DOW isopropanolamines can be used in many types of personal care products. In some cases, the isopropanolamines may be used directly to adjust pH or impact an inherent physical property. In other instances, the isopropanolamines may be used as an intermediate to produce nonionic or anionic surfactants.

Physical Properties Imparted

Emulsifiers

Fatty acid soaps are made from various fatty acids or oils in combination with isopropanolamines. Isopropanolamine soap emulsifiers generally give oil-in-water emulsions, but depending upon technique, choice of amine soap, and the materials to be emulsified, water-in-oil emulsions may result. Isopropanolamine soap emulsifiers work effectively to produce stable cosmetic emulsions. Depending on the size of the particles that are dispersed, the emulsion may be either transparent (particle <100 nanometers) or opaque (particles >400 nanometers).

Foam Stabilizers

The rate of attainment of surface tension equilibrium is decreased by foam stabilizers. Alkanolamides are often used to impart foam stability and are used in conjunction with other surfactants. They perform by causing the molecular film at the surface of the foam bubble to become closely packed. The carbon chain length of the alkanolamide should be close to the carbon chain length of the surfactant with which the amide is being used.

Viscosity Modifiers

Many formulated cosmetic products require a specific or narrow viscosity range. This can be accomplished by choosing an isopropanolamine soap or an alkanolamide with a carbon chain length that produces the desired consistency in the final product.

Cosmetic Formulations Incorporating Isopropanolamines

- Skin cream
- Waterproof makeup
- Conditioning shampoo
- Masking stick for blemishes
- Protein shampoo
- Shave cream
- Dispersible bath oil
- Bubble bath
- Complexion bar
- Liquid makeup
- Anti-dandruff shampoo
- Mascara
- Gel shampoo
- Stick antiperspirant
- Hair conditioner
- Bath and shower gels
- Soluble bath oil
- Hand and body lotion
- Liquid rouge
- Cream shampoo
- Cream sunscreen
- Baby shampoo
- Liquid hand soap
- Foaming bath oil
- Eye shadow cream


Nonionic surfactants made from isopropanolamines include alkanolamides. Anionic surfactants made with isopropanolamines include soaps and salts.

Foam Heights of Typical Lauryl Sulfates

<table>
<thead>
<tr>
<th>Salt</th>
<th>0.1% Concentration Ross-Miles Millimeters of Foam Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Lauryl Sulfate</td>
<td>175 mm(^1) 165 mm(^1)</td>
</tr>
<tr>
<td>Triisopropanolamine Lauryl Sulfate</td>
<td>205 mm(^1)  205 mm(^1)</td>
</tr>
</tbody>
</table>

\(^1\) mm = Millimeters

Pearlescence

Alkanolamides are used in shampoo formulations to impact this characteristic.

Products Available

Commercial grades of isopropanolamine and mixtures are also available from Dow.

Other Considerations

When isopropanolamines are used to neutralize the acid portion of a surfactant molecule, the amine salts are usually milder than the sodium or potassium salts from a hydroxide neutralization. Also, the amine salt generally will produce a more stable, viscous formulation when compared to the metal salts.

Foam heights and stability are better with the amine salt of lauryl sulfate, formed from triisopropanolamine, than with a sodium salt.

For more information on DOW isopropanolamines, call 1-800-447-4DOW (4369). Please refer to the Material Safety Data Sheet (MSDS) for safe handling information.
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