closing the loop on thermal solutions

ms • heaters • sensors • controls • process systems

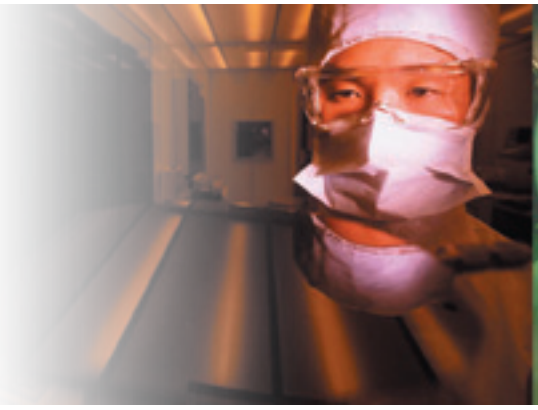
Durex plant in Cary, IL (Chicago)—Facility houses our foundry and full manufacturing operations

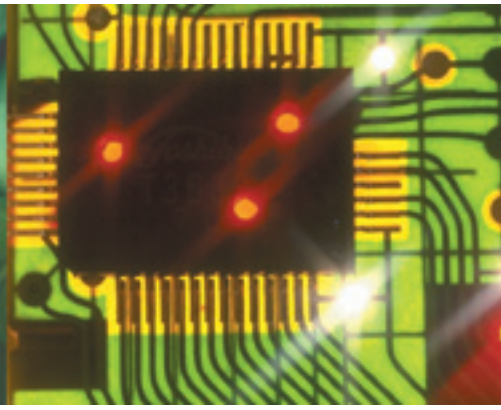
Closing the Loop on Thermal Solutions

The world of complex thermal processes demands high quality, precision-made thermal components and process control systems. At Durex Industries, we do this all day, every day. Our extensive design and manufacturing capabilities are synthesized to deliver solutions from complex and creative to robust and durable. We truly represent a tradition of excellence in the thermal process industry.

Headquartered in Cary, Illinois, our campus now encompasses 145,000 square feet, which includes additional capacity for research and development of new products for increasingly demanding applications. Our ISO-9001 certification also mirrors our commitment to total customer satisfaction, with continuous improvement integrated into the fiber of our operations.

INDUSTRIES SERVED





As a vertically integrated manufacturer based in the USA, we pride ourselves on our ability to quickly deploy our resources to resolve complex thermal problems, enhance existing designs, and provide rapid prototypes. Our sizeable array of in-house capabilities gives us a significant advantage in response time and design options, as well as tight process control, undiluted by outside sourcing.

Our competitive strengths are leveraged by our customers to produce solutions with accuracy, durability, and dependability – the key factors to ensuring your equipment and instruments perform as designed. Our aim is laser focused; to become an extension of your organization …working towards common goals via design optimization, continuous process requirements, and cost minimization.

This catalog offers you a look at our depth of products, both standard and custom designs to suit virtually any thermal processing requirement. You will find our products worldwide in industries as diverse as semiconductor processing, plastics, packaging, medical equipment, life sciences, foodservice, military technology, photovoltaic, and chemical and petroleum processing.

Durex engineered thermal products are supported through an international network of expert sales engineers, factory authorized distributors, and an inside staff of dedicated engineering professionals eager for the next challenge in thermal application.

We welcome the opportunity to become your valued design partner. Call direct or visit our website to get started.

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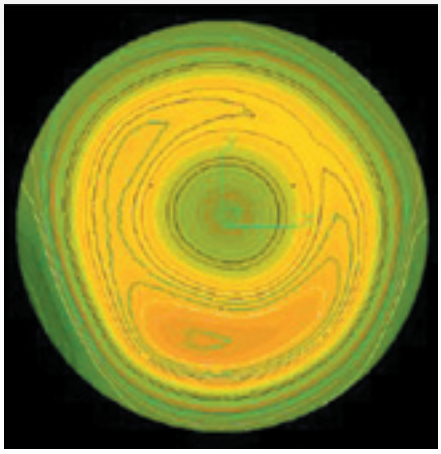
At Durex, there are several important reasons why we stay ahead of our competition. The most important reason is our wide range of capabilities. For example, our in-house capabilities include heater element manufacturing, foundry operations, heat treating, CNC bending, CNC machining, waterjet cutting, plasma and orbital welding, anodizing and passivation, and Class 100 clean room assembly.

Our quality assurance capabilities as an ISO-9001 registered manufacturing operation mirror our commitment to total customer satisfaction. These capabilities include a full service calibration lab traceable to NIST, digital in-house x-ray facility, helium leak test, coordinate measuring machine, temperature profiling acquisition and display, and an on-going accelerated life cycle testing.

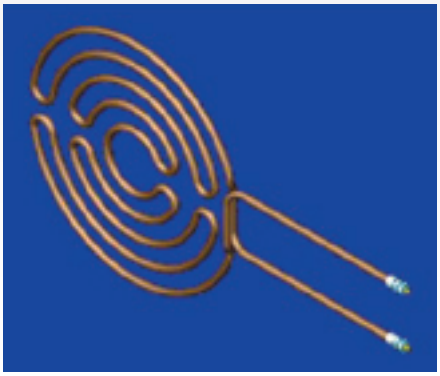
Contact us to find out more about the unique capabilities we offer that can provide you with the best design and product value in the industry!

NOTE: The product families and specific items shown herein are merely representative of what Durex can do. If your process or production requirement involves a heat process in any way, we welcome your call.



Problem Analysis

We assess the total environment of the application, including temperature range, field of heat required, humidity, space, thermal dissipation and data transmission, as required. We ask all the questions and we listen, as you provide the necessary input to guide our internal processes. If standard products can be utilized to solve the problems, we make those recommendations. When they cannot be used, or when a more cost-effective, space-containing or material-specific product is needed, we find it. Better designs and the most appropriate solutions are the result.



Design

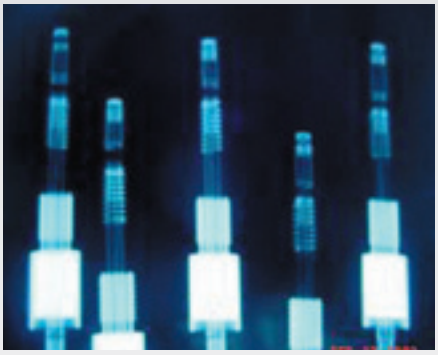
With state-of-the-art CAD and 3-D Solidification Modeling, Durex engineers create a thermal processing solution to your challenge. Precisely because we manufacture nearly everything we sell, Durex can draw from a wealth of experience and in-field successes to help you generate, sense or control heat in the best ways possible. This catalog demonstrates, we have thousands of proven products to help you, or we can design a completely new heater, sensor or control to match your requirements, both environmental and economic. You get the products and profitability you need.

Prototype

You work in a fast-paced, changing environment and so do we. Rapid prototype development is critical to market proactivity. As needed, Durex engineers can fashion test-ready samples on virtually any design, faster than all other suppliers in the industry. Once again, this translates into time and cost savings for your operation. You have less downtime or can bring your product to market faster.

Manufacturing

The Durex foundry process guarantees our heater performance, because it ensures precise element placement and minimum porosity on each alloy or pure aluminum casting we produce. Likewise, our machining and fabrication plant produces heaters and temperature sensors of unparalleled accuracy and stability in use. Such tightly controlled quality is built into your products.



Validation/QA

Another Durex advantage for you is the validation/quality assurance process used at our company. Nothing leaves our dock until it's been rigorously tested and certified for use, to your specifications. As needed, we have X-ray inspection, Helium leak testing, life cycle testing, surface temperature profiling and more. Our products undergo this extensive procedure for just one reason, namely, our customers' satisfaction.

Engineering Process

When you employ our engineering process, you enlist a team of experts that become an integral part of *your* design process. Designing and manufacturing the optimal thermal components for any application is a process that begins with analysis and identification. Overlooking these two important "first steps" leads to wasted time, money and opportunity. When you engage our engineering process, we bring our many years of application expertise to bear on your project. No large bureaucracy, no middlemen protecting mind share. Our engineers roll up their sleeves and get to work with your staff. If it can be done, it will be done. That is our attitude and commitment to our valued partners.

QUALITY POLICY

We are committed to total customer satisfaction through the competitive value of quality products and services, on-time deliveries, and the integrity of a total quality system that promotes continuous improvement in our services and operations.

DUREX IS AN ISO-9001 REGISTERED FIRM

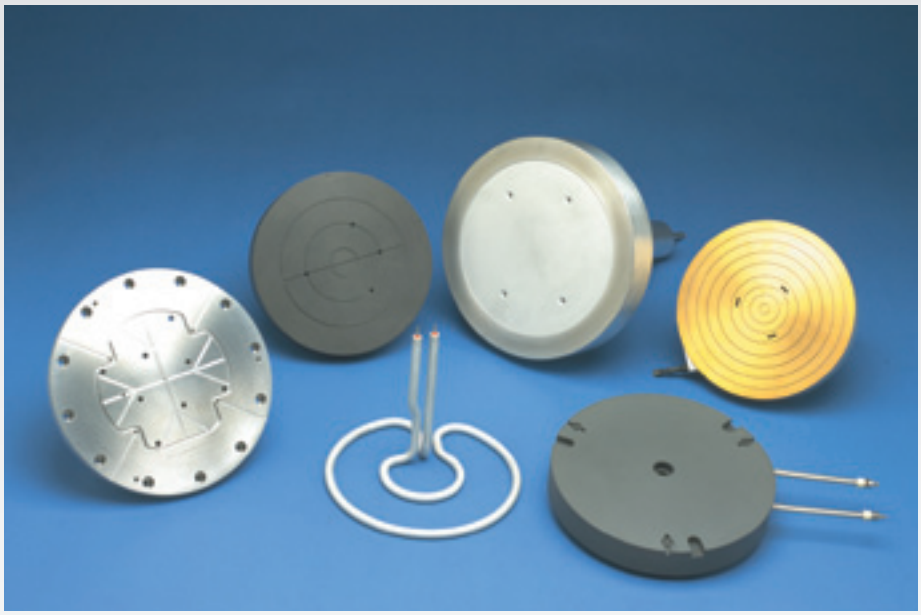
ADVANCED THERMAL SOLUTIONS FOR SEMICONDUCTOR PROCESSING

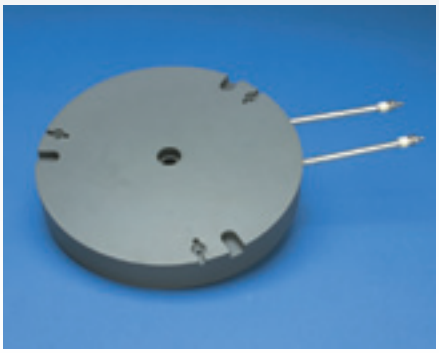
High-performance electric platen heaters and related products are available from Durex for all aspects of the semiconductor production process.

- CVD
- Photolithography
- Stripping
- PVD
- Etching
- Probing
- Wafer Annealing
- Plasma Ashing
- Flat Panel

Durex engineers are specialists in designing and building thermal processing solutions for the machinery and equipment OEM's in service to the semiconductor industry, as well as contract fab shops, sub-assemblers and others who work in this high-precision market. All our capabilities described previously are utilized in this market, in which Durex is an acknowledged leader.

The products shown here have been produced for specific customer applications, but all are available in the same or modified forms for your use.





BAKE PLATENS

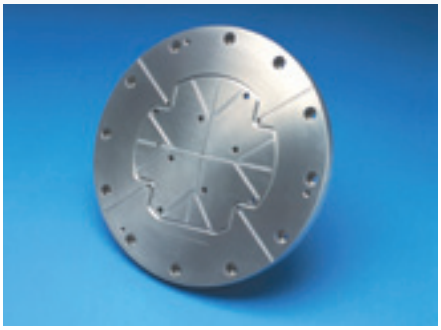
Utilizing state-of-the-art heater technology, Durex manufactures precision bake platens specifically for processing 200mm and 300mm wafers. These platens are cast from pure aluminum (99.7%) to insure maximum operating temperatures of 450°C (842°F) with minimum risk of process contamination. The casting process is controlled to eliminate any defects in the machined surface or casting body caused by porosity. A mineral-insulated heating element distributed throughout the casting provides surface temperature uniformity to ±1% or better of the process operating temperature. A hard-anodized finish provides an abrasion-resistant dielectric barrier on the working surface.

BAKE/CHILL PLATENS

Durex bake/chill platens have essentially the same operating specifications as our bake platens, with the addition of a cooling function. A precision formed cooling tube is added as an integral component to the heater assembly in the body of the casting. This function can be used to rapidly cool the working surface of the platen or to act as a heat exchanger for liquids and gases. A pressure test on the finished part assures the integrity of the cooling tube after the casting process. The platen can also include an integral temperature sensor as part of the assembly.

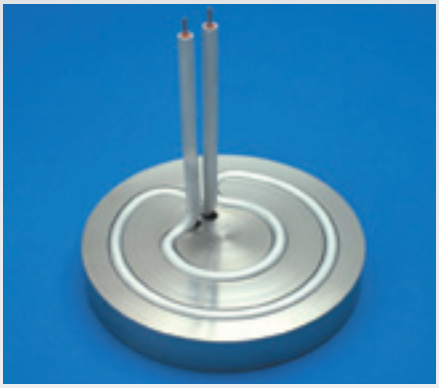
PEDESTAL HEATERS

These pedestals comprise a bake or chill platen with an aluminum "shaft" attached to the underside of the platen by electron beam welding. A helium leak test insures a vacuum tight assembly. The surface of the pedestal is precision machined with a flatness of ± 0.0005" and includes lift pin holes and proximity pins to customer specifications. Various termination options are available to customize the cooling tube exits for new or existing applications.



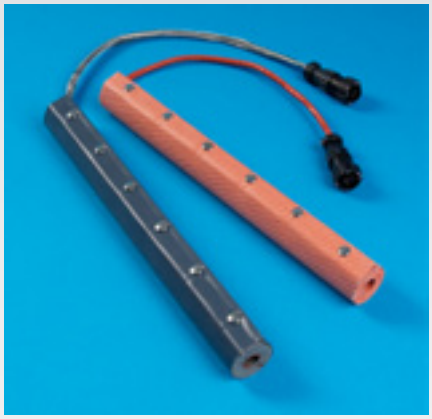
HOT CHUCKS

Hot chucks or "heated tools" deliver precise heat to wafers during the manufacturing process. These platens are individually customized with vacuum channels on the working surface, as well as specific pin hole locations and other surface or backside mounting holes. Manufactured from pure aluminum (99.7%), these hot chucks have a temperature uniformity of better than ±1% of the process temperature and a flatness tolerance of ±0.0005" across the entire surface. A precision lapped surface is standard, with a hardcoat anodized finish available.



HIGH-TEMPERATURE PLATENS

When temperatures exceed the 450°C (842°F) range provided by aluminum platen heaters, Durex offers a unique high-temperature platen heater to extend the range available for a machined heater. The heater body is typically constructed of stainless steel, with other materials such as Nickel, Inconel®, Copper or Bronze available, as needed. The assembly is provided as a single component. A precise groove is machined into the heater body, as determined by the heat profile requirements of the surface. A mineral-insulated heating element is press-fit into the groove to guarantee intimate contact with the heater body, which optimizes heater life and temperature uniformity on the working surface. In addition to high-temperature platens, these units can be manufactured as pedestals and welded vacuum tight.



GAS and PUMP LINE HEATERS

Gas and pump line heaters are turnkey solutions that reduce condensation from the gas cylinder to a vacuum chamber, and sublimation of nitrides and other materials in the exhaust lines from the vacuum chamber to the scrubber.

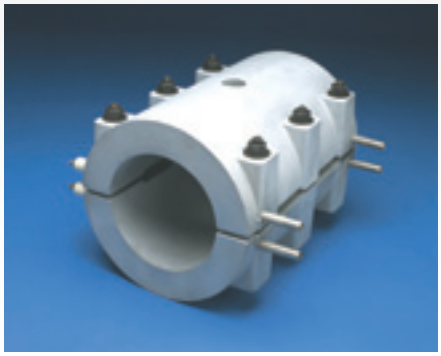
- Standard designs for regulators, filters, mass flow controllers (MFC) and piping
- Clean silicone rubber heater construction
- Process temperatures to 200°C
- Integrated temperature assemblies
- Meets SEMI safety guidelines
- Integrated high limit protection

DUROCAST™ INDUSTRIAL CAST-IN HEATERS

Durex designs Durocast™ cast-in heaters of aluminum and bronze for various heating applications, such as packaging, foodservice, hot melt systems, die heating, glue pots, heat sealing, heat treating, medical imaging, silk screening, textile production and vacuum forming. We also are the premier supplier of cast heaters for plastics processing.

Our foundry's production capabilities range from large quantities of simple platens to complex heated machine parts with unmatched temperature uniformity. We accomplish this variety, precisely because all our work is done in-house, including:

- CAD/CAM
- 3-D modeling
- CNC machining
- CMM inspection
- Computerized heat profiling
- Tooling fabrication
- Permanent mold casting
- Heating element manufacture
- X-ray facilities
- Teflon® coating line
- Life cycle testing
- UL/CSA recognition



LIQUID-COOLED BARRELS

A heating element and an integral cooling tube are cast into these heaters for uniform process control. Cooling tube sizes of 3/8" and 1/2" are available in stainless steel or Incoloy®. Dual cooling tubes are also available to eliminate downtime associated with clogged cooling lines. Various electrical and cooling tube terminations are offered by Durex. Strap-on and bolt-on designs are standard. Cast materials can accommodate temperatures to 750°F (400°C) aluminum, 1100°F (595°C) bronze.

AIR-COOLED BARRELS

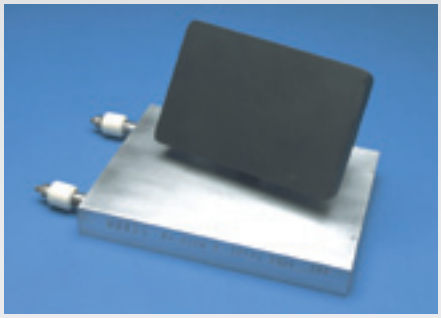
These heater designs incorporate a variety of cast fin patterns to circulate forced air across the body of the casting. Specific fin patterns are used to maximize the airflow for efficient cooling. Low profile fin patterns are used when restricted space or rapid cooling requirements are present. Durex can also integrate cast-in cooling tubes to augment cooling capacity on these designs.

AIR-COOLED BARRELS WITH SHROUD AND BLOWER

Durex designs cast shrouds as integral components on these air-cooled styles. The shroud fits tightly over the fin pattern and features a throat section for mounting a forced air blower to direct airflow across the entire body of the casting. This system optimizes the air cooling function of individual heater zones through the dedicated operation of individual blowers.

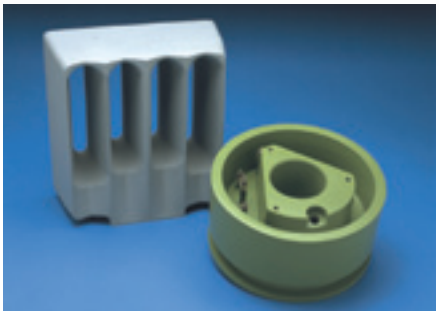
L-SHAPED PLATENS

For rectangular barrels or squared surfaces, maximum contact is achieved with this cast heater design. Usually constructed of a bronze alloy because of the high-temperature conditions of their application, these heaters can also be cast from aluminum, where lower watt densities are acceptable. The most common electrical termination for this type of heater includes a vented tower protecting the heating elements as they exit the back of the casting, with a moisture-resistant terminal housing.



CAST-IN PLATENS

Universal style platens are the primary source for heat in the foodservice, packaging, heat transfer, die heating, hot stamping and many other industries. Cast-in elements provide uniform heating, rapid delivery time and rugged continuous service. Durex designs and casts such heaters for large volume production, guaranteed to perform, heat after heat. Mounting options and heating surface features to fit any application. We work with equipment builders, product design firms, commercial/institutional and end users alike to create the best solution for your heating needs.



HOT MELT ADHESIVE HEATERS

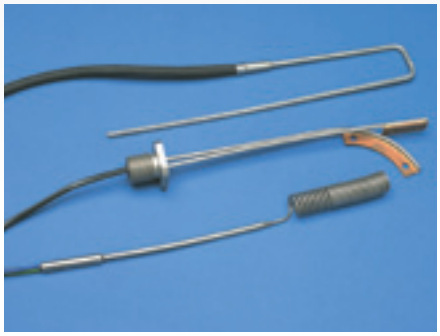
Hot melt adhesive delivery systems require very complex cast-in heater designs to simultaneously optimize melt flow and evenly distribute heat throughout the process. Durex engineers have the experience to design the ideal unit for your application. Our heaters are found throughout the automotive, packaging and other high-volume markets, where long service life, uniform performance and cost-effectiveness are all demanded.

CUSTOM APPLICATION HEATERS

When you have the breadth of experience and skills of Durex, there is literally no application for which we cannot design a thermal processing solution. We specialize in the design and casting of various heating components for the most unusual applications in industries and commercial operations worldwide. From the processing of synthetic fibers to the lamination of multi-layered derivative materials, from solvent reclaim equipment to petrochemical processing pipelines, Durex has the solution you need in a cast-in heater.

HIGH-PERFORMANCE MINERAL INSULATED HEATERS

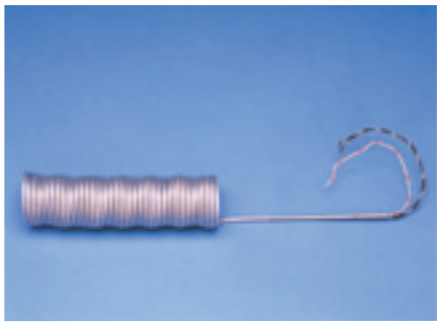
Coil, cable, cartridge and specialty heaters from Durex are offered as highly reliable sources of heat in various applications. These high quality heaters are entirely made by Durex at our factory and can be designed and built to your specific requirements. Durex uses the highest quality materials and produces heaters in hundreds of standard styles and sizes, for temperatures to 1500°F (816°C). We present here only a portion of the available heaters and we ask you to contact us with your next requirement. There is simply no industrial or commercial application for which Durex can't handle the heat. We welcome your challenges.



CABLE HEATERS

Durex cable heaters feature wattage and voltage customized to your application. Heating elements may be formed to specification at the factory or on location to suit the job at hand. Optional internal thermocouples can be added for precise temperature control. Sealed leadwire transitions eliminate contamination for extended service life. Durex offers flat spiral, helical spiral, multiple bend, flat U formed and many other heater designs as standard. We can also engineer a cable heater to the particular requirements of your application.

Sheath materials typically include 304 stainless steel, Inconel® 600, and Incoloy®. Among the many applications for Durex cable heaters are heat tracing/freeze protection, semiconductor manufacturing, plastic molding hot runner systems, air/liquid immersion, cutting/sealing bars, tube/pipe heating, analytical equipment and vacuum chambers.



TEFLON®-SHEATHED CABLE HEATERS

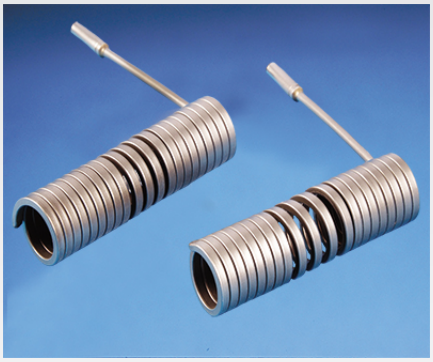
When the temperature, moisture-resistance or chemical exposure factors require, any Durex heater can be supplied with Teflon® end seals on the heater sheath, Teflon® coating on the entire sheath and/or Teflon® insulated leadwires. Durex produces these heaters for such demanding yet varied environments as semiconductor and food processing among many others.

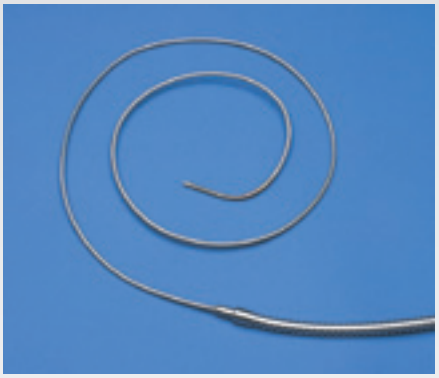
IMMERSION CABLE HEATERS

Durex can also modify any cable heater with special sheath materials, sheath seals and protective connection housings for immersion heating in a gas or liquid environment. Shown here is a fully grounded, helical wound screw-type connector heater. Flange and over-the-side designs, as well as many other styles, are also available.

COIL HEATERS

Durex coil heaters feature continuous operating temperatures up to 1500°F (816°C). Rapid heating and cooling occur, due to the low mass construction. All heating elements are sealed from contamination and the stainless steel sheath provides maximum corrosion resistance. Optional internal thermocouples may be utilized for precise control. These heaters are available in profiled coil configuration for maximum heating efficiency. Hundreds of styles and sizes available as standard, or Durex will custom engineer a coil heater to your particular needs. Fiberglass overbraid flex heater cable and fiberglass encapsulated leadwires, in rectangular or round sheath designs, are provided.



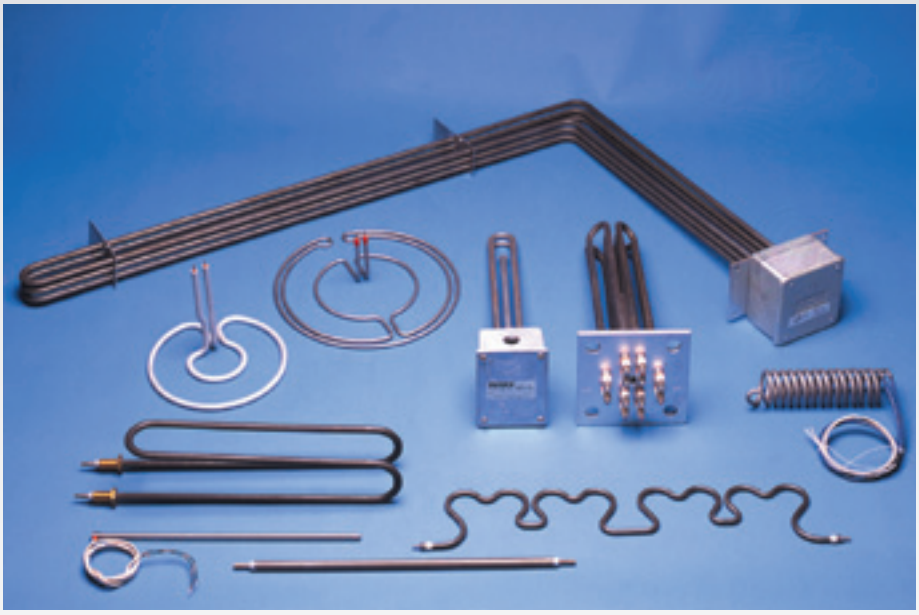


FIELD FORMABLE TRACE HEATERS

Shown here is a sample of a Durex pipe trace heater assembly, with a swaged stainless steel flex hose connection and TIG welded end. Pipelines, fuel lines, gas lines, food processing lines and other long runs, where evenly distributed heat is required to maintain temperature or prevent freezing, are all typical applications for these Durex products. Various terminations are available, as well as fiberglass leadwires, fiberglass sleeving, stainless steel overbraid and other shielding. Application engineering assistance is provided by Durex to help you integrate these products into your piping configurations, whether OEM, process, production or lab.

NOZZLE AND SPRUE-BUSHING HEATERS

Another Durex innovation for the hot runner molding industry, these heaters comprise a hollow cast copper alloy and stainless steel outer shell for optimum heat transfer with extra protection. Precision machined I.D. for a press fit installation. The copper alloy achieves maximum temperatures to 1200°F (649°C). Sealed heater construction eliminates failures due to contamination and moisture. An optional internal thermocouple is offered for integral temperature control.



FORMED TUBULAR AND IMMERSION HEATERS

Straight and formed Durotube™ tubular heating elements, screw plug immersion heaters, flanged immersion heaters, circulation heaters and all the accessories needed for your application can be provided by Durex. Plus, the best part, Durex engineering assistance can advise you how best to integrate these products into your system, your machinery, your process lines or your lab. Our experience is unmatched in this product area, as is our manufacturing capability. All the products shown here are entirely designed, engineered and manufactured by Durex at our factory.

FINNED TUBULAR HEATERS

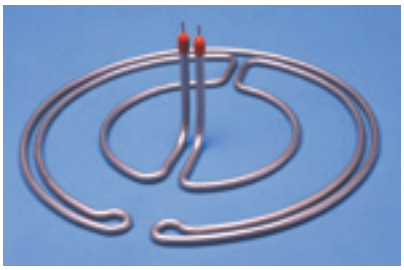
Higher watt densities and increased heat transfer characteristics are achieved using the finned tubular heater design. The continuous spiral fins are attached to the heater sheath promoting rapid heat dispersion in air or liquids. The fins are constructed of steel, stainless steel, or Incoloy® depending on the application requirements. All standard element diameters can be adapted to the finned construction.

These Durex products all feature the following:

- Select high quality sheath materials to suit the application
- Precision wound helical Nichrome resistance wire
- High purity MgO (magnesium oxide) powder insulation compacted to provide maximum heat conductivity and dielectric strength
- Integral cold pin fusion welded to helical resistance wire for optimum current carrying capability

FORMED MANIFOLD HEATERS

Durotube™ tubular heating elements can be provided to any length, formed into any configuration and sheathed in a dozen different materials to suit your application. Likewise, the connection/ termination possibilities are limited only by your imagination and the availability of components. Typical terminations include threaded stud, threaded bulk-head, screw lug, quick disconnect spade, ceramic-to-metal hermetic, molded rubber lead, conventional lead-wire terminal assembly and more. Durex frequently fabricates custom manifold heaters in conjunction with an OEM's design staff, both for prototype and production. We welcome all challenges.



CUSTOM FORMED ELEMENTS

When special connections, shapes, sheathing or other design elements require it, Durex engineers can produce a dozen or a thousand of the custom formed elements you need. Once again, you benefit from the "under one roof" philosophy that has made and keeps our company ahead of the pack, in heater design, engineering and fabrication. This is your Durex guarantee of quality at every bend!

OVER-THE-SIDE IMMERSION HEATERS

L-shaped and O-shaped immersion heaters are offered with standard NEMA 4 waterproof enclosure; Incoloy® sheath; all welded construction between the element housing and the riser pipes; stainless steel riser pipes and manifold housing; thermostat protection tube; 3/4" NPT waterproof wiring hub; 4" high sludge legs and welded connections between the leadwires and element jumpers. Optional NEMA 7 explosion-proof enclosure, thermocouples for control or high limit protection, alternate sheath materials such as Carpenter 20, Monel 400, Inconel 600, Hastelloy and Titanium are available.

FLANGED IMMERSION HEATERS

Flanged immersion heaters are offered in hundreds of styles and sizes, with 150 lb. rated flanges from 3-14" with integral thermowells. Welded construction on steel flanges and silver braze construction on non-ferrous flanges. All Durex immersion heaters feature recompacted bends to restore MgO density throughout. Copper, Incoloy® or steel sheaths. All heating elements moisture sealed for long life.

SCREW PLUG IMMERSION HEATERS

Hundreds of styles and sizes are available for use in virtually any media, including water, mild solutions, detergents, vegetable oil, aqueous solutions, tar, asphalt, petroleum products, plating chemicals, molten salt baths, grease, gas or grape juice. Various sheath, screw plug and corrosion-resistant hardware materials are available. NEMA enclosures for all moisture and explosion-proof conditions, as well. Optional thermocouples for control or high limit protection, plus a full range of thermostatic controls, can also be provided with these immersion heaters.

CART-TUBE™ SINGLE END TUBULAR HEATERS

Another special design from Durex, the Cart-Tube,™ single end tubular heaters feature one end Heliarc welded and leadwire termination at the other end. This construction permits a very versatile heater utilization, in a wide variety of industrial applications, including mold and die heating, plastic manifold heating, temporary immersion heating, pipe or tube heating and defrosting. Various sizes, lead terminations and sheath materials are standard. Cart-Tube™ heaters can be custom formed to your specifications or provided in straight lengths.

IMMERSION TUBULARS

When conventional immersion heaters won't do the job right, you can look to Durex for a combination of our Durotube™ element design along with the necessary hardware and safety devices required for immersion heating.

BOLT HEATERS

Designed for the purpose of preheating hollow holding bolts or studs used for the assembly, installation and servicing of hydraulic presses, steam or pressure vessels, turbines, boilers and other heavy-duty equipment. When the heater is inserted, the bolt or stud lengthens, thus allowing tighter nut fixing. Units feature swaged cartridge heater, conduit box with ground connection, insulated handle, 3-wire cord and plug assembly. Dozens of standard diameters and lengths available.

CIRCULATION HEATERS

Flange and Screw Plug circulation heaters are available in many standard designs. These are complimented by Durex experience in custom engineered solutions. We have experience in a wide variety of applications from water, oils, and steam to chemicals and hydrocarbon gases. We carefully engineer sheath and vessel materials to the application using appropriate watt densities to maximize life, yet minimize footprint.

- Temperatures to 1400°F (760°C)
- Watt densities to 100W/in²
- Fittings and flanges from 1" to 30"
- Copper, steel, 304SS, 316SS & Incoloy® sheaths
- Standard, seamless & heavy wall elements
- ASME Section VIII code stamp
- Insulation
- Passivation and special cleaning
- NEMA 1, 4, 7 & 4/7 enclosures available
- Thermostat or sensors
- Inconel®, titanium, other materials available

DFX™ CAST CIRCULATION HEATERS

Durex Industries' newest innovation, the DFX™ Cast Circulation Heater provides fast, safe and effective heating of fluids. A seamless, heavy wall 316 stainless steel flow tube along with the heater elements are embedded in a light weight aluminum casting. Along with fast thermal response and excellent controllability, indirect heating of the flow media is ideal for viscous and temperature sensitive fluids such as oils, coatings, resins, and solvents. Passivated and electropolished designs are perfect for supercritical cleaning applications, de-ionized water, and other clean applications.

- Temperatures to 200°C (390°F)
- Pressure > 3,000 psi (205 Bar)
- Up to 480 V; up to 40kW
- UL® recognition of certified enclosures
- Thermostat and sensor options
- Passivated / electropolished option
- NEMA 1, 4, 7 and ATEX enclosures available
- Heat / cool option

PROCESS HEATING SYSTEMS

For customers who are looking for convenience in field installation or those looking to integrate heaters and panels into their process system packages, Durex can make things easy! We have full skid mount, interconnect and package system capabilities to speed field installation and offer convenience and freedom from local connection hassles. We can skid mount electric heaters, control panels or mount and interconnect both. In addition we offer the following capabilities:

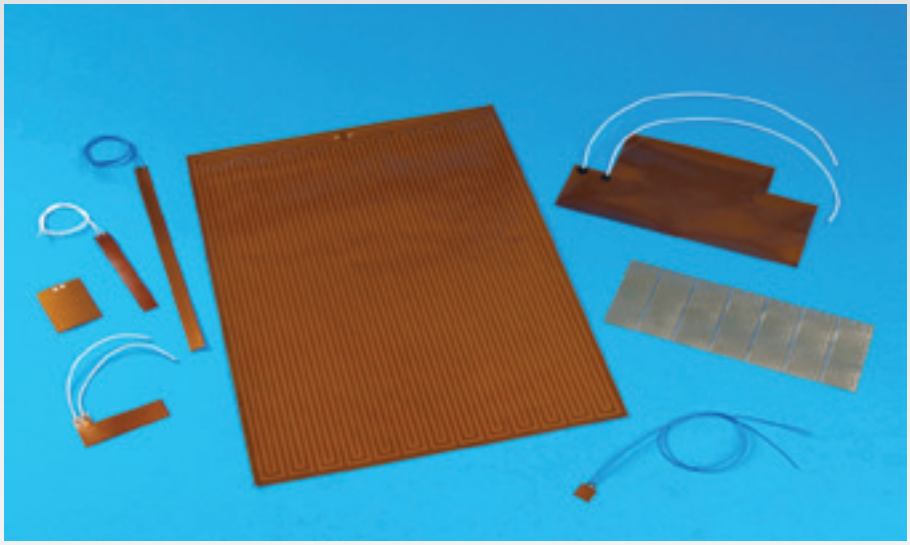
- Skid mounting and piping of multiple heater trains
- Fully interconnected heater/control panel skids
- Integrated instrumentation such as sensors, transducers, switches and sight glass
- Manual or automatic valves, pressure relief valves
- Pumps, piping, expansion tanks and associated instruments
- Touchscreen HMI and wireless comms capabilities
- Rain and solar shields
- Hazardous location compliance

FLEXIBLE HEATERS

Flexible heaters were originally conceived for the aerospace/defense industry, where their light weight, thin profile, low mass and tensile strength were advantageous. Today, flexible heaters are found on applications throughout the medical, aerospace, laboratory, electronics, semiconductor, and many other OEM markets. The Durex reputation for quality and innovation has helped introduce these products into many new markets.
We welcome the opportunity to discuss your application.

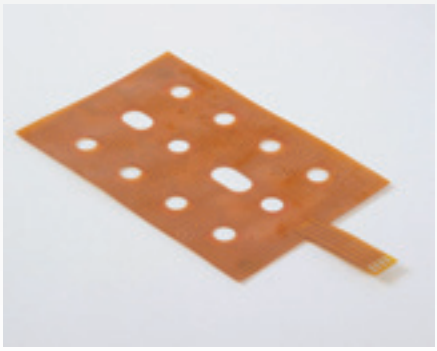
KAPTON® FLEXIBLE HEATERS

Kapton® flexible heaters offer superior tensile strength and tear resistance, with precision heat distribution. They are ideal for extreme temperature environments, from -319°F to +392°F (-195°C to +200°C). Standard sizes start at .007" (0.2mm) thick and up to 12" x 22" (305mm x 560mm) areas. Watt densities are typically 5W/in². Higher watt densities are common depending on the application. Please contact Durex Industries to discuss your application. These specifications are only a starting point as Durex has the ability to solve many application challenges.



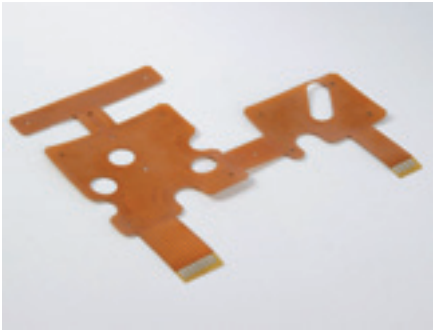
Kapton® is an organic polymer with very high dielectric capabilities, while providing superior resistance to most solvents, oils, even radiation. With low outgassing, these heaters are useful in vacuum environments.

Etched foil heating elements with Teflon® leads are the most common configuration. Many power lead insulation variations are possible. Durex Kapton® heaters can also be supplied with pressure sensitive adhesive to aid in easy installation on your production line. Because Durex also manufactures temperature sensors, Durex has the expertise to install thermistors, RTDs, or thermocouples on Kapton® heaters. Please consult Durex to discuss the numerous custom options available.

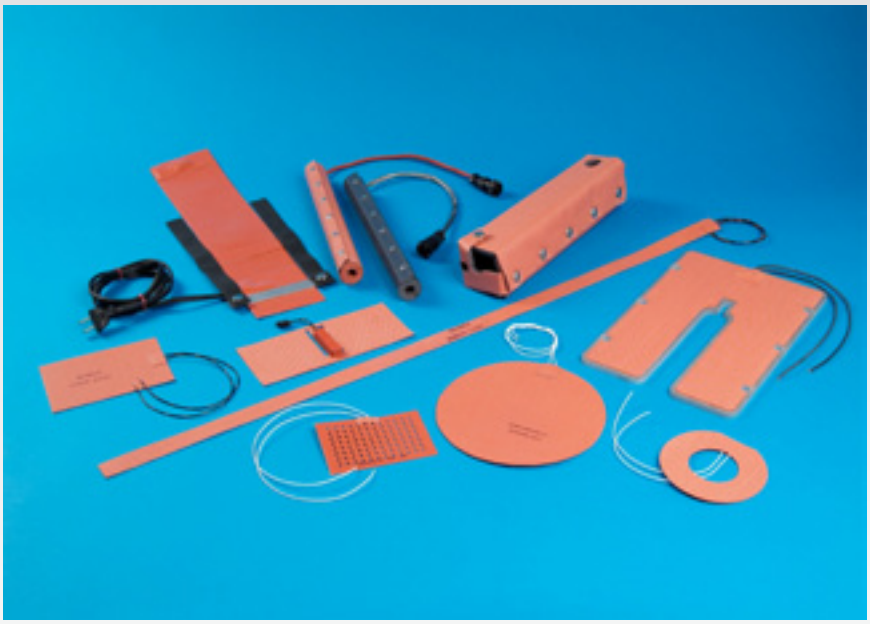


MEDICAL DESIGN KAPTON®

KAPTON® WITH TAB TERMINATION



CUSTOM DESIGNED KAPTON®



SILICONE RUBBER HEATERS

Durex silicone rubber heaters are used in a variety of applications and markets to provide efficient, even, surface heat. From condensation prevention in outdoor electronics to blood warming in sophisticated medical equipment, the flexibility of Durex silicone heating elements is unsurpassed.

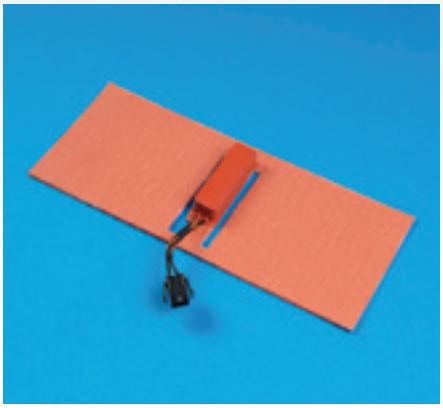
Common watt densities are around 5W/in², but with Durex's ability to easily customize this product, the most appropriate watt density for your application can be supplied. All standard Durex heaters are UL recognized under file number E110394.

Sizes can range up to 36" by 144" (915mm x 3650mm). Thicknesses are typically in the .030" to .056" (.75mm x 1/4mm) range excepting the power lead connection area. They are chemically resistant, available with wire wound or etched foil elements, and can operate in a wide temperature range, -80°F to +400°F (-62°C to +204°C).

A variety of power lead options are available including cords and cord sets. Teflon® and silicone are the most common lead insulation choices. Complex wire harnesses with connectors are commonly supplied by Durex as an added value to our customers.

Please contact Durex engineering. Some of the many available styles are shown here.

FLEXIBLE WRAP AROUND



HEATER WITH THERMOSTAT

CUSTOM SHAPED ELEMENTS

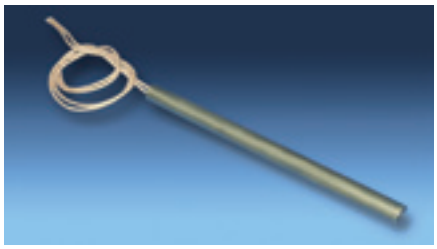
HIGH-TEMPERATURE CARTRIDGE HEATERS

Magnum™ cartridge heaters from Durex are simply the benchmark of industry. Plastics/Rubber molders, moldmakers and press builders alike look to Durex cartridges as a reliable, efficient and cost-effective heat source. Magnum™ cartridge heaters are swaged designs, made for use in applications where high density, high temperatures and long service life are critical to minimize mold service downtime and expensive press open time. The swaged construction produces a highly compacted unit that resists shock and vibration, while providing for maximum element life through efficient transfer heating. They last up to 20 times longer than uncompacted cartridge heaters. Temperatures to 1500° F (816° C) are easily handled. Fifteen diameters are offered as standard, but Durex will custom design a cartridge for any application. All Magnum™ cartridge heaters from Durex carry UL component recognition.

These Durex products all feature the following:

- High-temperature fiberglass flexible leadwire
- Protective ceramic or lava end seal
- High-temperature alloy sheath material
- Nichrome resistance wire allows even heat distribution and more efficient heat transfer
- Welded end disc seals out moisture and contamination

NOTE: The following are representative termination selection options. More options are available, so please contact Durex with your specific requirement.



NON-STICK CARTRIDGE HEATERS

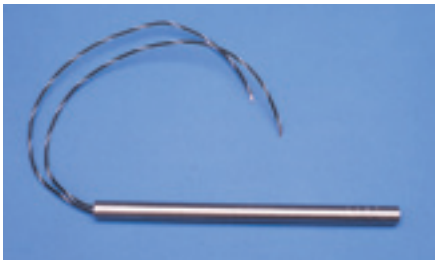
Using a patented process, Durex can provide a high temperature non-stick coating to any cartridge heater sheath. The Duraslik™ coating eliminates the need for additional release agents to be applied to the heater prior to the insertion. The coating acts as a corrosion inhibitor and a solid lubricant on the inner diameter of the drilled hole when the heater is energized, allowing for reduced downtime caused by "sticky" heaters during replacement.

STANDARD LEADS

Fiberglass insulated leadwires are externally connected to nickel pins. The connection area is electrically insulated with heavy wall fiberglass sleeving. 12" leads standard.

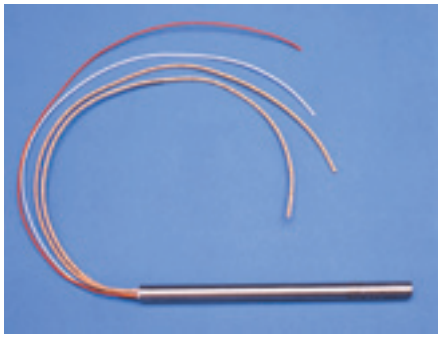
SWAGED-IN FLEXIBLE LEADS

Fiberglass insulated leadwires are internally connected to nickel pins. This design allows for much greater flexibility at the lead exit point from the heater.



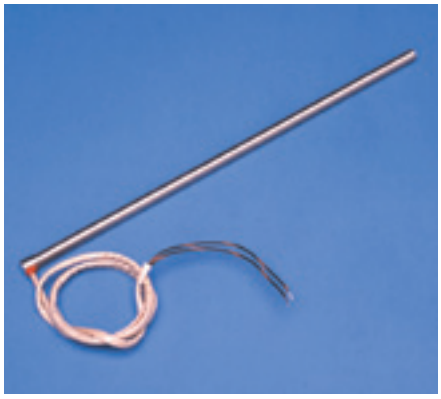
TEFLON® LEADS & SEAL

Teflon® insulated leadwires with a Teflon® end seal swaged into the cartridge heater sheath provides a superior moisture and chemical resistance. This design requires at least a 1" cold section at the lead exit end of the heater. Also available epoxy potted.



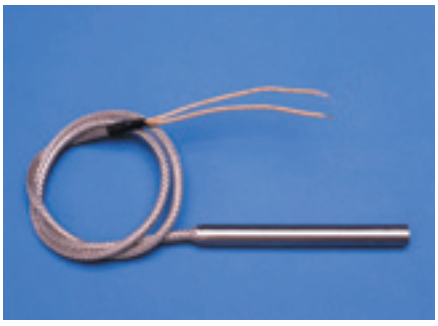
INTERNAL THERMOCOUPLE

A Type J thermocouple provides integral temperature control. The reference junction, grounded or ungrounded, can be located at the end disc, center or lead end. Other thermocouple Types are available.



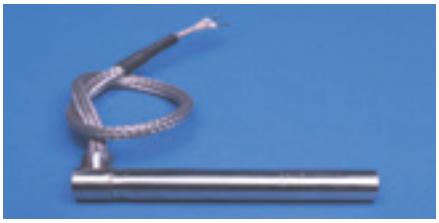
RIGHT ANGLE LEADS

Fiberglass insulated leads exit the heater sheath at a right angle for easier access and routing. Includes stainless steel end cap and high-temperature potting.



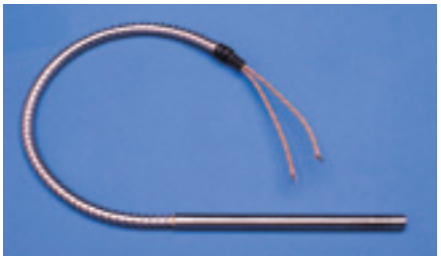
STRAIGHT BRAID LEAD PROTECTION

Stainless steel braid over fiberglass insulated leadwires exits straight from heater sheath for abrasion resistance.



RIGHT ANGLE BRAID PROTECTION

Stainless steel braid over fiberglass insulated leadwires exits at right angle from heater sheath. Includes stainless steel end cap.



STRAIGHT FLEX CABLE

Stainless steel flex cable over fiberglass insulated leadwires exits straight from heater sheath for maximum lead protection. Galvanized or stainless steel armor.

RIGHT ANGLE FLEX CABLE

Stainless steel flex cable over fiberglass insulated leadwires exits at right angle from heater sheath. Includes stainless steel end cap. Galvanized or stainless steel armor.

IMMERSION PIPE FITTING

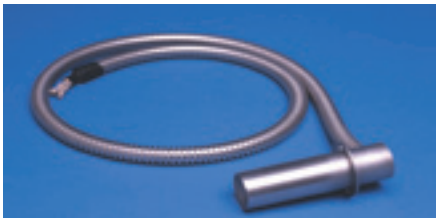
Cartridge heater supplied with threaded NPT pipe fitting, silver brazed or welded to heater sheath for immersed applications. Fiberglass insulated leadwires exit high-temperature cement potting. 3/4" cold section required before fitting.

MOUNTING FLANGE

Stainless steel flange welded directly to heater sheath. Fiberglass insulated leadwires are standard. Assorted sizes and options available.

BOLT HEATERS

Bolt Heaters are used to tighten large bolts that secure heavy machinery and equipment. The shaft of the heater is inserted into the hollow bolt and energized to expand it, which allows further tightening of the nut. This heater design is manufactured with specific diameter sheaths to fit industry standard hollow bolts. High watt densities with special heated lengths distribute heat evenly to the surrounding bolt.



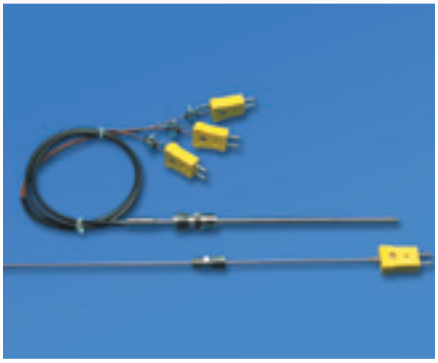
CUSTOM DESIGNS

Magnum cartridge heaters from Durex can be supplied with the following enhancements:

-Distributed wattage-Centerless grinding
-Teflon® coating -Ground leadwire
-Special connectors

INDUSTRIAL PROCESS THERMOCOUPLES

Since the company was founded in 1980, the design, engineering and manufacture of industrial and process thermocouples have been at the core of Durex business. This history in a broad cross section of American industries yields some very attractive benefits for customers. Among these benefits are the technical knowledge and hands-on experience we possess about nearly every process application involving temperature sensing. Durex engineers can assess your particular environment, parameters of measurement and degrees of control accuracy in a manner few can match. This translates into a supplier who knows your business, who knows the latest solutions for your process problems and has the manufacturing muscle to respond. These factors, coupled with the Durex network of quality distributors and sales representatives, work to keep your production and your process running with greater efficiency and profitability…exactly what you expect from your best suppliers. For all your thermocouple needs, contact Durex.



MULTI-POINT THERMOCOUPLES

Designed specifically for pipelines, process towers, boilers and other vessels where multi-point temperature monitoring is a must. Also for use when space limits the number of sensors which can be practically installed. Various connection and mounting styles available. Durex also offers a line of semiconductor multi-point thermocouples with stainless steel, Inconel®, molybdenum and Teflon® sheath materials.

MINERAL INSULATED THERMOCOUPLES

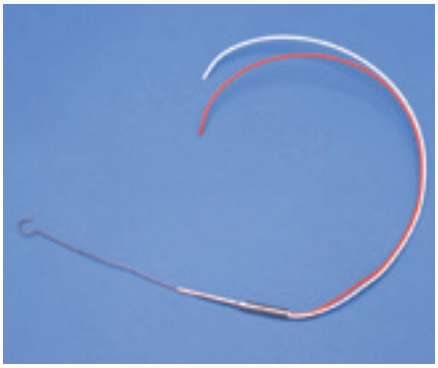
We currently manufacture and market every ANSI industrial thermocouple type in use, as well as hundreds of variations for the different junction types, sheath materials, sheath diameters and overall lengths required. Our calibration services, as well as our physical, electrical and ASTM testing procedures are the envy of the industry. Base metal and Noble metal thermocouples in bare and ceramic insulated designs are offered with every possible connection needed for temperatures to 2400° F (1316° C.) Better still, Durex engineers custom temperature sensors every day, so call on us to help with any requirement.

THERMOWELL ASSEMBLIES

Durex offers 1/2", 3/4" and 1" NPT drilled bar stock thermowells in standard, flanged and lagging or VanStone well extension designs, with stepped, straight or tapered shanks and a variety of terminal head designs and materials to match your requirement.

EXTREME SERVICE PLATINUM THERMOCOUPLES

For extreme high-temperature ranges to 3092° F (1700° C) with ultra high purity MgO or alumina oxide insulation, these Durex platinum thermocouples provide accurate readings in the most hostile environments, such as steel processing, commercial heat treating and furnace manufacturing. Protection tubes of ceramic, silicon carbide and other materials available.



MINIATURE THERMOCOUPLES

Durex offers a complete line of miniature thermocouples for applications with tight space requirements, limited access or other considerations. Assorted jack and plug style connections available, as well as miniature glass-filled nylon terminal head rated to 350° F (177° C) and measuring only 1-1/2" x 2-1/8".

PROTECTION TUBE ASSEMBLIES

Protection tube assemblies feature various stainless steels, carbon steel or Inconel® materials of construction, plus Mullite and Alumina ceramics for extremely high-temperature applications. For certain applications where needed, Durex supplies a unique double ceramic protection tube design. Ask for details.

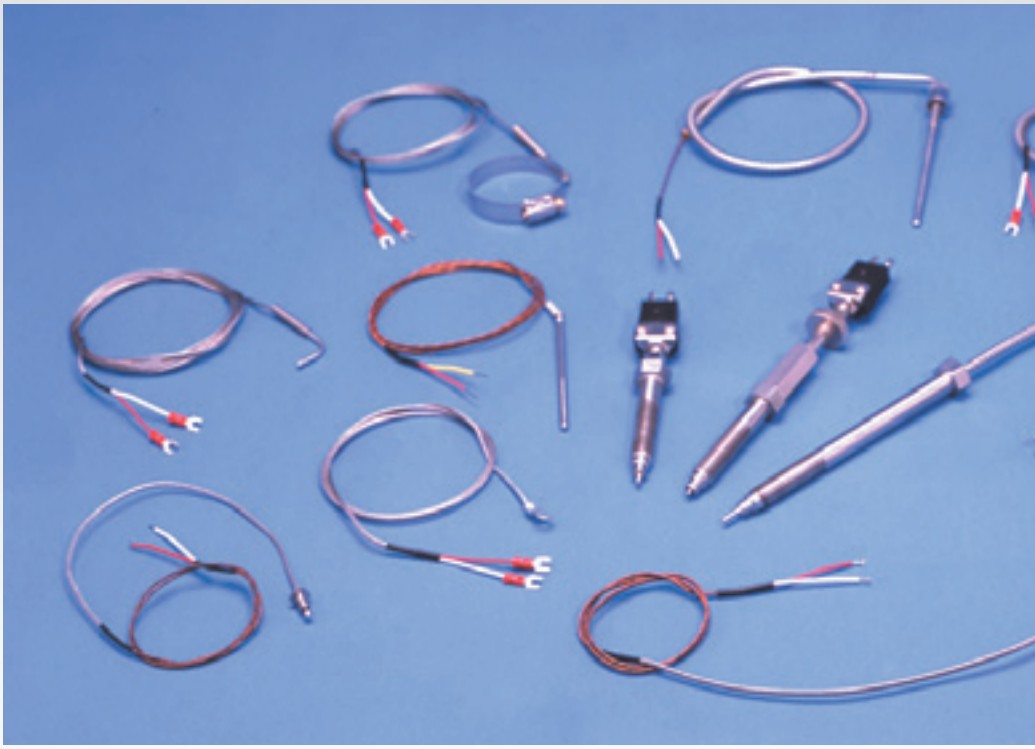
CUSTOM THERMOCOUPLE DESIGNS

Durex puts no limits on our imagination, so whatever temperature measurement requirement you have, bring it our way and a solution will be found. Whether it be a modification of a standard thermocouple, a particular arrangement of elements, an environment requiring a unique protection tube or a space constraint no other thermocouple company can accommodate.

THERMAL PRODUCTS FOR GENERAL INDUSTRY

Thermocouples and Resistance Temperature Detectors (RTD's) have been made for the plastics processing industry by Durex, since our inception in 1980. While our company has branched out into many other markets over the years, we still stand ready to serve every single need for temperature measurement in the plastics business. We work with all the major machinery and equipment builders, as well as the giants of plastics processing, from automotive to packaging to appliance and more. Durex can offer custom product, as well. We serve the industry through our network of plastics professionals, your local distributors. Their ability to provide you quick order turnaround, competitive pricing and prompt service means the quality and reliability of Durex products are never far away from your plant.

A representative sampling of those products is shown here.



ADJUSTABLE THERMOCOUPLE WITH SPRING

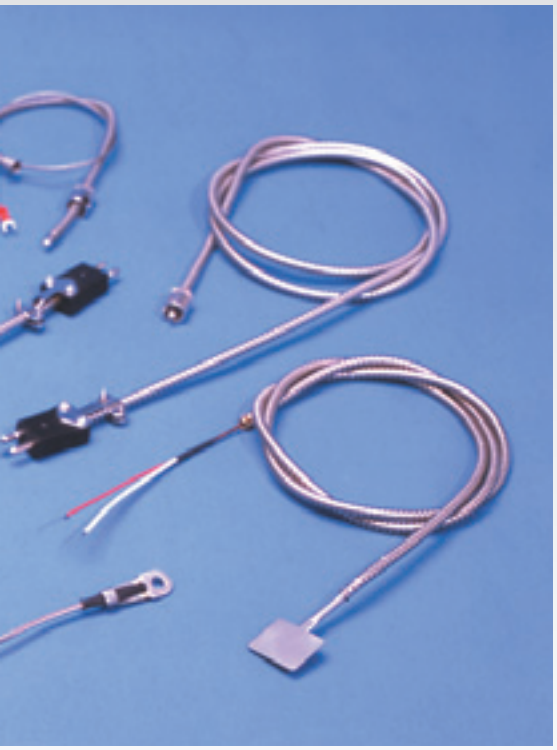
A compression spring and bayonet lockcap allow this design to adjust to holes up to 12" deep. A stainless steel tip with silver solder junction provide fast response time. A TIG welded junction is also available.

MELT BOLT THERMOCOUPLES

Durex melt bolts are designed for dependable temperature measurement of the plastic melt stream within extruders and injection molding equipment. Fixed and adjustable tip styles to suit any application. Ask us about Durexium, a multi-layer coating option. Extends wear life up to 12 times.

ADJUSTABLE THERMOCOUPLE WITH ARMOR

Flexible stainless steel armor cable and rotating bayonet lockcap on the outside diameter adjust to various immersion depths.

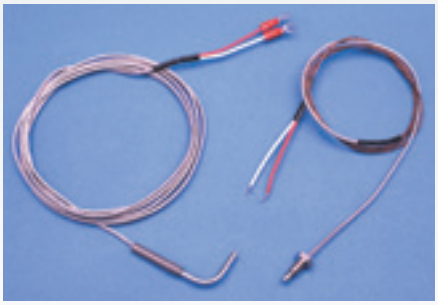


SURFACE MOUNT THERMOCOUPLES

For surface mounting via ring lug or gasket with bracket, these Durex thermocouples can be provided with various terminations, including split leads, spade lugs, standard plug, standard jack or special connectors, as needed.

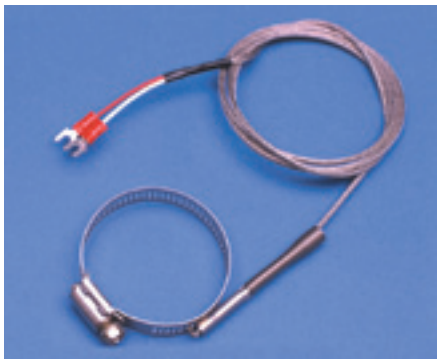
FIXED BAYONET THERMOCOUPLES

Straight run, 45° and 90° bend thermocouples are available in a wide variety of sizes and styles.



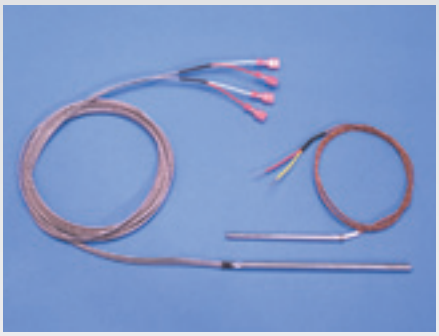
NOZZLE THERMOCOUPLES

Rotating bolt, fixed immersion, 90° probe and shim stock pad type nozzle thermocouples are offered by Durex for virtually any mounting requirement on a plastics machine or auxiliary apparatus.



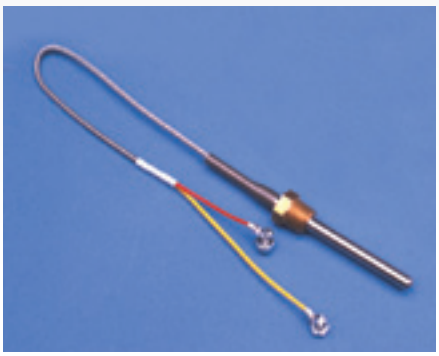
PIPE CLAMP THERMOCOUPLES

Durex offers these thermocouple styles for temperature measurements on pipe ranging from 1/2" to 2-1/4" diameters. Stainless steel overbraid shield protects the element, which senses the temperature on the surface of the clamp.



GENERAL PURPOSE THERMOCOUPLES

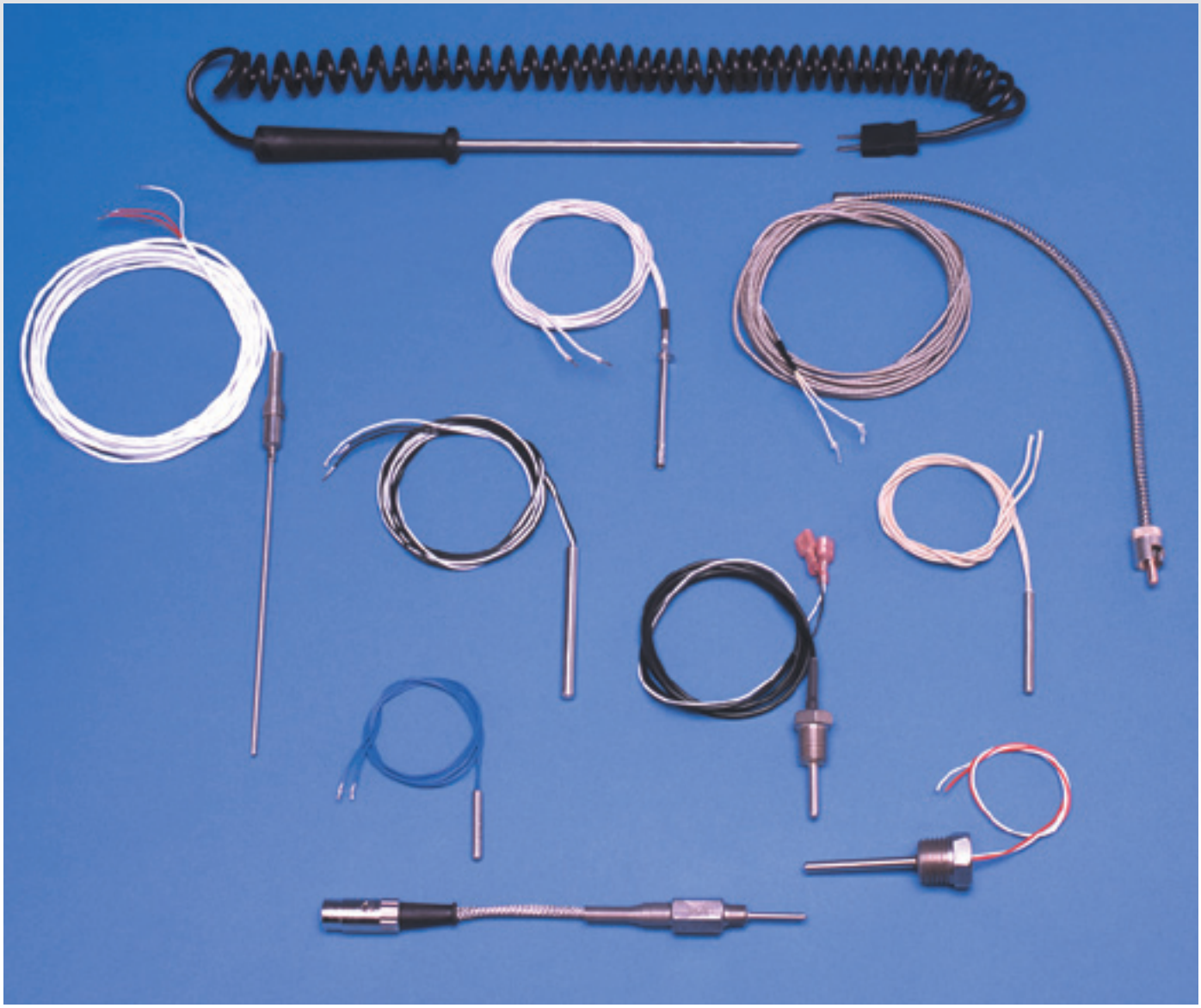
Standard Type J thermocouples have many uses in the plastics industry, for temperatures to 800°F (427°C). Sheath material is 304 stainless steel, with standard jack or plug connectors. Many other styles available. Extension assemblies also offered for any connection transition required.



CUSTOM DESIGNED THERMOCOUPLES

If the equipment you're using or building requires a particular sensor element, sheath material, connection style or fastening device, please contact Durex with your specifications. It's likely we've already built what you need!

Durex also offers assorted thermocouple connectors, bayonet adapters, cable clamps, panel jack strips, terminal strips, flexible armor cable, thermocouple extension wire and many other accessory items specifically for the plastics processor. We welcome the opportunity to service your needs.



PRECISION RTD'S AND THERMISTORS

Standard and custom designed RTD's and thermistors are offered for various industrial and commercial applications. A wide variety of curves and tolerances is available. High accuracy RTD's are provided with Platinum, Nickel or Nickel Iron elements for temperature ranges up to 1200° F (649° C). However, Durex offers RTD's for operating tempera tures to 1500° F 816° C) on request. 2-, 3- and 4-wire styles are available with a broad assortment of connections, mounting hardware and enclosures. Thermistor assemblies are designed to be lower cost probes for surface measurement, liquid immersion or gas temperature readings. NTC (Negative Temperature Coefficient) thermistors have a very predictable resistance gain that is inversely proportional to change in ambient temperature. Each of the five available standard thermistor curves from Durex has its own slope over a given temperature range.

STANDARD RTD'S

Three standard styles of construction are offered with four elements each by Durex on our RTD's, depending on your maximum temperatures. Up to 500° F (260°C),they are constructed with Teflon® leads and an epoxy end seal. Up to 900° F (482° C), high-temperature fiberglass insulated conductors are end sealed with high-temperature cement. Up to 1200° F (649° C), highly compacted MgO insulates Nickel conductors throughout the probe.

CUSTOM RTD'S

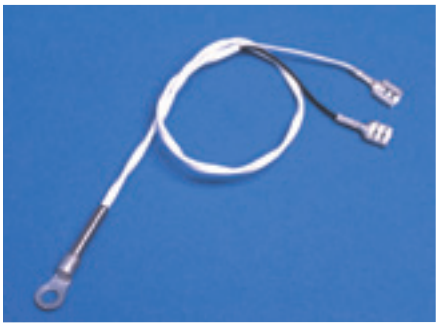
Shown here are samples of the many custom designed RTD's Durex manufactures regularly. These include the use of special wells, fittings, terminal blocks, connector hardware and unique sheath materials to match the specific needs of our customers. Durex can handle virtually any requirement, so please bring us yours.

IMMERSION RTD'S

For applications requiring immersion into any liquid or semi-solid, Durex will supply RTD's in protective thermowells or protection tubes, with sealed terminal heads. Assemblies available for high-pressure applications to 5000 PSI. Stainless steel sanitary fittings and wells are also offered standard for those applications requiring such hardware.

THERMISTOR ASSEMBLIES

10K to 500K ohm elements are available standard from Durex for accurate temperature measurements of surfaces, liquid or gas in the lower ranges, down to –50° C (-58° F) with high reliability. Stainless steel sheath materials, fiberglass or Teflon® leadwires and various fitting/ connector styles are offered.

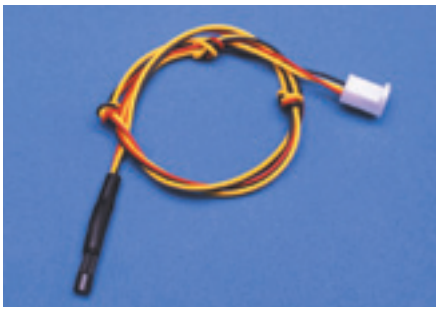


SURFACE MOUNT RTD'S

Durex RTD's can be supplied with block surface mount, spade type surface mount or adhesive patch mounting hardware. Fiberglass, Mica/Fiberglass, Teflon® or PVC leadwires with various braiding or armor cable shielding options are available.

PROCESS RTD'S

Durex provides RTD's for the most challenging process applications in the industry, from the high-corrosion environs of the petrochem plant to the high-precision of nuclear feedwater to the exacting requirements of process air and gas measurements. Platinum sensors uniform to DIN 43760, IEC 751 (Class A and B), as well as JIS 3920 are offered. For portability, Durex also offers a complete line of hand-held RTD probes.



IC SENSORS

High-precision, easily calibrated integrated circuit temperature sensors operate over a wide current range with consistent performance. Operate in -55°C to +150°C range. Low impedance and linear output easily interface to readout or control circuitry.

SPECIAL SENSOR APPLICATION PRODUCTS

One of the many benefits of Durex is our ability to utilize all our design, engineering and manufacturing muscle to bring customers thermal solutions to meet their requirements, their timetable and their budget. Who says you can't have quality, service and price from the same vendor? The efficiencies Durex brings to your thermal process challenges allow us to provide custom engineered products, even at lower volumes, for very competitive prices. Shown here are just a few samples of the successes we've achieved for customers.

Durex begins the special sensor application process by listening. Often, in the course of the very first conversation, we'll hear an aspect of your situation that sparks an idea or reminds us of a previous challenge we've overcome. The result is a better solution to your problem, often at a cost savings compared to "getting by" with some off-the-shelf catalog products.

If something on this page sparks an idea with you, please give us a call. We'll be listening!

SANITARY PROBES

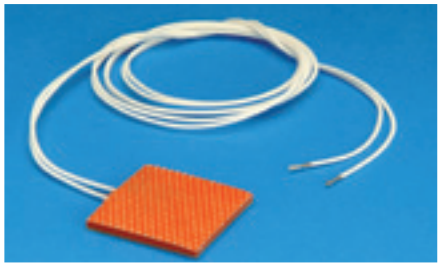
In applications such as food processing, semiconductor, medical, cleanroom and lab applications, where sanitary fittings, terminal heads, wells or other components are mandated, Durex brings a wealth of experience to the task. Regardless of the temperature ranges or physical sensing conditions involved, our engineers will design (or already have designed) the optimum solution for you.

HAND-HELD PROBES

When you need the portability of a hand-held device for sensing temperature, such as on motor bearings in-plant, on process pipelines in the field or anywhere in the lab, Durex can provide a complete, ready-to-use assembly, matched to the ranges and physical characteristics of the job at hand…so to speak. We currently supply such products to instrument companies, large process end users and labs alike. Thermocouple, RTD or thermistor elements can be provided with any sheath, leadwire and connector configuration required.

SELF-ADHESIVE RTD'S

If the surface being measured for temperature cannot be penetrated or if space limitations require it, Durex can provide an RTD with an adhesive patch for direct surface mounting. We routinely provide such sensors with special adhesives to accommodate temperature and vapor release requirements.

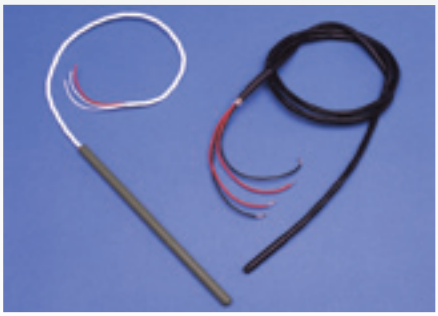


SILICONE ENCAPSULATED SURFACE MOUNT RTD

Utilizing the same technology as a sealed silicone rubber heater, Durex offers a surface mount RTD sensor for direct mounting to flat or curved surfaces. The design can be manufactured in various thicknesses and supplied with an adhesive backing for quick application. A thinner profile can be used to wrap the sensor to curved surfaces such as cooling or water lines.

MINIATURE RTD'S

Durex produces RTD probes down to 0.062" diameter, owing to our unique manufacturing capability. There is simply no point of sensing we can't reach for you, providing accuracy, reliability and long service life with a miniaturized probe and compatible hardware.

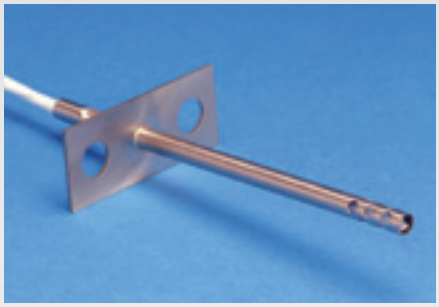


TEFLON® - COATED PROBES

When high contact temperatures are involved, Durex can Teflon® coat an entire probe, shrink-fit a dual-wall Teflon® sleeve onto the tip of the probe and/or supply Teflon®-coated, Teflon®-jacketed or shielded leadwires on any sensor assembly provided.

FLEXIBLE RTD'S

When a probe needs to "snake" through an installation because of space limitations or other factors, Durex offers flexible elements with overbraid shielding or armor to suit the specifics of your application.



AIR TEMPERATURE RTD

The perforated tip of the air temp RTD sensor is designed for rapid monitoring of airflow temperature in various applications. Small film elements used in these housings can detect incremental changes more quickly than conventional housings. This construction can also be adapted to include special flanges and fittings, as well as custom connector options.

THERMAL PROCESS ACCESSORIES

All the "extras" needed to complete your thermal processing installation are available from Durex. Our volume buying and long vendor relationships make these products easy and affordable to obtain from Durex or our local distributor. We guarantee the same Durex application assistance and service will support all these products in use at your company.

TRANSMITTERS

Durex offers a programmable Universal Temperature Transmitter for mounting in DIN B Sensor Head connected to any Type Thermocouple, RTD or mV signal with 4-20mA analog 2-wire output.

WIRE

Insulated wire for every Type thermocouple we offer is available for your ordering convenience.

PANEL STRIPS

2-12 circuit strips are available standard.

CONNECTORS

Plug, jack, circular panel jack, mini-plug, mini-jack, mini-circular panel jack and other styles are compatible with all calibration Type sensors.

TERMINAL HEADS

Cast iron, cast aluminum, cast anodized, explosion-proof, miniature glass-filled nylon and other styles available for all common process and conduit connections.

COMPRESSION FITTINGS

Allow for exact immersion depth on the sensor in-field. Rated up to 10,000 psi.

FLEX CABLE

Stainless steel flex cable is in stock at all times. Many sizes.

CUSTOM TEMPERATURE CONTROLS

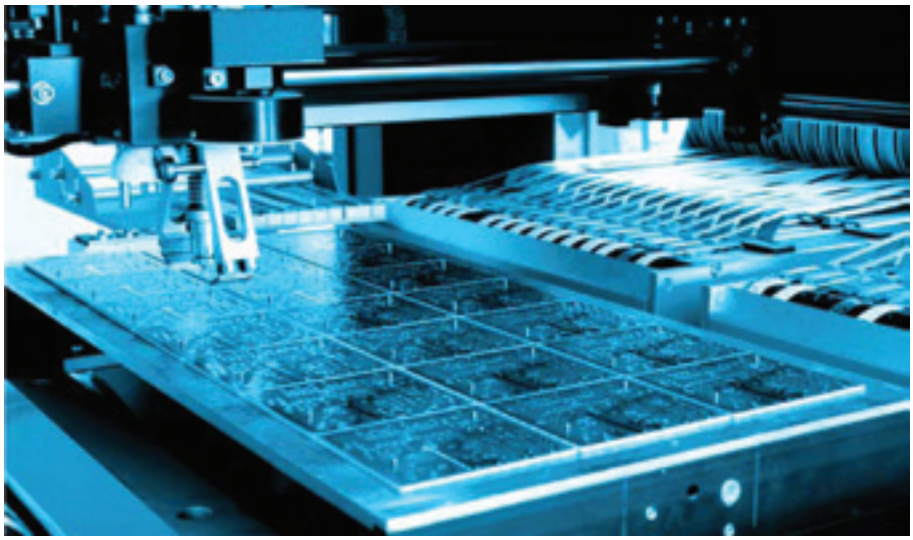
Durex Temperature Control Platforms are a cost savings, fast prototype and production solution for applications requiring combinations of temperature, humidity, time, pressure, and logic process functions. Durex's control platform leverages proven control designs. Most applications only require customization of firmware and hardware that is unique to the application. By using a common platform Durex's designers cost effectively achieve the distinctive operation and user interface required for our customers.

You can get the exact control you need…at a price that fits. Time, temperature, motion, speed, pressure and humidity, as well as communication and data logging, are just a few of the variables that can be included in your unique controller. In most multi-function controls the costs are less than the individual components that are integrated into a single custom control.

CUSTOM DESIGN CAPABILITIES

Design

- Digital control design, including C, C++, Assembly…
- Printed circuit board (PCB) design and layout
- Thermocouple, RTD, thermistor inputs
- Advanced display (HMI) technologies
- Product specification and design processes
- Design and manufacturing verification processes



Manufacturing

- PCB assembly: surface mount (SMT), through hole and mixed technology
- Automated conformal coating and potting
- RoHS compliant processing
- Custom PCB and cable/wiring engineering and assembly solutions
- Electronics supply chain management
- Turnkey and consignment services
- Timely and accurate pricing, quote and ordering
- Rapid response prototype and development

STOCK TEMPERATURE CONTROLS

RB AND SA SERIES PANEL MOUNT TEMPERATURE CONTROLLERS

The RB and SA Series panel mount controls from Durex Industries represent the next generation of high performance standard 1/32, 1/16, 1/8, and 1/4 Din PID temperature controllers. This controller family offers many control options that provide superior performance. The easy to read LCD display technology represents a major usability improvement over controls that used LED display technology. From the simplest control to more advanced controls with multiple I/O functions, control algorithms, and digital communications the Durex controls provide the industry's best value in control solutions.

Features:

- Large 11-segment LCD display that is easy to read at long distances
- Advanced PID auto-tuning algorithms optimize PID values to stabilize control of the system
- Rapid 0.25 second sampling rate provides quick response to changes in the temperature process
- Recipe storage of set point menus to allow easy set up during process changeovers
- RS-485 Serial Communications with Modbus/ ANSI protocol
- Programmable Ramp / Soak Control
- USB port for easy control parameter setup
- Burst fire power output
- Compact 2.36 inch (60 mm) housing depth reduces the space requirement in a control panel
- 90 to 264V AC (50/60Hz) supply voltage
- RB Compliance: c UL us, CE, and C-Tick standards
- SA Compliance: UL, CE, CSA, and C-Tick standards

CONTROL PANELS

Durex has an extensive line of standard control panels to meet a wide variety of industrial requirements. Control panels can also be custom designed for specific applications. All panels are fully pre-wired and tested at the factory and come with a set of drawings including schematics and I & M manuals. Standard panels include NEMA 12 enclosure, main power disconnect, process temperature controller, pilot lights, panel labels, primary and secondary fusing, and ventilation fan/filter (if required).

Among the options are:

- UL listing
- High limit controller
- NEMA 4, 4X or 7 enclosure
- Meters and chart recorders
- Lamps and annunciators
- Circuit breakers
- Enclosure heater
- Air cooling
- Multi-zone
- Class 1 Div. 2, Groups B, C, D hazardous location ratings
- Solar and drip shields

DUREX CAPABILITIES AND SERVICES

As a leader in the industry, we continually strive to stay ahead of the competition, thereby becoming a true value-added partner to our customers.

As an ISO 9001 Registered manufacturing operation, Durex Industries provides support services like these for all of our products:

DESIGN

- Solidworks Modeling
- Solid Flow-Casting Design
- Rapid Prototyping-3D Prototype Models
- Solidification Software

TESTING

- FEA Analysis
- Temperature Uniformity Mapping
- Life Cycle Testing
- Hardness Testing
- Hydrostatic Pressure Testing
- NIST Traceable Certification
- Surface Finish Analysis
- SensArray Wafer Temperature Profiling
- Helium Leak Test
- Heat Profile Certification
- On-Site Heat Treating and Stress Relieving

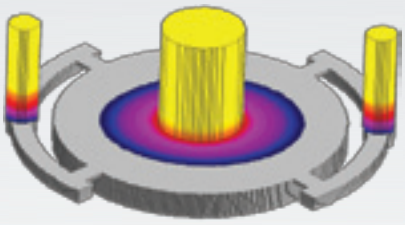
QUALITY

- Class 1000 Clean Room Assembly and Packaging
- CMM Inspection and Certification
- On-Site X-Ray Facility
- Temperature Calibration

MANUFACTURING

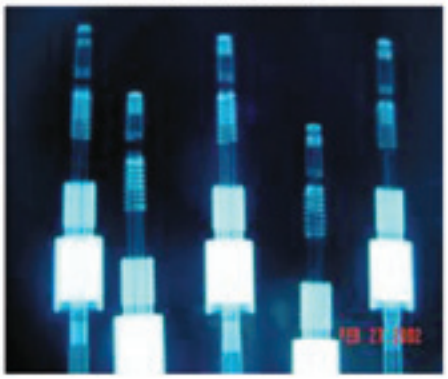
- Bar Feeder Machining
- Waterjet Cutting
- Permanent Mold & Sand Foundry
- CNC Bending
- CNC Machining Cells
- On-Site Teflon Coating
- On-Site Anodizing Facility
- Electropolishing
- Passivation
- Chemical Clean Operations
- Lapping
- Plasma Welding
- Orbital Welding
- Annealing
- Element Manufacturing
- Plug & Transition Molding
- Circuit Etching
- Vulcanized Bonding
- On-Site Plastic & Rubber Molding Process
- Foundry Operations
- Custom Packaging & Environmental Storage

SOLIDIFICATION SOFTWARE

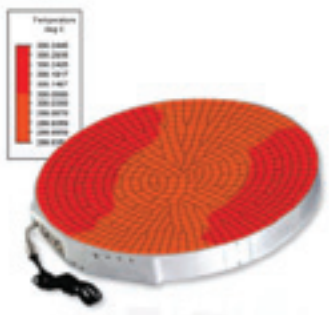


QUALITY ASSURANCE

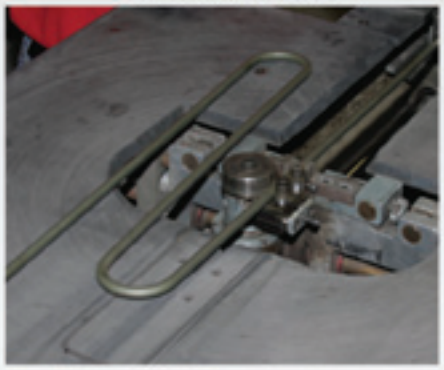
COMPLETE X-RAY FACILITY



TEMPERATURE UNIFORMITY MAPPING



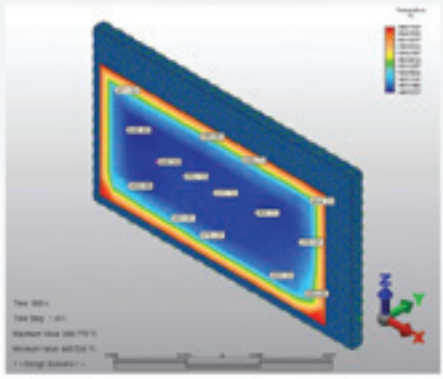
CNC ELEMENT BENDING



CNC MACHINING CELLS

CLEAN ROOM

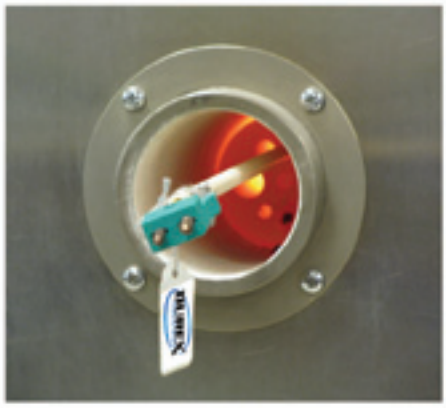
FEA ANALYSIS



PANEL MANUFACTURING

CIRCUIT ETCHING

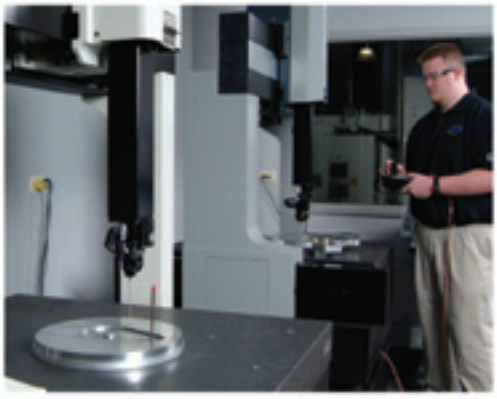
NIST CALIBRATION



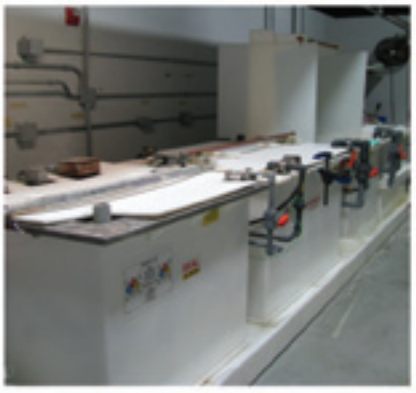
WATERJET CUTTING

FOUNDRY OPERATIONS

CMM INSPECTION



CHEMICAL CLEANING



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