

tesa[®] HAF 8412 ACF



Product Information

50 µm amber anisotropic conductive structural bonding film

Product Description

tesa HAF[®] 8412 is an amber heat-activated structural bonding film based on phenolic resin and nitrile rubber containing conductive particles.

Product Features

- Excellent grounding performance in applications with structural bonding requirements
- High bonding strength in narrow and small bonding areas
- Good ageing resistance
- Reliable SmartCard chip bonding and electrical connectivity in one step
- Suitable for PVC, ABS and PC SmartCards (DI)

Application Fields

tesa HAF[®] 8412 is designed for the embedding of chip-modules into dual interface smart cards for contact less and contact based applications and demanding grounding applications in consumer electronics.

Technical Information (average values)

The values in this section should be considered representative or typical only and should not be used for specification purposes.

Product Construction

- | | | | |
|--------------------|------------------------------------|-------------------|-------|
| • Backing | none | • Total thickness | 50 µm |
| • Type of adhesive | nitrile rubber /
phenolic resin | • Color | amber |
| • Type of liner | glassine | | |

Properties/Performance Values

- | | | | |
|-------------------------------|---------------------|----------------------------------|----------|
| • Activation temperature | 120 °C | • Contact resistance z-direction | 200 mOhm |
| • Bonding strength (push-out) | 3 N/mm ² | | |

Additional Information

Technical Recommendations:

The following values are recommendation for machine parameters to start with. Please note that optimum parameters strongly depend on the type of machine, particular materials for card bodies and chip-modules as well as customer requirements.

Embedding of chip-modules into dual interface smart cards

For latest information on this product please visit <http://l.tesa.com/?ip=8412>

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Product Information

Additional Information

1. Pre-lamination:

During pre-lamination, the adhesive tape is laminated onto the module belt. The pre-lamination step does not effect the shelf life time of the adhesive tape. Pre-laminated module belts can be stored over the same period of time as the adhesive tape.

Machine setting:

Temperature: 130–150 °C,

Pressure: 2–3 bar,

Speed: 1.5–2.5 m/min

2. Module embedding

During module embedding, the pre-laminated modules are die-cut from the module belt, positioned into the card cavity and permanently bonded to the card body by heat and pressure. Depending on the type of the implanting line, single step or multiple step process can be used. Today, most implanting machines have multiple heat press steps.

Single step process

Machine setting:

Temperature¹: 180–220 °C,

Pressure: 80–130 N/module,

Time: 1.5 s

3. Multiple step process (2 or more heating stamps)

Machine setting:

Temperature¹: 180-220 °C,

Pressure 80-130 N/module,

Time: 2 x 0.7 s / 3 x 0.5 s

¹Temperature recommendations refer to what can be measured inside the heating stamp. Different temperature settings are recommended for different card material:

- PVC 180–190 °C

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Product Information

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- ABS 180–190 °C
- PET 190–200 °C
- PC 200–220 °C

Grounding applications in consumer electronics

1. Pre-lamination: During pre-lamination, the tape is laminated onto one component.

Machine setting:

Temperature¹: ≥120 °C,

Pressure²: ≥5 bar,

Time: ≥5 s

2. Bonding: Remove the liner from the tape after pre-lamination step. Place the pre-laminated component onto the substrate to bond with. Apply sufficient temperature while applying pressure for the bonding time to reach sufficient bonding strength.

Machine setting:

Temperature²: 120-250 °C,

Pressure³: 5-30 bar,

Time: 5 s – 3 min

² 'Pre-lamination' and 'Bonding' temperature refer to the data that is measured in the bond line. ³ 'Pre-lamination' and 'Bonding' pressure refer to the force that is transformed from jig surface directly to the bonding area. Bonding strength values were obtained under standard laboratory conditions. (Material: etched Al test specimen / bonding conditions: temperature = 180 °C; pressure = 10 bar; time = 7 sec). To reach maximum bonding strength surfaces should be clean and dry.

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