





1b

## GUR<sup>®</sup> – The untouchable

Technical Polymers can be used in applications where other types of polymers and materials are not resistant enough. GUR<sup>®</sup> is just such an example: Its resistance to wear and tear, impact, chemicals and extreme temperature makes GUR<sup>®</sup> the top choice for applications as diverse as hip joints, snowboard bottoms, chain guides and truck bed liners. With the commissioning of a new state-of-the-art production plant in Bishop, Texas, Ticona has created the necessary base for continued growth at an above-average rate in these and other markets.

The engine on the 64,000-pound Mack 238 dump truck gets louder as Jan Lease raises the bed upwards. He then climbs out of the cab and gives an approving pat to the black plastic which lines the bottom of the bed: “The bed’s Polystone<sup>®</sup> lining makes a big difference. Normally the steel bottom of a truck bed gets worn out in less than three years and has to be repaired. Since we are increasingly using the Polystone<sup>®</sup> protective lining, the dump truck’s bed lining can withstand the wear and tear of gravel and rocks for at least five years.”

### Polystone<sup>®</sup> – the premium lining

Polystone<sup>®</sup>M is a lining produced by Röchling Engineered Plastics from Ticona’s GUR<sup>®</sup> (UHMW-PE) polymer. It is sold in large sheets to companies such as Horn Plastics, which then uses it to line truck beds.

Just recently, Röchling started to operate a new large press, enabling the company to produce sufficient quantities to meet the increasing market demand.

### GUR<sup>®</sup> – more resistant than steel

Jan Lease, technical director for Wingra, a large hauling company in Madison, Wisconsin, describes the application areas the protective lining is used in. Polystone made from GUR<sup>®</sup> lines the dump trucks that the company uses to transport hot asphalt at a temperature of 150° Celsius. They also use recycled GUR<sup>®</sup> for dump trucks that are under heavy mechanical stress – such as those used for transporting coarse rocks and gravel. What makes a Polystone<sup>®</sup> lining more resistant than tempered steel? The lining is so slippery that nothing sticks to it. In other words, since rocks scarcely even rub the surface, the polymer isn’t easily worn down.

### Partnership from polymers to dump trucks

Mike Crull, a Horn Plastics employee, visits Wingra once or twice a month. Most of Wingra’s 60 trucks have meanwhile been lined with a protective Polystone<sup>®</sup> layer. Mike Crull and his colleagues line about three trucks a week themselves. In addition, they supply distributors across the entire mid-West. Customers



2

1 a/b. Horn Plastics has lined most of the dump trucks for the construction supplies company Wingra Stone & Redi-Mix of Wisconsin with a protective GUR® lining. The investment is well worth it. GUR® effectively protects the trucks' steel surface against abrasion caused by rocks and sand.

2. Bishop, Texas, October 11, 2002: GUR® and plant leadership in Bishop start up the modern GUR® production plant. With a capacity of 30,000 metric tons per year, Ticona can supply the NAFTA area with high-quality GUR®.

also include mining companies all over the U.S. with their huge dump trucks that need very tough protection against the big rocks they have to carry. For some years now, Mike has seen a definite trend towards using the higher quality GUR® lining. Market share has increased from 10% to around 50% in just a few years. "The quality convinces our customers," says Mike Crull about the product's success. "Although the initial investments are higher, the customer saves money and time in the mid-run and is able to maintain the value of the vehicle." The market success of Polystone and thus of GUR® supports Crull's claim.

### Commissioning of the new GUR plant in Bishop, Texas

On October 11, 2002, Ticona's plant employees and several customer representatives including Röchling Engineered Plastics joined Ticona leaders at the inauguration ceremony for the new GUR® unit, which has a capacity of 30,000 metric tons per year. Around \$50 million were invested in the modern plant to satisfy the growing demand for GUR® and to manufacture top quality products.

Bob Engle, Ticona's global GUR® business manager, is particularly impressed by what the plant is capable of achieving: "Our modern facility

in Bishop now enables us to manufacture new grades of GUR® that will support innovative business opportunities. In addition to that, we can offer supply reliability, particularly in the NAFTA area, and leading quality product solutions to our customers.”

### Heavy Duty GUR® Polymer

GUR® is an ultra-high molecular weight polyethylene (UHMW-PE). The polyethylene molecules are so “long and entangled” that GUR® is extraordinarily tough and resistant to wear and tear, chemicals and extreme temperatures. The extreme molecular weight is achieved with proprietary Ticona technology for polymerizing ethylene. Due to its special combination of properties, GUR® is used in applications having a high degree of abrasion and impact: Besides being used to line truck beds, it is also used for

marine dock fenders, chain sprockets, conveyor channels, and as the bottom contact surface of skis, for example. Due to its chemical resistance, GUR® can also be found in galvanizing processes, slurry pumps, silo linings, and as porous molded components in filter technology.

Celanese has been producing GUR® since the 1950’s. In recent years, technical marketing has opened up some innovative applications for the polymer. These include: molding purge compounds, membranes for battery technologies, substrates for medical diagnostic tools, fibers for ballistic and recreational uses, and even some injection molded parts. Furthermore, GUR micropowders® can be used to increase the abrasion resistance or protect and alter the surface properties of polymers, rubber, and coated surfaces. ◀

### VECTRA® – THE HIGH END POLYMER

Ticona is not only the market leader for GUR® and Hostaform®, but also for Vectra® LCP, a liquid crystal polymer with unusual properties. Vectra’s® special structure yields a significant improvement in its mechanical properties, making it stronger, stiffer and dimensionally more stable than other polymers, particularly at reduced wall thickness. In addition to this, it has a high resistance to temperature and fire and absorbs little water. With this profile of characteristics, Vectra® is primarily used for applications in electrical and electronic components, fiber optics, medical equipment

such as endoscopic instruments, in the manufacture of cars and engines, as well as in the aerospace industry. Many molded components which were previously made of light metal alloys or other polymers are now made from Vectra®, resulting in fewer problems and more economical production. At the beginning of 2002, Vectra® was also granted FDA approval as a packaging material for pharmaceuticals and food ingredients.

Ticona supplies the NAFTA region and Europe from the Vectra® plant in Shelby, North Carolina. In May, the plant

there began to operate using its expanded capacity of 6,000 metric tons per year. Ticona’s Vectra® customers in Asia are supplied by Polyplastics, a joint venture between Ticona and Daicel Chemical Industries. Ticona is well prepared for the demand it expects to have from customers in existing markets, such as the telecommunications and electronics industry, and new markets, such as medical technology and special packaging.