

Hair Care 2017

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According to **Datamonitor**, current global spending on hair care exceeds \$50 billion with products based on natural ingredients leading product development. Similarly, **Euromonitor** reports that the trend for natural ingredients is strong in hair care, with most companies launching products featuring nature-inspired ingredients. The green trend could also be responsible for consumers looking for alternatives to silicones, however, most hair conditioning products currently contain silicones and will continue to do so to assure effectiveness, reports Euromonitor.

A report from **Stephenson Personal Care\*** in 2016 claims Brazil, Chile and South Korea will show the strongest growth in 2016/17; that 52% of US consumers prefer using a dry shampoo and that leave-in hair masks and conditioners are preferred in France, Germany, Italy, Russia and the UK. According to **Mintel** there are strong demands for haircare launches that tap into the seasonality trend, with 30% Brazilian haircare consumers claiming they would pay more for products to protect their hair from sun damage.

A hair care trends report\*\* from **IFF/Lucas Meyer** that suggests caring for the scalp is a major trend in Asia and that dermatological claims are a growing trend in the West. The use of oils for hair care is increasing and the report shows a pre-shampoo pure oil treatment containing Sunflohair [INCI: Phospholipids, Helianthus annuus (Sunflower) seed oil] and Phytensol [INCI: Phospholipids, Glycine soja (Soybean) oil] claimed to nourish and soften hair to give it smoothness and shine. MelinOil [INCI: Isopropyl palmitate, lecithin, aqua, acetyl hexapeptide-1] from **IFF/Lucas Meyer** is an oil-soluble version of a patented  $\alpha$ -MSH biomimetic peptide. It is supplied as a transparent micro-dispersion of the peptide in oil that can be incorporated into clear oil-based products. MelinOil binds MC1-R onto melanocytes and keratinocytes to stimulate the natural skin defence system against sun and stimulates melanin production in the hair bulb to reverse the signs of greying hair.

**IFF/Lucas Meyer** produces various plant milks under its Suprem WP trade name whereby 5% of the selected oil is macerated with 2% phospholipids to provide an active ingredient with the specific properties of the oil used. For example, argan oil, shea and olive oil are said to provide nutrition to the scalp. The trends report claims that active ingredients found in skin care are also being increasingly used in hair care products and cites caffeine as an

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example, this being present in its Isocell Slim [INCI: Caffeine, sodium salicylate, lecithin, silica] and Ecoslim [INCI: Caffeine, Coffea arabica (coffee) seed extract, lecithin].

Cleaning the hair is the precursor to almost all hair treatments and for many decades the most popular surfactant system was a combination of sodium laureth sulfate and cocamidopropyl betaine (SLES/CAPB). Generally, anionic surfactants are irritant, the irritation potential of amphoteric agents is generally lower and non-ionic surfactants are regarded as the least irritant. Combining anionic with amphoteric surfactants reduces irritation and improves foam stability and texture. Current trends are towards milder surfactants and these were reviewed in [the bathroom feature, SPC February 2015](#).

Tony Gough, **Innospec**, discussed current trends in global cleansing products at In-Cosmetics 2017 including the growing consumer trend of moving to sulfate-free cleansers. Gough described the Pureact WS and MS series of sodium methyl acyl taurates available from **Innospec** and how they met consumer trends. There is also a trend towards pH optimised products and products with a low pH especially for atopic / sensitive skin and to anti-pollution and depolluting products. There is also a move to greener and more sustainable surfactants and increased use of organic acids and 'multi-functional' ingredients with preservative action, said Gough.

At Formulate 2016 Tony Gough, **Innospec**, described coacervate formation in sulfate-free surfactant systems for 2-in-1 cleansing and conditioning. 2-in-1 conditioning shampoos work by the anionic surfactant forming a coacervate with low concentrations of cationic polymers such as guar hydroxytrimonium chloride or polyquaternium-10. This can be a clear solution but an insoluble gel phase forms as the shampoo is diluted in use. This is deposited on the hair and is retained after rinsing to give conditioning. Innospec markets Iselux [INCI: Sodium lauroyl methyl isethionate] that is effective in forming coacervate systems and, when used as a primary surfactant, Gough said it provides dense creamy foam with elegant aesthetics.

The polymer/surfactant gel agglomerates can physically entrap insoluble benefit agents such as silicone oils and carry them onto the hair and Gough showed how formulations could be optimised to provide maximum deposition by careful selection of the cationic conditioning polymers and rheology modifiers used. An alternative to silicones for conditioning shampoos is Plantasil 4V from **BASF**. It is a mixture of PEG-40 hydrogenated

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castor oil, PEG-7 glyceryl cocoate, PEG/PPG-120/10 trimethylolpropane trioleate and glycerin and is suggested as a shampoo additive to provide significant improvement on wet combing and sensorial performance in different hair types. It is said to be easy to cold process, compatible with all relevant conditioning polymers and to have less impact on foaming properties compared to other conditioning additives.

Offered as a naturally derived ingredient for conditioning shampoos ClearHance C from **Ashland** is derived from cassia seeds harvested in India. Its INCI name is Cassia hydroxypropyltrimonium chloride and is said to optimise the requirements of a clear surfactant system that delivers excellent conditioning benefits in both wet and dry comb measurements. It is compatible with most shampoo and body wash surfactant systems and improves silicone deposition in 1-in-1 products. Activeshine Amazon 3R [INCI: Orbignya speciosa (Babassu palm) kernel oil, Astrocaryum murumuru (Palm) seed butter] from **Chemunion** is offered as a vegetable alternative to silicon to provide Improved shine, combability, detangling and smoothness when delivered from shampoos and hair conditioners.

Thickening SLES/CAPB systems is readily achieved by the addition of salt however it is often less simple or more costly to adjust the rheology of other systems. **Evonik** has recently launched Antil 500 pellets as an innovative hydrophilic polymer [INCI: PEG-200 glyceryl stearate] to facilitate the thickening of challenging surfactant systems, such as sulfate-free formulas. The thickening agent provides a rich formulation texture with Newtonian flow behaviour but without changing the foaming characteristics. The 100% active, preservative-free solid is clearly soluble in water, is stable against hydrolysis and effective over a wide pH range. It is suitable for cold processing and said to enable a significant reduction of the active surfactant level in standard cleansing formulations.

SorbitThix L100 was described as a new a generation of liquid non-ionic associative thickener for modern personal cleansing formulations by Samuel Lin, **Applechem Inc.** when he presented details at Formulate 2016. Each molecule of SorbitThix [INCI: Sorbeth-230, decyl glucoside, sorbitan laurate] has six arms that form bridges with surfactant aggregates to increase solution viscosity. Solutions are clear and it is compatible with anionic, cationic and amphoteric surfactants and effective in the pH range 4.5 – 7.0. Lin compared its

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thickening action in various surfactant systems including sulphate-free, and systems containing sarcosinates, alkyl glucosides and glutamates.

For those looking for “green” ingredients KeraSym Restore from **Symrise** is described as a natural smart protein from the endosperm of wheat grain that repairs damaged hair where it is most needed, thus reducing hair breakage and split ends while improving hair gloss, force and elasticity. **IOI Actives** offers Softisan ConditionHair as a conditioning active to add to shampoos. It is a 100% natural product comprising glyceryl monooleate with pyrrolidone carboxylic acid (PCA) derived from natural glutamic acid and is highly substantive to hair. **Sabo-Kaneka** offers Sabosol GRN [INCI: Sodium coco-glucoside tartrate, cocamidopropyl betaine, sodium cocoyl hydrolyzed wheat protein] as a “green” surfactant system for hair shampoos and body washes.

A trend mentioned in various presentations is that of caring for the scalp. It can suffer from irritation, excessive sebum production and unwanted yeast-type infections. Fluidipure 8G from **Seppic** is claimed to protect the scalp from these problems by soothing irritation, rebalancing the scalp's microbiota and reinforcing the acid mantle. It is a mixture of capryloyl glycine and xylitylglucoside in hexylene glycol that inhibits growth of *Corynebacterium striatum* and *Propionibacterium acnes* while having minimal effect on *Staphylococcus epidermidis*. This is a “friendly” bacterium that protects the skin against “bad” bacteria and represents 90% of commensal aerobic flora of Stratum corneum.

Protecting the human microbiota is very much on trend and Defensscalp from **IFF/Lucas Meyer** extracted from rosebay is claimed to preserve the scalp microbiota ecosystem while regulating *Malassezia* proliferation responsible for dandruff. Defensscalp [INCI: Aqua, *Epilobium angustifolium* flower/ leaf/stem extract] normalises sebum, reinforces corneocyte cohesion and modulates the scalp immuno-inflammatory defence system to maintain a healthy flake-free and non-oily scalp.

KeraSym Shield is an anti-pollution ingredient from **Symrise** based on a wheat bran extract that protects the hair with a film that resists adhesion of pollution particles. The sales brochure is illustrated with test results that show KeraSym Shield [INCI: Pentylene glycol, aqua, glycerin, *Triticum vulgare* (wheat) bran extract, 1,2-hexanediol, caprylyl glycol] provides an effective barrier to urban pollution and confers an improvement in strength,

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gloss and shine. Another material based on wheat bran from **Symrise** is KeraSym Shape [INCI: Cetearyl nonanoate, Triticum vulgare (wheat) bran extract, ethylhexyl isononanoate, linoleic acid, Camellia oleifera seed oil]. It is described as an all curls beautifier that helps against frizz, reduces hair volume, shields cuticles and helps against breakage. It is aimed at the Afro hair market as an alternative to hair straightening and the use of harsh chemical relaxers.

Phytenso [INCI: Phospholipids, Glycine soja (Soybean) oil]] extracted from soybean by **IFF/Lucas Meyer** contains specific phospholipids that are biomimetic to the ones composing hair fibre. Because of this bioaffinity it adheres to the fibre and surrounds it with a smoothing and sheathing film, which straightens hair through a physical action. Phytenso contributes to the styling of curly and frizzy hair, which is most often difficult to manage in conditions of high humidity. Wavemax [INCI: Linum usitatissimum (linseed) seed extract, Salvia hispanica seed extract] from **Chemunion** is a natural haircare active that forms a film on hair fibres and delivers better curl retention when used with thermal styling and helps keep the shape of natural curls.

Exo-P from **IFF/Lucas Meyer** is an Alteromonas ferment filtrate in butylene glycol composed of 3 exotic polysaccharides from French Polynesia. Exo-P is a natural active that chelates heavy metals, limits free radical activity and protects from pollutants including PM2.5. Providing a protective film against pollution is the function claimed for Hair Sealift from **Odycea**. It is an aqueous hydrogel [INCI: Aqua, Chondrus crispus (carrageenan) extract, Girgatina stellata extract] that is mainly a hydrocolloid of sulfated galactans with 15 to 40% of ester-sulfate content. It forms a defensive and moisturising gel barrier on the hair and scalp protecting from pollution by trapping the impurities, and the protective gel acts as a moisture reservoir increasing moisture for up to 8 hours. It also absorbs excess sebum and softens the hair and soothes the scalp, restoring hair flexibility and lightness. It is suggested as a major component in cleansing hair masks.

Dry shampoos are becoming more popular and **AMSILK** produce functional silk polypeptides aimed at enhancing their properties. The company offers Silkbeads claimed to absorb up to 160% of their weight in oil to improve appearance and remove dandruff flakes. It forms a breathable film on the hair that smooths the surface and provides brilliance. AMSILK also

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supplies Silkgel as a hydrogel of silk in water that imparts an antistatic finish and repels PM2.5 carbon particles from adhering to the hair. The silk polypeptides [INCI: sr-spider polypeptide-1] are manufactured by a biotechnological process using E. Coli in bioreactors and are approved by the Vegan Society.

**Givaudan Active Beauty** has launched a new patented bio-active ingredient acting on keratin infrastructure called ResistHyal that, it claims, will revolutionise the hair care market. It contains an optimised ratio of low and high molecular weight hyaluronic acids, which create a specific local molecular moisturising film around the hair fibre. This film protects the hair during thermal treatments and protects it from pollutants. Givaudan claims that it needs be the only active ingredient used in a styling spray and that it will makes hair significantly softer, shinier, more protected and will reduce frizz.

Hot styling appliances can reach temperatures between 95C and 235C so there is a need to protect hair from thermal damage. Forming a protective film around the hair shaft is a popular method of providing protection and it may also inhibit deposition of pollutants. PhytoVie Defense [INCI: Brassica campestris/aleurites fordii oil copolymer] from **Tri-K** is described as a natural plant based polymer made from renewable tung and rapeseed oils. It forms an even, lightweight and flexible film on the hair that provides thermal protection, reduces frizz and improves strength and shine. BaobabTein NPNF [INCI: Hydrolyzed Adansonia digitata seed protein] from **Tri-K** is a multi-functional natural active for hair care claimed to repair damage caused by heat, UV exposure and relaxing treatments on African, Brazilian and Caucasian hair types with improvements for both wet and dry combing.

Heated blow drying causes thermal damage and combing during the process causes further hair damage. **Innospec** suggests that the addition of Shineblend®9503 [INCI: Cyclopentasiloxane, dimethicone/vinyl dimethicone crosspolymer, dimethiconol, PEG-10 dimethicone] to styling compositions reduces the blow-drying time and thereby reduces the potential of hair damage. Shineblend is also said to provide high shine and impart frizz control. **Innospec** has introduced two materials to protect hair from thermal damage; Gelaid CPDP [INCI: Cyclopentasiloxane, dimethicone, phenyl trimethicone] and Gelaid CDP-CF [INCI: Dimethicone, phenyl trimethicone].

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From **Floritech** there are Floraesters K-20W Jojoba and Floraesters K-100 Jojoba, described as multifunctional hydrolyzed jojoba esters that provide protection from thermal damage. Tests show that Floraesters K-100 Jojoba in a conditioner reduces hair breakage by 38% after heat exposure. Both grades impart strong hydrating and conditioning effects while also reducing tack to improve hair feel of formulations. Due to its high pH, Floraesters K-20W can replace triethanolamine to neutralise carbomer and stearate systems.

Thermal damage, chemical treatments, sun damage and ageing all contribute to weakening hair. FiberHance bm (Bond Multiplier) from **Ashland** is a new patented chemistry for hair strengthening ingredients. FiberHance bm [INCI: Hydroxypropyl gluconamide] has a unique multifaceted mode of action which penetrates deep into the cortex to create new hydrogen and ionic bonds that support the damaged internal keratin structure and strengthen and provide manageability back to the hair.

Bond multipliers are designed to build bonds within the hair and improve integrity, revolutionising hair colouring treatments. **Croda's** new Plex system boasts unique heat-activated properties that increase hair integrity within the cortex and protect the cuticle during blow-drying through bond building. It can be incorporated into a bleach or colour mixture without increasing the processing time. It is a three-step process and testing revealed that Steps 1 and Step 2 of the Croda Plex system increases bond-building, hair integrity and colour wash fastness after blow drying the hair post application. Step 3 showed an increase in hair strength by 85% over the commercial benchmark.

Step 1 involves treating the hair with a composition containing Crodasone Cystine to promote heat activated bond building and Keravis PE to improve hair strength.

Steps 2 & 3 involve treating the hair with compositions containing Keravis PE to improve hair strength; Crodazosoft DBQ for hair softness; Arlasilk PLN to protect hair colour; Keradyn HH for healthy hair dynamics; Crodazoquat MCC for conditioning damaged hair; Crodasone P for heat activated cuticle protection and Crodamol STS for added shine.

For further information about the Croda Plex system and the individual ingredients readers are urged to contact Croda direct. Croda also markets Myrustyle styling polymers and numerous protein-based hair treatments.

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Bleaching hair causes chemical damage to the hair shaft. GoBlond [INCI: Aqua, Linum usitatissimum (Linseed) seed extract, polyquaternium 7, sericin, fibroin, hydroxypropyl starch phosphate, guar hydroxypropyltrimonium chloride] from **Chemyunion** is added to the bleach and developer solutions just before application for protection of hair fibre during the bleaching process, delivering improved smoothness, strength and shine.

**Salvona** reports that thinning hair is problem during aging and especially women in the post-menopausal phase of their life. It describes HS Silk [INCI: Aqua, polyvinyl alcohol, acrylates copolymer, keratin, hydrolyzed keratin, phenylethyl alcohol, caprylyl glycol, ethylhexylglycerin] as a sub-micron sphere infused with keratin within its porous core encapsulated in a polymeric shell. The shell is designed to enhance adhesion of keratin complex to the hair and prolong its benefits and Salvona claims that HS SLK restores natural shine, repairs damage, helps maintain healthy hair appearance, and battles thinning hair.

\* Knowledge Corner: Global Haircare trends 2016

\*\* Hair Care Trends