



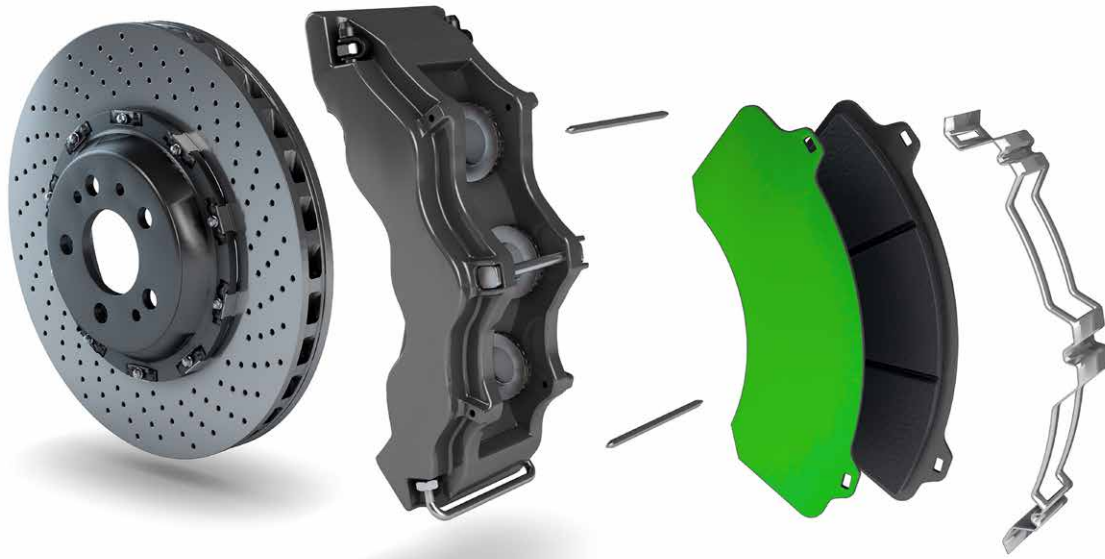
# Brake Shim Adhesives

 Solutions for Noise Reduction



Adhesive Tape Systems

# Solutions for Noise Reduction



ORAFOL's brake shim adhesives are advanced solutions for noise reduction for highly demanding automotive brake applications. This adhesive range was specifically designed to have excellent adhesion properties on most brake materials (e.g. rubber, steel, powder coated metals).

The products were developed to withstand extreme shear forces and temperatures, which occur during brake operation. For decades, ORAFOL's brake shim products have proven their worth in numerous brake systems. The long-term experience gained in this field and state-of-the-art equipment have provided the possibility to offer well proven systems as well as newly developed products that meet upcoming challenges e.g. cold-noise damping.

### ORAFOL's Brake Shim Solutions Offer

- Damping behavior tailored to various brake systems
- Excellent damping efficiency
- Reliable noise reduction and long-term stability
- Wide damping frequency range
- Excellent shear and temperature resistance
- Variety of available liners compatible to various application processes and complex product shapes

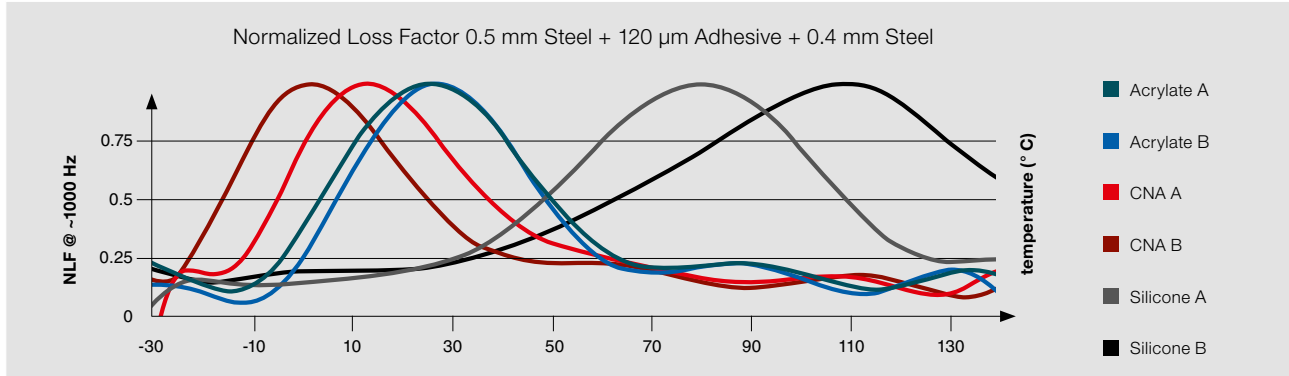
Adhesives	Damp. Max @ ~1000 Hz (° C)	Temp. Resistance (° C)	Peel Performance on Steel (N/25 mm)
Acrylate A	26	> 220	21
Acrylate B	26	> 220	24
CNA A	12	180	20
CNA B	2	150	17
Silicone A	80	> 220	26
Silicone B	108	> 220	26



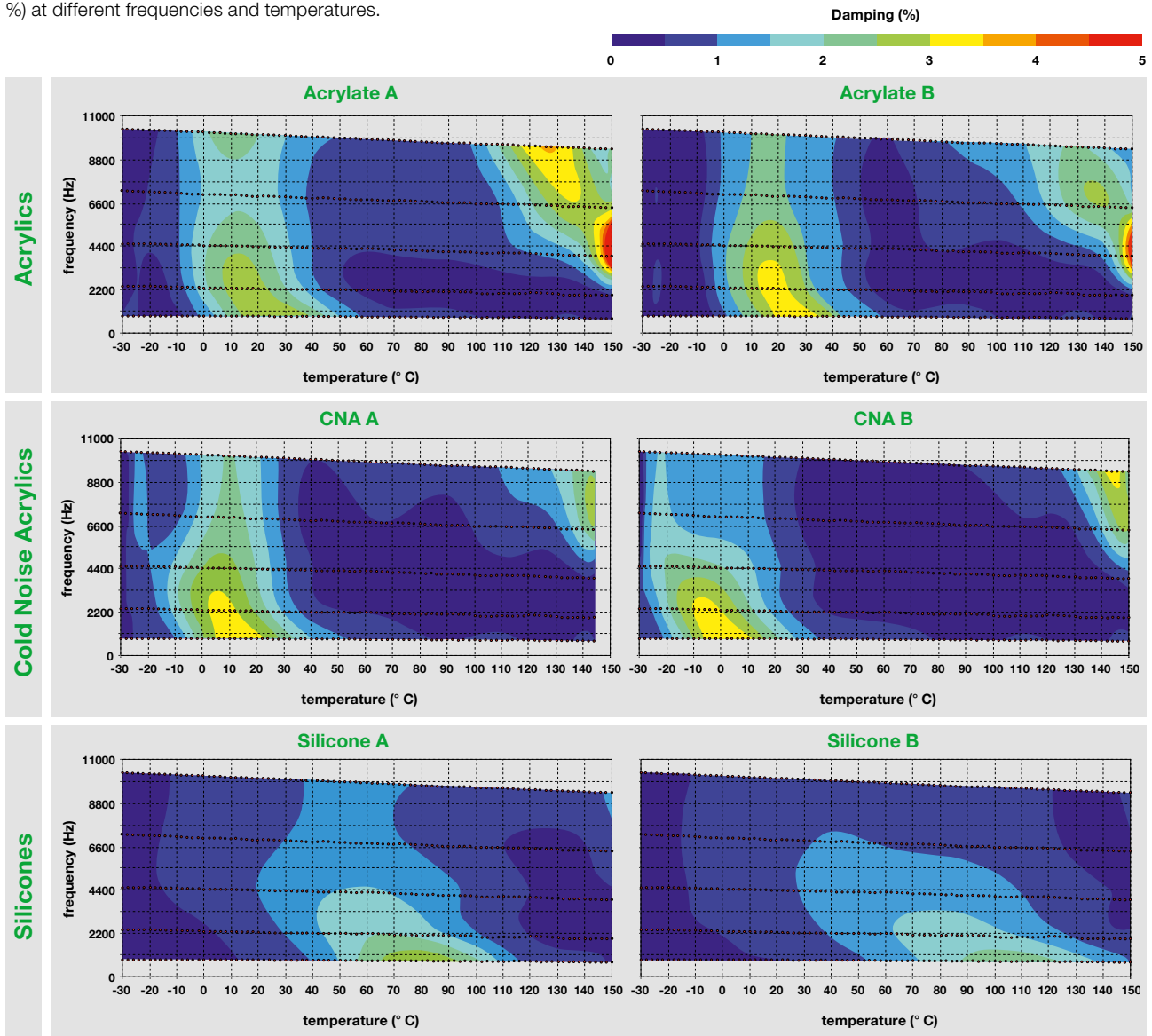
# Properties of Brake Shim Adhesives

## Damping Profiles (Loss Factor)

The spectra were recorded using 80 - 120 µm Adhesive films adhered to a 5.0 mm stainless steel ground plate and a 0.4 mm stainless steel shim.



The top figure summarises the damping behavior of the available brake shim adhesives. For better comparison the curves are normalized and the first Eigenfrequency (at around 1000Hz) of the loss factor is plotted over the temperature. The acrylics, as well as the cold noise acrylics (CNA), damp efficiently between -20° C and 50° C whereas the silicones at much higher temperatures between 50° C and 130° C. The bottom graphs give a more detailed look onto the damping behavior of each adhesive. Shown is the damping efficiency (in %) at different frequencies and temperatures.



## ORAFOL's Product Range for Brake Applications

Product Number	Adhesive Type	Adhesive Thickness (µm)	Liner Mounting Side (Brake Side)	Liner Laminating Side (Brake Shim Side)
<b>1309</b>	Silicone	50	White PET/LDPE-laminate (suitable for Bunetto process)	Clear 36 µm PET
<b>1310</b>	Silicone	80	White PET/LDPE-laminate (suitable for Bunetto process)	Clear 36 µm PET
<b>1373</b>	Acrylic	100	Yellow siliconized paper 90 g/m <sup>2</sup>	-
<b>1373W</b>	Acrylic	100	White PE-coated paper 140 g/m <sup>2</sup>	-
<b>1373WA</b>	Acrylic	100	White PE-coated paper 100g /m <sup>2</sup>	-
<b>1374</b>	Acrylic	50	Yellow siliconized paper 90 g/m <sup>2</sup>	-
<b>1374WA</b>	Acrylic	50	White PE-coated paper 100 g/m <sup>2</sup>	-
<b>1321</b>	Acrylic	70	Clear 50 µm PET (opt. printed)	White siliconised paper 90 g/m <sup>2</sup>
<b>1322</b>	Acrylic	70	White PET/LDPE-laminate (suitable for Bunetto process)	White siliconised paper 90 g/m <sup>2</sup>



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