Personal care product selection guide

Solutions for skin care, sun care, hair care, color cosmetics and toiletries
About us

Air Products develops and produces innovative and evidence-based ingredients for the cosmetics industry. Our cosmetic active ingredients and delivery systems encompass specially designed Cellular Actives™ solutions and ROVISOME® encapsulated ingredients that reflect our competencies in skin physiology, biochemistry and dermal delivery. Our polymer platforms provide unique, multifunctional benefits that can empower differentiated consumer product characteristics. Collectively, we aim to provide our customers with ingredients and support that can enable formulators to fulfill their performance target goals.

Air Products (NYSE: APD) is a Fortune 500 industrial gases and specialty chemicals company operating across a wide range of industries on a global scale. We have the experience and world-class manufacturing and analytical capabilities that enable us to offer solutions to our customers to help them formulate products in a reliable and cost-effective manner.
Providing performance solutions across applications

At Air Products, our goal is to enable your success. Our specialty ingredients focus on delivering market-differentiating characteristics and label claims for your products. We also work with our customers to understand their needs and anticipate future demands. We can craft customer-specific, encapsulated-ingredient solutions that can empower exciting new product concepts. We also work with customers to support their formulating efforts using our materials, often demonstrating analytically how our polymers or cosmetic actives can provide multifunctional benefits to their formulations. No matter whether a skin care, sun care, hair care, color cosmetic, or toiletry product concept, we want to show you how our ingredients can provide you with performance solutions.

**Skin Care** continues to drive industry growth, but consumers are increasingly seeking differentiation. Our cosmetic active ingredients and polymers can help you provide such differentiation through tangible benefits substantiated by in vivo, ex vivo, and in vitro studies that formulators and consumers can count on.

**Sun** exposure concerns are leading to greater sun care product usage. To deliver the safety and feel benefits that consumers are seeking, consider our specialty polymers, which can provide excellent barrier and rheology properties. Our delivery systems can also enhance the beneficial properties of sun care ingredients such as UV filters and free-radical scavengers.

**Hair Care** success is driven by enabling consumers to express themselves. Our styling polymers can provide great hold performance while imparting additional benefits for the consumer. Our hair care cosmetic actives can provide color and heat protection as well as scalp appearance benefits.

**Color Cosmetics** are becoming more multifunctional, and our polymers can both enhance pigment distribution and provide other benefits such as reduced tackiness, reduced greasiness, and transfer resistance while improving consumer product experiences.

**Toiletries** such as deodorants, shampoos, and body washes have become staples of the modern consumer, and innovation continues to be critical for formulators to remain in the lead. Our polymer and delivery solutions can enhance ingredient deposition and delivery while imparting a feel that can motivate consumer brand loyalty and satisfaction.
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<thead>
<tr>
<th>Category</th>
<th>Benefits</th>
<th>Active Ingredients</th>
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| **Skin Care**     | Antioxidant Benefits                        | • ROVISOME® ACE cosmetic active  
• ROVISOME Q10 cosmetic active  
• ROVISOME Defence cosmetic active  
• ROVISOME C cosmetic active |
|                   | Cellulite                                   | • ProContour® cellular active                                                      |
|                   | Elasticity/Lifting                          | • ROVISOME HA cosmetic active                                                      |
|                   | Impure Skin                                 | • Herbapurifine™ cellular active                                                   |
|                   | Moisturizing                                | • AquaPront™ cellular active                                                       |
|                   | Revitalizing                                | • ROVISOME HA cosmetic active                                                      |
|                   | Skin Tone                                  | • UniTone™ cellular active  
• ROVISOME FEC cosmetic active  
• ROVISOME C cosmetic active  
• ROVISOME DHA cosmetic active |
|                   | Soothing                                   | • Herbapurifine cellular active                                                    |
|                   | Wrinkle Smoothing                           | • AquaPront celllar active  
• ROVISOME Retinol Moist cosmetic active  
• Cerasome Oxygen cosmetic active |
|                   | Formulation Performance                     | • Deposilk® Q1 polymer  
• Intelimer 13 series                                                                  |
|                   | Formulation Feel                            | • Deposilk Q1 polymer  
• Intelimer 13 series                                                                  |
| **Sun Care**      | Sunless Tanning                             | • Intelimer 8600 polymer  
• ROVISOME DHA cosmetic active                                                       |
|                   | Sunscreens                                  | • Intelimer 8600 polymer  
• Deposilk Q1 polymer                                                                  |
| **Hair Care**     | Scalp/Hair Vitality                         | • ROVISOME Hair Growth Serum cosmetic active                                        |
|                   | Styling                                     | • Intelimer 8600 polymer                                                            |
| **Color Cosmetics** | Facial                                   | • Intelimer® 13 series polymers  
• Deposilk Q1 polymer                                                                  |
|                   | Lip                                         | • AquaPront cellular active  
• Intelimer 13 series polymers                                                          |
| **Toiletries**    | Antiperspirant/Deodorant                    | • Intelimer 13 series polymers                                                      |
|                   | Body/Facial Wash                            | • Deposilk Q1 polymer  
• Intelimer 8600 polymer                                                                 |
Cellular active solutions are a family of innovative products that use advanced and multifaceted delivery technologies to provide solution-focused, performance-tested benefits that formulators can leverage for their consumer products. These actives are substantiated by in vivo and in vitro studies to meet the most innovative claims, enabling both R&D and Marketing to develop successful product concepts.

<table>
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<tr>
<td>AquaPront™ Cellular Active</td>
<td>AquaPront cellular active can instantly help to reduce the appearance of wrinkles and dilated pores, with excellent short-term and long-term results. Its effects are due to the Moisture Trap™ delivery system, which is designed to lock the moisturizing and skin-refining properties of AquaPront cellular active firmly onto the skin for many hours.</td>
</tr>
<tr>
<td>Herbapurifine™ Cellular Active</td>
<td>Herbapurifine cellular active is an active complex for the treatment of impure skin. Herbapurifine cellular active helps to promote conditions enabling the skin to reduce efflorescences (comedones, papules, pustules) by 31.1% on average after 4 weeks of application. Furthermore, it helps to promote skin soothing and leaves a soft skin feel.</td>
</tr>
<tr>
<td>ProContour™ Cellular Active</td>
<td>ProContour cellular active is formulated to help fight the appearance of cellulite. It helps to reduce the appearance of fat lobules prolapsing into the dermis, both in expanse, width, length and height. The material utilizes a synergistic set of active ingredients that are delivered deep into the skin, where they can provide the most benefits.</td>
</tr>
<tr>
<td>UniTone™ Cellular Active</td>
<td>UniTone cellular active is an active complex that helps to promote conditions amiable for skin whitening and skin depigmentation. The material has been shown using 5D Intravitaltomography, an in vivo imaging technique, to promote conditions which result in the reduction of melanin content in the strata basale et spinosum by 95.5% after 14 days. The material also helps to promote reduction of intracellular and extracellular melanin content and helps to effectively promote conditions where tyrosinase activity appears reduced.</td>
</tr>
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**Vivendin™ Cellular Active**

Vivendin cellular active is an active complex that helps to promote conditions conducive to the activation of the skin’s longevity genes, the SIRT-enzymes. INEOCELL technology, a novel cell-targeted delivery system, delivers Vivendin cellular active directly into epidermal cells where it can be most effective.

**OxyForce® Cellular Active**

OxyForce cellular active can enhance the supply of molecular oxygen to the skin cells, support of natural collagen production, improve cell energy levels, increase cell proliferation, reduce wrinkle depth and enhance skin smoothness. The radical sun protection factor was measured concluding that the higher level of transcutaneous oxygen does not induce an increased amount of Reactive Oxygen Species (ROS) in skin after exposure to UV radiation.
Multifunctional polymer solutions

Formulators looking to enhance their label claims can turn to Air Products’ multifunctional polymers for unique performance attributes that consumers should notice. Each polymer solution provides multiple formulation benefits that can help to differentiate the characteristic of formulations. Moreover, many of these solutions can be utilized across a broad set of skin care and hair care applications.

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<td>Deposilk® Q1 Polymer</td>
<td>Deposilk Q1 polymer is designed to provide excellent deposition of ingredients and a silky sensory feel to formulations. The material is an amphiphilic, cationic polymer that can provide its benefits within the water, oil, or alcohol phases of formulations. It is particularly suited for high-water-content skin care formulations, where it can enable a cost-effective solution for leave-on and wash-off facial and body systems. The material is provided as a solution in butylene glycol and water.</td>
</tr>
<tr>
<td>Intelimer® 8600 Polymer</td>
<td>Intelimer 8600 polymer can provide formulations with multifunctional benefits, including film/barrier benefits, enhanced ingredient retention benefits, improved ingredient distribution benefits, oil-thickening benefits, and a non-tacky, non-greasy sensory benefit. The material is a hydrophobic, side-chain crystalline polymer provided as an emulsion in water. It is particularly effective for sun care, hair care, and wash-off formulations.</td>
</tr>
<tr>
<td>Intelimer® 13 Series Polymers</td>
<td>Intelimer 13 series polymers are side-chain crystalline materials that are unique owing to their very sharp melt transition, enabling them to exhibit rapid changes in viscosity upon melting. This characteristic provides a unique nongreasy, nontacky sensory benefit that can be particularly useful for hair care, antiperspirants/deodorants, and color cosmetics. The material is provided as solid pastilles and can be used for anhydrous systems.</td>
</tr>
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ROVISOME encapsulated cosmetic actives

The ROVISOME delivery system can provide formulators with the ability to carry cosmetic actives to deeper skin layers, increasing ingredient availability to the skin. In some instances, this greater availability can lead to substantially better ingredient performance, even at lower use levels. As an encapsulated cosmetic active, the ROVISOME delivery system can also enhance the stability of some ingredients by shielding them from common environmental factors. Below is a partial listing of commercial offerings. Air Products can work with customers to provide customized encapsulated solutions.

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<td>ROVISOME® ACE Cosmetic Active</td>
<td>ROVISOME ACE is a combination of antioxidative vitamins that help to prevent oxidative stress. ROVISOME ACE has significant radical scavenging properties and thus represents the ideal cosmetic active for the “second line of defense” against environmental aggressors. Optionally, this material is also available with our New “Consumer-Centric” delivery technology.</td>
</tr>
<tr>
<td>ROVISOME® ACE Plus Cosmetic Active</td>
<td>ROVISOME ACE Plus is a combination of strong antioxidative vitamins that help to prevent oxidative skin stress. ROVISOME ACE Plus has significant radical scavenging properties and thus represents the ideal cosmetic active for the “second line of defense” against environmental aggressors. Unlike ROVISOME ACE, this material uses pure retinol and tocopherol for even higher antioxidative properties.</td>
</tr>
<tr>
<td>ROVISOME® AHA Cosmetic Actives</td>
<td>ROVISOME AHA (various cosmetic active ingredient options available, including Sodium Lactate or Sodium Glycolate or Sodium Citrate or Sodium Malate) can provide significant improvement in skin smoothness and help to improve the appearance of wrinkles while at the same time increasing the skin’s moisture level. Moreover, the encapsulation of salts helps to avoid skin irritation that can be associated with use of pure acid and salt. Optionally, Rovisome AHA Sodium Lactate is also available with our New “Consumer-Centric” delivery technology.</td>
</tr>
<tr>
<td>ROVISOME® C Cosmetic Active</td>
<td>ROVISOME C acts as a radical scavenger and is supportive of conditions enabling the skin’s natural collagen synthesis. Optionally, this material is also available with our New “Consumer-Centric” delivery technology.</td>
</tr>
<tr>
<td><strong>ROVISOME® Defence Cosmetic Active</strong></td>
<td>ROVISOME Defence contains a unique composition of polyphenols, which are characterized by their excellent antioxidative and skin-smoothing properties. Based on these effects, it is ideal support for the skin in its fight against environmental aggressors. Optionally, this material is also available with our New “Consumer-Centric” delivery technology.</td>
</tr>
<tr>
<td><strong>ROVISOME® DHA Cosmetic Active</strong></td>
<td>ROVISOME DHA can increase the availability of DHA, enabling it to form a brown color complex with amino acids in the upper skin layers more effectively and support a more even, longer-lasting tan—only one application can give visible results with a long-lasting tan.</td>
</tr>
<tr>
<td><strong>ROVISOME® FEC Cosmetic Active</strong></td>
<td>ROVISOME FEC is designed to deliver a combination of fucoidan, escin, and caffeine to deeper skin layers. It can promote brightening of dark circles around the eyes and improve skin moisture and condition.</td>
</tr>
<tr>
<td><strong>ROVISOME® HA Cosmetic Active</strong></td>
<td>ROVISOME HA contains liposomally encapsulated sodium hyaluronate, which is delivered through the lipid barrier to the deeper skin layers. ROVISOME HA can help solve the problem of agglutination on the skin, often occurring in formulations with HA. Inside the skin, the material exerts its water-binding properties and helps to deeply moisturize the skin. Optionally, this material is also available with our New “Consumer-Centric” delivery technology.</td>
</tr>
<tr>
<td><strong>ROVISOME® Hair Growth Serum Cosmetic Active</strong></td>
<td>ROVISOME Hair Growth Serum delivers a combination of vitamins and cosmetic actives to the scalp and hair. It is useful in products for fuller, thicker hair.</td>
</tr>
<tr>
<td><strong>ROVISOME® Q10 Cosmetic Active</strong></td>
<td>ROVISOME Q10 can help stabilize and support the skin by acting as an antioxidant and radical scavenger, thereby reducing the appearance of skin aging and wrinkle formation. In ROVISOME Q10, the coenzyme Q10 is embedded into a liposomal lipid bilayer membrane and is converted into the more effective form, ubiquinol. Optionally, this material is also available with our New “Consumer-Centric” delivery technology.</td>
</tr>
<tr>
<td><strong>ROVISOME® Retinol Moist Cosmetic Active</strong></td>
<td>ROVISOME Retinol Moist is stabilized vitamin A and can effectively reduce the appearance of wrinkles without inducing skin irritation.</td>
</tr>
<tr>
<td><strong>ROVISOME® Sensitive Cosmetic Active</strong></td>
<td>ROVISOME Sensitive combines the beneficial properties of calendula flower and liquorice root in the ROVISOME carrier system to enable good skin-soothing effects and help reduce the appearance of skin redness. Optionally, this material is also available with our New “Consumer-Centric” delivery technology.</td>
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</table>
Cerasome and Nanosome encapsulated cosmetic actives

Air Products has capabilities and experience employing specialty delivery system technologies. These technologies can often provide effective performance benefits within specific applications. Below are commercial offerings that showcase some of these specialty encapsulation systems. Our technologies can be fashioned to meet specific ingredient delivery needs.

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<td>Cerasome™ Oxygen Cosmetic Active</td>
<td>Cerasome Oxygen is a carrier system based on skin-identical glycosphingolipids. This material can increase the oxygen content in the deeper skin layers that is supportive of various skin cell processes. Cerasome Oxygen can effectively help to reduce the appearance of wrinkles on the skin.</td>
</tr>
<tr>
<td>Nanosome Q10 Cosmetic Active</td>
<td>Nanosome Q10 employs a monolayer phospholipid vehicle to deliver coenzyme Q10 to the skin. Unlike the ROVISOME delivery system, which is designed to provide fast delivery to deeper skin layers, the Nanosome delivery system favors a slower and more gradual release of encapsulated cosmetic actives over time to the skin. As such, Nanosome Q10 is well suited to provide a sustained antioxidant benefit for formulations.</td>
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