
®Araldite Powder Coating

Araldite® KU 610-1 BD

Formulated, one-component system based on epoxy resin and an amine hardener

Non-porous, insulating coatings which withstand high electrical stresses and can be applied to metal components of all kinds

Applications

Spray with or without electrostatic charging and cure

Processing methods

Good protection against corrosion
Good adhesion
Very good mechanical and electrical properties, e.g. good flexibility and high dielectric strength

Properties

General instructions The powder is sprayed onto the pre-heated substrate where the particles fuse to form a continuous film which is then cured.
If electrostatic spray guns are used the substrate being coated need to be pre-heated, although subsequent curing will still be necessary. Pre-heating facilitates application of thick coatings.
Electrostatic equipment is best used for coating bulky parts having a large surface area and poor heat retention, or for parts having complex shapes. Powder wastage, amounting to around 5% when cyclone equipment is used, can be reduced to about 1% by using special recovery units.
We shall be happy to provide advice on selecting the equipment best suited to your requirements.

Substrates

In principle, any material which withstands the required pre-heating and curing temperatures may be coated with Araldite KU 610-1.
Coverage of sharp edges and corners will obviously not be as good as on rounded edges and corners.

Pretreatment

If maximum adhesion is not the prime consideration, or if a part is to be coated all over, cleaning and degreasing with normal organic solvents will suffice (e.g. trichlorethylene, perchlorethylene, acetone, or the [®]Chlorothene NU made by Dow Chemical Corporation). For maximum adhesion, the surface to be coated must be roughened by sandblasting, sanding or pickling before it is degreased with the usual solvents.

Pre-heating

As soon as possible after pretreatment, the parts to be coated should be heated to at least 150°C. To make sure that no new oxide layer forms on the surface of the part to be coated, pre-heating should take not more than 30 to 60 minutes.

Coating

Depending on the application method selected and the coating thickness required (cf. "General", above), a spray gun is used to coat the pre-heated part as evenly as possible with Araldite KU 610-1. Spraying can be continued until the heat retained by the part being coated no longer suffices to fuse the powder particles being applied.
When electrostatic equipment is used, spraying can be continued until the charge built up in the powder surface reaches a level at which similar polarity results in repulsion of new particles and no more powder can be deposited. Pre-heating the part to be coated will delay build-up of the particle-repulsing charge and facilitate the production of thicker coatings.

Remarks The gelling and cure times given above cover the time during which heat is applied directly to the coating, i.e. the actual temperature acting on the resin coating. They do not include the time required to heat up the article to be coated.

Storage Araldite KU 610-1 should be stored at 6-18°C, dry in tightly sealed original containers. Product specific advise regarding storage can be found on product label. After this date, the product may be processed only following reanalysis. Partly emptied containers should be tightly closed and stored cool immediately after use. It must not be stored at temperature above 40°C.
For information on waste disposal and hazardous products of decomposition in the event of fire, refer to the Material Safety Data Sheets (MSDS) for these particular products.

Processing

(guideline values)

Curing

Post-treatment

Spraying is followed by curing. The gelling and cure times required are as follows:

Curing temperature °C	Geltime min	Minimum cure time (incl.geltime) hours
130	55 - 70	approx. 10
140	35 - 45	5
150	25 - 30	3
160	16 - 20	2
180	6 - 9	1
200	3 - 4	0.5

The quoted gelling and curing times refer to the direct effect of temperature on the epoxy resin coating and do not include the time required to preheat the substrate to the required temperature

Araldite KU 610-1			
Appearance			blue-grey powder
Particle <100 µm	sieve analysis	%	>=95%
Density		g/l	610 to check!
Softening point	Kofler		
	hot bench	°C	70 - 75
Melting point	Kofler		
	hot bench	°C	90 - 100
Flash point		°C	150
Edge coverage	square-section rod	%	> 35
Properties of coatings cured for 1 hour at 180°C			
Density	ISO 1183-3	g/cm ³	1.42
Glass transition temperature	ISO 11357-2	°C	105-115
Erichsen distensibility reverse	ISO 61520	mm	1 - 2
(film thickness 0.6-0.7 mm)			
Direct Impact resistance	special test	KG.cm	160
(ball dropped on front side)			
Water absorption *			
1 hour, 100°C		%	1.49 - 1.52
10 days, 20°C		%	1.02
Water vapour diffusion	Deeg & Frosch	g/cm.h.mm Hg	5·10 ⁻⁸ (approx).
Dielectric constant ε_r (50Hz)			
20°C	IEC 60250		4.3
50°C			4.5
100°C			5.1
Dissipation factor tan δ (50 Hz)			
20°C	IEC 60250	%	0.8
50°C			1.2
100°C			5.7
Volume resistivity δ at			
20°C	IEC 60053	Ω cm	6·10 ¹⁵
50°C			5·10 ¹⁴
100°C			5·10 ¹¹
after 240 hours immersion in water, determined at 20°C			2·10 ¹⁵
Dielectric strength 50 C/s 25°C,			
(film thickness			
approx. 0.48mm)	Huntsman	kV/mm	46

* Aluminium sheet, 70x70x1,5 mm coated one side only, film thickness 0,5 mm

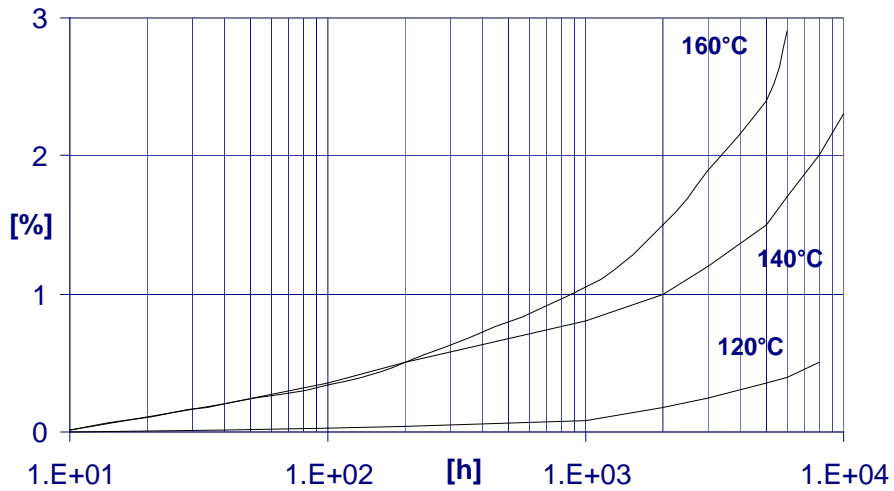
Properties

(guideline values)

Weight loss on heat ageing

Weight loss on heat ageing of Araldite KU 610-1 powder coatings

Curing schedule: 60 min at 180°C
Test specimens: sheet iron 1.5x70x150 mm
Coating thickness: approx. 750 µm



Industrial hygiene

Mandatory and recommended industrial hygiene procedures should be followed whenever our products are being handled and processed. For additional information please consult the corresponding Safety Data Sheets and the brochure "Hygienic precautions for handling plastics products".

Handling precautions	Safety precautions at workplace:	
	protective clothing	yes
	gloves	essential
	arm protectors	recommended when skin contact likely
	goggles/safety glasses	yes
	respirator/dust mask	recommended
	Skin protection	
before starting work	Apply barrier cream to exposed skin	
after washing	Apply barrier or nourishing cream	
Cleansing of contaminated skin	Dab off with absorbent paper, wash with warm water and alkali-free soap, then dry with disposable towels. Do not use solvents	
Clean shop requirements	Cover workbenches, etc. with light coloured paper Use disposable breakers, etc.	
Disposal of spillage	Soak up with sawdust or cotton waste and deposit in plastic-lined bin	
Ventilation:		
of workshop	Renew air 3 to 5 times an hour	
of workplace	Exhaust fans. Operatives should avoid inhaling vapours.	

First Aid

Contamination of the **eyes** by resin, hardener or casting mix should be treated immediately by flushing with clean, running water for 10 to 15 minutes. A doctor should then be consulted.

Material smeared or splashed on the **skin** should be dabbed off, and the contaminated area then washed and treated with a cleansing cream (see above). A doctor should be consulted in the event of severe irritation or burns. Contaminated clothing should be changed immediately.

Anyone taken ill after **inhaling** vapours should be moved out of doors immediately. In all cases of doubt call for medical assistance.

Note

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All recommendations for use of our products, whether given by us in writing, verbally, or to be implied from results of tests carried out by us are based on the current state of our knowledge. Notwithstanding any such recommendations the Buyer shall remain responsible for satisfying himself that the products as supplied by us are suitable for his intended process or purpose. Since we cannot control the application, use or processing of the products, we cannot accept responsibility therefore. The Buyer shall ensure that the intended use of the products will not infringe any third party's intellectual property rights. We warrant that our products are free from defects in accordance with and subject to our general conditions of supply.