

Hybrid box

George Watkins turns a unique box

Hybrid material can be great to use and always gives unique results. I make hybrid blanks by combining polyurethane casting resin with a pearlescent pigment and natural-edge pieces of Australian brown mallee burr.

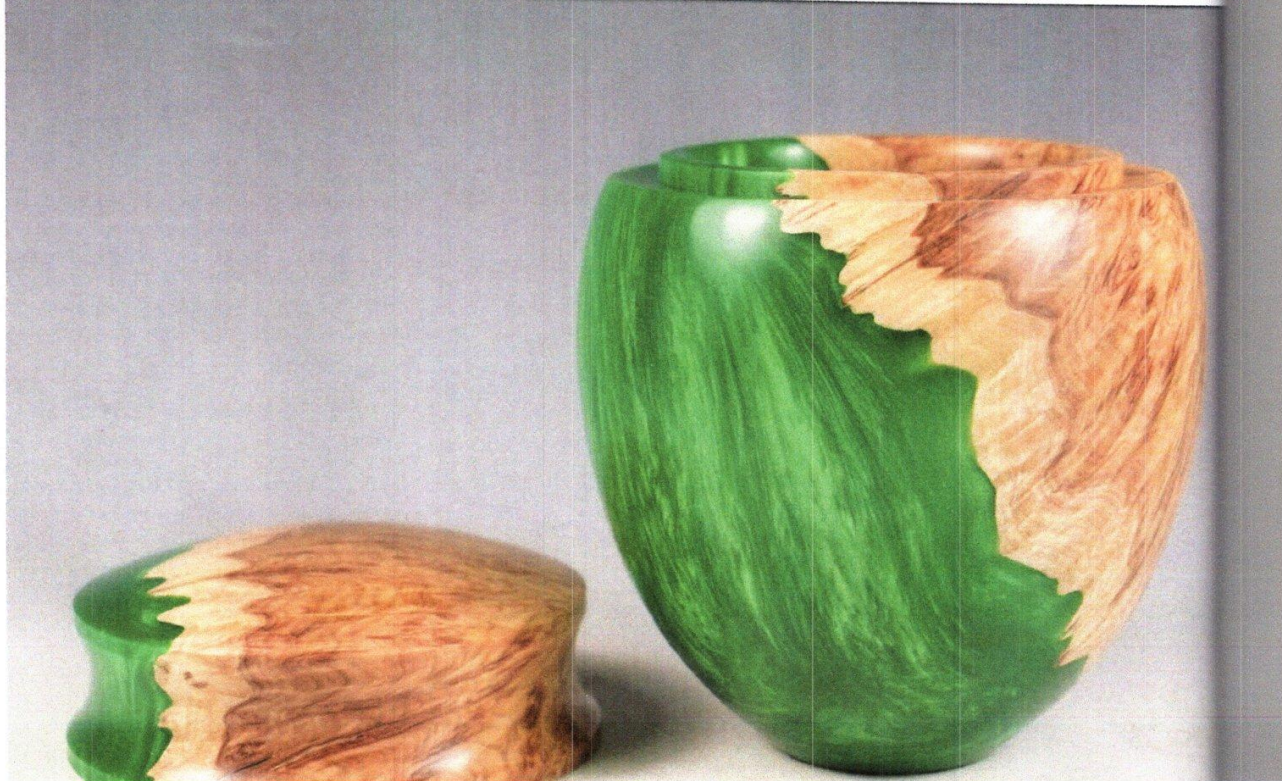
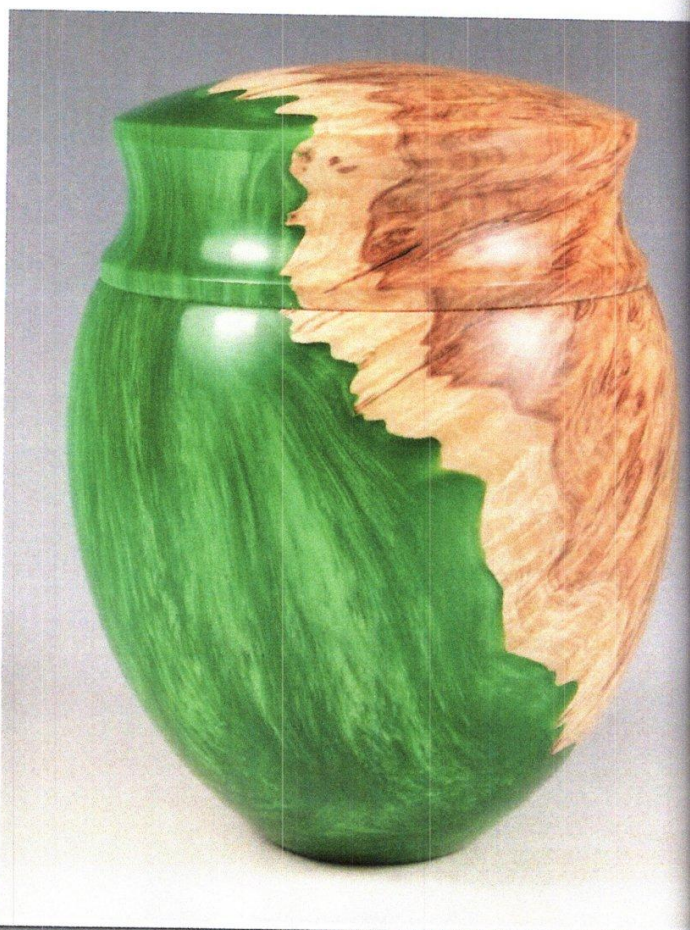
In this article I am using a hybrid blank containing just one piece of burr, but you can also use two pieces and face the natural edges towards each other, which gives a river-type effect between them. Sometimes if you use a large piece of wood with a large bark inclusion, when removed it can create a unique shape in which to cast resin.

I prefer to use Australian burr as it has a high concentration of tiny burr spikes and is a dense wood which doesn't require stabilising like a lot of native UK timbers, such as birch and horse chestnut burr.

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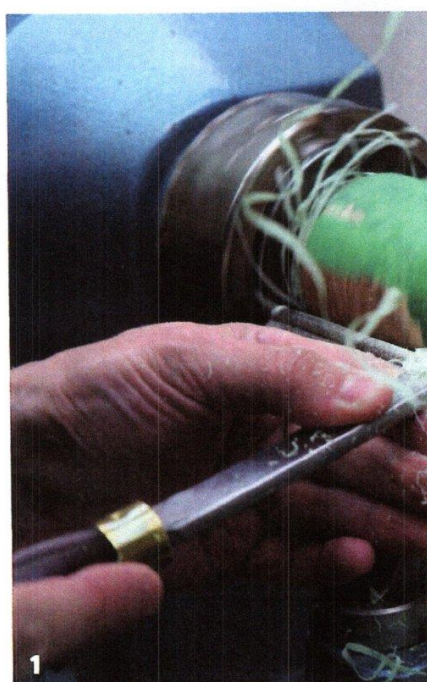
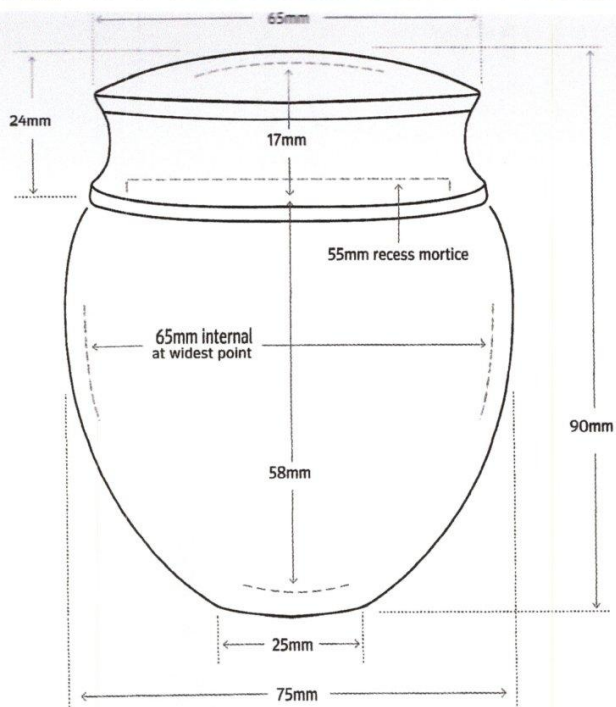
Plans & equipment

Tools & equipment

- PPE & RPE as appropriate
- Lathe
- Chuck with 50mm jaws
- 10mm spindle gouge
- 19mm skewed negative rake scraper
- 13mm round-nosed negative rake scraper
- 25mm round-nosed negative rake scraper
- 2mm parting tool
- Steel rule
- Inside callipers

Materials

- Hybrid blank 80mm diameter x 100mm
- Abrasives to 1500 grit
- Lemon oil
- Abrasive paste
- Microcrystalline wax



The making

1 Mount the hybrid blank into the chuck and, using a 19mm negative rake scraper, cut a 50mm chuck tenon so that the blank now has chuck tenons on each end. I don't tend to rough turn hybrid material as the wood has already been kiln dried prior to casting the resin.

2 Decide which end you would like the lid to be then measure 25mm in from that end and part off the base section of the blank using a 2mm parting tool, in this case leaving the piece for the lid in the chuck.



◀ **3** Use a 19mm skewed negative rake scraper to reduce the overall diameter of the lid by 10mm.

4 With a 13mm round-nosed negative rake scraper cut a shallow cove into the side of the lid, roughly 3mm from what will be the join between base and lid – an exact measurement is not critical at this stage.

5 Hollow out the lid of the box using a 10mm spindle gouge. Although light cuts with very sharp gouges can be used with hybrid material, I find that a better cut and finish is achieved with negative rake scrapers.

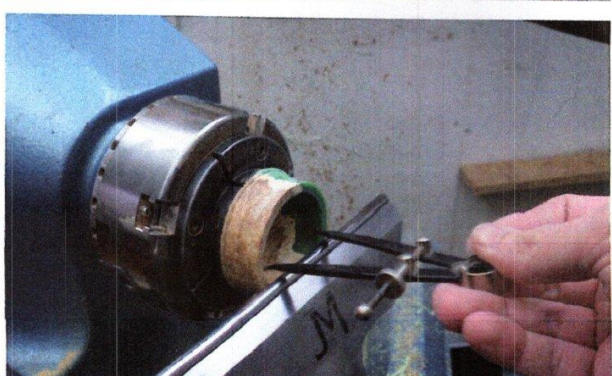
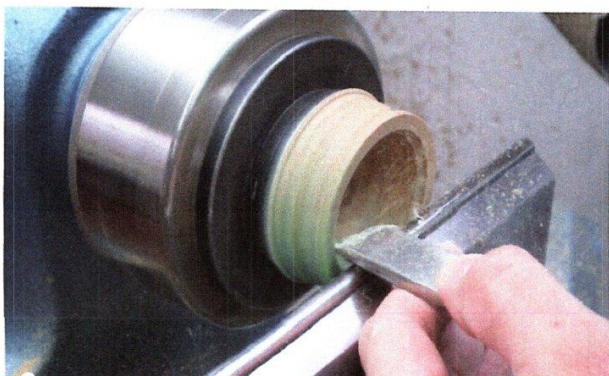
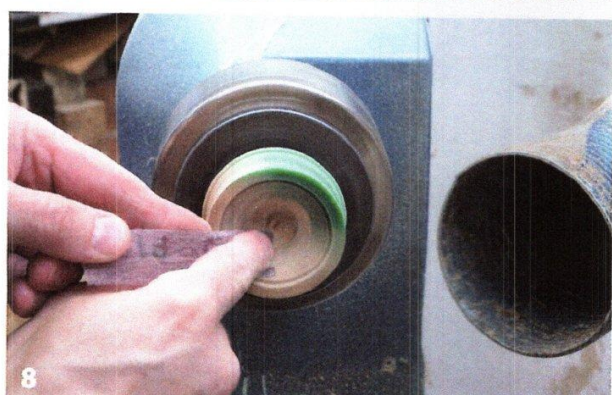
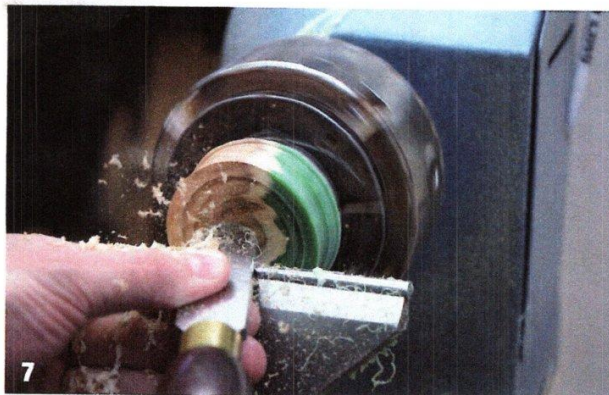
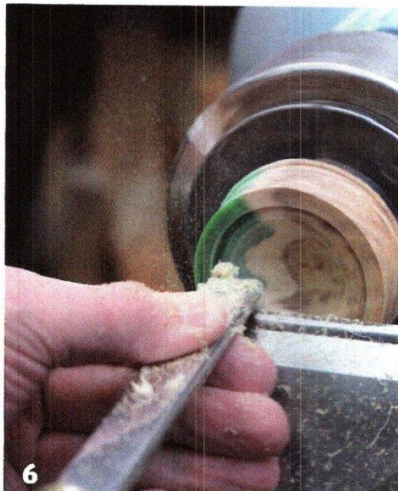
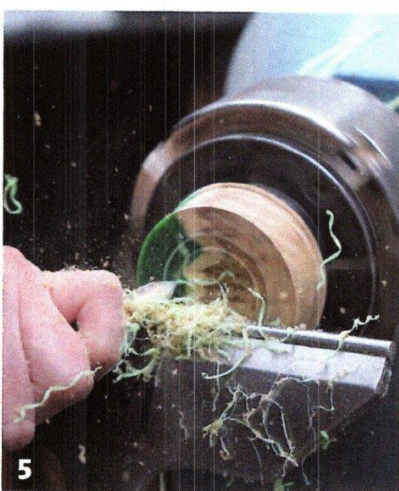
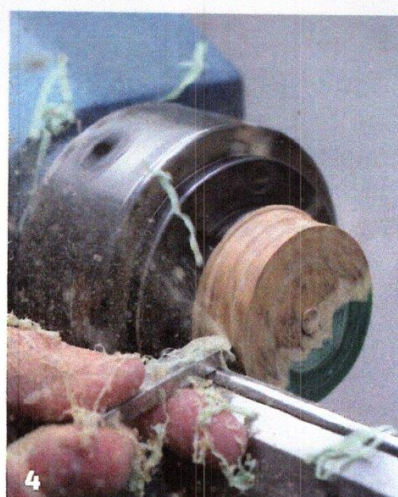
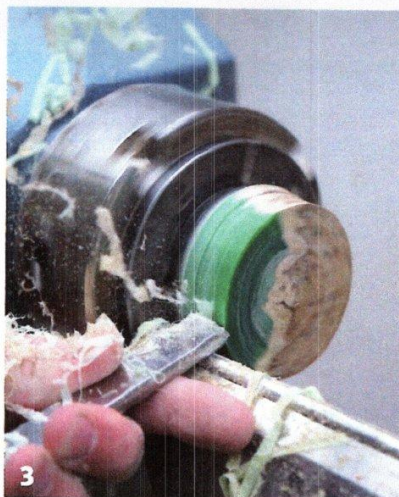
6 With a 19mm skewed negative rake scraper, cut the mortise approximately 3mm deep.

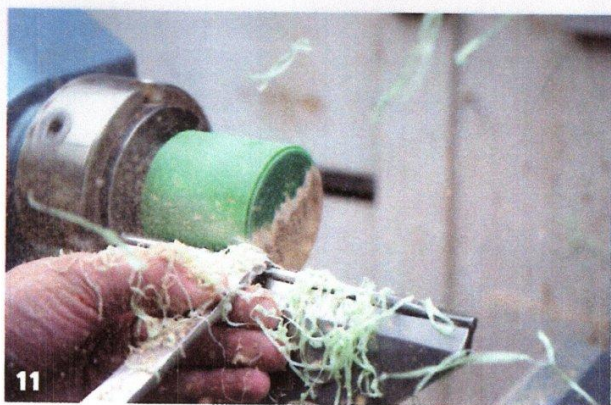
7 Use a 25mm round-nosed negative rake scraper to refine the inside of the box surface prior to sanding.

8 Reduce the lathe speed to approximately 600rpm and sand the inside of the lid, working through the grits from 180 to 1500, then apply the three-step finish (detailed at the end of the article).

9 Re-cut the mortise with a 19mm skewed negative rake scraper as it's difficult to sand the inside of the lid without rounding over the edge of the mortise.

10 Check that the mortise is parallel using a pair of inside callipers. It's worth taking extra time on this step to ensure this is correct, as it will make the lid much easier to fit.





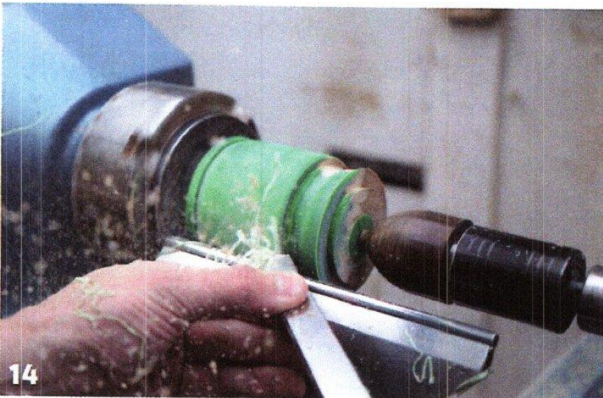
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11 Remove the lid from the chuck and mount the base section into it. Using a 19mm skewed negative rake scraper, cut a tight jam fit tenon to suit the lid's mortise.

12 Jam fit the lid on to the base and bring up the tailstock for support. I use a homemade wooden mandrel in my tailstock instead of a traditional 60° live centre which can leave a small indentation.

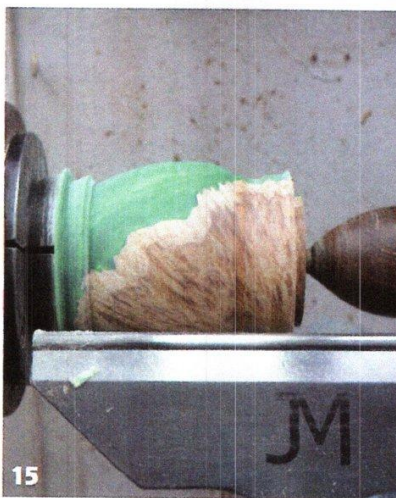
13/14 With a 19mm skewed negative rake scraper, start to remove some of the waste wood from the base of the box and begin to create the shape.

15 Don't remove too much material from the base of the box at this stage. You need to leave extra material which will add strength and stop vibration while the lid is turned and the box hollowed out.

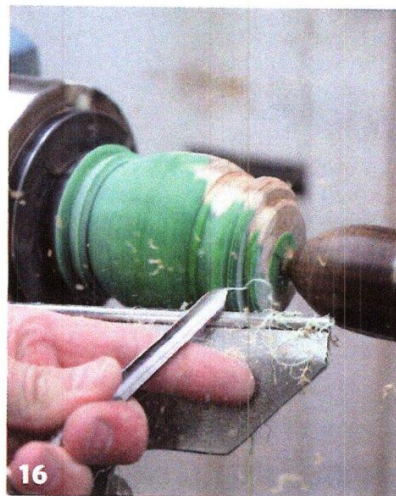
16 Using a 10mm spindle gouge, remove the waste wood from the lid of the box and create the gently curved top.

17 With the 13mm round nosed negative rake scraper, refine the shallow cove on the side of the lid. There are two small flats either side of the cove – the lower flat section needs to be slightly wider than the upper flat, in this case it's 2.5mm and 2mm.

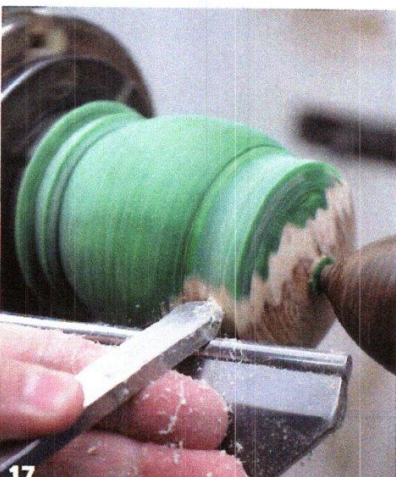
18 Refine the curve on the top of the box with a 19mm skewed negative rake scraper. This tool leaves a much better surface finish compared to a gouge or carbide tool,



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19 In this picture you can see the lid before sanding, how the base curves in to meet the lid and the extra material at the base of the box that was referred to in Step 15.

20 Reduce the lathe speed to approximately 600rpm and sand the outside of the lid, working through the grits from 180 to 1500. Don't sand the lower flat area of the lid nearest to the base and don't worry if the upper flat area gets rounded over when sanding the cove.

21 With a freshly sharpened 19mm skewed negative rake scraper, cut the upper flat section, removing any rounding over that happened during sanding. You can now apply the finish.

22 Remove the lid and, with the 19mm skewed negative rake scraper, change the fit of the mortise on the base of the box from a jam fit to a looser fit which is easy to take on and off with one hand.

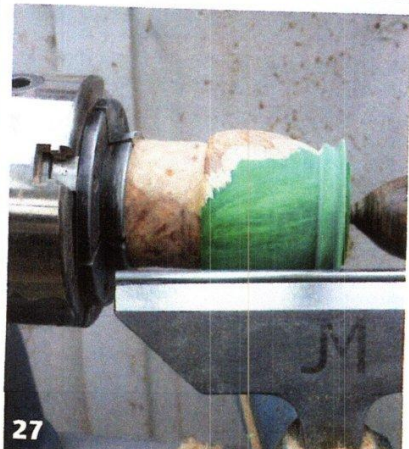
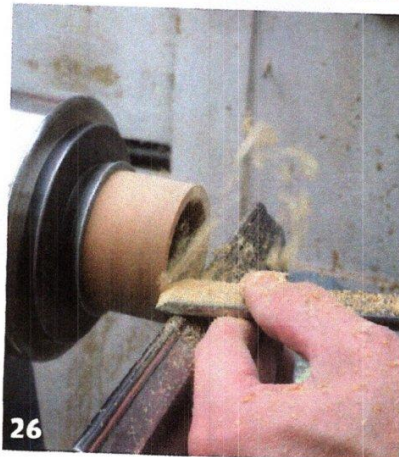
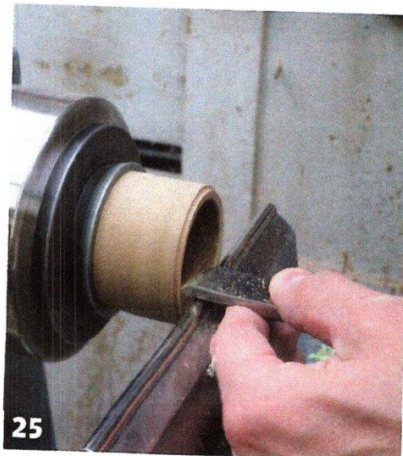
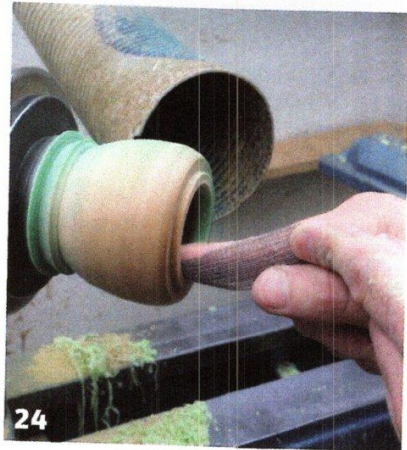
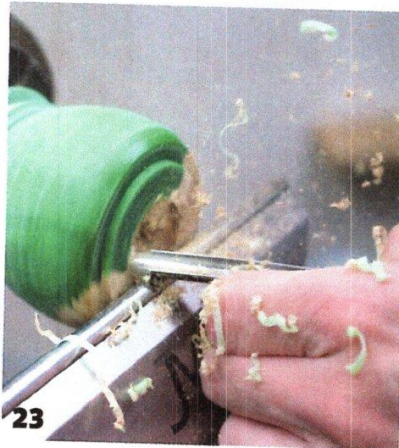
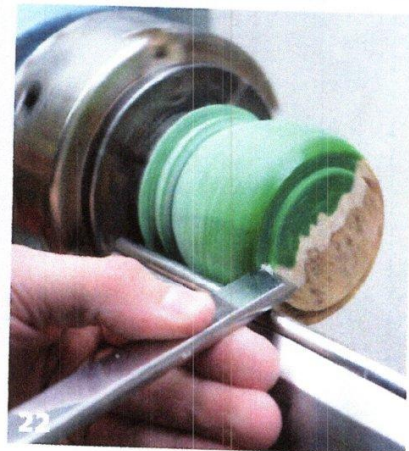
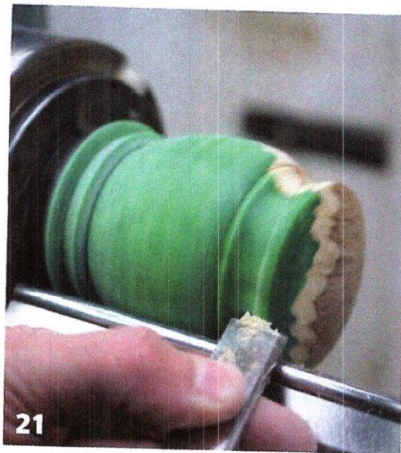
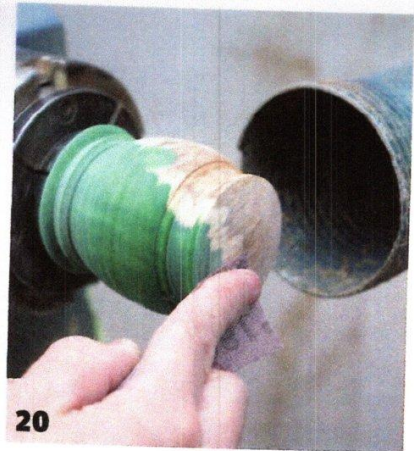
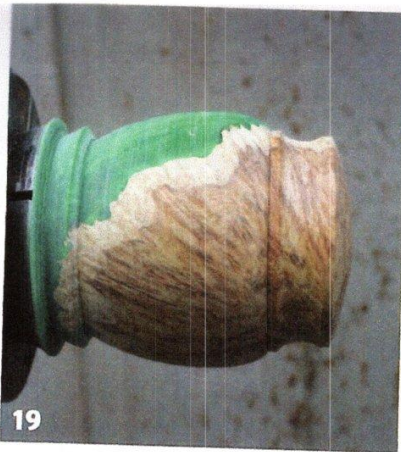
23 Remove the bulk of the wood from inside the base of the box with a 10mm spindle gouge, then refine the surface with a 13mm round-nosed scraper. Regularly stop, measure the depth and cut a gentle curve into the base of the box.

24 Reduce the lathe speed to approximately 600rpm and sand the inside of the base, working through the grits from 180 to 1500, then apply a finish.

25 Remove the base of the box from the chuck and mount a piece of scrap wood. Cut a jam-fit mortise with a 19mm skewed negative rake scraper.

26 Make sure that the top edge of the jam chuck runs true and is cut flat as this is the surface that the base of the box will jam fit up to. It also creates a register for the base that helps it to run true, and it creates strength during the turning.

27 Jam fit the base into the scrap wood and bring up the tailstock for support.



28 With a 19mm skewed negative rake scraper, cut away the waste material at the base of the box and finalise the shape. Leave the tailstock in place for as long as possible to add support to the jam chuck.

29 With a 25mm negative rake scraper, cut away the nib left after the tailstock is removed and cut a slight concave shape into the base of the box to ensure it sits flat when placed on a table or shelf.

30 Reduce the lathe speed to approximately 600rpm and sand the outside of the base, working through the grits from 180 to 1500.

31 Apply a coat of lemon oil. If this oil isn't available then this stage can be skipped or any non-film-forming oil can be used. Then apply an abrasive paste and buff off the excess.

32 The final part of the three-step finish is to apply a thin, even coat of a microcrystalline wax. This adds protection and prevents any fingerprints on the hybrid surface. The box is now finished. ●

TOP TIP

Sanding hybrid material can be a little problematic and it can quickly clog conventional abrasive cloth. I prefer to use a mesh-style abrasive. This will clog (see picture), but you can quickly unclog it by simply flicking it with your finger near the dust-extraction pipe.

