

# DAVID NEAT

## MODEL-MAKING MATERIALS

The following information is according to the best of my knowledge at the time of writing (Nov 2008) and details (especially suppliers and their prices) are subject to change. Where I have listed specific suppliers I have kept largely to those online or London suppliers with which I am familiar and contact details are listed on a separate information sheet.

This is by no means a comprehensive list, but a selection of the most useful and available for a limited budget. Materials for 'surfacing and painting' are not specifically listed as yet, partly because common surfacing materials are listed under other headings, but in time a separate list will be added. A longer list with more detailed information can in any case be found at the end of the book *Model-making: Materials and Methods*.

### CONSTRUCTIONAL MATERIALS

#### **Foamed PVC**

Only available in sheet form. Range of colours but matt white most common. Foamed interior makes it soft to cut, but has excellent rigidity and resists warping. Available in thicknesses from 1-18mm. Superglue must be used to bond. Can be painted with anything if primed first (best to give light coat of Simoniz car primer). Can be sanded down, unlike card.

Obtainable e.g. nationwide through Robert Horne Group (brand name 'Foamalux'); Abplas (cheaper brand); Bayplastics.co.uk ('Palight')

Price e.g. 8x4ft sheet 1mm thickness £15, 3mm thickness £22

#### **Styrene**

The most common form of plastic. Available in sheets (0.13mm to 3mm) or in strips. Either superglue or plastic solvent must be used to bond. Bends easily.

Obtainable 4D modelshop (London)

Price e.g. 66x68cm sheet of 0.5mm white £1.80, packets of strips £2.65 (4D)

#### **Stencil paper**

Also known as 'oiled manila', impregnated with linseed oil. Cuts cleanly, stays rigid, can be directly painted even with acrylics. PVA will suffice to bond it.

Obtainable Paperchase; Atlantis; most good art shops

Price e.g. 76x50cm sheet (Paperchase) £3

#### **Obeche wood**

A soft but firm wood, ideal for small-scale work. Subtle grain, stains very well. Most suitable in sheet form (i.e. for panelling, floorboards) but also available in thicker pre-cut strips.

Obtainable 4D modelshop; other good hobby shops

Price e.g. 9x100cm strip-sheet of 0.8mm thickness (4D) £2.55

### **Balsa wood**

Most will be familiar with this very soft, quite cheap and easily found wood and will probably also know how fragile it can be. Not suitable for delicate or intricate forms but excellent at 'sketch' modelling stage or for achieving rough wood effects with the aid of a wire brush. Can be easily painted, glued but does not stain well.

Obtainable: most college, art or hobby shops; 4D etc.

Price e.g. 90cm strip lengths, 3mm-10mm sq £0.20-£0.60. Sheets c.90x10cm, 1-3mm thickness c. £1-£2

### **Foamboard**

Most commonly a layer of polystyrene foam between two layers of thin card. Available 3, 5 and 10mm thicknesses (though most college, art or graphics shops stock only the 5mm). Kapa-line foamboard is a special superior type (polyurethane foam instead of styrene).

Obtainable 4D modelshop; Hindley's (hindleys.com)

Price standard cheaper foamboard c. £4-6 for A1 sheet. Kapa-line 5mm 70x100 (4D) £6.95, 10mm £8.95.

### **Cardboard**

Mountboard (e.g. Daler-Rowney 'Studland' brand) most commonly used

Obtainable almost all art/graphics shops

Price varies £2-4 per A1 sheet

Finnboard. Cheaper than mountboard, softer and less liable to warp. Only available in an unbleached cream colour. Made from wood pulp. Can be wetted and bent into curves more easily than mountboard. Available 0.9, 1.5, 2, 2.5 and 3mm thicknesses.

Obtainable 4D modelshop

Price e.g. standard size 70x100cm sheet, 1.5mm thickness £2.65

Thin white card. Shops vary greatly in their choice of a thinner card than mountboard, so this is a matter of individual research. But for example, many college shops obtain their thinner white card from the firm Seawhite, Brighton. This has quite a smooth, matt surface and is available in three weights (per sq metre) 200g, 300g (c.0.5mm thick) and 600g (c.1mm thick). This is quite a stable card, staying together quite well even when cut intricately, though stencil paper or plastic may perform better for this.

Obtainable only as retailer from Seawhite itself

Price e.g. in shop A1 300g £0.80, A1 600g £1.50

## **SHAPING AND MODELLING MATERIALS**

### **Polyurethane foam (Kapa-line foamboard)**

Available 3, 5 and 10mm thicknesses. Paper layer can easily be stripped off to use foam. Will glue well using PVA, UHU or superglue and is not affected by solvents.

Obtainable 4D modelshop; Hindley's (hindleys.com)  
Price Kapa-line 5mm 70x100 (4D) £6.95, 10mm £8.95.

### **Styrofoam**

Finer version of common 'polystyrene' usually light blue in colour. Made for roof and wall insulation. Can be easily carved and finely sanded. Caution: superglue, UHU or most spray paints will dissolve surface. Strong PVA, or 'UHU Por' will bond it.

Obtainable 4D modelshop (different types and thicknesses); Travis Perkins (not all)

Price e.g. sheet 5x60x120cm £25

### **Super Sculpey**

An extremely versatile and easy-to-work polymer clay. Needs to be heated to harden (usually in oven, but heat gun treatment will work well). Will not stick to fingers. Sticks well to itself. Forms can be built up, added to, in stages with baking in between.

Obtainable most good art or hobby shops; Tiranti (cheapest); 4D modelshop

Price ½ kg packet (Tiranti) £6.30

### **Milliput**

A 2-part epoxy putty. Equal amounts must be thoroughly mixed and working time is c.40 mins. Small range of different grades and colours available. Will stick to fingers, can be smoothed or even thinned with water.

Obtainable most good art or hobby shops; Tiranti; 4D modelshop

Price c. £2-£4.70 a packet dependant on type

### **Polycell 'Fine Surface' polyfilla**

Consists mainly of an acrylic paste. Minimal shrinking, cracking. Extremely adhesive and durable. If thoroughly mixed with a little water, will make a good 'relief paint'.

Obtainable most decorator or DIY shops; B&Q

Price e.g. 1kg tub £7

### **Plastazote**

A flexible foam, mainly in sheet form, available in a wide variety of colours, densities and thicknesses. Can be firmly bonded together with EvoStik Impact adhesive, Dunlop Thixofix or (in some cases) superglue.

Obtainable Pentonville Rubber Co; 4D modelshop; some hobby or craft shops

Price varies

### **Plasticine**

Can be made more durable and paintable by coating with PVA.

Obtainable most art or hobby shops

Price c. £1.50 per ½ kg packet

## **METALWORKING MATERIALS**

### **Brass**

Most commonly available metal for small-scale work, in a variety of strips, tubes and sheets. Not as pliable as copper but much softer than steel. The most suitable for soldering.

Obtainable 4D modelshop; good hobby model shops

Price varies, e.g. 100cm length of 0.8 circular rod (4D) £0.54

### **Brass shim**

Also known as 'sculptor's shim' or 'brass fencing', 0.1mm brass sheet on a roll. Suitable for light soldering and etching. Cuts easily by scoring/bending.

Obtainable Tiranti (4D sells offcut bundles £0.55)

Price e.g. 16.5cm x 2.5m roll £6.70

### **Solder**

A soft metal alloy in wire form which melts forming a bond between two pieces of metal. The standard for brass soldering used to be 60%tin 40%lead, but now lead-free solders are more common. It is recommended to use one without a built-in flux. Other metals (aluminium, steel) can be soldered, but need other more expensive types of solder and flux.

Obtainable B&Q; Maplins; 4D modelshop

Price c.2metres £1-4

### **Flux**

An essential fluid (or sometimes in grease form) which will clean and prevent oxidation of the metal surfaces to be joined. The standard cheaper type is fine for brass, while more expensive for other metals.

Obtainable B&Q; Maplins; 4D modelshop

Price c. £2-10 per 30ml (dependant on type). Carr's Green Label 50ml (for brass) £2.90 at 4D

### **Welded wire mesh**

Available in different gauges though most common has 12x12mm squares. Galvanised iron wire, welded firmly at each intersection. Because the surface is roughened PVA will 'stick' to it.

Obtainable B&Q; good ironmongers such as Robert Dyas

Price A1 size sheet (B&Q) c. £4

### **Impression mesh**

Many different types down to extremely fine. Defined by diamond-shaped openings, punched out of continuous sheet making it mouldable. Usually copper or aluminium.

Obtainable 4D modelshop; B&Q (not all)

Price varies

### **Aluminium wire**

Because relatively soft, even thick aluminium wire can be bent easily making it ideal for sculptors' armatures etc. Can be found either in circular or square section.

Obtainable 4D modelshop; Tiranti (larger gauges); Scientific Wire Company

Price e.g. 3mm (1/8inch) square section x 37metres (1kg) at Tiranti £13.85

### **Florist's wire**

Traditionally, short lengths of very soft, bendable wire (lead alloy), useful for bunching and bending for tree armatures etc.

Obtainable some old-established ironmongers, florists' supply outlets, or ask friendly florist.

### **Lazertran Silk transfer paper**

A copy paper specially designed for transferring an image onto another surface. Designed for silk but works well on metal.

Obtainable Lazertran.com (info); London Graphic Centre

Price e.g. 8x A4 sheets £10.20 from Lazertran

### **Sodium persulphate**

Obtainable as a powder which makes a brass etching solution when mixed with water. The usual recommended mix is 100g powder to 500ml water.

0.1mm brass will take a few hours to etch through.

Obtainable Maplins

Price e.g. 100g £2.26 (larger more economical amounts only available online)

## **MOULD-MAKING AND CASTING MATERIALS**

### **Silicone rubber**

Available in a variety of hardnesses and other individual properties. For example a typical one, Tiranti's T30, has a medium hardness, tough but elastic, allowing some undercutting (Shore A 30). Most silicone rubbers set by adding a small amount of catalyst, in this case 2.5% by weight. Pot life 20mins, curing time 8 hours. Some other silicone rubbers such as Tiranti's RTV-101 are heat resistant allowing low-melt metals to be cast into them. They will withstand oven temperatures, so Sculpey can be press-moulded and baked inside the mould.

Obtainable Tiranti; 4D modelshop; Bentley Chemicals; Mouldlife

Price on average per kilo (litre) £20 including catalyst

### **Vinamold or Gelflex**

Re-meltable vinyl compound. Will melt completely in a saucepan at c. 150 degrees C. Can be used again and again, provided the compound is never overcooked. Mould is ready as soon as it has cooled (c. 30-60mins dependant on size). Not for highly detailed or fine work (will cool too quickly around the prototype), limited working life. Prototypes also need to be heat-resistant.

Obtainable Tiranti; 4D modelshop

Price c. 1kg Vinamold (Tiranti) £6.38

### **Polyurethane resin**

A 2-part liquid casting resin which sets when mixed in equal amounts, therefore easy to dose. Tiranti's DRO29F recommended because relatively cheap and reliable. Pot life 5mins, cure time 30mins or faster if heated. If casts are taken out of the mould when firm but still flexible they can be trimmed easily in this 'green' state.

Obtainable Tiranti; 4D modelshop; Bentley Chemicals; Mouldlife

Price on average per 2k (litres) £24 (Tiranti's DRO29F 2k kit £22.54)

### **Casting plaster**

A special type of high-grade, fine plaster most suitable for casting. An example is Basic Alpha, from Tiranti. This type of plaster is much stronger than the 'plaster of Paris' commonly sold in chemists or hobby shops. It also mixes smoother and flows better. All plasters should be mixed by adding plaster to water, never the reverse. Using acrylic polymer solution (instead of water) will make an even stronger casting material (mix is different, usually 3-parts plaster to 1-part polymer).

Obtainable Tiranti

Price e.g. 5k Basic Alpha £6.63, 1litre polymer (also known as 'plaster hardener') c. £8.50

### **Liquid latex**

Not suitable for casting solid items but ideal for 'skins'. Can be layered into/onto most impervious, sealed surfaces and peeled off when dry. Each coat must thoroughly dry before applying the next. Do not use vaseline as extra barrier because latex will not dry on it. Best paints to use are special latex paints or Humbrol enamels. Latex can also be layered over a simple shape to produce the traditional 'sock' mould form but expect some distortion from this method.

Obtainable Tiranti, 4D modelshop, most good craft shops

Price e.g. 1k £8.62 at Tiranti, usually cheaper at college shops

### **Super Sculpey**

Versatile as a 'casting' material if press-moulded into any type of mould, carefully removed, then baked hard. If used with heat-resistant rubber moulds Sculpey can be hardened directly in the mould (in oven or using heat gun), then removed.

Obtainable most good art or hobby shops; Tiranti (cheapest); 4D modelshop

Price ½ kg packet (Tiranti) £6.30