



A PASSION FOR POLYMERS FOR OVER 50 YEARS



Based in Clearwater, Florida, TSE Industries is a third generation, family-owned company founded in 1962 by Walt and Helen Klingel. They started TSE by buying and reselling plastic materials. Since then, polymers of all kinds have run in the veins of the Klingel family. Their son, Robert R. Klingel, Sr., serves as TSE's

C.E.O. while Rob's three sons run day-to-day operations. Richard "Rick" Klingel (right) is TSE's President. Robert R. Klingel, Jr. (left) runs TSE's Engineered Polymers Division, while Louis "Brad" Klingel (center) runs TSE's UHMW sheet division, TSE-OK.

OUR GUIDING PRINCIPLE: TSE was built on simple values that have stood the test of time. Our guiding principle remains the same: Treat our customers and employees as we want to be treated. These core values have served us well over the last 50 years and account for our growth from a small "Mom and Pop Shop" to an industry leader, with 235 dedicated employees who share our philosophy. Our Management Team and employees take pride in quality work and being a business partner you can count on and trust with your most critical products and parts.

GIVING BACK: The Klingel family has always believed in and supported the Tampa Bay Community. In 2002, the Klingel Family Foundation was established to increase this effort by facilitating charitable giving to a wide range of outstanding organizations. Since its inception, the Foundation has given over \$1,200,000 to various charities, including Hospice, The Ronald McDonald House, All Children's Hospital, Moffitt Cancer Center, the SPCA, and many others.



Walt & Helen Klingel

TSE also works with St. Petersburg College and Pinellas Technical Education Center, enhancing educational experiences in the machining trades and providing job opportunities for graduates.



CONTRACT MANUFACTURING OF SPECIALTY CHEMICALS

Consistent, reliable products, delivered on-spec and on time, every time, is hard. It takes commitment. It takes the right processes, developed over decades. It takes expertise and experience. Most of all, it takes the right people. At TSE, we've got the right people. Our PhD Chemists, Engineers, skilled Chemical Operators, and Materials Management workers make hard things look easy every day.



OUR PROCESSING TECHNOLOGIES INCLUDE:

- Reactive Hot Melt Adhesives - No one does them better than TSE!
- Urethane Prepolymers (MDI, TDI and Aliphatics)
- Pigmented or Filled Polyurethanes and Polyols
- Blocked Prepolymers (MDI and TDI)
- Cast Urethanes and Prepolymers
- TPU's (Thermoplastic Polyurethanes)

OUR MANUFACTURING EQUIPMENT INCLUDES:

- Four Sizes of Production Reactors: 3,750(5), 1,500, 500(2), 250 Gal
- Five Scale-Up Reactors: 500, 250, 25, 15, 5 Gal
- All Reactors 316 Stainless Steel, Full Vacuum & Pressure Rated
- Operate Under Closed Conditions
- Charge from Bulk, Drum, Tote and Bags
- In-line Filtration (10-800 micron) and Jacketed Draw-Off Lines
- Nitrogen & Argon Piped to All Reactors and Packaging Areas
- Complete Heating and Cooling Systems
- NMP Process Cleaning System

Our on-site Development and Analytical Center (DAC Lab) oversees all aspects of quality control for our contract manufacturing services, from scale-up, to in-process testing, to final testing prior to shipment.

Come tour our plant in Clearwater, Florida, and see the full range of contract and toll manufacturing services we offer. For more information, please visit www.tsetolling.com or call us at (800) 237-7634.



Contract Manufacturing of Specialty Chemicals

REACTIVE HOT MELT ADHESIVES

At TSE, contract manufacturing of reactive hot melt adhesives is our specialty. TSE has been a toll manufacturer for one of the largest suppliers of reactive hot melt adhesives for decades, manufacturing and shipping their products throughout the world. We now offer our considerable expertise with reactive hot melt adhesives to a select number of new customers.

Now, you can place an order for 100,000 pounds or 5,000,000 pounds of reactive hot melt adhesives, resting assured that you're in good hands. Just bring us your manufacturing package and we'll take it from there. We have the depth of knowledge and the equipment to get your reactive hot melt adhesives into full production with speed, accuracy and efficiency.

THE RIGHT PEOPLE: Our expert staff of PhD Chemists and Engineers will scale-up your hot melt adhesives in our in-house lab using a dedicated bank of smaller reactors. Once you're satisfied that your reactive hot melts meet your specifications, we'll take them into full production, utilizing our experienced staff of Production Managers, Floor Supervisors, and Chemical Operators.



QUALITY MATTERS: We're an ISO 9001-2008 certified facility. We perform in-process and final testing. Our Materials Management team will carefully package and ship your products directly to you or drop ship them to your customers with your label. Once your hot melt adhesives are in production, just send us your purchase orders and consider them delivered!

At TSE, our unmatched expertise in reactive hot melt adhesives will convince you that we're the right choice, but our performance will have you sticking with us, year after year and decade after decade.

Visit us in beautiful Clearwater, Florida, and see for yourself why TSE is the best choice for contract manufacturing your reactive hot melt adhesives. For more information, please visit www.reactivehotmelts.com or call us at (800) 237-7634.

Reactive Hot Melt Adhesives



CUSTOM PLASTIC FABRICATION & CNC MACHINING

TSE brings over 50 years of engineering experience in custom plastic fabrication and CNC machining to every job. We'll help you choose the right material for your application and fabricate your parts to meet your specifications and exceed your expectations with:

- A full-time staff of experienced plastic design and fabrication engineers skilled in CAD/CAM programs
- Custom plastic fabrication and CNC machining of parts by experienced machinists utilizing the highest quality materials
- Production-run quantities without the up-front cost of custom molding or tooling
- An ISO 9001 certified company dedicated to quality, getting it right the first time and every time, on time and on budget



SETTING THE INDUSTRY STANDARD: We've invested in the CNC machining and plastic fabrication equipment to assure conformance to the strictest tolerances. More importantly, we've invested in people – training and developing the skilled craftsmen who transform your most challenging designs into reality.

AN EXTENSIVE INVENTORY: Our UHMW Sheet Division, TSE-OK, LLC, presses sheets right here at our Clearwater, Florida campus, allowing us to offer you a wide variety of custom colors of varying thickness and sizes. This unique capability enables us to reduce production time and deliver your parts faster.

TSE can handle all of your custom plastic fabrication & CNC machining needs! For more information, please visit www.tseplastics.com or call us at (800) 237-7634.

Custom Plastic Fabrication



MILLATHANE® MILLABLE POLYURETHANE RUBBER

TSE is the world's largest manufacturer of millable urethane rubber, selling our millable urethane under the Millathane® trademark. From aircraft wing deicing bladders, to ATM rollers and wheels, to the greatest basketball shoes of all time, Millathane is THE material of choice for your most demanding applications.



Millathane possesses a combination of physical properties not found in natural or synthetic rubber such as:

- Outstanding abrasion, oil, oxygen and ozone resistance
- Excellent gas (e.g., nitrogen) permeability resistance
- Low temperature flexibility
- Dynamic load bearing ability
- High resilience
- Excellent resistance to compression set
- Withstands temperatures up to 120° C

Millathane millable polyurethane compounds have properties that are often comparable to those of castable (liquid) polyurethanes, which require different processing equipment and molding techniques. Millathane compounds are mixed on rubber mills or internal mixers, and molded like other types of rubber.

THANECURE® REACTIVE ADDITIVES: Thanecure T9 (TDI Dimer) is a polyfunctional isocyanate used primarily as a vulcanizing agent for polyurethane rubbers, as a crosslinker for heat-activated adhesive systems and as an adhesion promoter for rubber-to-fabric bonding.

Thanecure ZM is a cure activator for sulfur-cured Millathane polyurethane rubber. Increasing the amount of Thanecure ZM increases the rate and state of cure and improves the compression set resistance. Thanecure ZM is used to cure polyester, polyether, and other types of sulfur-curable polyurethane rubber.

Trust Millathane® Millable Polyurethane Rubber for your most demanding applications. For more information, please visit us at www.millathane.com or call us at (800) 237-7634.



Millathane®

Millable Polyurethane Rubber

DURO-GLIDE® UHMW-PE SHEETS AND ENGINEERING PLASTICS

Whatever your needs in UHMW-PE sheets and engineering plastics, such as HDPE, Nylon and Acetal sheet, count on our sheet division, TSE-OK, located right here at our Clearwater, Florida campus. At TSE-OK, we blend and press a wide range of UHMW-PE sheets. We also sell HDPE, Nylon and Acetal sheets.

We offer our Duro-Glide® Virgin UHMW-PE sheets in a wide array of colors to meet most applications. For your most challenging applications, we custom blend and press our Duro-Glide Enhanced UHMW sheets, with special additives to give it exactly the properties you need, including impact & wear resistance, antistatic, antimicrobial and high temperature resistance. We also offer reprocessed as well as unique combo sheets that tell you when it's time for replacement.



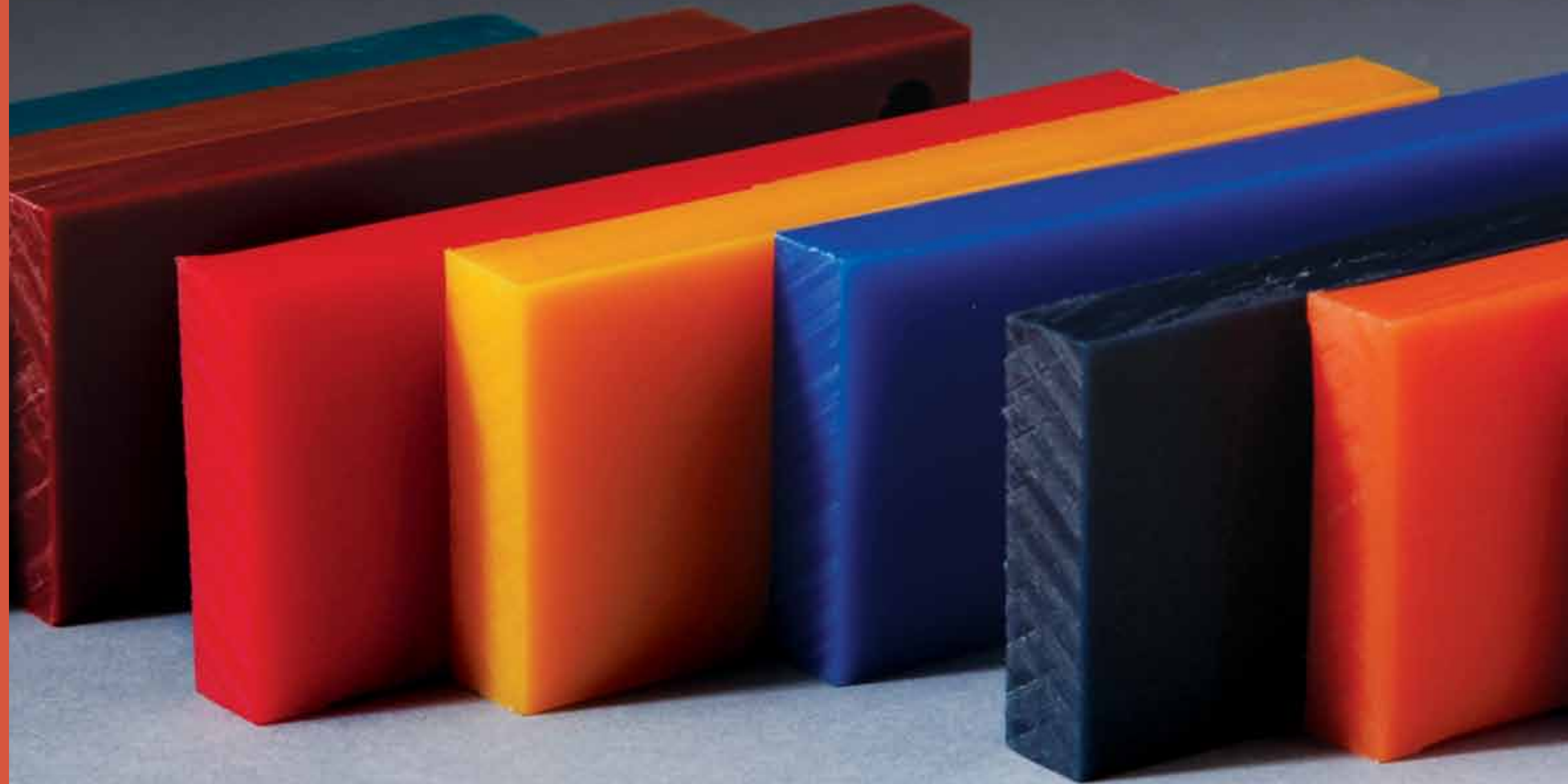
We offer 4' x 10' UHMW-PE plastic sheets ranging from 1/4" to 6" thick. We also offer 80" x 120", 80" x 160" and 80" x 240" UHMW-PE sheets, one of the largest sheets available in the U.S. From 1/4" x 48" x 120" sheets up to 6" x 48" x 120", we sell UHMW Sheets for a wide variety of industrial applications including:

- Plastic Fabrication
- Chain Sprockets and Gears
- Airboat Polymer
- Mining, Agro, & Power Industries
- Fendering Systems, Docks and Hulls
- Food Processing
- Truck Liners
- Paper and Logging
- Ski Ramps

TSE-OK can meet all of your UHMW-PE sheet and engineering plastics needs! For more information, please visit www.tseok.com or call us at (866) 652-2557.

TSE-OK

Duro-Glide® UHMW-PE & Engineering Plastics



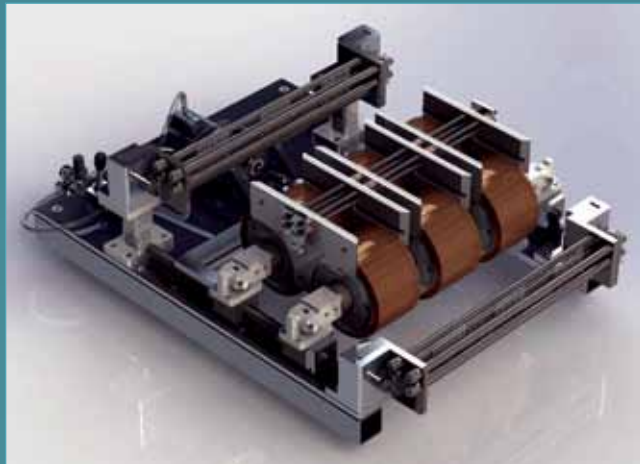
TSE-ECOSPRAY® & TSE-ECOWIND® POLYURETHANE COMPOSITE RESINS

ENVIRONMENTALLY PREFERABLE: TSE-EcoSpray® and TSE-EcoWind® are revolutionary, toxin-free, environmentally preferable polyurethane resin systems for composites that do not contain VOCs like styrene or biohazards like BPA. Our TSE-EcoWind® High Performance Filament Winding Thermoset Resin System won the JEC Americas 2013 Innovation Award in the "Green Solutions" category.

SUPER-FAST CURE TIME INCREASES PRODUCTION BY 500-800%! Cure time for our TSE-EcoSpray resins for bath and hot tub spa reinforcement is super-fast. It cures in just 25 minutes vs. traditional resins that take about 5 hours, increasing production by 500%! Cure time for our TSE-EcoWind polyurethane resin for filament winding is super-fast too. It cures in just 1 hour vs. traditional anhydride-based epoxy resins that take 8 hours, increasing production by up to 800%!

COSTS LESS: TSE's toxin-free, fast-curing, composite resin systems cost less than epoxy and vinyl ester solutions and provide better physical, mechanical and thermal properties.

SUPER-FAST RESIN SAVINGS!: Need another reason to switch? Typical filament winding applicators waste around 5% of the resin being applied, spilling your profit all over the floor! TSE's patented, high-speed, dripless resin applicator, the TSE-EcoWinder®, cuts resin waste from 5% to just 0.25%! Imagine the savings and impact on your bottom line!



TSE provides complete VOC-Free and BPA-Free turnkey solutions, including technology, product and processes (Filament Winding, Spray-Up, RTM, Casting) to make your conversion from conventional systems to our composite resin systems virtually seamless.

TSE-EcoSpray and TSE-EcoWind Environmentally Preferable Resins. Super-Fast and VOC-Free! For more information, please visit us at www.tseresins.com or call us at (800) 237-7634.

Environmentally Preferable Polyurethane Composite Resins



WHK BIOSYSTEMS, LLC

WHK BioSystems, a wholly-owned subsidiary of TSE Industries, is an FDA-registered and ISO 13485: 2003 certified medical device manufacturer. Our team brings over 20 years of medical device contract manufacturing experience to every project. Our expertise includes single-use components and assemblies, custom fluid assemblies, and a wide range of products for the biopharm, pharmaceutical and medical device industries.



ISO CLASS 7 CLEAN ROOM: Our new, 2,400 square foot, ISO Class 7 (Class 10,000) Clean Room in Clearwater, Florida, is equipped to take on your most demanding challenges. We offer:

- Product design services
- Clean room RF welding, laser cutting & engraving
- Expert assembly of single-use components, medical devices, manifolds and tubing assemblies
- Injection molded assemblies
- Leak detection, pressure testing and sterilization
- Inventory management and delivery.



All of our production and testing is overseen by WHK's Quality Manager, with decades of experience in all aspects of QC in the medical device manufacturing field. We'll ship your product safely and efficiently, on time and on budget, nationally or internationally, from our on-site 6,000 square foot warehouse.

For more information, please visit us at www.whkbio.com or call us at (855) WHK-BIO1 (855-945-2461).



WHK BioSystems

Medical Device Manufacturing