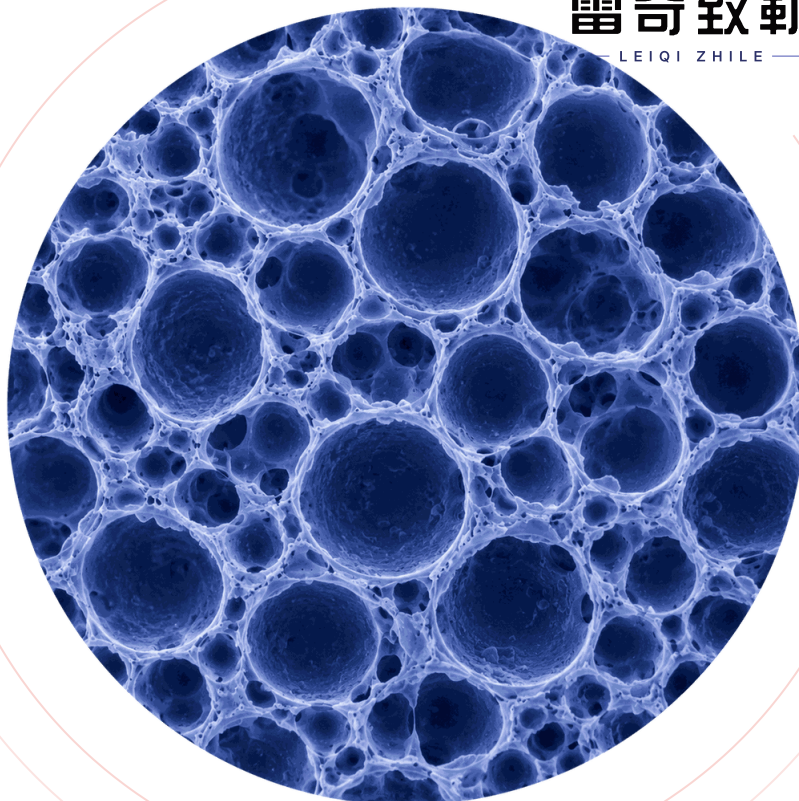


雷奇致勒

— LEIQI ZHILE —



MICROCELLULAR PU ELASTOMER · NEW

WK Series

Microcellular PU Vibration & Noise Reduction

Vibration and noise reduction in one solution

6 grades · static bedding modulus 0.03–0.22 N/mm³

WK-003

WK-006

WK-009

WK-013

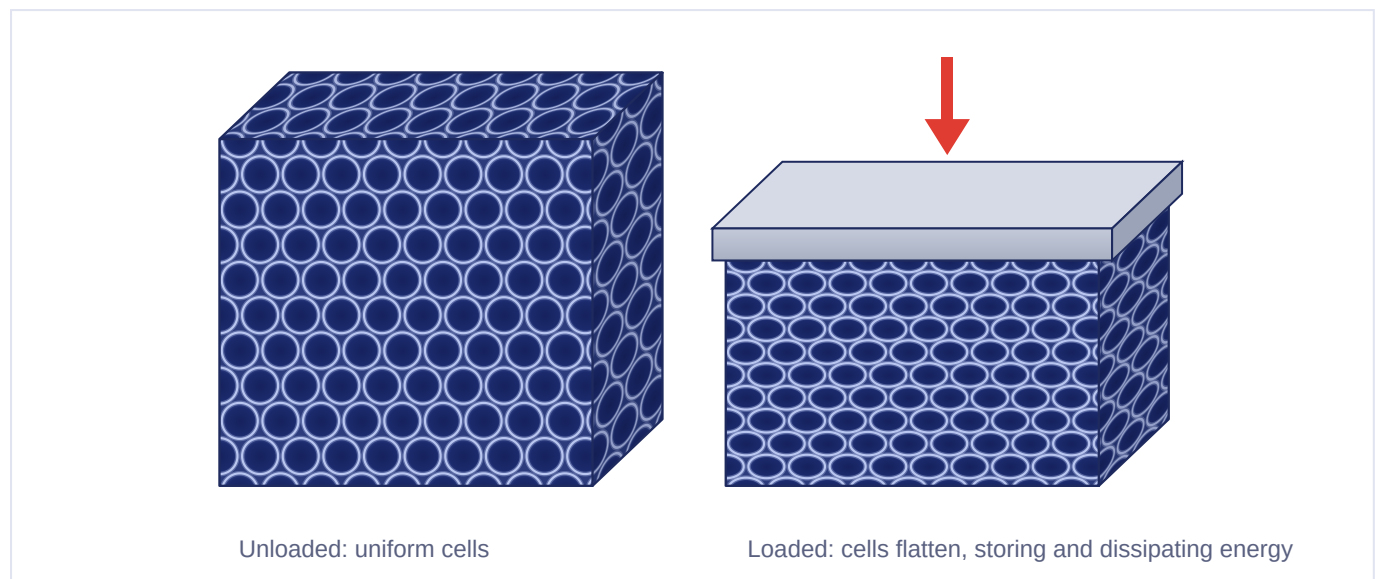
WK-016

WK-022

WHAT IS WK

The WK Series is a microcellular polyurethane elastomer: a dense, uniform network of micro-cells whose walls are made of a high-strength, highly elastic PU matrix. By tuning formulation and density we produce six grades from soft to stiff (WK-003 to WK-022); the number in each grade name is its static bedding modulus ($\text{N/mm}^3 \times 100$), matched to different contact-pressure ranges.

Unlike solid elastomers, boards made of WK material are volume-compressible under load and expand very little sideways. That makes them ideal as continuous mats that support machines, floor slabs or track structures evenly over a large area.



Spring

Cell walls flex like countless tiny springs, carrying the load and recovering when it is removed.

Damper

As the cells deform, viscoelastic hysteresis of the PU matrix turns part of the vibration energy into heat.

All in one

Spring and damping in a single material: no separate dampers, a compact build-up and simple installation.



WK boards



Cross-section

SIX KEY ADVANTAGES

The WK Series brings resilient support, moderate damping and durability together in one microcellular material. Performance values are confirmed by test reports, available per project.



Six stiffness grades

WK-003 to WK-022

Soft to stiff (static bedding modulus 0.03–0.22 N/mm³), selected by contact pressure and target load.



Balanced damping

Spring and damper in one

Balances resonance control with isolation efficiency at higher frequencies.



Low permanent set

Holds its thickness under load

Low deflection and stable stiffness under long-term load, so performance lasts.



Versatile in use

Indoor, underground, covered outdoor

Avoid prolonged UV exposure; humid-ageing data and special temperature conditions available per project.



Tough and durable

Tear-resistant

Resilient and tough, resisting tears during installation and service.



Electrical insulation

For electrical separation

The material does not conduct electricity and suits supports needing electrical separation; insulation can be tested per project.

Compared with common isolation materials (qualitative)

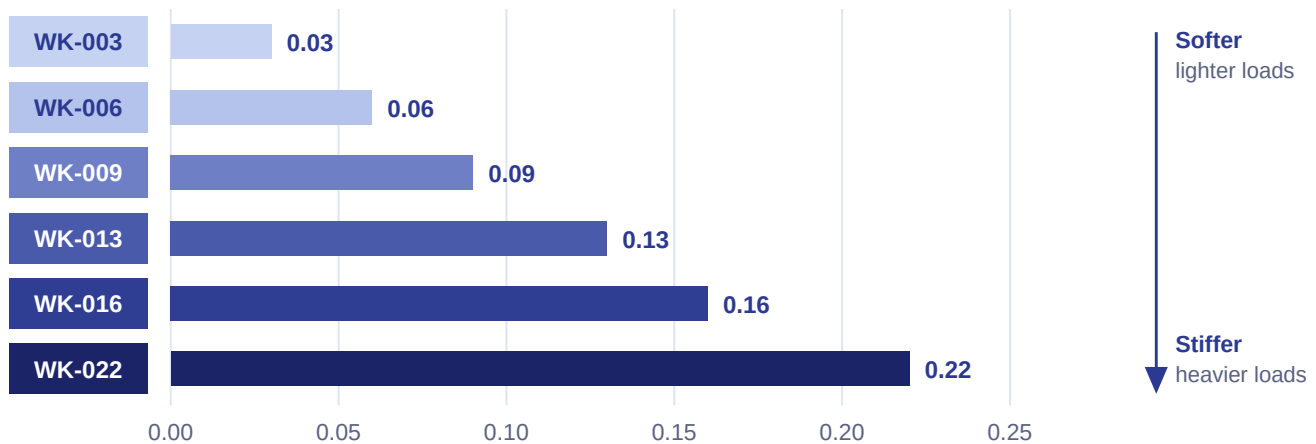
Aspect	Steel springs	Solid rubber	WK microcellular PU
Damping	Very low; extra dampers often needed	Moderate	Balanced; no separate dampers needed
Lateral bulging	—	Significant; needs room	Small; volume-compressible
Support type	Point	Point / strip	Point, strip or full-surface
Low-frequency isolation	Excellent	Fair	Good; designed by grade and thickness
Build-up height	Tall	Medium	Low; thin layers suffice

Qualitative comparison based on general engineering practice; confirm by design calculation and testing.

GRADES & APPLICATIONS

The WK Series has six grades. The number in each name is the static bedding modulus ($\text{N/mm}^3 \times 100$, measured on 25 mm product): WK-013, for example, is 0.13 N/mm^3 . Lower numbers are softer and suit lighter contact pressures; higher numbers are stiffer and suit heavier ones. The natural frequency depends on pressure, bedding modulus and total thickness and is set by the selection calculation.

Static bedding modulus by grade (N/mm^3 , 25 mm)



Application selection matrix

Application	WK-003	WK-006	WK-009	WK-013	WK-016	WK-022	Page
Precision instruments	•	•	•				08
Medical equipment (MRI, CT)		•	•	•			08
Room-in-room (studios, cinemas)	•	•	•				07
Floating floors		•	•	•			07
Stairs and wall decoupling		•	•	•			07
Gym floors				•	•	•	07
HVAC units, fans, pumps			•	•	•	•	08
Transformers and gensets					•	•	08
Rail vehicle floors / cabs			•	•	•		09
Track-bed mats	•	•			•		09
EV battery pack pads	Dedicated thin-sheet product						09
Electronics cushioning and sealing	Dedicated thin-sheet product						09
High-speed rail track pads	Dedicated high-density formulation, made to the fastening system						09

• = recommended grade. The matrix is a first guide; final selection depends on load, excitation frequency and conditions of use. Sectors on page 09 require industry-specific testing. See the listed pages for details.

TECHNICAL DATA

The number in each grade name is its static bedding modulus ($\text{N/mm}^3 \times 100$). The table lists the main specifications of each grade; the test report for each batch applies.

Property	Unit	Standard	WK-003	WK-006	WK-009	WK-013	WK-016	WK-022
Static bedding modulus ¹	N/mm^3	GB/T 39705-2020	0.03	0.06	0.09	0.13	0.16	0.22
Contact pressure (relative)	—	—	Very light	Light	Light–med.	Medium	Med.–heavy	Heavy
Dynamic / static ratio	—	GB/T 39705-2020	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Reference density ²	kg/m^3	GB/T 6343	200–300	300–400	400–500	500–600	600–700	700–800
Tensile strength	MPa	GB/T 10654	≥ 0.5	≥ 0.8	≥ 0.8	≥ 0.8	≥ 1.0	≥ 1.2
Elongation at break	%	GB/T 10654	≥ 150	≥ 220	≥ 180	≥ 170	≥ 150	≥ 150
Compression set	%	GB/T 10653	< 5	< 5	< 5	< 5	< 5	< 5
Appearance	—	GB/T 39705-2020	Flat, smooth surface; no crumbling, cracks, delamination or soiling; defects from inclusions, bubbles or flow marks $\leq 50 \text{ mm}^2$					
Dimensional tolerance	—	—	Length $\pm 1\%$, width $\pm 1\%$, thickness $\pm 1 \text{ mm}$					

Please tell us

- Machine weight and centre of gravity
- Support area and type (full-surface / strip / pad)
- Excitation frequency or machine speed
- Environment (temperature, oil, outdoor use)
- Allowable deflection or build-up height

¹ Measured on 25 mm product; grade number = static bedding modulus $\times 100$ ² Reference density; if a grade is made denser, its tensile strength and elongation requirements rise accordingly

$\geq$, $\leq$ and $<$ values are specification limits; the test report for each batch applies. Tests and who performs them are listed on page 11.

SELECTION GUIDE

1

Contact pressure

$\sigma = \text{machine mass} \times g \div \text{support area}$

2

Choose grade

Deflection $s = \sigma \div C$; a lower bedding modulus C is softer

3

Set thickness

25 mm standard; n stacked layers give about $1/n$ of C

4

Check frequency

f/f_0 must exceed $\sqrt{2}$; aim for ≥ 2.5

Worked example (from WK-003 specifications, damping ignored)

Given Machine mass 2,000 kg, full-surface support 0.5 m², motor speed 1,480 rpm

① **Pressure** $\sigma = 2,000 \times 9.81 \div 500,000 \text{ mm}^2 \approx 0.039 \text{ N/mm}^2$

② **Grade** WK-003, static bedding modulus $C = 0.03 \text{ N/mm}^3$ (one 25 mm layer): deflection $s = 0.039 \div 0.03 \approx 1.3 \text{ mm}$

③ **Thickness** Two 25 mm layers ($d = 50 \text{ mm}$): C falls to 0.015 N/mm^3 , deflection about 2.6 mm

④ **Frequency** Dynamic/static ratio at its 1.3 limit, dynamic bedding modulus $\approx 0.0195 \text{ N/mm}^3$: $f_0 \approx (1/2\pi) \cdot \sqrt{(0.0195 \times 9,810 \div 0.039)} \approx 11.1 \text{ Hz}$; excitation $1,480 \div 60 \approx 24.7 \text{ Hz}$, so $f/f_0 \approx 2.2$

Result Transmissibility ≈ 0.26 : about 74 % of the vibration is isolated

With a single 25 mm layer, f_0 would be about 15.7 Hz ($f/f_0 \approx 1.6$) and isolation only about 32 %; four layers (100 mm) bring f_0 to about 7.9 Hz and isolation to about 89 %. The example uses the WK-003 specification limits and ignores damping; final selection should use the test report and measured curves for the grade, and account for eccentric loads, dynamic loads and installation conditions.

Selection support

Need curves and data for a specific grade?

Load–deflection curves, natural-frequency curves and dynamic test data for each grade are available per project. Tell us the machine weight, support area and excitation frequency, and our engineers will help with the selection calculation.

[Load–deflection curves](#)
[Natural-frequency curves](#)
[Dynamic test data](#)
[Selection calculation](#)

APPLICATIONS BUILDING ACOUSTICS

Impact sound, equipment vibration and structure-borne noise are common complaints in homes, hotels, offices and cultural buildings. WK grades are chosen by load and laid full-surface or in strips between floors, walls and rooms; thicker layers lower the natural frequency.



Floating floors

Laid between structural slab and screed to stop footfall and impact noise reaching the floor below.

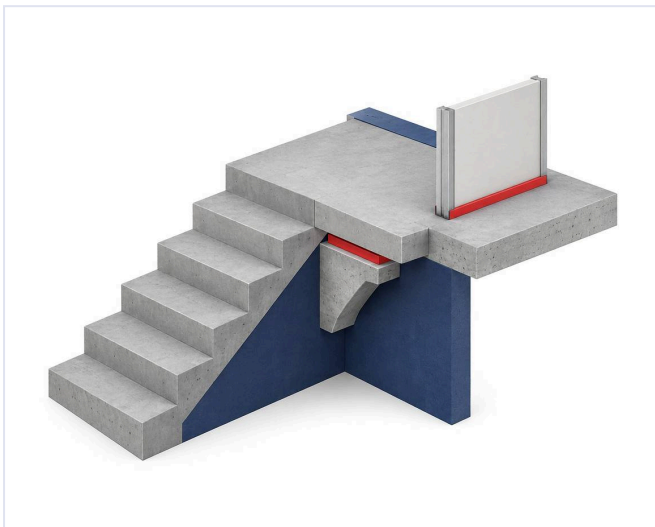
Suggested **WK-006** **WK-009** **WK-013**



Room-in-room

Recording studios, cinemas and broadcast rooms float on a resilient layer, decoupled from the main structure.

Suggested **WK-003** **WK-006** **WK-009**



Stairs and wall decoupling

Under stair landings, flight bearings and lightweight walls to break structure-borne sound paths.

Suggested **WK-006** **WK-009** **WK-013**



Gym floors

Absorbs dropped barbells and dumbbells, reducing vibration and noise in the spaces below.

Suggested **WK-013** **WK-016** **WK-022**

Suggested grades are a first guide; final selection depends on load, excitation frequency and conditions of use. Dynamic stiffness s' and impact sound improvement ΔL_w (GB/T 19889.8) for floating floors can be tested per project.

APPLICATIONS EQUIPMENT & INSTRUMENTS

Machines push vibration into the structure; instruments need protection from it. WK grades are selected by machine weight and speed and used as mats, strips or block bearings.



HVAC units, fans and pumps

Isolates rooftop and plant-room equipment, cutting vibration and noise into the building.

Suggested **WK-009** **WK-013** **WK-016** **WK-022**



Transformers and gensets

Reduces low-frequency magnetic hum and running vibration transmitted into the structure.

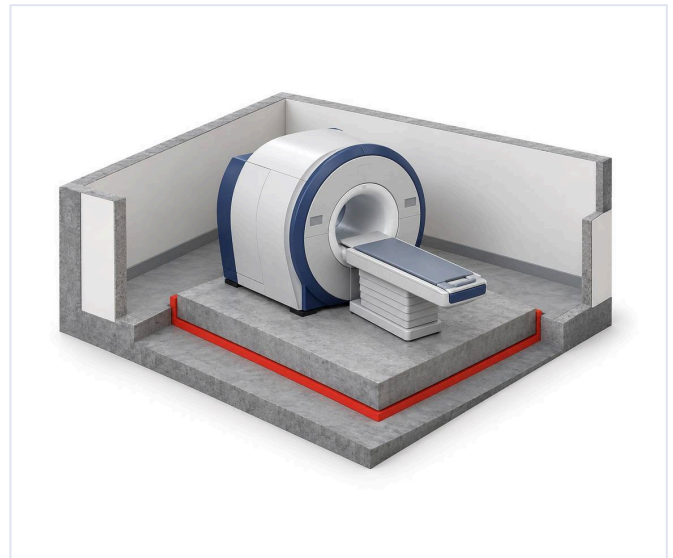
Suggested **WK-016** **WK-022**



Precision instruments

For general lab and metrology equipment; demanding low-frequency cases need a dedicated design.

Suggested **WK-003** **WK-006** **WK-009**



Medical equipment

Foundation isolation for MRI, CT and other large medical systems.

Suggested **WK-006** **WK-009** **WK-013**

Suggested grades are a first guide; final selection depends on load, excitation frequency and conditions of use.

APPLICATIONS TRANSPORT & NEW ENERGY

Microcellular PU also serves rail transit, vehicle isolation, battery pack cushioning and electronics sealing. Track-bed mats use the standard WK grades; rail track pads, battery and electronics uses rely on dedicated formulations or thin sheets outside the standard WK grades; these sectors set flammability, fatigue and stiffness requirements or need certification, so supply follows project-specific testing.



Track-bed mats

Laid between the track slab and the base on metro and light-rail lines, ballasted or ballastless, reducing train vibration passed into tunnels, bridges and nearby buildings; tested to GB/T 39705-2020.

Suggested **WK-003** **WK-006** **WK-016**



High-speed rail track pads

Rail pads and baseplate pads for high-speed rail fastenings, in a dedicated high-density formulation, reducing wheel-rail vibration and noise passed into the track.

Suggested **Dedicated high-density formulation, made to the fastening system**



Rail vehicle floors

Floating floors for metro and high-speed train cars, reducing interior vibration and noise.

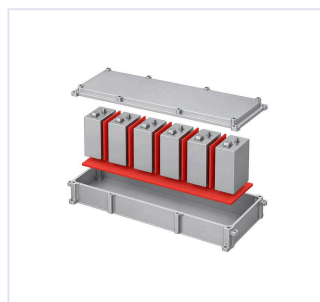
Suggested **WK-009** **WK-013**
WK-016



Cab isolation

Resilient mounts for construction machinery and commercial vehicle cabs, improving operator comfort.

Suggested **WK-009** **WK-013**
WK-016



EV battery pack pads

Between cells or under modules to absorb swelling and shock; dedicated flame-retardant thin sheet.

Suggested **Dedicated thin-sheet product**



Electronics cushioning and sealing

Cushioning pads and dust seals for displays and devices; dedicated thin sheet.

Suggested **Dedicated thin-sheet product**

Suggested grades are a first guide; supply for these sectors requires passing the relevant industry tests.

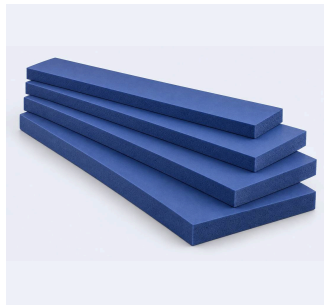


PRODUCT FORMS & INSTALLATION



Rolls

1.5 m wide, 5.0 m long



Strips

up to 1.5 m × 5.0 m



Die-cut parts

cut to drawing



Moulded parts

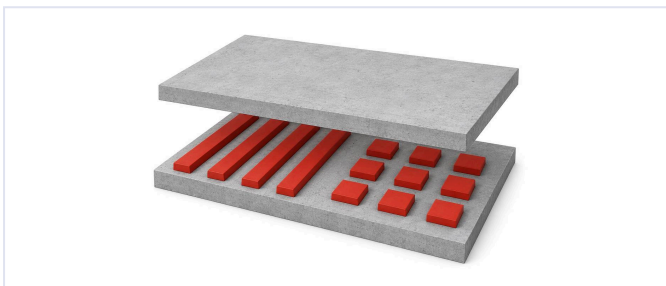
moulded to drawing

Supply specification

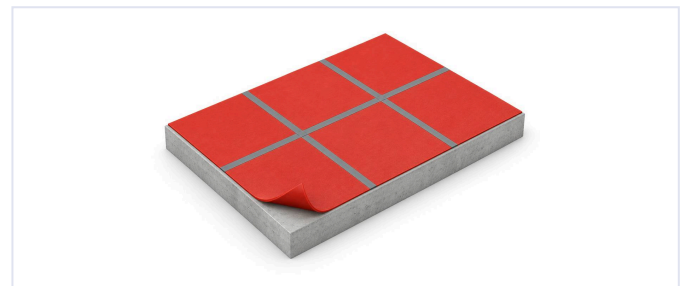
Standard thickness	25 mm; layers can be stacked for greater thickness
Sheets	1200 mm × 1000 mm
Rolls	1.5 m × 5.0 m
Strips	width up to 1.5 m, length up to 5.0 m
Custom parts	Die-cut and moulded parts; other sizes on request
Colour coding	By grade, for easy identification on site
Tolerances	Length ± 1 %, width ± 1 %, thickness ± 1 mm

Installation tips

- 1 Substrate flat, clean and dry, with no sharp protrusions
- 2 Lay full-surface, strips or pads as designed; never leave material edges overhanging under load
- 3 For floating floors, tape all joints so screed cannot bridge the layer
- 4 Where bonding is needed, use the recommended adhesive and test a sample first
- 5 Protect from sharp objects and prolonged direct sunlight during works
- 6 After installation, check that deflection matches the design
- 7 When stacking layers, offset the joints
- 8 Store dry, flat, out of sunlight and unloaded; avoid prolonged contact with oils and solvents



Strip / pad support



Full-surface laying

QUALITY & CONTACT

The WK Series is developed in our 1,169 m² technical centre, equipped with universal tensile testers, climate chambers, DIN abrasion testers and resistivity meters for formulation validation, incoming inspection and release testing. Dynamic properties are tested by third-party laboratories.

Available tests and reference standards

Test	Reference standard	Performed by
Density	GB/T 6343	In-house
Static bedding modulus	GB/T 39705-2020	In-house
Dynamic bedding modulus, dynamic/static ratio	GB/T 39705-2020	Third-party lab
Tensile strength, elongation	GB/T 10654 (ISO 1798)	In-house
Compression set	GB/T 10653 (ISO 1856)	In-house
Appearance, dimensional tolerance	GB/T 39705-2020	In-house

Send us the machine weight, support area and excitation frequency: our engineers will help with the selection calculation and provide samples.



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