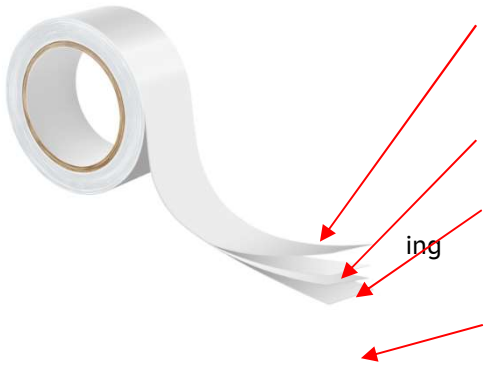
CHOOSING THE RIGHT TAPE

Tape is used to stabilize and seal parcels securely. It also offers a telltale sign for end recipients to know if the package has been tampered with or opened. The heavier the parcel is, the more securely it must be sealed. There are different variations of the most common tape types available as well as other options for sealing a package:

- Plastic tape
- Tape with paper carrier: Paper tape or wet tape (water activated)
- Self-adhesive sealing tape
- Strapping (see strapping fact sheet)

COMPOSITION OF TAPES AND TAPE TYPES

Synthetic tapes have a backing material usually made of polypropylene (PP) or polyvinyl chloride (PVC). For self-adhesive tapes, the type of adhesive and the thickness are crucial for the tape to provide an effective seal.



Paper-based tapes come in two types: packing tape (self-adhesive) and wet tape. Wet tape is non-adhesive until activated by water. If you are using wet tape, make sure to moisten the tape sufficiently and apply it with adequate pressure for a long enough time to ensure a good seal. This allows the adhesive to penetrate the carton surface and create a permanent bond. Following these steps is crucial. Improper application of the tape leads to faulty seals that come loose during transport.
Correctly applied wet tape is fused to the cardboard surface and will damage that surface when forcibly removed, providing immediate evidence of tampering. In addition, the tape needs to be heavy duty enough to help ensure safe transport of the package. Thus, it is very important to use tape that is fiber-reinforced. There are different types of fiber-reinforcement, each with its own distinct appearance. Choose tapes with filaments having either a sinusoidal shape with two parallel threads or bi-directional filaments forming a grid. Tape that only has parallel filaments won't do the job!

DHL Paket GmbH – ID no.: 570 – As of: 08/2023 – 1 of 4

Fiber-reinforced tape with a sinusoidal shaped fibers
for light packages

Fiber-reinforced tape with parallel filaments

Fiber-reinforced tape with grid pattern
for heavy packages

Whatever tape type you choose, it should be at least 50 mm wide.
The tensile strength of the **tape** should be at least $\frac{130\ N}{25\ mm^2}$
We recommend that you use synthetic or fiber-reinforced **paper tapes**.

For **international shipments**, the tensile strength should be at least 10% higher.

SELECTING THE FILM BACKING

Properties	PP tape	PVC tape	Packing tape	Wet tape
Tear resistance	Medium to high	Very high	Low to medium	Low*1
Temperature resistance	Low	High		
Transparency	High	Medium	–	–
Unrolling noise	Loud*2	Quiet	Quiet	–
Long-term storage	No	Yes		
Suitable for parcel weights	Light to medium	Medium to heavy	Light to medium	Light to medium
Costs	Low	High	Medium	Medium
Sustainability	Medium	Low	High*3	High*3
Adhesive type (possible uses)	Acrylic adhesive Hot melt adhesive*2 Natural rubber-based adhesive	Natural rubber-based adhesive	Natural rubber-based adhesive	Gummed adhesive from plants (starch or similar)

*1 Without fiber-reinforcement *2 Loud during unrolling *3 100% recyclable

DHL Paket GmbH – ID no.: 570 – As of: 08/2023 – 2 of 4

PROPERTIES OF ADHESIVES

Properties	Acrylic adhesive	Hot melt adhesive	Natural rubber-based adhesive
Transparency	High	Medium*1	High*2
Shear strength	Low	Medium	High
Temperature resistance	Low	Low	High*3
UV-/aging resistance	High	Low	Low
Sustainability	Low*4	Low to high*5	High
Adhesion (bond with cardboard)	Low	Low	High
Suitable for recycling boxes (Testliner)	Low	Medium	High

*1 Turns yellow after a certain time *2 Color changes possible since *3 it is suitable for cold storage

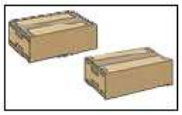
*4 Two types: dispersion adhesive=eco-friendlier/solvent-based adhesive=not eco-friendly

*5 Depends whether hot melt is plant or oil-based (EVA; polyolefin)

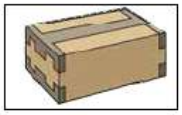
TAPING METHOD

To select the best taping method for a parcel, look at its weight class:

Center seam taping for parcels up to **12 kg**



Double-H taping for parcels between **12 kg and 25 kg**



Double-T taping for parcels **from 25 kg**

When selecting the right tape, it is important to consider the following:

- Shear strength
- Tear resistance
- Adhesive strength
- Age resistance

Adhesive strength depends on:

- Type of adhesive and thickness
- Characteristics of the backing material (stiff or flexible)
- Liner board of the box (e.g., Kraftliner, Testliner, Schrenz)
- Application pressure (and time for wet tapes)
- Ambient temperatures

DHL Paket GmbH – ID no.: 570 – As of: 08/2023 – 3 of 4

Selecting the right tape by:

- **Parcel weight**
  → Select the film backing and taping method based on the heaviness of the parcel. PVC tape with strong tear resistance and a strong rubber-based adhesive is good for heavy parcels.
- **Taping method** (center-seam, double-H, double-T)
  → Parcels that are too heavy can open during transport. A different taping method may help here. Recommended: Center-seam taping up to 12 kg, double-H up to 25 kg, double-T up to 31.5 kg.
- **Cover flap tension of the box**
  → Multi-layer cardboard boxes in particular have a high degree of flap tension. i.e., the cover flaps are harder to tape shut. PVC tape, a wider tape (e.g., 75 mm) or a different taping method can help.
- **Transport and storage conditions** (temperature and humidity)
  →The type of adhesive makes a big difference here. Dramatic fluctuations in climate conditions during transport have an effect on tape adhesiveness. Using a tape with an acrylic adhesive can help.
- **Surface of the box** (e.g., Kraftliner, Testliner or Schrenz)
  → The type of adhesive makes a big difference here. Some tapes do not adhere well to Testliner outer layers due to its low tack surface. Using a tape with a rubber-based adhesive can help.

Self-adhesive tapes, often in combination with perforated tapes, should be used with caution. They must be of sufficiently high quality to keep parcels from opening accidentally during transport. Overall, they are better for smaller, lightweight shipments, as long as an adequate seal is guaranteed. Self-adhesive tape seals are more likely to open accidentally during package collisions on conveyor belts. Perforated tapes are not strongly recommended either for parcels with heavy contents, since the weight can put pressure on the seals.

DHL Paket GmbH – ID no.: 570 – As of: 08/2023 – 4 of 4