

One of the fastest growing areas in the beauty business is that of Spa treatments and not only are they being introduced in fitness centres and hotels; spa baths and spa-type treatments are also becoming increasingly available for home use. This feature is going to look at the products that may be used as professional treatments or in the user's own bathroom.

When considering spa treatments, the first product that comes to mind is the clay mask, whether for the face, hands or the whole body. Such treatments have been used since antiquity and remain immensely popular. Clay is mainly hydrated aluminium silicates with a particle size of less than 2 microns but it is also rich in other minerals, the proportions of which are dependent on the source of the material. The clays commonly used in cosmetics are kaolin, Fuller's earth, bentonite and Laponite, which is a synthetic layered silicate, mainly used for its unique rheological properties.

Kaolin, often referred to as white clay, is chemically inert over a wide range of acid-alkaline conditions and has good opacity. Fuller's earth is predominantly smectite and is also known as bleaching clay because of its ability to decolourise oils and other liquids. Bentonite is predominantly smectite and is mainly used as a thickening agent but all three clays are used in face masks because of their ability to hold water and to absorb impurities from the skin. Smectite is a group name encompassing a number of very fine grained minerals, which possess ion-exchange characteristics. Its ion-exchange ability determines the clay's physical expansion and colloidal properties. Smectite is naturally converted to illite by diagenesis, the changes that take place in sediment as a result of increased temperatures and pressures, causing solid rock to form. Illite clays are found world-wide but those from the Mediterranean basin are most frequently used in cosmetics.

Colour clays from **Lake Chemicals & Minerals Ltd.** are a collection of ten naturally coloured illite clays from the Mediterranean. The different colours are due to their differing mineral and metallic ion content and each colour is recommended for particular treatments. The cosmetic uses of the various elements are described: silicon is important for restructuring tissues and is basic for collagen synthesis and lack of this element produces stretch marks, wrinkles and ageing. Sodium is important for correct cell growth and osmotic pressure regulation. Magnesium is necessary for the correct performance of enzymes that control skin metabolism and it also acts in anti-inflammatory processes. Calcium is essential for the skeleton, nails and skin metabolism and potassium gives elasticity and flexibility to tissues. Iron influences melanin synthesis and works in the oxygen transport in the blood and Zinc is used for skin tissue regeneration. Zinc also helps in the synthesis of collagen and elastin, improving skin strength and elasticity. It is fundamental for correct cell growth and its lack can provoke alopecia, dermatitis and healing problems.

Clays are formed as sedimentary marine deposits; however Liposilt from **Lipo Chemicals Inc.** is a naturally occurring organic colloid of fresh water sediments more than 30,000 years old that is collected from two fresh-water lakes in Eastern Europe. Liposilt Green is from locations that lack oxygen, thus its decomposition occurred at a relatively slow rate. It contains chlorophyll and carotenoids from blue green algae. Liposilt Black is collected from an oxygenated portion of the lake and therefore it underwent more massive decomposition and oxidation than Liposilt Green. Both Liposilt Green and Liposilt Black contain humic acid, carbohydrates, nitrogen and free fatty acids and both contain more than 90% organic matter. Clinical studies have shown that Liposilt Black improves the surface characteristics of the skin, creating a more even skin tone and increasing moisture levels while simultaneously

reducing sebum content. Liposilt Green was shown to increase cell turnover by 16%, shortening the period from nineteen to fifteen days.

Returning to ingredients of marine origin numerous materials are recommended for spa treatments. The author has noted a trend by material suppliers to provide final products or mixtures of materials that only need the addition of water, although it may also be possible to add extra ingredients to confer an element of exclusivity to the item. Nowhere is this more apparent than for bathroom products. Under the heading of thalassotherapy at home, **Biotrech Marine** offers a peel-off beauty mask made from alginic acid and diatomeae that contains 1% *Corallina officinalis*. This is a coral-like seaweed, rich in calcium and magnesium carbonates and it also contains zinc and manganese. It is supplied as a powder to be mixed with water at the time of use and it is claimed to absorb skin impurities and to have a softening, cleansing, refreshing and firming effect on the epidermis. The same company also offers Pate d'Algues from *Laminaria digitata* as a ready made body wrap and Masque d'Algues, described as a cocktail of brown seaweed enriched in minerals, trace elements, amino acids, polyphenols and polysaccharides, as a face and hair mask.

**Agrimer** provides two finished face masks: Clearmask contains a complex of saxifrage, grape, mulberry bark and scutellerias extracts with added ascorbic acid in a base of diatomaceous earth that is mixed with water just prior to use for skin whitening. ThaliSource is described as a double action skin moisturiser based on *Laminaria digitata*. Supplied as a liquid it forms a polysaccharide film on the skin that limits transepidermal water loss and improves the appearance, softness and comfort of the stratum corneum. Complete masks from **Codif** are a body mask containing extracts of marine plants and sea salt and a mask to boost microcirculation comprising diatomaceous earth, algin and *Pelvetia canaliculata*.

**FMC Biopolymer** supplies Isagel FM as a gelling system for peel-off masks. It is a mix of diatomaceous earth, algin and calcium sulphate and tetra sodium pyrophosphate. It is mixed with water just prior to use and other ingredients may be added as required at this stage. For a different source of water **Biotech Marine** provides Gulf Stream Sea Water and **Soliance** offers Spring Sea Water from North Brittany. This is removed from a sea water well on land after the sea water has penetrated 15m depth of sand and permeated through granite into a natural reservoir. **Codif** supplies Earth Marine Water, also obtained from inland wells. Other aqueous variants that could be used for preparing the masks are botanical extracts from **Alban-Muller International**: they include watercress for astringency; white water lily flower for moisturising and water-mint that is refreshing and softening. **Vevey** supplies aqueous extracts of essential oils in very concentrated form as Hydroessentials, which are diluted with water to provide lovely smelling aqueous mists or unusual sources of water to mix with masks and other materials.

The spa experience is all about improving the appearance and pampering the individual; exfoliation comes under the first heading and is suitable for both professional treatments and for home use. Exfoliation is a natural process of the skin that helps remove dead cells and debris from the upper epidermal layer that block pores and amplify fine lines. The epidermis creates cells that renew themselves every twenty days. From their place of origin in the epidermis, cells travel up to the outer layer of skin, or stratum corneum. As new cells rise to the skin's surface, the dead ones are sloughed off. With aging the renewal rate begins to slow significantly and sebaceous glands also become less active. Pollution, smoke, sun and heat develop impurities at the skin surface, increase the number of dead cells and block natural

exfoliation. The result is thicker stratum corneum, dull-looking dry skin, plugged pores and even development of benign growths such as seborrhoeic keratosis.

Cosmetic exfoliation is an aid for natural exfoliation. There are two types; mechanical exfoliation relies on mild abrasives such as loofa, mesh puffs, woven sponges and scrubs that contain micro-beads or abrasive particles. Chemical exfoliation is the use of chemical peels like alpha-hydroxy and beta-hydroxy acids, which dissolve the “glue” that keeps the dead cells attached to the skin, and retinoids that work by speeding up cell renewal . [Ref 1]

The numbers and types of abrasive particles available have increased dramatically in recent years; from **Lipo Chemicals Inc.** we have ground and coloured luffa powders including blue, burgundy, green, and violet. The colours are obtained using cosmetic grade pigments such as ultramarines, iron oxides, and chromium oxides. Other natural exfoliants from Lipo include rose hip seed powder, walnut shell flour, apricot seed powder and almond meal. **Lucas Meyer** suggests vegetable Indonesian resin, a mixture of styrax benzoin gum and shorea robusta resin, which is pink powder with a pleasant odour.

There are many other exfoliants available and a rising number of product vehicles suggested for their application. The exfoliants are often suspended in a clear gel or surfactant system but may either float to the surface or sink to the bottom. The obvious solution to this problem would appear to be to increase the viscosity. However even if a surfactant product is turned into a ringing gel the particles may still migrate. The answer is to increase the suspending power of the product. Suspending power is measurable as yield value and this must be sufficiently high to overcome the effects of gravity or buoyancy on the particles. The web site of A&E Connock [Ref 2] has two articles on the science of suspending exfoliants and particulates in suitable bases and the same company also offers a wide range of suitable materials under the heading of Scrub Agents.

**Paroxite Ltd.** also provides an extensive collection of scrub agents, both botanical and mineral. Pink salt from the Himalayas, mother of pearl and Polynesian sand from Pacific lagoons each add an exotic touch. Monoi de Tahiti is coconut oil that has absorbed the fragrance from gardenia flowers and natural vegetable milks based on fruits, flowers, vegetables and spices are also available from this company.

Lipobeads, **Lipo Chemicals**, are semi-solid matrices that act as a carrier to pigments and active ingredients. They comprise lactose, cellulose and hydroxypropyl methylcellulose with a specific pigment and specific active ingredient. They are supplied as a hard solid, which swells in aqueous medium to give a soft bead that disappears on rub-out, instantly releasing the encapsulated active. Available actives include vitamins A, E and C, triclosan, tea tree oil and ceramides. They also provide an interesting visual effect and it is suggested that they are suspended in bath foams, shower gels and liquid soaps.

**Tagra Biotechnologies** supply encapsulated active ingredients ensuring that the contents are protected from oxidation in the product and provide slow release in use. Floraspheres and Florasomes, **Flora Technologies**, are made from jojoba esters, which gently break down when rubbed on the skin. Florasomes are soft spheres of jojoba esters that carry active ingredients and deliver interesting emolliency. Unispheres, INCI: Mannitol, cellulose and hydroxypropyl methylcellulose from **Induchem** also contain an active and are used for their visual effect when suspended in clear products. **Merck** recently extended its range of

Ronastar Sparkle pearlescent pigments that are suitable for incorporating in surfactant-based products, where the visual effect is particularly stunning.

An essential part of the bathroom is the bath and there are many interesting additives to make it a more memorable experience. From **Lessonia** we have Microzest Bitter Orange consisting of micronised orange peel that can be combined with bath salts or added as a single material. It is claimed that bitter orange peel contains a natural blend of essential oils and active ingredients including vitamin C and bioflavonoids. **Univar** supply a number of fruity fragrances and pure fruit extracts that can be added to bath products.

For improved skin feel from shower gels and other surfactant-based products there is Mackaderm GC, INCI: Hydroxymethyl dioxanone, a water-soluble ester from the **McIntyre** group. The Ucare series of conditioning polymers from **Amerchol** provide increased deposition of actives and oils and are recommended for clear formulations. From the same company the SoftCAT SK series, INCI: Polyquaternium-67, cationic conditioning polymers help body wash formulations deliver active ingredients more efficiently, resulting in improved skin hydration and the alleviation of skin dryness. They increase oil deposition from personal cleansing products and deliver surfactant-soluble ingredients such as fragrances to skin and provide superior sensory experience.

**Res Pharma** has an extensive range of water-soluble oils that are ideal for surfactant systems. There are eighteen variants including cotton, babassu, grape and shea butter under the Res Planta trade name. Florasolves are a range of PEG esters from **Flora Technologies** that are based on natural oils and are water-soluble. **Croda Oleochemicals** supplies a number of ethoxylated vegetable oils that are also soluble in personal cleansing products.

If an essential part of the spa and bathroom experience is pampering and imparting an improved sense of well-being what better way than to incorporate materials into treatments that release serotonin. Serotonin is a neurotransmitter that helps maintain a happy feeling and seems to keep moods under control by helping with sleep, calming anxiety, and relieving depression. AC Sponge Lysate, INCI: Hymeniacidon heliophila lysate filtrate, from **Active Concepts** is a ferment of the Hymeniacidon heliophila sponge which contains 5-hydroxytryptophan. When included in cosmetic formulations, this product is said to regenerate collagen, work as an antioxidant and protect the skin against the damages of ultraviolet light, as well as increasing the serotonin in the body and enhancing one's sense of well being.

ArEAUmats, **Codif**, are a range of aromatic waters that provide a relaxing effect to the skin, through the stimulation of  $\beta$ -endorphins. ArEAUmats are obtained from particular seaside plants and produced using a solvent-free vacuum distillation process. There are four ArEAUmats currently available, each from a different plants and offering slightly different specific benefits but all sharing the  $\beta$ -endorphin stimulation effect. Their activity has been pinpointed to the presence of certain aromatic compounds, and tests have shown that efficacy is not achieved in the absence of these compounds. Calmiskin, **Silab**, is from mint, is rich in eriocitrin-type flavanones and also promotes the release of  $\beta$ -endorphin to give a feeling of well being.

A growing niche market for bathroom products are products that are organically certified or that contain organically certified ingredients. This means using natural colours and **Univar** offers a number of natural plant extracts that have been tested for colour stability when

exposed to daylight at pH 4 – 5. A novel variant is offered by **Honeywill and Stein** that suggests Colloidal PMG-WP, which is a colloidal suspension of ultra-fine gold particles in water. Colloidal gold is the pink/purple dye used in stained glass windows and is therefore, very stable.

Of the many formulations suggested by ingredient suppliers the following appear particularly interesting as starting points: **Goldschmidt Personal Care** formulated a quick breaking emulsion based on ABIL EM 90. With over 90% water phase, this formulation provides a stable cream that on application to the skin “quickly breaks” and visually releases water droplets while lightly conditioning the skin. It provides the visual experience of naturally quenching and refreshing the skin.

Material	%w/w
Cetyl PEG/PPG-10/1 Dimethicone (ABIL EM 90)	0.80
Cetyl Dimethicone (ABIL Wax 9801)	1.60
Diethylhexyl Carbonate (Tegosoft DEC)	2.00
Dimethicone 350cs	1.00
Cyclomethicone	4.00
Magnesium Stearate	0.30
Water	84.30
Propylene Glycol	5.00
Sodium Chloride	1.00
Preservative	q.s.

1. Intensively disperse magnesium stearate into oil phase at room temperature.
2. Add water phase at room temperature slowly while stirring.
3. Homogenize for 2 minutes at 1100 rpm.

The **Cornelius Group Technical Centre** a formula for a self emulsifying oil and ester blend, which can be used in a shower product for skin conditioning. The product looks and feels like normal oil when applied and rubbed into the skin. When washed off under a shower it visibly self-emulsifies and washes off leaving an exceptional skin feel by virtue of the residual oil left behind.

Materials	%w/w
Paraffinum Liquidum AAB2	to 100
Sodium Isostearoyl Lactylate (Pationic ISL)	2.50
Oleth-5 (Ritoeth 5)	6.5
Mango & Passionfruit 1-56728U Parfum	0.10
Oil soluble dye qs, dependant on chosen shade	

1. Heat mineral oil and Pationic ISL and mix thoroughly.

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1st Published in SPC February 2007  
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2. Pre-mix Ritoleth 5 and parfum.
3. With stirring slowly add pre-mix to bulk.
4. Stir in dye and pour into packaging.

REF 1 Technical bulletin; Exfoliation; Lipo Chemicals Inc.

REF 2: [www.connock.co.uk](http://www.connock.co.uk)

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[www.creative-developments.co.uk](http://www.creative-developments.co.uk)