The background of the page is a close-up photograph of a black control panel. It features several buttons: a home button with a house icon, a back button with a curved arrow, a central circular button with "OK" and four directional arrows, and a power button with a power symbol. A large, thick red arrow starts from the left side of the panel and points towards the right, passing over the control buttons. The text "Designed for demanding LSE applications" is overlaid on the left side of the panel in white text on blue rectangular backgrounds.

Designed for
demanding LSE
applications

Technical guide

Introducing our latest tape innovations

Engineered for the toughest bonding challenges

We're expanding the horizon of adhesive performance with two new specialized products: a transfer tape and a double-sided PET tape developed specifically for low surface energy (LSE) substrates.

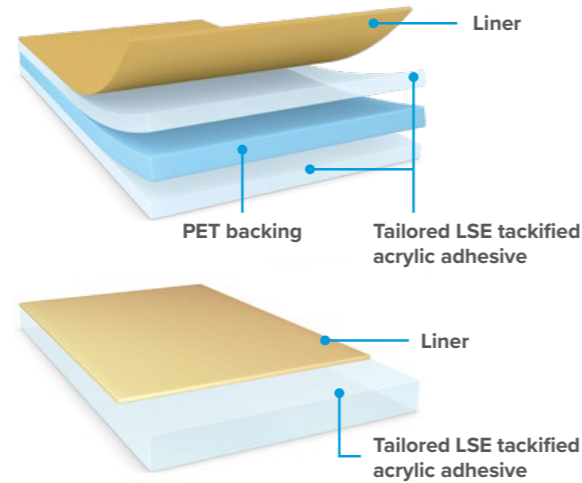
These tapes are designed to tackle surfaces where traditional adhesives often fail – such as PP, PE, and other hard-to-bond plastics – delivering secure, reliable adhesion without the need for primers or additional surface treatment.


With these new solutions, customers benefit from:

- Optimized bonding on LSE and high-performance plastics
- Improved durability under stress, temperature, and aging
- Cleaner, faster application processes in demanding industrial environments

Our advanced formulation ensures a strong initial tack and long-lasting bond, helping manufacturers across industries meet growing design and performance expectations.

Don't settle for general-purpose tapes where specialized solutions are needed. With our LSE-optimized tapes, your toughest bonding problems just met their match.





Speciality offer

- Special technical requirements
- Demanding applications
- Unique features and advanced functionalities



tesa® 4950



tesa® 74515

	tesa® 4950	tesa® 74515
Total thickness w/o liner [µm]	100	125
Adhesive	Tackified acrylic	Tackified acrylic
Backing type	90% PCR PET	None
Backing thickness [µm]	12	/
Color	Transparent	Transparent
Liner type	PV4: white PE-coated (PCK) PV20: branded more sustainable paper	PV4: white PE-coated (PCK) PV12: transparent PET
Liner thickness [µm]	PV4: 126 PV20: 69	PV4: 126 PV12: 75
Default dimension offered [m x mm]*	50 x 1372	50 x 1372

* Other dimensions possible upon request

Key features



Excellent on Low Surface Energy Substrates



High bonding



Excellent on smooth surfaces



Quick bonding



Chemical resistance







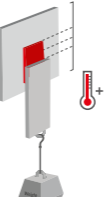

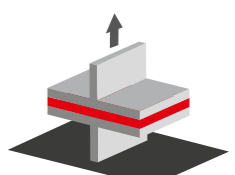
Excellent die-cutting



Temperature resistance



Environmental resistance

Test method	Peel adhesion	Static shear resistance	Dynamic shear resistance	Short term temperature resistance	SAFT test (Shear adhesion failure temperature)	Static peel	Dynamic T-block
Test method							
Substrate	Various	Stainless steel	Steel plate / Steel plate	Aluminum	Stainless steel	PP	Aluminum / PE
Temperature [°C]	23	23	23	130–220	40–200	23	23
Dwell time	Initial	72h	72h	Initial	30 min	24h	72h
Bonding area [mm]	20 x 200	13 x 20	25 x 25	19 x 21	25 x 25	150 x 20	25 x 25
Speed	300 mm/min	/	50 mm/min	/	0.5°C/min	/	300 mm/min
Load	N/A	5 N and 10 N	N/A	80g	1,000g	150g	N/A
Result	180° average peel adhesion [N/cm]	Holding duration [min]	Maximum force [N/cm ²]	Maximum temperature [°C] Short term: 15min	Shear adhesion failure temperature [°C]	Peel distance per hour [mm/h] Test ended after 24 hours	Bond strength in z-direction [N/cm ²]

General product performance

Our new LSE tapes. Delivering performance & flexibility for breakthrough designs.

Our latest 100 µm double-sided PET tape and 125 µm transfer tape, featuring a tackified acrylic adhesive, are specifically engineered to meet the challenges of bonding to low surface energy (LSE) materials such as polypropylene, polyethylene, and other traditionally difficult substrates.

These tapes are designed to outperform standard adhesives — delivering strong, reliable bonds on challenging surfaces without the need for primers or additional surface treatment. Whether for splicing, mounting, or assembly, both tape designs offer clean processing, easy conversion, and robust durability.

Key performance highlights:

- Excellent adhesion to LSE plastics — primerless bonding
- PET backing provides outstanding dimensional stability
- High shear strength and temperature resistance ensure long-term reliability
- Transfer tape design enables ultra-thin bonding and exceptional conformability

With their superior processability and performance, our LSE-optimized tapes are the preferred choice for converters and end-users seeking to enhance both production efficiency and end-product quality.


When bonding to LSE materials, trust the tapes designed to succeed where others fail.

The new tesa® LSE assortment




	tesa® 4950		tesa® 74515
Thickness w/o Liner [µm]	100		125
Adhesion on LSE substrates	Excellent		Excellent
Static shear steel plates (10N, 23°C) [min]	>10,000		>5,000
Tack	Excellent		Excellent
Temperature resistance [°C]	-40 to 200 (short)		-40 to 200 (short)

Certificates and compliance*



tesa Sustainability Marker Industry

This icon identifies our more sustainable products. We continually strive to make our products and assortment more sustainable. To demonstrate our initiatives and efforts in the industrial segment, this marker highlights our more sustainable products. **Scan this code or click to learn more!**




VDA 278 – Outgassing Performance
Our low VOC portfolio does not contain any single substances restricted by the GB regulation (China), the indoor concentration guideline by JAMA (Japanese Automobile Manufacturers Association), or the Japanese Ministry of Health, Labor, and Welfare (MHLW).



UL certification
Compliance with UL 969 („Standard for Marking & Labeling Systems“) file MH18055.



Letters of Conformation / Statements
Statements available confirming the non-use of specific regulated substances in the tapes composition, e.g.

- Regulatory datasheet
- Shelf-life information
- Product carbon footprint (PCF)
- etc.



Please note: The following technical information provides qualitative rankings and typical values. Please note that these values have not been statistically validated and should not be used for specification purposes. They are influenced by different factors, including the polarity and roughness of the substrate, the pressure applied during application, the time the adhesive is allowed to dwell, the rate at which it is peeled, and the surrounding environmental conditions, such as temperature.

Peel adhesion performance

Peel adhesion assesses the adhesive's effectiveness on a substrate and is applicable to all types of applications. Tests encompass various substrates, including metals, glass, and plastics, representing a spectrum of materials that are easy or challenging to bond. However, it is important to note that

peel adhesion values serve as an indication, and the performance on customer-specific materials, particularly plastics, may vary. It is crucial to avoid applying the same peel force experienced during testing in real-world bonding designs.



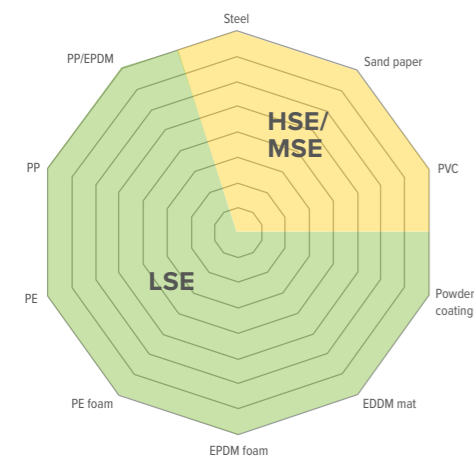
Please note: The following pages present a benchmarking analysis of tesa® 4950, and tesa® 74515 against comparable competitor tapes with similar total thickness (excluding liner), 12 µm PET backings (in case of the d/s PET tapes), and modified acrylic adhesives. It is crucial to note that evaluating the performance and suitability of a tape for specific applications requires considering multiple performance tests. Tape performance cannot be accurately ranked based on a single test procedure, such as the commonly used peel adhesion. Customers should conduct a comprehensive evaluation of tape performance within their own application and production processes to ensure optimal results.

Thickness profile of selected benchmark tapes

	tesa® products	Product of competitor A	Product of competitor B	Product of competitor C
tesa® 4950 100 µm d/s PET tape and comparable competitor products	100 µm	110 µm	101 µm	–
tesa® 74515 125 µm transfer tape and comparable competitor products	125 µm	128 µm	–	108 µm



All benchmarked tapes exhibit comparable thickness levels, as confirmed by internal measurements. The filmic tapes fall within a thickness range of 100–110 µm, while the transfer tapes range between 110–130 µm.

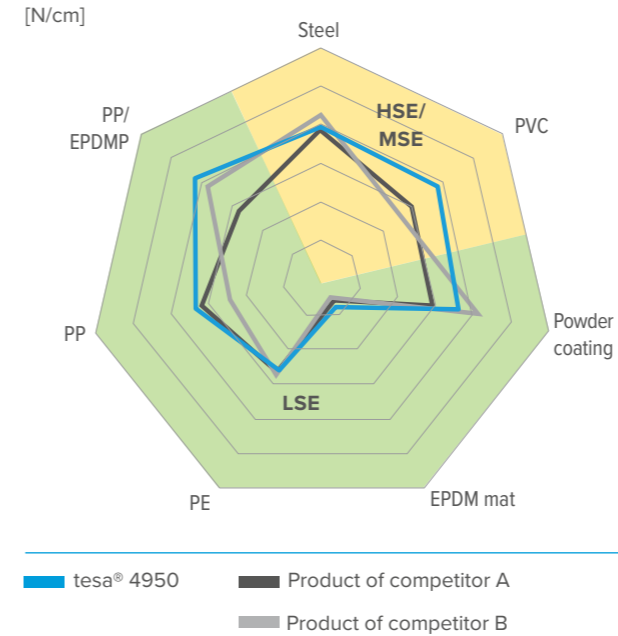


Peel adhesion performance was evaluated on various substrates, which can be clustered into high surface energy (HSE) substrates, medium surface energy (MSE) substrates, and low surface energy (LSE) substrates. The higher the peel adhesion strength, the better the tape performs on a specific substrate. In the spider web graph, peel adhesion increases from the center to the outer edges.

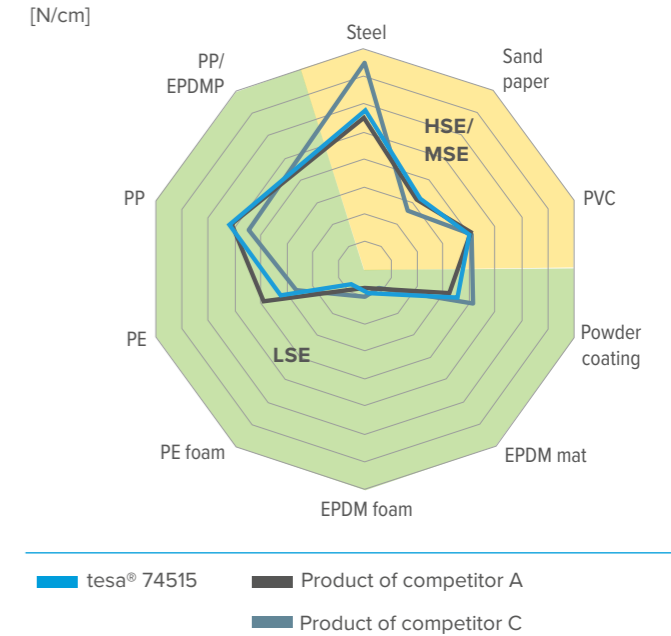
These evaluations help in understanding how different surface energies affect the adhesion strength and reliability of the bond. Additionally, the data gathered from these tests show whether a tape is well-balanced across various substrates or tailored to specific niche applications.

Peel adhesion measurements

tesa® 4950 | 100 µm d/s PET tape and comparable competitor products



tesa® 74515 | 125 µm transfer tape and comparable competitor products



Peel adhesion of the two tesa® tapes

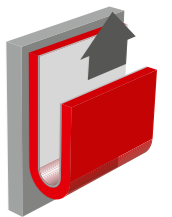
	Steel	PP	PE	PC
tesa® 4950 100 µm d/s PET tape	7.5 N/cm	6.6 N/cm	5 N/cm	7 N/cm
tesa® 74515 125 µm transfer tape	9 N/cm	10 N/cm	5.5 N/cm	10 N/cm



The peel adhesion measurements showcase the tailored performance of tesa® 4950, and tesa® 74515 tapes across a diverse array of Low Surface Energy (LSE) substrates. These tapes exhibit particularly strong adhesion on LSE substrates, meaning that they show good wetting of the substrates. The new tesa® tapes demonstrate strong dynamic peel adhesion, performing on par with established LSE tapes.

Test method – 180° peel adhesion

- This method allows for the evaluation of various substrates.
- Peel adhesion is measured at a rate of 300 mm/min and at an angle of 180°.
- Initial measurements provide insights into immediate performance, which is crucial during handling.
- The test result for 180° peel adhesion is expressed in [N/cm], representing the average force required to remove the tape from the substrate.



Static peel measurements on PP

The test replicates the process of mounting objects overhead and introduces a controlled peel into the system. It evaluates the static peel of a strip of tape from a standard test panel under a specified weight.

	tesa® products	Products of competitor A	Products of competitor B	Products of competitor C
tesa® 4950 100 µm d/s PET tape and comparable competitor products	0	0	+	/
tesa® 74515 125 µm transfer tape and comparable competitor products	0	-	/	-

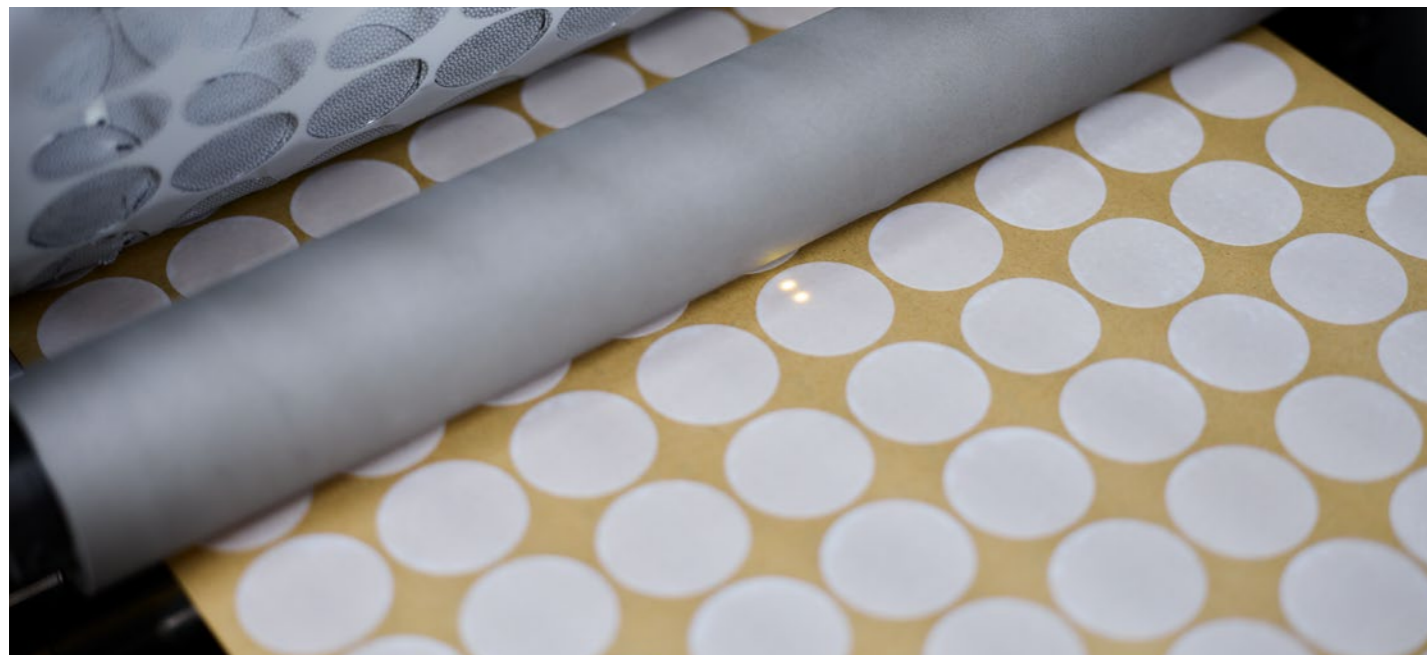
+ good 0 medium - low



In static peel resistance, the two tesa tapes match the performance level of the competitor tapes, confirming its suitability for demanding bonding tasks on low surface energy substrates such as polypropylene.

Test method – 90° static peel

- The tape is applied to a Polypropylene (PP) substrate.
- Static peel is measured at a 90° angle and at a temperature of 23°C.
- The static peel is induced by applying a 150 g load at the end of the respective tape being bonded to the PP substrate.
- The peel distance is measured after various times and is qualitatively assessed.

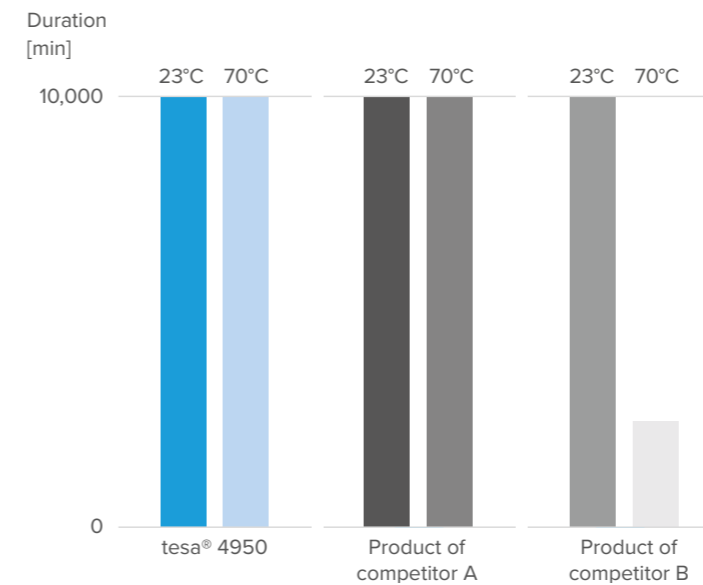


Static shear performance

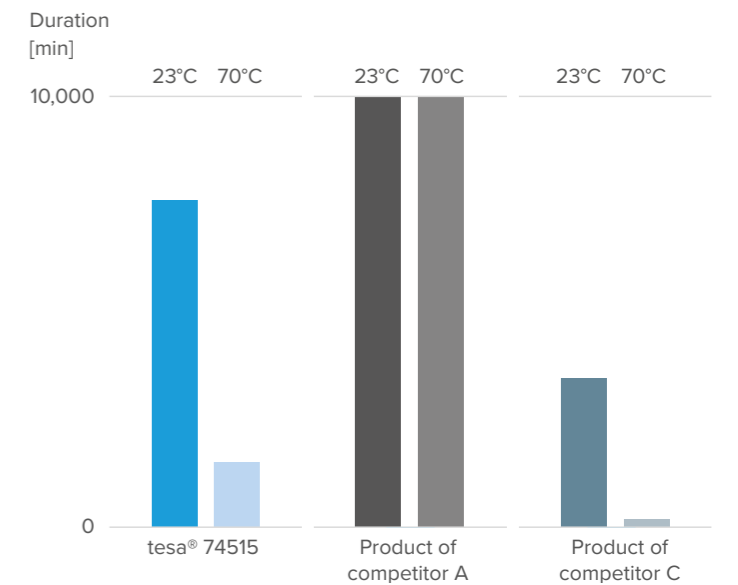
Room temperature and 70°C

Shear forces exert their influence parallel to the bonding surface. Among static loads, shear loads are the most relevant. Static (dead) loads, like the weight of a mounted panel, remain constant over time. The shear performance is considered better when the tape can endure without shearing off the substrates for an extended duration.

tesa® 4950 | 100 µm d/s PET tape and comparable competitor products



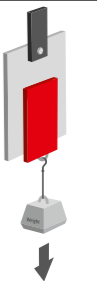
tesa® 74515 | 125 µm transfer tape and comparable competitor products



The new tesa® LSE products demonstrate excellent static shear resistance, performing on par with or exceeding leading competitor tapes. Testing was conducted under both standard room temperature (23°C) and elevated temperature (70°C) conditions to simulate real-world application environments. These results confirm the tapes' reliability in demanding bonding scenarios. The performance consistency across temperatures reinforces their suitability for both ambient and thermally stressed applications.

Test method – static shear resistance

- Evaluated at two temperatures — room temperature (23°C) and elevated temperature (70°C) — to simulate both standard and thermally stressed environments.
- 1 kg (10 N) shear load applied at 23°C | 500 g (5 N) shear load applied at 70°C. The tests represent a significant overload and are intended solely for evaluating cohesion.
- All tests were conducted on static stainless steel panels to ensure consistency and comparability across samples.
- Shear holding time was measured up to 10,000 minutes (≈7 days) or until failure, whichever occurred first, to assess long-term load-bearing capability.

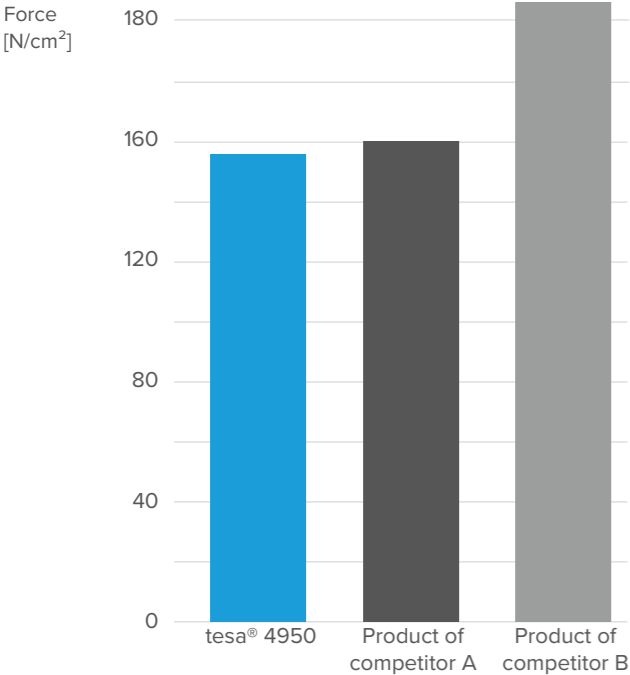


Dynamic shear performance

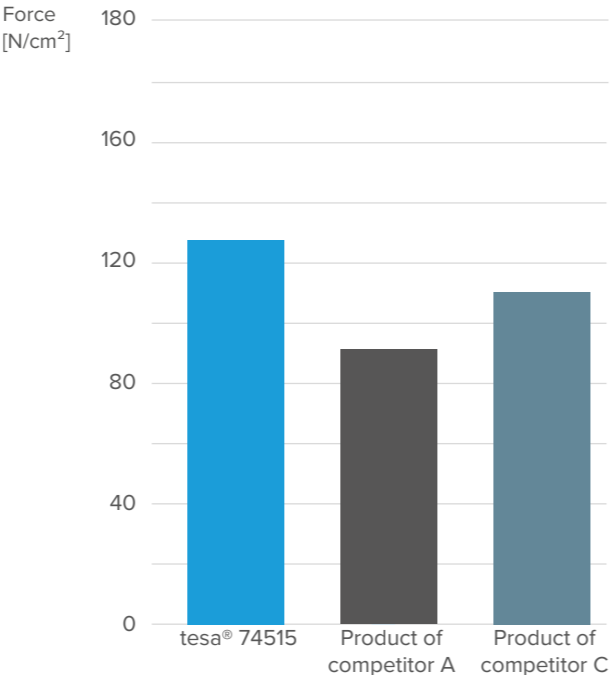
Room temperature

Shear forces act in parallel to the bonding surface. The test results are dependent on the substrate and the speed at which the test is conducted. Dynamic loads are characterized by their changes over time. Dynamic tests evaluate the short-term performance, typically within a timeframe of minutes, primarily focusing on assessing cohesive properties. These tests are crucial for understanding how materials behave under real-world conditions, where loads can vary rapidly. By analyzing dynamic responses, engineers can predict failure modes and improve material design for better durability and reliability.

tesa® 4950 | 100 µm d/s PET tape and comparable competitor products



tesa® 74515 | 125 µm transfer tape and comparable competitor products



The new tesa® LSE tapes exhibit excellent dynamic shear resistance at room temperature (23°C), maintaining strong and stable bonds under mechanical load. In benchmarking tests, both tesa® 4950 and tesa® 74515 performed on a comparable level to competitor tapes, confirming their reliability for demanding bonding applications where dynamic mechanical stress is a key factor.

Test method – dynamic shear resistance

- Dynamic shear test evaluates the max. force to separate the double-sided tape from the test substrates.
- A velocity of 50 mm/min is applied to induce the separation.



Short term temperature resistance

Measurement range 130°C – 220°C

The short-term temperature resistance test evaluates an adhesive tape’s ability to withstand high temperatures over brief periods without compromising its performance. By determining the maximum temperature the tape can endure short-term, this test provides crucial information for applications involving sudden or temporary heat exposure. This method is essential for predicting the tape’s behavior in scenarios where it may be subjected to intermittent high temperatures, ensuring its reliability and effectiveness.

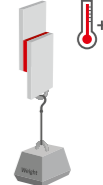
		120°C	140°C	160°C	180°C	200°C	220°C
tesa® 4950 100 µm d/s PET tape and comparable competitor products	tesa® 4950	Pass	Pass	Pass	Pass	Pass	Pass
	Product of competitor A	Pass	Pass	Pass	Pass	Pass	Pass
	Product of competitor B	Pass	Pass	Fail	Fail	Fail	Fail
tesa® 74515 125 µm transfer tape and comparable competitor products	tesa® 74515	Pass	Pass	Pass	Pass	Pass	Pass
	Product of competitor A	Pass	Pass	Pass	Pass	Fail	Fail
	Product of competitor C	Pass	Pass	Fail	Fail	Fail	Fail



The assessment of short-term temperature resistance highlights the exceptional resilience of the two tesa® tapes at elevated temperatures. Their performance matches or exceeds that of the best competitor products, confirming their suitability for applications involving brief high-temperature exposure. Long-term temperature resistance was also evaluated, demonstrating that both tesa® products withstand continuous exposure above 100°C, further validating their robustness in demanding environments.

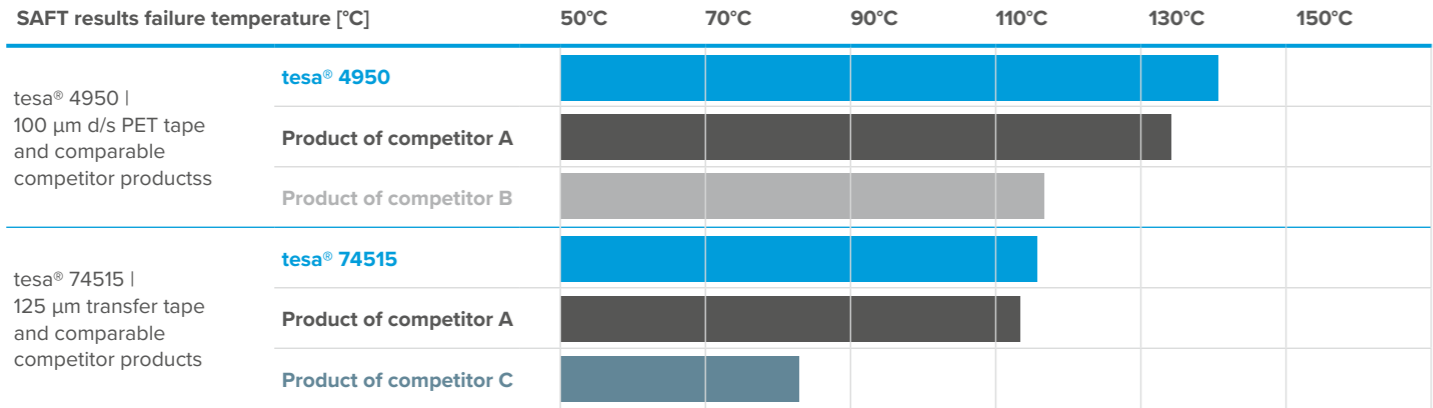
Test method – temperature resistance short term


- Shear distance at various temperatures at 80 g shear load is measured.
- Short term temperature resistance: Temperature with less than 1mm shear distance after 15 min under shear load.
- Temperature resistances were tested between 130°C and 220°C



Shear adhesion failure temperature (SAFT)

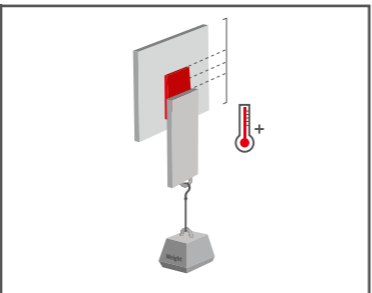
The Shear Adhesion Failure Temperature (SAFT) test is commonly used to assess a tape’s temperature durability by identifying the point at which adhesive failure occurs under a constant shear load. While it offers comparative insights into thermal stability, the standard load of 1 kg applied in this test significantly exceeds the forces typically encountered in real-world applications. As such, the results should be interpreted as relative benchmarks rather than direct indicators of performance in practical use cases. This distinction is important, especially when considering the proven short- and long-term temperature resistance of the tapes, which better reflect their suitability for demanding environments.



 The SAFT test results confirm the findings from the short-term temperature resistance measurements detailed on the previous page. The two tesa® tapes demonstrated superior thermal resistance in the SAFT test, clearly outperforming all competitor tapes and confirming their robustness under elevated temperature and shear load conditions.

Test method – shear adhesion failure temperature

- The test is conducted between 40°C and 200°C with a temperature ramp rate of 0.5°C per minute.
- An appropriate static load i.e. 1,000 g is selected.
- The temperature at which the tape separates from the panel is recorded. This test differs from the Short term temperature resistance tests as the static shear load is higher and a temperature profile is applied. Furthermore, this test according to AFERA 5013 records the full adhesive failure compared to 1 mm shear distance in the short term temperature resistance measurement.




Dynamic T-block

This test method evaluates the dynamic T-Block strength of the tape, measuring the force required to separate the bond in the z-direction under tension. While this setup does not directly reflect typical application scenarios—where adhesive tapes are rarely pulled apart vertically—it does simulate conditions where z-direction forces may occur, such as in static load-bearing or mounting situations. High T-Block values indicate strong cohesive and adhesive integrity, which is beneficial for applications involving vertical loads, suspended components, or stress conditions where z-direction stability contributes to long-term performance.

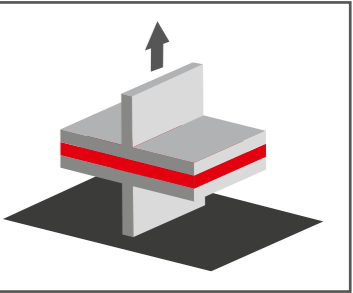
	tesa® products	Products of competitor A	Products of competitor B	Products of competitor C
tesa® 4950 100 µm d/s PET tape and comparable competitor products	+	+	+	/
tesa® 74515 125 µm transfer tape and comparable competitor products	+	+	/	+

+ good 0 medium - low

 All tapes demonstrated comparable dynamic T-Block performance, indicating similarly strong z-direction bonding strength and suitability for applications involving vertical loads or dynamic stress.

Test method – Dynamic T-block

- Measures the force required to separate the adhesive bond in the z-direction under dynamic load conditions.
- Conducted at a constant crosshead speed of 300 mm/min.
- The adhesive was applied to polyethylene (PE), a typical low surface energy material.
- The pulling element was made of aluminum, ensuring consistent and rigid force application during testing.





tesa® Customer Solution Center

Let us help you shape the future

To make industrial processes as efficient as possible, it is crucial to choose the right tape. Depending on the substrate, environmental conditions, and the method of application, tapes with very different characteristics may be required. Our tesa® Customer Solution Center supports your company in finding the perfect tape and application solution for your individual requirements.

Interested in tape support? Reach out to our tape experts!

Our Customer Solution Centre experts assist companies worldwide to optimise production processes and enhance the performance and appearance of their products. We work closely with our sales team to identify the key specifications of your project. Whether you are looking for a way to replace traditional fastening tech-

niques (e.g. screws, rivets, or liquid glue) with a high performance double-sided tape or having problems to identify the ideal tape for your application, our tape consultants can offer the right advice and expertise. Feel free to reach out to your local tesa® sales representative or check out our webpage.

On-site support

Whenever possible, our engineers will visit your production facility before recommending a tape. Many specific conditions and challenges are only visible on-site, and a perfect solution can only be found if these factors are taken into account. When the new process is implemented, our engineers will be there again to work with you to fine-tune the application. And of course, they will come back whenever they are needed.

Training

If you would like to learn more about adhesive tape solutions, we invite you to attend one of our training sessions. During the workshops, our engineers will explain the characteristics of a wide range of tapes and show you how to select the ideal solution for different applications. You can either participate in one of the regular training sessions at the tesa headquarters or you can request an individual session at your production facility.

tesa® products prove their impressive quality day in, day out in demanding conditions and are regularly subjected to strict controls. All technical information and data above mentioned are provided to the best of our knowledge on the basis of our practical experience. They shall be considered as average values and are not appropriate for a specification. Therefore 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. 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.



Certifications

Our company is focused on international quality, environmental, and occupational safety standards.

Please find more information regarding our certifications at:
www.tesa.com/certifications