

Issued by: Ku-ring-gai Community Workshop 'The Shed' Inc.

Date: 5 April 2020

## Foreword

In the light of the lock-down it was felt that a more regular issue of the Bulletin would be appreciated by the members It also offers the opportunity to brush-up on your skills and knowledge of the equipment and other tools in the Shed and to maintain communication with the members. If you have insights to offer for an article then please send an email to <u>kushed@bigpond.com</u> with the subject to contribute. We will keep this going for as long as we have articles.

If you manage to do some projects at home then please share them with us by writing a few words and, ideally, a photograph.

Sit tight, stay healthy and follow Tom Jones's hygiene tips: <u>https://www.youtube.com/watch?v=BryllYufO2A</u>



## **Rosella Nesting Boxes**

Nikki Wallace, the wonderful and altruistic principal behind the nesting box project, recently reported that unfortunately her project had to be put on hold, due to the restrictions imposed as a result of the Coronavirus epidemic.

However, it was most fortunate that our team were able to complete the first batch of fifty boxes just in time to be picked up and transported to Rosedale on the South Coast.

Nikki is now waiting for the restrictions to be lifted when she can liaise with Wires and train locals in the process of installation.

In the mean time she is hoping the local Landcare Group with the support of the local council will undertake the painting of the boxes. Later too, Nikki will call on us to build more nesting boxes to utilise the plywood we still have in store.

In the meantime, the birds might find it difficult to maintain social distancing without a home in which to bunker down.

# Brush-up on the use of our equipment and accreditation

This is the perfect time to brush-up on the operation and safe use of our equipment. They are on the Kushed.org.au website at <a href="http://www.kushed.org.au/accreditation.html">http://www.kushed.org.au/accreditation.html</a>

The first item is a list of the codes for operation and activities, risk factor and if a procedure has been written for that operation. When you have identified the code, then you can click on the appropriate item in the list on our website. You will note that not all equipment is written up yet. The codes are the same as on your name tag.

## **Cooking Group News**

As everyone is now confined to base, we plan to distribute a series of enticing recipes to all members at regular intervals. Our volunteer Cooking Instructor Idris has provided a suite of menus for two complete meals (Entree, Main & Dessert). Today we start with the first of these - an entree of Veggie Dumplings

## Mushroom, Tofu and Kale Dumplings Ingredients

- 1 tablespoon sesame oil
- 1 clove garlic, crushed
- 1 teaspoon grated ginger
- 2 shallots, finely chopped, plus extra to serve 75g Swiss brown mushroom, finely chopped
- 1 cup (25g) kale leaves, finely shredded
- 1 teaspoon soy sauce

150g firm tofu, drained, chopped in small cubes 30 gow gee wrappers

## Chilli dipping sauce

1 tablespoon red wine vinegar ½ long red chilli, deseeded and finely chopped Above items available from Woollies or Harris Farm.





## To make the chilli dipping sauce

Place the vinegar and chilli in a bowl and stir to combine. Set aside.

## To make the filling

Heat 1 teaspoon of the oil in a frying pan over medium heat, add the garlic, ginger and shallot and cook, stirring, for 1 minute. Add the mushroom and cook, stirring, for 1 minute. Add the kale and soy sauce and cook for a further 1 minute and the kale has wilted. Remove from the heat. Add tofu and stir through the mixture. Cool the mixture.





## To fill the dumpling

Place a gow gee wrapper on a clean surface. Place 1 heaped teaspoon of the mixture in the centre of the wrapper. Brush the edge with water, fold the wrapper over to enclose and pinch to seal.





## To cook the dumplings

Heat the rest of oil into the non-stick frying pan over medium heat, pan fry the dumplings until light brown on the base, add  $\frac{1}{2}$  cup water to the pan. Cover with lid to steam for 3 minutes or until the water.



## To serve the dumplings Place on the plate with dipping sauce

Place on the plate with dipping sauce and extra shallot.



## **The Repair Show**

There is a series of shows called the "The Repair Shop" on ABC Iview. An antidote to throwaway culture, the show shines a light on the wonderful treasures to be found in homes across the UK and how to restore them. If you do not have a free account go to

https://iview.abc.net.au/ and register. You can then select the episode you want to watch.

## Scam alerts

We are all targets for scammers and for the inadvertent distribution of fake and misleading information. Have a look at <u>https://www.staysmartonline.gov.au/</u> for further information on this subject. Scroll down to Alerts and make yourself aware of these threads on the internet and messaging.



Visiting the shed is an important part of the week for many men and women. Whilst COVID-19 has forced the closure of thousands of sheds across 12 countries, staying in touch and connected is more important than ever.

The AMSA Shed Online is a simple online space for men to stay connected at a time when community connection is increasingly difficult, but still vitally important to our health and wellbeing.

So, we invite the Men's Shed community to join in conversation at The AMSA Shed Online.

## Sandpaper

This article is longer than originally intended so read it at your leisure, for under the present lockdown what else will you do.

Sandpaper seemed to be a useful subject to research for the Shed, but it became quickly clear that this is a far wider and complex field than anticipated. In order to keep it manageable, it is restricted to rocks on flexible backing material for use on wood. The wider field of abrasives deals with polishing diamonds, abrasives, stone polishing, valve grinding, abrasive wheels and angle grinders etc. The word rock is used tongue in cheek, even if it is a close description of the abrasive particles.

Sandpaper is a generic term, and sand or ordinary paper backing is rarely used. We will cover the different materials in the sections below.



The cross section shows the typical construction or architecture of "sandpaper". The rocks are stuck to the backing with an adhesive compound. This article is an overview of the variations available. There is also a wide range of information and viewpoints available on the internet.

#### What is sandpaper used for

You abrade a material to shape it or to even out its surface. The rocks must have sharp edges and be harder than the material you want to remove. It is no good trying talcum powder to remove hardwood. It acts like a saw or chisel. But, like a chisel, if the edge is dull, it will not cut regardless how hard the metal is.

The image above is a cross section of an 80-grit, open sandpaper construction, on paper backing. The yellowish colour is the binder and the fibrous white layer is the backing.

Big rocks (smaller grit numbers) remove material faster but leaves deep grooves or scratches. Progressively going to smaller rocks (larger grit numbers) are used to even out the scratches. They leave shallower grooves.

#### Construction

Ideally, the rocks are tightly bound to the substrate and stay in place, and the wear on the rocks

and their sharp edge is minimal. Cost differences are usually related how well the product meets these criteria.

It is critical that the binder holds the particles to the backing, regardless of the type of abrasive particles. There is a fair amount of physics and chemistry involved as it deals with molecular as well as physical attachment.

The same issues apply when selecting a glue or binder to adhere, say, a piece of acrylic to aluminium or silicone to wood. Each type of particle has its own challenges. In some cases, the abrasive needs to be etched or primed before it is stuck to the backing. Even if you have all that sorted, the integrity of the backing must stay intact, rather than de-laminate.

For applications like sanding disks, belt sanders or drum sanders, paper would not have sufficient internal strength. In those cases, a strong fabric-based material is used.

#### Grit materials and hardness

There are five main types of sandpaper available, but not all are conducive for woodworking. Some of the performance differences are due to the difficulty that the manufacturers have in controlling the evenness of the rock sizes.

- *Glasspaper*, also known as flint paper, is lightweight, typically a pale-yellow colour. Glasspaper disintegrates easily and is rarely used for woodworking.
- *Garnet paper* is usually a brownish-red colour, which is commonly used in woodworking. It will not sand wood as quickly as other sandpapers but leaves a better finish. Garnet is an excellent choice for final sanding.
- Aluminium oxide is another common type of sandpaper for woodworking projects. It is the type of paper most often used in power sanders. Aluminium oxide is more durable than garnet paper but doesn't leave as nice of a finish. Aluminium oxide lasts longer than the other kinds of grits since it contains a self-renewing property; because it's the most delicate, it crumbles easily, forming new sharp edges.
- Silicon Carbide paper is typically a dark grey or even black. This type of paper is used primarily for finishing metals or for "wet-sanding", using water as a lubricant. While some advanced finishes use Silicon Carbide paper, it is not typically used in woodworking. Silicon carbide is ideal for sanding harder materials such as metals and plastic.
- Ceramic sandpaper is made of some of the most durable abrasives available and can remove considerable amounts of material in a hurry. Ceramic paper is often used for belt sander but sometimes is used for hand shaping of wood. It will usually leave a very rough finish, so exercise care when using Ceramic sandpaper, particularly on plywood and veneers, where it can quickly sand through the finish layer and ruin a piece.

Hardness scale		Mohs scale	Vickers scale	Knoop scale
Natural abrasives	industrial diamond	10	10,000	8,000
	corundum	9	2,200	1,600–2,100
	emery	7–9	1,600	800–1,800
	garnet	7–8	1,100–1,300	1,300–1,350
	flint	7	900–1,100	700–800
	quartz	7	1,100	700–800
	pumice	5–6	—	430–560
	talc	1	—	—
	synthetic diamond	10	10,000	8,000–10,000
Synthetic abrasives	boron nitride (cubic)	10	7,300-10,000	4,700–10,000
	boron carbide	9–10	3,300-4,300	2,200-5,100

Below is a table of hardness of a range of different abrasives:

	silicon carbide	9	2,800-3,300	2,000-3,700
alumina		9	2,200	2,000-2,600

The hardness is not necessarily an indication of how sharp it is, for the edge is doing the cutting and the hardness will determine how long that edge stays keen.

#### Grit type and wear properties

Grain Type	Bond / toughness	Structure	Properties / wear properties
Aluminium oxide	hard / tough	crystalline, irregular	Wedge-shaped. block grain, even wear
Silicon carbide	very hard / less tough	crystalline	sharp-edged, brittle, highly friable / micro-wear
Zirconia Alumina	hard / very tough	crystalline even	wedge-shaped, block, drop formed grit / micro-wear, se sharpening
Ceramic Aluminium oxide	hard / very tough	micro- crystalline	sharp-edged, pointed grit / micro-wear, self-sharpenin

### Grit type and wear properties

#### **Grit density**

You may see sandpapers that are rated as either "open-coat" or "closed-coat". The difference is that closed-coat sandpaper has the grit particles grouped closely together, where open-coat sandpapers have larger gaps between the particles.

As a general rule, open-coat is typically better for woodworking, as it clogs-up less, particularly when working with softwoods that contain more resin, paint or oily finishes. In that case it maybe better to use the thicknesser.



Unclogged sandpaper

**Clogged sand paper** 

Where sandpaper is power driven, like on a sanding disk, belt sander or drum sander, clogging becomes a major problem. With all the valleys filled, no sharp particles are exposed. The wood, and the now non-abrasive, sandpaper are in close contact and create friction without the heat being carried away in abraded wood particles. The wood will heat up and start to carbonise, leaving scorch marks that maybe 0.5mm deep. The drum sander is particularly sensitive to this with costly sanding rolls to be replaced. That is why this machine should only be operated under the direct supervision of a coordinator.

As a curtesy to others using the same machine, use the rubber stick to remove as much of the clogging as possible after use.



Stearate sandpaper is also known as self-lubricating sandpaper. Any resinous material scraped off the work does not stick to the paper. It is used primarily for sanding wood and paint finishes as well as metal. As the rocks wear down, the stearate also wears down, exposing new sharp-edged rocks. The lubricant or soap on the paper prevents clogging and extends the life of the sandpaper.

#### **Grit sizes**

The process of sanding is removing wood with uneven cutters, or rocks. It leaves grooves or scratches, of a similar size as the rocks. Bigger rocks remove more wood but also leaves bigger grooves. By gradually using smaller rocks (larger grit numbers) you end up with smoother surfaces. There is a point where the natural grain and timber fibres will limit the smoothness attainable. Even polishing glass is an abrasive process till the point where the grooves are too small for the human eye to see.

While you can find many differently graded sandpapers available, most sanding projects call for

papers in the following grit ranges:

The terms coarse, medium and fine are often used in conjunction with grit size of abrasive grains. What grits sizes are located within the individual terms is shown below.

Grit size	Description	Application
12,16,20	Super coarse	For extra deep and coarse cutting, e.g. floor sanding.
24,30,36	extra coarse	For coarse cutting.
40,50,60	coarse	For cutting and sanding uneven surfaces.
80,100	medium	For sanding marks and unevenness.
120,150,180	fine	For fine-sanding, and use between and after final surface treatment.
220,240,280,320	extra fine	For final sanding where there is a particular requirement for a smooth surface.
400,500,600	super fine	For final sanding where there is a particular requirement for an extra smooth surface.
800, 1200, +	ultra-fine	For final sanding where there is a particular requirement for and extremely smooth surface.



- #60-#80 (coarse): Cuts through the old paint and rough edges with relative ease. Also shapes and rounds edges. Not recommended for fine details or edges and corners that you want to keep sharp. Also, be very careful using this on plywood, which has thin face layers that are easy to sand through.
- #100-#150 (medium): The most often-used gauges of sandpaper. It is hard to go wrong with sandpaper grits in this range. You can work down difficult materials by applying more pressure to your workpiece. Or, you can preserve fine materials by letting up on the pressure. This is generally used for bare wood surfaces. A final sanding with 150-grit paper is commonly recommended for wood surfaces that will be painted; it leaves a little "tooth" to the wood surface for the paint to grip onto, while sanding more doesn't yield a smoother painted finish. Note: This doesn't apply to high-gloss finishes, which requires light sanding the paint itself between coats, using fine sandpapers.

- #180-#220 (fine): Seldom used on the first run-through, unless the surface is already smooth to the touch. Grits in this range are typically for second or third sanding. Sometimes, fine-grit sandpaper is used to roughen glossy paint in preparation for applying another coat. Bare wood that will be stained usually should not be sanded with higher than 220-grit paper.
- #320 and up (ultra-fine): Used to achieve another level of smoothness on all types of materials. With wood, ultra-fine grits usually are reserved for smoothing painted surfaces between coats. Many finer grits are used for wet sanding, which creates a fine, gritty slurry that complements the sandpaper's efforts at smoothing. Do not use wet sanding on bare wood, for you will raise the grain.

## **Backing materials**

In general, there are two main backing materials. Paper is primarily used for hand sanding and cloth backing for machine mounted sanding pads or belts. The cloth is more durable at the higher speeds.

The back of the backing may have an adhesive or Velcro to stick it to sanding pad. The latter is generally more reliable in use.

## Exotics

There are also, so-called, grit agglomerates. This is not an independent grit type, rather it is a grit agglomeration, which is comprised of many individual aluminium-oxide or silicon-carbide grits mixed with a resin bonding agent, which together form a large grit.



While the individual particle would classify as fine or very fine, they are moulded to form pyramid structures with a height and density of a course grit. The benefit is that they can remove more material in a pass than fine grit but leave the scratch marks of a fine grit. The pyramids rows are angled to the direction of travel to provide an even cut.

They are mainly used in metal applications on a linishing belt. If you have a hip or knee implant, then you may find it re-assuring that the joint area was most probably polished using this abrasive material.





#### Efficiency/effectiveness versus cost

The cost is a balancing act. For industrial use, the longer an abrasive last on a machine the less downtime in changeovers and more productivity. This translates to dollars and cents in savings on machine time and labour.

In Shed, or home activities, time and labour are not costed, hence we are generally less picky about how long the abrasive lasts. Hardware stores tend to stock the cheaper sandpapers as the selling points of the more expensive products are hard to communicate to a lay audience.

The photos were made with a USB microscope at 50X magnification. Much information for the text was obtained from the internet. Hetta Mollema

## And now for something lighter



Some assembly required

Looking at the map for some weekend travel ideas



Working from home



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