

Structural Adhesives

Aerospace Adhesives

Araldite® 204

One component foaming adhesive

Key properties

- Extrudable paste form
- 120°C curing
- Core splicing adhesives
- Expands during cure to fill voids

Description

Araldite 204 is a one-pack paste adhesive developed primarily for bonding segments of honeycomb core material, and for bonding the edges of the core to structural edge members, in bonded sandwich panels. The cured Araldite 204 provides a shear-carrying connection across these discontinuities within the panel, and thus preserves the structural integrity of the panel.

Araldite 204 is intended for use in applications where the maximum working temperature does not exceed 90°C. It can be used, however, at temperatures up to 120°C if it is not required to sustain significant working loads.

Typical product data

Properties	Araldite 204 (uncured)
Colour (visual)	Black
Specific gravity	1.1
Viscosity Pa.s	3500
Shelf life (0°C) months	12
Flashpoint °C	>100

Processing

When Araldite 204 is used for bonding sections of Aeroweb honeycomb in sandwich structures, there is generally no need to pretreat the edges of the core segments.

Aluminium honeycomb which has been machined or has become soiled in any other way should be thoroughly degreased before bonding. For maximum bond strength, the core segments should be cut slightly oversize (about one cell row or equivalent on each edge), and the edges flattened back, collapsing the overlapping cells, to produce a continuous closed edge at the honeycomb. This closed edge must be degreased, by rinsing with an appropriate solvent.

This type of pretreatment is not practical with non-metallic Aeroweb cores; these should be cut slightly oversize so that, when assembled, they exert an outward pressure on the panel edges. Solvent degreasing is not recommended, so it is essential when handling non-metallic honeycomb to take care to avoid any contamination.

Pretreat the edge members of sandwich panels in accordance with the instructions

given for the adhesive used to bond the edge members to the facing skins. No further pretreatment is needed for bonding with Araldite 204.

Application

Araldite 204 may be applied by extrusion from a suitable pressurised gun, or by spreading with a spatula or other appropriate tool. After removal from cold storage Araldite 204 should be left to warm up naturally to room temperature before opening the container.

Apply the Araldite 204 to one side of each joint only. When applied by extrusion a suitable spread is obtained by applying beads of the paste, 6 mm diameter, evenly spaced at approximately 13 mm centre distance along the core edge parallel to the core faces. If the adhesive is applied by spatula, try to obtain an even spread approximately 2.5 mm thick. Care should be taken that large masses of adhesive do not occur.

Assembly

After applying the adhesive, push the core segments firmly together and complete the panel assembly as quickly as possible to prevent it from being disturbed. Providing the components are suitably clamped to prevent relative movement, the assembly may be set aside before the adhesive is cured, but bonding must be completed within the safe working life of each adhesive system used in the assembly.

Curing

Araldite 204 is cured by heating to a minimum temperature of 120°C. For optimum properties the assembly should be held at the curing temperature as follows.

Curing Temperature °C	120	150	170
Curing time (minimum)	1 hour	30 min	20 min
Expansion (nominal)	50 – 125%	75 – 175%	100 –200%

Heat up rate is not critical, but when curing at a high temperature (e.g. 170°C) it is advisable to keep the rate of temperature rise below 10°C per minute. Allow adequate time for heat to penetrate the whole assembly so that the adhesive is properly cured throughout the depth of the panel.

Temperatures should be held within limits of $\pm 5^\circ\text{C}$ to cure the Araldite 204 in the times stated.

When autoclave bonding assemblies containing Araldite 204 the vacuum line should preferably be opened to atmosphere in order to ensure even expansion of the foam.

Double lap shear strength

Typical minimum individual values, determined on production batches.
(1.6 mm glueline thickness)

at 22°C - 12 MPa

at 80°C - 10 MPa

These values are for information only and do not constitute a specification.

Storage

Store Araldite 204 in a cool dry place. The adhesive has a storage life of 12 months when stored at 0°C plus a cumulative 'out' life of 3 months at room temperature. The expiry date of the safe storage life for the material is stated on the label of each pack.

Handling precautions**Caution**

Our products are generally quite harmless to handle provided that certain precautions normally taken when handling chemicals are observed. The uncured materials must not, for instance, be allowed to come into contact with foodstuffs or food utensils, and measures should be taken to prevent the uncured materials from coming in contact with the skin, since people with particularly sensitive skin may be affected. The wearing of impervious rubber or plastic gloves will normally be necessary; likewise the use of eye protection. The skin should be thoroughly cleansed at the end of each working period by washing with soap and warm water. The use of solvents is to be avoided. Disposable paper - not cloth towels - should be used to dry the skin. Adequate ventilation of the working area is recommended. These precautions are described in greater detail in the Material Safety Data sheets for the individual products and should be referred to for fuller information.

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All recommendations for the use of our products, whether given by us in writing, verbally, or to be implied from the 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 therefor. 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.

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