

Aerok 7020



Toughened Epoxy.

Product description

Aerok 7020 is a 1K-heat cured toughened epoxy, which can achieve very high strengths, whilst also achieving good impact and peel resistance.



Handling/application information

Surface prep

- Preparation is key to ensuring a strong and durable bond between substrates. All surfaces should be cleaned and free of any dust/grease by using an appropriate cleaner/degreaser.
- To obtain a stronger bond, we would recommend the following, firstly clean the metal/substrate with an appropriate solvent such as isopropyl alcohol (IPA) or methyl ethyl ketone (MEK), followed by abrasion and then finally cleaning again with IPA or MEK.
- Without mechanical abrasion AEROK 7020 still shows very good adhesion and strengths by just cleaning the surface of the substrate. However, we would recommend you evaluate the adhesive on your substrates to identify the best surface preparation for your needs.

Adhesive application

- Adhesive can be applied in various methods, such as spatula, notched trowel or extruding through a cartridge.

Bond line thickness

- For optimum performance we would recommend a cured bond line thickness of between 0.20 – 0.50 mm. AEROK 7020 contains spacer beads which should prevent adhesive squash out and ensure the correct bond line thickness is achieved.

Key features

- High Shear Strength
- Excellent Peel Resistance
- Impact toughened formulation
- Excellent adhesion profile
- Excellent chemical and heat resistance
- Heat cured

Handling/application information

Curing Procedure

- The following time should only be used as a rough guide, the actual cure schedule will depend on numerous factors, such as the effectiveness of the heat source, how fast the bond area takes to heat up, etc.
- To initiate the cure the adhesive must reach a temperature of at least 180°C. Once at temperature the adhesive should take approximately 60 minutes to cure.
- The curing of AEROK 7020 is an exothermic reaction. Therefore, it is important not to cure large masses of AEROK 7020 at any given time as this may cause the adhesive to reach high enough temperature to char the adhesive and thus compromise the adhesive bond. Thin bond lines will ensure that high exotherms are not reached.

Typical physical properties

Uncured

Properties	AEROK 7020
Chemistry	Peroxide
Colour	Cream
Viscosity @ 5 s ⁻¹	250,000
Density / g ml ⁻¹	1.28

Cured

Properties	Value
Colour	Cream
Shore D hardness	80-85
Tensile strength at break/MPa	55-60
Percentage elongation at break/%	6
Compressive strength - ASTM D 695/MPa	230

Typical performance characteristics

Overlap Shear Strength – in accordance with ISO4587

Substrates	Surface prep	Shear strength/MPa
Aluminium	IPA wipe	60
	IPA, abrade, IPA	62
Anodised aluminium	IPA wipe	38
	IPA, abrade, IPA	41
Stainless steel	IPA wipe	39
	IPA, abrade, IPA	42
Hot-dip galvansied steel	IPA wipe	33
	IPA, abrade, IPA	45
E-galvanised steel	IPA wipe	30
	IPA, abrade, IPA	32
Mild steel	IPA wipe	35
	IPA, abrade, IPA	36

IPA: Isopropyl alcohol, CF: Cohesive failure, AF: Adhesive Failure, SF: Substrate Failure

Temperature performance

Overlap Shear Strength – in accordance with ISO4587

Substrates	Surface prep	Test temp [°C]	Shear strength [MPa]
Aluminium	IPA, abrade, IPA	25	50
Aluminium	IPA, abrade, IPA	60	45
Aluminium	IPA, abrade, IPA	100	42
Aluminium	IPA, abrade, IPA	150	36
Aluminium	IPA, abrade, IPA	200	12

IPA: Isopropyl alcohol, CF: Cohesive failure, AF: Adhesive Failure, SF: Substrate Failure

Chemical and environmental testing

Chemical Resistance Testing; Overlap Shear – In accordance with ISO4587

Lap shears of stainless steel were made in accordance with ISO4587 with the following dimensions 25 x 12.5 x 1 mm and allowed to cure for 14 days under ambient conditions (23°C @ 54% RH). Lap shear specimens were fully immersed in chemical solution for 24 hours and 14 days, before being tested for strength retention.

Chemical	Surface prep	No of days immersed	Strength retention
Water	IPA	1	100
		14	85
5% Salt Solution	IPA	1	100
		14	100
1.5m Hydrochloric Acid	IPA	1	60
		14	60
Conc. Bleach Solution	IPA	1	100
		14	100
Polar Protic Solvent - IPA	IPA	1	100
		14	92
Polar Aprotic Solvent - Acetone	IPA	1	85
		14	85
Non-polar Solvent - Diesel/ Hydrocarbons	IPA	1	99
		14	94

IPA: Isopropyl alcohol, CF: Cohesive failure, AF: Adhesive Failure, SF: Substrate Failure

Disclaimer and health and safety

Disclaimer - The variability of materials, substrates and conditions of use is such that no warranty of their functionality for a specific application can be deducted from this information, written recommendation or any other type of suggestion offered. Each user has the responsibility to complete adequate evaluations on the efficacy of the materials offered by Forgeway, of its products, services, recommendations and suggestions for the specific application need, and must accomplish sufficient testing to ascertain that the final product will be safe and sound for the final intent of the end user.

Health and Safety - Refer to Safety Data Sheet (SDS) for further information. Apply the usual industrial hygiene.

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