If a tape has low tear strength, a small tear will seed a premature failure. In this application, some rigidity from the fiberglass reinforcement will also prevent the release tape from wrinkling during heat up, the backing will form a wrinkle on the heated platen that will seed a premature failure. In this application, some rigidity from the fiberglass reinforcement will also prevent the release tape from wrinkling due to the motion of the machine. Note that materials with lower dimensional stability should be used for wide width platens such as 39 inch wide (1 meter), tapes without a reinforcement will tend to fail prematurely. Industry Standard Test: ASTM D624 “Trouser Test”

**TENSILE STRENGTH**
What is it: Measure of the force required to break a tape. A tape with high tensile strength is a stronger tape.

Importance: Tensile Strength in this application primarily makes the tape easy to remove and replace without coming apart in pieces.

Industry Standard Test: ASTM D1000

**THICKNESS**
What is it: Measured distance of the cross-section of the tape.

Importance: Thicker PTFE glass tapes have thicker glass cloth which is stronger. A stronger glass cloth resists the sharp edges of the sealing platen from cutting through the surface. If a hole is made, it will quickly result in tape failure.

Industry Standard Test: ASTM D1000

**ABRASION RESISTANCE**
What is it: Resistance of the wearing down or rubbing away caused by friction.

Importance: Heat seal machines that run at high speed will abrade the surface of the heat seal tape. Once the PTFE layer wears through, the tape must be replaced.

Industry Standard Test: ASTM D3884 — Taber Abrasion Testing (note: multiple tests procedures are available; there is no standard test for heat seal).

**THERMAL CONDUCTIVITY**
What is it: Amount/speed of heat transmitted through a material.

Importance: The heat from the heat seal platen must be able to conduct heat through the heat seal tape in order to melt and seal the plastic film.

**LOW COEFFICIENT OF FRICTION (COF)**
What is it: A value that shows the relationship between the force of friction between two objects and the normal reaction between the objects that are involved.

Importance: The low COF prevents the melted plastic from sticking to the heat seal tape.

Industry Standard Test: ASTM D1894

**LOW SURFACE ENERGY**
What is it: Energy associated with the intermolecular forces at the interface between two materials. High surface energy liquids more easily wet out onto a surface.

Importance: To prevent a melted plastic from wetting out on the heat seal tape and sticking, the surface energy of the melted plastic must be higher than the surface energy of the heat seal tape. Heat seal tapes are designed with a very low surface energy to prevent wet-out.

Industry Standard Test: ASTM D7334

**ADHESION STRENGTH TO PART**
What is it: Measure of adhesion strength to stainless steel after 20 minutes.

Importance: The tape needs to stick to the heated platen and remain stuck after exposure to heat sealing temperatures.

Industry Standard Test: ASTM D1000

**SHORT TERM OPERATING TEMPERATURE**
What is it: Short and long-term temperature exposure requirements.

Importance: A tape that can resist higher temperature can allow the heat sealing machine to run at higher temperature. If the end user can increase the temperature, a faster line speed can typically also be achieved.

Industry Standard Test: Shear Adhesion Failure Test (“SAFT”)
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### Key Contributors

**Dimensional Stability & Rigidity**
- Ability of the material to resist strain and swelling with changing temperature and moisture.
- Excellent: Good
- Poor

**TEAR STRENGTH**
- Ability of the tape to resist tear when a load is applied to the edge. High plastic film, too easily tear. Low plastic film, too rigid. PTFE is in the middle.
- Excellent: Good
- Poor

**TENSILE STRENGTH**
- Measure of the force required to break a tape. A tape with high tensile strength is a stronger tape.
- 100–250 lbs/in (14–35 kg/cm)
- 200–350 lbs/in (29–51 kg/cm)
- 350–500 lbs/in (52–71 kg/cm)

**THICKNESS**
- Measured distance of the cross-section of the tape.
- 6–12 mils (0.15–0.30 mm)
- 12–16 mils (0.30–0.40 mm)
- 16–25 mils (0.40–0.63 mm)
- 25–35 mils (0.63–0.88 mm)
- 35–50 mils (0.88–1.27 mm)

**Abrasion Resistance**
- Resistance of the wearing down of or damage caused by friction.
- Excellent: Good
- Poor

**Thermal Conductivity**
- Amount of heat transmitted through a material.
- 0.3 (W/mK)
- 0.2 (W/mK)
- 0.3 (W/mK)
- 0.3 (W/mK)
- 0.3 (W/mK)
- 0.3 (W/mK)
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- 0.3 (W/mK)
- 0.3 (W/mK)

**Low Coefficient of Friction (LCF)**
- A value that shows the relationship between the force of friction between two objects and the normal reaction between the objects that are involved.
- 0.04
- 0.04
- 0.04
- 0.04
- 0.04
- 0.04
- 0.04
- 0.04
- 0.04
- 0.04
- 0.04
- 0.04

**Low Surface Energy**
- Energy associated with the non-adhesive forces at the molecular interface.
- Excellent: Good
- Poor

**Adhesion Strength to Part**
- Measure of adhesion strength to a substrate after 24 hours.
- 20 oz/in
- 20 oz/in
- 20 oz/in
- 20 oz/in

**Short Term Operating Temperature**
- Short and long-term temperature exposure requirements.
- 50°F (10°C)
- 70°F (21°C)
- 100°F (38°C)
- 150°F (66°C)
- 226°F (107°C)

**Other Attributes**
- Longest life in high speed food packaging
- Best choice for PTFE coated films
- Highest R-value
- Highest fire rating
- Longest life in high speed heat seal applications
- PTFE Glass
- Abrasion resistant: For high abrasive action
- Zone tape for hot wire sealers
- Thinner 3 in tape for low temperature heat sealing
- Best acrylic adhesion for narrow heat sealing (3 mils or less)
- Abrasion resistant for long life, anti-adhesive action, minimal flow to PTFE tape wrap
- Abrasion resistant for low temperature, anti-adhesive action
- Longest life due to high PTFE content and abrasion resistance

**FDA**
- FDA 21 CFR 177.1550
- FDA 21 CFR 177.160
- FDA 21 CFR 177.1550
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