Bathroom Products;
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What happens in bathrooms is usually happening behind closed doors. Male teenagers maybe squeezing their spots, shaving and hoping that liberal application of deodorant and after shave will cover up for the lack of a recent shower. Teenage girls can occupy the family bathroom for hours; as a male I cannot even guess what they may be doing. Older males will probably substitute a shower for an excess of deodorant and maybe apply some moisturiser if any happens to be available. Older females, if they have the time, may occupy the bathroom for as long as their teenage daughters as they progress from the normal functions of showering and bathing to body care treatments such as exfoliation, depilation, anti-cellulite and body firming applications.

Common to all users, although maybe with different attitudes to it, is personal cleansing and this involves washing, showering and bathing. Whether it is a hurried shower before work or a leisurely bath of an evening the trend is towards mild products with an appreciable after-feel. If additional claims for moisturising, skin firming or other desirable attributes can be made it is a bonus.

Various ingredient suppliers provide materials suitable for facial wash products and mild surfactants with Ecocert approval were extensively described in SPC September 2008 under the title Green and Clean. Not mentioned were three anionic surfactants from Cesalpinia of Italy. Ecarol AGE EC, INCI: Disodium cocoglucose citrate, Ecarol AGE ET, INCI: Sodium cocoglucose tartrate and Eucarol AGE SS, INCI: Disodium cocopolyglucose sulfosuccinate. All three materials are derived from renewable raw materials, are offered in unpreserved aqueous solution and have good cleansing properties and outstanding mildness. The citrate and tartrate have Ecocert approval.

Non-SLES based surfactant systems can be difficult to thicken PEG-150 distearate is commonly used but its dilatant rheology is not always appreciated. Glucamate LT from Lubrizol is PEG-120 methyl glucose trioleate in aqueous-glycolic solution, which works particularly well with hard-to-thicken surfactants such as glucose derivatives. It is liquid so can be cold-processed and it provides viscosity, a creamy lather and added mildness.

Another material useful for controlling the rheology of surfactant systems is Carbopol Aqua SF. It is a cross-linked acrylic polymer dispersion designed to impart suspending, stabilising and thickening properties to a variety of surfactant-based personal cleansing products. Lubrizol report that is has been used to great effect in a high oil content body wash formulation that contained 18% sunflower oil, with added skin conditioning agents and botanical extracts. The Carbopol polymer enhanced the creaminess of the foam whilst providing a stable and even oil distribution with smooth flowing pour characteristics.

For systems based on alkyl ether sulphates Hest AVB from Global 7 is said to be far more effective as a thickening agent than Cocamide DEA It is a mixture of PEG-175 diisostearate and glycereth-7 caprylate/caprate/cocoate and is suitable for cold-processing. Global 7 provides a number of rheological modifiers and emulsion stabilisers and is represented in the UK by Paroxite Ltd. For low pH systems Carbopol Aqua CC, INCI; Polyacrylate-1 crosspolymer, is Lubrizol's newest rheology modifier which can provide suspension and flow control in low pH systems as well as compatibility with cationic ingredient.

Also recommended for suspending materials in surfactant systems is Axcel CG-PX from CP Kelco. It is a microfibrous cellulose with xanthan gum obtained by the fermentation of

glucose syrup. It forms a 3-dimensional pseudoplastic network in water, which after high shear activation, imparts suspending properties without adding to the perceived viscosity. Axcel CG is compatible with surfactants, is stable across a broad pH range and is salt tolerant. It is used at 0.05% to 0.2% in shower gels, liquid soaps and bath foams and can be used to suspend encapsulated actives or particulate matter for scrubbing action or visual effect.

Particulates are much used in personal care products in the bathroom from glitter in bath and shower gels to mild abrasives such as nut shell powders, dried algae, Dead Sea salt and synthetic materials in exfoliating scrubs. Incorporating particulate matter into liquid or semi-solid products is not straightforward; there may be chemical instability between base and particle, the particles may float or sink over time, the particles may upset the balance of the preservative system or they may be microbiologically contaminated. The particles may also be too aggressive on the skin either through having sharp edges or through being a potential allergen.

A&E Connock has a wide range of such materials and two interesting guides to the properties and suspension of them can be found on its web site [Ref 1]. The importance of product yield value in determining the resistance to movement of suspended particles is discussed and the practical considerations of measuring yield values and relating the physical attributes of exfoliants to stability results obtained from centrifuge tests are described.

ISP Captivates are microcapsules using complex coacervation suitable for encapsulating oils, butters and waxes together with other lipophilic ingredients. Their size varies from 5 – 2000 microns and their colour can be adjusted to provide colour bursts in surfactant systems and they can also incorporate actives to be released on application from liquid soaps and body washes. Other interesting particulates include Himalayan Salt from Greentech and Bora Bora White Sand and Volcanic Black Sand from Pacifique Sud. Although the INCI name for Himalayan Salt is simply sodium chloride Greentech claims that it contains 84 different elements and oligo elements. White Sand is formed by natural erosion of the reefs around the leeward side of Bora Bora Island and Volcanic Black Sand is formed by erosion of the natural granite from the volcanic islands of French Polynesian.

For something that sounds more exclusive, i.e. expensive, there is AC Diamond Dust from Active Concepts. It is the dust obtained from grinding diamonds and is sold as an exfoliant for elbows and feet but it is so fine it may also be used on neck, shoulders and face. For natural exfoliants with added colour Lipo produce a number based on *Luffa cylindrica* and various seed and shell powders that are combined with iron oxide colours to enhance the visual appearance of the formulation. Lipo also supply a number of natural emollients derived from 100% natural plant sources rich in essential fatty acids. Under the trade name Lipobutter eleven varieties are available, eight of which have Ecocert validation.

At In-Cosmetics 2008 Lubrizol launched a system of selection of esters and rheology modifiers that it called SensiMap. Based on an extensive study of the physical characterisation of many esters it can greatly simplify their selection for the appropriate formulation type. The data generated shows how the esters compare to each other and other common formulation benchmarks in polarity, contact angle, interfacial tension and lubricity. Soap-free cleansing systems continue to grow in popularity as consumers are increasingly aware of the effect that different materials can have on the suppleness of their skin and for

facial cleansing Lubrizol suggests a combination of sunflower oil and emollient esters in a mild surfactant system. A preferred ester is Schercemol NGDO, INCI: Neopentyl glycol diethylhexanoate, which is a highly efficient solvent that gently removes make-up and sebum.

Personal cleansing products are enhanced by the addition of skin conditioning agents and cosmetic actives. Symollient from Symrise is a mixture of a fatty acid polyglycol ester, PEG-5 isononanoate, and a fatty alcohol polyglycol ether, Trideceth-9. It is a clear, colourless or light yellow liquid that is clearly soluble in aqueous surfactant solutions. It is offered as a hydrophilic emollient for shower and bath preparations and is said to improve the suppleness of skin by preserving its lipid content and to have an anti-drying effect and to improve the skin tolerance of surfactants. It enhances foaming characteristics and has solubilising properties for oils and fragrances.

Cleansing products are designed to remove dirt and debris from the skin but may also remove protective lipids, thus weakening its natural defensive barrier. The addition of emollients may help to counteract this effect but most are lost in the rinsing process. Ceraphyl RMT from ISP is deposited on the skin from cleansing formulations, providing moisturising properties from a rinse-off formulation. The material is castoryl maleate and for best effect it is combined with fatty acids in-situ to provide a lamellar gel structure that is suspended within the cleansing surfactant micelles. As with all the materials mentioned in this feature the suppliers provide example formulations and tests protocols and results that illustrate the claims made.

Also claimed to an effective moisturiser and skin treatment ingredient when added to wash-off products is Cleomilk from Rahn Cosmetics. It is rather fancifully described as a plant-based milk like concentrated skin care lotion modelled on Cleopatra‘s skin care. Its principal constituents are Sesamum indicum (Sesame) seed oil, Nigella sativa (Black caraway) seed oil and Aloe barbadensis leaf juice powder, all derived from controlled organic cultivation. The black caraway oil and sesame oil reduce moisture loss from the skin and in combination with Aloe vera juice, this reinforces the skin‘s natural water storage.

Many of the additives suggested for shower gels and body washes were originally developed for hair conditioning rinses. One such material is Abil T Quat from Evonik. It is silicone quaternium-22 and is said not to thin surfactant systems when used at the recommended level of 0.5% to 2% and is compatible with anionic surfactants provided the correct mixing procedures are followed.

Spas are very popular in beauty salons and health centres and many Spa products are also sold for home application. Principal Spa products for home use are scrubs and masks and there are many materials available to improve the basic formulations. Particulates for use in scrubs have already been mentioned. These are most commonly used in surfactant-based products but they may also be used in non-aqueous systems. They pose particular difficulties as the oil base has to be gelled but left sufficiently pliable for easy application and it needs to be readily removed after use.

Oils can be gelled with fumed silica such as the Aerosil products from Degussa AG; dextrin derivates like dextrin palmitate available as Rheopearl from Chiba Flour Milling Co. and the Gilugel products based on aluminum/magnesium hydroxide stearate from BK Giulini Chemie GmbH. Global 4075 from Global 7 is a combination of glyceryl isostearate and capric/caprylic glycerides that is used in combination with sodium stearate to thicken non-polar oil and silicone systems, producing viscosities from gelled oils to solid deodorant sticks.

To render them readily removable it is possible to incorporate a suitable surfactant like PEG-60 hydrogenated castor oil. This system is particularly suitable for salt scrubs and when properly formulated there should not be any oil exudation at ambient temperatures.

Anti-cellulite and body firming treatments are popular in Spas but are also available for home application. Sederma proposes the use of Phytosonic as a slimming treatment for areas of fat accumulation. It is a combination of Glaucium flavum extract, Euglena gracilis extract and vegetal caffeine and its action is said to mimic ultrasound treatments by promoting the unbinding of adipocyte from the extra cellular matrix though the stimulation of specific proteases.

Biotech Marine supplies Rhodystérol and Phycoboréane as additives for slimming applications. Rhodystérol is a mixture of propylene glycol diethylhexanoate and Gelidium cartilagineum extract, a red seaweed, and the rationale behind its use in slimming products is that seaweeds convert lipids to energy but excess lipids are stored until required. This reserve is used by the algae in periods of stress and the agents which transmit the messages to instigate lipolysis are sterols or derivatives. These are particularly active in the Rhodophyta or red algae and Rhodystérol contains 1.5% of active sterol and is recommended for use as a lypolytic and firming agent in body massage products. Phycoboréan is an aqueous extract of Laminaria hyperborea and is described as a reactivator of lypolytic adipocyte metabolism.

There are many other ingredients suggested for anti-cellulite and body firming products, and this subject will be covered in a future article. It also appears that teenage males do spend time in the bathroom to improve their appearance and so teenage skin care will be the subject of an article in SPC in April?

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www.creative-developments.co.uk

Ref 1 http://www.connock.co.uk/