matteco elastomeric bearing ELR 8

with general building authority approval/ general type approval Z-16.32-497

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The matteco elastomeric bearing ELR 8 is an unreinforced, shear-soft elastomeric bearing whose main component SBR and NR is made of recycled old tires in powder form. It is intended for the bearings of components, especially prefabricated steel and prestressed concrete parts, but also wood and plastic constructions.

Experimental tests required by an independent institute in accordance with the guidelines of the Institut für Bautechnik in Berlin have been specified as proof of the classification for use in building construction and the associated building authority approval.

In building construction, matteco elastomeric bearings ELR 8 are mostly used as point bearings, in storey construction as strip bearings underneath surface bearing structures.

Due to its very good thermal insulation values, matteco elastomeric bearing ELR is also used for **thermal separation.**

matteco elastomeric bearings ELR 8 are also used very effectively for **structure-borne sound insulation** of external vibrations. By using matteco elastomeric mounts ELR 8 as elastic intermediate layer, the transmission of structure-borne noise is efficiently and cost-effectively prevented.

With the fire protection equipment, matteco elastomer bearing ELR 8 also meets the requirements of the **F90 fire resistance class**, proven by fire protection technical expert opinion.

Notes on the assessment basis

In each individual case, the load safety of the elastomeric bearings in the ultimate limit state must be verified by means of a static calculation for all decisive design situations and load cases. The basis for approval is the verification concept according to DIN EN 1990:2010-12 in conjunction with the National Annex.
The design values of the effect of the action (stress) $_{Ed}$ are to be determined from the characteristic values of the actions, taking into account the partial safety factors $_{Yf}$ and the combination values ψ according to the Technical Building Regulations.
In the ultimate limit state, the following verification must be carried out:

$$E_{\perp d} / R_{\perp d} \leq 1$$

with:

$E_{\perp d}$ Load of the elastomeric bearing perpendicular to the bearing plane [N/mm²].

$R_{\perp d}$ Rated value of the corresponding load capacity of the elastomeric bearing [N/mm²] perpendicular to the bearing plane as a function of the form factor S at a compression of ε = 25%.

Shape factor for rectangular cross-sections $S = (a*b) / (2*t*(a+b))$
with:
a Shorter side of the bearing [mm]
b Longer side of the bearing [mm]
t Thickness of the unloaded bearing [mm]

Shape factor for strip-shaped cross-sections: $S = a / (2*t)$
(condition: b > 10 * a)

Shape factor for round cross-sections $S = r / (2*t*(a+b))$
with:
r Radius of the round bearing [mm]

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Performance features

- Ecologically and sustainably produced elastomeric bearing with general building authority approval (Z-16.32-497).
- High restoring force due to shear-soft elastomer bearing.
- Excellent structure-borne sound insulation up to over 35 dB.
- Permanently elastic bearing.
- Very high homogeneity.
- Very robust and durable.
- Rot-proof.
- 100% recyclable.

Delivery forms

- As a blank with holes, cut-outs and diagonal cuts.
- Available as strips in all widths.
- Standard bearing thickness 10, 15 and 20 mm.
  Intermediate bearing thicknesses on request.
- For use in in-situ concrete, the bearing can be supplied with lost formwork, both for point and strip bearings.
- Special lost formwork for use in the required fire resistance class F90 available.

Type designation for tender and order

- matteco ELR 8 - thickness / length x width - F90 (optional)

Assembly:

Direct contact with materials containing plasticizers should be avoided. Support surfaces must be free of concrete residues, dust, oil, grease and solvents. A planned alignment of the bearing surfaces must be ensured.

Tolerances:

With regard to the tolerances to be observed for the dimensions, the following applies

Length:	Class L3 according to Table 1 of DIN ISO 3302-1:1999
Width:	Class L3 according to Table 1 of DIN ISO 3302-1:1999
Thickness:	Class M4 according to Table 1 of DIN ISO 3302-1:1999

disposal:

No disposal costs - return by matteco GmbH

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Technical data

Description	Value
Material:	Recycled rubber powder with special binder (no PU binder)
Color:	black
Shape:	Plate, both sides flat
Surface:	smooth
Thickness:	10, 15, 20 mm
Width and length:	according to specification (max. width 1.2 m)
Design value of the load capacity: at room temperature	7.8 N/mm²
Density:	approx. 1050 kg/m³
Tear resistance:	2.6 N/mm²
Elongation at break:	65 %
Modulus of elasticity:	1,49 N/mm²
Shear modulus:	1.18 N/mm²
Structure-borne sound insulation:	up to 35 dB
Thermal conductivity:	0.15 W/mK
Operating temperature:	-25°C to +50°C, briefly up to 70°C
Shore A hardness:	58 ± 5
Fire behaviour Elastomer:	Efl
Dangerous substances:	none
No disposal costs - 100% recyclable by matteco	
75% reduction in CO2 emissions through energy-efficient production	

Approval:
General building approval Z-16.32-497, issued by the German Institute for Building Technology in Berlin.

Fire reports:
Expert opinion on fire behaviour 2551/2018 MPA Braunschweig.

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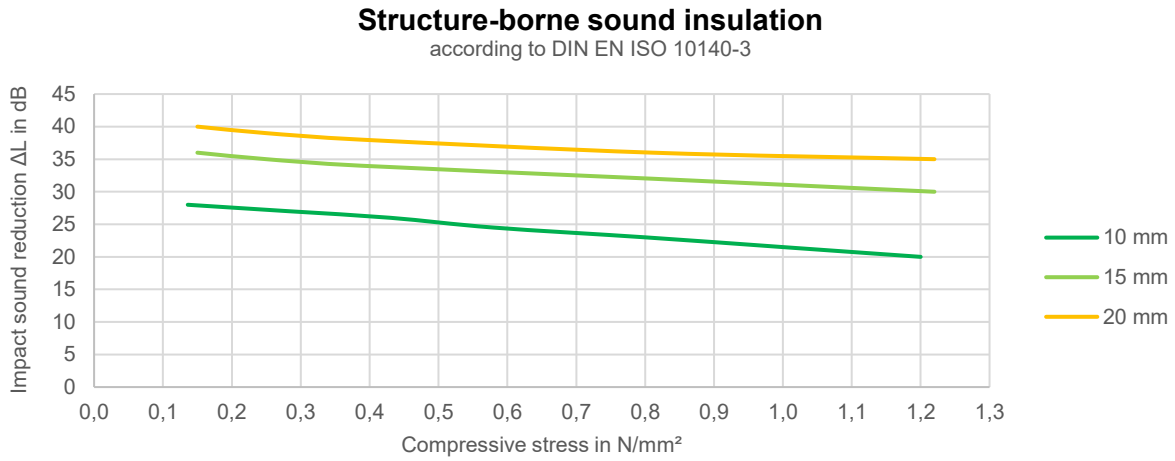
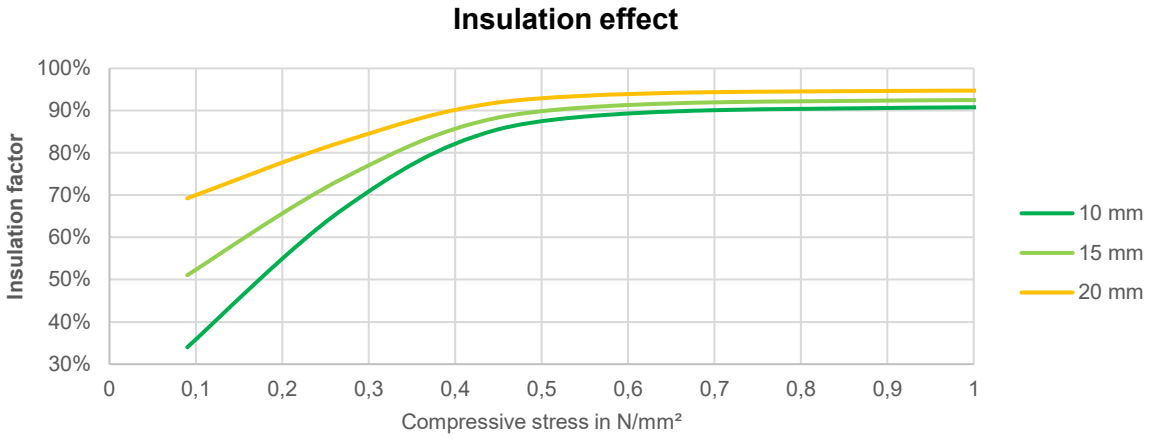
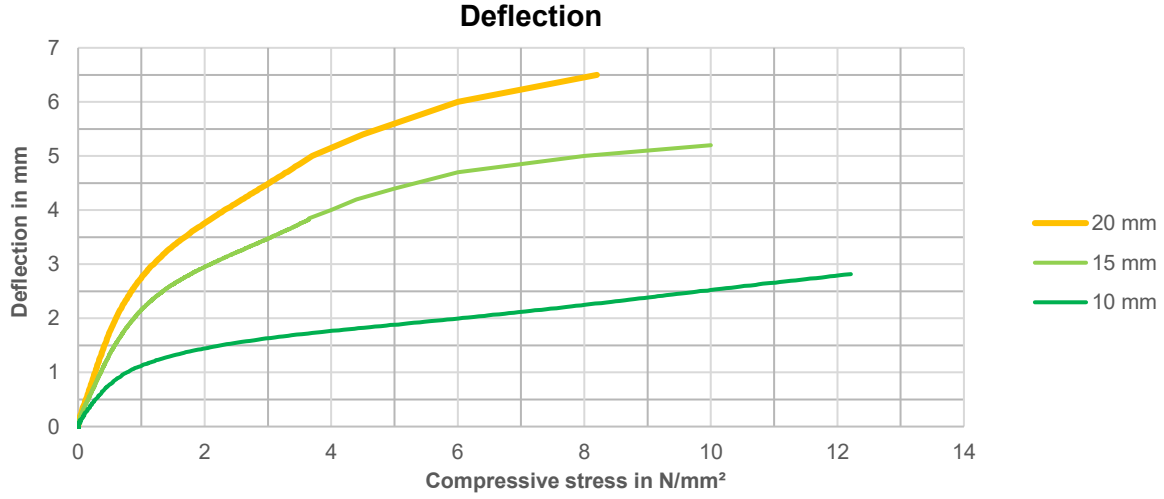
Very high sound insulation due to shear soft elastomer bearing!



Due to the homogeneity of the material structure of matteco elastomeric bearings ELR 8, a relatively constant structure-borne sound insulation is achieved over a wide load range. This enables us to offer planners, architects, construction companies and building owners the greatest possible acoustic safety.



Shown is the insulating effect of ELR 8 at an excitation frequency of 100 Hz.



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Product overview

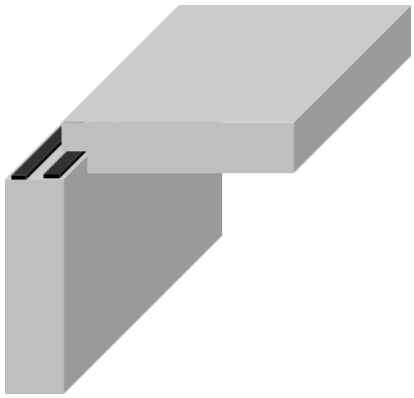
matteco elastomeric bearing ELR 8, **strip bearing**

Elastomer width a [mm]	Thickness t = 10 mm		Thickness t = 15 mm		Thickness t = 20 mm	
	Load capacity Rd [kN/m]	Perm. angle of rotation α [‰] 2000/a	Load capacity Rd [kN/m]	Perm. angle of rotation α [‰] 3000/a	Load capacity Rd [kN/m]	Perm. angle of rotation α [‰] 4000/a
25	30*	16	20*	16	-	-
40	70*	16	40*	16	30*	16
50	120	16	70*	16	50*	16
60	210	16	100	16	70*	16
70	340	16	150	16	100*	16
75	430	16	180	16	120*	16
80	550	16	220	16	140*	16
90	700	16	310	16	180*	16
100	780	16	430	16	240	16
110	860	16	600	16	320	16
120	940	16	830	16	410	16
130	1010	15	1010	16	530	16
140	1090	14	1090	16	680	16
150	1170	13	1170	16	870	16
160	1250	13	1250	16	1100	16
170	1330	12	1330	16	1330	16
180	1400	11	1400	16	1400	16
190	1480	11	1480	16	1480	16
200	1560	10	1560	15	1560	16
Maximum deflection [mm]		2,5		3,75		5
Perm. horizontal shear deformation [mm].		3		4,5		6

* Formats outside the approval

According to the abZ, the following must be taken into account for torsion: obliquity with 10 ‰ and unevenness with 625/a ‰

- Use in in-situ concrete: Embedding in PE foam
- Use in fire resistance class F90 on request



Example of calculation of the restoring force:

Existing line load: 175 kN/m
Selected bearing thickness: 15 mm
Selected bearing width: 100 mm
expected horizontal deformation: 3.0 mm
Horizontal force / load capacity: 0.1 (see diagram next page)
Restoring force: 0.1 x 175 kN/m = 17.5 kN/m

The values given above are indicative and have been determined over a longer, representative period of time in accordance with applicable testing standards or internal company methods. However, they are not considered binding specifications and are therefore in no way to be understood as an express assurance of certain properties. We reserve the right to make further technical developments and to reprint data sheets.

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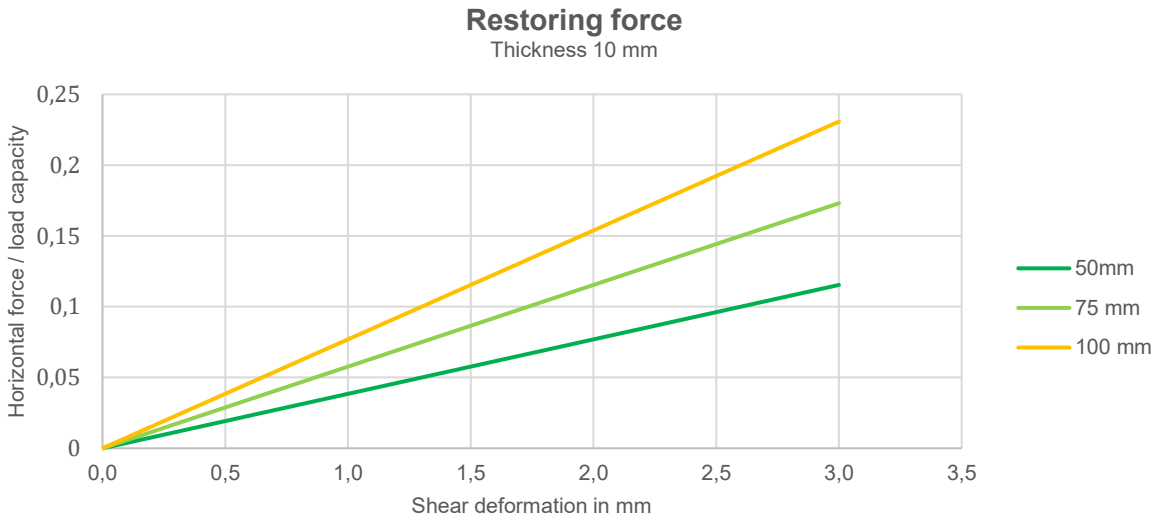

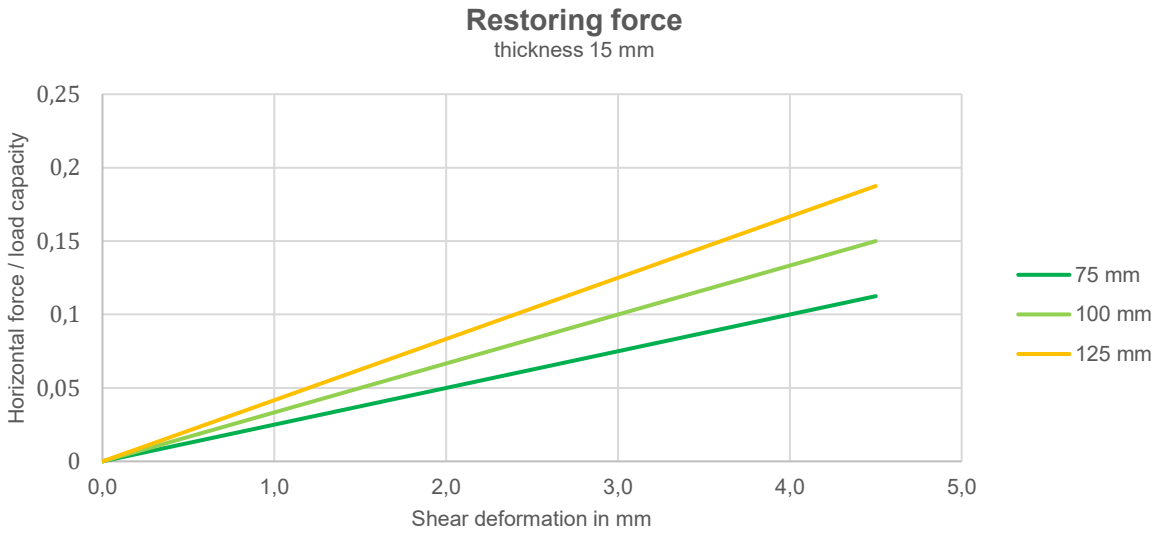

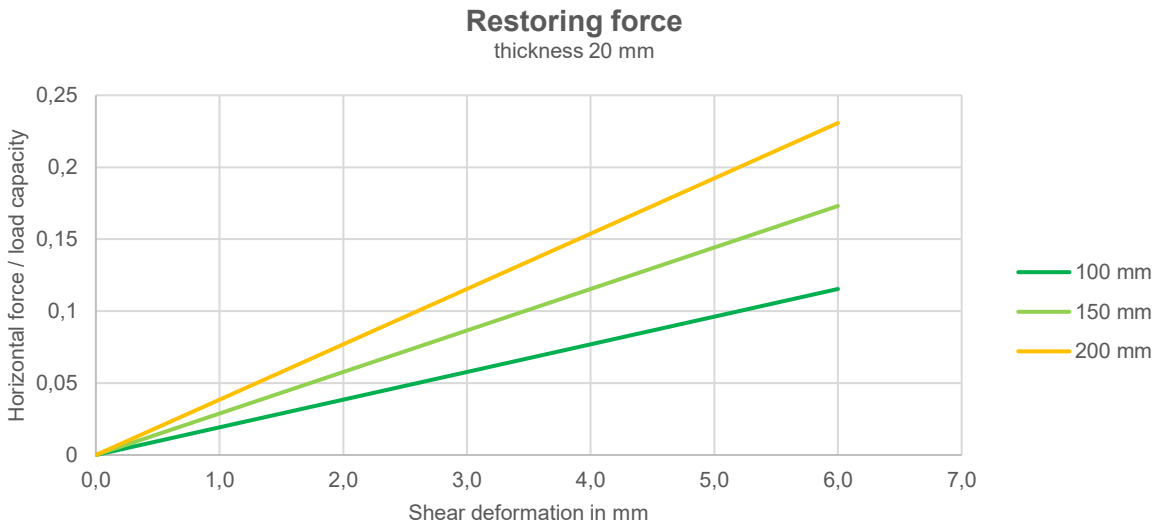

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matteco elastomeric bearing ELR 8, **point contact bearing**

Thick-ness t [mm]	Width a [mm]	Perm. angle of ro-tation α [‰]	Load carrying capacity Rd [N/mm²] Length b [mm]														
			100	120	130	150	170	180	200	250	300	350	400	450	500	550	600
10	100	16	2,4	2,8	3,0	3,4	3,8	4,0	4,3	5,1	5,8	6,4	6,9	7,3	7,7		
	110	16	2,6	3,1	3,4	3,9	4,3	4,6	5,0	6,1	7,0						
	120	16	2,8	3,4	3,7	4,3	4,9	5,2	5,8	7,1							
	130	15	3,0	3,7	4,1	4,8	5,5	5,9	6,6								
	140	14	3,2	4,0	4,4	5,3	6,2	6,6	7,5								
	150	13	3,4	4,3	4,8	5,8	6,8	7,3									
	200	10	4,3	5,8	6,6												
	250	8	5,1	7,1													
	300	7	5,8														
	350*	6	6,4														
	400*	5	6,9														
	450*	4	7,3														
	500*	4	7,7														

7,8

* Formats outside the approval

Thick-ness t [mm]	Width a [mm]	Perm. angle of ro-tation α [‰]	Load carrying capacity Rd [N/mm²] Length b [mm]														
			100	120	130	150	170	180	200	250	300	350	400	450	500	550	600
15	100	16	1,4	1,5	1,6	1,7	1,8	1,9	2,0	2,2	2,4	2,6	2,7	2,8	2,9	3,0	3,1
	110	16	1,4	1,6	1,7	1,8	2,0	2,1	2,2	2,5	2,7	3,0	3,1	3,3	3,4	3,6	3,7
	120	16	1,5	1,7	1,8	2,0	2,2	2,3	2,4	2,8	3,1	3,4	3,6	3,8	4,0	4,2	4,3
	130	16	1,6	1,8	1,9	2,1	2,3	2,4	2,6	3,1	3,5	3,8	4,1	4,4	4,7	4,9	5,1
	140	16	1,6	1,9	2,0	2,3	2,5	2,6	2,9	3,4	3,9	4,3	4,7	5,1	5,4	5,7	5,9
	150	16	1,7	2,0	2,1	2,4	2,7	2,8	3,1	3,7	4,3	4,9	5,3	5,8	6,2	6,5	6,9
	200	15	2,0	2,4	2,6	3,1	3,6	3,8	4,3	5,6	6,9						
	250	12	2,2	2,8	3,1	3,7	4,4	4,8	5,6	7,7							
	300	10	2,4	3,1	3,5	4,3	5,3	5,8	6,9								
	350	9	2,6	3,4	3,8	4,9	6,0	6,7									
	400	8	2,7	3,6	4,1	5,3	6,8	7,6									
	450	7	2,8	3,8	4,4	5,8	7,4										
	500*	6	2,9	4,0	4,7	6,2											

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Thick-ness t [mm]	Width a [mm]	Perm. angle of ro-tation α [‰]	Load carrying capacity Rd [N/mm²] Length b [mm]														
			100	120	130	150	170	180	200	250	300	350	400	450	500	550	600
20	100	16	1,0	1,1	1,1	1,2	1,3	1,3	1,4	1,5	1,6	1,6	1,7	1,8	1,8	1,8	1,9
	110	16	1,1	1,1	1,2	1,3	1,4	1,4	1,5	1,6	1,7	1,8	1,9	2,0	2,0	2,1	2,1
	120	16	1,1	1,2	1,3	1,4	1,4	1,5	1,6	1,7	1,9	2,0	2,1	2,2	2,3	2,4	2,4
	130	16	1,1	1,3	1,3	1,4	1,5	1,6	1,7	1,9	2,1	2,2	2,3	2,5	2,6	2,6	2,7
	140	16	1,2	1,3	1,4	1,5	1,6	1,7	1,8	2,0	2,2	2,4	2,6	2,7	2,8	3,0	3,1
	150	16	1,2	1,4	1,4	1,6	1,7	1,8	1,9	2,2	2,4	2,6	2,8	3,0	3,2	3,3	3,4
	200	16	1,4	1,6	1,7	1,9	2,1	2,2	2,4	2,9	3,4	3,9	4,3	4,7	5,1	5,5	5,8
	250	16	1,5	1,7	1,9	2,2	2,5	2,6	2,9	3,7	4,6	5,4	6,2	7,0	7,7		
	300	13	1,6	1,9	2,1	2,4	2,8	3,0	3,4	4,6	5,8	7,1					
	350	11	1,6	2,0	2,2	2,6	3,1	3,4	3,9	5,4	7,1						
	400	10	1,7	2,1	2,3	2,8	3,4	3,7	4,3	6,2							
	450	9	1,8	2,2	2,5	3,0	3,6	4,0	4,7	7,0							
	500	8	1,8	2,3	2,6	3,2	3,9	4,2	5,1	7,7							

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