

Curls - The Science

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CURLS

Photo of hair looking sciencey

To get started, it helps to understand what your hair is made of

WHAT HAIR IS MADE OF

Diagram of hair structure

The shaft of a strand of hair consists of three distinct layers: cuticle, cortex and medulla (usually).

The **cuticle** is the outside layer, it is made of scale like keratin structures which overlap like tiles on a roof, keeping the insides nice and safe. When the parts of the cuticle are all laying flat, nice and tidy, you get shiny tresses! The cuticle naturally becomes brittle over time, through washing, the elements and styling. Oils can help keep the keratin flexible and prevent breakage.

The **cortex** is the thickest part of the hair strand, and sits inside the cuticle. The pigments and proteins which give hair its colour and degree of curl exist here. When colouring or perming it is this layer which is affected most heavily.

The **medulla** is the core of the hair strand, in most hair types. However, in fine fair hair the medulla sometimes simply doesn't exist! It is not known exactly what the medulla does, or why it is present in some hair types but not others. It is theorised that the medulla plays a role in supporting or creating the structure since it most often appears in thicker, darker hair strands.

THE ROOT OF THE CURL

FOLLICLE SHAPE

The follicle shape is thought to be the largest determining factor in hair type. The rounder the follicle, the straighter the hair. If a follicle takes a more oval shape the hair it produces will be curlier.

Diagram of follicle

FOLLICLE DIRECTION

The angle of the follicle relative to the skin also help to determine the degree of curl in a hair. A follicle which is perpendicular to the scalp will grow straight hair, any change in this angle contributes to the degree of curl.

Learn about Hair Types next!

NEXT!

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Photo of different curls

All about the hair type, and the porosity

HAIR TYPES

1

STRAIGHT

Type ones are straight:
a) Straighter than straight
b) Straight
c) Kinda straight

2

WAVY

Type twos are wavy, with hair that primarily lies near the head:
a) Very slight 'S' shape
b) Defined 'S' shape
c) Very well-defined 'S' shape starting straight from the root

3

CURLY

Type three are curly, with volume and a corkscrew shape:
a) Large loose ringlets, approx 5cm diameter
b) Tighter ringlets, approx 3cm diameter
c) Tighter again, approx 1cm diameter

4

COILY

Type fours are coily, with huge volume and super tight curls:
a) Very constricted, defined, tight 'S' shape coils
b) Very tight 'Z' shape
c) Very tight zig-zag, sometimes too tight to even see!

1

Diagram - Type 1

2

Diagram - Type 2

3

Diagram - Type 3

4

Diagram - Type 4

POROSITY

Remember the cuticle? Porosity relates to the cuticle, and to the positioning of your roof tiles.
If your roof tiles are lying beautifully flat, one atop the other, your hair is likely to have very low porosity. If your roof tiles are sticking up all over the show and broken in places, the hair is likely to have high porosity.

High porosity is naturally the opposite of low porosity. Substances are able to easily penetrate the shaft, but are equally easily lost. This leads to brittle, breakable strands and a lot of frizz. Coloured, relaxed or permed hair is very likely to be highly porous, along with that regularly treated with heat.

Low porosity means that it is difficult for moisture, or any substance, to enter the shaft of the hair. The hair will be sleek and shiny, take a long time to dry and a long time to wet through. The up side of low porosity hair is that it locks in any moisture which does penetrate the shaft, keeping it flexible and low-frizz.

A common porosity test is to take a strand of hair and place it into a vessel of water. If the strand slowly sinks to the bottom, it has medium porosity. If the strand sinks like a stone, it has high porosity. If the strand floats in the water, it has low porosity.

SUMMARY

You hopefully now have a vague idea of your dominant curl type, and your porosity. Both of these have a factor in choosing the type of products to apply to your hair to achieve the result you want. The interesting part is that most curly bods have more than one hair type at any one time, and that as hair transitions to a curly routine those curls types can all change. As such, as you progress through your curly journey of discovery it is a good idea to occasionally check porosity and hair type and revise what you are doing accordingly.

Next, learn what Actions you can take.

START PLANNING

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Photo of hair products

You've got the basics, you want to know about products and regimes!

THE BIG DEBATES

Sulfate, silicone and alcohol free? Is it the only way? Is it the best way. There are multiple takes on whether co-washing and the use of 'bad' products is as terrible as it comes across. The fact of the matter is that every head is different, every life is different, and what works for one person won't necessarily work for another with the same curl type and porosity.

Is colouring really so bad? As a somewhat invasive treatment it does, by its very nature, penetrate the hair shaft and affect the cortex. Some colours also contain components which lift the cuticle to allow deeper, more permanent colours creating a higher porosity shaft than if not coloured. Does that mean you shouldn't colour? It really comes down to your experience of colouring your curls, and how it affects them.

Heat and straighteners? The big no-no, agreed across the board is that heat and straightening is bad for the hair, for only a short term result. Drying with heat evaporates moisture from the shaft over and above the level to which it would if drying naturally or with very low heat. Ironing hair out has the same effect. The consensus is don't, but if you have to, don't do it often and make sure to get a moisture mask on there sharpish!

WHERE TO GO FROM HERE

The major player in the curly revolution is [The Curly Girl Method](#). For endless information, check out their website or Facebook groups. The groups are really supportive and full of people who have undergone the process, survived the transition phase and have worked out what works for them.

If co-washing, silicone and sulfate free isn't your bag, or you want to still colour, check out [Manes by Mel](#) for an alternative take on curly haircare.

[Naturally Curly](#) is another great resource, full of information about techniques, products and tools, and lots of background information on curly science.

GOOD LUCK!

We are always trying to add new content, with sections planned on products and another to help you more easily identify your curl type and porosity combo. If you have suggestions or questions, get in touch, we would love to hear from you!

Contact Us

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Photo of curls

~~Got questions? Get in touch!~~

THE CONTACT FORM

We are a small, volunteer based team who have come to love our curls (most days), and we want to share that with as many people as we can! Whiz us a question and we will get back to you as soon as we can.

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ASK US

Your name:

Name

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Your question here...

ASK!

Name

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