

customers



partners



Wolverine Advanced Materials

#127-78, Gujang-Ri, Paltan-Myeon, Hwaseong-City, Gyeonggi-Do, Korea
T. 82.31.350.5000 F. 82.31.350.5002 <http://www.wolverine.co.kr>



Wolverine Pressing Changshu Co., Ltd.

No. 3 Building, Jingshun Industrial Square, Riverside Industrial Park,
Changshu Economic Development Zone, Changshu Jiansu Province, China
T 86.21.6445.0088 F 86.21.6415.8168



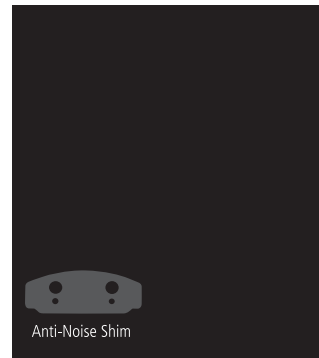
Japan Metal Gasket Co., Ltd.

360-0843/3308 Mikajiri, Kumagaya, Saitama, Japan
T 81.48.532.0911 F 81.48.532.0941

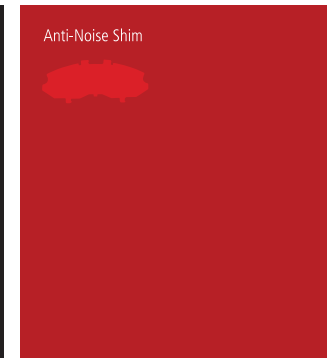


Wolverine Korea Co., Ltd

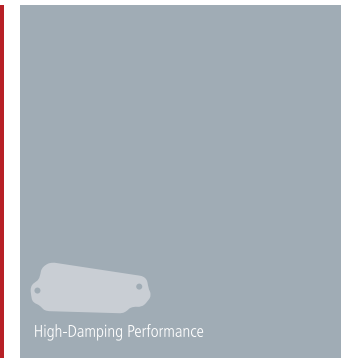
#127-78, Gujang-Ri, Paltan-Myeon, Hwaseong-City, Gyeonggi-Do, Korea
T. 82.31.350.5000 F. 82.31.350.5002 <http://www.wolverine.co.kr>



Anti-Noise Shim



Anti-Noise Shim



High-Damping Performance



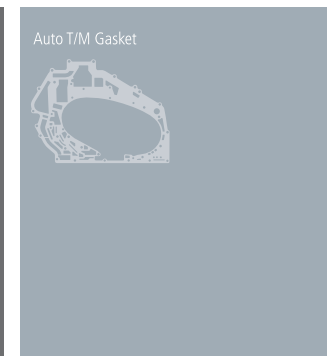
Compressor Gasket



Engine Gasket



Compressor Gasket



Auto T/M Gasket



Wolverine
KOREA

www.wolverine.co.kr

Wolverine Korea

Committed to designing, manufacturing, and supplying quality parts to our customers around the world.

Dedicated to providing the best workplace for our employees, who make our company what it is today.

WOLVERINE KOREA

We are Wolverine Korea, pursuing customer satisfaction and employee happiness.

To provide improved service and to enhance our value to all of our customers and companies working with Wolverine Korea, our company will always strive to be innovative.



1987. 1 Wolverine Korea established

1990. 3 Wolverine Korea Ltd. incorporated
First brake shim supplied to Mando Corporation
First compressor gasket supplied to Korea Delphi

1996. 6 Company moved to Kimpo
(Land :73,159 sq ft., Building: 32,451 sq ft.)

1998. 4 Begin supplying Halla Climate Control Corporation

1999. 8 QS 9000 / ISO 9002 Certification (KMA)

2004. 1 ISO 14001 Certification (BSI)

2004. 3 ISO / TS 16949 Certification(BSI)

2006. 1 Begin supplying LG Electronics

2006. 5 Begin exports to Visteon Corporation (USA)
JVC [METAL FIT KOREA] formed with Japan Metal Gasket

2006. 8 Company moved to Hwasung
(Land:177,915 sq ft., Building:65,828 sq. ft.)

2007. 4 Registered as 1st tier supplier to Hyundai Motors (Engine Gasket)

2008. 3 Wolverine Pressing Changshu(China) Established

2008. 4 Brake Pad Shim Certificate of Patent (10-0824911)



WOLVERINE KOREA PRODUCT

It is our privilege and honor to introduce our company, our technology, and our people.

As a supplier of automotive, electronic, and industrial components, we are committed to designing, manufacturing, and supplying quality parts to our customers around the world.



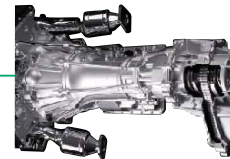
1. ENGINE PARTS

- Cylinder Head Gasket
- Intake Manifold Gasket
- Water Pump Gasket
- Surge Tank Gasket



2. COMPRESSOR PARTS

- A/C Comp CYL Gasket
- Discharge Gasket
- Suction Gasket
- Muffler Gasket



3. AUTO T/M PARTS

- T/M Case Cover Gasket
- Oil Pan Gasket
- Oil Pump Gasket
- Adapter Gasket



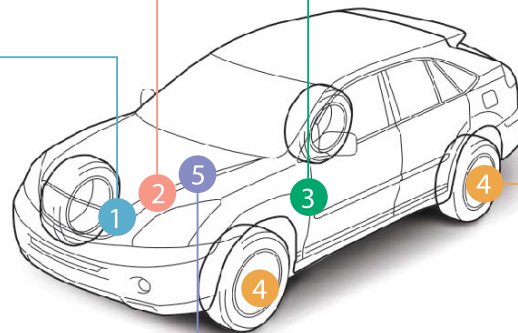
4. DISC BRAKE PARTS

- Brake Noise Insulators (Shims)
- Constrained Layer Vibration Dampening Treatments



5. Active Vibration Damping Technology

- Oil pans
- Front Engine Covers
- Transmissions (case-to-case)
- Engine Baffles / Cam Covers
- Generator Covers
- Closure Panels, Latches and Structural Brackets
- Aluminum Heat Shields



Optimal Noise, Shock & Vibration Control for Consumer Electronics

- Fan Cage Isolator
- Vibrationless Hard Drive Cage
- Side Cover Damper (Peel-and-stick)



PORTABLES



HARD DRIVES



DESKTOPS



PRODUCT (Shim)

PRODUCT (Gasket)

Anti-Noise Shim

Non-Adhesive Type Shim
Adhesive Type Shim (Embo, Burring, Beading, Forming etc.)

Gasket

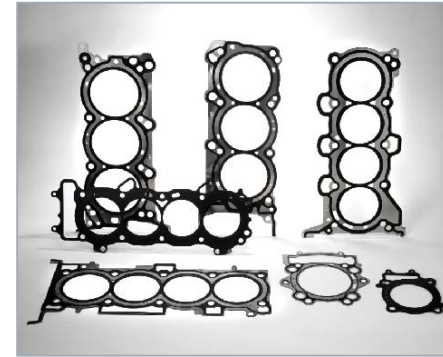
Engine Head Cylinder Gasket
Compressor Gasket
Auto T/M Gasket
Engine Secondary Gasket

NVH-High Damping Performance

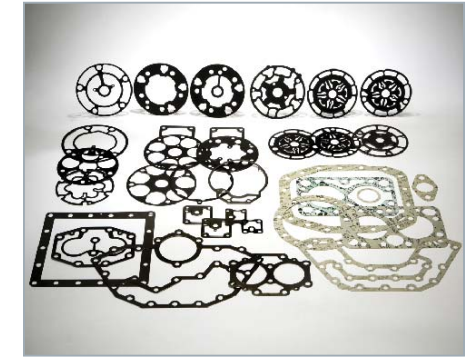
Constrained Layer Vibration Dampening Treatments



Non-Adhesive Type Shim



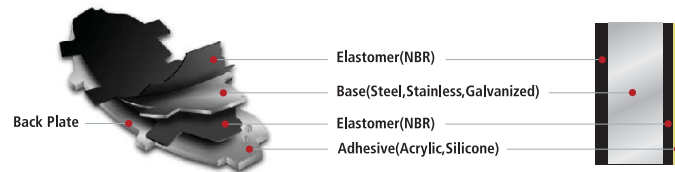
Engine Head Cylinder Gasket



Compressor Gasket

- Base Material of Non-Asbestos Steel is coated with thin layer of elastomer coating
- Composition of Steel, coated with acrylic or nitrile rubber, and adhered to backplate with acrylic or silicone adhesive, or clipped on without adhesive

Construction



Adhesive Type Shim

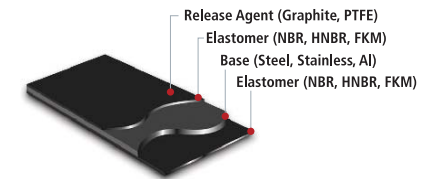


Adhesive Type Shim (Burring, Beading, Forming)

1) R.C.M (Rubber Coated Metal)

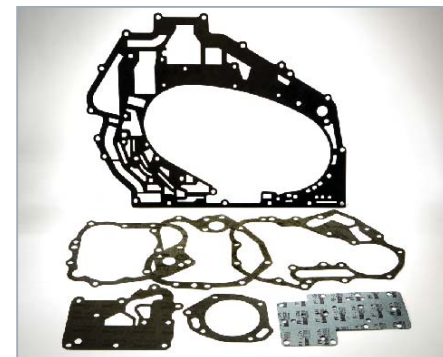
- Used as Sealing Agent between 2 machined parts. Base material is non-asbestos metal (Steel, Stainless Steel, or Aluminum), and is coated on both sides with elastomer (NBR, HNBR, or Fluoro elastomer), and is effective in preventing noise, vibration, and leakage.

Construction

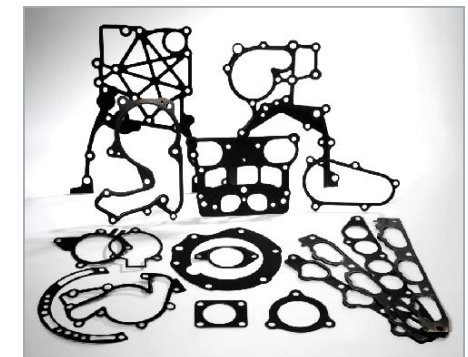


2) R.C.M Characteristics

- Allows formation of Bead on RCM surface, which is effective for sealing, even on uneven surfaces or changes in surface due to vibration
- Rubber Coating on Steel : Durable as steel, but rubber coating increases sealability, and reduces noise, vibration



Auto T/M Gasket



Engine Secondary Gasket

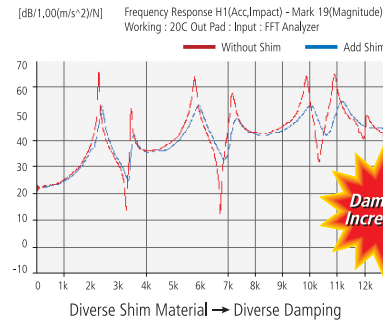
R&D (Shim)

Wolverine aims to move forward through persistent research
Through continuous quality-improvement of products, customer satisfaction will be achieved with the highest-quality products



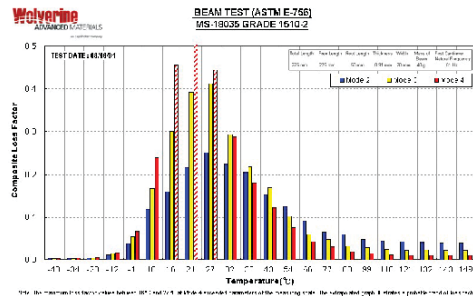
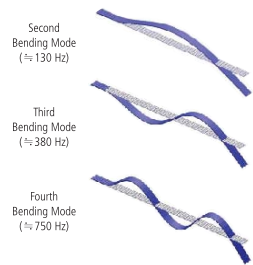
1. Damping

- Vibration → Parameter (Mass, Damping, Stiffness)
- Damping Characteristics
 - Structural Vibration is lessened, or absorbed
 - Amplitude Resonance is decreased
 - Free Vibration and Impact Vibration is decreased
- Damping Mechanism
 - Structural Energy is transferred as Heat Energy
- Damping Application
 - Placed where potential or stored energy has greatest tendency to stretch or bend.



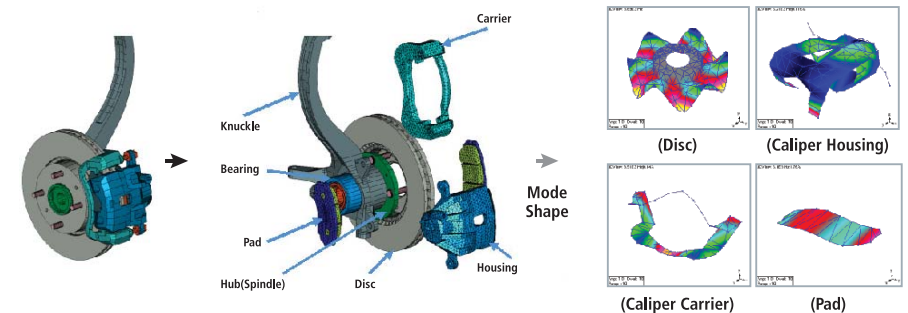
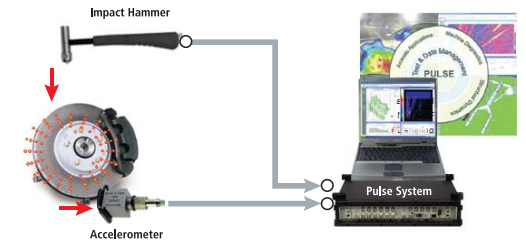
2. Material/Design Evaluation Techniques : Beam Test

- ASTM E756-98 Test Procedure : Up to 1000Hz, -40°C to 150°C



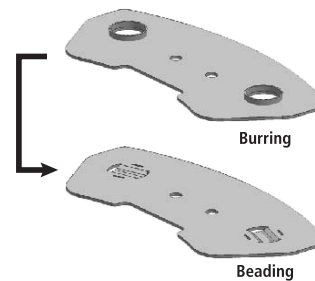
3. Modal Analysis

- Initial Analysis will result in the discovery of the system's Modal Parameter.
- Modal Parameter
 - : The system to be analyzed will have certain points on the surface which will be analyzed, which can be found through the FRF (Frequency Response Function)
 - Natural Frequency
 - Damping Ratio
 - Mode Shape

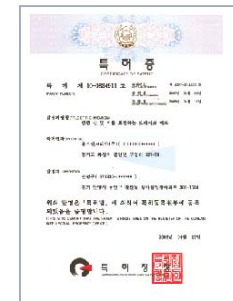


4. Certificate of Patent

- Patent Number : 10-0824911(April. 2008)



- Used Type
- Improved Type
(Cost down & increase of production efficiency)



R&D (Gasket)

Wolverine aims to move forward through persistent research
Through continuous quality-improvement of products, customer satisfaction will be achieved with the highest -quality products



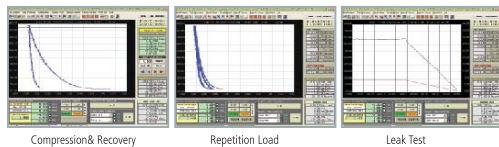
1. CAD

Equipped with multiple design tools such as **Pro-Engineer, Autocad and CATIA etc.**, to satisfy all of our customer's various requirements



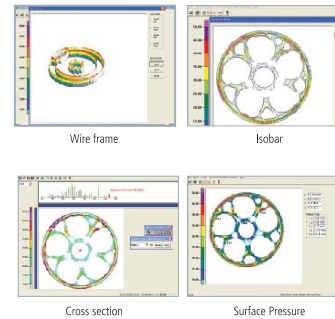
2. Bead Compression & Recovery Tester

Analysis of compression and recovery characteristics allows **calculation of permanent deformation value on gasket**



3. Surface Pressure Analysis Tester

Evaluate and verify product performance by analysis of the effect of simulated surface pressure to precise requirements



4. Bolt Axial Force Tester

Evaluate axial force of bolt to verify correlations between gasket and relevant parts.



Ass'y Load Cell



Load Cell



Cell Jig



Product Facility & Process Flow

Wolverine Korea strives to achieve efficient manufacturing process.

We also strive to create a work-friendly environment, clean, quiet, and bright.



Product Process Flow

Raw Inventory
Raw Materials



Slitting Inventory
Slit Raw Materials



Manufacturing
Stamping



Inspection
3D Non-Contact Measuring/Surface Contracer



Packing
Inspection & Pack



Parts Inventory
Gasket & Shim



Assurance of Quality

Wolverine Korea strives continuously with the goal of zero-defect.

Using the most up-to-date machines and systems, we prevent defects before they occur.

Incoming Inspection

Manufacturing

Inspection Process
Frequent Inspection
Timely Inspection
Precise Inspection

Parts Ready

Reliability Test Finished Parts Inspection

Material Procurement

Certifications

Certificate of Registration
QUALITY MANAGEMENT SYSTEMS ISO 14001:2004

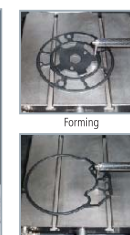
Cert No : ISO/TS 14001
Agency : BSI
Acquired Date : 2004. 01. 12

Certificate of Registration
QUALITY MANAGEMENT SYSTEMS ISO 16949:2009

Cert No : ISO 16949
Agency : BSI
Acquired Date : 2007. 03. 16

1. Quality Inspection

Surface Contracer



3-D Non- Contact Coordinate Measuring Machine



2. Reliability Test

