

Ketron® PEEK

Reference Guide





The industry's first
NORSOK M-710 certified
stock shapes for oil, gas and
petrochemical applications.



QUADRANT

Ketron® PEEK

The industry's first NORSOK M-710 certified stock shapes for oil, gas and petrochemical applications

Materials	NORSOK M-710 Approved	Process Method	Max Operating Temperature	Material Advantages
Ketron® 1000 PEEK EXT		Extruded	480°F 250°C	Unfilled PEEK in extruded plate, rod & tube. Offers highest elongation of all PEEK grades. Ideal for large cross section tube in small quantities.
Ketron® 1000 PEEK IM		Injection Molded	480°F 250°C	Unfilled PEEK in injection molded tubes. Higher internal stress than extruded or compression molded. Excellent combination of thermal resistance and high compressive strength.
Ketron® 1000 PEEK SP		Compression Molded	480°F 250°C	Unfilled PEEK in compression molded rings.
Ketron® CA30 PEEK		Extruded	480°F 250°C	30% carbon fiber filled PEEK in extruded plate, rod & tube. More thermal conductivity than unreinforced PEEK with enhanced compressive strength and stiffness.

NEW

SEGMENTED WELDED RINGS

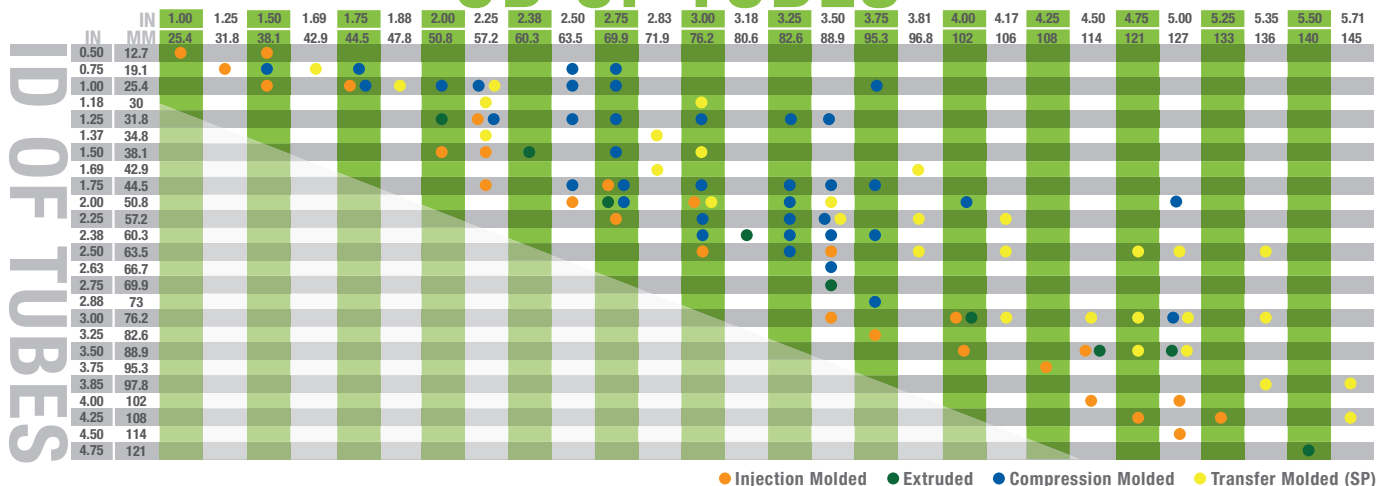
Near Net Shapes have: chemical resistance, low deformation, proven mechanical properties, dimensional stability, excellent machinability

Principle Objective:	Welding of segments into large OD rings consisting of 4, 6, or 8 segments depending on OD ring size & plate availability
Materials:	PEEK natural, PEEK + PTFE (completed) development of other materials on-going PEEK + carbon fibers, PEEK + glass fibers, PPS-HPV
Size Range:	OD range: min 700 mm – max 3 m Cross Section: 100 x 100 mm max, typically range 25 x 50 mm
Applications:	Industries: oil & gas, aerospace, industrial, military equipment Large dia. high temperature/high pressure seals, BU rings, guide rings
Required Equipment:	QEPP Tiertl: dedicated high temperature mirror welding system, fully computer controlled welding system (temp, forces, displacements)



NEAR NET SHAPES TOOLING SIZE CHART

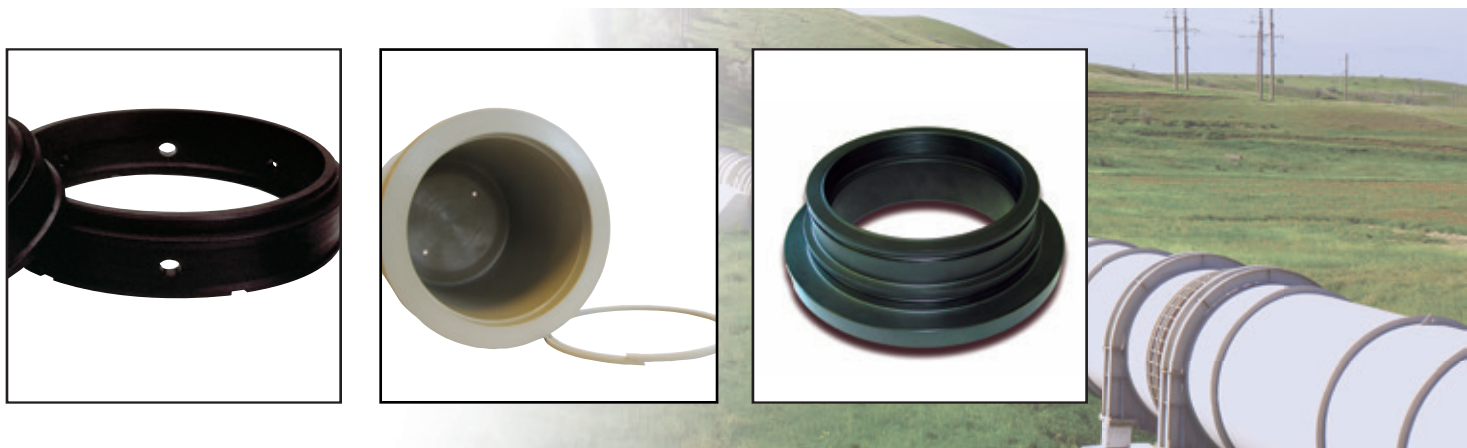
OD OF TUBES



NOTE: Other sizes are available, contact a Quadrant representative for more information. This chart does not include segmented weld rings that are custom designed.

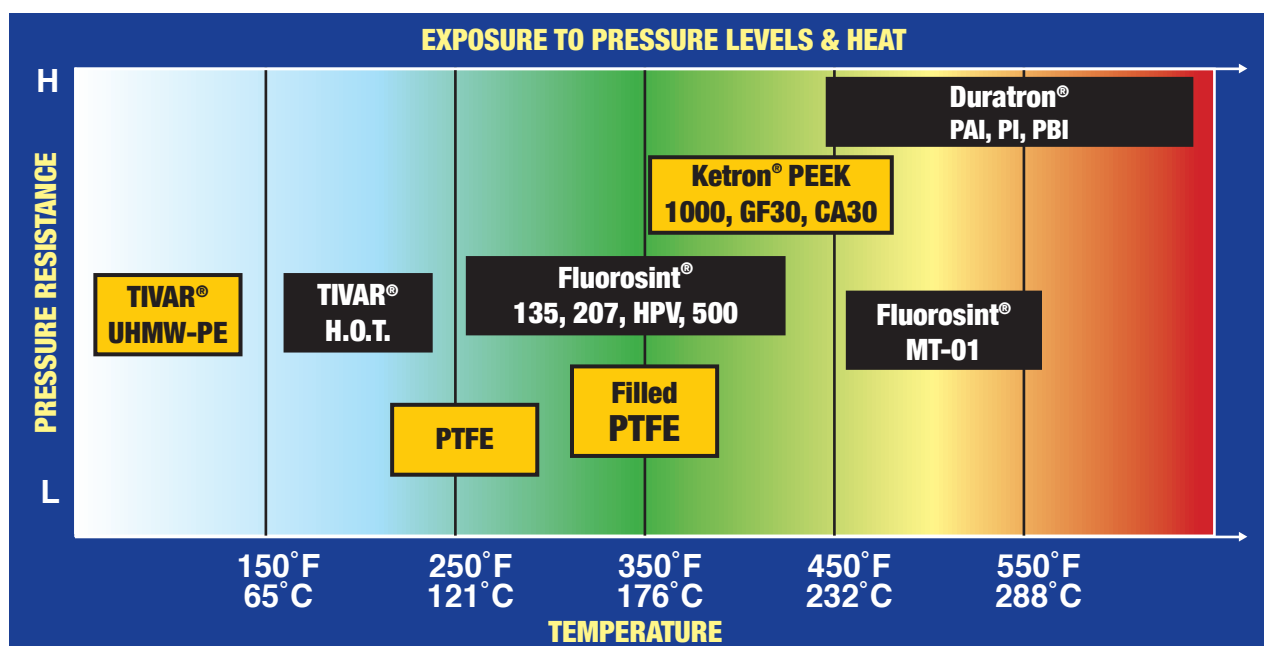
COMPETITIVE ADVANTAGE

Quadrant develops the materials of choice for design engineers where performance and reliability are required in extreme and hostile environments. Advanced properties of chemical and abrasion resistance combined with HPLT/ HPHT ratings and superior strength make the Quadrant family of materials the ideal choice for structural parts, bushings, bearings, seals and back up rings.



Quadrant's global partnerships provide technical service and application development. Flexibility in material portfolio and manufacturing capabilities provide our clients with a competitive edge. Quadrant can provide the platform for bringing your concept to the production line, from high volume molded parts to lower volume custom cast and machined components.

SEAL MATERIAL SELECTION MATRIX



TIVAR® H.O.T. / Fluorosint® / Duratron® Family - Fill in the performance gaps left by traditional materials. Quadrant offers a wide variety of materials to solve current and future design challenges for improved MTBR (Mean Time Between Repairs).

MATERIAL OPTIONS IN CHANGING ENVIRONMENTAL CONDITIONS HPHT (High Pressure High Temperature)

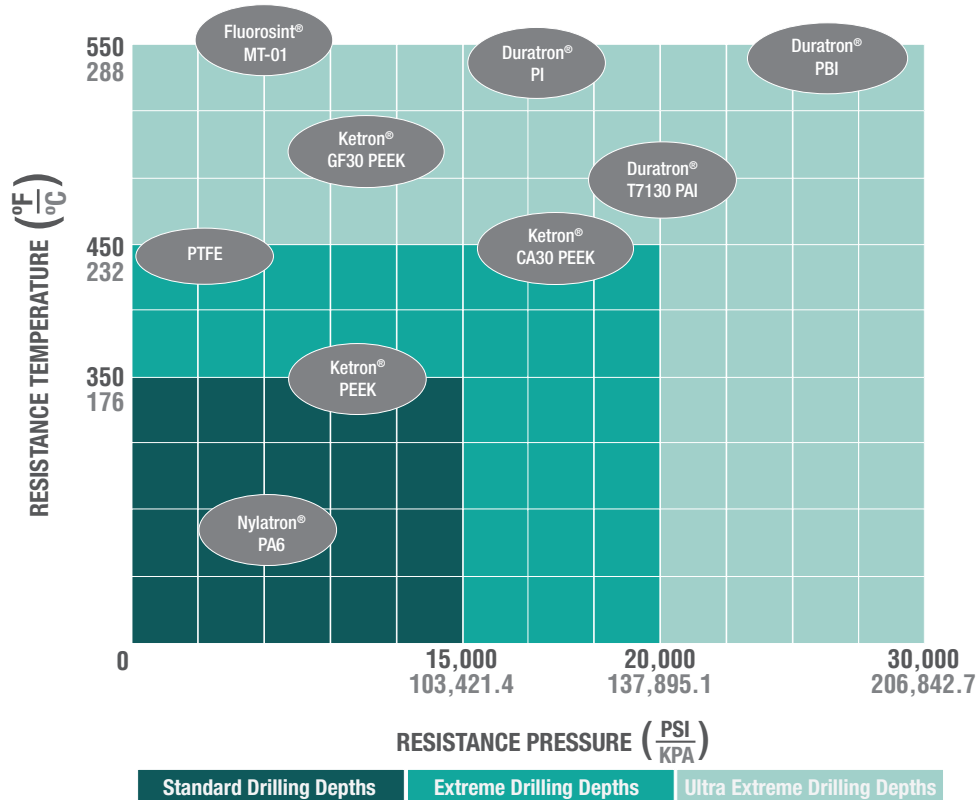


Photo courtesy of Elliott Compressor

“Polymer Labyrinth Seals provide much greater efficiency and provide the increased performance over a much greater service life”

KEY BENEFITS

- High mechanical strength
- Chemical and corrosion resistant
- Materials operating in temperatures of -50°F (45.5°C) to 480°F (250°C)
- Low weight compared to metal components
- Low coefficient of friction
- Low moisture absorption
- Excellent dimensional stability and quality
- Low coefficient of thermal expansion
- **NEW** NORSOK M-710 (sour gas aging) compliance for Ketron® PEEK stock shapes

COMMON APPLICATIONS

- Pipeline systems (pipe in pipe spacers, pipe clamps, lined pipe, pipe collars)
- Subsea vehicles (thruster cowlings, bearing, seals)
- Lifting equipment (cable sheaves, hook blocks, bearing pads)
- Instrumentation (insulators, sensor protectors, guidance probes, connectors)
- Compressor, pump and valve components (seals, bearings and wear components, backup rings, lantern rings)
- Offshore equipment (bushings, slide pads)
- Large diameter bouy seal rings to over 16.4ft (5m)

Ketron® PEEK



Quadrant was the world's first stock shape manufacturer to earn NORSOK M-710 compliance and provides the most accurate and reliable data on their stock shapes.



The NORSOK M-710 specification was developed by the Norwegian petroleum industry to ensure sufficient understanding and experience of oil and gas materials. It specifies a test procedure to predict the progressive degradation of thermoplastic materials exposed to a sour fluid at elevated pressure and temperature over an extended period of time. NORSOK M-710 defines the requirements for critical non-metallic (polymer) sealing, seat and back-up materials and components for permanent use subsea, including well completion, christmas trees, control systems & valves, and topside valves in critical gas systems.



QUADRANT: LOW STRESS



OTHER MARKET OFFERINGS: HIGH STRESS

WE TAKE THE STRESS OUT

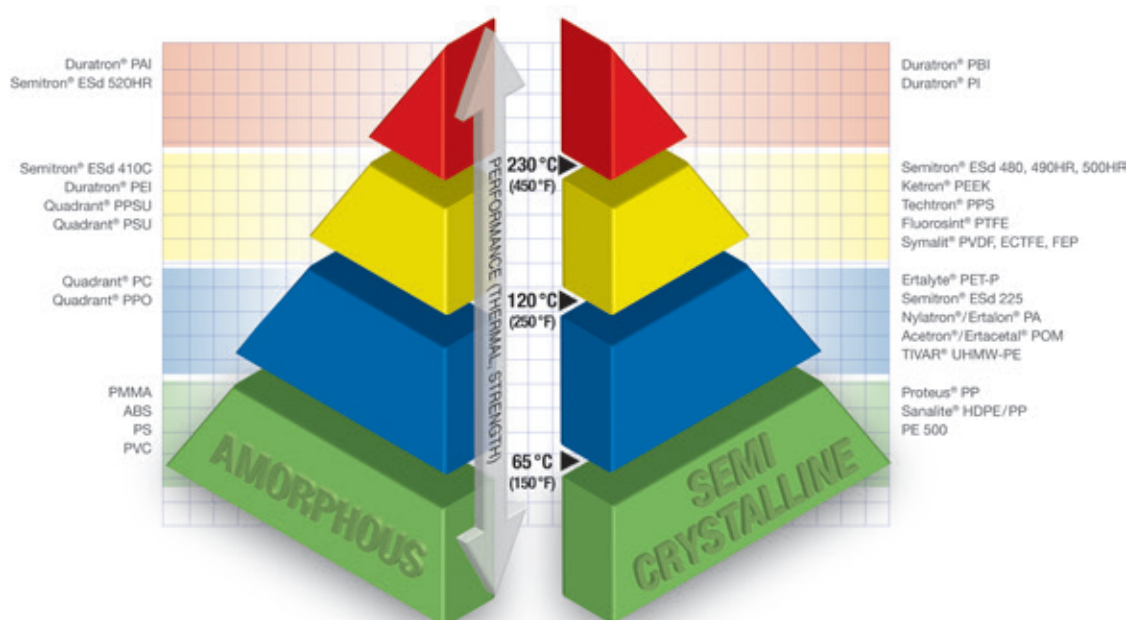
Specify the shape manufacturer and then you are specifying a process which includes consistent resin and consistent shape properties...including consistent low stress materials. Let Quadrant eliminate the guess work and provide a consistent low stress shape regardless of the resin.

The global industry leader

replacing metals and alloys by delivering stronger, lighter-weight plastic and polymer materials with superior corrosion & extreme temperature resistance

PERFORMANCE ADVANTAGES START HERE

Explore the industry's broadest family of engineering plastic products, online! The perfect match for your application, environment and performance level is just a few clicks away.



Europe

Quadrant EPP Deutschland GmbH
Max-Planck-Straße 11
48691 Vreden, Germany
T +49[0] 2564 3010
F +49[0] 2564 3012 55
contact@qplas.com

North America

Quadrant EPP USA, Inc.
2120 Fairmont Avenue
PO Box 14235 - Reading, PA 19612-4235
T 800 366 0300 | +1 610 320 6600
F 800 366 0301 | +1 610 320 6638
americas.epp@qplas.com

Asia-Pacific

Quadrant EPP Asia Pacific Ltd
60 Ha Mei San Tsuen, Ping Shan
Yuen Long - NT Hong Kong
T +852 24702683
F +852 24789966
asia.epp@qplas.com

This brochure and any data and specifications presented here or on our website shall provide promotional and general information about the Engineering Plastic Products (the „Products“) manufactured and offered by Quadrant Engineering Plastic Products („Quadrant“) and shall serve as a preliminary guide. All data and descriptions relating to the Products are of a general informational nature only. Neither this brochure nor any data and specifications presented on our website shall create or be implied to create any legal or contractual obligation. This brochure and any data or specifications herein do not create expressly or by implication any legal, contractual or warranty obligation whatsoever. No warranty of any kind, either express or implied, is made as to the information contained in these pages, including, but not limited to, all warranties provided for by Louisiana law, any implied warranty of merchantability, of fitness for a particular purpose, and any warranty against hidden defects or redhibitory defects or vices. No information in this brochure creates any express or implied warranty that the goods described here in shall conform to any description herein. Quadrant sells the products described herein solely to sophisticated users and not to consumers, and Quadrant assumes no responsibility that any goods described herein will be fit for any particular purpose for which a Quadrant customer may determine to purchase such goods, except and to the sole extent otherwise provided in a separate written contract.

Any illustration of the possible fields of application of the Products shall merely demonstrate the potential of these Products, but any such description does not constitute any kind of covenant or warranty whatsoever. Irrespective of any tests that Quadrant may have carried out with respect to any Product, Quadrant does not possess expertise in evaluating the suitability of its materials or Products for use in specific applications or products manufactured or offered by the customer respectively. It thus remains the customer's sole responsibility to test and assess the suitability and compatibility of Quadrant's Products for its intended applications, processes and uses, and to choose those Products that according to its assessment meet the requirements applicable to the specific use of the finished product. The customer undertakes all liability in respect of the application, processing or use of the aforementioned information or product, or any consequence there of, and shall verify its quality and other properties.

Acetron®, Borotron®, Duratron®, Ertacetal®, Ertalon®, Ertalyte®, Fluorosint®, Ketron®, Nylatron®, Quadrant®, Semitron®, Symalit®, Techtron® and TIVAR® are registered trademarks of the Quadrant Group.

www.quadrantplastics.com

