

ADHESIVE BONDING CONSIDERATIONS

Adhesive bonding offers one method for repairing or assembling products or items. The advantages of this process are many and include distribution of applied forces, lighter weight and appealing appearance, no distortion of substrates, sealed joints, and long life in the presence of vibration just to name but a few.

Adhesive bonding can be divided into two segments: (1) assembly bonding and (2) structural bonding.

Assembly bonding uses adhesives to hold two parts together. There is little or no load applied to the joint other than the weight of the two parts or small forces created by differences in thermal expansion.

Structural bonding is the formation of a load-carrying joint usually between two high-strength members. Elaborate surface preparation is usually performed on each substrate to obtain optimum strength and performance (environmental, durability, fatigue and/or chemical resistance).

To be successful using bonding technology, knowledge is needed about the different types of adhesives. GSA Global Supply offers a wide variety of adhesives including materials having room and elevated temperature cures. These adhesives are based on epoxy, urethane, phenolic, methyl methacrylate, silicone, and rubber polymers, in addition to others, too numerous to be included here. They come in many size containers and numerous packaging modes plus several forms including liquid, paste and film. It is also helpful to know the advantages and disadvantages of each type of adhesive to be used in a particular application and how to use the adhesive in a process that will provide a reliable, repeatable, quick-forming bond. Once this information is available, then a comparison and compromise can be made to identify the “best” adhesive for your application. Listed below are some factors that should be considered when using adhesives in a bonding process.

- The purpose of the adhesive joining.
- The forces to be applied to the joint.
- The materials to be joined.
- The type of adhesive joint will be used (shear, tensile, compression or peel).
- Surface preparation
- The form of the adhesive (liquid, film, one or two part).
- Durability considerations.
- Environmental impact of using a certain adhesive or process.
- Producibility (cost, speed, and quality).

National Stock Number Examples of Adhesive Types

Asphalt based adhesive

Intended Use: This item is a one cut-back type of asphalt adhesive suitable for the installation of asphalt and vinyl floor tile on primed or unprimed concrete, steel, hardwood, or plywood subfloors.

8040-00-273-8705 Armstrong World Industries, Inc. part number S

Neoprene rubber based adhesives

Intended Use: A polychloroprene-based adhesive for bonding neoprene, natural, reclaim, SBR, and butyl rubbers to most substrates. Dries quickly and has excellent salt water, oil, grease, and fuel resistance.

8040-01-068-2423 3M Co. product 2141, part number 62

8040-00-058-2399 A-A-1936 ADHESIVE, CONTACT, NEOPRENE RUBBER

Cyanoacrylate adhesive

Intended Use: This is for use with or without an activator when speed of curing is a primary consideration. It also covers the activator which may be used to provide even faster curing and to enable the adhesives to bond to otherwise applications requiring one-component bonding of small, well-mated surfaces where heat and/or pressure cannot be applied.

8040-00-142-9193 A-A-3097 ADHESIVES, CYANOACRYLATE, RAPID ROOM TEMPERATURE-CURING, SOLVENTLESS

Butadiene/acrylonitrile base resin

Intended Use: A butadiene-acrylonitrile based adhesive, 22-26% solids, general purpose adhesive/coating that is oil, gasoline, and aromatic fuel resistant and adheres to synthetic rubber, metal, glass, and many plastics.

8040-00-433-4065 3M Co. product 776, part number 62

Epoxy resin based adhesives

Intended Use: A 2 part, low viscosity, liquid, epoxy adhesive system for repair applications that include laminating with glass cloth, injection, and coating.

8040-01-189-1284 Henkel Loctite Inc. part number EA 9314NA.

8040-01-126-6271 Henkel Loctite Inc. part number EA 956

8040-00-944-7292 AMS 3726, MMM-A-1754

8040-00-092-2816 Elementis Services Inc. part number 8173; 3M Co. part number Scotchweld 3501 B/A; or Henkel-Loctite part number EPK 608.

8040-01-184-7171 Henkel-Loctite Inc. part number EA-9330.3 or Magnolia Plastics Inc. part number Magnobond 6155 A/B.

Silicone rubber based adhesives

Intended Use: This specification covers three groups of one-part, room-temperature-vulcanizing (RTV), silicone adhesive-sealants which cure to durable, rubber adhesive-sealants upon reaction with moisture in the air. This specification also covers primers (see 6.1.3) for use with the silicone adhesive-sealants.

8040-00-843-0802 MIL-A-46106 ADHESIVE-SEALANTS, SILICONE, RTV, ONE-COMPONENT

8040-00-701-9546 MIL-A-46106 ADHESIVE-SEALANTS, SILICONE, RTV, ONE-COMPONENT

8040-01-010-8758 MIL-A-46106 ADHESIVE-SEALANTS, SILICONE, RTV, ONE-COMPONENT

8040-00-851-0211 MIL-A-46106 ADHESIVE-SEALANTS, SILICONE, RTV, ONE-COMPONENT

8040-00-144-9774 Dow Corning Corp. product 3145 RTV Gray or Accrabond Inc. product Instabond 1645 Gray.

High strength silicone adhesive

Intended Use: A one-component, acetoxy cure, high-strength, RTV silicone adhesive-sealant.

8040-00-181-8380 General Electric Silicones part number RTV-157 03T.

High temperature silicone adhesive

Intended Use: A general purpose, thixotropic paste, silicone rubber used for metal to metal sealing and bonding where high strength and high temperature service are required.

8040-00-145-0450 General Electric Silicones part number RTV-159 3TG.

Urethane resin based adhesives

Intended Use: A 1-part, moisture curing, non-sag, polyurethane adhesive/sealant for use in sealing metal interior/exterior joints, overlap seams, fascia, parapets, and other structural components.

8030-01-443-7389 Degussa Building Systems, Inc. part number CX-22.

8040-01-358-2776 Vantico Inc. product Uralane 5774-A/C.

8040-01-406-8116 Sika Corp. part number Sikaflex 252.

8030-01-443-7388 Chemrex Inc., part number CX-84-978-123

Fluorosilicone rubber adhesive

Intended Use: A 1-part, acetoxy-cure, fluorosilicone sealing compound for use as a fairing compound on aircraft surfaces.

8030-01-471-2719 Nu-Sil Technology Inc. part number FS3730-11.