

DATA SHEET

SHRINK TITE TAPE

HAWKEYE SHRINK TITE TAPE is slit to width from a polyester film. Under heat, the molecules are restructured to cause a biaxial strain on the film that applies the positive pressure in mandrel cured plastics and rubbers.

Shrink Tite Tape is unaffected by oils, most solvents, resins, varnishes and has high resistance to acids and alkalis. Its minimal corrosion on copper and the high dielectric strength offers good electrical insulation.

SPECIFICATIONS

Thickness:	.002" and .005"
Widths:	1/2", 3/4", 1", 1 1/4", 2", 2 1/2"
Nominal Shrinkage (lengthwise) at 300° F (148° C):	20%
Maximum Shrink Force (lengthwise):	2500 PSI
Shrinkage Start:	175° F (79° C)
Temperature Range for Practical Use:	200-400° F (93 – 204° C)
Approximate Time to Reach Full Shrink After Exposure to Temperature:	Seconds
Melt Point:	480° F (248° C)
Tensile Strength:	25,000 PSI
Flammability:	Auto Ignition over 900°F (482° C)

NOTE: Technical information furnished by HAWKEYE is based on laboratory findings and is believed to be correct. No warranties of any kind are made except that materials supplied are HAWKEYE standard quality. All risk and liability arising from handling, storage and use of HAWKEYE products, as well as compliance with applicable legal restrictions rests with the buyer.

DATA SHEET

SHRINK TITE TAPE (RELEASE COATED)

SHRINK TITE TAPE is available coated on one side (outer) with a tetrafluoroethylene resin (TFE) to enhance the release characteristics of the tape from various substrates. When the coating material is applied, it is fully bonded to the tape. This results in a clean, dry, non-oily surface, with no discernible transfer to contaminate the substrate material it comes into contact with.

SHRINK TITE TAPE - RELEASE COATED will enhance the release characteristics of the tape from a wide range of materials including epoxy and many other resins.

When wrapped around an object and heated, Shrink Tite Tape will shrink until fully restrained by the object. Once fully restrained, the remaining shrink force maintains tension in the tape, which is then felt as compression force by the underlying object. This compression force is then maintained without relaxation during any baking and cooling periods.

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DATA SHEET

SHRINK TITE TAPE COMPRESSION FORCE CHARACTERISTICS

Compression Force is defined as the pressure felt by the underlying object. When wrapped around an object and heated, Shrink Tite Tape will shrink until fully restrained by the object. Once fully restrained, the remaining shrink force maintains tension in the tape which is then felt as compression force by the underlying object. This compression force is then maintained without relaxation during any baking and cooling periods.

The compression force that can be achieved will vary according to several factors:

- Diameter of the object to be taped: The smaller the diameter, the greater the compression force. Conversely, the larger the diameter, the less the compression force.
- Thickness of the tape (.002" or .005"): The .005" tape will exert 2 1/2 times the compression force as the .002" tape.
- Number of layers or laps of the tape applied: Two layers of tape will exert twice the compression force as one layer; three layers, three times, and so forth.
- Temperature to which tape is exposed: The compression force drops off outside the range of 200 - 400 degrees F (79 - 204 degrees C).
- Compressibility of the object: The more the object compresses before the tape is fully restrained from shrinking, the less force will be available to apply the final pressure.

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DATA SHEET

SHRINK TITE TAPE TAPE APPLICATION

When Shrink Tite Tape is wrapped around a part which is to be compressed, the tape may be applied in single or multiple layers; directly or over clamping forms. For instance; a part with a round section, such as a rod or a tube can be taped directly and uniform pressure will result during shrinking. A part with a rectangular section, however, may require clamping forms, otherwise the tape may exert pressure mainly on the four corners. In other cases, a combination of directly applied tape, and tape over clamping forms or simple molds may be most effective.

When wrapping a part, the tape should be applied reasonably tight. If the tape is wrapped too loosely, less shrink force is left for applying final pressure. For greater pressure, multiple layers of tape can be applied. In some cases, it may be desirable to shrink each layer with a heat gun to prevent wrinkles in the underlying layers.

When taping, the start end of the tape can be locked by one or two overlaps. The finish end can be secured with adhesive tape. It may be practical to secure both the start and finish ends of the tape with a generous overlap of an adhesive tape which is compatible with the baking temperature to be used. Heat sealing to secure the ends is not practical, as the melted material is weak and brittle.

Shrink Tite Tape, being a polyester, has excellent release characteristics from a wide range of materials. However, with any new application, tests should be run to determine the specific release characteristics of the tape from the compound or substance to be wrapped. If the tape will not release from the part, it may be necessary to use either Shrink Tite Tape with release coating or to apply an appropriate release agent.

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DATA SHEET SHRINK TITE TAPE – PERFORATED

Shrink Tite Tape is available perforated with pinholes on ¼” centers. This perforation enhances the tapes ability to outgas volatiles during cure of Thermoset composites. It can also be used in preliminary consolidation stages of composites that require outgassing to ensure “void free” finished products

Perforated Shrink Tite Tape can eliminate the time and safety concerns associated with the use of pin-type hand rollers.

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DATA SHEET

SHRINK TITE TAPE – 750

Shrink Tite Tape 750 is a heat shrinkable polyimide tape. Shrink Tite Tape 750 has higher temperature capabilities than other shrinkable tapes. It's primary application is to provide an external compressive force to fully consolidate the higher cure temperatures called for in thermoplastic composites. Shrink Tite Tape 750 provides a very simple and effective means to produce an end product without the need for vacuum bagging or autoclaving.

Shrink Tite Tape 750 is a modified polyimide that shrinks in the machine direction. The tape starts to shrink at approximately 70°C and reaches its maximum shrink percentage at 350°C.

Shrink Tite Tape 750 can also be perforated with pin holes on ¼" (6mm) centers. This is to enhance its ability to outgas volatiles or excess resin during cure of Thermoset Composites.

SPECIFICATIONS

<u>Shrinkage Characteristics</u>	<u>.002" (50μ)</u>
Normal Shrinkage (lengthwise) at 300°F	12% at 700°F (372°C)
Maximum Shrink Force (lengthwise)	30,000 psi
Starts to Shrink:	200°F 993°C)
Temperature Range for Practical Use	200-700°F (93-372°C)
Approximate Time to reach Full Shrink after exposure to temperature	10 min.

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DATA SHEET

SHRINK TITE TAPE PR-10

Shrink Tite Tape PR-10 is a tough, flexible heat shrinkable polyester tape. When wrapped around an object and heated, Shrink Tite Tape PR-10 has the unique ability to shrink and apply pressure. This simple method of applying pressure is used to advantage in many industries.

The compression force characteristics of Shrink Tite Tape PR-10 make it an effective and useful tool for consolidating and compacting advanced composites. Shrink Tite Tape PR-10 can be used effectively for compressing, debulking, shaping, forming and banding various materials.

Shrink Tite Tape PR-10 begins to shrink at 149°F (65°C) and has been used in applications up to 356°F (180°C). If left unrestrained the tape will shrink 20% after 15 minutes at 302°F (150°C).

Shrink Tite Tape PR-10 is release coated on one side. The PTFE release coating allows for easy removal from various substrates.

Shrink Tite Tape PR-10 is generally removed after application and it is not reusable.

SPECIFICATIONS

Shrink Percentage (+/-2%):	10%
Thickness:	.0018"
Starts to Shrink	150°F (65°C)
Usage Temperatures	175°F – 350°F (80°C – 180°C)
Melting Point:	484°F (251°C)
Shelf Life	Indefinite at room temperature

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DATA SHEET

SHRINK TITE TAPE PR-15

Shrink Tite Tape PR-15 is a tough, flexible heat shrinkable polyester tape. When wrapped around an object and heated, Shrink Tite Tape PR-15 has the unique ability to shrink and apply pressure. This simple method of applying pressure is used to advantage in many industries.

The compression force characteristics of Shrink Tite Tape PR-15 make it an effective and useful tool for consolidating and compacting advanced composites. Shrink Tite Tape Pr-15 can be used effectively for compressing, debulking, shaping, forming and banding various materials.

Shrink Tite Tape PR-15 begins to shrink at 140°F (60°C) and has been used in applications up to 356°F (180°C). If left unrestrained the tape will shrink 15% after 15 minutes at 302°F (150°C).

Shrink Tite Tape PR-15 is release coated on one side. The PTFE release coating allows for easy removal from various substrates.

Shrink Tite Tape PR-15 is generally removed after application and it is not reusable.

SPECIFICATIONS

Shrink Percentage (+/-2%):	15%
Thickness:	.0085"
Nominal length/roll	600 ft
Starts to Shrink	140°F (60°C)
Usage Temperatures	175°F – 340°F (79°C – 171°C)
Melting Point:	480°F (240°C)
Shelf Life	Indefinite at room temperature

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SHRINK TITE TAPE PR-20

Shrink Tite Tape PR-20 is a tough, flexible heat shrinkable polyester tape. When wrapped around an object and heated, Shrink Tite Tape PR-20 has the unique ability to shrink and apply pressure. This simple method of applying pressure is used to advantage in many industries.

The compression force characteristics of Shrink Tite Tape PR-20 make it an effective and useful tool for consolidating and compacting advanced composites. Shrink Tite Tape PR-20 can be used effectively for compressing, debulking, shaping, forming and banding various materials.

Shrink Tite Tape PR-20 begins to shrink at 149°F (65°C) and has been used in applications up to 356°F (180°C). If left unrestrained the tape will shrink 20% after 15 minutes at 302°F (150°C).

Shrink Tite Tape PR-20 is release coated on one side. The PTFE release coating allows for easy removal from various substrates.

Shrink Tite Tape PR-20 is generally removed after application and it is not reusable.

SPECIFICATIONS

Shrink Percentage (+/-2%):	20%
Thickness:	.0018"
Starts to Shrink	150°F (65°C)
Usage Temperatures	175°F – 350°F (80°C – 180°C)
Melting Point:	484°F (251°C)
Shelf Life	Indefinite at room temperature

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SHRINK TITE TAPE PP-7

Shrink Tite Tape PP-7 is an extruded co-polymer based on polypropylene film. Shrink Tite Tape PP-7 was designed for high speed overwrapping of tubular composite parts. Shrink Tite Tape PP-7 offers better tensile properties than other biaxially oriented polypropylene films, the advantage being the ability to pull higher tension on the film during wrapping to compact the composite part.

Shrink Tite Tape PP-7 can be used to replace some processes where standard BOPP film and nylon films are used in combination in multiple wrapping steps to achieve both release and compression. This is due to the high tensile properties of Shrink Tite Tape PP-7 and the natural release characteristics of polypropylene.

Shrink Tite Tape PP-7 is extruded with differential slip characteristics of its outer, sealable layers which enable tighter wrapping of the film over the composite part. This can be used to advantage when composite parts are not immediately placed in the cure oven, as the film will relax less than wrapping with standard BOPP films, prior to cure.

SPECIFICATIONS

Shrink Percentages MD*	7%
Thickness:	.001" (0.025mm)
Use Temperatures	Up to 320°F (160°C)
Tensile Strength	24,700 lb/in ²
Melting Point:	330°F (165°C)
Shelf Life	Indefinite at room temperature

*MD = Machine Direction, shrinkage calculated at 248°F (130°C) for 60 seconds. Tests to determine application suitability should be made by each user.