

# What is Solid Surface?

The heart of solid surface is that bundle of properties that make it a unique product - its performance characteristics. Some performance characteristics that all solid surfaces share are:

1. **It's solid.** The sheet or shape must be "homogeneous" - that is, the colour or pattern must be consistent throughout every part. This makes it very unlike gel-coated products such as cultured marble, or laminated products such as plywood or plastic laminate. It also makes it a little bit like wood, but without knots or grain.
2. **It's machinable.** Solid surfaces are machinable with most woodworking tools. It can be drilled, routed, sanded and cut.
3. **It's hard.** There is a range here, but it is not clearly defined. Suffice it to say, solid surface is harder than wood, not as hard as steel.
4. **It's non-porous.** Speaking chemically and technically, nothing is 100% non-porous. But solid surface is very close. It is unaffected by water and changes in humidity, and is bacteria resistant.
5. **It's stain and chemical-resistant.** Most household staining agents and chemicals, and even some industrial chemicals, will not damage it. Polyester resin is more chemical resistant than acrylic alternatives.
6. **It's fire resistant.** There are grey areas here: because Kymira can be modified to suit specific requirements, fire-resistance can vary with those alterations. But generally most solid surfaces are fire-resistant or fire-retardant.
7. **It's repairable.** Because Kymira is made in its liquid state here in Christchurch, even large damages can be repaired virtually invisibly.
8. **It endures.** This is reflected by all these multi-year consumer warranties. Solid surface, unless mistreated, should remain unchanged for a very long time.
9. **It is aesthetically pleasing and warm to the touch.** It has beauty, a look and a "feel." It is a decorative surface, made to be seen and touched.

## What's in it?

Most solid surface materials combine two main ingredients: a natural mineral (the "filler") and a resin (the "binder"), along with various additives. These are combined and then cast or sprayed using a curing process that results in a solid sheet or a shape.

## Resin

Polyester is a thermosetting synthetic resin made by esterification of polybasic organic acids and polyhydric alcohols. The resin has high strength and excellent resistance to moisture and chemicals when cured and is exceptionally durable. Polyester resins are used in many high-strength demanding applications besides solid surfacing, including outdoor applications like boats and aircraft cowlings. Methyl methacrylate ( acrylic modification ) is used as a part replacement for styrene in the monomer portion of the resin to impart better resistance to yellowing on exposure to UV. With Kymira Spray applied Solid Surface, the need to thermoform sheets is irrelevant, as the base is pre shaped and the process is post mould. Kymira sheet form is also available.

## ATH

The filler of choice in Kymira is alumina tri-hydrate, or "ATH."

ATH is refined from bauxite ore (one of the most abundant minerals on the planet) and looks like a light tan powder. Bauxite is a form of clay, which means that when it comes to the natural vs. artificial thing, solid surface starts as one of the most abundant and natural minerals on earth. The tan colour means that most ATH used in solid surface must be refined again to get a special "white" grade. This grade has a high degree of translucency and allows for bright, pure light colours, especially white.

ATH has great physical properties. It has excellent chemical and stain resistance; excellent water-resistance; nice translucency; hard enough to give superb impact-resistance but "soft" enough to be machinable; and one last almost magical property: not only will it not burn, but because it has "water in hydration," when attacked by heat ATH actually releases steam. This makes it a natural fire-retardant.

ATH can comprise 45-70% of a sheet of solid surface.

## Other Fillers

Because Kymira is manufactured in New Zealand, there is the opportunity to be much more flexible with the variety of fillers that are added to it. Variety such as stones, paua shell, glass etc. can be added to give a range of finishes.

## No Fillers

Some formulations contain no ATH at all. This is a conscious choice which responds to a specific demand in the marketplace. Scratches in dark colours of solid surface materials, filled with ATH, show white (because of the whiteness of the ATH). By losing ATH, some of its benefits, chiefly fire-resistance, but also some hardness are lost. It is a trade-off, but one that allows us to provide customers with a range of dark, extremely rich, deep-looking colours that they can't get anywhere else. These are great in retail display situations in conjunction with metal flakes.

## Additives

Every solid surface product contains numerous additives. These include pigments, but also a host of additives that improve or enhance chemical and performance properties : UV absorbers, cross-linking agents, stabilizers, the list goes on. We continually change additives with improvements in technology, carefully tweaking their products in a process of "continuous improvement."

One important additive which all solid surfaces share is a catalyst. This is the chemical, usually a peroxide, which causes the mixture to harden, or cure.

### **Casting and Spraying**

The way a solid surface is "cast" is generally a simple one. The resin "syrup" is mixed with the additives and fillers and then poured into a mould, usually open, sometimes closed (usually closed for shaped products). It is important that no air bubbles are entrapped in the mix, as this would result in voids in the material. This is accomplished in different ways, from simple adjusting of the viscosity of the mix to vibrating casting tables and other more exotic methods. Newer methods allow for the mix to be spray applied, via specialist machinery, this allows for easier methods of creating more complicated shapes and can result in cost savings.

### **Solid Surface applications**

Solid surface's great performance characteristics make it ideal in both the residential and commercial arenas.

### **Countertops**

As a worktop in the kitchen or a vanity top in the bath, this is probably solid surface's most familiar application. Invisible seams mean limitless design possibilities as well as superior hygienic performance.

There are no grout lines or caulked or epoxied joints (as with natural stone) to catch dirt and germs. And because solid surface is virtually non-porous, most bacteria and fungi simply cannot grow on it. The salmonella that will find its way into most other surfaces will not last on solid surface.

And for cleanability and ease of maintenance, they are unmatched. Products that would ruin other countertops, like Ajax or Jiff, only bring out the lustre of a matte finish solid surface top.

### **Wetwalls**

Because it is virtually unaffected by moisture, solid surface bath and shower walls are an extremely popular application. Besides the great design features--colours, seamless appearance, inlays & built-in accessories like soap dishes or shower caddies--solid surface does not support the growth of mould or mildew. No matter how sloppy your teenagers, or how long and steamy their showers, you will never find any nasty mould or mildew in your solid surface shower or bath wall.

### **Exterior Uses**

By being nearly impervious to the weather, solid surface is used for signage, window sills, even exterior building cladding.

### **Furniture**

Table tops that are a designer's dream are also the maintainer's dream. Stains and small burns that would be the death of wood, laminate, ceramic tile and many other surfaces don't phase solid surface. Even chairs and other furniture pieces are now being made with solid surface.

### **Commercial Uses**

Food courts, banks, airports, malls, hospitals -- from toilet partitions to wall cladding and mouldings -- even flooring -- it seems that every day architects and designers are coming up with a new application for this supremely versatile 21st century material.