

Section I
Antiperspirants and
Deodorants

Anti-Perspirant Roll-On
Slightly cloudy, high viscosity

<u>Ingredients:</u>	<u>Wt%</u>
A: Wacker-Belsil DMC 6032	2.00
Water	52.00
B: Ethanol Alcohol (Cosmetic grade)	25.00
C: Locron L	20.00
Tylose H 4000 P	0.5-1.0
Pigments, fragrances	q.s.

Mix A, stir B into A, mix in C. The desired viscosity can be regulated with Tylose H 4000 P (add Tylose H 4000 P either mixed with water to A or mix at the end in the finished formulation).
Formulation 516 AH

Anti-Perspirant Stick
Firm slightly yellow stick with little rub

<u>Ingredients:</u>	<u>Wt%</u>
A: Lanolin Acid	45.00
Wacker-Belsil SDM 6022	30.00
Locron P	15.00
Wacker-Belsil DM 350	5.00
B: Wacker-Belsil CM 040	5.00

Melt A, mix in B and fill while hot.
Temperature stability: at 45C over 10 weeks.
Formulation 358 AH

SOURCE: Wacker Silicones: Suggested Formulations

Antiperspirant Solid

A typical antiperspirant stick formulation. SF1202 acts as a fugitive carrier for the antiperspirant active, thus providing a dry, non-greasy feel. In antiperspirant solid or stick products, SF1202 is the preferred cyclomethicone providing a stable colloidal matrix of wax for stick integrity and strength. SF96 (100) provides anti-whitening properties.

<u>Ingredient:</u>	<u>Wt%</u>
Cyclomethicone (SF1202)	45.0
Dimethicone [(SF96)(100)]	5.0
Stearyl Alcohol	19.0
Hydrogenated Castor Oil (mp 70C)	3.0
Talc	4.0
Glyceryl Stearate and PEG-100 Stearate	2.0
Aluminum Zirconium Tetrachlorohydrate Gly (ZAG)	22.0

Procedure:

1. Mix together cyclomethicone, dimethicone and stearyl alcohol.
2. Add ZAG, talc and glyceryl stearate & PEG-100 stearate.
3. Heat to 75C and stir with moderate agitation until all wax is melted.
4. Pre-melt hydrogenated castor oil and add to mixture as a liquid and stir for 15 minutes.
5. Cool mixture to 55C with continued mixing and pour into container. Cool (avoid air entrapment due to excessive mixing speeds.)

Formula AP 100

Antiperspirant Gel

A simple emulsion demonstrating the use of SF1328 as a water-in-oil emulsifier. Cyclomethicone is the external phase to provide a dry, non-greasy feel and to reduce tack. The product is an opaque gel but can be clarified by matching the refractive index of Part A and Part B. This is often done by adding propylene glycol to Part B. Formulation AP104 illustrates transparent gel formulation.

<u>Materials:</u>	<u>Wt%</u>
Part A:	
Cyclomethicone (and) Dimethicone Copolyol (SF1328)	10.00
Cyclomethicone (SF1204)	14.00
Part B:	
Polysorbate-80	0.25
Aluminum Zirconium Tetrachlorohydrate Gly (ZAG)	20.00
Water	55.75

Procedure:

1. Mix together Part A ingredients.
2. Dissolve polysorbate-80 into warm water.
3. Add ZAG to the water and polysorbate-80 solution and mix to form Part B.
4. Slowly add Part B to Part A with high shear mixing.
5. Homogenize with a high speed and high shear mixer such as an Eppenbach mixer.

Formula AP102

SOURCE: GE Silicones: Formulary: Formula AP100 & AP102

Antiperspirant Stick
Firm stick with soft rub

<u>Ingredients:</u>	<u>Wt%</u>
A Wacker-Belsil SDM 6022/Stearoxy Dimethicone, Dimethicone	6.00
Adol 66/Isostearyl Alcohol	13.50
Brij 78/Steareth-20	2.50
Lanette O/Cetearyl Alcohol	20.00
 B Wacker HDK H 15/Silica Dimethyl Silylate	 1.00
Locron P/Aluminum Chlorhydrate	25.00
 C Wacker-Belsil DM 100/Dimethicone	 2.00
Wacker-Belsil CM 040/Cyclomethicone	30.00
 Fragrances, pigments	 q.s.

Mix A and heat to 65C. Stir B into A, cool to approx. 45C and then add C.

Formulation 280 AH

Antiperspirant Roll-On
White, low viscosity

<u>Ingredients:</u>	<u>Wt%</u>
A Wacker-Belsil CM 040/Cyclomethicone	70.00
Wacker-Belsil DM 100/Dimethicone	5.00
 B Tegin M/Glyceryl Stearate	 2.70
 C Locron P/Aluminum chlorhydrate	 20.00
Wacker HDK H 15/Silica Dimethyl Silylate	1.00
 Fragrances, pigments	 q.s.

Mix A, melt B and stir into A, mix C and stir into AB homogeneously.

Formulation 178/2 AH

SOURCE: Wacker-Chemie GmbH: Formulas for Beauty

Antiperspirant Suspension Roll-on

A typical antiperspirant suspension roll-on. Cyclomethicones, SF1173 and SF1202, act as fugitive carriers for the antiperspirant active, thus providing a dry, non-greasy feel. The type of cyclomethicone for antiperspirant products is generally chosen based on evaporation rate. Various mixtures of the different cyclomethicones are used depending on the desired properties of the finished formulation. SF96 (50) provides anti-whitening properties.

<u>Materials:</u>	<u>Wt%</u>
Cyclomethicone (SF1173)	45.7
Cyclomethicone (SF1202)	19.5
Dimethicone [SF96 (50)]	5.0
Quaternium-18 Hectorite	2.5
Ethanol	2.0
Aluminum Zirconium Tetrachlorohydrate Gly (ZAG)	25.0
Silica	0.3

Procedure:

1. Mix SF1173, SF1202 and quaternium-18 hectorite in a high speed mixer.
2. Add SF96 (50) and ethanol and continue mixing.
3. Add silica and ZAG and mix an additional 15 minutes.
4. Transfer the material to a homogenizer such as an Eppenbach Homomixer and homogenize for 3 minutes at high speed.
5. Check viscosity. It should be approximately 3000 cps.

Formula AP101

Antiperspirant Roll-on Emulsion

Similar to formulation AP102, a simple emulsion demonstrating the use of SF1328 as a water-in-oil emulsifier. By decreasing the internal phase, the viscosity of the emulsion is reduced thus, providing a roll-on product instead of a gel. Cyclomethicone is the external phase to provide a dry, non-greasy feel and to reduce tack. The product is opaque but can be clarified by matching the refractive index of Part A and Part B. This is often done by adding propylene glycol to Part B.

<u>Materials:</u>	<u>Wt%</u>
<u>Part A:</u>	
Cyclomethicone (and) Dimethicone Copolyol (SF1328)	7.50
Cyclomethicone (SF1204)	20.50
<u>Part B:</u>	
Polysorbate-80	0.11
Aluminum Zirconium Tetrachlorohydrate Gly (ZAG)	20.00
Water	51.89

Procedure:

1. Mix together Part A ingredients.
2. Dissolve polysorbate-80 into warm water.
3. Add ZAG to the water and polysorbate-80 solution and mix to form Part B.
4. Slowly add Part B to Part A with moderate shear mixing. Gradually increase agitation to high shear as the mixture thickens. Continue agitation for 5 minutes.
5. Homogenize 1-2 minutes with a high speed/high shear mixer such as an Eppenbach mixer.

Formula AP 103

SOURCE: GE Silicones; Personal Care Formulary; Formulas

Deodorant Stick

<u>Ingredient:</u>	<u>Wt%</u>
Propylene Glycol	49.50
Carbowax 1540	6.00
Triclosan	0.25
Promidium SY	7.00
DI Water	27.25
Monateric CLV	2.00
Fragrance	2.00
Sodium Stearate	6.00

Procedure:

Heat the Promidium SY, Propylene Glycol and Carbowax 1540 to 70-75C. Add the Triclosan. Mix. Add the fragrance, Monateric stirring slowly. Add the Sodium Stearate, when melted, add water slowly. Discontinue heating. Cool, fill warm.
Formula F-850

Deodorant Stick with Phospholipid CDM

<u>Ingredient:</u>	<u>Wt%</u>
Propylene Glycol	50.50
Carbowax 1540 (PEG-32)	6.00
Promidium SY (PPG-3 Hydroxyethyl Soyamide)	7.00
Phospholipid CDM (Coco PG-Dimonium Chloride Phosphate)	1.00
Triclosan	0.25
Monateric CLV (Disodium Cocoamphodiacetate)	2.50
Fragrance	2.00
Sodium Stearate	6.00
Water	24.75

Procedure:

Heat the Promidium SY, Propylene Glycol and the Carbowax 1540 to 70-75C. Add the Triclosan. Mix. Add the fragrance, Phospholipid CDM and Monateric stirring slowly. Add the Sodium Stearate, when melted, stir and add water slowly. Discontinue heating. Cool, fill warm.
Formula F-851

SOURCE: Mona Industries, Inc.: Formulas F-850 and F-851

Promidium Deodorant Stick

The following deodorant stick applies smoothly and leaves you feeling fresh and confident all day long.

<u>Ingredient:</u>	<u>Wt%</u>
Propylene glycol	60.00
PEG-32	6.00
Triclosan	0.20
Promidium CO (PPG-2 Hydroxyethyl Cocamide)	7.00
Water	15.30
Monateric CLV (Disodium Cocoamphodiacetate)	2.50
Fragrance	2.00
Sodium Stearate	7.00

Procedure:

Heat the Promidium CO, Propylene Glycol and the PEG-32 to 70-75C. Add the Triclosan. Mix. Add the fragrance and Monateric, stirring slowly. Add the Sodium Stearate. When melted, add water slowly. Discontinue heating. Cool, fill warm.

SOURCE: Mona Industries, Inc.: Formula F-852

Antiperspirant Stick

<u>Ingredients/CTFA Name:</u>	<u>Wt%</u>
Part A:	
Stearyl Alcohol	20.00
Schercemol BE/Behenyl Erucate	10.00
Schercemol DIS/Diisopropyl Sebacate	15.00
DC 344 Fluid/Cyclomethicone	15.00
Schercemol PGMS/Propylene Glycol Stearate	10.00
Part B:	
Cornstarch	10.00
Rezal 36 GP/Aluminum Zirconium Tetrachlorohydrate GLY	20.00

Procedure:

Heat and melt Part A (60-65C) until homogeneous. Add Part B. Mix well. Cast into molds.

SOURCE: Scher Chemicals, Inc.: Formula SK 152