



Adhesive, One Part, Cyanoacrylate, Surface Insensitive

1 Scope

1.1 Material Description. This specification covers a family of single component, solvent-free, fast setting, ethyl ester based, colorless, liquid cyanoacrylate adhesives.

1.1.1 These materials must be capable of being dispensed with current production equipment. They shall be compatible with production systems.

1.1.2 These adhesives will bond to a variety of surfaces that, under normal conditions, resist other cyanoacrylates.

1.1.3 The variation in these adhesives is the viscosity. Otherwise, the materials are closely related.

1.1.4 The adhesives cure without heat, pressure or accelerator.

1.1.5 The adhesives bond a wide variety of metals, plastics and rubbers with similar or dissimilar materials. However, every new substrate combination needs to be tested because some materials are subject to crazing, delamination, or other attack by reactive adhesives.

1.1.6 The adhesives shall be insoluble in and resistant to water, gasoline, petroleum products, and other chemicals commonly used in the assembly of automotive components and related parts.

1.2 Symbols. Not applicable.

1.3 Applicability. Bonding to metals, plastics, and rubbers.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

ASTM D92

ASTM D792

ASTM D1084

2.2 GM Standards/Specifications.

GMW3059

GMW14444

GMW15735

GMW16853

3 Requirements

3.1 Emissions Testing of Interior Materials and Parts. For all Code E designated parts per GMW14444, reference GMW16853 for emissions testing of interior materials and parts.

3.2 Toxicity. The toxicity shall be disclosed in kind and magnitude, as required, by the GM Materials Safety Data Sheet. In addition, the material must have full approval of the appropriate medical department prior to production use.

3.3 Stability (GMW15735). Material conditioned using potential storage conditions must be capable of passing all the requirements of this specification.

3.3.1 Elevated Temperature Stability. As shipped, the adhesive must be capable of withstanding a temperature of 55 °C for 72 h without separation or caking.

3.3.2 Low Temperature Stability. As shipped, the adhesive must be capable of withstanding 3 cycles of the applicable cycle schedule outlined in GMW15735.

3.3.3 Storage Stability. The shelf life of the adhesive in closed containers shall be 180 days at a temperature not to exceed 35 °C. Shelf life of the material commences upon the receipt of the materials from the manufacturer.

3.4 Material Properties – Uncured Adhesive. See Table 1.

Table 1: Uncured Adhesive

Properties	Values				Test Method
	Type I	Type II	Type III	Type IV	
Appearance	Clear liquid	Clear liquid	Clear liquid	Gel	-
Specific Gravity	1.1	1.1	1.1	1.1	ASTM D792
Flashpoint, °C	80 °C to 93 °C	80 °C to 93 °C	80 °C to 93 °C	80 °C to 93 °C	ASTM D92
Viscosity, mPa-s	90 to 140	10 to 30	450 to 800	18 000 to 40 000	ASTM D1084
Viscometer Model	LVF	LVF	RVT	RVT + HELI	-
Spindle/Speed	#1/30	#1/30	#2/20	TC/20	-

HELI = Brookfield Helipath Stand

mPa-s = Millipascal-second

LVF = Brookfield Model LVF

RVT = Brookfield Model RVT

TC = T-bar spindle, size C

3.5 Material Properties – Cured Adhesive. See Table 2.

Table 2: Cured Adhesive

Properties	Values – All Types	Test Methods
Cure Time	12 s to 15 s skin over, 24 h full cure	-
Service Temperature (Type I, II, IV)	-54 °C to +121 °C	-
Service Temperature (Type III)	-54 °C to 83 °C	-
Soluble in	DMF, Nitromethane	-

DMF = Dimethylformamide

3.6 Adhesive Properties. Test specimens, prepared as specified in the designated procedures, must meet the requirements of the following specifications:

3.6.1 Bond Properties. All types.

3.6.2 Fixture Time. Rubber/rubber 10 s to 30 s.

3.6.3 Tensile Strength. All types 6.9 mPa minimum.

3.6.3.1 Tensile strength specimens are to be fabricated from Buna N rubber cord stock. Prepared test specimens are to be conditioned for 1 h, 20 °C to 25 °C, and 70% ± 5% relative humidity (RH) before testing.

3.6.3.2 Secure an approximately 600 mm specimen of cord stock test material. Using an adequate splicing fixture to ensure a perpendicular cut, slice the cord stock sample in half.

3.6.3.3 Precondition the cord stock test specimens for 1 h, 20 °C to 25 °C, and 70% ± 5% RH.

3.6.3.4 To the square ends, apply sufficient adhesive to completely cover the end of one of the test pieces. Remove any excess adhesive.

3.6.3.5 Mate the ends of the test pieces squarely together.

3.6.3.6 Maintain the bond stationary for the test time and allow the adhesive to cure.

Note: If the ends of the stock do not mate evenly, do not attempt to align the stock but rerun the test.

3.6.3.7 Allow to cure at room temperature for the specified time.

3.6.3.8 When the hold time has elapsed, secure the end of the cord stock about 150 mm away from the bond and pull in a gradually increasing load rate.

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