

ACETRON® GP NYLATRON® ERTA
Products and Applications Guide



A guide to selection and performance of
polyolefin materials.



QUADRANT

You inspire... we materialize®



QUADRANT



→ **Global Leader in Engineering Plastics for Machining.**

Quadrant Engineering Plastic Products is the world's leading manufacturer of plastic machining stock.

In 1946, we invented and then patented the first process for extruding nylon stock shapes for machining. The industry we created gives designers more flexibility and design possibilities by producing shapes that can easily be machined into parts. Quadrant assists engineers in selecting the optimum material for their application. Quadrant manufactures the broadest array of machinable plastic materials available anywhere in the world.

→ **TECHNICAL SUPPORT FROM CONCEPT THROUGH PRODUCTION.**

Application and production support when and where you need it. Quadrant's technical support team works with engineers and machinists from material selection through machining, for optimum performance, productivity and cost.

Quadrant locations around the world offer an experienced technical team and the most comprehensive testing laboratories in the industry. You can count on reliable support at every phase of your project:

- Evaluation of performance needs and application environment
- Material selection – including selection software
- Material certifications
- Regulatory agency compliance
- Set-up and production recommendations from experienced machinists
- A wide range of material selection, design and fabrication guides and tools – all available on the Quadrant Engineering Plastic Products Website, www.quadrantplastics.com

→ **QUALITY SYSTEMS THAT ENSURE CONSISTENCY.**

From full lot traceability to ISO certifications, Quadrant meets your requirements for consistent quality, performance and machinability. As the first to line mark shapes materials, Quadrant set the standard for traceability on our products right back to the resin lot and production shift. We have also kept pace with industry standards and quality systems to comply with the needs of the industries that your company also serves. Count on Quadrant. It is the inspiration behind our drive to provide the best levels of support for our materials in your applications.

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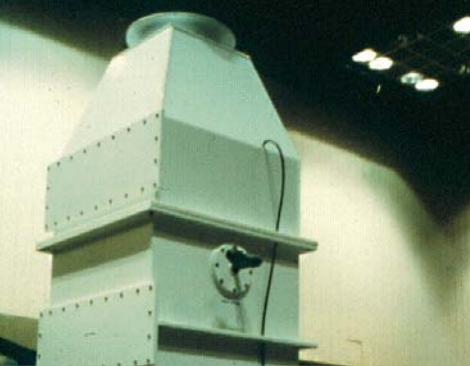
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TIVAR® PRODUCT COMPARISON DATA CHART

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PVC & CPVC PRODUCTS



PRODUCT APPLICATION:

Fume Scrubber

- **Problem:** Harsh chemical fumes are often more damaging to metal scrubbers than the chemical solutions themselves.
- **Solution:** Corzan® CPVC can handle the harsh fumes as the air is scrubbed prior to release into the environment.
- **Benefits:** Easy to fabricate and weld, Corzan® CPVC is lighter than steel and absorbs ambient plant noise more effectively.

PRODUCT PROFILE

ECONOMICAL MATERIALS FOR LOWER TEMPERATURE, WET APPLICATIONS REQUIRING GOOD CHEMICAL RESISTANCE

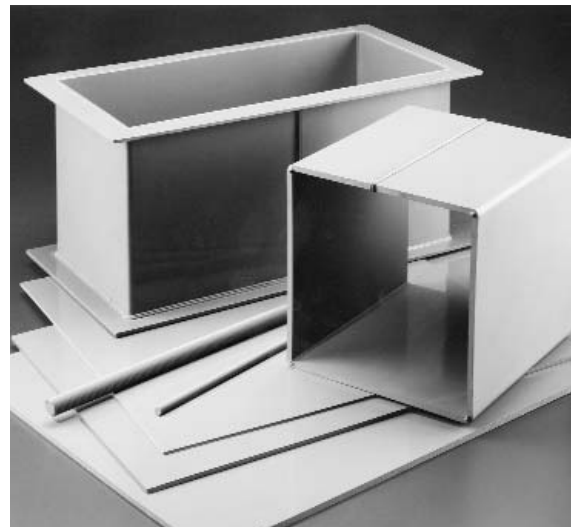
- Resists many acids, alkalis and solvents
- UL94 V-0 Flammability rating
- Corrosion resistant
- Vacuum formable
- No moisture absorption

PVC (POLYVINYL CHLORIDE) TYPE I, GRADE I, PER ASTM D-1784

is an economical alternative to more expensive materials for liquid containment. PVC performs in applications up to 160°F and is thermoformable. Quadrant's PVC sheet is compatible with Type I PVC pipe, so the piping system can be welded directly to the liquid container, eliminating flanges and connectors.

CORZAN® CPVC (CHLORINATED POLYVINYL CHLORIDE)

meets ASTM D-1784, cell classification 23447B. It is also compliant with NSF Standard 14 for Plastic Piping Systems Components and Related Materials. Corzan® performs well up to 200°F and is highly weather resistant for outdoor applications. Corzan® CPVC has good impact strength and is very chemical resistant so it excels in many harsh environments including metal surface finishing and chemical processing.



Both PVC and Corzan CPVC are easily welded using standard plastic welding technology.



Tech Notes:

PVC and CPVC both have a UL94 V-0 Flammability rating. The UL 94 test is a laboratory test where specimens are subjected to a specified flame exposure. The relative ability to continue burning after the flame is removed is the basis for the classification. Materials that extinguish themselves rapidly and do not drip flaming particles are given the more favorable ratings. The UL rating scale, from highest burn rate to most flame retardant, is HB, V-2, V-1, V-0, 5V.

>> STANDARD & PREMIUM POLYPROPYLENES [PROTEUS® PRODUCTS]

PRODUCT PROFILE

FOR GENERAL PURPOSE APPLICATIONS IN WET AND DRY ENVIRONMENTS WHERE EASE OF FABRICATION IS IMPORTANT

- Excellent chemical/corrosion resistance
- High strength
- Resists most acids, alkalis and solvents
- No moisture absorption
- Vacuum formable
- FDA/USDA, NSF and 3-A Dairy compliant (natural color)
- Ideal for applications up to 180°F

PROTEUS® HOMOPOLYMER POLYPROPYLENE

offers a high strength-to-weight ratio and excellent chemical resistance for use in highly corrosive environments. Proteus® Homopolymer Natural Polypropylene is easily fabricated and welded into tanks and processing equipment used in the metal plating and chemical processing industries. The excellent formability and consistency of the material have also made it a standard in the prosthetics and orthotics industry.

PROTEUS® CO-POLYMER POLYPROPYLENE

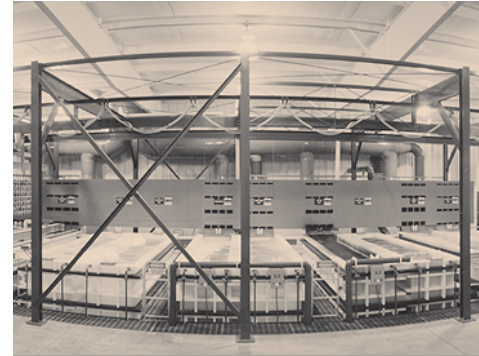
offers the same excellent chemical resistance of Homopolymer Polypropylene, with the added benefit of better resistance to stress cracking at low temperatures while being more pliable. Proteus® Co-Polymer Polypropylene is FDA and 3-A Dairy Sanitation compliant, for use in food storage or processing equipment.

PROTEUS® HOMOPOLYMER POLYPROPYLENE PREMIUM GLOSS

is a bright white or black, stress-relieved sheet, with film masking on one side (two-sided masking available on request). Quadrant's advanced quality control system allows us to achieve and maintain our color and gloss for demanding users like the semiconductor industry. Proteus® Premium Gloss White meets FDA criteria for food contact and is easy to fabricate, weld and thermoform.

PROTEUS® ORTHOTIC AND PROSTHETIC GRADE

is a natural homopolymer polypropylene that is more rigid, used where a higher degree of stiffness is required. Proteus® O & P Grade offers tighter lot-to-lot consistency demanded by many thermoformers in the orthotic and prosthetic industry. Proteus® O & P Grade exhibits the same chemical and corrosion resistance as standard Proteus® Polypropylene and does not absorb moisture.



PRODUCT APPLICATION: Metal Anodizing

- **Problem:** Steel chemical tanks corrode and leak causing safety issues and loss of expensive chemicals used in process.
- **Solution:** Proteus® Homopolymer Natural Polypropylene is easy to weld into tanks and resists corrosion from a variety of chemicals.
- **Benefits:** Proteus® works with many different chemicals and a high strength-to-weight ratio of the material provides the rigidity needed.



PRODUCT APPLICATION: Fire Truck Tanks

- **Problem:** Steel water tanks on pumper fire trucks rust and corrode quickly. Constant road vibration causes leaks and failures.
- **Solution:** Proteus® Co-Polymer Polypropylene is easy to fabricate and has better weld strength to resist stress cracking at lower temperature.
- **Benefits:** Lighter, more durable tanks help reduce fuel consumption and reduce maintenance costs.

>> STANDARD POLYETHYLENES

POLYETHYLENE PRODUCTS.



PRODUCT APPLICATION:

Chemical Processing Storage Tank

- **Problem:** Chemical corrosion caused metal tanks to leak hazardous chemicals.
- **Solution:** Fabricated HDPE tanks resist corrosion from the harsh chemicals that destroyed costly metal reservoirs.
- **Benefits:** Cleaner, more impact resistant tanks are much easier to utilize and require far less repair and maintenance.



PRODUCT APPLICATION:

Commercial Cutting Board

- **Problem:** Many commercial kitchens and food processing facilities have struggled with wood cutting boards that absorb liquids, flavors and odors. These substances can grow into bacteria that can contaminate food products.
- **Solution:** Sanalite® HDPE or PP cutting boards eliminate these problems.
- **Benefits:** Easy to clean and disinfect. Will not absorb liquid, flavor or odor. Sanalite® is lighter than wood allowing for easier installation. This highly cut resistant polymer provides a longer service life for knives and cutting tools.

PRODUCT PROFILE

COST EFFECTIVE MATERIALS FOR GENERAL PURPOSE APPLICATIONS IN WET AND DRY ENVIRONMENTS

- Excellent chemical/corrosion resistance
- High strength
- No moisture absorption
- Good impact strength
- Vacuum formable
- FDA/USDA compliant (natural color)

HDPE (HIGH DENSITY POLYETHYLENE)

is used in a wide variety of applications that require basic engineering plastic performance. High impact and tensile strength make Quadrant HDPE appropriate for vacuum and thermoforming prosthetic devices or industrial parts and containers. Excellent chemical and corrosion resistance combined with ease of fabrication and welding make it the standard for chemical processing tanks and equipment. Natural HDPE meets FDA/USDA requirements for food processing and handling applications.

HDPE (HIGH DENSITY POLYETHYLENE) BLACK

is a non-FDA compliant material that offers the same performance as natural HDPE.

SANALITE® HDPE (HIGH DENSITY POLYETHYLENE) CUTTING BOARD

is an odorless and taste-free pebbled finished cutting board material recognized as the industry standard of excellence for use in food preparation and meat/poultry processing. Sanalite® is lightweight, easily cleaned and sanitized, and is compliant with FDA, USDA, NSF and Canada AG standards. Sanalite® Cutting Board is also available in Natural Polypropylene for users who prefer a harder cutting surface and added stain resistance.

LDPE (LOW DENSITY POLYETHYLENE)

is more flexible than HDPE. LDPE is easily vacuum or draped formed into prosthetic devices that offer more flexibility of motion. LDPE also provides good chemical resistance and impact strength and is easy to fabricate into industrial parts. LDPE meets FDA criteria for use in food processing and packaging.

>> STANDARD & ENHANCED ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE

TIVAR® PRODUCTS

PRODUCT PROFILE

FOR SUPERIOR WEAR RESISTANCE AND PART LIFE IN WET AND DRY ENVIRONMENTS

- Excellent abrasion resistance
- Low coefficient of friction
- No moisture absorption
- Corrosion resistant
- Excellent noise abatement
- Excellent impact strength
- Maintains key physical properties to -30°C

TIVAR® 1000

meets FDA, USDA and 3-A Dairy Sanitation guidelines for food processing and handling, making it the material of choice for tough food handling problems. Because TIVAR® 1000 is resistant to chemical attack, it stands up to repeated wash downs with aggressive chlorine solutions, common in the food processing industry, and so damaging to other polymer materials. Available in a broad array of custom colors on a made to order basis.

TIVAR® RECYCLED

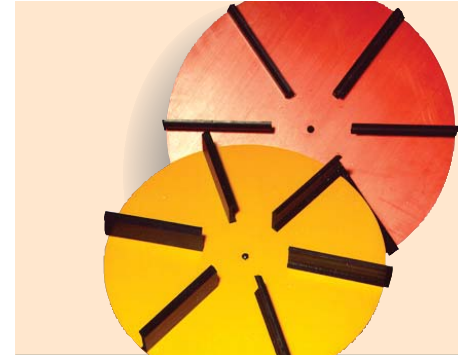
is a blend of virgin and reclaimed TIVAR® that maintains an acceptable combination of TIVAR® properties for less-demanding, non-FDA applications.

TIVAR® UV RESISTANT

provides enhanced stability for outdoor applications. TIVAR® UV Resistant retains all the key properties of TIVAR® 1000 and prevents premature degradation of the material under continuous UV exposure. It is ideal for agricultural, recreation and transportation applications. Parts made from TIVAR® UV Resistant are self-lubricating and will not corrode or freeze, providing extended part life and improved performance.

ARMOR-X (IMPACT MODIFIED UHMW-PE)

is an ideal material for protecting equipment and critical surfaces. Its unique modified UHMW formation offers good impact resistance and keeps valuable parts safe. Armor-X has a distinct Proknob finish available to keep parts in place and add cushioning.



PRODUCT APPLICATION:

Salt Spinners

- **Problem:** Chemical corrosion and harsh environment cause steel spinners to rust and require costly, premature replacement.
- **Solution:** Spinners made from TIVAR® UV Resistant material eliminate corrosion and rusting problems from salt and water.
- **Benefits:** Smoother operation. Less salt build-up and less sticking to spinner. Replaceable fins allow for quicker more economical maintenance.

Fig. 1 — SAND SLURRY LOSS AS FUNCTION OF UV EXPOSURE

