

## Basics of Plastic Modelling

**Introduction:** Welcome to the World of Scale Plastic (kit) Modelling. This guide is designed for the novice (*beginner*) modeller, in order to assist you with some of the basics involved in kit construction & presentation. Like most hobbies, modelling is limited only by your imagination (and budget); however, there are some basic essentials you will need to buy and know in order to achieve a reasonable result from your purchase. Please note: most accessory items described below can be purchased from us here at the '*Albury Hobby Centre*'.

### **Tools of the Trade:**

At the most basic level of modelling, there are some essential tools you will need in order to build your kit. We categorise modelling tools as: essential & luxury items. These tools are listed below:

#### **Essential**

- Hobby Knife (No.1 Handle with No.11 Blade)
- Plastic Glue (Tube or Liquid Plastic Cement with needle Applicator)
- Sandpaper/Emery Board
- Paint Brushes (Synthetic and Sable)
- Paint (i.e. Enamel, Lacquer or Acrylic)

#### **Luxury**

- Sprue Cutter Nippers
- Liquid Plastic Glue with Brush
- Cyanoacrylate (Super Glue)
- Primer (Aerosol)
- Paint Brushes (Sable)
- Paint (Oils)
- Pastel Chalks
- Tamiya Masking Tape
- Liquid Masking (Maskol)
- Paint Thinners
- Cutting Mat
- Filler Putty
- Various Shaped Files
- Wet & Dry Abrasive Paper
- Specialty Files in various shapes
- Decal Setting Solution
- Gloss/Matt/Satin Clear Coat
- Electric Drilling Tool (Roto-craft, Dremel, Arlec etc.)
- Airbrush & Compressor
- Aftermarket Detail Sets (eg. Resin & Photo-etch etc.)

### **Stage 1 – Preparation:**

All plastic model kits are manufactured from fine plastic pellets compressed in 2 part steel moulds. These moulds are lined with an oil-based solution called "mould release agent", which assists in separating the kit components from the mould. This mould release agent is often still present on your kit sprues. So if the plastic feels greasy or wet, it should be removed if you wish to paint your kit to ensure the paint adheres properly. The easiest method of removing this agent is to simply bathe the kit components in a sink with warm (NOT HOT) water with a few drops of dishwashing liquid added and give it a light scrub then allow to air dry. Now that you have washed your model, things can get started.

### **Stage 2 – Removing Kit Parts:**

The first thing you should do is: **study the instructions!** When starting out, you should follow these diagrammatic representations of kit construction strictly to the letter (or number), and only remove those parts required for each step as you reach it to avoid losing any. You will note that all the kit components are attached to a plastic 'frame.' This plastic frame is called a "sprue". In order to construct the kit, you will need to neatly remove these components from each sprue without damaging the part itself. The best way to do this is either with a hobby knife or a specifically designed 'sprue cutter'. This cutter cleanly & safely cuts away the kit component from the sprue, leaving little, if any clean up work. **NEVER twist parts from the sprue or cut them away with domestic size scissors or Stanley knives, as it will take a chunk out and damage the parts.** If your budget does not allow you the luxury of 'sprue cutters', then we suggest you purchase a basic hobby knife. These knives are very cheap (& sharp so care must be taken) but you can buy replacement blades for them when they become blunt.

### **Stage 3 – Putting it all Together:**

Once you have removed the appropriate component/s from the sprue, try to clean off the left over plastic 'bump' from the part's sprue join with a hobby knife and/or file to ensure a flush fit with its sister part. Once this is done, it is important that before committing glue to plastic, you give the parts a "dry fit". This simply means putting the kit pieces together (without glue), in order to see how they fit – as you may still need to remove a slight amount of plastic from one part or the other in order to achieve a perfect join. Once happy with the part fit, you can now safely glue them together.

You should note, glue is a **solvent** & as such, should be treated with caution. Model glue actually 'melts' or welds the plastic parts together, so it is important to use glue sparingly and avoid spillage on the model, your fingers, or the work surface. "Revell", Testors & "Humbrol" amongst others produce a glue container with needle nose "syringe" applicator, which is ideal for controlling glue application to your model. The other alternative is to pour a small amount of tube glue onto some kitchen foil and use a tooth-pick or cocktail stick to apply the glue to your model. You **DO NOT** need to apply a lot of glue to your model – a little goes a long way. (For more advanced users brush-able Liquid Glues are also available and recommended for cleaner joins). Once the parts are together, if needed you can use low-tack masking tape (Tamiya Tape) and/or clothes pegs or elastic bands etc. to hold kit parts together until they set which may take a few hours for a final cure.

### **Stage 4 – Cleaning it all up:**

Unless you are exceptionally careful with glue application, you will find some glue residue has oozed out from the mating surfaces during drying. This is not necessarily a bad thing, as it will help fill some minor gaps between those surfaces. All you need to do is sand it back once it has fully set. The best thing to use here is either the heel of the hobby knife blade held at right angles to the surface to gently scrape it away (called "adzing"), or even 'wet & dry' sand paper. If using wet & dry it is advisable to use *this paper wet*. Gently rub the paper along the join line and you will eventually rub away the oozed glue line, leaving a seamless join. This phase is essential if you intend to paint your model and have a flawless finish free of gaps and mould lines.

### **Stage 5 – Painting & Decorating:**

Some modellers' are happy to simply make their model, decal it and leave as is in bare plastic colour. This is fine, however; there's greater reward from actually painting and weathering your model to represent the real thing. Before we begin this phase, there are some basics you will need to know about model painting.

The first thing to do, is re-wash or wipe your model. This will remove dust or finger grease that has accumulated during the construction process. Just lightly rub the model with a lint free rag soaked in water or rubbing alcohol (Isopropyl de-natured alcohol).

The next thing you need to decide upon is whether you want to airbrush or brush-paint your model. Whilst more expensive initially, far superior results can be obtained from using an airbrush (or even aerosol/spray paint can) – **DO NOT** use automotive or household paints for this task though as they may melt your model, not to mention bury detail.

\*DO NOT apply Lacquer based paint over Enamel paint.

#### **Brush Painting:**

The plastic used to produce your model is smooth and shiny. As such, you should consider applying a primer coat in order for the subsequent layers of paint to 'grip' onto. You can brush on primer paint, but it is much better if you buy an aerosol can of primer, as this produces a much smoother layer for you to **brush paint** onto.

#### **Subsection:- 'Aerosol Hints & Tips'**

With all aerosol paint cans, you should do the following prior to spraying your model:

1. Place the aerosol tin into an ice-cream container or similar, which has been previously filled with hot tap water ONLY (DO NOT boil on stove). Leave the aerosol in the water for about 2 minutes'
2. Take the aerosol out and shake it vigorously for about 1-2 minutes'. (Read Instructions on the aerosol tin).
3. Hold the aerosol approximately 20-30cm away from your model and commence to spray one (1) light coat in **ONE DIRECTION** only starting about 10cm before the model to avoid any initial spatter and finishing a few centimetres past it to avoid any pooling.
4. Leave this first coat to dry for about 30 – 60 minutes
5. Apply a second coat, covering the whole kit. Allow to dry for at least 24 hours in a dust free environment.
6. When finished turn the can upside down and spray it until only propellant comes out to avoid any clogs

Any portions of your model which you do not wish to paint (eg. Windscreens, canopies etc), should be masked **prior** to any painting sequence/s. We recommend the best masking tape available is: "**Tamiya Masking Tape.**" This is a low tack tape designed especially for modelling and is relatively cheap. **DO NOT** use household grade tape on your models, it **WILL** damage your paintwork and/or leave a sticky residue on the paint.

It is now time to start your brush painting. The first important aspect of this phase is to ensure you have purchased good quality brushes (either nylon or sable). Poor quality brushes will leave brush hairs & brush strokes in your paint scheme.

To ensure a smooth quality paint job, you should remember to thin your paint, but before this, remember to stir your tinlet or bottle of paint **THOROUGHLY**. Failure to stir paint properly **WILL** result in poor paint coverage & adhesion. Once the paint is stirred properly, you can either attempt to apply the paint directly from tinlet or bottle using your brush OR, often it is better to thin the paint a little in order to assist smoother coverage. We suggest you obtain a few 35mm clear film canisters (free from most photographic shops) and a couple of cheap eye droppers. Use the eye dropper to transfer the amount of paint you require, from tinlet or bottle, to a film canister. Now, using a clean eye dropper, transfer another amount of thinner to the film canister. Paint to thinner ratios do vary, but we recommend a ratio of about 7:3 – (that is: 7 parts paint to 3 parts thinner). Experimentation is the key here. A Paint brush can also be used to transfer paint and stir it into the thinners.

Whilst we're discussing thinners, we recommend you buy generic brand thinners for the paint type you're using. This means that if you purchased "Humbrol" paints, then you should use "Humbrol" thinners. Paint companies blend their thinners to be completely and chemically compatible with their paint range. Having said that, you can clean your brushes with either turpentine or water, depending upon whether you're using enamel or acrylic paints (**more on this later**).

**When transferring paint of different colours**, remember to clean the eye dropper or brush thoroughly before plunging one colour into another. If you don't, you WILL contaminate the other paint tin or bottle.

Now, once the thinners have been added to the base paint, ensure you stir this mixture thoroughly (using a brush or stick of plastic sprue or even a cocktail stick). Dip about 1/3 of your paint brush into the paint and commence painting your model. It is important to remember at this point, that you should paint in only one direction along the model. Apply only **thin** coats and never go over the same area twice **before** the underlying paint has dried thoroughly. Failure to adhere to this basic principle of brush painting will result in the underlying paint 'lifting' and may cause ugly brush strokes to appear in the final finish.

You will notice that the first and second layers of paint you apply may show minor brush strokes – don't worry about this! Subsequent layers of thin paint application will generally hide the 'brush stroke' effect.

**The important points to remember about brush painting are:**

- **Mix the paint thoroughly**
- **Thin the paint (70% paint to 30% thinner)**
- **Ensure an undercoat has been applied to the model**
- **Paint ONLY in one direction**
- **Apply ONLY thin coats of paint**
- **Allow the paint to dry thoroughly between coats**

#### **Stage 6 – Transfer/Decal Application:**

Now that you have painted your model & allowed it to dry thoroughly, we can consider decaling. What's decaling you say? Well, decals are the markings you find on a sheet in your model box & decaling is the method of applying these transfers to your model. Decals are often seen as national insignia (eg. The Aussie Kangaroo, Numbers on the side of Tanks, etc).

For decals to adhere properly to your model, they stick best to a very glossy surface. You might say this is difficult to achieve, if for instance, your model is painted in all matte colours - but all is not lost! You can (and should) coat your entire model in a gloss varnish or alternatively the areas to be decaled. Once the varnish is dry, you have a nice smooth & glossy surface onto which you can apply your decals.

The best way to apply decals is to cut out each decal you need from the sheet (using small scissors or knife) one at a time, and place it into a saucer of luke-warm water. Immerse it in the water face-up for about 3 to 5 seconds – any longer and the adhesive will float away.

As soon as the decal paper starts to soak the water up and darken, take it out of the water with a pair of tweezers. Sit it on your bench for another 10-15 seconds until the decal itself just begins to slide on the backing paper. Then pick up the wet sheet and place it onto the model near where it is to be applied. With a wet paint brush & tweezers gently coax and slide the decal onto the appropriate area of your model.

Once in its final position, use a cotton bud to gently dab the decal into place & absorb any water residue. If you wish, you can even use a decal "**Setting Solution**" which will melt the decal into place; in effect giving the markings (decals) the appearance of having been painted on (as they are in real life).

But, I wanted my model to be matte, not gloss! What happens now? Well, simple – all you need to do now is cover your whole model in a matte varnish (either brushed, aerosol or airbrushed) and this will restore the original paint to a matte finish. Easy.

Even if you wanted your model to present a glossy appearance, then you still should give your model another coat of gloss varnish. This in effect, also "seals in" the decals you have just applied and enhances the gloss appearance even further.

#### **Types of Modelling Paints:**

Within modelling, there are basically two (2) types of paint you can buy for your kit. These are: **Enamel and Acrylic**.

**Enamel Paint:** This is a hydrocarbon or solvent-based paint. That is, the paint pigments (which give paint its colour) are mixed in solution with the liquid solvent. This is why it is so important to ensure you have mixed your paints well. If you don't, you will be left with a heap of pigment – not good! Enamels can be cleaned from your brushes with Turpentine, General Purpose thinners or Cellulose (Lacquer) thinners. This paint is usually more ideal for brush painting than Acrylics. The reason for this, is that the solvent (Hydrocarbon) liquid evaporates (Dries) at a slower rate and therefore, there is less propensity for brush strokes to form whilst hand painting.

**Acrylic Paint:** These paints are very user friendly in that they contain an alcohol solution as the carrier solution for the acrylic resin paint pigments. This means that this paint can be thinned with either de-natured alcohol, methylated spirits, generic thinner or distilled water. Even better, your brushes can be washed out in water! We do however, recommend thinning these paints with a generic thinner. Like enamels, these paints have to be stirred well. The down side to acrylic paints is that their "carrier" solution dries rapidly (when compared to enamels) and as such, it is more common for brush strokes to appear in your paint job. All is not lost however. You can buy a product called: "**Acrylic Retarder**" from art supply stores which effectively slow down the evaporation (drying) process of this type of paint. Note: if you take this option, make certain you apply the retarder to the base paint in a separate mixing container (i.e. 35mm film canister) and NOT directly into the paint bottle!

## **Stage 7 –Weathering:**

This is a topic which could take up a book on its own. But depending on the subject (plane, tank, ship etc.) and personal taste, how far you go and which combination of techniques used will vary considerably. Study of photographs and real equipment is a perfect way to see what effects the weather and use has on equipment. But the four basic ones are outlined in summary below.

### **1. Washes**

For adding scale depth “**Washing**” is a well-known technique of applying a highly thinned black or dark brown paint solution around the base of raised detail or into panel lines. This gives the impression of shadow and gives a scale contrast to varying surface details. Spot washes can also be added to replicate oil stains etc. to individual taste. Generally a tiny amount of paint is added to a lot of thinner so it is more tinted thinners than thinned paint. Care needs to be taken when applying it so the underlying paint doesn't lift and the wash doesn't dry in tide marks. A soft lint-free cloth can be used to mop up any excess.

### **2. Drybrushing**

For dirt and dust effects as well as accentuating raised detail, “Drybrushing” is a favourite where a light, dirty sand colour is virtually wiped off a square tipped brush on scrap paper repeatedly so only a hint remains on the brush. This is then whisked over the surface of the model to subtly bring up surface detail and/or add a dusty effect. The number of passes applied will determine the effect.

### **3. Scratches and Paint Chips**

These can be added by a few methods – they can either be painted on in either a darker or lighter colour to the base colour or even drawn on with a sharp 2B lead pencil. Careful study of photos is essential to master the severity and appearance of the scratches. Lead pencil or graphite shavings can also be used to simulate worn bare metal too.

### **4. Mud/Dirt**

Many methods can be used to add mud to vehicles. The easiest though is to mix real sand or dirt into a wet slurry with water and brown acrylic paint. Static grass can also be added to the mix if desired for clumps of grass sod. Use an old brush and simply slop this mixture into the tracks of a tank or the underside of rally cars as required.

### **5. Pastel Chalks**

These as their name implies are artist's chalk sticks bought in packs or in individual colours, which can be ground into a fine powder on sandpaper and then applied to the model to replicate dust, rust or soot. A soft fluffy brush will give a light dusty look, while a short, stumpy brush can provide denser more concentrated stains. Colours to aim for are white, sand, earth browns, orange and black. Sadly these are not very robust and can rub off if the model is handled after application so they need to be added last and the model kept free from dust and being picked up. Attempts to seal their effect in with a clear coat will usually result in most of the look being lost.

### ***That's it folks !***

Yes, it's as easy as that. Just follow these 7 easy steps outlined in this summary and with a little practice you can produce some beautiful scale models. There are obviously further advanced techniques which will enhance your model even further, but these techniques fall outside of the scope of this summary (for instance, an airbrush/compressor combination will provide far superior results in paint application when compared to brush painting). If you have any further questions, please feel free to ask any of the staff members at the “**Albury Hobby Centre**” as they will be more than happy to assist you with ANY queries you may have, no matter how basic (or advanced).

**Happy modelling and all the best from The Team at the ‘Albury Hobby Centre’**

### **A FEW USEFUL WEB REFERENCE SITES:**

[www.scalemodelindex.com](http://www.scalemodelindex.com)

Huge Modelling Site Link Index

[www.hyperscale.com](http://www.hyperscale.com)

Aircraft & Tank Modelling Site

[www.missing-lynx.com](http://www.missing-lynx.com)

Specialist Tank Resource Site

[www.aircraftresourcecenter.com](http://www.aircraftresourcecenter.com)

Specialist Aircraft Resource Site

[www.aussiemodeler.com](http://www.aussiemodeler.com)

Aircraft & Tank Modelling Site with Primarily Australian Content