CIAM FLYER
The Introduction to the Model Aircraft World

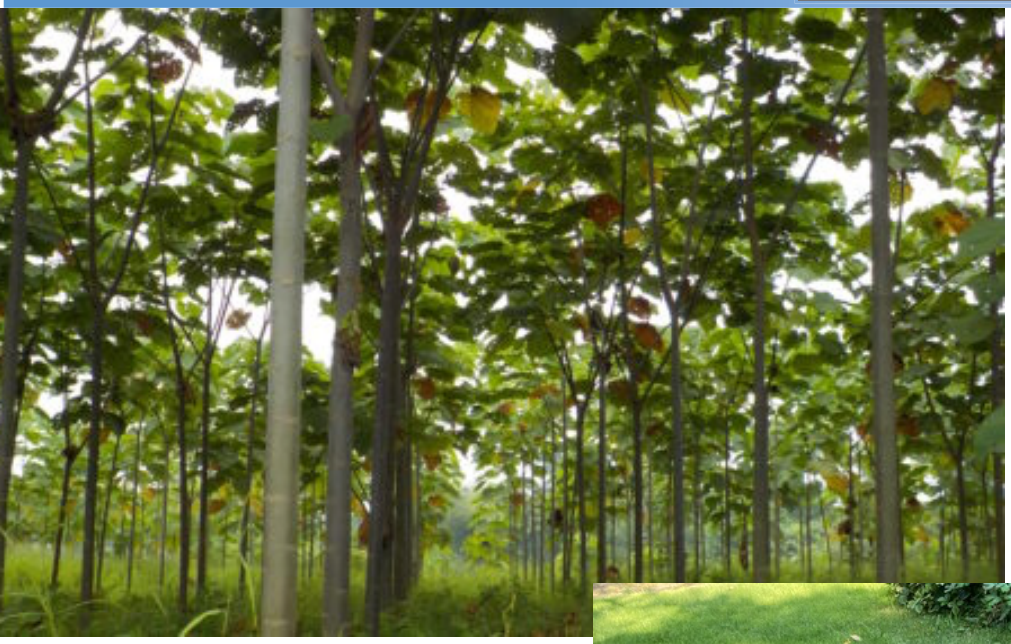
This is what model planes are made of

These days, commercially available, fully or partially completed model aircraft are manufactured mainly from foamed plastics or various other plastics. Some manufacturers still supply models built from balsa and other types of wood and attractively covered with colourful films.

Those who want to build their own models –maybe even from their own design– can essentially choose among four

1. Balsa wood

Wood is probably still the most popular construction material used by aeromodellers. Balsa wood is available in various grades of hardness and sizes and is one of the lightest types of wood around. It is also easy to cut and shape. The bulk of our balsa wood comes from Ecuador and is grown in plantations. Balsa trees have huge crowns and grow by several metres each year. They can grow to a height of up to 30 m in only 10 years.

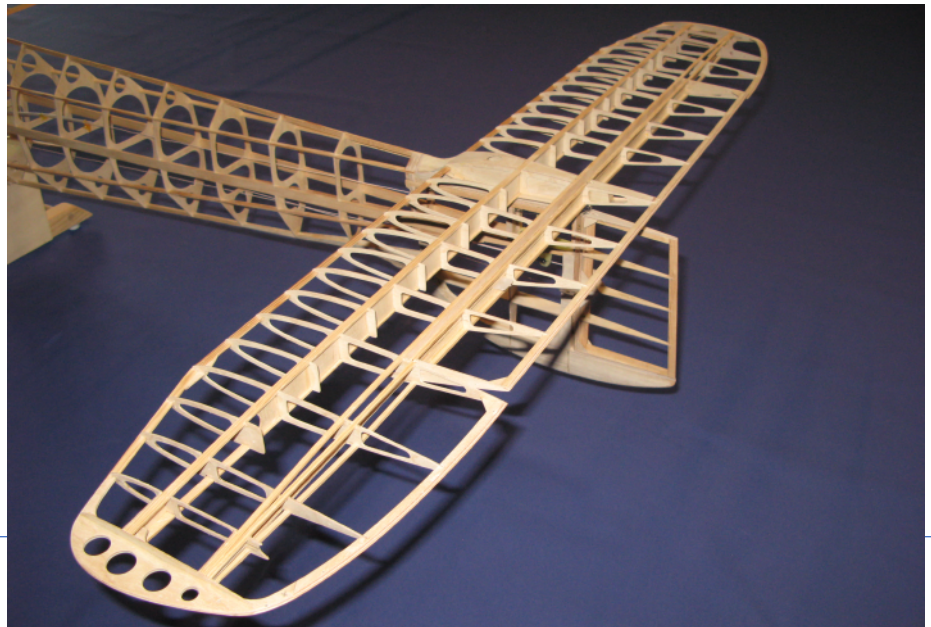


Balsa trees grow plantation in Ecuador, Indonesia and Papua New Guinea. Ecuador is the most important country.

Balsa is light, easy to cut and shape. and is ideal for model aircraft constructions.

2. Plywood

Aircraft parts requiring more strength, such as fuselage frames, are usually built from plywood. In most cases this comes in the form of three thin sheets of wood with their grain rotated to one another by up to 90°, glued and pressed together. In aeromodelling, lightweight, yet remarkably strong plywood sheets of 0,4 to 5 mm thickness are most commonly used.



Plywood is often used to construct fine but stable mode part

3. Expanded polystyrene and rigid foams

EPS is expanded polystyrene consisting of a small amount of polystyrene and lots of air (98% air and 2% polystyrene). It is hard to imagine our life without EPS and its many uses – from packaging material and thermal insulation to spheres and other shapes used in arts and crafts. EPS is another material very popular in aeromodelling. It is easy to cut with a hot wire and can be manually or mechanically processed similarly to wood. The core of a model aircraft is often made of EPS covered by a thin outer layer of balsa wood or e.g. woven fibreglass.

Like their basic materials, the number of different rigid foams available is almost endless, with Depron®, a moulded expanded polystyrene, being particularly common in model aircraft. It is available in sheets of various thicknesses which can be processed and bonded in ways similar to wood, allowing lots of freedom of design and making it a great material for young people to work with. Give a youngster a piece of Depron®, a craft knife and a tube of glue and prepare to be impressed!

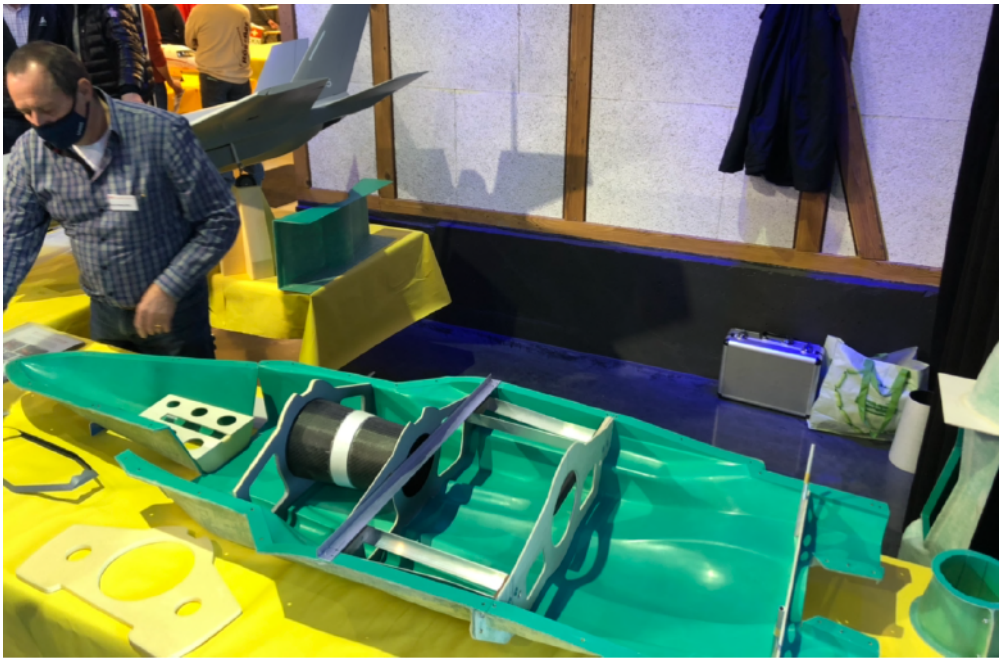
***The foam materials are available at very low prices. They allow young people to experience model flying in a playful* way.**

4. Laminated plastic

Various manufacturers offer high-quality models such as jets, large gliders or aerobatics models which are manufactured by moulding processes allowing the production of large series. However, such models, made completely from glass-fibre reinforced plastic, are rather expensive. For self-build, it makes sense for several enthusiasts to club together and use the same moulds for joint building projects.

Summary

The choice of building materials is down to experience. Hybrid construction methods using several different materials, e.g. EPS and wood or Depron® and wood, are likely to be very common. The use of a 3D printer allows other combinations. There are thousands of experienced designers and aeromodellers around the world who are happy to help. Don't hesitate to ask! A list of aeromodelling experts in various fields is available on the FAI website (https://www.fai.org/page/ciam-experts). Good luck!



Model aircraft building by moulding processes. It makes sense for large series.

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