ADHESIVES, CYANOACRYLATE, (CA) **WSS-M2G401-B1/B10**

1. SCOPE

The materials defined by these specifications are a series of solventless, room temperature curing cyanoacrylate adhesives.

2. APPLICATION

These specifications were released originally for single component industrial quality adhesives formulated for bonding all metals, most rubbers and many plastics.

See attached strategy table for details.

LIMITATIONS:

- Surfaces must be clean, free of oil and debris prior to application.
- When mixed substrates are used, material selection should be based on maximum bond strength of weakest bond to substrate. I.E. Substrates: EPDM Rubber on Steel. The adhesive bond strength of steel is superior to EPDM Rubber. Therefore, the material selection should be based on maximum bond strength of the adhesive to EPDM Rubber.

B1 Toughened ethyl cyanoacrylate low viscosity adhesive for general filling use, with a 90 second fixturing time. For parts that encounter shock, vibration, or thermal cycling.

B2 Thermally resistant ethyl cyanoacrylate high viscosity adhesive for porous surfaces, with a 360 second fixturing time. Material is thermally resistant up to 121 °C. Typical applications: speaker assemblies, automotive components, electrical equipment, oil filters, and disk drives.

B3 Thermally resistant ethyl cyanoacrylate gel adhesive for porous surfaces, with a 30 second fixturing time. This is a heat resistant (-53 to 121 °C) instant adhesive for vertical or overhead surface applications.

B4 Thermally resistant ethyl cyanoacrylate gel adhesive, with a 30 second fixturing time. This is a thermal resistant/thermal cycling resistant (-53 to 121 °C) instant adhesive for vertical or overhead surfaces .

B5 Surface insensitive ethyl cyanoacrylate gel adhesive for porous surfaces, with a 15 second fixturing time. General purpose no-run material that can be applied to vertical surfaces. I ideal use for porous absorbent or acidic surfaces.

B6 Toughened ethyl cyanoacrylate medium viscosity adhesive for clear gap filling, with a 30 second fixturing time. An adhesive formulated for excellent impact and peel strength in gap filling applications. Material bonds well to rubber. Typically used where slower fixture speeds are required or parts are subjected to shock and vibration.

Date	Action	Revisions
2007 04 20	Activated	G. Kowalski

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B7 Low odor/low bloom alkoxy cyanoacrylate gel adhesive for porous surfaces, with a 90 second fixturing time. Used where adhesive run-off or drips must be avoided such as glass, vertical, or overhead surfaces.

B8 Low odor/low bloom alkoxy cyanoacrylate low viscosity adhesive for close fitting parts, with a 50 second fixturing time. Used for appearance sensitive assemblies such as glass or plastic.

B9 Surface insensitive ethyl cyanoacrylate low viscosity adhesive for general purpose applications, with a 5 - 15 second fixturing time Used for bonding porous, absorbent, dry, or acidic surfaces such as: leather, fabric, plastic, and rubber.

B10 Surface insensitive ethyl cyanoacrylate low viscosity adhesive for general purpose applications, with a 5-15 second fixturing time Used for bonding to vertical or overhead surfaces, porous, absorbent, dry, or acidic surfaces such as: leather, fabric, plastic, and rubber.

3. REQUIREMENTS

3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.2 CONTROL ITEMS

Control items must be run on every lot of material, control of these items must be represented in the PFMEA and control plan. After the review and sign-off of the control documents (PFMEA, CP, and SPC data) for a significant number of lots, the frequency of the testing can be reduced as agreed upon by the Materials Engineering representative. Periodic review of the data is necessary to determine if the process has shifted, retesting of para 4.0 parameters may be requested by Materials Engineering if a significant shift has occurred.

3.2.1 Lot to Lot Testing on B1 materials

3.2.1.1	Viscosity, mPas (BS 5350 Part B8 Physica cone and plate, cone MK22, shear rate 1000s^{-1} 25 + 0.5 °C)	100 - 200
3.2.1.2	Tensile Strength, N/mm^2, min (ASTM D 1414-03, DIN 53504 30 sec. RTC, Buna N rubber cord stock TS105)	1.8
3.2.1.3	Tensile Shear Heat Aging, N/mm^2, min (ASTM D 1002-05, ASTM D 3163 ISO 4587, DIN EN1465. Grit blast steel lap shears TS101 Pre-condition lap shears at 70 +/-5% RH for 1 hour. Clamp and cure test specimens at 70 +/- 5% RH)	1.8
3.2.1.4	Appearance (ASTM E 284-05)	Black liquid

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3.2.2 Lot to Lot Testing on B2 materials

3.2.2.1	Viscosity, mPas (ASTM D 1084, 20 rpm Brookfield HBT, spindle, 3, 25 +/- 0.5 °C. Perform tests after holding sample 24 hrs at 25 +/- 0.5 °C, Run spindle at100 RPM for one minute before making reading)	5,000 – 16,000
3.2.2.2	Tensile Shear Hot Strength, N/mm^2, min (ASTM D 1002-05, ASTM D 3163, ISO 4587, DIN EN 1465. Grit Blast steel lap shears TS101, degreased. Pre-condition lap shears at 70 +/- 5% RH for 1 hour)	4.1
3.2.2.3	Tensile Shear, Heat Resistance, N/mm^2, min (ASTM D 1002-05, ASTM D 3163, ISO 4587, DIN EN 1465. Grit blasted steel lap shears TS101, degreased. Pre-condition lap shears at 70 +/- 5% RH for 1 hour. Cure test specimens at 70 +/- 5% RH)	18.6
3.2.2.4	Tensile Shear Al/Al lap shears, N/mm^2, min (ASTM D 1002-05, ASTM D 3163, ISO 4587, DIN EN 1465. Aluminum lap shears TS021, as received)	7.0
3.2.2.5	Tensile Shear 48 hr RTC, N/mm^2, min (ASTM D 1002-05, ASTM D 3163 ISO 4587, DIN EN1465. Grit blast steel lap shears TS101, degreased. Pre-condition lap shears at 70 +/- 5% RH for 1 hour. Cure test specimens at 70 +/- 5% RH)	13.8
3.2.2.6	Appearance (ASTM E 284-05)	Black liquid

3.2.3 Lot to Lot Testing on B3 materials

3.2.3.1	Viscosity, mPas (ASTM D 1084, 20 rpm Brookfield RVT, spindle TC, helipath at 25 +/- 0.5 °C)	10,000 to 60,000
3.2.3.2	Tensile Shear Hot Strength, N/mm^2, min (ASTM D 1002-05, ASTM D 3163, ISO 4587, DIN EN 1465. Grit Blasted steel lap shears TS101)	5.6
3.2.3.3	Appearance (ASTM E 284-05)	Colorless to slightly pale

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