One-component heat-curing type Heat-resistant Inorganic Adhesive for Bonding, Filling and Coating

ARON CERAMIC

ARON CERAMIC is a general purpose, one-component, heat-curing type of inorganic adhesive for bonding, filling and coating, which is free from organic substances.

ARON CERAMIC presents a variety of outstanding features like its available heat-resistance up to 1,300°C and resistance to burning and solvents in addition to its non-toxicity and high tensile strength.

FEATURES

* Heat—curing at 150°C warrants heat-resistance up to 1,200 through 1,300 °C without any trends to burn or emit gases.
* Even at high temperatures, good bonding strength is assured on metals, ceramics, glass, quartz and carbon.
* Reasonable resistance to temperature cycles.
* Fair resistance to oils, solvents, and chemicals.
* Widely applicable to filling, sealing and coating in addition to bonding.

APPLICATIONS

* Heat-resistant bonding on metals, ceramics, carbon, glass and quartz.
* Molding or filling on heat emissive components.
* Filling and bonding on explosion proof elements or electrical controllers.
* Electric terminals on back of halogen lamps.
* Ignition plug assembly.
* Sections and areas requiring resistance to organic solvents, oils, chemicals or gases such as Kerosene, Ozone, etc.
* Heat-, oxidation-, abrasion-, and corrosion-resistant coating on metals.
* As a molding material for hear-resistant parts.
* Normal pressure sealing.

TOAGOSEI CHEMICAL INDUSTRY CO., LTD.
14-1, Nishi-Shimbashi, 1-chome, Minato-ku, Tokyo 105 Japan

SELECTOR CHART

	Description	Measuring Conditions	ARON CERAMIC E	ARON CERAMIC C	ARON CERAMIC W	ARON CERAMIC D	ARON CERAMIC for coating C
Liquid before cure	Appearance		White paste	White paste	White paste	White paste	White slurry
	Viscosity(cp)		50,000	70,000	50,000	50,000	700
	Density(g/cm³)		2.3	1.9	2.3	2.3	1.8
	Main component		Zirconia/Silica	Silica	Alumina	Alumina	Silica
	pH		12	12	12	12	12
	Cure method		At 150°C for at least one hour	At 150°C for at least one hour	At 150°C for at least one hour	At 150°C for at least one hour	At 150°C for at least one hour
After cure	Tensile strength(kgf/cm²)	ASTM D-2095 (Steel)	200	200	200	250	150
	Maximum operating Temperature(°C)		1,300	1,200	1,300	1,300	1,200
	Thermal expansion(/°C)	Typically at O to 600°C	4×10^{-6}	13×10^{-6}	8×10^{-6}	8×10^{-6}	13×10^{-6}
	Thermal conductivity (kcal/m hr°C)	ASTM C-201	–	0.57	0.68	0.68	0.57
	Compressive strength(kgf/cm²)	ASTM C-407	1,900	1,600	1,600	2,000	800
	Modulus of rupture(kgf/cm²)	ASTM C-268	600	450	600	600	300
	Vicker's hardness(Hv20)		380	260	400	420	350
	Volume resistivity(Ω cm)	ASTM D-257(23°C55%RH)	1×10^{10}	6×10^{9}	8×10^{10}	8×10^{6}	4×10^{9}
	Surface resistivity(Ω)	ASTM D-257(23°C55%RH)	4×10^{8}	3×10^{8}	7×10^{8}	7×10^{8}	2×10^{8}
	Dielectric strength(V/mm)	ASTM D-149(23°C55%RH)	2,800	2,800	4,200	4,200	2,400
	Moisture absorption(%)	23°C95%RH72hrs	2	4	0.4	2	–
	Water resistance		Good	Good	Excellent	Good	Good
	Acid resistance		Good	Excellent	Excellent	Excellent	Good
	Alkali resistance		Good	Good	Good	Excellent	Excellent
	Oil resistance		Excellent	Excellent	Excellent	Excellent	Excellent
	Organic solvent resistance		Excellent	Excellent	Excellent	Excellent	Excellent
	Features		Higher tensile strength Lower linear expansion coefficient Good resistance to thermal shock	Higher tensile strength Higher linear expansion coefficient	Good resistance to water and moisture Higher tensile strength	Higher tensile strength middle linear strength good mechanical property	Coating grade
	Major applications		For bonding filling and coating with materiais of lower thermal expansion coefficients	Typically for bonding and filling on metals	For bonding filling and coating under circumstances where resistance to water and moisture is needed	For bonding, filling and coating with materials of middle thermal expansion coefficient	For thermo-oxidation-chemical- and corrosion-resistant coating on metals

How to use Aron Ceramic

Prior to use、the paste must be sufficiently agitated so that its proper homogeneity may be ensured.

Rust and dirt on surfaces of adherends must be removed with sandpaper or their equivalents.

Furthermore 、fats and grease thereon must also be removed with trichloroethylene、caustic soda solution, or other related solvents.

1.For Bonding

When the applied ARON CERAMIC has been left to stand at room temperature for approximately 16 hours with the bonded parts gently secured、it must be thoroughly dehydrated at about 90°C and cured at 150°C for at least one hour、respectively、followed by its natural process of cooling.

2.For Filling

When the filled ARON CERAMIC has been left to stand at room temperature for approximately 24 hours、an appropriate process of dehydration is needed at about 90°C before its heat curing at 150°C for at least an hour with its subsequent natural process of cooling.

3.For Coating

When、on dipping、brushing、roll-coating or spraying、the applied ARON CERAMIC has been left to stand at room temperature for approximately 24 hours、a further two hours will be needed for its heat dehydration at about 90°C.

A process of heat curing at 150°C follows for at least 1 hour before its natural process of cooling is initiated.

4.Depending on the structures and dimensions of the adherends、the above mentioned drying process at room temperature and the dehydration process at around 90°C can be either omitted or reduced. Although almost immediate curing is available through heating on any burner-like heaters、special attention must be paid to possible reduction in tensile strength since foams are likely to be involved in vaporized water due to the rapid process of hearting.

In the case where a shorter drying and or dehydration process is desired、the use of ARON CERAMIC Hardener is recommended. The mixture of ARON CERAMIC and its Hardener cures at room temperature in about 30 to 60 minutes and heating at 150°C improves its moisture and water resistance.

The viscosity of ARON CERAMIC can be reduced through water addition、however、the increment in volume should be kept under 10% or less in relation to that of ARON CERAMIC so as to cover its possibly reduced tensile strength.

Apparatus and instruments can be water-rinsed since the uncured ARON CERAMIC is water-soluble.

Caution

5.After use、replace cap tightly.

6.Avoid contact with eyes since ARON CERAMIC is alkaline. In case of eye contact、immediately flush with plenty of water、and get medical attention.

Any traces of ARON CERAMIC possibly stuck to human skin must be carefully rinsed away.