

# Sandpapers/glasspapers - types and their uses

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The term 'sandpaper' is used these days to cover abrasive grit on flexible backing sheets used to smooth many types of material. True 'sandpaper' (i.e. backing paper covered with grains of sand) is no longer available commercially but has been replaced by backing sheet covered with glass, aluminium oxide, silicon carbide, garnet or other specialist grit. Generally the terms 'sandpaper' and 'glasspaper' are used generically to cover all types of grit attached to a backing sheet - 'Sandpaper' is used below in general terms to refer to the family of sheet type abrasives.

Each type of grit has different characteristics which make each most suitable for specific applications, an understanding of the types of grit is essential so that the right type is chosen for a particular job.

In simple terms, the abrasive grit is fixed by an adhesive to a backing sheet - the type and size of grit, the type of adhesive and the type of backing material all have an effect on the suitability of a sandpaper for a particular job.

## General characteristics:

### Grit size

Various sizes of grit are available for all types of grit material, the size is referred to by a number which represents the number of holes per linear inch in a sieve screen - they range from 40 (very coarse) to over 400 (very fine). Good quality sandpaper will have universal sized grit. The size of grit is used to classify the sandpaper by 'grade' as follows:

Grit size	grade
40-60	course
80-100	medium course
120-150	medium
180-220	fine
240 upwards	very fine

The individual sheets of sandpaper are normally marked on the reverse with the grit size (i.e. 120) and/or with the grade (i.e. medium).

Most commonly, sandpaper are available as 'closed coat' (i.e. completely covered with grit) however 'open coat' (where only 50 to 70 per cent of the backing is covered) is available for most types of sandpaper although only a specialist supplier may stock them. Closed-coat sandpapers cut faster, but are more likely to clog (i.e. the intergrain space become clogged with the waste from the material being sanded) than open-coat sandpapers.

### Backing materials

Three types of backing materials are commonly available:

- Ordinary paper - Although relatively a cheap backing, ordinary paper is an adequate material for most sandpapers. The quality of paper varies depending upon the intended method of use (and price); sandpaper supplied for use with power tools generally has a tougher quality of backing paper than that sold for hand use.

- Waterproof paper - Water proof paper is essential where the sandpaper is to be used with a lubricant. The back of this type of paper usually has a darker, glossier appearance.
- Cloth - Generally used where a high degree of flexibility is required when using the sandpaper.

## Backing adhesives

Adhesives may be water soluble or waterproof. Most common sandpapers use a water-soluble adhesive; this is quite satisfactory, as most sandpapers are not intended for use with a lubricant.

Wet-and-dry sandpapers and others designed to be used with a lubricant, use a waterproof adhesive.

No matter which of these types of adhesive is used, it is important that the bond between the grit and the backing material is strong enough to prevent excessive separation when being used.

Sandpapers produced for power tools tend to have a stronger grit/paper bond than sandpapers made for hand use.

## Forms

Sandpaper is available in a number of forms, each form being available in a number of grades:

- Sheets - normally (at least in the UK) about 280 x 230 mm, often sold for the DIY market in packs of 4 or more sheets, either of the same or mixed grades. Usually only suitable for hand sanding.
- Rolls - available in a number of widths (e.g. 50, 115mm), each roll is of a single grade and normally is sold by linear length. Although it is produced for use with power tools (e.g. orbital sanders), it can be used for hand sanding.
- Discs - for use with rotary sanders or other power tools. The discs are used with a stiff but flexible backing disc. The sanding disc is fitted to the backing disc either by a central securing screw/dished washer or by a self-adhesive backing. Various diameters of disc are available, the diameter of the sandpaper should match the diameter of the backing disc.
- Belts - for use with belt sanders. Various widths and lengths are available to suit each belt sander on the market.
- Specials - A number of power sanding tools are now available with non-standard 'foot prints', these require 'special' pre-cut shapes. Generally, the sandpaper is attached to the tool by a self-adhesive backing.

Sandpapers sold for power tool use are generally more robust than most types sold for hand sanding. While sandpapers for power tool use can be used for hand sanding, the reverse does not apply - hand sandpapers will not last very long if used with a power tool.

- Flexible Block - Flexible abrasive blocks are normally of rectangular cube with grit on four faces, two faces of one grade of grit and a different grade of grit on the other two faces. The block tend to be less durable, but can be useful when decorating. Blocks are available with different types of grit and different grade.
- Liquid Sander - Something which is not a true sandpaper. Ideal for the 'lazy' diy'er, Liquid Sander comes in a can as a liquid. It is just brushed onto a surface, it finely abrades and cleans the surface, leaving it ready for painting. It does not really 'smooth' a surface, it just provides a key on a sound surface for a new application of paint.

## Types of grit

### Glasspaper

Generally composed of quartz granules on a paper backing, this is an inexpensive, relatively soft abrasive for sanding painted or natural timber, metal, and other materials. It wears relatively quickly and is best suited to provide a roughish finish before a really smooth surface is attempted.

Normally only available with non-waterproof adhesives/backing paper.

### Aluminium Oxide

This man-made material is suitable for shaping, sanding and polishing hard metal such as iron and steel, but also effective on timber. Aluminium oxide cuts much faster and lasts longer than glass or garnet.

It is available on non-waterproof, cloth or waterproof backings.

Cloth backing offers flexibility and is suitable for heavy-duty applications, such as rust removal and metal shaping.

### Silicon Carbide (wet and dry)

Silicon carbide paper, also known as 'wet and dry' paper, is suitable for both dry and wet sanding. It is suitable for sanding hardwood and plywood, soft metal like brass and aluminium, and plastic; also used for smoothing glass edges and frosting glass surfaces. It is fast-cutting and almost as hard as diamond, but it is brittle so the coarser grades will wear fast if used on hard metal.

When used with water, it gives a very fine sanding of paint or varnish between coats. It can be used with mineral oil for smoothing and polishing metals. The lubricant helps to keep both the abrasive and the surface cool and floats away sanding waste; a additional advantage is that it prevents the formation of fine air-bourne dust. The wet slurry which forms will need to be wiped away during and after smoothing.

'Wet and dry' is extensively used during vehicle body painting as, with water, it can give a very smooth surface to each coat of paint - generally we expect higher quality paint finishes on Automobiles than on household fitments.

### Garnet Paper

This is a natural crushed rock and is an excellent abrasive for general wood sanding, either by hand or with a power tool - it is recognised by its distinctive bright green colour. It now seems to be being replaced by Aluminium Oxide grit.

The natural garnet grit lasts about twice as long as the quartz chips used on glasspaper but it is not as long lasting as Aluminium Oxide.

Garnet is also available with a cloth backing; in this form, it is used for work requiring more durability and flexibility.

Garnet Paper is a good all round abrasive, but particularly useful for smoothing hardwoods and for fine finishing work.

## Steel Wool

Although not a sandpaper, Steel Wool is used for fine 'sanding'. It is much used by the serious cabinetmaker as it has a much finer abrasive effect than grit materials on sandpaper. The fine steel strands cut rather than abrade the surface, producing very fine finishes; as the wool is used, small pieces of it break off and mix in with the sanding dust.

Steel Wool is graded starting at a very coarse 5 through to a series of noughts - 0000 being the finest.

Although excellent on timber and metal, steel wool should not be used for smoothing plasterwork or other surfaces where the fragments of steel may become embedded and could rust stains.

Steel wool can be used to 'sand' complicated shapes such as metal castings or wooden mouldings.

## Using Sandpaper

For best results:

- Always use the correct type and grade of sandpaper for the job in hand - do not use paper sold for 'hand sanding' in a power tool.
- Start by using a medium or coarse grade paper. Change the grade of paper you are using as the job progresses.
- Let the abrasive grit do the work, do not use undue pressure it will only clog the paper or cause the paper to wear out unnecessarily quickly. When power sanding, very little pressure is necessary, just guiding the tool is normally sufficient.
- Use a sanding block when hand sanding.
- Move sandpaper along the grain of bare timber, not across.
- On a smooth, non-grained surface, move the sandpaper in small circular motions.
- When using a lubricant, do not let the surface dry out. If excessive wet waste material builds up, wash it away from the work area.
- Take all appropriate safety precautions, especially when power sanding - refer to the instructions from the sandpapers and power tool manufacturers. Only allow competent people to use a power sander; with the abrasive surface moving it can cause injury if it comes in contact with skin or damage if brought into contact with an unintended surface.
- Store sandpapers carefully in a cool dry area. Except for papers made using waterproof adhesive and backing material, any dampness may cause the adhesive or backing to fail or weaken and grains will become detached.
- If the paper becomes clogged after a short time of use, look at the surface being sanded - if it is timber, the timber may be damp - allow time for it to dry out. Paint which clogs paper may either be too new to sand or old paint applied in thick coats which have not gone off.