

Launch your next innovation...

...with one of ours.



Introducing **Pennite® 4512** Thermoformable PA6

<u>PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>VALUE</u>
Specific Gravity	D-792	1.22
Tensile Strength, break -40°C (-40°F)	D-638	115MPa ~ 16,700psi
Elongation, Break % -40°C (-40°F)	D-638	2
Flexural Modulus -40°C (-40°F)	D-790	5200MPa ~ 754,000psi
Flexural Strength -40°C (-40°F)	D-790	200MPa ~ 29,000psi
Notched Izod Impact -40°C (-40°F)	D-256	40J/M ~ 0.7ft-lbs/in
Melting Point	D-3418	220°C ~ 428°F
Heat Deflection @ 264psi (1.8MPa)	D-648	197°C ~ 386°F
Burning Behavior	UL-94	HB

PENNITE® 4512 is available in sheets and rolls from 0.010" (0.25mm) to 0.250" (6.35mm) thick in standard and custom widths up to 50" (1250mm).

ENSINGER/PennFibre, the global leader in High Performance Forming Materials, has broadened their thermoformable nylon offerings with the addition of PENNITE® 4512, a type 6 nylon with 12% glass fiber reinforcement, that is thermally and impact modified and black pigmented for service applications.

PENNITE® 4512 offers an excellent balance of engineering properties combined with a superior melt strength ideally suited to engineered thermoforming products. PENNITE® 4512 exhibits improved strength, stiffness, and creep resistance compared to other nylons used in thermoforming and fabrication. PENNITE® 4512 provides outstanding permeability and chemical resistance to oils, hydrocarbons, and most solvents.

PENNITE® 4512 is designed as a cost effective thermoplastic for metal replacement and is ideal for automotive applications such as air ducts, radiator shrouds, fuel cells, covers, structural components and reservoirs.

ENSINGER/PennFibre
PENN FIBRE PLASTICS, INC. ~ Since 1937

Contact us today for more information
800-662-7366
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PENNITE® 4512

PROCESSING INFORMATION

*High Performance
Forming Materials*

DRYING:

As with all polyamides, the hygroscopic nature of these materials make them susceptible to moisture absorption and retention. **Proper pre-drying of Pennite® 4512 prior to thermoforming is a critical element of forming a successful product.** Our recommendation is that sheets be dried for a period of 24 hours at temperatures of 100°C(212°F) in a desiccant or recirculation style of oven. The natural black pigment and heat stabilizing characteristics of Pennite® 4512 allow for extended drying parameters without surface or color degradation. Failure to adequately dry Pennite® 4512 will result in moisture releases during the forming cycle that will cause surface blisters and bubbles to arise.



PENNITE® 4512 is formable with any conventional thermoforming equipment. As with most materials, forming parameters are heavily dependent upon tooling design and part geometry.

With proper predrying, the following criteria was observed on parts formed with .060in(1.5mm) thick sheet:

tool temperature = 175F(80C) indirect

upper heating = 600/570/450/570/600°C

lower heating = 500/470/370/470/500°C

sheet surface prior to forming = 212°F(100°C)

sheet surface at forming = approximately 480-500°F(250-260°C)

In almost all situations, the outer edges of the sheet should receive more heat than the center in order to achieve a more uniform sag of the material.

PENNITE® 4512 is available in rolls from 0.010"(0.25mm) to 0.125"(3.15mm) thick in standard and custom widths up to 50"(1250mm).
PENNITE® 4512 is available in sheets from 0.010"(0.25mm) to 0.250"(6.35mm) thick in standard and custom widths up to 50"(1250mm).

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For more information please contact Penn Fibre

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