bloom said at the time. The firm's original plant had been expanded three times since Preferred purchased it in 2012.

Listing

Continued from page 13

Hexpol Compounding Colonial Rubber Works
150 S. Connell Ave.
Dyersburg, TN 38024
731-285-4353
www.hexpolcompounding.com

Hexpol Compounding North Carolina
280 Crawford Road
Statesville, NC 28625
704-872-1585
www.hexpolcompounding.com

Hexpol Compounding Valley Processing
491 Wilson Way
City of Industry, CA 91744
626-961-0311
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Hexpol Compounding S.A. de C.V. (Mexico)
Av. Japon #302
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C.P. 76220, Santa Rosa Jauregui
Querétaro, Mexico
011-52-442-211-3500
www.hexpolcompounding.com

Hexpol Silicone Compounding
3939A Mogadore Industrial Pkwy.
Mogadore, OH 44260
440-682-4039
www.hexpolcompounding.com

Hoosier Racing Tire Custom Manufacturing
2307 Pidco Drive
Plymouth, IN 46563
574-784-3409
www.hoosiertirecustommfg.com

HTS Mixing
3260 Goodyear Blvd.
Union City, TN 38261
731-884-2536
www.htsmixing.com

I

IER Fujikura Inc.
8271 Bavaria Road
Macedonia, OH 44056
330-425-7121
www.ierfujikura.com

Infinity Rubber Compounding Solutions
100 Kennedy St.
Welland, ON, Canada L3B 0B4
905-735-6366
www.infinityrubber.com

Ivanhoe Division of Home Rubber Co.
31 Woolverton Ave.
P.O. Box 878
Trenton, NJ 08611
800-257-9441
www.homerubber.com

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J.D. & Co.
P.O. Box 818
1708 Hal Ave.
Cleburne, TX 76031
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J.J. Short Associates Inc.
1645 Wayneport Road
Macedon, NY 14502
800-641-3511
www.jjshort.com

K

Kardoes Rubber Co. —a Hexpol Company
1061 Industrial Drive
LaFayette Industrial Park
LaFayette, AL 36862
334-864-0777
www.kardoesrubber.com

Kirkhill Rubber Company – A Hexpol Company
12023 Woodruff Ave.
Downey, CA 90241
562-803-1117
www.hexpolcompounding.com

L

Laur Silicone Inc.
4930 S. M-18
Beaverton, MI 48612
989-435-7400
www.laursilicone.com

Littlern Corp.
77 Second St. SW
Barberton, OH 44203
330-848-8847
www.littlern.com

LMI Custom Mixing L.L.C.
804 Byesville Road
Cambridge, OH 43725
740-435-0444
877-564-7822
www.lmimix.com

M

Mechanical Rubber Products Corp.
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77 Forester Ave., Suite 1
Warwick, NY 10990
845-986-2271
www.mechanicalrubber.com

Mid-States Rubber Products Inc.
P.O. Box 370
1232 S. Race St.

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Thanks to a number of acquisitions over the past several years, Hexpol now mixes silicone at a number of facilities around the world. From left are its Hexpol Silicone Ohio operation in Mogadore, Ohio; the Kirkhill Rubber site in Long Beach, Calif.; and Mesgo Group in Italy.

Hexpol making mark in silicone mixing

By Bruce Meyer
Rubber & Plastics News Staff

MOGADORE, Ohio—In a little more than four years, compounding giant Hexpol A.B. has built quite a sizable foothold in the global silicone mixing business.

It started in 2014 with its $13.2 million purchase of Portage Precision Polymers Inc., a deal that brought it a dedicated silicone plant in Mogadore. That was followed in 2016 with the $36 million acquisition of the United Kingdom-based Berwin Group Ltd.

Those were followed last fall by two deals in quick succession, when Hexpol bought Kirkhill Rubber of Long Beach, Calif., for $49 million, and then 80 percent of Italy's Mesgo Group for $193 million.

The reason for the focus on acquiring silicone mixing assets was simple: Sweden's Hexpol is always trying to keep its eye on the ball in terms of technology, according to Donald Picard, vice president of sales and marketing for Hexpol Compounding North America.

"Silicone is part of that because it's a material that's going to be used a lot in the future," he said. "It's a little higher tech than some of the general purpose elastomers.


Picard

"We're always trying to stay abreast of the state of the art in rubber compounding. We don't want to be complacent. We always want to be looking at the next material and what our customers will need next."

Over the years, a number of customers had asked the firm if they compounded silicone. And Hexpol also saw some trends that might lend some applications to silicone, Picard said.

One such example is the transition over to non-fossil fuel cars, which won't need gasoline-resistant hoses, or some of the heat-resistant polymers. There will be heat, however, but generated in a different way, where the need may be to cool an electric motor that gets hot in a hurry if the vehicle stops suddenly. He said silicone may well be the polymer to solve such a problem.

"The industry is still moving forward, it's changing all the time," Picard said. "It's not static by any means, and all of these new applications are going to mean new challenges for all of us. That was one of the catalysts that kind of made us take a look at silicone."

Having the Portage Precision purchase serve as the base, Hexpol saw the opportunity to expand upon it with the follow-up deals, and thus far they are happy with the results.

"I think all the parties will benefit because now we have a more collaborative approach to the market in terms of processes and recipes and markets," Picard said. "It's been good for us. If we didn't already have a jump start on that, it would have been a bit more difficult."

Added capabilities

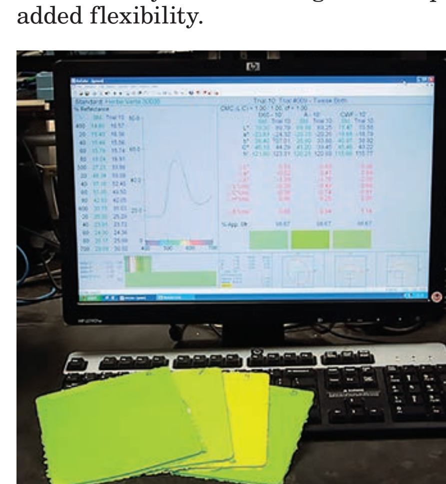
Besides bringing in silicone mixing capacity—and some other polymers, including FFKM fluoroelastomers—Kirkhill brought Hexpol expanded opportunities in the aerospace business. Picard said that industry still is largely focused on the West Coast, with sub-contractors making components that go into various types of aircraft, and a lot of that is made with silicone elastomers.

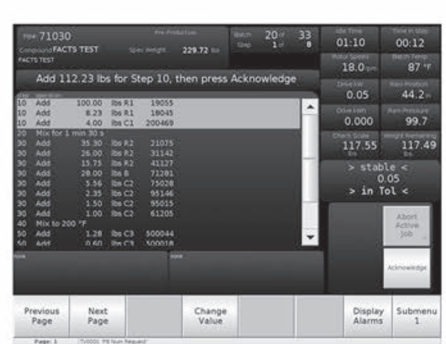

A Hexpol employee tests a silicone compound at the firm's Ohio site.

"It would have been more difficult for us to penetrate that from our Ohio campus, just because of geography and getting to know that market well," he said. "You sort of have to be there. The acquisition of Kirkhill helped us almost to leapfrog into that technology, because (Kirkhill officials) have an awful lot of contacts in aerospace and semiconductors.

"We've been able to put our knowledge bases, IP and chemists together, and we're already starting to see some positive results from that."

The Kirkhill acquisition also brought with it some other capabilities, such as pre-forming, calendering and platinum-cure systems. This gives Hexpol added flexibility.


Hexpol's Ohio site also enables the mixer to do color matching services.



"Now we can put manufacturing where it belongs based on equipment requirements," Picard said. "If a customer needs pre-forms, we can send them to Kirkhill. Typically the order volumes in silicone are not so large, so geography is not as big a problem as it might be with some organic elastomers. If you're buying just a few thousand pounds, the freight difference isn't that big."

But the experience of the people that came to Hexpol in these acquisitions is the most important asset the mixing company received.

"You just need a checkbook and you can buy all that equipment," Picard said. "But without the expertise to use it and to formulate it properly, and to get it to market, you just have a bunch of machinery. To apply that to help the customers you have to have the whole package, and we think we have it."

Positive reception

Thus far, customer reaction to Hexpol's silicone offerings has been positive, he said. Hexpol has been able to build on its relationships with its organic rubber customers that also fabricate with silicone, many of those that had been pestering the mixer over the years to add silicone to its repertoire.

In other cases, though, they've helped customers get into silicone fabrication that previously had been reluctant to do so. Picard said some had thought it was a difficult material to process, but Hexpol has been able to walk them through it and show them it may be easier than they thought.

"You know what you know and sometimes something is a little scary, but there's no need for it to be," the Hexpol executive said. "They already know us, so the service and support is established. Now that we tell them we have the capability, all of the sudden they're paying attention, and say, 'Send me a sample and send me in somebody who can show us how to do it.' "

Job shops, particularly, are curious to learn, he added, as it's another chemistry they can use to help them be successful.

"Job shops like to be able to be a full-service supplier to their customers," Picard said. "They don't want to tell their customers we can make all your organic rubber parts, but if it's silicone you have to go somewhere else. They don't like doing that, and frankly we didn't like doing that. We like to be able to supply whatever the customer needs."

A Hexpol employee performs lab tests at its operation in California.

A company staff member inspects samples coming out of the cutting machine.

In North America, Hexpol's silicone rubber business focuses on HCR materials, though Mesgo does have some liquid silicone rubber capability in Europe. In terms of volume, Picard said Hexpol realizes the HCR silicone market is smaller than organic rubbers, so it expects its business to break down in similar proportions.

But Picard said one advantage Hexpol has is that it's recognized as an independent silicone compounder, meaning it's not also producing the feedstocks, like some of the silicone compounders do.

"And being independent, we have the ability to select whatever polymer base or gum is appropriate for the application in terms of performance and cost," he said. "We aren't mandated to use our company's polymer. So that helps us not only to gain business but also to continue to supply during some of the supply issues seen over the last 12 to 18 months. We've been able to give customers options."

Listing

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Princeton, IN 47670
812-385-3473
www.mid-states.com

Momentive Performance Materials
260 Hudson River Road
Waterford, NY 12188
614-986-2495
800-295-2392
www.momentive.com

Mountville Rubber Co.
1602 Orchard Hill Road
LaGrange, GA 30240
706-882-8134
800-448-8492
www.mountvillerubber.com

MSR Mid South Roller Arkansas
P.O. Box 130
200 Porter Industrial Road
Clarksville, AR 72830
479-754-6993
800-643-8117
www.midsouthroller.com

MSR Mid South Roller Texas
1108 Enterprise Place
Arlington, TX 76001
817-468-2939
800-749-3094
www.midsouthroller.com

N

National Rubber Corp.
367 Morganza Road
Canonsburg, PA 15317
412-831-6100
866-672-8100
www.nationalrubber.com

Northstar Elastomers L.L.C.
4500 Main St. NE
Fridley, MN 55421
952-270-4767
www.nselastomers.com

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O

Oregon Rubber Mills
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Corvallis, OR 97333
541-752-4142
www.oregonrubbermills.com

Otech Corp.
4744 E. Oaknoll Road
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219-778-8001
www.otechcompounds.com

P

Patch Rubber Co.
100 Patch Rubber Road
Roanoke Rapids, NC 27820
252-536-2574
www.patchrubber.com

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401 Lafayette St.
Newtown, PA 18940
800-772-6969
215-968-3334
www.pelmor.com

Pierce-Roberts Rubber Co.
1450 Heath Ave.
Trenton, NJ 08638
609-394-5245
www.pierceroberts.com

Pinnacle Elastomeric Technology
5272 Mountain Center Plaza
Lula, GA 30554
770-967-4111
www.pinnacleelastomers.com

Polycorp Ltd.
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Elora, ON, Canada N0B 1S0
519-846-2075; 800-265-2710
www.poly-corp.com

Polymeric Systems Inc.
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47 Park Ave.
Elverson, PA 19520
800-228-5548
610-286-2500
www.polymericsystems.com

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2828 Second St.
Cuyahoga Falls, OH 44221
330-928-2210
www.polymericsinc.com

Polymerics Inc.
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1540 St. Clair Ave.
Kent, OH 44240
330-677-1131

PolyOne
GLS Thermoplastic Elastomers
833 Ridgeview Drive
McHenry, IL 60050
815-385-8500
800-457-8777
www.glstpes.com

PPD Group
325 Principale N. St.
Waterville, QC, Canada J0B 3H0
819-837-2491
www.ppdgroup.com

Precix Inc.
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744 Belleville Ave.
New Bedford, MA 02745
800-225-8505
508-998-4000
www.precix.net

Preferred Compounding Corp.
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Copley, OH 44321
330-798-4790
www.preferredperforms.com

Preferred Compounding Barberton
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Barberton, OH 44203
330-798-4790
www.preferredperforms.com

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Circuito Exportacion No. 402
Parque Industrial Tres Naciones
San Luis Potosi, Mexico CP78395
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Preferred Compounding Huntingdon
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Huntingdon, TN 38344
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www.preferredperforms.com

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Tallapoosa, Ga. 30176
770-574-2321
www.preferredperforms.com

Preferred Compounding Whitewater
736 Executive Drive
Whitewater, WI 53190
262-248-4481
www.preferredperforms.com

Preferred Compounding Kleen Polymers
145 Rainbow St.
Wadsworth, OH 44281
330-336-4212

Q

QPoly L.L.C.
12911 Industrial Park Drive
Suite 2
Granger, IN 46530
www.qpoly.com

R

R&S Processing Co. Inc.
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15712 Illinois Ave.
Paramount, CA 90723
562-531-1403
www.rsprocessing.com

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Akron, OH 44310
330-374-1810
www.rainbowmastermixing.com

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3749 N. Romero Road
Tucson, AZ 85705
520-887-2400
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Ronsil Rubber Division
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Reiss Manufacturing Inc.
Corporate Office
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732-446-6100

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www.renosol.com

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Highland Park, IL 60035
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www.therubberconsortium.com

S

Salem-Republic Rubber Co.
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Sebring, OH 44672-9801
877-425-5079
www.salem-republic.com

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338 Remington Road
Cuyahoga Falls, OH 44224
330-920-3125
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Wacker Chemical Corp.
2215 International Pkwy.
North Canton, OH 44720
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www.wacker.com/silmix-usa

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13910 Oaks Ave.
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Specialty Rubber Inc.
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4500 White Horse Pike
Elwood, NJ 08217
609-704-2555
www.specialtyrubber.com

Standard Rubber Products Inc.
S&D Rubber Co.
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King St. Industrial Park, 64 B St.
West Hanover, MA 02339
781-878-2626

T

Tahoma Rubber & Plastics Inc.
255 Wooster Road North
Barberton, OH 44203
330-745-9016
www.tahomarubberplastics.com

Technical Industries Inc.
217 Church St.
P.O. Box 65
Peace Dale, RI 02883-0065
401-783-5887
www.tidispersion.com

Teknor Apex Co.
TPE Division
505 Central Ave.
Pawtucket, RI 02861
800-556-3864
401-725-8000
www.teknorapex.com/tpe

U

U.S. Silicones L.L.C.
3103 Cannongate Drive
Fort Wayne, IN 46808
260-480-0171
www.ussilicones.com

V

Vanguard Products Corp.
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203-744-7265
www.vanguardproducts.com

Viceroy Rubber & Plastics Ltd.
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Weston, ON, Canada M9M 2L4
416-762-1111
www.viceroyrubber.com

Vulcan Corp.
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Clarksville, TN 37040
931-645-6431
www.vulcorp.com

W

West American Rubber Co. L.L.C.
750 N. Main St.
Orange, CA 92868
714-532-3355
877-229-2726
www.warco.com

Whitford Corp.
47 Park Ave.
Everson, PA 19520
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www.whitfordww.com

New ASTM tests to measure carbon black, silica dispersion

By John S. Dick, Edward Norton and Andres Gil
Alpha Technologies

Executive summary

Compounds based on different base elastomers will break down in different ways during the mixing process and have different degrees of interaction with carbon black and precipitated hydrated silica with differing ratios of organosilanes. This affects downstream factory performance in extruding, calendering, molding and cured physical properties.

Two years ago a new standard method for measuring the Payne Effect was developed as ASTM D8059 using the Premier-brand RPA. Also in 2011, a new standard method was developed using a reflected light microscope to measure state of mix under ASTM D7723.

In this study, the Premier RPA Rubber Process Analyzer was used to measure the differences in rheological behavior from using different base elastomers with variation in the applied work history during mixing. Model rubber compounds were prepared and tested using several different base elastomers. Processability characteristics as seen in the Payne Effect were measured for these mixed stocks with varying work histories using the Alpha Technologies Premier RPA.

During the mixing process for a rubber compound, the base elastomer is masticated while the other ingredients, such as carbon black and/or silica, begin to wet and incorporate. As this process continues, the carbon black and/or silica agglomerates are deagglomerated and dispersed as aggregates while the base raw elastomers are simultaneously masticated and "broken down," usually through some degree of depolymerization.[1,2]

This study constructed simple model recipes of these selected raw elastomers with N330 carbon black and VN3 precipitated silica and studied the rheological effects on these experimental compounds from controlled amounts of applied work history during BR Banbury mixing in the laboratory.

TECHNICAL NOTEBOOK
Edited by John Dick

Experimental

Table 1 shows the seven different raw elastomers which were selected for this study.

The selected polymers include a wide selection of mostly tire rubbers (except for NBR) that are commonly used. This selection includes NR, SBR, BR, IIR, BIIR, NBR and IR. NBR only is included because of its unique polarity and what effects that it might have with silica dispersion.

These raw elastomers also were mixed with VN3 precipitated hydrated silica (180 m²/g surface area) in a carefully controlled manner with a laboratory BR Banbury, which was stopped periodically during the mixing cycle to take small 20 gram sample aliquots between 3 and 7.5 minutes of mixing time for carbon black and between 4 and 12 minutes for silica.

The silica series of experiments were performed without any TESPT (organosilane) and with 1.38 phr, respectively. Because the specific gravity for these elastomers were different, all comparisons were made on an equal volume basis for carbon black so that each batch would always contain exactly 35 percent by volume of N330 carbon black.

On the other hand, the silica comparisons were all made by equal weight (phr) of 60 phr VN3 Silica. One silica series was performed with TESPT at 1.38 phr and 1.38 N330 carbon black (from X50, which is a 50:50 blend of TESPT and N330 carbon black).

The other silica series was performed without TESPT; however, 2.8 phr N330 carbon black was added to allow these compounds to absorb light (for possible further ASTM D7723 reflective microscopy work). These mixed samples were tested for "state of mix" with the Alpha Technologies Premier RPA-brand Rubber Process Analyzer shown in **Fig. 1** in accordance with ASTM D8059. Also, the Alpha Technologies Alpha View Disper-Grader-brand special light reflected microscope (ASTM D7723) was used in these studies as shown in **Fig. 2**.

This light reflecting microscope works off the principle of quantitatively measuring the reflecting light from the undispersed carbon black or silica agglomerates (white area) vs. the light which is not reflected into the microscope lens as illustrated in **Fig. 3**.

Measuring dispersion

This part of the study involved measuring rheologically the effects of carbon black or silica incorporation and deagglomeration (dispersion) at different states of mix during the Banbury mixing process.

In the carbon black design of experiment, each raw elastomer compound was mixed with exactly 35 percent by volume of N330 carbon black.

During the BR Banbury mixing process, 20 gram aliquot samples were taken from the mixer after 3, 3.5, 4.5, 5.5, 6.5 and 7.5 minutes, as sampling intervals. Each of these samples were tested on the RPA by the new ASTM D8059 Standard for the Payne Effect.

For this study, a time test was applied at ± 0.07 percent strain, 1 Hz and 100°C for 2 minutes before the Payne Effect Strain Sweep was applied (for the carbon black study) and 70°C for 2 minutes before the Payne Effect Strain Sweep was applied (for the silica study). This strain sweep was applied at 1 Hz and 100°C (for carbon black studies) and 1 Hz and 70°C (for all silica studies), starting with ±0.07 percent strain, followed by ±0.1, 0.14, 0.2, 0.28, 0.35, 0.5, 0.7, 1.0,

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Table 1: Elastomers used in this study.

Name of Rubber	ASTM Abbreviation	Trade Name	Specific Gravity
Styrene Butadiene Rubber	SBR	SBR 1500	0.94
Natural Rubber	NR	SIR 20	0.92
1,4 cis Polybutadiene Rubber	BR	Budene 220	0.92
Natsyn 2200	IR	Natsyn 2200	0.91
Bromobutyl Rubber	BIIR	Bromobutyl 2244	0.93
Butyl Rubber	IIR	Butyl 268	0.92
Acrylonitrile Butadiene Rubber	NBR	NBR DN 2850	0.97

Fig. 1: Premier RPA, Alpha Technologies.

The authors


Dick


Norton


Gil

John Dick has more than 45 years of experience in the rubber industry. He was with B.F. Goodrich and later Uniroyal Goodrich Tire Co. as a section manager and development scientist in research and development until 1991, when he joined Monsanto's Rubber Instruments Group (now Alpha Technologies) as a senior scientist, applications, until 2016.

Dick now is the technical editor of *Rubber & Plastics News* and a consultant for Alpha Technologies. He also currently teaches 15 rubber technology courses each year for the University of Akron, University of Wisconsin in Milwaukee and ASTM International.

He has authored more than 80 journal and magazine publications including five books on rubber technology. He has consulted and given technical papers and seminars in more than 40 countries.

Ed Norton received his bachelor's degree in chemical engineering at Rose-Hulman Institute of Technology in Terre Haute, Ind. After graduating, he spent seven years working for Alpha Technologies as an applications specialist, providing technical support and training on rheometers to both internal and external customers.

Norton recently joined Cancarb Ltd. in Medicine Hat, Alberta, as a technical marketing representative. In his new role, he will be conducting studies on thermal carbon black and providing technical services.

Andres Gil is an application engineer for Alpha Technologies, helping customers in the rubber industry by providing solutions and analysis to issues relating to compounding, processing and R&D. He received his bachelor's degree in chemical engineering from the University of Texas.

Gil has more than four years of experience in manufacturing and polymer industries. He has experience as an industrialization engineer for a leading tire manufacturing company in which he led projects that helped develop efficient products and safe processes in continuous processing manufacturing plants.

ASTM

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1.4, 2.0, 2.8, 3.5, 5.0, 7.0, 10.0, 14, 20, 28, 35, 50, 70, 100 and 140 percent.

Respective samples from these mixing processes were run in duplicate on the Alpha View DisperGrader by the new ASTM D7723 procedure for measuring percent carbon black dispersion. The test conditions for running these tests were as follows:

- White area threshold: 23 µm;
- Exposure time: 40 ms;
- Position of illumination: Top;
- Color channel for analysis: Blue.

The following equation was used to calculate percent Z Dispersion:

% Z = 100 – 100 URF%/35, where:

- URF % = % of total scan from undispersed filler measured in reflection; and
- % Z = weighted percent dispersion or "Z Value," which assumes max. of 35 percent area.

The two silica mixing studies (one with and one without TESPT) were performed in the same manner, except aliquots were taken over a longer period of time because of the greater difficulty in getting silica to disperse in carbon-based rubbers compared to carbon black. So with the silica dispersion studies, sampling intervals from the BR Banbury were 4, 6, 8, 10 and 12 minutes, respectively.

Fig. 2: Alpha view DisperGrader.

Fig. 4: Brabender torque curve.

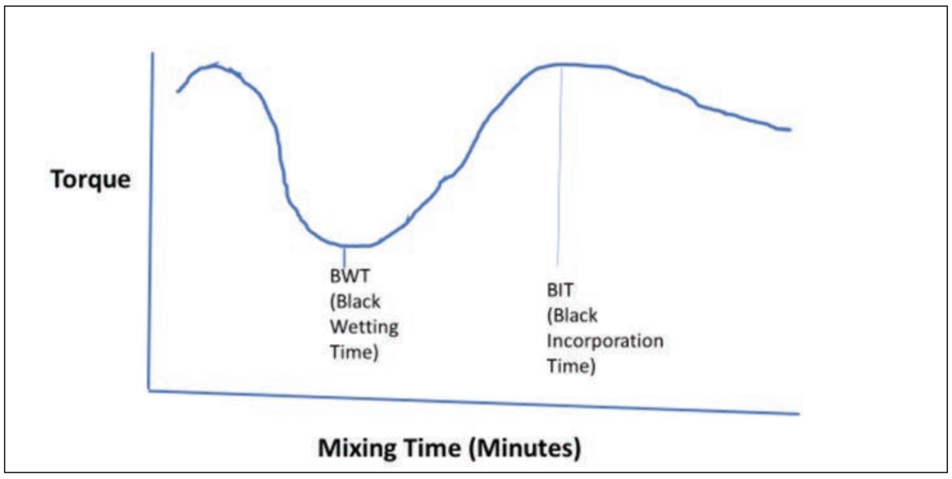


Fig. 3: Alpha view DisperGrader light reflecting microscope.

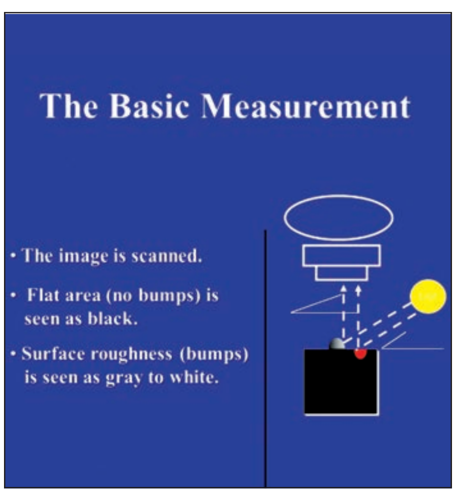
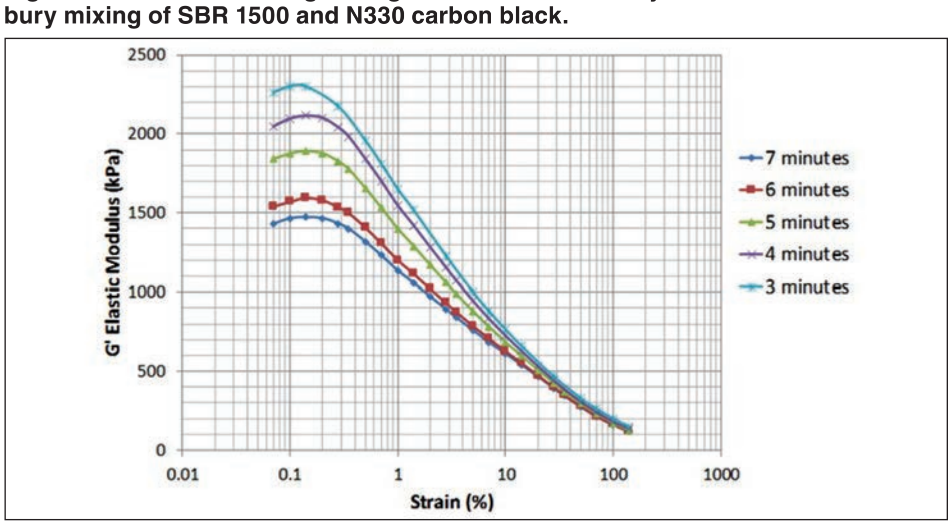


Fig. 5: Effects of increasing mixing time on measured Payne Effect curves for Banbury mixing of SBR 1500 and N330 carbon black.



Discussion

Incorporation and deagglomeration of carbon black

The Payne Effect is an effective way of studying deagglomeration of fully reinforcing carbon black during the rubber compound mixing process. It should be an effective way of relating to carbon black aggregate—aggregate attraction vs. the carbon black aggregate attraction to the specific rubber hydrocarbon medium.[3]

Different rubber hydrocarbon mediums have different affinities for the carbon black filler. For example, it is well known that in various blends of different types of rubber polymers, one domain of rubber (at the microscopic level), will have a greater attraction (or affinity) for the available carbon black than the other rubber present in the blend.[4,5]

Usually different rubbers in a compound blend are not perfectly soluble with each other so they will commonly establish continuous and discontinuous phases. Therefore, typically the available carbon black is attracted more to either the continuous or the discontinuous rubber phase.

The typical carbon black affinity for different elastomers is shown:[6,7,8,9]

BR > SBR > CR > NBR > NR > EPDM > IIR

So, carbon black is much more attracted to the BR phase (polybutadiene rubber) than the IIR (butyl rubber) phase.

On the other hand, silica is actually "rubber phobic" compared to carbon black. Silica is not really that rubber friendly. When initially mixing silica with organic based elastomers, the silica particles prefer to agglomerate and associate with each other rather than disperse throughout the rubber hydrocarbon medium.

Carbon black, by contrast, is much more "rubber philic" and is known to disperse much more rapidly than precipitated hydrated silica. So carbon black is known to have a much better wetting time and incorporation time than a typical precipitated hydrated silica. The data in **Fig. 4** show the typical black wetting time and black incorporation time from a Brabender mixing study. Carbon blacks, because they are relatively "rubber philic," typically show significantly shorter BWT and BIT values than what silica display.[10,11,12]

So in any mixing process, one passes through a "wetting phase," an "incorporation phase," and a "dispersion phase" in order to achieve good macro and micro dispersion.

Certainly, TESPT (organosilane) addition to a silica mix will improve this situation somewhat; however still precipitated hydrated silica with TESPT will not perform the way that carbon black does during mixing. One also should not forget that the TESPT silanization is best achieved at batch temperatures between 145°C to 155°C.[13]

SBR/carbon black

From the ASTM D8059 Payne Effect RPA measurements, the SBR test results show a great distinction in the Payne Effect curves based on the mixing time intervals being applied during the mixing of SBR 1500 and N330 carbon black shown in **Fig. 5**.

The affinity of carbon black to SBR 1500 is high. During the mixing process, the carbon black readily deagglomerates in the SBR medium because of this attraction between SBR and carbon black. As can be seen, with only the limited work history applied from 3 minutes of mixing time, the filler agglomeration network is rather high as shown from the G' elastic modulus value measured at the low initial applied strain of only 0.07 percent.

However, as the mixing time and resulting work history increase, the measured G' value decreases from the destruction of the agglomerate-agglomerate filler network and the corresponding increase in the macro-dispersion of the N330 carbon black.

Fig. 6 shows how well the G' Elastic Modulus for the Payne Effect at 0.07 percent strain predicts the state of mix and degree of deagglomeration for the dispersing of N330 carbon black in the SBR1500 rubber.

The Payne Effect G' inversely correlates very well to the state of mix and inversely to the aggregate-aggregate network density.

Fig. 7 shows the very good correlation of the percent Z Dispersion as performed by ASTM D7723 with the state of mix.

The shape of this curve represents the "law of diminishing returns," which was reported in 1992 using the older, slower, optical microscopy method ASTM D2663, which gave close to the same profile.[14]

For each marginal addition in work history, there was a smaller increase in percent dispersion of carbon black. By using the Alpha View DisperGrader (ASTM D7723), one produces a very similar curve, but much faster and perhaps more accurate. ASTM D7723 also was quite effective at measuring the "state of mix" when using SBR as the raw elastomer in this mixing experiment.

SBR/silica

On the other hand, this same experiment was carried out under similar mixing conditions except that VN3 precipitated hydrated silica (180 m²/g) was used in place of N330 carbon black as described in the experimental section. **Fig. 8** shows the distinction in the Payne Effect curves based on the time intervals being applied during the mixing of SBR 1500 and VN3 precipitated hydrated silica.

These Payne Effect curves are well formed, just as with the carbon black before. However, the order of their occurrence for these silica Payne Effect curves vs. mixing time is very different vs. what was seen for carbon black as shown in **Fig. 9**.

Because of silica's natural incompatibility with SBR, it is more variable in its

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Fig. 6: G' Payne Effect at 0.07 percent strain vs. work history for mixing of SBR 1500 and N330.

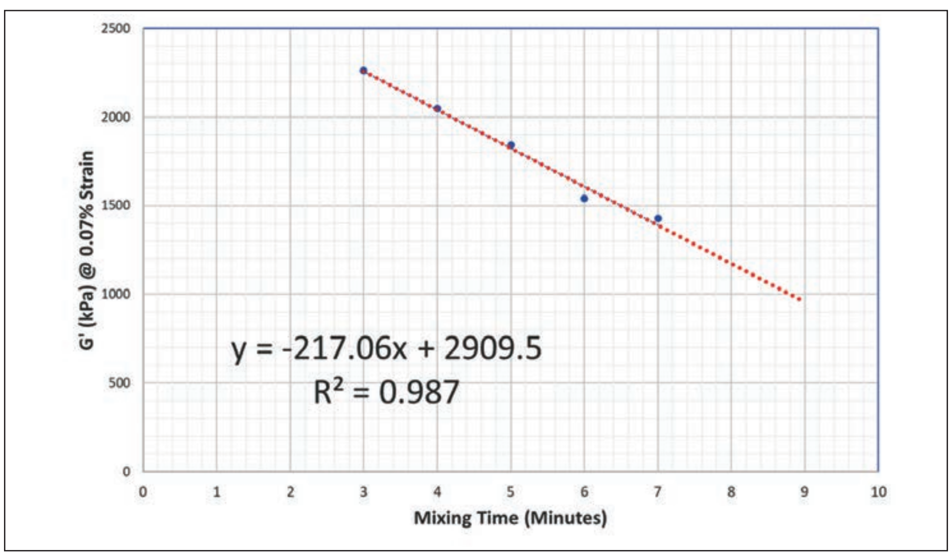


Fig. 7: ASTM D7723 percent Z Dispersion vs. work history of mixing SBR 1500 vs. N330.

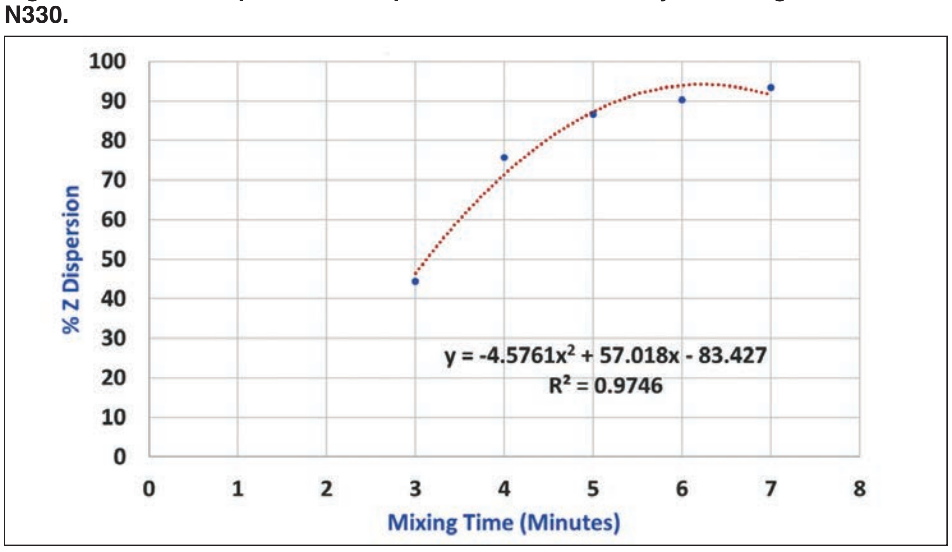


Fig. 8: Effects of increasing mixing time on measured Payne Effect curves for Banbury mixing of SBR 1500 and silica without TESPT.

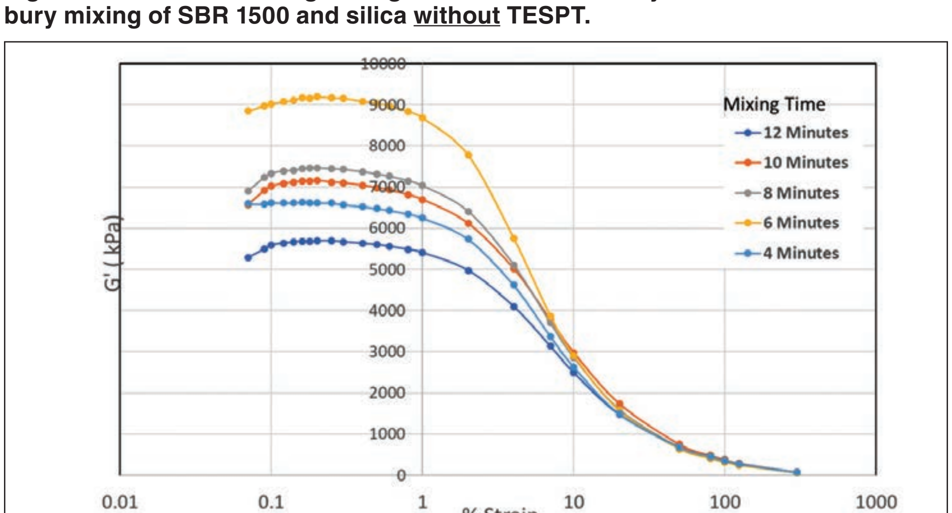


Fig. 9: G' Payne Effect at 0.07 percent strain vs. work history for mixing of SBR 1500 and VN3 silica without TESPT.

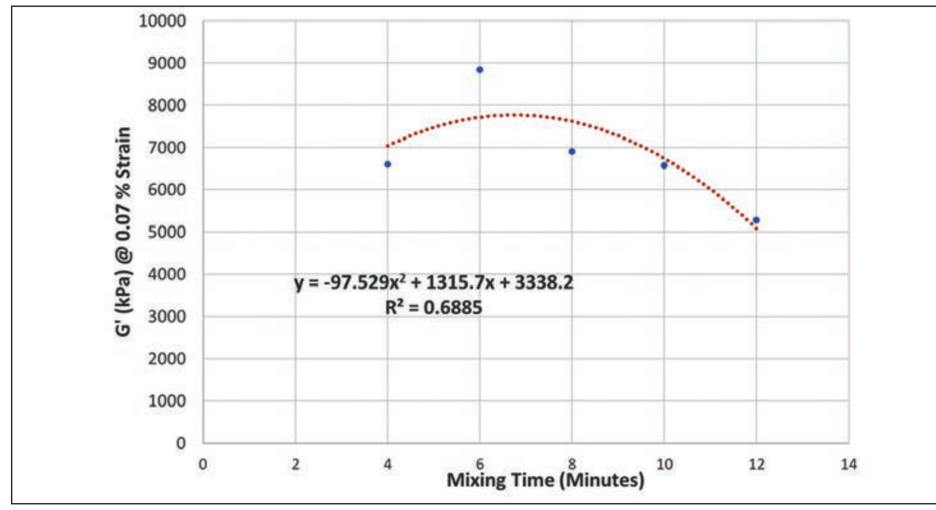
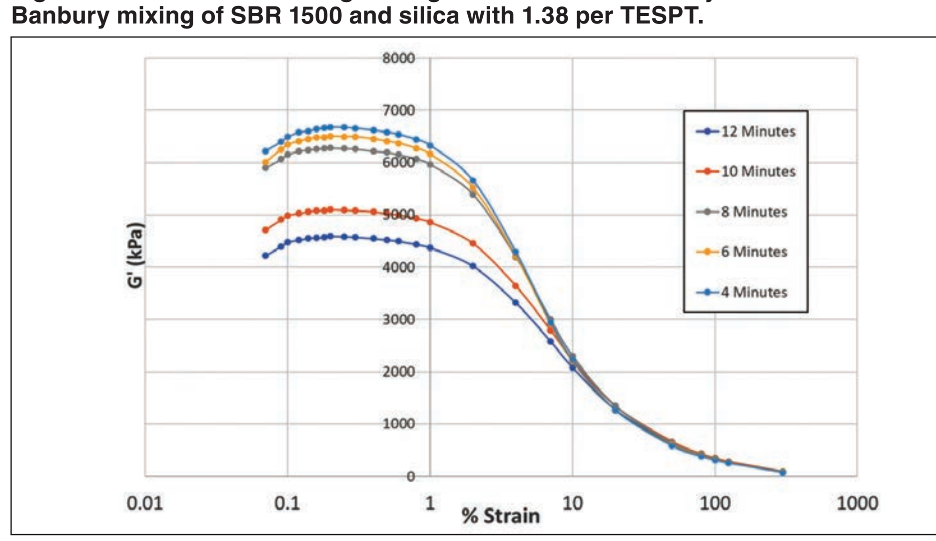


Fig. 10: Effects of increasing mixing time on measured Payne Effect curves for Banbury mixing of SBR 1500 and silica with 1.38 per TESPT.



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wetting and incorporation times before it forms its ultimate density of its filler network and starts to decrease this density from continued mixing.

Fig. 10 shows the effects of using 1.38 phr TESPT on the Payne Effect curves from the SBR-silica interaction.

As noted from earlier studies,[15] the TESPT does effectively reduce the elastic modulus (G') by improving the attraction of the silica particles to the rubber hydrocarbon medium.

Fig. 11 shows the occurrence of the 0.07 percent strain Payne Effect curves vs. the mixing time with the presence of TESPT.

As can be seen with the addition of a small amount of TESPT, a very good correlation with mixing time (and probably dispersion) is achieved. The R^2 shows a correlation with 95 percent of the variation explained.

TSR 20 natural rubber/carbon black

TSR 20 natural rubber also was studied for its carbon black dispersion characteristics. **Fig. 12** shows the effects of different amounts of work history on the Payne Effect profiles with N330 carbon black.

Just using the G' at 0.07 percent applied strain from the RPA measurements, one can use this parameter to predict state of mix for the carbon black as shown in **Fig. 13**.

In addition, the ASTM D7723 percent

Fig. 11: G' Payne Effect at 0.07 percent strain vs. work history for mixing of SBR 1500 and VN3 silica with 1.38 phr TESPT.

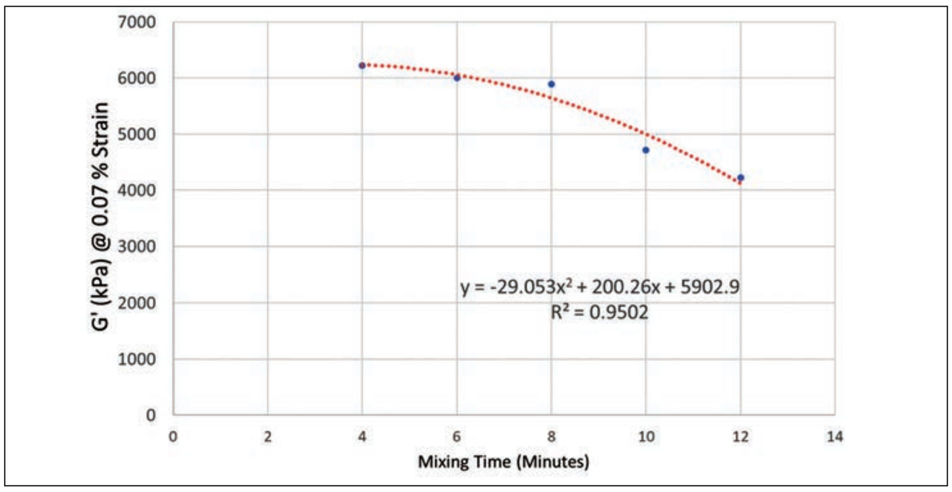


Fig. 12: Effect of increasing mixing time on measured Payne Effect curves for Banbury mixing of natural rubber TSR20 and N330 carbon black.

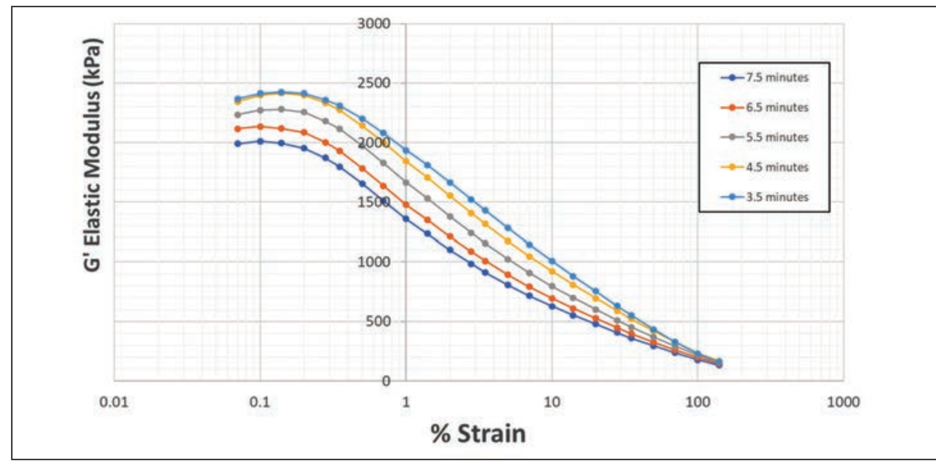


Fig. 13: G' Payne Effect at 0.07 percent strain vs. work history for mixing of TSR 20 natural rubber.

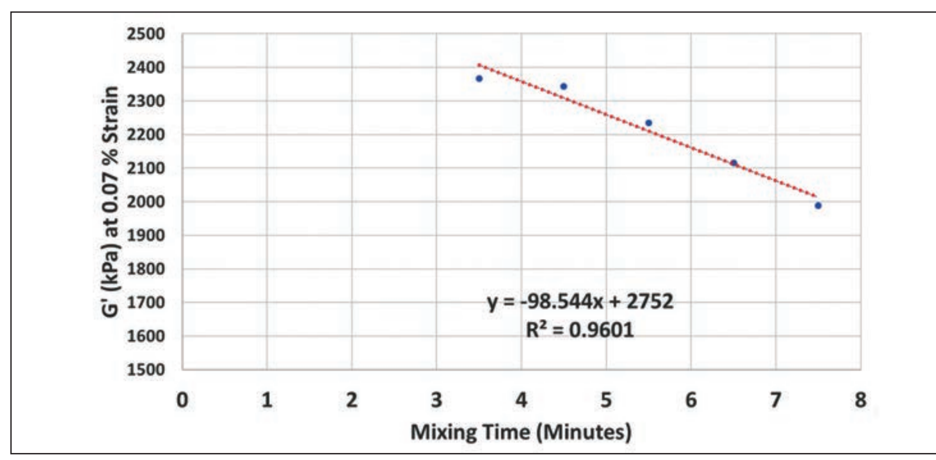


Fig. 14: ASTM D7723 dispersion vs. work history of mixing TSR 20 natural rubber with N330.

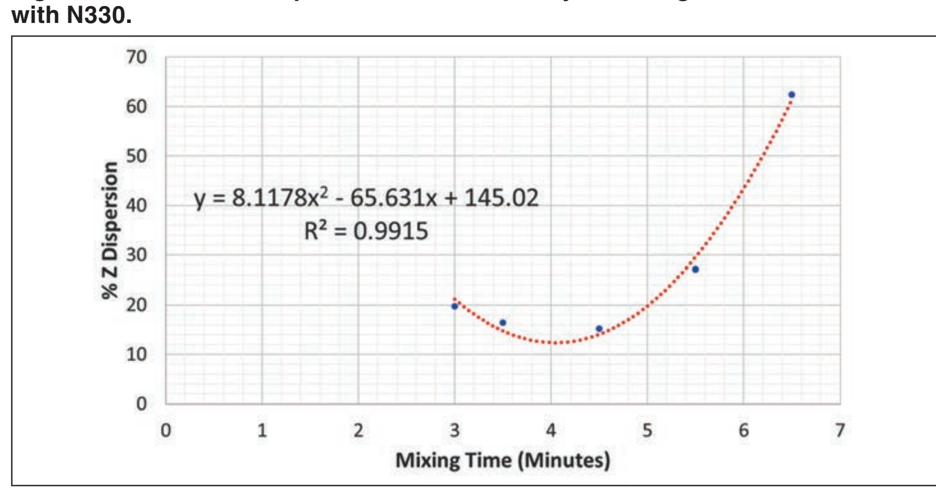
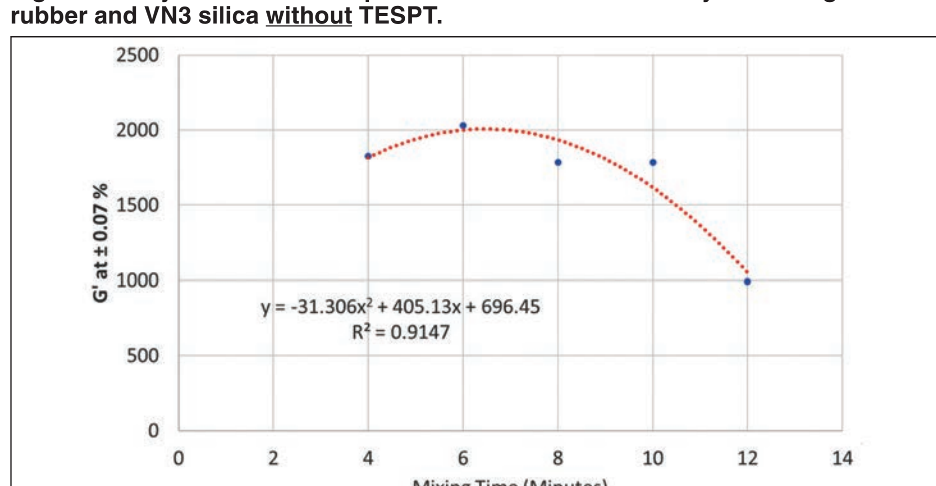


Fig. 15: G' Payne Effect at 0.07 percent strain vs. work history for mixing of natural rubber and VN3 silica without TESPT.



Z value for carbon black dispersion is a good predictor of state of mix for a natural rubber base, as shown in **Fig. 14**.

In this experiment, unlike the SBR, which readily accepted the N330 carbon black during the early stages of mixing, the TSR 20 natural rubber was more resistant in accepting the carbon black initially, but readily accepted the N330 in the later stages of mixing.

Normally the TSR 20 grades of natural rubber can contain as high as 0.20 percent dirt, which usually is defined as impurities which have a particle size greater than 44 µm. This level of contaminant can appear as contributors to the "white area" in the percent Z calculation and may make the percent Z values lower than they normally would be with SBR, for example.

More work needs to be performed to determine just how much negative effect that a relatively high "dirt" level might have on the percent Z values.

TSR 20 natural rubber/silica

By contrast, the same experiment was also performed with precipitated hydrated silica instead of N330 carbon black with the TSR 20 grade of natural rubber. **Fig. 15** denotes the changes in the resulting Payne Effect curves from different mixing times (work histories).

Fig. 15 also shows the effects of varying work histories during mixing on the G' at a strain of only ±0.07 percent.

Just as we saw with mixing in SBR, silica is likewise difficult to disperse in natural rubber as well. Silica is much more difficult than carbon black, as can be seen. Not only is the Payne Effect with silica more varied than with carbon black, but it also takes significantly more time to incorporate the silica into the NR compared to carbon black (which is more "rubber friendly").

The effects of the addition of a relatively small amount of TESPT organosilane (1.38 phr) was added as well in order to make the applied silica somewhat more "rubber friendly."

Unfortunately in this experiment, the addition of the TESPT only made the mixing variation worse.

Polybutadiene/carbon black

Polybutadiene (BR) was included in this study, even though it is almost never used by itself in a tire compound. However, it is commonly used in tire technology in blends with other raw elastomers such as SBR or NR.

This BR compound did not break down in the same manner that the SBR did. In fact, using the G' at 0.07 percent strain gave only a fair prediction of state of mix as shown in **Fig. 16**.

However, **Fig. 17** shows that the ASTM D7723 (Dispergrader) did somewhat better in measuring the progression of the state of mix than the G' Payne Effect.

Because of these particular problems with 100 phr BR (which is rarely used by itself), the ASTM D7723 Percent Z Dispersion was somewhat better.

Polybutadiene/silica

If there is sometimes a problem in measuring the state of mix for carbon black in "all" polybutadiene (a rather "artificial" situation), there can be even more of a problem when measuring "state of mix" of BR and silica.

Fig. 18 shows a significant amount of noise associated with trying to achieve good dispersion of silica without any TESPT. There is quite a bit of scatter, probably because of problems with silica "wetting" and "incorporation" in BR.

The correlation here is quite poor at only 55 percent explained.

The addition of 1.38 phr of TESPT did lower the Payne Effect curves somewhat by increasing the attraction of the silica particles for the BR medium and somewhat reducing the silica particle-particle interaction.

Fig. 19 shows both the incorporation as well as the dispersion phase of the mixing; but possesses a much higher polynomial R^2 regression coefficient showing less scattering and more "explained" than what was observed for no TESPT.

BIIR/carbon black

Fig. 20 shows the effects of using bromobutyl rubber in these experiments. As can be seen, with the halogenation of butyl into bromobutyl rubber, there is very significant separation of the Payne Effect curves from applying different mixing times.

Fig. 21 shows the effectiveness of using the Payne Effect G' at 0.07 percent to predict the state or quality of mix of the subject compound.

As can be seen from the brominated butyl rubber compound, the G' Payne Effect at 0.07 % curve is very effective at predicting the state or quality of mix with carbon black.

From **Fig. 22**, the ASTM D7723 DisperGrader test also was able to achieve an equally effective prediction of state of mix for the BIIR with the N330 carbon black.

The direct correlation between ASTM D7723 percent Z Dispersion vs. the ASTM D8059 G' Payne Effect at 0.07 percent strain (using the RPA with EDR), all with BIIR, is shown in **Fig. 23**. As can be seen, the R square shows 98 percent of this correlation is explained. The brominating of butyl rubber has a profound effect on the mixing quality of BIIR and N330 carbon black.

BIIR/silica

Fig. 24 shows that without TESPT, the silica mix in BIIR is more dominated by the incorporation phase of the mixing process.

Fig. 25 shows how the Payne Effect responds to the mixing time with silica and TESPT with bromobutyl rubber (work history).

When comparing **Fig. 24** (without TESPT) with **Fig. 25** (with TESPT), one can see that the presence of only 1.38 phr TESPT significantly reduces the shear modulus measured at 0.07 percent strain as well as shift the curve more into the dispersion phase and more away from the incorporation phase.

IIR/carbon black

Regular butyl rubber (IIR) incorporates carbon black and processes very differently from the bromobutyl rubber that we were discussing earlier. Rheologically and from a processing perspective, regular butyl rubber behaves very differently because it is not brominated as seen from its Payne Effect Curves shown in **Fig. 26**.

Unlike the BIIR, which has its Payne Effect Curves greatly affected from variations in applied mixing work history, the regular IIR (without the benefit of bromine) shows very little change from variations in mixing work history.

Fig. 27 shows the resulting poor correlation between G' at 0.07 percent and mixing time.

As can be seen, because of the closeness of the G' Payne Effect curves for regular butyl rubber, the correlation between G' at 0.07 percent strain with mixing time is very poor and "noisy." The butyl rubber is relatively less compatible in the dispersion of the N330 carbon black compared with the BIIR discussed

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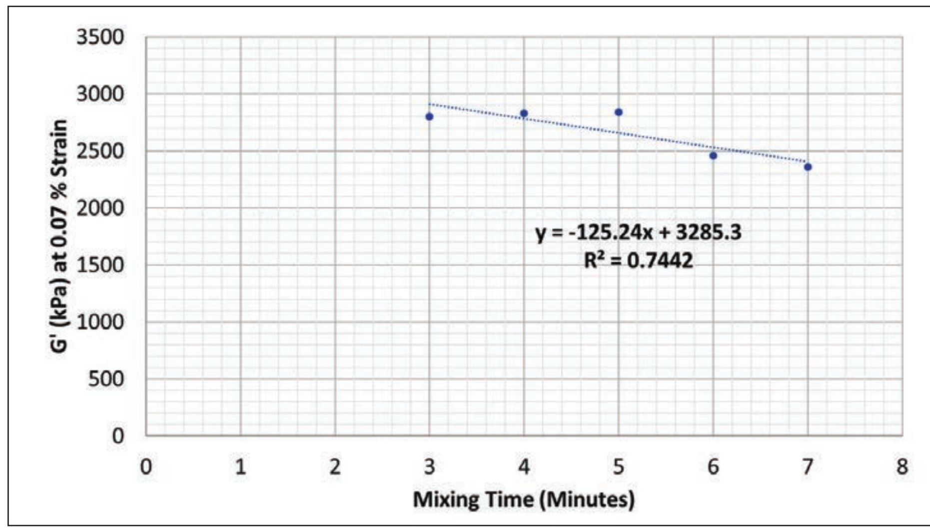
Fig. 16: G' Payne Effect at 0.07 percent strain vs. work history for mixing polybutadiene rubber (BR).



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earlier.

On the other hand, **Fig. 28** shows some correlation of measured percent Z Dispersion for N330 with mixing time for this regular butyl rubber experiment. ASTM D7723 may have some advantage here over the ASTM D8059 Payne Effect method for measuring the carbon black state of mix for compounds based solely on IIR.

IIR/silica

With silica in place of carbon black, it is a very different situation. Where carbon black showed a relatively poor compatibility with regular butyl rubber (as noted above), precipitated hydrated silica has a significantly different attraction to the butyl rubber medium as shown in **Fig. 29**.

The fact that the silica without any TESPT gives an incorporation/dispersion plot with the polynomial model statistical regression of 99.6 percent is very interesting and contrasts greatly with the "noise" shown in **Fig. 27** with carbon black (which actually showed no correlation). Only the DisperGrader could show a good correlation to the state of mix for regular butyl and carbon black. However with regular butyl and silica, the situation is different.

The Payne Effect can also be useful with butyl rubber when silica and TESPT are used as well, as seen with **Fig. 30**.

This figure also shows the addition of TESPT causes the mix to be further along and entering the dispersion phase from the incorporation phase much faster than without the TESPT (**Fig. 29**).

Summary

Carbon black mixing

In summary regarding these experiments, both the RPA Payne Effect method (ASTM D8059) and the percent Z Dispersion DisperGrader Method (ASTM D7723) using Alpha View software worked very well for measuring state-of-mix for N330 carbon black with the general purpose elastomers such as SBR, NR and BR.

However, the Payne Effect method worked somewhat better for the SBR. On the other hand, if BR is being mixed by itself and not in a blend, then the percent Z Dispersion method has an advantage over the Payne Effect method in this particular study.

Since the butyl rubber does not have very good affinity for N330 carbon black, G' values did not spread out very much with increasing work history and this method was a poor predictor of state of mix for an all-butyl rubber compound. On the other hand, the percent Z Dispersion test did work effectively with N330 dispersion in butyl rubber.

Even though there were problems with regular butyl in using the Payne Effect method with carbon black, the opposite is true with bromobutyl rubber where the Payne Effect method worked well for

Fig. 17: ASTM D7723 dispersion vs. work history of mixing BR (Budene 220) with N330.

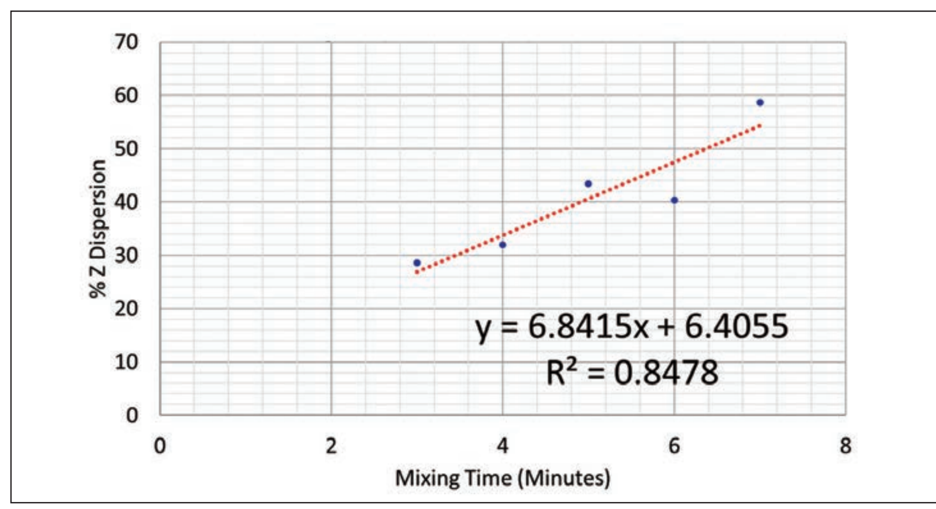


Fig. 18: G' Payne Effect at 0.07 percent strain vs. work history for mixing of polybutadiene rubber and VN3 silica <u>without</u> TESPT.

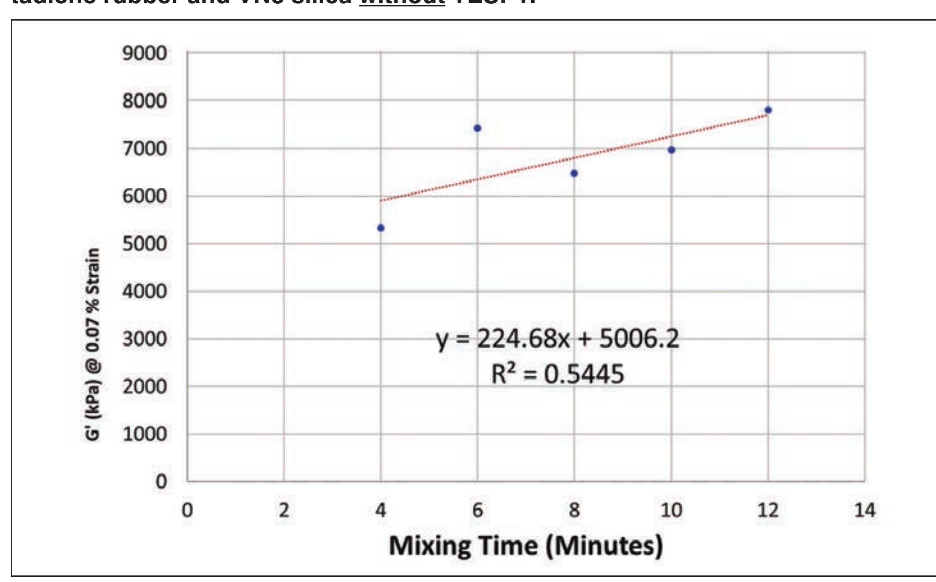
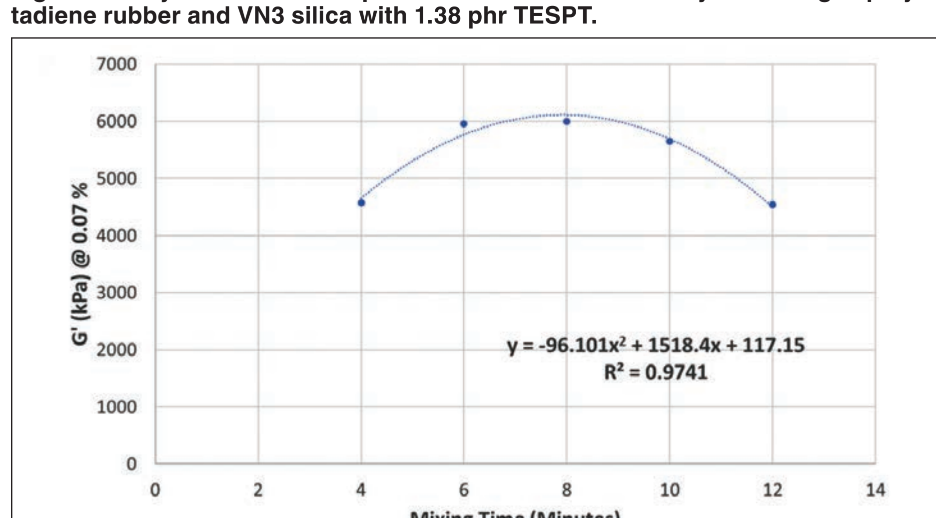


Fig. 19: G' Payne Effect at 0.07 percent strain vs. work history for mixing of polybutadiene rubber and VN3 silica with 1.38 phr TESPT.



carbon black dispersion prediction.

NBR with carbon black showed a lot of similarity to SBR in that the RPA Payne Effect test gave good predictions regarding carbon black state-of-mix where the percent Z Dispersion method also worked.

Silica mixing

As the data suggests, silica is obviously more difficult to effectively disperse in the general-purpose elastomers used in this study compared to the carbon black, just discussed.

Precipitated hydrated silica is more "rubber phobic" in the mixing experiments conducted here compared to carbon black, which is more "rubber philic" and disperses faster.

As a result, the carbon black G' Payne Effect measurements at very low strain were mostly lowered by the increasing work history (mixing time) in the experiments just summarized because the carbon black wetted, incorporated, and established an agglomerate network relatively fast compared to silica. So the increased applied work history from longer mixing times destroyed more of the established carbon black network and caused the Payne Effect G' values to usually decrease.

However, with the silica mixing experiments, the silica has a more difficult time being "wetted" and "incorporated" into the rubber matrix before it can start to disperse. So the Payne Effect G' values for silica mixing may actually increase, instead of decrease, because the silica is still in the "incorporation" phase and has not reached the "dispersion phase" yet.

So low-strain Payne Effect modulus G' for silica mixing in different raw rubbers can give one of the following profiles depending on the silica's or silica/TESPT's compatibility with the subject elastomer.

Fig. 31 represents four mixing situations that one can experience in mixing precipitated hydrated silica (with or without TESPT) with different types of raw elastomers.

In the incorporation/dispersion model, it was found that statistical correlations worked best using the polynomial statistical regression model as performed earlier.

In the summary table for Silica Mixing Results (**Table 3**), comparisons are made for 60 phr silica mixing with each of the raw elastomers with and without 1.38 phr TESPT. This table shows which of the four models are most applicable and what is the R^2 (whether it is a linear regression or a polynomial regression).

Conclusions

The RPA ASTM D8059 Payne Effect Method and the ASTM D7723 percent Z Dispersion Method (with the Dispergrader) are both quite effective at measuring state of mix (work history) and degree of dispersion for rubber compounds based on general purpose elastomers and fully reinforcing carbon black.

The ASTM D8059 Payne Effect Method is sometimes compromised by com-

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Fig. 20: Effects of increased mixing time on measured Payne Effect curves for Banbury mixing of bromobutyl 2244 rubber (BIIR) and N330 carbon black.

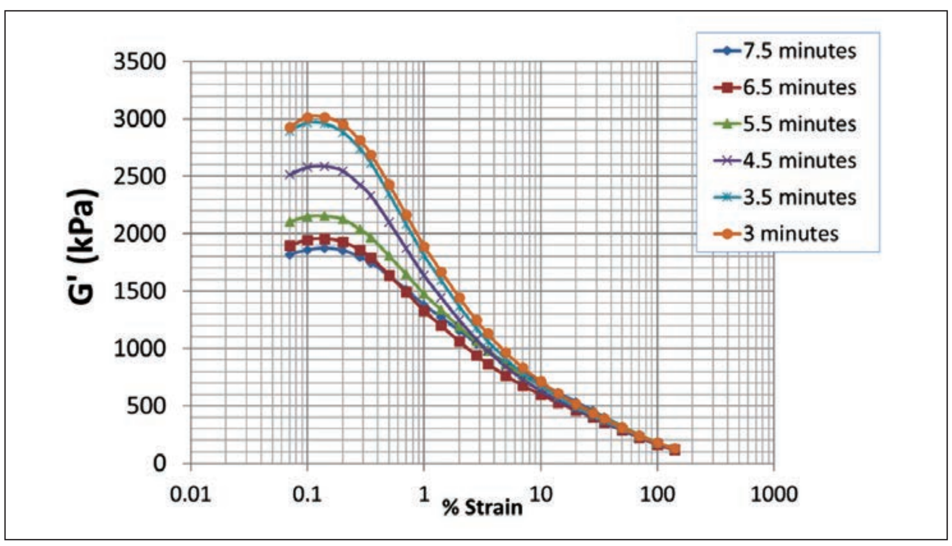


Fig. 21: G' Payne Effect at 0.07 percent strain vs. work history for mixing bromobutyl 2244 with N330.

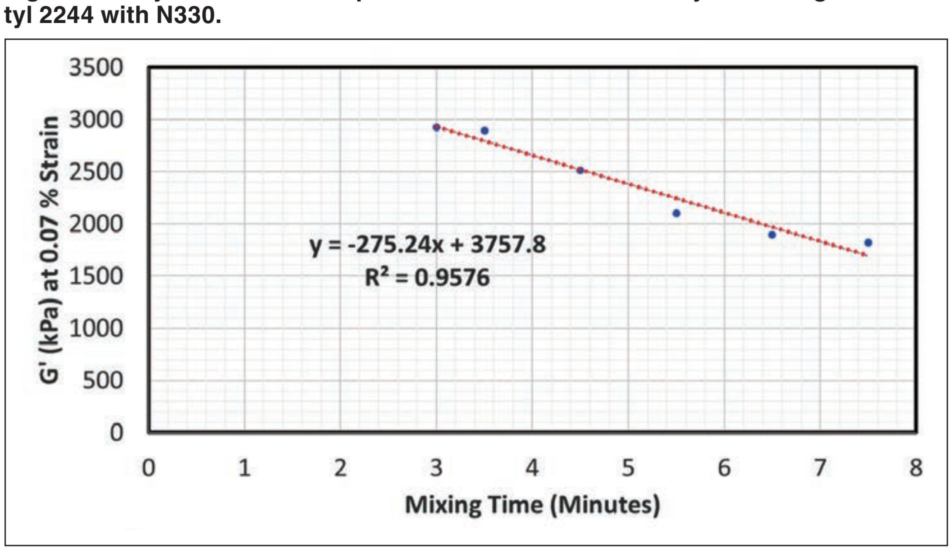
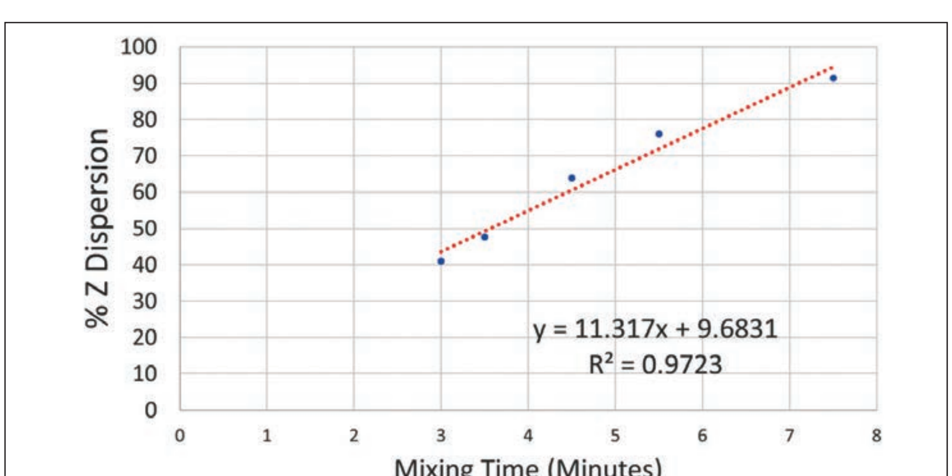


Fig. 22: ASTM D7723 percent Z Dispersion vs. work history of mixing BIIR vs. N330.



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pounds based solely on regular butyl rubber because this polymer possesses poor affinity for carbon black compared to other elastomers.

Silica mixing in various general-purpose elastomers is significantly more variable than comparable carbon black mixing.

Especially for silica mixing, the RPA ASTM D8059 is quite effective at measuring the quality of mix not only in the dispersion phase, but also in the earlier incorporation phases as well, for mixing with the different general-purpose raw elastomers.

Also, the RPA ASTM D8059 is effective at measuring the rheological improvements of the addition of TESPT to silica mixing with the various general purpose elastomers.

More studies need to be performed on testing silica loaded compounds by the new ASTM D8059 RPA procedure at higher test temperatures and with higher loadings of TESPT.

Fig. 23: ASTM D8059 G' at 0.07 percent strain vs. ASTM D7723 percent Z Dispersion for BIIR and N330.

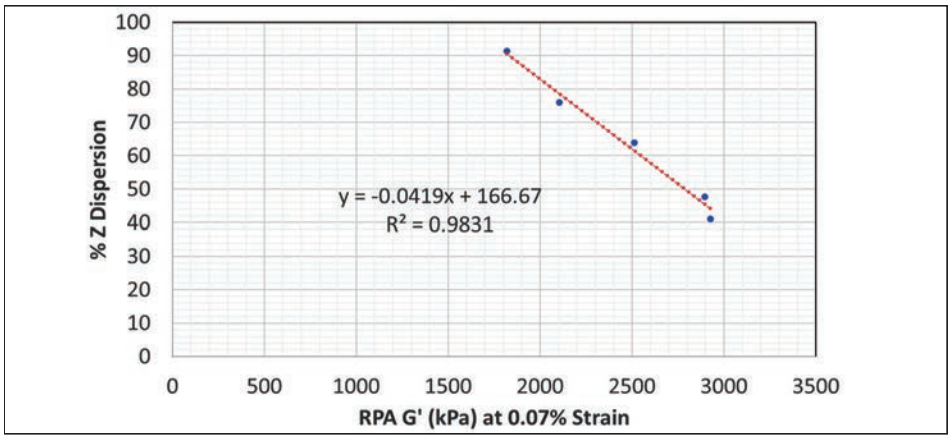

Fig. 24: G' Payne Effect at 0.07 percent strain vs. work history for mixing of bromobutyl rubber and VN3 without TESPT.

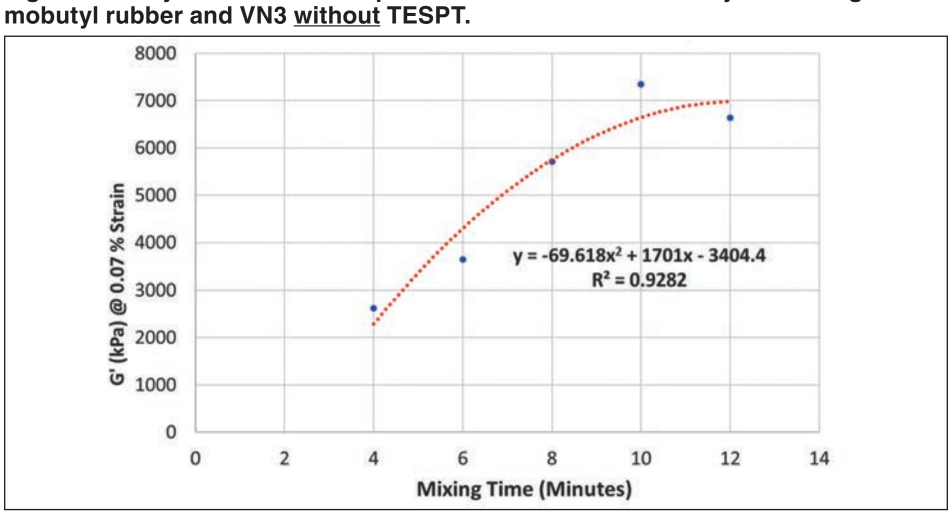

Fig. 25: G' Payne Effect at 0.07 percent strain vs. work history for mixing of bromobutyl rubber and VN3 silica with TESPT.

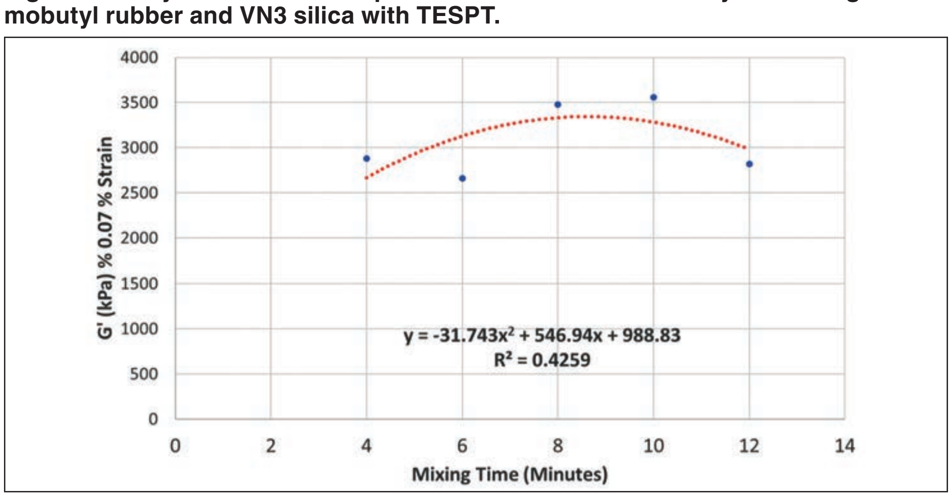

Fig. 26: Effects of increased mixing time on measured Payne Effect curves for Banbury mixing of butyl 268 (IIR) and N330 carbon black.

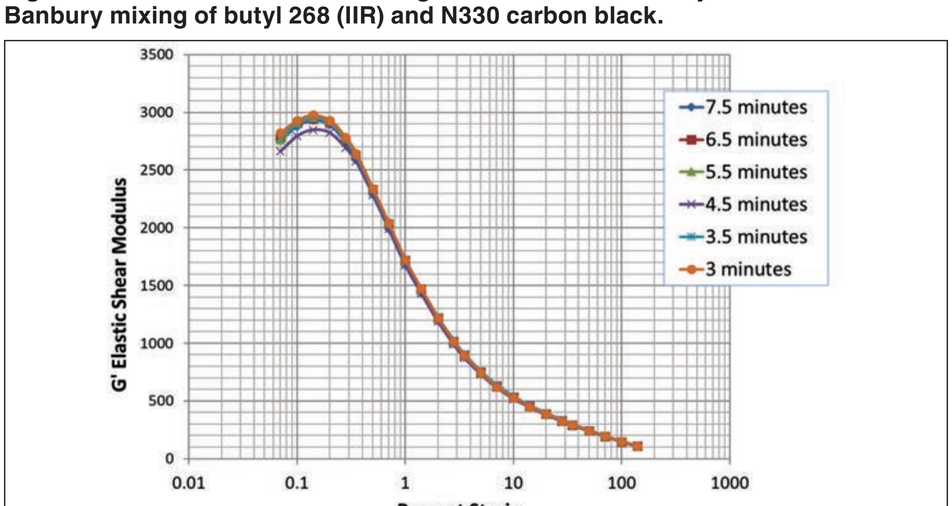

Fig. 27: G' Payne Effect at 0.07 percent strain vs. work history for mixing of regular butyl rubber (butyl 268) and N330.

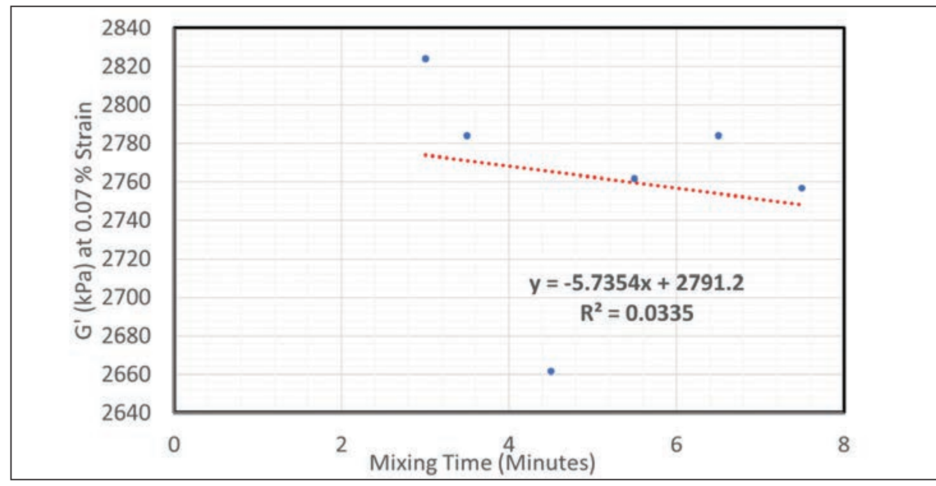

Fig. 28: ASTM D7723 percent Z Dispersion vs. work history of mixing butyl 268 rubber with N330.

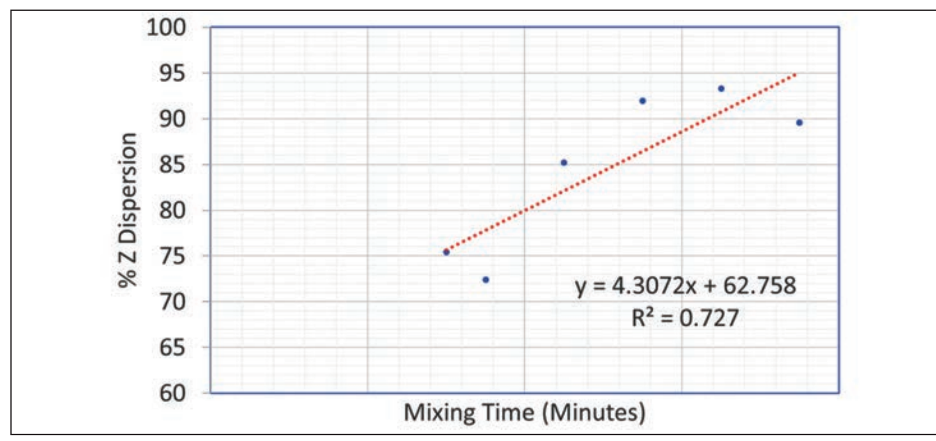

Fig. 29: G' Payne Effect at 0.07 percent strain vs. work history for mixing of regular butyl rubber and VN3 silica without TESPT.

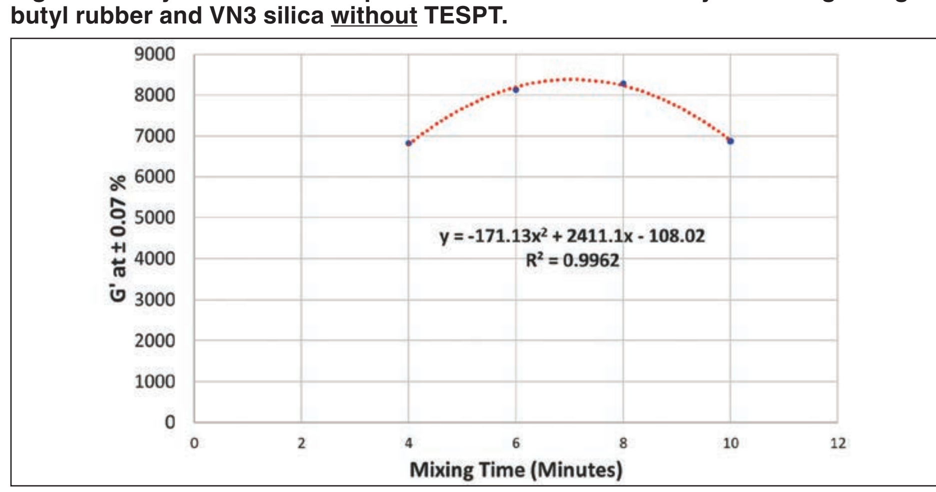

Fig. 30: G' Payne Effect at 0.07 percent strain vs. work history for mixing of regular butyl rubber and VN3 silica with TESPT.

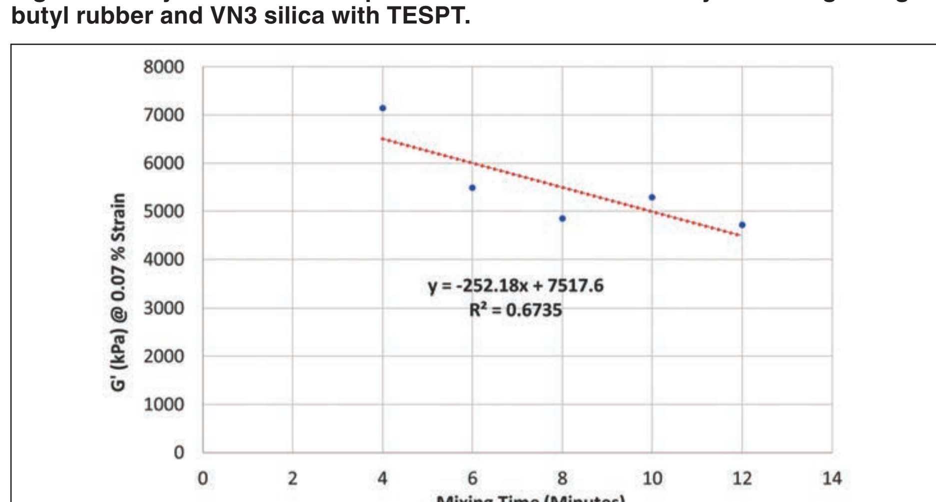

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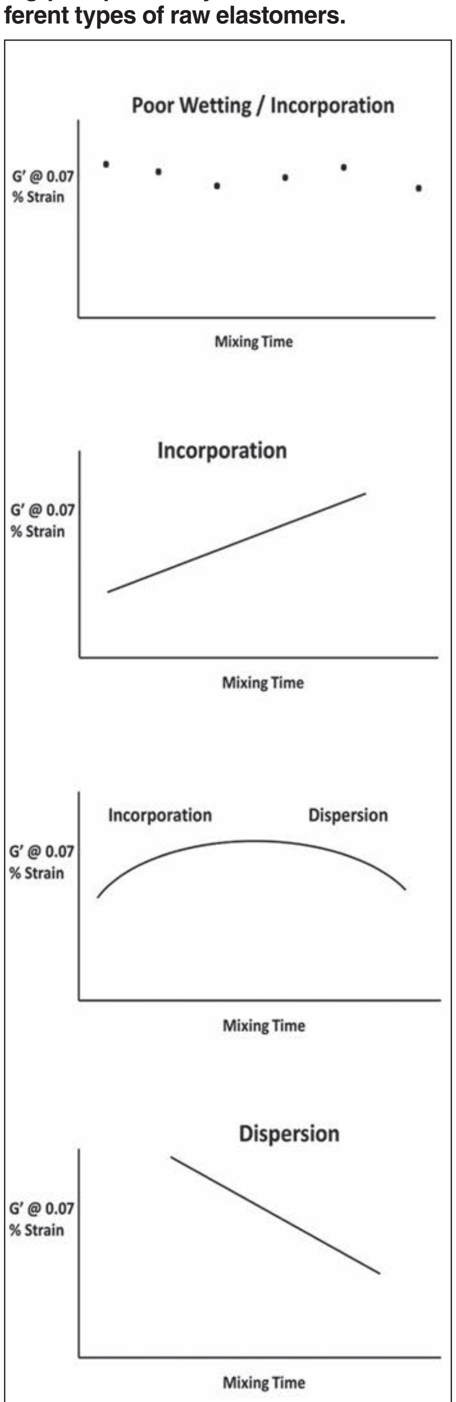
Table 2: Summary of carbon black mixing results.

Base Elastomer Used in Mixing Study	Statistical Correlation R^2 Between the Payne Effect G' @ 0.07% (ASTM D8059) and Mixing Time (State-of Mix)	Statistical Correlation R^2 Between the % Z Dispersion (ASTM D7723) and Mixing Time (State-of Mix)
SBR	0.987	0.9746
NR	0.9601	0.9915
BR	0.744	0.8478
BIIR	0.9576	0.9723
IIR	0.0335	0.727
NBR	0.8747	0.8631

Table 3: Summary of silica mixing results.

Base Rubber Used in Mixing Study (with or without TESPT)	Type of Profile	Statistical Correlation R^2 Between the Payne Effect G' @ 0.07% (ASTM D8059) and Mixing Time (State-of Mix)
SBR without TESPT	Incorporation-Dispersion	0.6885
SBR with TESPT	Dispersion	0.9502
NR without TESPT	Incorporation-Dispersion	0.9147
NR with TESPT	Incorporation	0.6956
BR without TESPT	Incorporation	0.5445
BR with TESPT	Incorporation-Dispersion	0.9741
IR without TESPT	Poor Wetting-Incorporation	0.0009
IR with TESPT	Incorporation-Dispersion	0.8526
BIIR without TESPT	Incorporation	0.9282
BIIR with TESPT	Incorporation-Dispersion	0.4259
IIR without TESPT	Incorporation-Dispersion	0.9962
IIR with TESPT	Dispersion	0.6735
NBR without TESPT	Dispersion	0.7621
NBR with TESPT	Incorporation-Dispersion	0.8912

Fig. 31: Four potential situations in mixing precipitated hydrated silica with different types of raw elastomers.



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Elite

Continued from page 1

ended up being a financial decision for us because they helped us quite a bit."

Elite broke ground in December 2001 on a greenfield operation. "We didn't buy a building," he said. "We poured the concrete, put up the buildings and ordered the equipment."

It was late 2002 before the mixing operation was production-capable. As the team tried to build up a business, Elite first got caught up in the economic downturn that followed the 9/11 attacks in 2001.

But the slowdown actually worked to the firm's advantage a bit, according to Glidewell. "I was always on the opposite side of that in technical," he said. "When things were running really fast and furious in the plant, you were rarely given any production time to run trials."

With the business of potential customers slow, Elite was given some opportunities as the new kid on the block. "Some we knew from past relationships," he said, "and we were fortunate enough to start building our business."

Elite started with one mixing line, added a second in 2004 and a third two years after that. It primarily deals with higher-end compounds such as HNBR.

"But it's like any other business," Glidewell said. "You have to keep the lights on and you have to pay the bills, so you have to take some more commercial-like business. We ran quite a few FDA-approved ingredient types with EPDM and SBRs. It was a little bit less margins, but it was business. We managed to start filling up our mixers."

An overview of Elite Elastomers' headquarters site in Ripley, Miss. The firm has its main mixing facility there, along with a research and development center, and a manufacturing site for its Elite Engineering Products business.

Defining its business model

In 2006, Glidewell wanted Elite Elastomers to focus on growing its business in the oil and gas sector, mixing some FKM and HNBR compounds. But he found it tough to get past the buyers, until one day he came to a realization.

"If you're not one of the boys, you've got to hire one," he said. So Glidewell hired the now-retired Paul Guess, who had a track record with Colonial Rubber and was known to customers in the oil and gas sector.

"It wasn't anytime at all that we had opportunities to submit samples," the Elite president said. "We really have made that particular market segment the one we spend a lot of our time in and really a lot of our innovation capital to develop new products for those grades."

After that—sometime between 2009 and 2010—Glidewell said Elite wanted to define its identity and business model in the market. He knew the mixer wasn't a big player in terms of volume, so that wasn't the right path. But where it excelled was in developing material compounds.

"We understand that, and our approach is application-oriented," he said. "I'm a chemical engineer, so I look at things from an engineer's perspective as well as a chemistry perspective when we design."

So Elite made a concerted effort to make that part of its sales process. "If you want something that's an optimal material for you, you need to talk to someone who understands how you're going to be using your product," Glidewell said.

Ginger Glidewell, technical director of Elite Elastomers and Steve's wife, said the compounder excels in the development of intellectual property that is unique to the market.

"We like to ask the customers what it is they want to do in the marketplace that maybe they're not doing at this point," she said. "If you want to be No. 1 in a particular application, we would love to partner with you. We push customers to the forefront of the application so they're No. 1 and we're the support bank."

Another opportunity is where customers may have technical talent retiring, Elite can serve as an extension of the technical units inside some of these groups. "We sit in on engineering, design and development meetings jointly, which when I first started in this career, that was unheard of," she said.

With many of the projects the firm has been involved in, it has been on a "by invitation" basis, Ginger Glidewell said.

"We've been identified as a group that can handle intellectual discussions and property in a fashion that is comfortable moving forward being an outsider to the company we're talking with," she said. "It's very nice to have that reputation with our customer base."

Steve Glidewell said Elite is all about building things, from how it designs materials that don't exist to building businesses. "That's part of that American experience in doing something constructive, and leaving where you've been a little better off," he said.

Making end products

In 2016, the company formed Elite Engineered Products L.L.C., which the firm said allows it to "couple its cutting edge ability to develop non-metallic materials with its extensive knowledge of the manufacture of the products made from those materials."

It has 50,000 total square feet of space in two plants in Ripley, though Steve Glidewell said currently only the 35,000-sq.-ft. plant is being utilized. He said EEP was set up to manufacture completion tools for the fracturing process in the oil exploration market along with sub-sea insulation and infrastructure products.

Elite has a portfolio of swellable elastomers that are used in the completion of fracking wells. It boasts both water and oil swell packers.

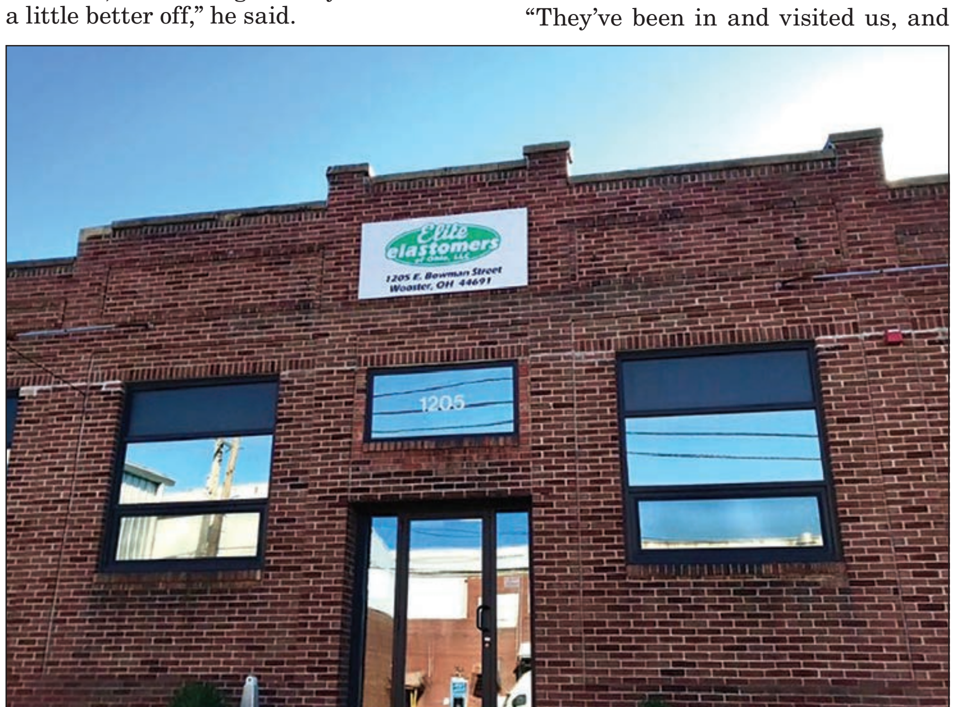
The company treads carefully to make sure EEP doesn't compete with customers it's supplying material to. There is one mixing and calendering customer, however, that makes a similar product with its own compound, and Steve Glidewell said they met and made full disclosure with the customer.

"They've been in and visited us, and they trust us completely," he said. "That's the level we want to work with from an integrity standpoint, that they're willing to know that we have another product that we provide in general to the industry. ... It actually competes with them, but they still want to buy from us and do business with us."

For that customer, he said the bottom line was this: "You provide good product. You're focused on us as a customer. If you're not putting my compound on your packer, it doesn't bother me."

Elite started EEG just as the oil and gas market was entering its recent downturn, but the market is coming back and Steve Glidewell said his firm has seen more activity for the packers.

The goods are sold through distributors, and he said EEP has plenty of capacity to ramp up production as sales grow.



Elite Elastomers last fall purchased Wayne County Rubber, a mixer in Wooster, Ohio. The site has been renamed Elite Elastomers of Ohio. The company is using an "improvement footprint" to target projects to move operations forward at the purchased facility.

Future plans

Ginger Glidewell said Elite is in a strong position to control the rate at which it moves forward. "We feel that we are responding to a market request for another choice or option, and logistically we needed to be positioned for that," she said.

The firm deploys what it calls an "improvement footprint," aimed at targeting projects to move operations forward in existing facilities. It will execute that program at the former Wayne County Rubber facility in Ohio.

Steve Glidewell said a dedicated color line will be added to the Ripley mixing facility in the near-term.

Ginger Glidewell added that some customers now purchase non-critical color compounds from Elite, but these same customers also have a need for materials to fill color-critical applications.

"It will certainly service our existing customer base, and then provide opportunity to those who have reached out to us that we're unable to offer in that line right now."

The two said also on the wish list is new products in the sustainable markets. There has been active lab work on a new generation of compounds in this area, Ginger Glidewell said.

"It's a giant kitchen, but we just call it a lab," she said. "Our group has a good time. Being small, we have an advantage as far as our turnaround time from development to prototype to commercialization. We can get there pretty quickly with that dedicated facility."

QPoly

Continued from page 1

growth for Specialty Products as Shaul said the company then turned to its existing customers who were working with FKMs and found more business opportunities organically.

But silicone remained the main marketing focus. Shaul, who was the primary face of the FKM business, sat down with Specialty Products founder Rick Rey and outlined his vision. The conversation eventually led to Shaul purchasing the FKM business.

"They're very much a dedicated silicone mixer," Shaul said. "Although we did well with the FKM product, it wasn't something Specialty marketed or went after. It wasn't their primary business. They are a silicone mixer and that's what they do."

After Shaul officially started QPoly, he stayed on with Specialty Polymers for another six months to ensure a smooth transition. The firm handled the mixing for QPoly during that process, allowing QPoly to set up and eventually move production into its current facility in Granger, just 10 miles away.

The process took about one year from May 2017 until April 2018. QPoly invested in a full set of dedicated equipment and Shaul said it continues to have a strong relationship with Specialty Products. Despite being separate production and legal entities, the two refer customers to one another regularly.

"Overall it went very smooth," Shaul said. "Given that I had been with Specialty Products for so long, I knew their business inside and Rick was more than willing to support me in this venture. We had time to do a gradual transition."

He added that the transition for customers also went smoothly.

"I was the primary interface for the FKM customers at Specialty Products," Shaul said. "The transition was really easy. All of our customers were really open to it. We didn't have anybody leave us. Anybody who was working with us at that time is now a customer of QPoly. I think everyone was comfortable knowing that I was running it before and am still running it now."

Most of the firm's business comes from the automotive market, but Shaul said it also serves the aerospace, military/defense and general purpose industries.

One of the main sources of growth for the firm has been new oil applications in engines. Shaul said automotive manufacturers are trying to achieve longer cycle times on oil and other fluid changes. A result of that push is that the fluids are becoming more synthetic and aggressive, which in turn is leading to those customers looking at FKM compounds as a solution to provide better chemical resistance.

The trend is not limited to automotive. Shaul said emission standards for small engines like lawnmowers and weed eaters are causing the fuels and oils to become more aggressive there, too, leading to increased demand for FKMs in the commercial and consumer markets.

"FKM has been big in that market to keep up with those changes," Shaul said. "You need the higher chemical performance to keep up with current requirements. It's continuing to grow. We're seeing a lot of interest in the newer peroxide technology with a higher chemical resistance in the FKM product line. There's a lot of development in that now for us."

QPoly follows the same business model as Specialty Products, which Shaul said is a focus on small- to medium-sized rubber product manufacturers looking for a supplier who can respond quickly to business opportunities.

"There are a lot of people that want that personal touch, who they can call up and talk directly to us with development projects, concerns or whatever it may be." Shaul said. "We try to be very quick and turn around quotes within hours or at least a day. For so many of the small businesses that are trying to make it it's about timeliness and service. It's about being available when they need us. That's the biggest advantage we have, we're nimble and we're quick."

He said that, combined with a deep knowledge of its customer base, has helped QPoly find success as it establishes its brand within the market.

"Our team here cares," Shaul said. "We enjoy the rubber industry, a lot of these people we consider our friends. When they need something, we want to help. You're not going to talk to a customer service representative who doesn't know who you are and what you do. We know our customers really well and we're happy to help."

IN BRIEF

Singer Equities acquires belting distributor group

HOUSTON—Singer Equities Inc. has purchased Quality Conveyor Solutions L.L.C., which provides conveyor belt, accessories and field services, including installation and mobile maintenance. Terms of the deal were not disclosed.

QCS is based in Roanoke, Va., and has other locations in Covington and Richmond, Va.; Baltimore; Rocky Mount, N.C.; and Kingsport, Tenn. It serves such markets as aggregate, pulp and paper, power generation and cement.

The business was founded in 2016 and will continue operating under the QCS name. Singer said owners Aaron Atwell, Bill Bettridge, Junior Purdue, Doug Stanley and Geoff Emery will continue in their management roles.

Atwell will serve as vice president and general manager of QCS, which will merge operations with Virginia Carolina Belting, a division of Singer Equities based in Salem, Va.

Singer Equities President Sam Petillo said the owners and their 37 employees have significantly grown the business in a short period of time. "We are excited to add their knowledge base and conveyor service experience to the Singer family," he said in a statement.

Singer Equities, along with Bishop Lifting Products and Dakota Fluid Power, are wholly owned subsidiaries of Houston-based SBP Holdings.