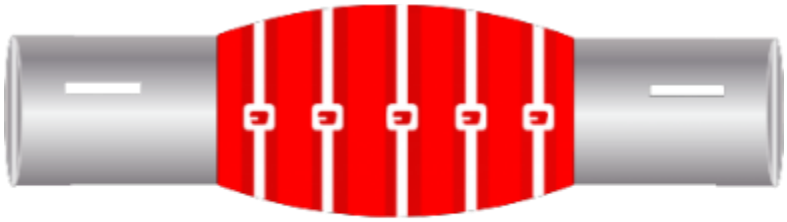

BULLET BUMPER ADHESIVE

MU-BB27

Technical Data Sheet July 2021

Product Description: This adhesive is a low odor, two-part acrylic structural adhesives that offer excellent shear, peel, and impact performance. These products provide excellent adhesion to many painted/coated metals, plastics, glass, and bare metals. These special formulations provide outstanding shear and impact strength at cold temperatures.

Features • Excellent strength and durability on a wide variety of common materials

• Low odor • Minimal surface preparation

• Outstanding cold temp performance • Contains ceramic beads to control bond line thickness

Note: Unless otherwise indicated, all properties measured at 72°F (22°C).

Typical Uncured Physical Properties

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Property

Color Base (B): Black

Accelerator (A): Gray

Viscosity Base (B): 40,000 cP

Accelerator (A): 15,000 cP

Density Base (B): 1.04 g/cm3

Accelerator (A): 1.08 g/cm3

Mix ratio By volume 10 Parts B : 1 Part A

By weight 10 Parts B : 1 Part A

Note: Cure times are approximate and depend on adhesive temperature.

Work life: 8-10 minutes

Open time: 10-12 minutes

Time to handling strength: 12-14 minutes

Time to structural strength: 15-20 minutes

1. Viscosity measured using cone-and-plate viscometer; reported viscosity at 4 sec-1

shear rate.

2. Density measured using pycnometer.

3. Maximum time that adhesive can remain in a static mixing nozzle and still be expelled without undue force on the applicator.

4. Maximum time allowed after applying adhesive to one substrate before bond must be closed and fixed in place.

5. Minimum time required to achieve 50 psi of overlap shear strength.

6. Minimum time required to achieve 1,000 psi of overlap shear strength.

Typical Mixed Physical Properties

Note: The following technical information and data should be considered representative or typical

only and should not be used for specification purposes.

Color: Black

Full Cure Time: 24 hours

Viscosity: 40,000 cP

Density: 1.04 g/cm

Shore A Hardness: 65

Typical Cured

Physical Properties

Note: The following technical information and data should be considered representative or typical

only and should not be used for specification purposes.

Overlap Shear (psi)

Substrate:

Etched Aluminum: 1,933 CF

Cold rolled steel: 2,023 CF

ABS: 878 AF

Acrylic: 662 AF

Polycarbonate: 180 AF

Polyester (fiber-reinforced): 674 AF

Epoxy resin (fiber-reinforced): 2,114 CF

Etched Aluminum (tested at -40°F): 4,556 CF

Etched Aluminum (tested at 120°F): 1,421 CF

Etched Aluminum (tested at 180°F): 668 AF

Note: This adhesive also has relatively low adhesion to low surface energy plastics (such as polypropylene, polyethylene, TPO, and PTFE). Applications involving any of these materials should be carefully evaluated by the end user for suitability.

Note: The presence of oxygen inhibits the cure of acrylic structural adhesives. Therefore, any exposed surfaces of the mixed adhesive will cure much more slowly than adhesive contained within the bond line. With methyl methacrylate (MMA) acrylic adhesives, any uncured adhesive on the surface flashes off immediately, leaving a surface that feels dry to the touch. With this low odor acrylic adhesive, uncured adhesive on exposed surfaces does not evaporate away as quickly, leaving a tacky film of partially cured material. For manufacturing processes that need a tack-free surface quickly, such as for subsequent sanding or painting operations, consider instead using a standard MMA acrylic adhesive

Typical Cured Physical Properties:

Mechanical Properties

Tensile Modulus: 6,410 psi

Tensile Strength: 1,051 psi

Tensile Strain at Break: 113%

Note: Fully-cured structural adhesives can withstand short-term incidental contact with almost any solvent, chemical, or environmental condition. However, long-term continuous exposure of this acrylic structural adhesive to the following liquids should be avoided:

1. Elevated temperature (>120°F) water

2. Ketone-type solvents (acetone, MEK)

Directions for Use

1. To obtain the highest strength structural bonds, paint, oxide films, oils, dust, mold release agents, and all other surface contaminants must be completely removed. The amount of surface preparation depends on the required bond strength and environmental aging resistance desired by user. For suggested surface preparations on common substrates, see the section on surface preparation.

2. . Mixing

For Duo-Pak Cartridges

Store cartridges with cap end up to allow any air bubbles to rise towards the tip. To use, simply insert the cartridge into the EPX applicator and start the plunger into the cylinders using light pressure on the trigger. Then remove the cap and expel a small amount of adhesive to ensure material flows freely from both sides of cartridge. For automatic mixing, attach an EPX mixing nozzle to the cartridge and begin dispensing the

adhesive. For hand mixing, expel the desired amount of adhesive and mix thoroughly. Mix approximately 15 seconds after obtaining a uniform color.

3. Apply adhesive and join surfaces within the open time listed for the specific product.Larger quantities and/or higher temperatures will reduce this working time. The adhesive and all materials should be at 60°F (16°C) or above to achieve highest bond strength.

4. Allow adhesive to cure at 60°F (16°C) or above until completely firm. Applying heat up to 150°F (66°C) will increase cure speed.

5. Keep parts from moving during cure. Apply contact pressure or fixture in place if necessary. Optimum bond line thickness ranges from 0.005 to 0.020 inch; shear strength will be maximized with thinner bond lines, while peel strength reaches a maximum with thicker bond lines.

6. Excess uncured adhesive can be cleaned up with ketone-type solvents.

Surface Preparation:

Acrylic Adhesives are designed to be used on painted/coated metals,most bare metals, and most plastics and composite materials. The following cleaning methods are suggested for common surfaces:

Painted/coated metals:

1. Wipe surface free of dust and dirt with clean cloth and pure isopropyl alcohol.*

2. Sandblast or lightly abrade using clean fine grit abrasives. Do not completely remove the paint layer or coating down to bare steel.

3. Wipe again with clean cloth and pure isopropyl alcohol to remove loose particles.*

Bare metals:

1. Wipe surface free of dust and dirt with clean cloth and pure acetone.*

2. Sandblast or lightly abrade using clean fine grit abrasives.

3. Wipe again with clean cloth and pure acetone to remove loose particles.*

Plastics and composite materials:

1. Wipe surface free of dust and dirt with clean cloth and pure isopropyl alcohol.*

2. Lightly abrade using fine grit abrasives.

3. Wipe again with clean cloth and pure isopropyl alcohol to remove loose particles.*

*Note: When using solvents, extinguish all ignition sources, including pilot lights, and follow themanufacturer’s precautions and directions for use.

Storage:

Store product at 80°F (27°C) or below. Refrigeration at 40°F (4°C) will help extend shelf life.
Do not freeze. Allow product to reach room temperature prior to use.

Shelf Life: 12 months