



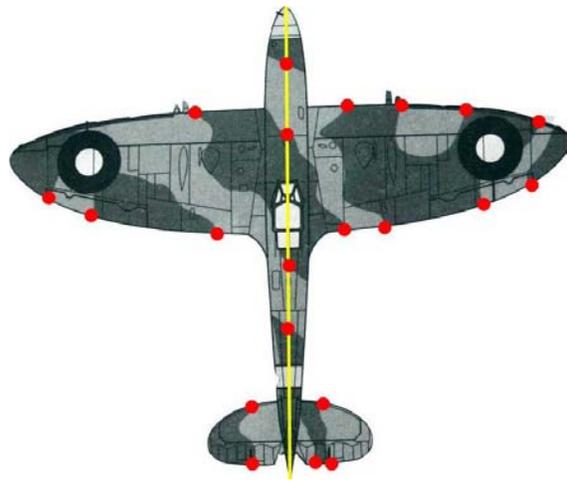
PAINT MASKING for Model Builders

The purpose of this tutorial is to discuss methods of creating painted patterns on scale models through the use of masking materials.

I. Preparation and Layout

All of the normal surface preparation associated with the current stage of construction should be completed, and any applied primer allowed to cure thoroughly. Surfaces to be masked should be free from all sanding residue or other contaminants, body oils, etc.

Layout the masking by carefully noting key elements on photographs, and transferring these points to the appropriate point on the model. A light mark with a lead pencil will allow you to see the mark, but not be seen under a coat of paint, or still be removable after the final color is applied.



For complex camouflage schemes, the kit instructions or other diagrams can be photocopied to the size of the model, and then cut out to use directly, or for the creation of masks to layout the pattern on the model.



Often, decals will provide some, but not all of a certain color, with the difficult-to-decal sections needing to be painted in. If this is the case, and in instances where the painted pattern must match a decal, photocopy the decal. Cut out the copied patterns and use them to layout the masking pattern.



Some masking will involve transferring measurements, either from a drawing or from a ruler. Using a good pair of dividers with sharp tips and either a screw adjustment or a firm hinge will greatly simplify this process.

Mark lightly with a mechanical pencil. A version that uses 0.5mm lead will make the finest mark. The mark can be later removed with a white vinyl artist eraser.



Screw-Adjust Dividers



Mechanical Pencil with 0.5mm lead



White Vinyl Eraser



II. Tools

The basic tools needed for masking are scissors, hobby knife and patience. Lots and lots of patience.

Tape and other masking material will almost always need to be cut to size and shape. For larger pieces destined for relatively flat surfaces, use scissors. Good sharp scissors are essential to obtaining clean cuts. For straight lines, scissors should be large enough to cut in one motion. Fiskars™ and Scotch™ brands are good quality, come in a variety of sizes and are reasonably priced. The notions section of a fabric store is a good place to browse for the pair you need.



Fiskars™ 12" general purpose shears



Scotch™ 8" Precision Scissors

For impossibly small and intricate cuts, arrowhead scissors, such as those sold by Dr. Slick™, are quite useful, although they can be expensive. Look for them in the fly-tying section of the sporting goods store.

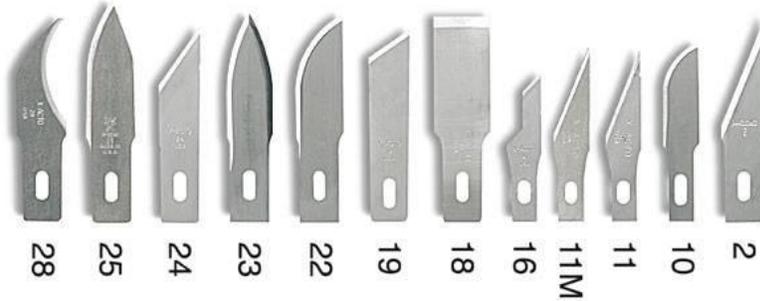


Dr. Slick™ Arrowhead Scissors

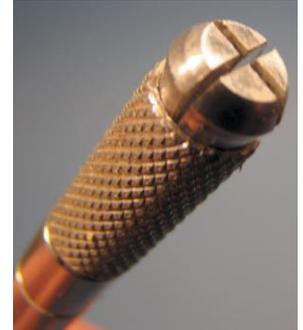
Handy Hack: Apply the tape to wax paper or parchment paper, which will keep the tape straight and flat, and will prevent it from sticking to the scissors as it is cut. The backing can be easily removed from the tape when time to apply it to the model.



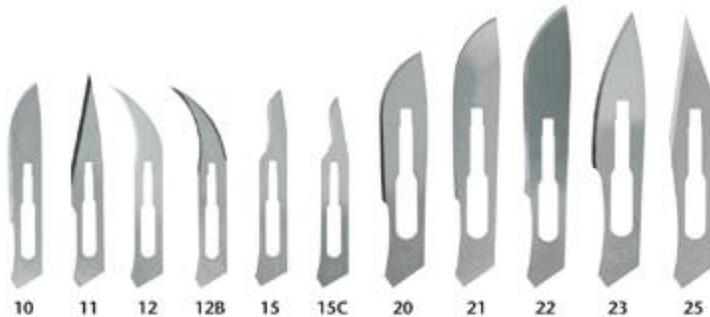
For all other duties, cutting the masking material will be done with a hobby knife. X-Acto™ and Excel™ brands are readily available and accept a wide variety of replaceable blades, although a No. 11 blade is the most commonly used.



Typical hobby knife blade assortment and handle with clamping collet



An alternative is the surgical scalpel. This can be much sharper than a standard hobby knife, but is not as robust, and is usually more expensive. Swann-Morton™ is the top of the line, but there are other lower-cost brands that perform nearly as well.



Typical scalpel blade assortment and handle with mounting lug



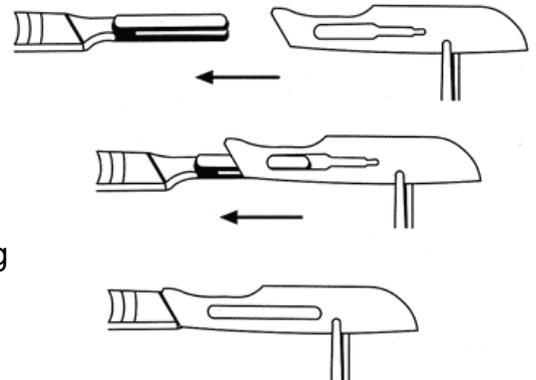
NOTE: SPECIAL HANDLING REQUIRED!

Scalpels are designed to cut flesh, so the blades are extremely sharp. When changing a blade, ALWAYS hold the blade with pliers.

Note the shape of the end of the blade. Its angled shape is designed to key into the angled recess in the handle.

Slip the big end of the blade's mounting slot over the lug. Slide the blade toward the handle until the small end of the mounting slot engages the grooves in the lug. Continue pushing until the end of the blade drops into the recessed portion of the handle.

To remove, grip the back end of the blade, lift it off of the lug and push forward.

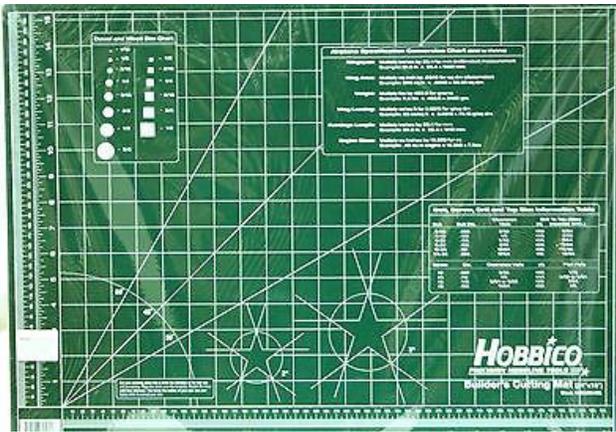


For complex curves, a swivel knife may be helpful. The blade is free to swivel in the handle so that cutting is more like drawing. Disadvantages are that the learning curve for this knife is fairly steep, and the range of blades available is limited.

X-Acto™ Swivel Knife



Tape can be cut on glass, tile or other hard flat surface, or on a self-healing mat. The self-healing mat by Hobbico™ is covered with alignment information, but mats by Alvin™ and Fiskars™ work equally as well. Mats are available in numerous sizes.



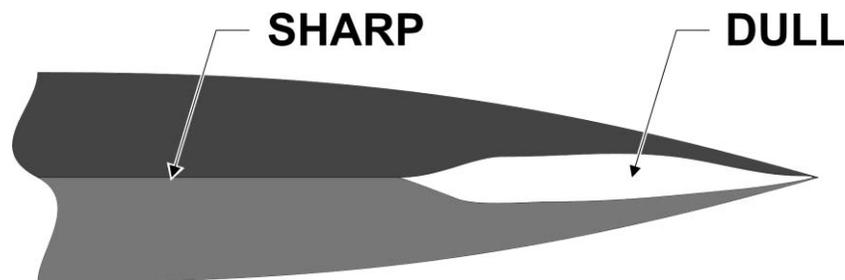
*Hobbico Builder's Cutting Mat 18" x 24"
Self Healing Work Top Mat 0455*



Alvin 6" x 8 1/2" Self-Healing Cutting Mat

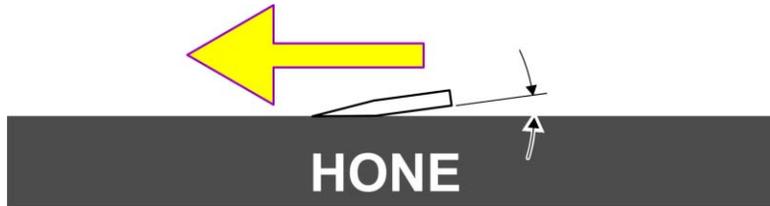
Hints on Maintaining the Cutting Edge

Cutting on glass or ceramic tile produces the sharpest edge, but also causes the blade to quickly dull. Carefully wipe the blade with a cloth and examine the edge under a strong light. The sharp edge will be invisible, while the dull areas will appear as shiny spots.



Using a hone, sandpaper or sharpening stone, lay the blade with the edge in contact with the surface. Try to maintain the same angle as the ground portion of the blade, and then push the blade so that the edge is cutting into the stone. Scraping drops of oil off of the sharpening surface is good practice for developing the proper technique. Note that dragging the blade “backwards” will usually round off the edge, so always sharpen by pushing “forward”.

When the shiny spots disappear, the blade is sharp.



Using an EZE-Lap™ diamond hone after each cutting pass is also a good way to maintain the sharpness of the cutting edge. Available at sporting goods stores.



EZE-Lap™ Diamond Hone & Stone set



EZE-Lap™ Hook Sharpener



III. Materials

The most common masking material is tape. Tape comes in several varieties, with each having its place in the model builder's toolbox:

Clear cellophane tape and packaging tape are very robust and usually have an aggressive adhesive. This is useful for making small clear windows, such as landing light covers, and for protecting details when sanding seams. Its strength makes it ideal for creating very thin lines. In thin strips, it is also quite flexible. Its downside is that it is relatively thick compared to other model-specific tapes.



Frosted cellophane tape (Scotch™ Magic Tape) slices cleanly with light pressure. Frosted tape is THE go-to material for those situations where tape must be cut directly on the model. It appears darker after it adheres to the surface, but is translucent enough that detail can show through. This makes it ideal for masking clear parts such as canopies with raised framing.



Kabuki tape (Tamiya™ Masking Tape) is a perennial modeler's favorite. It is thin, flexible in thin strips, and fairly strong. Also, it cuts easily and leaves a sharp edge, although it can act "gummy" if the blade is not sharp. Most pre-cut masks are made from kabuki tape.

Generic and general purpose masking tapes are available in a variety of widths. Be aware that adhesive strengths vary greatly, so testing before use is mandatory.



FrogTape™ and similar products add water barrier technology that is advertised to form sharper separations, but this feature only works well with water-based paints.



Bulk Masking:

Often, it is not necessary to tape an entire project, but exposed surfaces must still be protected from overspray. Several materials are available for bulk masking duties.

Newspaper, bond paper and butcher paper can be used for bulk masking. Be sure that all edges are taped, and try to avoid folds and wrinkles that can catch and channel overspray. Be aware that with newspaper, the inks can bleed onto the project, particularly if the surface is glossy.



Other paper products such as sticky notes, wet paper and even wet facial tissue can be used to mask delicate surfaces. Wet facial tissue is great for masking small openings like engine cowlings.

Clear films can also be used for bulk masking. Saran Wrap™, Glad™ Cling Wrap and other stretch/cling wrap products will adhere to themselves so that they usually require no other sealing. The wrap materials still need to be taped to other masking media, however, so that paint cannot blow underneath.



Stretch wrap (as well as butcher paper) is available in large rolls at places that sell restaurant supplies.

Avoid Glad Press "N Seal™. It has small pockets of adhesive that can leave a pattern of residue on the surface



Bare-Metal™ foil is the thinnest masking material available. It must be well burnished to prevent bleed-under, and must be sliced with a very sharp knife to avoid tearing. It is also prone to leaving adhesive residue upon removal.



Masking Liquids are useful for filling areas where the pattern is outlined by tape, such as the center of a pre-cut canopy mask, or areas that are just too difficult to mask by taping.

Disadvantages: It must be applied thickly enough that it can be later peeled off since thin coats are difficult to remove and may leave small unprotected areas in the brush marks. It is very challenging to paint the liquid to a precise demarcation. Also, the carrier material is ammonia, making damage to acrylic finishes a distinct possibility.



Modeling clay, Blue-Tac™ and silicone polymer (Silly Putty™) can be used to create free-form and soft-edged patterns, and for masking hard-to-tape areas like wheel wells.



<http://www.internetmodeler.com>



Be aware that silicone polymer is a *liquid*, although a very slow moving form. If left for too long on a model, it can drip into some inconvenient places or flow out of position.

Parafilm™ is a wax-like sheet that is activated by stretching. It is good for masking odd shapes, and can be sliced to a sharp edge. Its disadvantage is that the adhesive is very mild, and paint can seep or blow underneath unless the edges have been very carefully sealed.



Hard Edges

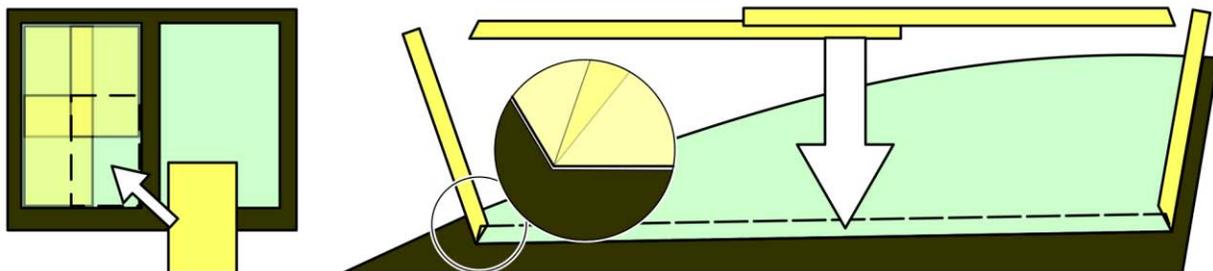
Paint demarcations can be abrupt (hard edge) or gradual (soft edge). Hard edged lines are formed by securing the masking material very tightly to the surface. The sharper the edge of the masking material, the sharper the color demarcation will be. The sharpest edge is obtained by slicing the tape on a glass or ceramic tile surface. Slicing on a self-healing mat will allow the cut edge to “roll” slightly, making it ever-so-slightly less sharp.

Form thin, consistent strips by first applying the tape to the cutting surface as smoothly as possible. Lay a steel straightedge on the tape and make an initial slice to trim off and discard the original edge, which may have been nicked and/or contaminated with lint. Hold the blade at 90° to the straightedge in order to ensure a consistent cut line.



If the masking strip needs to be a specific width, transfer the measurement to the tape with a pair of divider. Mark the tape in at least two spots. Place the tip of the cutting blade on one of the spots and slide the straightedge until it contacts the blade. Repeat for the other mark, taking care not to move the straight edge from the first mark. It may be necessary to recheck this measurement several times to ensure a parallel cut. Much like airbrushing, begin the cut off of the tape, and end off of the tape. The cut should be made in a single pass.

To mask a square (such as a framed window), cut four pieces of tape about $\frac{3}{4}$ of the size of the opening. Place a corner of each tape piece in one corner of the opening, carefully aligning the edges. For other angles, slice the end of the tape at an angle and apply it to one leg of the angle. Make sure that the pointy tip of the tape is right at the apex of the angle. Slice the next piece of tape in the opposite direction and apply to the second leg. Line up the pointy tips to achieve a sharp angle. If careful cutting an inside line to precise length presents a challenge, it can be masked in two or more pieces.



Whenever using masking tape on a hard edge, be sure to burnish the edge so that paint cannot seep under the masking. Frosted tape is particularly useful in this regard, since it appears darker when properly burnished.

Notes on masking bubble canopies and other compound surfaces:

1. Cover the surface with multiple thin strips applied mummy-style in order to minimize the number of wrinkles in the tape.
2. Alternately, if the canopy has not been dipped in acrylic floor polish, mask the edges and fill in the center with a masking liquid. Be aware that masking liquids contain ammonia which may damage the acrylic finish.



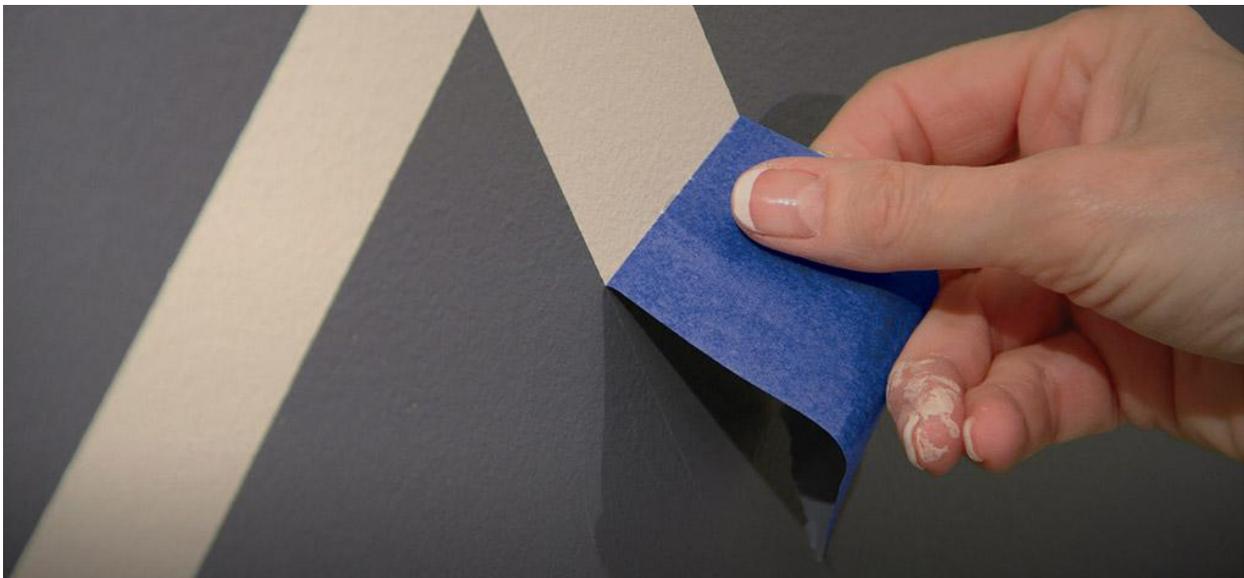
<http://www.scalespot.com/>



<http://www.arcforums.com>

For really sharp edges, it is necessary to trace the demarcation line with a sharp knife after the paint has dried, and before the masking is removed. This prevents the masking from lifting paint.

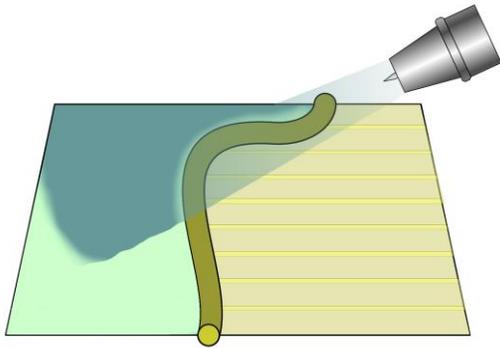
When removing the masking, pull the tape back on itself and follow the demarcation line as close as possible. This too will minimize the tendency of the paint to lift with the masking.



Soft Lines

In a soft edge, the paint makes a gradual transition from one color to another. This is usually accomplished by using an airbrush and allowing some small amount of paint to drift under the masking.

The easiest method is to form the demarcation with ropes of clay. Be sure that the color to be protected is well masked with tape, paper or other material, and then spray at a slight angle over the curved surface of the rope. The degree of softness of the painted demarcation can be controlled by varying the spraying angle. The steeper the angle, the softer the edge will be.



<http://www.militarymodelling.com/>

Alternately, paper masks can be held off of the surface with pieces of tape rolled to be double-sided. Note that the adhesive of actual double-sided tape is usually too aggressive to be used for masking. Again, spray at an angle over the edge of the mask. Spraying toward the mask will result in an unwanted hard edge where the underlying tape is placed, and the paper mask can be lifted off of the surface by the force of the air stream.



<http://worldinminiature.blogspot.com>

