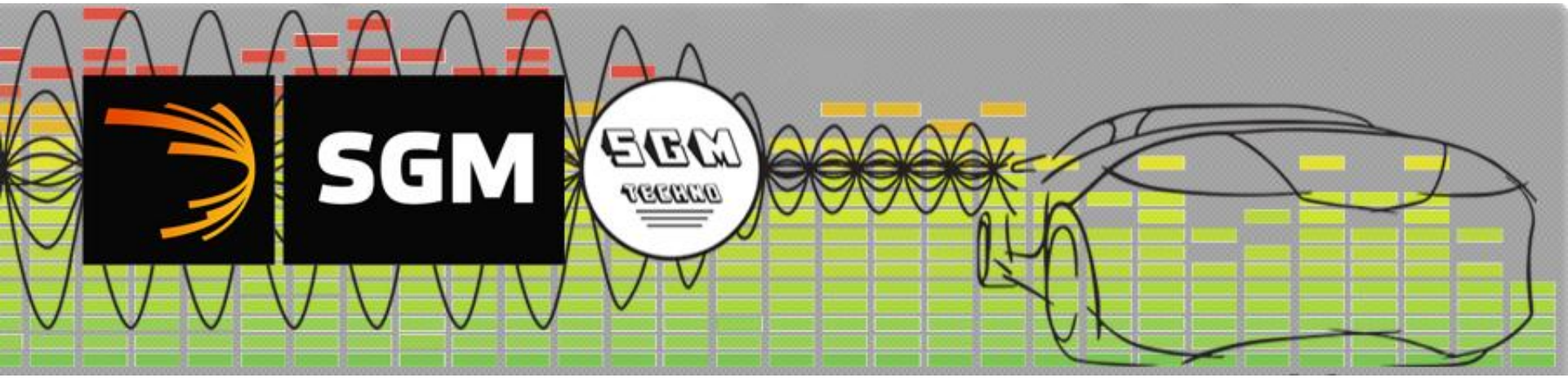



# Sound insulation materials

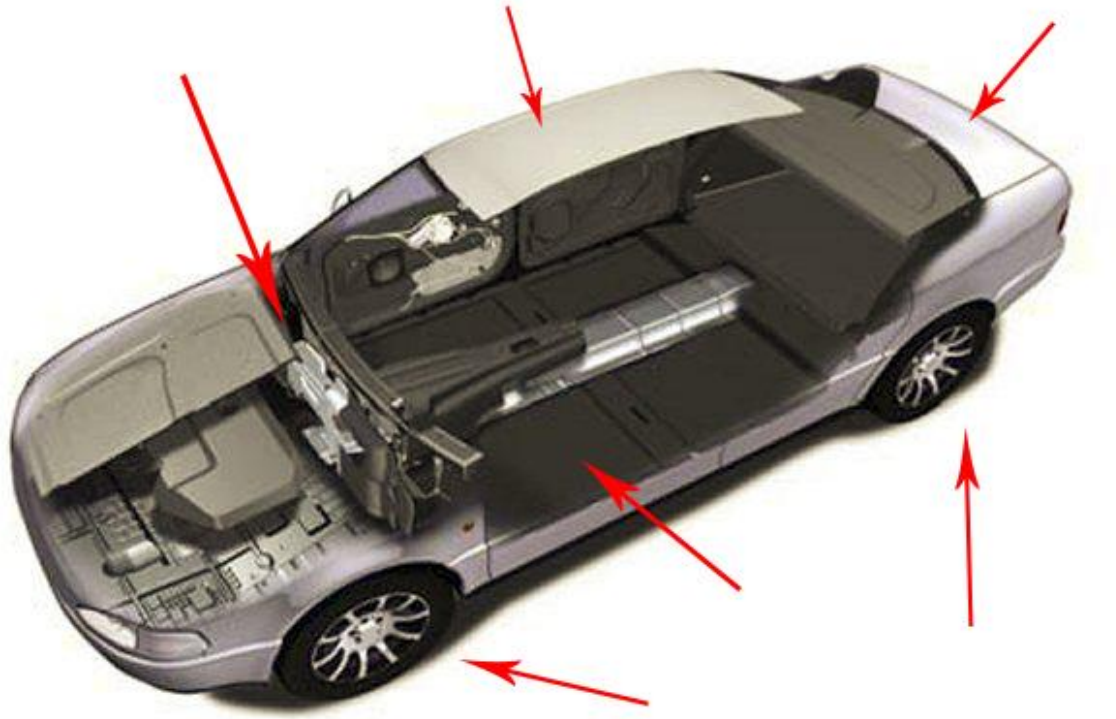
## *Brief description of sound insulation materials*

*Sound insulation materials ensure a comfortable journey.*

*While driving, less vibration is felt. Squeak sounds, which occurs when one part comes in contact with the another, cannot be heard. The noise from the street or the engine compartment does not bother anymore.*

***Let's take a tour....***

## *Why the noise occurs?*



*Unwanted sounds that are heard in the car, occurs because of the lack of noise insulation.*

*Places, that without additional insulation are highly sound-conducting: the engine compartment bulkhead, the underbody and wheel arches.*

## *What impact has the noise on your health?*

*Constant engine noise, low frequency sounds, caused by vibration, can cause fatigue and stress.*

*Other symptoms, that the constant noise can cause:*

1. *Poor sleep*
2. *Excessive sensitivity to sounds*
3. *Respiratory disorders*
4. *Migraine*

## *Solution*

***Sound insulation materials.***
*They reduce unwanted sounds, which comes from the street, the engine or wheels. These materials also insulates heat, absorb vibration and reduce squeaking sounds.*

*Here is the list of most common materials, used for manufacturing of sound insulation products.*

## *Types of materials*

1. *Bitumen – mastic insulating materials*
2. *Mastic insulating materials with foam*
3. *Foam materials*
4. *Mastic insulating materials*
5. *Bitumen insulating materials*
6. *„Antiskrip“ materials*

***Bitumen – mastic materials (absorbs sound and reflects heat)***

***Where they can be used:***

1. *Car floor.*
2. *Trunk (to cover).*
3. *The wheel arches.*
4. *Engine compartment - from the interior side.*

*It is a complete solution, which allows to avoid unwanted noise, reduce vibration, keep warmth inside the car during winter season.*

# *Mastic insulating materials with foam - prevents from noise, supply thermal insulation*

***Where they can be used:***

*These materials do not have restrictions on use, so they can be installed anywhere. It is even necessary to use them in car's interior.*

*These materials provide protection against outside noise and vibration. In addition, they perform the function of heat insulation in the car, helps to eliminate the friction between plastic parts, when air temperature changes.*

## *Foam materials – insulates sound and heat*

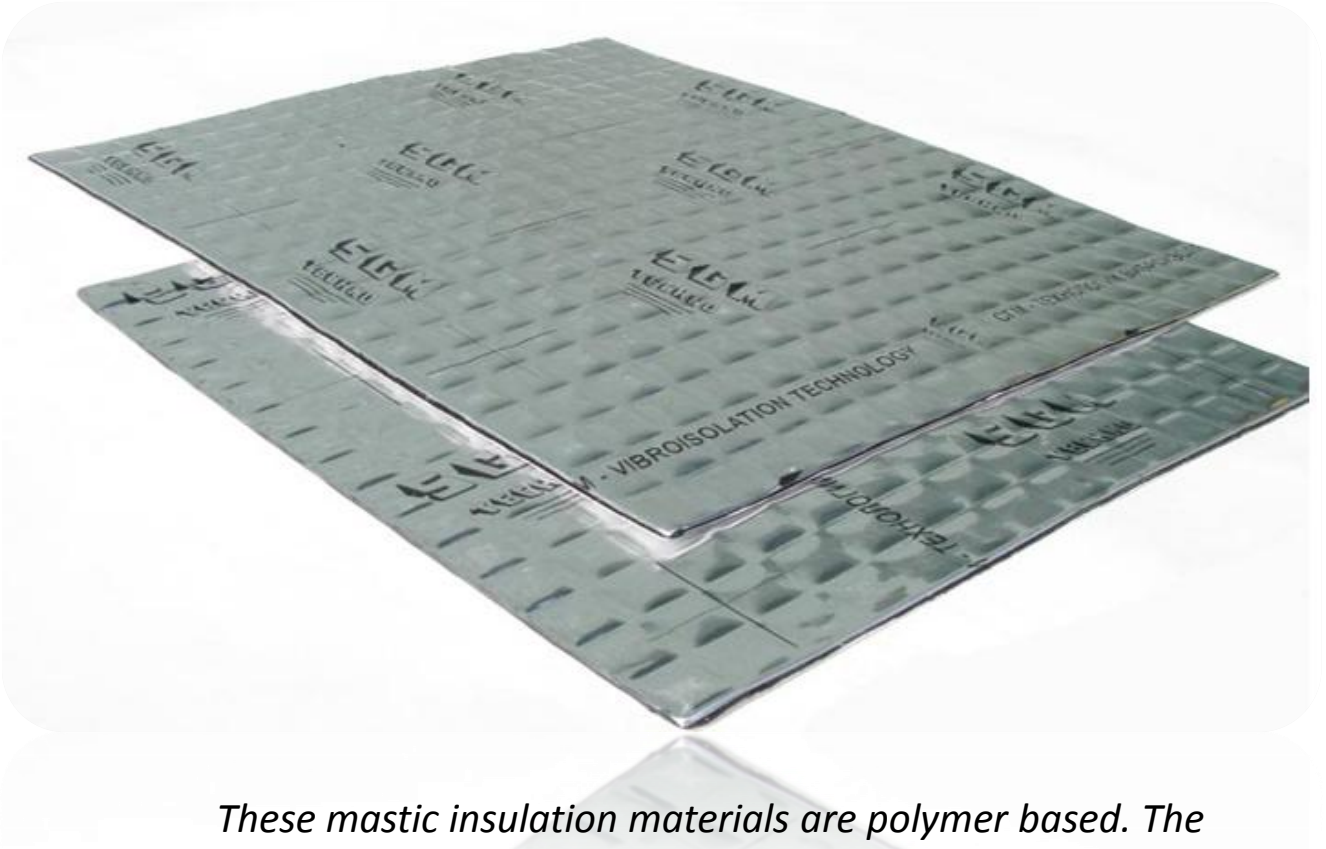
***Where they can be used:***

*These materials may be used for complex assembly work: floors, roof, doors and other places.*

*This material insulates sound and heat, reduces vibration. It is made of polyurethane foam. There is an adhesive layer. The material can be used as a base layer. On its surface other insulating materials can be put.*

***Mastic insulating materials – insulates sound and heat, reduces vibration***

***Where they can be used:***
*Floor, roof, engine compartment and other places.*

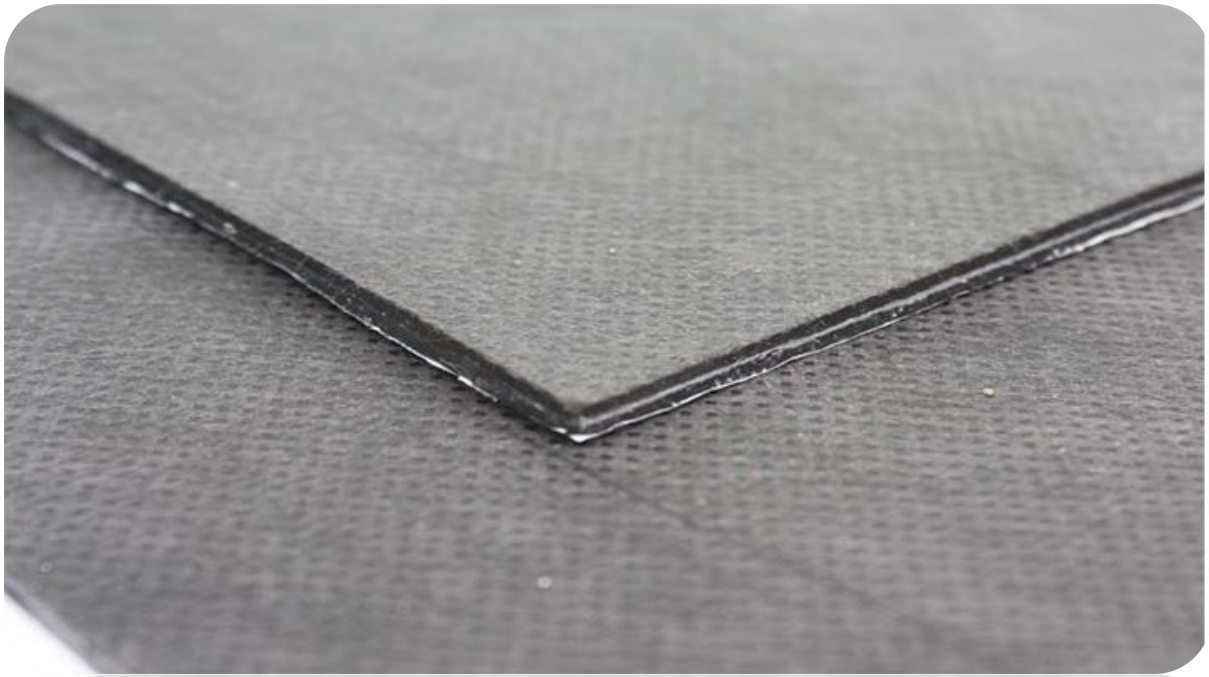



*These mastic insulation materials are polymer based. The upper half of the material is covered with foil, and the bottom - an adhesive layer. Aluminum increases the thermal insulation and reduces heat loss.*

***Bitumen insulating materials - absorbs sound and reflects heat***

***Where they can be used:***

*Floor.*
*Roof.*



*Bitumen insulation materials consists of several layers: aluminum foil. (Performs vibration absorption and heat reflection functions.) Elastomer - bitumen- layer.(Absorbs sound.) The adhesive layer.*

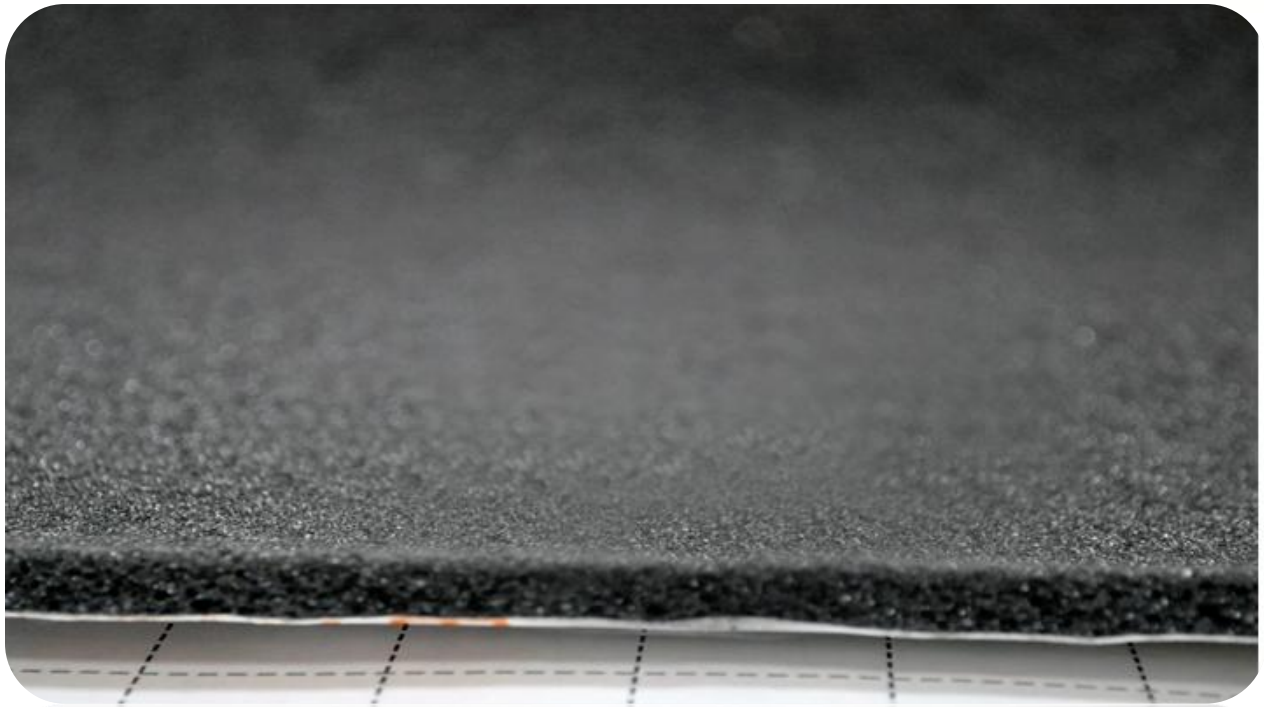
# *“Antiskrip” materials - reduces squeaking sounds*

***Where they can be used:***
*For the finish of the interior (the end of work)*

*Plastic parts (moldings, sills, decor items, etc.)*

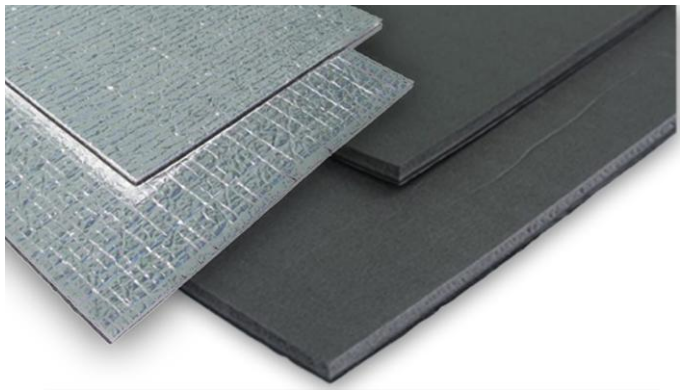
*The dashboard (where plastic parts comes in contact with each other and therefore the friction arises while driving).*

*The roof. If decorative elements are mounted in the roof of the car, between them and the metal surface this material can be added.*

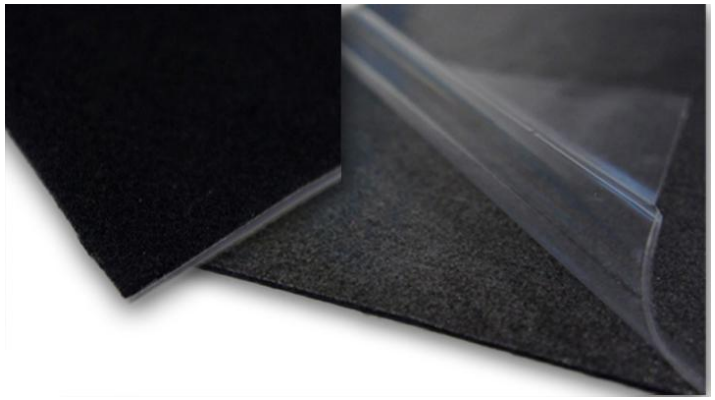


*"Antiskrip” materials reduces squeaking sounds. These materials are the last on the list of materials, which can be fitted to the car. They complete sound insulation process.*

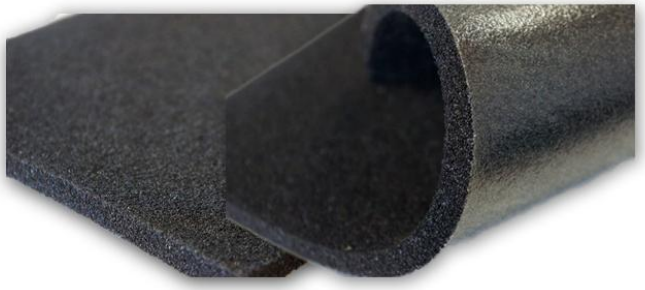
## *Examples of specific products*



*Sound – heat insulation – "IZOL" series*



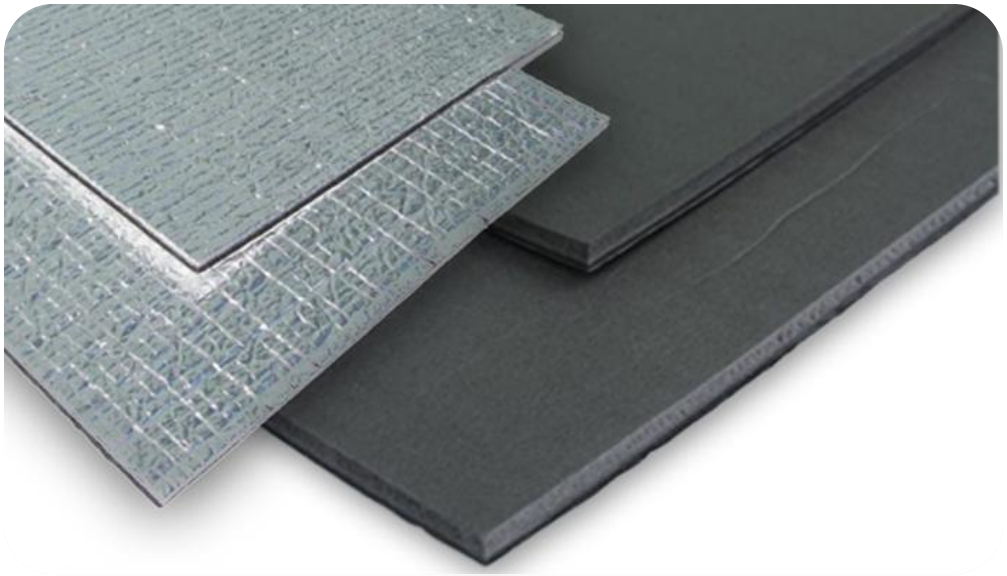
*Reduce squeaking sounds – „Antiskrip"*



*Reduce squeaking sounds - "Violon" series*


*Absorbs vibration – "Alumast" (M series)*

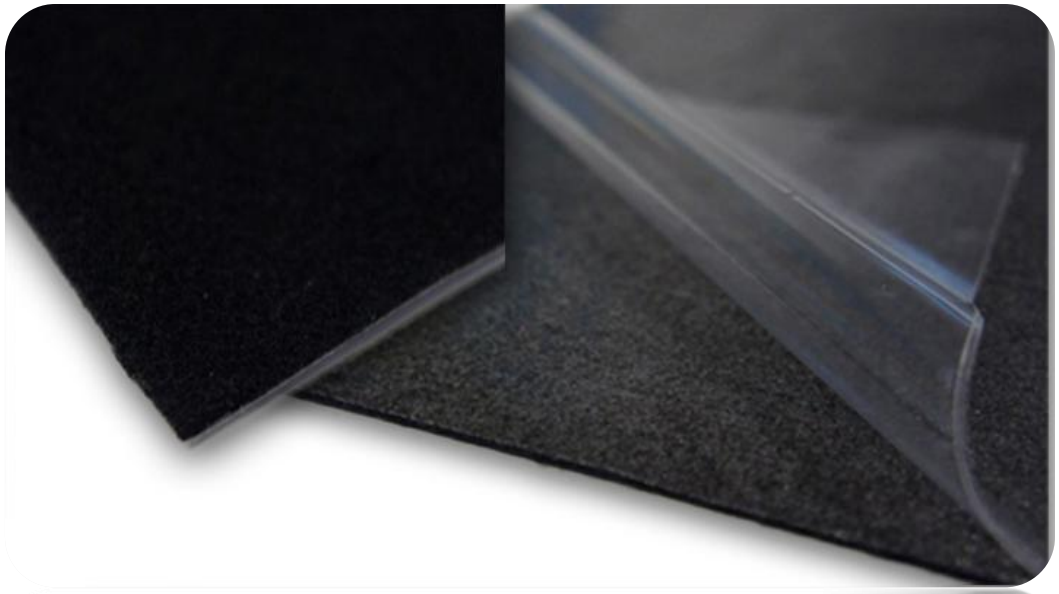
## *“IZOL” series (sound – heat insulation)*



- *This series of products are made of porous polyethylene with mounting layer of mastic.*
- *It is designed for car interior insulation against external noise. It also has a heat insulating properties.*
- *Products are elastic, resistant to moisture, has a strong tenacity to the mounting surface.*

***The products of this series can be mounted in:***
*Car body and the trunk floor, wheel arches, engine – interior bulkhead of the cabin side.*

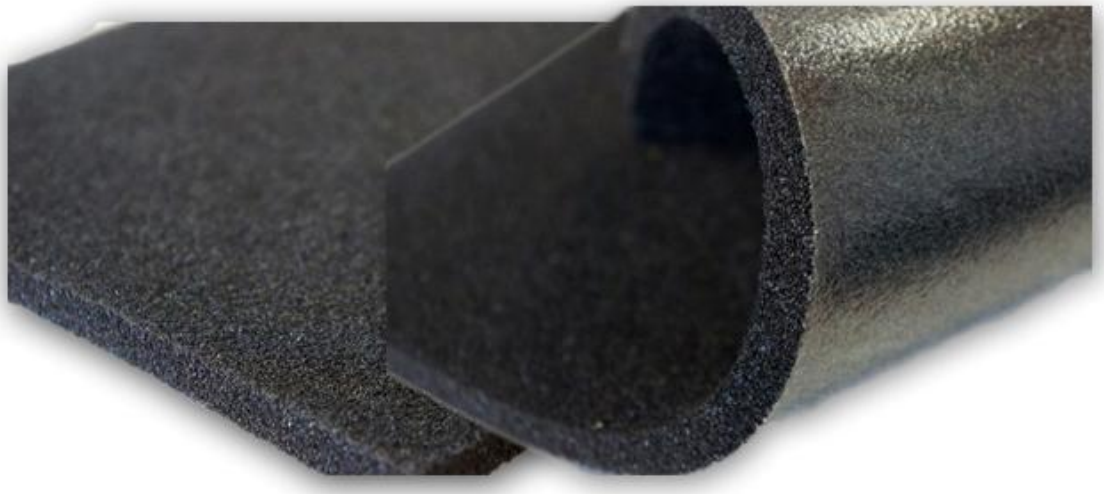
## *“Antiskrip” series – reduce squeaking sounds*



- *This series of products are fabric-based. They seal the surface.*
- *Thickness - 1-1.5 mm with an adhesive layer, which is covered with a protective sheet.*
- *They are used for reduction of squeaking sounds in places, where interior parts come together, for sealing, seams and joints filling.*

***The products of this series can be mounted in:***
*The gaps between car’s interior decorative elements and the car body, gaps in the dashboard, air duct sealing.*

## *“Violon” series – reduce squeaking sounds*



- *“Violon” series is designed to remove squeaking sounds in places, where interior parts come together, for sealing, seams and joints filling.*

- *All the products of these series has an adhesive layer, which makes them easy to install.*

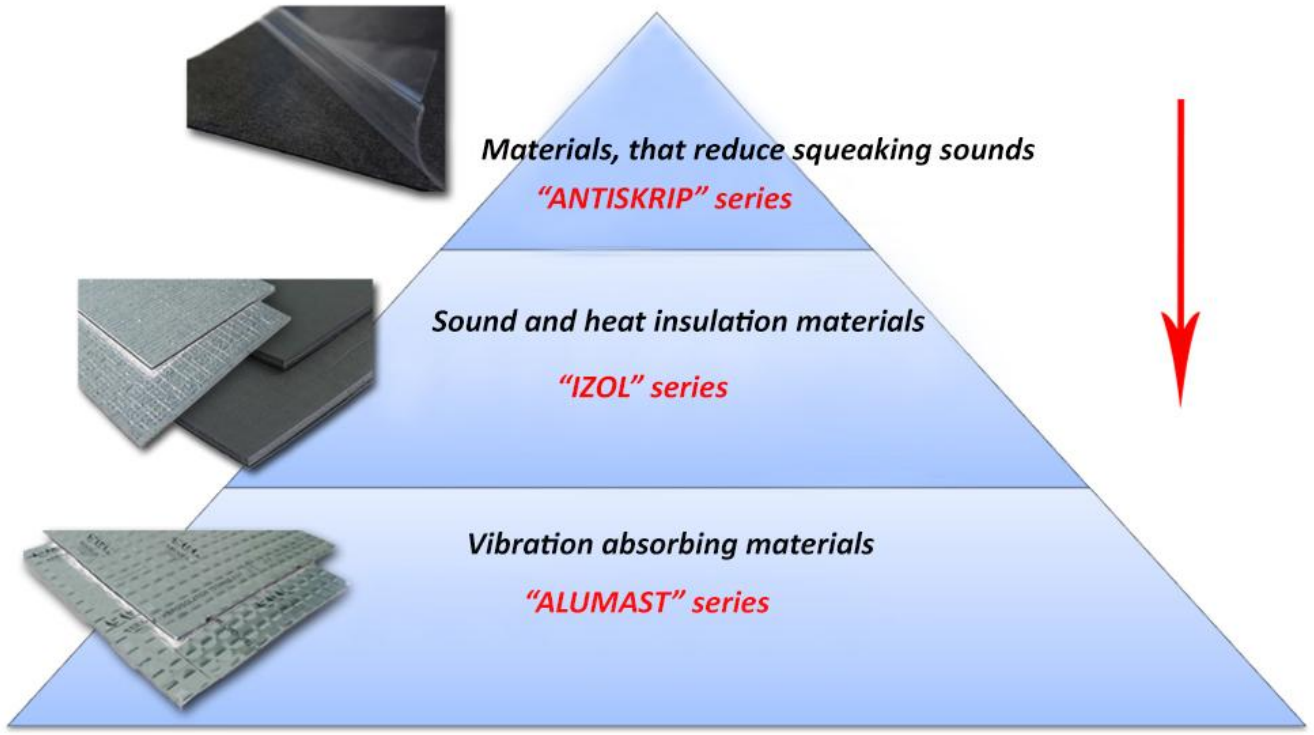
***The products of this series can be mounted in:***
*Plastic interior parts, the dashboard, the roof, surface of air ducts, wiring harness.*

## *“Alumast” series - absorbs vibration*


***The products of this series can be mounted in:***
*car doors, roof, side panels, hood, trunk lid, engine - cabin bulkhead of the cabin side.*

- *"Alumast” series - flexible, elastic, adhesive, vibration absorbing products, made from of adhesive polymers (mastic).*
- *The outer side of the product is covered by aluminum foil. On it the logo is imprinted.*
- *When mounting, an additional adhesive layer is unnecessary.*
- *This vibro insulating material is resistant to moisture.*

## *Combinations of materials*




*Good results are achieved when mounting a combination of three materials – sound insulation, vibration absorbing and squeaking sounds reducing materials. Vibration absorbing material is mounted on a metal surface and above it - the sound insulation. On it – material for reducing squeaking sounds.*

## *What is the mechanical loss coefficient?*

*Sound insulation materials are mounted in the car.*

*Sound insulation material transforms vibrational energy into thermal energy.*

*Car body, while driving, or when the engine is on, resonates - emits vibration. Ideally, the materials of car's body surface should absorb vibration and transform it into thermal energy.*

*Mechanical loss coefficient, SFC, shows how much vibrational energy is transformed into thermal energy. This determines the level of driving comfort. If the SFC is 1 – it is the maximum result, the entire vibrational energy is transformed into thermal energy. If the SFC <1, the material's sound and vibration absorption properties are inferior. When choosing an insulation material, pay attention to this number – SFC. The higher the number - the better.*

# *Why sound insulation materials is worth trying?*

*They provides additional comfort during the trip. While driving, less vibration is felt. Squeak sounds, which occurs when one plastic part comes in contact with the another, cannot be heard. The noise from the street or the engine compartment does not bother anymore.*

*Conversation in the car becomes easier, driver and the passengers feels less tired, nothing distracts the attention while driving.*