

PRODUCT DESCRIPTION

ARON ALPHA[®] Type 201 is a one component (requires no mixing), humidity cure, general purpose instant adhesive. Viscosity is very low and ideal for bonding plastics, rubbers and metals.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Formula	201
Appearance	Colorless, Transparent
Base Monomer	Ethyl 2-Cyanoacrylate
Viscosity (cps)	2
Specific Gravity (d ²⁰)	1.050
Boiling Point (°C/°F)	60~62/140~144
Flash Point (Closed cup, °C/°F)	83/181
Ignition Temperature (°C/°F)	485/905
Freezing Point (°C/°F)	-30/-21

TYPICAL CURING PERFORMANCE

Under normal conditions, the atmospheric moisture initiates the curing process. Although full functional strength is developed in a relatively short time, curing continues for at least 24 hours before full chemical/solvent resistance is developed.

Cure Speed vs. Substrate:

Formula	201
Material	Setting Time (sec)
PVC (Rigid)	5
PMMA (Polymethylmetacrylate)	10
ABS (Acrylonitrile Butadiene Styrene)	15
PC (Polycarbonate)	20
Natural Rubber	5
Steel	15
Copper	3
Phenolic Resin	5
Rigid PVC/Steel	15
Aluminum/ABS	15
Phenolic Resin/Copper	5
Neoprene Rubber/Steel	10
Neoprene Rubber/ABS	20

Cure Speed vs. Bond Gap:

The rate of cure will depend on the bond line gap. Thin bond lines result in faster cure speeds, increasing the bond gap will slow the rate of cure.

Cure Speed vs. Humidity:

The rate of cure will depend on the ambient relative humidity. High humidity result in faster cure speeds, lower humidity result in slower rate of cure.

Cure Speed vs. Accelerator:

Where cure speed is unacceptably long due to large gaps or low humidity, applying accelerator chemistry to the surface will improve cure speed. However, this can reduce ultimate strength

of the bond and therefore testing is strongly recommended to confirm effect.

TYPICAL PROPERTIES OF CURED MATERIAL

Formula	201
Appearance	Colorless, Transparent
Specific Gravity (d ²⁰)	1.248
Hardness (Rockwell M)	85
Hardness (Rockwell D)	90
Glass Transition Temperature (°C/°F)	140/284
Softening Point (Vicat °C/°F)	145/293
Linear Expansion Coefficient (x10 ⁻⁴)	1.1
Dielectric Tangent (10MC, 10°C)	0.07
Dielectric Constant (10MC, 10°C)	3.5
Dielectric Breakdown Voltage (kV/0.1mm, 23°C)	14
Volume Insulation Resistance (Ωcm·30°C)	10 ¹⁴
Soluble in the following solvents	Acetone, Nitromethane, Dimethylformamide, Dimethyl sulfoxide

Adhesive Properties:

Tensile strength measured in psi

Formula	201
Material	Tensile Strength (psi)
Rigid PVC	5000
Polymethylmetacrylate	5000*
ABS	3600*
Polycarbonate	5000
Natural Rubber	360*
Steel	4600
Copper	5000
Phenolic Resin	5000*
Rigid PVC/Steel	2600
Aluminum/ABS	2100
Phenolic Resin/Copper	3600
Neoprene Rubber/Steel	360*
Neoprene Rubber/ABS	360*

*Material Failure

Lap shear strength measured in psi

Formula	201
Material	Shear Strength (psi)
Rigid PVC	1000*
Polymethylmetacrylate	710*
ABS	710*
Polycarbonate	1000*
Natural Rubber	70*
Steel	2840
Copper	3000
Phenolic Resin	1000*
Rigid PVC/Steel	1000*
Aluminum/ABS	710*
Phenolic Resin/Copper	1000*
Neoprene Rubber/Steel	70*
Neoprene Rubber/ABS	70*

Test conditions—Test specimen:

Tensile strength:	0.5 x 0.5 x 1.5 inch; bonded area 0.25 sq. inch
Lap shear strength:	for plastic/rubber 0.1 x 1.0 x 4.0 inch; bonded area 0.5 sq. inch for metal 0.064 x 1.0 x 4.0 inch; bonded area 0.5 sq. inch
Bonding atmosphere:	72-75°F, 58-62% relative humidity
Test Methods:	ASTM D2095, D3164, D1002

SPECIFICATIONS

Military Specification: Mill-A-46050C Type II Class 1

GENERAL INFORMATION

Directions for Use:

Clean the surfaces to be bonded and then apply ARON ALPHA[®]. Be sure to apply ARON ALPHA[®] to only one of the surfaces to be bonded, preferably the smaller surface or the surface on which the ARON ALPHA[®] cure time is slowest or on the substrate surface facing upwards.

Common errors in applying ARON ALPHA[®] is to apply an excessive quantity of ARON ALPHA[®] or to apply too little of a quantity of ARON ALPHA[®] in a wide, thin film.

Dispensing in excess is a waste of ARON ALPHA[®] as well as potentially damaging to the appearance of the bonded materials in the way of chlorosis (blooming) and/or solvent cracks.

Dispensing not enough of the ARON ALPHA[®] monomer may cause the monomer to harden before actual bonding starts and this will reduce the bond strength to a great extent. This is especially the case with rubber materials due to catalysts on the surface.

Make sure that the nozzle of the ARON ALPHA[®] container is in direct contact of the material surface to be bonded so that you can apply an optimum quantity of ARON ALPHA[®] from the container. Immediately after dispensing adhesive, mate the two surfaces and let the ARON ALPHA[®] monomer spread between the two surfaces. It is not necessary to spread the monomer by using a rubbing motion.

ARON ALPHA[®] monomer, if kept in the form of a mound or fillet on the substrate surface, typically does not cure for 5 to 10 minutes and retains sufficient bond strength.

Optimum quantity of ARON ALPHA[®]

The thinner the film of the ARON ALPHA[®] monomer on the surface to be bonded, the greater the resulting bond strength. An excessive quantity of ARON ALPHA[®] never helps increase the bond strength. On the contrary, it may bring about chlorosis, solvent cracks, or erosion by the ARON ALPHA[®] monomer of the surface to be bonded. Test results indicate that with ARON ALPHA[®] the optimum quantity to be applied at one time is 0.004 - 0.006 g/cm² or 0.03 - 0.05 mm in terms of film thickness. On the basis of the value of 5 mg/cm², you can obtain standard bond strengths as shown in the tables above.

Storage:

Store product in the unopened container in a dry location.

Humidity

- Avoid moist, humid storage conditions.
- Fasten cap tightly to avoid exposure to moisture.
- Store with desiccant.

Temperature

- Avoid storing at a high temperature.
- When storing ARON ALPHA[®] for an extended period, refrigerate between 40°F and 50°F.

Sunlight

- Avoid direct exposure to ultraviolet light (keep in light-proof packaging).

Other

- Never store ARON ALPHA[®] with an accelerator or primer.

Warning:

Eye and Skin irritant. Bonds skin instantly. *Combustible* – keep away from heat and flames. For safe handling information on this product, consult the Material Safety Data Sheet (MSDS) before using.

Disclaimer:

Please be advised that test results are those which were prepared at Toagosei America's laboratory. The results may vary under actual application conditions.

It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof.

Material removed from original containers may be contaminated during use. Do not return product to the original container. Toagosei cannot assume responsibility for product which has been contaminated or stored under conditions other than previously indicated.

If additional information is required, please contact your Toagosei Technical Department or Customer Service Representative at 614-718-3855 or 1-800-338-5192 or via email at salesorder@toagosei.net