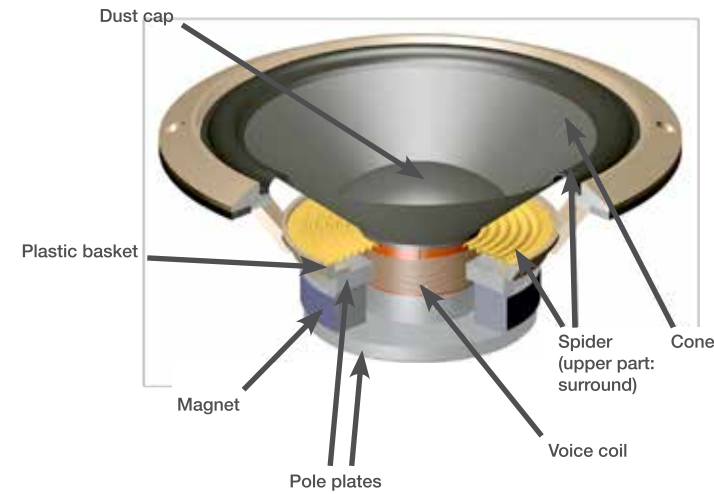


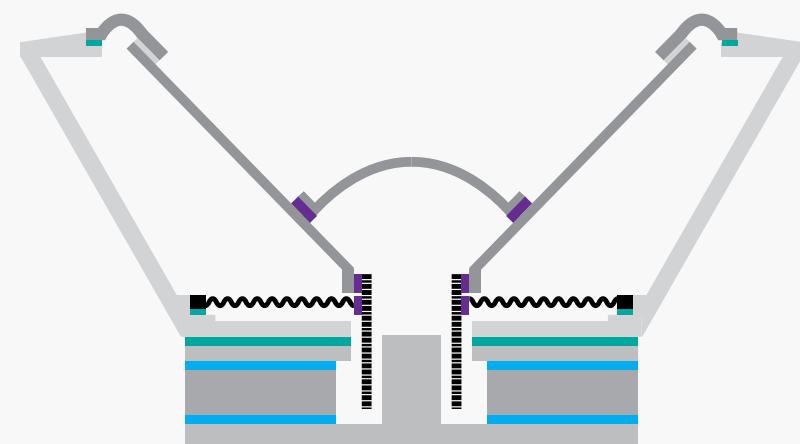
LOUDSPEAKER ADHESIVES

– BEST IN CLASS

Adhesive Products is a significant adhesive producer for the loudspeaker industry - especially for the automotive speaker production - with a very high market share. Our customers are major loudspeaker companies like PSS, Harman, Dynaudio or ASK for now more than 20 years. So we have a lot of experience in the market section of loudspeaker gluing joints. In order to meet up the changing demands of our customers, we offer high flexibility and a high degree of application customization to meet your expectations for the assembly line. We are very concerned about the declaration and physiology of our raw materials in order to provide completely non-toxic products with a high user comfort. On the inside pages we give you an overview of the common gluing solutions for every gluing joint inside the loudspeaker.



We divided the gluing joint applications in three main sections. The brochure suggests some of our standard products for the subclasses of the three gluing sections:



BASKET

VOICE COIL

MAGNET



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Please notice:

The mentioned data and information are based on tests in our laboratory. Reliable statements about the behaviour of the glue in practical use and the suitability for a specific use can not be taken. The suitability of the product for a provided use by consideration of all necessary conditions must be tested by the user itself. The kind, the physical and chemical properties of the used materials and the influences during the transport, storage and usage of the glue can effect deviations in the behaviour of the glue in comparison to the behaviour in our laboratory. The mentioned data are measured in our laboratory and they are typical average values or values which are measured only one time. The mentioned data and information represent consequently no guarantee / assurance of the parameters or the suitability of the glue for a specific use. V/09/20. Mistakes remain reserved.

HIGH-PERFORMANCE ADHESIVES FOR LOUDSPEAKER INDUSTRY

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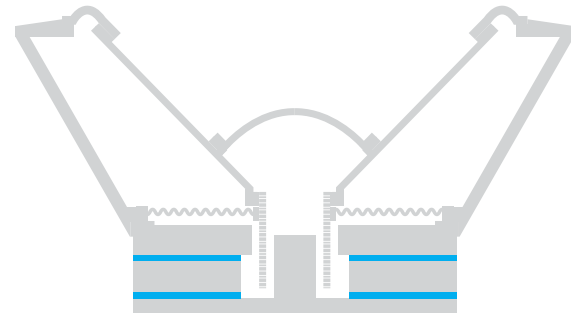
BASKET

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The gluing joint between magnet and pole plate is one of our supreme disciplines. We offer the industry standard 3-component system ND 2010/2800 and now also a new 2-component system ND 7744, which is able to substitute to the same performance as ND 2010/2800. Application for this gluing joint is usually done by beat on beat method, but it can also be done by static mixing (e.g. in a cartridge), if the fixture time is adjusted high enough. The following adhesives represent our basic portfolio in the acrylate world for the magnet gluing joint.

ND 2010/2800 3C acrylic

Used by major producers for more than 15 years; industry standard for the application.

Parameters for application:

- Viscosity A (RT): 5.400 ± 1.000 mPa*s
- Viscosity B (RT): 6.400 ± 1.300 mPa*s
- Viscosity B w/ 8% HP (RT): 8.500 ± 1.700 mPa*s
- Mixing ratio: 1:1 (A : B w/ 8% HP)
- Open time range (RT): > 15 sec
- Fixture time range (RT): 50 sec – 6 min

Product properties:

- Very high temperature resistance (-70 °C to +130 °C)
- Lap shear strength (RT, ZPS): > 17 MPa
- No irritating components like acrylic acid
- Colour: A blue, B fluorescent yellow, HP red

ND 7744 2C acrylic

Fresh innovative development; tests show superior behaviour to all competitors.

Parameters for application:

- Viscosity A (RT): 2.100 ± 500 mPa*s
- Viscosity B (RT): 2.200 ± 500 mPa*s
- Mixing ratio: 1:1 (by volume)
- Fixture time range (RT): 15 sec – 6 min

Product properties:

- Very fast curing possible
- Very high temperature resistance (-70 °C to +130 °C)
- Lap shear strength (RT, ZPS): > 10 MPa
- Odourless as the glue is free of MMA (methyl methacrylate)
- No irritating components like acrylic acid
- Colour: A fluorescent yellow, B black

1212 AV 1C acrylic + activator

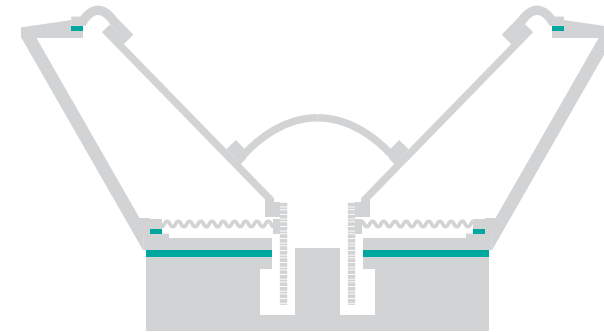
Classic product for fast assembly lines.

Parameters for application:

- Viscosity A (RT): 2.100 ± 500 mPa*s
- Viscosity B (RT): 2.200 ± 500 mPa*s
- Fixture time range (RT): 15 sec – 6 min

Product properties:

- Odourless as the glue is free of MMA (methyl methacrylate)
- No irritating components like acrylic acid
- Colour: yellow transparent (yellow in UV light), transparent (blue translucent in UV light)



We supply adhesives for the main three gluing joints deriving from the basket:

- Basket – spider
- Basket – surround spider
- Basket – pole plate

The basket – pole plate gluing joint is very difficult due to the different thermal expansions of the plastic basket and the metal. Our product MA 7429 offers a wide range of performance properties in order to achieve a strong and long lasting bond. This adhesive can also be used for other basket gluing joints, but we also have a wide range of different adhesives depending on the process specification of the customer.

For example:

- Odourless solution (MMA-free): MA 7761 (inside page 3)
- PE/PP plastics solution: MA 8910 (inside page 3)

MA 7429

2C acrylic (partly MMA-based)

Additive adhesion to plastic; above market standard in performance and physiology.

Parameters for application:

- Viscosity A as well as B (RT): thixotropic (30.000 – 50.000 mPa*s)
- Mixing ratio: 1:1 (by volume)
- Open time range (RT): 40 – 60 sec
- Fixture time range (RT): 3 – 10 min (depending on substrate)

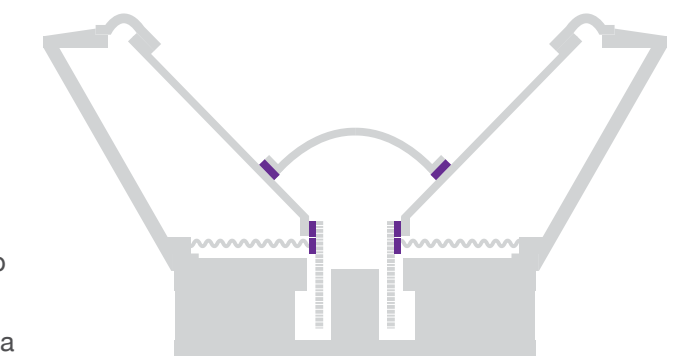
Product properties:

- Outstanding high and low temperature performance
- Lap shear strength (RT, ZPS): > 17 MPa
- Outstanding humidity resistance
- Excellent adhesion to plastic and metal
- Colour: A pink, B green

Voice coil adhesives cover two gluing joints:

- Voice coil – membrane cone
- Voice coil – spider

For the application of voice coil gluing we are not restricted to a certain chemistry. We offer a variety of polyurethanes, epoxys and acrylics, which will do the job completely fine. We selected three standard products, which are frequently used in such applications. We offer a special adhesive for applications including PP or PE – it is called MA 8910. We included the gluing joint cone – dust cap in this category as the used adhesives are similar.



PU 162 2C polyurethane

Very good adhesion to many substrates; excellent temperature and humidity resistance.

Parameters for application:

- Viscosity A (RT): 85.000 mPa*s
- Viscosity B (RT): 450 mPa*s
- Mixing ratio (A/B): 2:1 (by volume)
- Open time range (RT): 5 – 20 min
- Fixture time range (RT): 15 – 180 min

Product properties:

- Excellent chemical resistance
- Lap shear strength (RT, ZPS): > 10 MPa
- Outstanding humidity resistance
- Good adhesion to plastic and metal
- Colour: A grey, B dark brown

MA 7761 2C acrylic (MMA-free)

Very good adhesion to almost all substrates; high temperature performance.

Parameters for application:

- Viscosity A as well as B (RT): 20.000 – 30.000 mPa*s
- Mixing ratio: 1:1 (by volume)
- Open time range (RT): 30 sec – 6 min
- Fixture time range (RT): 5 – 20 min

Product properties:

- Excellent HT performance
- Lap shear strength (RT, ZPS): > 17 MPa
- Good humidity resistance
- Outstanding adhesion to almost all substrates (except PE, PP, rubbers)
- Colour: A fluorescent yellow, B black

UV 5679 1C UV acrylic (MMA-free)

Dual curing mechanism (UV and humidity).

Parameters for application:

- Viscosity (RT): 12.000 ± 2.000 mPa*s
- Fixture time between two glass slides: 5 ± 2 sec (UV intensity: 1,0 mW/cm²)

Product properties:

- Fast fixation by UV light, final curing in shadow areas by humidity
- Good humidity resistance
- Good adhesion
- Colour: transparent

MA 8910 2C acrylic

PE/PP bonder without the need of surface treatment; highest standard in performance and physiology.

Parameters for application:

- Viscosity A and B (RT): thixotropic
- Mixing ratio (A/B): 10:1 (by volume)
- Open time (RT): 2 – 3 min
- Fixture time (RT): approx. 15 min, fully cured (RT): 24 h

Product properties:

- Very good high and low temperature performance
- Contains no toxic peroxides or accelerators
- High fracture toughness and impact resistance
- Lap shear strength (RT); ZPS/ZPS: 8 – 10 MPa, > 3 MPa for PE/PP, PE/PE and PE/ZPS (material break)
- Colour: A white, B amber