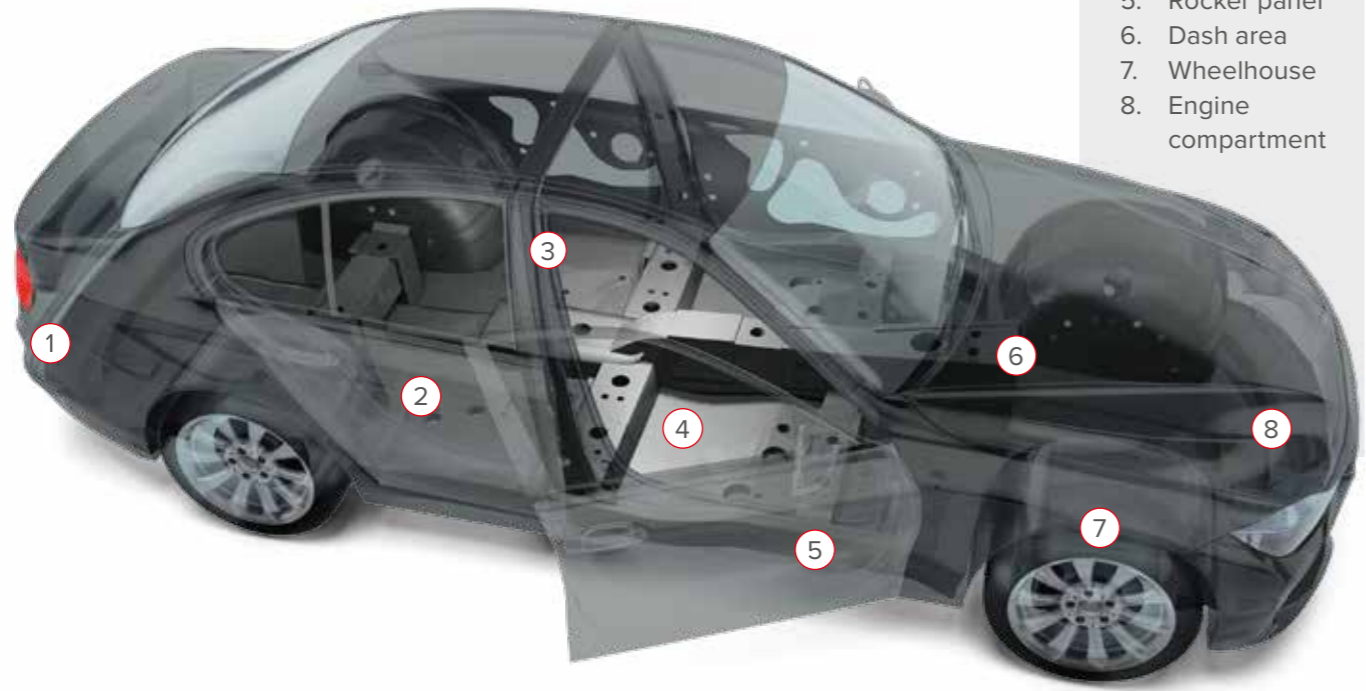




# EFFICIENCY UNPLUGGED

**Our Hole Covering Solutions for the Automotive Industry**

# CUTTING DOWN CAR WEIGHT



1. Rear end
2. Door
3. Pillars
4. Floor area
5. Rocker panel
6. Dash area
7. Wheelhouse
8. Engine compartment

## Redefining process efficiency

Drain, frame, and access holes are only a few of the application areas of our hole covering solutions. These holes come in many shapes and sizes and there are up to 220 of them per vehicle. The manufacturing process requires a variety of production- and maintenance-related holes and, if left uncovered, these holes can lead to problems such as sealing issues and noise disturbances.

No matter where in the production process the product is applied, our hole covering product assortment offers perfect sealing solutions for corrosion prevention throughout the vehicle's lifetime.

- Our hole covering die-cuts are quick and easy to apply and the specially chosen adhesives make it easy to achieve a good seal
- One die-cut may be suitable for many different hole dimensions and can accommodate 3-D geometries when traditional plugs may make this difficult
- The noise level within the passenger compartment is reduced to a minimum

Up to  
**220**  
Holes per  
Vehicle

## In a vehicle, every gram counts

In the automotive industry, efficiency is what counts. Cutting down car weight is not simply a mandatory task, but rather an attitude and a mode of thinking. The lightweight construction principle is not limited to the body or to specific subassemblies and parts – developers always consider the vehicle as a whole, and in their work, every gram counts.

Our hole covering products offer weight reduction up to 85% per vehicle in comparison to typical rubber and plastic hole plugs. We offer the right material in the right place for optimal functionality.



# EFFICIENT MANUFACTURING

## Maximize your efficiency

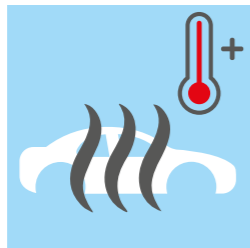
We offer the capability to match the properties of the product with the performance requirements of each particular hole covering whenever in the manufacturing process the opening must be closed. Our hole covering die-cuts are quick and easy to fit and the specially chosen adhesives make it easy to achieve a good seal.

We are specialized in customizing the shapes and sizes of our products according to individual specifications or preferences to satisfy a specific customer need. One die-cut may be suitable for many different hole dimensions. The diversity of our product range also enables alternative design of car apertures.

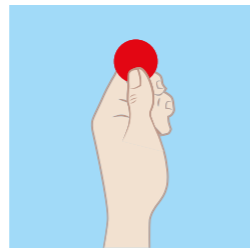
### 1. Permanent hole covering – before UBC and paint



E-coating



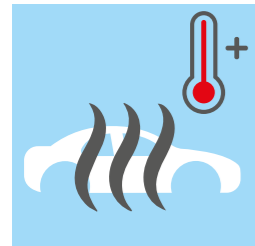
Drying 185°C



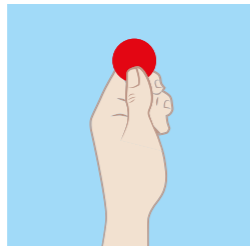
Permanent hole covering



PVC under body coating, filler



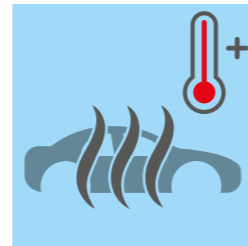
Drying ≥ 180°C



Permanent hole covering

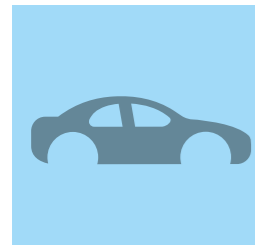


Painting (base coat, clear coat)

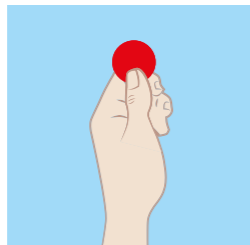


Drying 160°C – 180°C

### 2. Permanent hole covering – assembly line



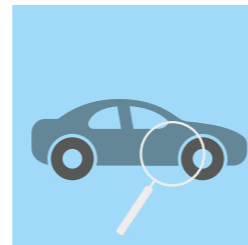
Painted car body



Permanent hole covering



Assembly



Inspection

## Eliminate bottlenecks halting production

Even small adjustments in production can have a great impact on the efficiency. We present the appropriate solution to your hole covering challenge in a process efficient way – be it in the form of die-cuts or automation solutions.

## Process advantages through die-cuts

Our tailor-made hole covering solutions contribute towards weight reduction in the vehicle and also go a long way towards making your production more efficient, process securer and operator friendly. Process-specific delivery forms make the application of the die-cuts significantly easier than that of plugs.



### Target printing

Our products offer a special visual locating feature “target printing” to improve orientation for automatic application tools using visual identification and for the worker as a point of reference during assembly, thereby improving accuracy. One die-cut dimension can be used for different hole diameters as the target printing shows the recommended hole size.



### Family sheet

A family sheet combines different die-cut dimensions and shapes from one material in one sheet. The application process is easier and it speeds up the visual quality check to ensure that all holes are closed as the amount of die-cuts on a sheet matches the amount of holes that need to be closed per application.

## Efficiency through automation

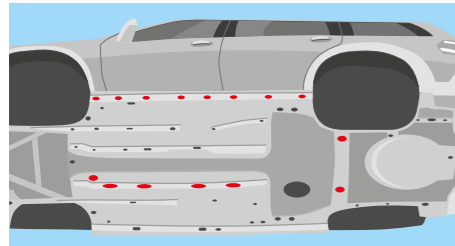


We are solution-oriented and strive to make your processes even better. Die-cuts are the perfect solution when you want to automate your application process. We can offer a full range of manual to semi and fully automatic dispensers for a fast and convenient application. Our dispensers offer a high level of process stability and cost savings. We customize our applicators according to your specific needs to meet production process requirements.

# ALWAYS THE RIGHT SOLUTION

## Save your thumbs

We have developed a variety of alternatives to rubber or plastic plugs to fit any application. Let's demonstrate how our hole covering products can provide solutions to your most demanding applications, even where regular plugs might not be effective. Here are some examples:



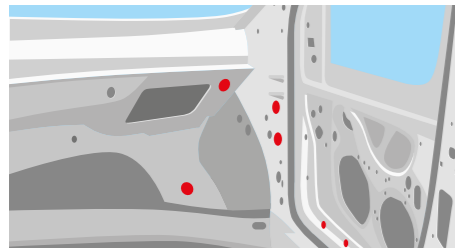
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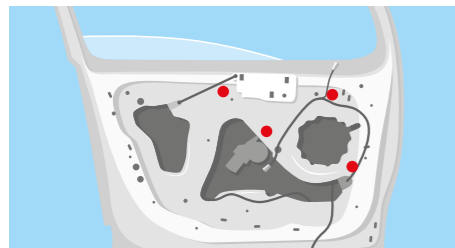
### Easy application

tesa® 54657 can easily conform to complex surfaces or difficult-to-reach application areas where plugs are just not effective. Our cloth tapes are equipped with rubber-based adhesives which have a very high-strength bond to a variety of substrates.



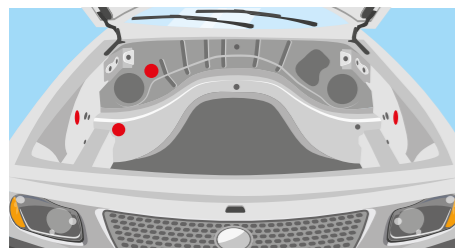
### Acoustic insulation

Primary applications for tesa® 54715 include hole cover applications that require excellent noise damping as well as sealing against humidity. The excellent acoustic-damping performance achieved is comparable with a closed metal car body. An added benefit is the ability to be applied both pre-and post-paint cycle.



### Air-tight and noise sealing

tesa® 54337 is a good sound damper in addition to having the ability to seal off holes from water and dust. Therefore, it is often used in hole covering applications that require flexibility and insulative properties.



### Various solutions for exterior and interior

For a lightweight alternative to rubber and plastic hole plugs, tesa® 54336 is your solution. tesa® 54336 is ideal for use on holes where excellent sealing properties in combination with good temperature resistance are application requirements.

## Our hole covering product range

	tesa® 54715 PVO LOW VOC	tesa® 54716 PV6 LOW VOC	tesa® 54717 PV1 LOW VOC	tesa® 54718 PV4 LOW VOC	tesa® 54337 PV1 LOW VOC	tesa® 54336 LOW VOC	tesa® 54338	tesa® 54339 LOW VOC	tesa® 54657 LOW VOC	tesa® 54651 LOW VOC
Thickness of tape [µm]	1060	1320	1160	1350	450	450	95	260	290	310
Backing	Mineral-filled PO	Mineral-filled PO	Mineral-filled PO	Mineral-filled PO	PVC	PET	PET	PET	Cotton cloth	Rayon cloth
Adhesive	Modified acrylic	Modified acrylic	Modified acrylic	Modified acrylic	Modified acrylic	Modified acrylic	Modified acrylic	Modified acrylic	Thermo-setting rubber	Natural rubber
Color	Grey	Grey	Grey	Grey	Black	Black	Trans-parent	Trans-parent	Grey	Black
Adhesion to steel [N/cm]	6	5	7	5	8	19	4	7	6	4
Puncture resistance 24 RT/[N]	120	550	630	400	470	440	730	730	350	300
Temperature resistance 30 min/[°C]	100	160	160	160	110	190	160	180	180	130
UBC/Paint compatibility		Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Corrosion protection (water and dust sealing)	•••	•••	••••	••	••••	••••	••••	••••	••	•
Acoustic damping	•••	•••	•••	•••	••	••	•	•	•	•
Conform to complex surfaces	•	•	•	••	••	•••	••	•	••••	••••

- Excellent
- Very good
- Good
- Appropriate



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.



Our management system is certified according to the standards ISO 9001, ISO/TS 16949, and ISO 14001. All our products delivered to automotive customers are listed in the International Material Data System (IMDS).