Antiperspirants and Deodorants
Formulation Examples and Forms of Applications:

1. Aerosols:
   • Active ingredients + liquid gas {as propellants} placed into a spray container under pressure to obtain a homogeneous solution.
   • They are base on alcohol solution of the active ingredients.
   • Propellants are usually hydrocarbons e.g. propane, butane, isobutane.
- Dimethylether can be used as propellants.
- Chlorofluorohydrocarbons were placed out.
- Refatting and fixing agent was added.

**Rx**

Irgasan DP300
Perfume oil
n-octyl dodecanol
Ethyl alcohol
Propellants

* Spray deodorants based on alcohol give fresh feeling due to the cooling effect when the solution evaporates.
* Oil based deodorants is available & contain amount of propellants 90%.

• Dry based deodorants are usually suspended antiperspirants and antimicrobial.

2. Pump Spray:

• it’s have an aqueous-alcohol solution base { water content {10-70%}.

• Because of water content the solubility of perfume oil & and active ingredients was diminish. So, we have to add solubility promoters & emulsion.
• Stabilizer is added to counter the effect of light.
• Glycerol assist the solubility.
• Aluminum & plastic is used as a container.
• Pump spray give large droplets, while liquid spray produce fine, light mist.

Rx
Deodorants spray oil
Solubilizer
Ethyl alcohol
Polyethylene glycol
water
3. **Roll-on-deodorants**

- **It require a liquid base with enough viscosity for effective transfer and application of the fluid by the roller ball.**
- **These can be achieved by using suitable gels or emulsion o/w.**
- **By using a special swelling agent we can get a gel base from the aqueous alcohol of active ingredients solution.** \{**modified cellulose polymer and bentonite**\}. 
<table>
<thead>
<tr>
<th><strong>Rx Gel</strong></th>
<th><strong>Emulsion o/w</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorohexidine diacetate</td>
<td>irgasane DP300</td>
</tr>
<tr>
<td>Perfume oil</td>
<td>perfume oil</td>
</tr>
<tr>
<td>Solubilizer</td>
<td>glycerol stearate</td>
</tr>
<tr>
<td>Hydroxyethylcellulose</td>
<td>cetyl stearate alcohol</td>
</tr>
<tr>
<td>Ethyl alcohol</td>
<td>ethoxylated</td>
</tr>
<tr>
<td>Water</td>
<td>2-octyldodecanol</td>
</tr>
<tr>
<td></td>
<td>ethyl alcohol</td>
</tr>
<tr>
<td></td>
<td>polyacrylate</td>
</tr>
<tr>
<td></td>
<td>glycerin</td>
</tr>
<tr>
<td></td>
<td>water</td>
</tr>
</tbody>
</table>
4. **Stick Deodorants:**

* the base used should show certain solidity and resistance to deformation, and at the same time be applicable with moderate pressure and movements.

• The specification was achieved by using soap glycol gel system.

• Using of glycol of \( M.\text{wt.} \) form a clear transparent gel + sod stearate, which is able to incorporate additional amount of water and alcohol.
Rx

Irgasan DP300
Perfume oil
Sod. Stearate
1,2 propylene glycol
Solubilizer
Ethyl alcohol
water
Application of Deodorants:
• Used after bathing and in between
• spray and pump can be applied to the armpits, adjoining chest, back and arm areas.
• we should not dress directly.

Antiperspirants:
• its task is to limit the perspiration.
**Composition of Antiperspirants:**

1. **Astringents:**
   
   *Example Aluminum salt*

   • *It's have an acidic reaction so, we must add neutral aluminum comp. which unfortunately diminish the antiperspirants effect.*
   
   • *alkaline Al chloride + Al (OH)$_3$ [*chlorohydral. {pH 4.5}]*
   
   • *Al chlorohydroxylactate complex (pH 8-8.5)*
   
   • *Al hydroxy chloride propylene glycol complex (easy dissolved in ethanol).*
Production of Cosmetically Appealing Antiperspirants

• It requires certain inert ingredients depending on the method of application.

• We use dry spray which based on alcohol, they are suspension due to the insolubility of active ingredients (oil & propellants).
**Rx**

**Spray**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Powder Spray</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al hydroxy chloride</td>
<td></td>
</tr>
<tr>
<td>Isopropyl myristate</td>
<td></td>
</tr>
<tr>
<td>Perfume oil</td>
<td></td>
</tr>
<tr>
<td>Propellant</td>
<td></td>
</tr>
</tbody>
</table>

---
• Oil is very necessary in antiperspirants to serve as carrier, as well as fatty acid aster or liquid fat alcohol for skin care.

* The basic for stick deodorants sod stearate gel with alcohol or glycol. Al hydroxy chloride was excluded, in stead lactate complex have been used (chloracel).
Rx

Stearic acid

Ethyl alcohol

Chloracel 40%

Propylene glycol

Sod. Hydroxide solution

Perfume oil
Application and Effects

The active ingredients of antiperspirants acts as an astringent and its have a protein precipitating effect.

The use of acidic salt will inhibit the bacterial growth.