



Technical Data Sheet

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Aerolite UP 4145

One-component urea powder adhesive

Use

Aerolite UP 4145 is a one-component urea powder adhesive, which only requires mixing with water to make it ready for use. It is suitable both for industrial use as well as for smaller bonding operations. It is especially suitable for joinery, cabinetwork and assembly gluing, particularly when small amounts of glue mix are needed, or when demand is such that the use of a liquid adhesive is uneconomic.

When used correctly, bonds obtained with Aerolite UP 4145 are of durability class C2 according to EN12765, and conform to BS1204:Parts 1 and 2, Type MR.

The setting time of Aerolite UP 4145 is fast, but will allow adequate working life for most envisaged applications using hot and cold pressing techniques.

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Appearance	White, free flowing powder
Viscosity (2:1 solution, 25°C)	1800 – 3800 mPas

Containers

Standard export sacks, each 25kg (55lbs) net. The sacks can be delivered on pallets covered by shrinkable polythene.

Storage

Aerolite UP 4145 should be stored in the original packaging, in a cool dry place (ideally 5 – 25°C). The adhesive should be protected against humidity and direct sun light. Sacks which have already been opened must be carefully closed prior to further prolonged storage. Shelf life under these conditions is at least 6 months.



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Glue Mix Preparation

Mix Aerolite UP 4145 powder adhesive with water as follows:

	Parts by Weight	Parts by Volume
Aerolite UP 4145	2.0	3.1
Water	1.0	1.0

Use a dry, preferably non-metallic container, and add water to the powder gradually, stirring to ensure the powder is evenly mixed. Continue to stir until the solution is free from lumps. The mixed adhesive is ready for use.

To ensure that a consistent glue mix with the correct properties is obtained, mixing by weight is strongly recommended. Addition of too much water will seriously reduce the rate of setting and the gluing properties, particularly at low temperatures.

Pot Life

The pot life of Aerolite UP 4145 at different temperatures is given in the table below.

Temperature (°C)	10	15	20	25	30
Pot Life (hours)	2½	1¾	¾	½	¼

Glue Spread

Apply glue mix thinly to one surface, then assemble the joint and apply full clamping pressure. If only light clamping pressure is used, the glue mixture should be applied to both surfaces to be joined.

Normally the adhesive spread is in the range of 100 – 400g/m².

Assembly Time

The joints should be assembled whilst the glue line is still moist and good contact can be assured. The clamping pressure should be applied as soon as possible after assembly, especially at higher temperatures.

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Pressure

The pressure is first of all determined by the density, surface evenness and thickness tolerance of the adherends and the assembly time. Glue being squeezed out of the glue line when pressure is applied is an indication of sufficient pressure.

Normal pressure is 0.3 – 1.0N/mm² (3 – 10kg/cm²), depending on the type of bonding operation and the material to be bonded.

Pressing Times

Aerolite UP 4145 should not be used at temperatures below 10°C. Minimum wood temperature is also 10°C. The table below gives the minimum time for application of pressure at temperatures between 10 and 35°C.

Temperature (°C)	10	15	20	25	30	35
Pressing Time (hours)	8	4	1½	1	½	⅓

If the joint is liable to be strained immediately after removal of the pressure, the above times should be increased. Aerolite UP 4145 will continue to gain strength after pressing. The full strength and final water resistance properties are obtained a few days after pressing.

The basic setting times of Aerolite UP 4145 for hot bonding at different temperatures are given in the table below.

Temperature (°C)	50	60	70	80	90	100
Pressing Time (minutes)	6	3½	1¾	1	¾	⅔

The pressing times (basic setting times) stated refer to glue line temperatures only and allowance must be made for the heat to travel from the press platen. Heat penetration time will vary according to the density and moisture content of the wood and the distance to the furthest glue line. The table below is a guide to the additional time required for low and medium density timbers.

Press Temperature (°C)	Additional time per mm distance to the furthest glue line (minutes)
50 – 60	3
70 – 80	2
90 – 100	1

The pressing time must be considerably extended when bonding wood materials with high density and/or low absorbency.



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Because so many variations in local production conditions affect the pressing time, it is recommended to establish the correct pressing time by conducting trials.

Wood Materials

The surfaces must be free from oil, fat, dust or other deposits. Aerolite UP 4145 gives the highest bond strength when the moisture content of the wood is between 6 – 15%. Acceptable bond strength can even be obtained at higher moisture content, but high moisture content increases the risk of over-penetration of the glue into the veneer (bleed-through), and greater formaldehyde emission.

Wood that has been stored in an unheated shed or workshop may be cold and contain excessive moisture. This can result in poor bonding. It is therefore good practice to store the wood in reasonably warm and dry conditions for several days prior to gluing.

Cleaning

Mixer and spreader equipment must be cleaned before the glue has set. Cleaning is most easily done with warm water (40 – 60°C). Once the glue has set it is insoluble and must be scraped off.

Glue remainders and untreated wash water present a pollution risk if allowed to enter public drains or watercourses and should be handled accordingly. Advice on how to dispose of glue waste is given in our Technical Information Leaflet No. 2E, “Glue waste disposal – Pollution prevention”, which is available on request.

Safety Precautions

Reference is made to the Safety Data Sheet for Aerolite UP 4145.

When handling the adhesive powder and the glue mix it is recommended that certain precautions normally taken when handling chemicals is observed. Skin contact with the uncured glue should be avoided, since people with particularly sensitive skin may be affected. It is recommended to wear protective gloves. Likewise, eye protection should be worn where there is a risk of splashes. Hands and forearms should be thoroughly washed with soap and warm water at the end of the working day.

Adequate ventilation of the workshops should be maintained.



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Caution

TS Resins adhesives and hardeners 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 into 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 – non 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 Material Safety Data sheets for the individual product. These are available on request and should be referred to for fuller information.

The suggestions given in these notes are based on data gained from experience and tests. However, since operating conditions in the user's plant is beyond our control, we cannot assume responsibility for any risks or liabilities, which may result from the use of our products. The information provided were believed to be accurate at the time of preparation, or obtained from sources believed to be generally reliable. However, TS Resins Ltd makes no warranty concerning their accuracy, and TS Resins Ltd will not be liable for claims relating to any party's use of or reliance on information or recommendations contained herein, regardless of whether it is claimed that the information or recommendations are inaccurate, incomplete or otherwise misleading. Further, TS Resins Ltd makes no warranty concerning any product, except that the product shall conform to contracted specifications.

PdW 02.2021