Surface Tension

tesa LSE Adhesive Tape

Converter Assortment

Where Is it Best to Adhere?

Low-energy surfaces such as plastic are hard to stick to – ink drops will run off the surface. Difficult surfaces with poor adhesive properties are PE, PS, PTFE, PP, silicone, and powder coatings.

By contrast, there are materials with high-energy surfaces. Adhesive sticks to them very well. The adhesive spreads widely and evenly on the surface. High-energy surfaces include steel, aluminum, and PVC (PC).

But there are solutions to attach adhesive to surfaces with low surface tension, from physical to chemical surface treatments or better primerless adhesive solutions.

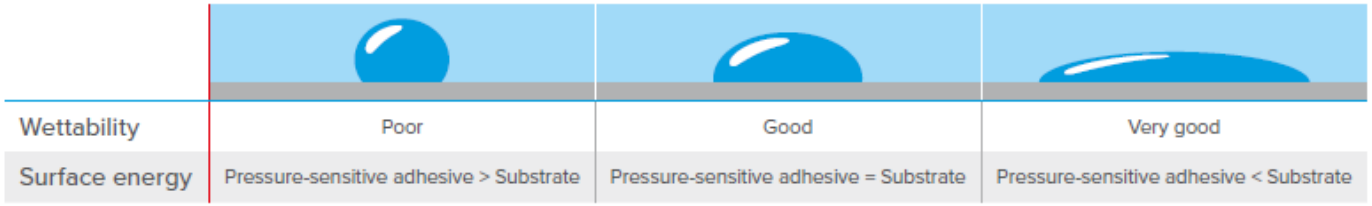
Surface tension

In order to achieve sufficient contact points for the formation of high adhesion forces, the pressure-sensitive adhesive must be able to sufficiently wet the substrate to be bonded. Wetting largely depends on the surface tension or energy of the substrate and the pressure-sensitive adhesive.

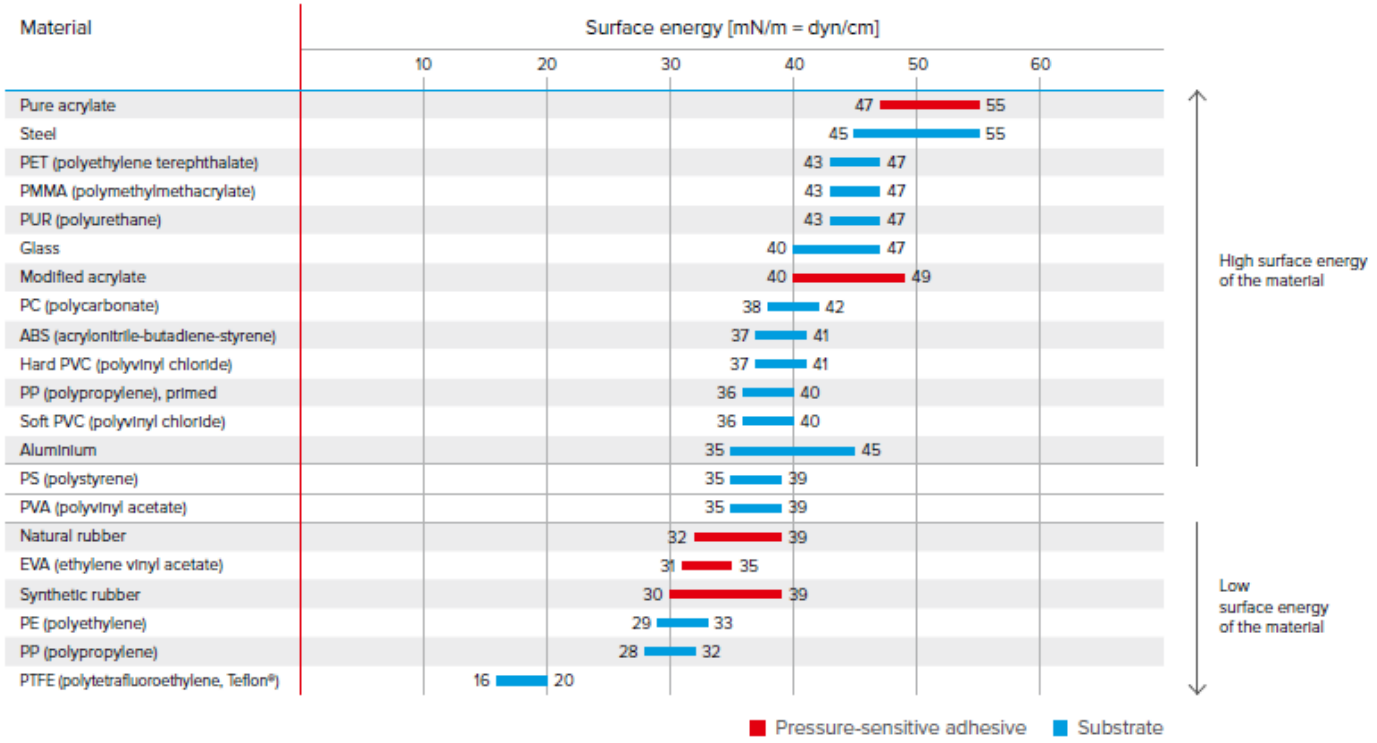
A pressure-sensitive adhesive is generally able to wet-out a substrate if the substrate's surface energy is greater than or equal to that of the adhesive. The higher the wet-out, the more contact points are available to form a bond between two surfaces. As a first indication one can use a water droplet to differentiate between high and low surface energy substrates. If the droplet forms a film, this points to a high surface energy. On the other hand, if it stays a droplet or drips off, it points to a lower surface energy than water. In this case, bonding to the substrate may be difficult.

More accurate results are achieved with so-called test inks, which are also available in pen form. The surface energy is given in mN/m, dyn/cm, or sometimes also in mJ/m², whereby: 1 mN/m = 1 dyn/cm.

The boundary between low-energy and high-energy surfaces is usually drawn in the range of a surface energy of 36–38 mN/m. Therefore, the bondability for surface tensions above this range is usually problem-free, whereas at values below this range a pre-treatment of the surface to be bonded should be considered.



Wettability	Poor	Good	Very good
Surface energy	Pressure-sensitive adhesive > Substrate	Pressure-sensitive adhesive = Substrate	Pressure-sensitive adhesive < Substrate



LSE plastic mounting

Double-Sided Adhesive Tapes for Low-Energy Surfaces

Main Application

- Thin PSA for, for example, laminating silicones, foam, felt, films, membranes, non-woven textiles, or (faux) leather to serve multiple applications on LSE substrates in various industries in Automotive, Electronics, Building, and general industries
- Thick PSA for structural bonding of interior plastic parts in door panels, consoles, and instrument panels as well as exterior-attachment-part mounting with higher tolerances

Assortment Properties

- tesa solutions for LSE substrates provide a cost-efficient, reliable, and strong bonding performance on challenging low-surface-energy substrates
- Selecting the suitable tesa product can eliminate the need for surface treatment like primer, flaming, or plasma treatment

Main Product Features

High bonding

Conformable

Low bonding pressure

Good wetting

Chemical resistance

Anti-repulsion

Impact resistance

Compressible

LSE performance

Quick bonding

Bestsellers

new

tesa® 88665
- One side silicone
- Other side a modified acrylic
- Excellent bonding to PTFE, silicone, or silicone-containing substrates

tesa® 77808 Acrylic Foam Tape
- Superior bonding of dissimilar LSE* plastics and materials
- Good initial performance at 5°C
- Faster processes and cost savings
- Environmentally friendly

tesa® 92108 HiP
- High initial performance
- Strong ultimate bonding performance
- Suitable for bonding different substrates like PP to ABS

tesa® 64912 PE-Foam Tape
- Superior performance without primer
- Suitable for LSE and MSE paint systems

Product News: tesa® 88665 MP+ PET

A differential double-sided PET film tape for bonding silicone to a wide variety of materials

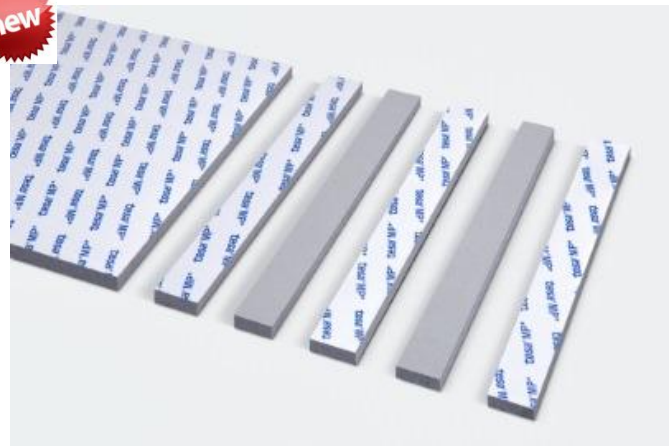
tesa® 88665 MP+ PET is a self-adhesive double-sided film tape equipped with a PET backing, tackified adhesive on the one side with a siliconized PE-coated paper liner and silicone adhesive on the other side with a PET film liner.

The silicone adhesive provides extraordinarily strong adhesion and holding power to silicone material, while the acrylic adhesive provides equally strong adhesion and holding power to a variety of materials. The well-balanced bonding performance on both sides secures the maximum range of the applications.

new

new

new



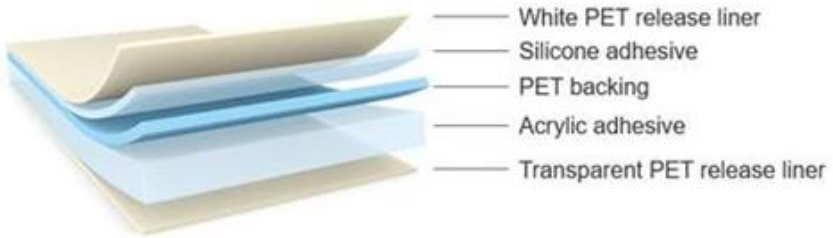
Specific product assortment

Double-Sided Adhesive Tape: Differential Si/Ac for Silicone and PTFE Substrates

Product	Thickness [µm]	Color	Liner Si / Ac	Standard log roll sizes length [m] width [mm]	MOQ in log roll	Adhesive	Backing	Peel adhesion to **Silicone** [N/cm] (initial / 14 days)	Temperature resistance short term [°C]	Description / special features
new tesa® 88665	115	Transparent	50µ PET / 80µ PCK	100 : 980	1	Si / Ac	PET	6.3 / 9.5	150	One side is equipped with a silicone adhesive (easy side) and the other side is equipped with a modified acrylic (tight side). It's designed for demanding applications where silicone materials must be bonded to a range of substrates. Excellent resistance to demanding environmental conditions. ✓ Excellent bonding properties of the silicone adhesive especially to silicone or silicone-containing substrates ✓ Excellent bonding properties of the acrylic adhesive to a wide range of materials ✓ Very good handling performance in converting processes ✓ Excellent resistance to demanding environmental conditions
tesa® 61526	30	Transparent	50µ PET / 50µ PET	100 : 1,240	5	Si / Ac	PET	3.0 / 4.5	120	
tesa® 61532	50	Transparent	50µ PET / 50µ PET	100 : 1,240	5	Si / Ac	PET	3.0 / 4.5	120	
tesa® 61528	100	Transparent	50µ PET / 50µ PET	100 : 1,240	5	Si / Ac	PET	2.8 / 4.0	120	
tesa® 61529	140	Transparent	50µ PET / 50µ PET	100 : 1,240	5	Si / Ac	PET	3.0 / 4.0	120	
tesa® 61520	200	Transparent	50µ PET / 50µ PET	100 : 1,240	12	Si / Ac	PET	3.1 / 4.4	120	

new

	tesa® 88665
Total Thickness	115 µm
Color	Transparent
Product Construction	fluoride coated PET film 50µm Silicone, 50 µm PET Backing: 25µm tackified Acrylic, 40 µm PE Coated Paper 80 µm
Liner Look	



Feature	Benefit
Differential adhesive design	• Enable silicone bonding to a variety of substrates without surface treatment process
Balanced bonding performance on both sides	• Secures the maximum range of the applications
Strong film backing	• Offer dimensional stability to foams and other soft substrates • Neat and clean edge of die-cuts
Easily removable double liner (PE coated paper liner + Fluoride coated PET liner)	• Reliable converting process • Wrinkle resistance in moisture environment • Easy to identify the different side of adhesives

1. The values in this section should be considered representative or typical only and should not be used for specification purposes. 2. tesa® products prove their impressive quality day in, day out, in demanding conditions and are regularly subjected to strict controls. All information and recommendations are provided to the best of our knowledge on the basis of our practical experience. Nevertheless, tesa SE can make no warranties, express or implied, including, but not limited to any implied warranty of merchantability or fitness for a particular purpose. Therefore, the user is responsible for determining whether the tesa® product is fit for a particular purpose and suitable for the user's method of application. If you are in any doubt, our technical support staff will be glad to support you. 3. Measurements were conducted in tesa accordance with internal test methods in standard lab conditions.

Specific product assortment

Double-Sided Adhesive Tape: Standard LSE Surfaces

Product	Thickness [µm]	Color	Liner	Standard log roll width [mm]	Adhesive	Backing	Peel adhesion to **PP** [N/cm] (initial/three days)	Temperature resistance [°C]	Description / special features
tesa® 66022	220	Transparent	Brown/Blue Logo	1,150	Acrylic	None	14.0/16.0	200/-	Low VOC and highly conformable to follow 3D shapes
tesa® 4965	205	Transparent	Multiple	1,372	Acrylic	PET	6.8/7.9 (14 days)	200/100	Immediate usability right after assembly, suitability for critical demands such as heavy stress and temperatures
tesa® 51970	220	Transparent	Brown	1,372	Acrylic	PP	6.8/8.8 (14 days)	130/80	Good static shear resistance at 23°C and 40°C
tesa® 51570	110	Translucent	Brown	1,400	Rubber	Non-woven	7.0/12.0 (14 days)	40/80	Good shear resistance at 23°C, low permanent temperature requirements
tesa® 755xx	50, 75, 125	Transparent	Brown	1,372	Acrylic	None	11.0 (initial on steel)	100/200	Excellent static shear resistance at 70°C
tesa® 92105	500	Black	Transparent	610	Performance polymer foam	None	25/30	–30°C to 100°C	Low VOC, excellent static shear resistance, focusing on plastic to plastic applications
tesa® 92108	800	Black	Transparent	610	Performance polymer foam	None	28/36	–30°C to 100°C	Low VOC, excellent static shear resistance, focusing on plastic to plastic applications
tesa® 92111	1,100	Black	Transparent	610	Performance polymer foam	None	29/40	–30°C to 100°C	Low VOC, excellent static shear resistance, focusing on plastic to plastic applications
tesa® 77805	500	Gray	Royal Blue	900	Acrylic foam	Acrylic foam	26/28	–40 to +80°C	High initial adhesion to LSE and MSE surfaces without primer
tesa® 77808	800	Gray	Royal Blue	900	Acrylic foam	Acrylic foam	28/31	–40 to +80°C	High initial adhesion to LSE and MSE surfaces without primer. Auto attachment part mounting
tesa® 77811	1,100	Gray	Royal Blue	900	Acrylic foam	Acrylic foam	32/35	–40 to +80°C	High initial adhesion to LSE and MSE surfaces without primer. Auto attachment part mounting
tesa® 77815	1,500	Gray	Royal Blue	900	Acrylic foam	Acrylic foam	36/39	–40 to +80°C	High initial adhesion to LSE and MSE surfaces without primer. Auto attachment part mounting
tesa® 64912	1,200	Black	Brown	1,240	Rubber	PE foam	20/20 (after 14 days)	–40°C to reliable performance to higher temperatures	High initial adhesion to LSE and MSE surfaces without primer. Auto attachment part mounting

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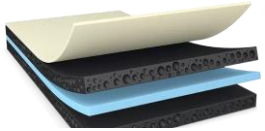
tesa LSE Assortment

Design overview and summary

With this assortment, we created double-sided (d/s) mounting tapes with unique LSE adhesives in different designs and thicknesses focusing on the special requirements of certain applications in demanding industries.

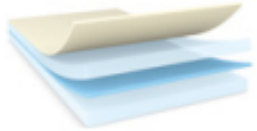
Each series within this assortment focuses on LSE properties needed in markets that face increasing challenges regarding new substrates, new substrate combinations, and overall higher complexities and raw-material cost pressures to eliminate the need for priming processes.



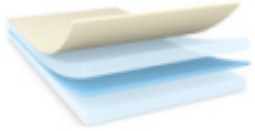
ACX^{plus} LSE

d/s PE-Foams LSE

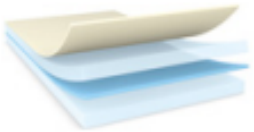
d/s Differentials SI/AC



d/s PET LSE



d/s NW LSE



Transfers LSE

Our capabilities go beyond what is available here. Please contact our local representatives to discuss this further


tesa®