

Section VI

Hair Care Products

Alcohol-Free No Voc Hair Spray Formulation

A commercially-proven medium-hold no-voc pump formulation for the rapidly emerging alcohol-free hair spray arena. This non-flaking formulation will not dry out the hair like conventional hair sprays and is ultra-environmentally friendly.

<u>Ingredients:</u>	<u>Wt%</u>
Water	84.46
AMP Regular	0.99
50% Acrylates Copolymer	14.00
Monawet MQ-70R	0.30
Glycerin	0.25

AMP=Aminomethylpropanol
Acrylates Copolymer=Balance O/55

Procedure:

Combine ingredients in order shown with mild agitation. Add fragrance and preservative. Package in pump hair spray container.

Typical Properties:

pH: 8.5
Viscosity: 8 cps
Appearance: Clear

SOURCE: Mona Industries, Inc.: Formula F-833

Hair Pomade

<u>Ingredients/CTFA Name:</u>	<u>Wt%</u>
Petrolatum	66.2
Schercemol DID/Diisopropyl Dimer Dilinoleate	20.0
Schercemol BE/Behenyl Erucate	9.0
Cetyl Alcohol	4.2
Propylparaben	0.1
Fragrance	0.5
Colors	q.s.

Procedure:

Heat all ingredients gently in a water bath or hot plate to 65C. Gently mix to 50C. Pour into containers.

SOURCE: Scher Chemicals, Inc.: Formula SK 141

Apricot Hair Conditioner

<u>Ingredients/CTFA Name:</u>	<u>Wt%</u>
Schercoquat APAS (90%)/Apricotamidopropyl Ethyldimonium Ethosulfate	3.0
Cetyl Alcohol	2.0
Schercomid AME (70%)/Acetamide MEA	6.0
Schercemol GMIS/Glyceryl Monoisostearate	4.0
Herbasol Extract Apricot	0.5
Preservative	0.2
Color, Fragrance	q.s.
Water	84.3

Procedure:

Blend and heat to 70C Schercoquat APAS, Cetyl Alcohol, Schercomid AME and Schercemol GMIS.
 Slowly add water at 70C to the blend and mix until uniform.
 Add extract, preservative and fragrance and mix until uniform.
 Formula SK 146

Wheat Germ Hair Conditioner

<u>Ingredients/CTFA Name:</u>	<u>Wt%</u>
Schercoquat WOAS (90%)/Wheat Germ Amidopropyl Ethyl-dimonium Ethosulfate	1.0
Schercemol PEG 400 DS/PEG 8 Distearate	4.0
Cetyl Alcohol	2.0
Schercomid AME (70%)/Acetamide MEA	6.0
Schercemol GMIS/Glyceryl Isostearate	4.0
Herbasol Extract Wheat Germ/Wheat Germ Extract	0.5
Preservative	0.2
Color, Fragrance	q.s.
Water	82.3

Procedure:

1. Blend and heat to 70C Schercoquat WOAS, Schercemol PEG 400 DS, Cetyl Alcohol, Schercomid AME and Schercemol GMIS.
 2. Slowly add water at 70C to the blend and mix until uniform.
 3. Add extract, preservative & fragrance & mix until uniform.
- Formula SK 149

SOURCE: Scher Chemicals, Inc.: Formulas SK 146 and SK 149

Balsam Conditioner

<u>Raw Materials:</u>	<u>Wt%</u>
Mackine 301 (Stearamidopropyl Dimethylamine)	1.6
Cetyl Alcohol	1.8
Phosphoric Acid (85%)	0.9
Sodium Chloride	0.3
Mackstat DM (DMDM Hydantoin)	qs
Balsam of Peru	qs
Water, Dye	qs to 100.0

Procedure:

1. Add first four components to water.
2. Heat to 70C.
3. Blend until homogeneous.
4. Cool to 45C and add Mackstat DM and Balsam of Peru.
5. Cool to room temperature.

Clear Conditioner with Wheat Germ Cationic

<u>Raw Materials:</u>	<u>Wt%</u>
Mackalene 716 (Wheatgermamidopropyl Dimethylamine Lactate)	1.0
Hydroxyethylcellulose	1.0
Mackstat DM (DMDM Hydantoin)	qs
Water, Dye, Fragrance	qs to 100.0

Procedure:

1. Completely disperse Hydroxyethylcellulose in cold water.
2. Heat to 45C and add Mackalene 716.
3. Adjust pH to 5.0 with Lactic Acid.
4. Blend until clear.
5. Add remaining components.
6. Cool to room temperature.

Clear Leave-On Conditioner

<u>Raw Materials:</u>	<u>Wt%</u>
Mackalene 426 (Isostearamidopropyl Morpholine Lactate)	6.0
Hydroxyethylcellulose	1.0
Mackstat DM (DMDM Hydantoin)	qs
D.I. Water, Dye, Fragrance	qs to 100.0

Procedure:

1. Completely disperse Hydroxyethylcellulose in cold water.
2. Add Mackalene 426.
3. Blend until clear.
4. Heat to 40C.
5. Add remaining components.
6. Cool to room temperature.

SOURCE: McIntyre Group Ltd.: Personal Care Formulary: Formulas

Clear Conditioner for Daily Use

This light rinse-off clear conditioner contains SME253 which is a 20% Trimethylsilylamodimethicone micro emulsion with particle size less than 20nm. It has been designed for global markets. All components of SME253 comply with regulations related to personal care products in the U.S., European Union, Canada and China. This formulation remains clear upon adding SME253 with excellent conditioning effects which are soft, smooth, and silky feel.

<u>Ingredient/Function:</u>	<u>Wt%</u>
Part A:	
Deionized Water/Diluent	90.15
Hydroxyethylcellulose/Thickener	1.50
Glycerin/Humectant	2.00
Methylparaben/Preservative	0.20
Propylparaben/Preservative	0.10
Part B:	
Cetrimonium Chloride (28-30%)/Conditioner	3.00
Methylchloroisothiazolinone (and) Methylisothiazolinone(1)/Preservative	0.05
Trimethylsilylamodimethicone (and) C11-15 Pareth-7 (and) C12-16 Pareth-9 (and) Glycerin (and) Trideceth-12(SME253)(2)/Conditioner	3.00

Procedure:

1. Heat water, glycerin, methylparaben, propylparaben at 65C. Slowly add Hydroxyethylcellulose and mix until uniform.
2. Cool the batch down to 45C and add Part B as the order listed.

Daily Use Conditioner for Normal to Dry Hair

<u>Ingredients/Function:</u>	<u>Wt%</u>
Water/Diluent	86.00
Dimethiconol(SM2765)(1)/Conditioning agent	5.00
Quaternium-27/Antistatic agent and conditioner	3.30
Stearyl Alcohol/Emulsifier	3.00
Glyceryl Stearate/Thickener	1.50
Propylene Glycol/Humectant	1.00
Germaben II/Preservative	0.20

Procedure:

1. Melt together Glyceryl Stearate and Stearyl Alcohol.
2. Separately combine Water, Quaternium-27, Propylene Glycol and Germaben II with moderate propeller agitation. Heat to 65C.
3. When both phases are at the same temperature, add wax phase to aqueous phase with rapid agitation for approximately 5 minutes. Remove heat and reduce stir speed to moderate. Continue mixing.
4. Add dimethiconol emulsion under 45C and continue stirring until cool.

SOURCE: GE Silicones: Formulas CP 113 and CP 116

Conditioner for Dry/Damaged Hair with SM2101

This conditioner is designed for daily use on dry/damaged hair. SM2101 is an effective conditioner for hard-to-condition hair due to its high level of substantivity, yet is readily removed and does not result in build-up.

<u>Ingredient/Function:</u>	<u>Wt%</u>
Part A:	
Deionized Water/Diluent	76.40
Propylparaben/Preservative	0.10
Methylparaben/Preservative	0.20
Part B:	
Behentrimonium Methosulfate (and) Cetearyl Alcohol(1)/ Conditioner/Emulsifier	2.70
Pentaerythrityl Tetrastearate(2)/Thickener	1.50
Cetyl Alcohol/Refatting agent/Emulsifier	2.30
Stearamidopropyl Dimethylamine/Conditioner	2.50
Part C:	
Trimethylsilylamodimethicone (and) Isolaureth-6 (and) Octoxynol-40 (SM2101)(3)/Conditioner	5.00
FD&C Yellow No. 5 (1.0% solution)/Color	0.30
Part D:	
Polysorbate-80/Emulsifier/Solubilizer	1.50
Glycerin/Humectant	2.75
Fragrance (4)	0.50
Tocopherol/Vitamin E/Antioxidant	0.05
Part E:	
Cyclomethicone (SF1204)(3)/Wet combing	4.20

Procedure:

1. Dissolve parabens in water and heat with moderate propeller agitation to 65C.
2. Melt together Part B ingredients and add to the water phase. Remove heat and continue stirring 15-20 minutes.
3. Mix together Part C and add to Part AB. Stir approximately 15 minutes.
4. Mix together Part D; add to batch below 40C with moderate stirring for 15 minutes. Add SF1204 cyclomethicone and continue stirring for an additional 10-15 minutes.

Trade Names/Suppliers:

- (1) Incroquat Behenyl TMS, Croda, Inc.
- (2) Crothix, Croda, Inc.
- (3) GE Silicones
- (4) Fragrance J-6636, Bell Fragrances & Flavors

SOURCE: GE Silicones: Personal Care Formulary: Formula CP 102

Conditioning Color Sealant for Temporary Hair Dyes

SM2115 is a microemulsion of an amine functionalized silicone polymer of high amine content. Due to its small particle size and high amine content, it is extremely substantive to hair and provides intensive conditioning. In addition, SM2115 acts as a color sealant, providing protection against wash-out of temporary dyes.

<u>Ingredient/Function:</u>	<u>Wt%</u>
Part A:	
Deionized Water/Diluent	88.10
Quaternium-15/Preservative	0.20
Stearamidopropyl Dimethylamine/Conditioner	0.50
Acetic Acid/pH adjuster	0.19
Sodium Acetate/Buffer	0.11
Part B:	
Fragrance	0.75
Octoxynol-40/Surfactant	0.85
Isolaureth-6/Surfactant	1.96
Glycerin/Humectant	1.09
Part C:	
Trimethylsilylamodimethicone (and) Octoxynol-40 (and) Isolaureth-6 (and) Glycerin (SM2115) (1)/Color sealant/Conditioner	6.25

Procedure:

1. Combine Part A with moderate propeller agitation and heat to 60C. Continue stirring for 15 minutes. Remove from heat.
2. Combine Part B ingredients and add to Part A with moderate propeller agitation.
3. Slowly add Part C to Part AB and continue mixing 15 minutes.

Trade Names/Suppliers:

(1) GE Silicones
Formula CP 112

Cuticle Coat with Enhanced Shine

An excellent leave-in conditioner similar to the cuticle coat formulation CP 106, with the addition of SF1550 to enhance shine.

<u>Ingredient/Function:</u>	<u>Wt%</u>
Cyclopentasiloxane (and) Dimethicone (SF1214)(1)/Conditioning	60.0
Phenyl Trimethicone (SF1550) (1)/Shine	30.0
Isohexadecane/Carrier/Dry time	10.0
Fragrance	q.s.

Procedure:

1. Mix together SF1214 and isohexadecane until uniform.
2. Slowly add SF1550 to isohexadecane mixture and continue mixing for 15 minutes.
3. Add fragrance and color as desired, stirring well.

Trade Names/Suppliers: (1) GE Silicones

Formula CP107

SOURCE: GE Silicones: Personal Care Formulary: Formulations

Conditioning Pretreatment for Chemical Processing

SM2115 is a microemulsion of an amine functionalized silicone polymer with a high amine content. It is extremely substantive to hair and provides conditioning which is substantive through chemical processing, making this product an ideal pretreatment for perms, dyes, bleaching, and relaxers. Hair feels soft, conditioned and less damaged even after chemical processing.

<u>Ingredient/Function:</u>	<u>Wt%</u>
Part A:	
Deionized Water/Diluent	85.10
Quaternium-15/Preservative	0.20
Acetic Acid/pH adjustment	0.19
Sodium Acetate/Buffer	0.11
Part B:	
Fragrance	0.50
Octoxynol-40/Surfactant	0.85
Isolaureth-6/Surfactant	1.96
Glycerin/Humectant	1.09
Part C:	
Trimethylsilylamodimethicone (and) Octoxynol-40 (and) Isolaureth-6 (and) Glycerin (SM2115)/Conditioner	10.00

Procedure:

1. Combine Part A with moderate propeller agitation and heat to 60C. Continue stirring for 15 minutes. Remove from heat.
 2. Combine Part B ingredients and add to Part A with moderate propeller agitation.
 3. Slowly add Part C to Part AB and continue mixing 15 minutes.
- Formula CP 111

Hair Gloss Spray

A leave-in conditioner which can be sprayed onto the hair and used throughout the day to provide shine and conditioning. SF1550 provides gloss and sheen to the hair, while SF1202 makes the product fast-drying without an oily residue.

<u>Ingredient/Function:</u>	<u>Wt%</u>
Phenyl Trimethicone (SF1550)(1)/Shine/Conditioning	10.0
Cyclopentasiloxane (SF1202)(1)/Fast dry/Conditioning	90.0
Color	q.s.
Fragrance	q.s.

Procedure:

1. Mix together SF1550 and SF1202 until uniform.
2. Add color and fragrance as desired with stirring.

Trade Names/Suppliers:

(1) GE Silicones

Formula CP108

SOURCE: GE Silicones: Personal Care Formulary

Cream Hair Conditioner

<u>Raw Materials:</u>	<u>Wt%</u>
Part A:	
Oleyl Alcohol	10.0
Cetyl Alcohol	2.5
Mackester SP (Glycol Stearate (and) Stearamide MEA)	3.0
BHA	0.1
Propylparaben	0.1
Part B:	
Mackalene 316 (Stearamidopropyl Dimethylamine Lactate)	25.0
Mackstat DM (DMDM Hydantoin)	qs
Water, Dye, Fragrance	qs to 100.0

Procedure:

1. Heat Part A components to 70C.
2. Add Mackalene 316 to water and heat to 70C.
3. Add Part A to Part B and with continuous blending, cool to 45C
4. Add remaining components.
5. Cool to room temperature.

Conditioner and Setting Lotion

<u>Raw Materials:</u>	<u>Wt%</u>
Mackalene 316 (Stearamidopropyl Dimethylamine Lactate)	4.0
Gafquat 755	8.0
Cetyl Alcohol	0.5
Mackstat DM (DMDM Hydantoin)	qs
Water, Dye, Fragrance	qs to 100.0

Procedure:

1. Completely disperse Gafquat 755 in water.
2. Add Mackalene 316 and Cetyl Alcohol.
3. Heat to 70C.
4. Blend until completely homogeneous.
5. Cool to 45C and add remaining components.
6. Cool to room temperature.

Curl Conditioner and Oil Sheen

<u>Raw Materials:</u>	<u>Wt%</u>
Glycerine	47.0
Propylene Glycol	3.0
Mackpro NLP (Quaternium-79 Hydrolyzed Collagen)	4.0
Mackanate DC-30 (Disodium Dimethicone Copolyol Sulfosuccinate)	3.0
Mackstat DM (DMDM Hydantoin)	qs
D.I. Water	qs to 100.0

Procedure:

1. Add components in order.
2. Blend until clear.

SOURCE: McIntyre Group Ltd.: Personal Care Formulary: Formulas

Cream Rinse

<u>Recipe:</u>	<u>Wt%</u>
A Genamin KDMP/Behentrimonium Chloride	2.00
Hostaphat KL 340 N/Trilaureth-4 Phosphate	1.50
Cetyl alcohol	2.00
Mineral oil, high viscosity	2.00
B Water	92.70
Preservative	q.s.
C Fragrance	0.30
Dyestuff solution	q.s.
D Citric acid-->pH 4.0	q.s.

Procedure:

1. Melt A at approx. 75C.
2. Heat B to approx. 75C.
3. Stir 2 into 1.
4. Stir until cool.
5. At approx. 35C add the components of C to 4.
6. Finally adjust the pH with D.

Formula B II/1055

Cream Rinse

<u>Recipe:</u>	<u>Wt%</u>
A Genamin CTAC/Cetrimonium Chloride	6.00
Hostaphat KML/Laureth-4 Phosphate, Polyglyceryl-2 Sesquiosostearate	1.20
Cetylstearyl alcohol	3.00
Mineral oil	1.00
B Water	88.20
Preservative	q.s.
C Fragrance	0.30
Panthenol	0.30
Dyestuff solution	q.s.
D Citric acid-->pH 4.0	q.s.

Procedure:

1. Melt A at approx. 75C.
2. Heat B to approx. 75C.
3. Add 2 under stirring to 1. Stir until cool.
5. At approx. 35C add the components of C.
6. Adjust the pH with D.

Formula B II/1067

SOURCE: Hoechst Aktiengesellschaft: Guide Recipes

Cream Rinse

<u>Recipe:</u>	<u>Wt%</u>
A Genamin EQ/Distearoylethyl Dimonium Chloride	2.00
Hostacerin DGSE/PEG-4 Polyglyceryl-2 Stearate	1.20
Hostacerin DGI/Polyglyceryl-2 Sesquiisostearate	1.00
Cetyl alcohol	1.80
Almond oil	1.00
B Tylose H 10000/Hydroxyethylcellulose	0.20
C Water	91.80
D Fragrance	0.30
Panthenol	0.50
Extrapon Henna	0.20
Preservative	q.s.
Dyestuff solution	q.s.
E Citric acid-->pH 4.0	q.s.

Procedure:

1. Melt A at approx. 75C.
 2. Stir B into C, heat it to approx. 75C.
 3. Add 2 under stirring to 1.
 4. Stir until cool.
 5. At approx. 35C add the components of D.
 6. Adjust the pH with E.
- Formula B II/1063

Cream Rinse

<u>Recipe:</u>	<u>Wt%</u>
A Genamin STACP/Steartrimonium Chloride	1.50
Genamin CTAC/Cetrimonium Chloride	1.00
Hostacerin DGSE/PEG-4 Polyglyceryl-2 Stearate	1.20
Cetylstearyl alcohol	2.50
B Tylose H 10000/Hydroxyethylcellulose	0.50
C Water	92.20
D Fragrance	0.30
Panthenol	0.30
Extrapon Henna	0.50
Preservative	q.s.
Dyestuff solution	q.s.
E Citric acid-->pH 4.0	q.s.

Procedure:

1. Melt A at approx. 75C.
 2. Stir B into C, heat to approx. 75C.
 3. Add 2 under stirring to 1. Stir until cool.
 4. at approx. 35C add the components of D.
 5. Adjust the pH with E.
- Formula B II/1066

SOURCE: Hoechst Aktiengesellschaft: Guide Recipes

Cream Rinse Conditioner

This cream rinse formula features Crodafos CES, a conditioning and emulsifying system from Croda, together with a cationic conditioner, Incroquat CTC-30. By its ability to promote fast release of oils and conditioning agents to the hair and its compatibility with quaternary conditioners, Crodafos CES enables this cream rinse to provide enhanced conditioning effects. Increased sheen, silkier, softer feel, and improved texture. The product rinses out extremely easily without incidence of drag or a waxy deposit.

Ingredients:Weight%**Part A:**

Crodafos CES (Cetearyl Alcohol (and) Cetearyl Phosphate)	6.0
Crodacol CS-50 (Cetearyl Alcohol)	1.5
Super Refined Wheat Germ Oil (Wheat Germ Oil)	2.0
Crodamol OS (Octyl Stearate)	2.0
Crodamol OPG (Octyl Pelargonate)	2.0

Part B:

Deionized Water	83.65
Incroquat CTC-30 (Cetrimonium Chloride)	1.50
TEA 99%	0.35

Part C:

Propylene Glycol (and) Diazolidinyl Urea (and) Methyl Paraben (and) Propyl Paraben	1.00
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pH=5.5+-0.5

Viscosity=18,500cps+-10% (Spindle TD @ 10 RPM @ 25C)

Procedure:

Combine ingredients of Part A with mixing and heat to 75-80C. Combine ingredients of Part B with mixing and heat to 75-80C. Add Part B to Part A with mixing and cool to 50C. Add Part C while mixing and cool to desired fill temperature.

N.A.T.C. Approved

SOURCE: Croda Inc.: Formulation HP-181

Daily Protection Spray

Designed for use on damp hair after showering, at the beach or by the poolside, this Daily Protection Spray contains a trio of ingredients that can protect hair from sun damage or blow-dryer burnout. Crodasone W is a heat-activated protein/silicone copolymer and provides thermal protection that helps prevent hair from becoming heat-damaged by styling appliances. Incroquat UV-283 guards against UVB damage caused by the sun. Hydrosesame AA provides moisturizing benefits throughout the day.

<u>Ingredients:</u>	<u>Wt%</u>
Part A:	
Deionized Water	94.0
Crodasone W (Hydrolyzed Wheat Protein Hydroxypropyl Polysiloxane)	1.0
TEA	q.s.
Crovol PK-70 (PEG-45 Palm Kernel Glycerides)	2.0
Part B:	
Hydrosesame AA (Sesame Seed Amino Acids)	1.0
Incroquat UV-283 (Cinnamidopropyltrimonium Chloride)	1.0
Part C:	
Propylene Glycol (and) Diazolidinyl Urea (and) Methyl Paraben (and) Propyl Paraben/Germaben II	1.0
pH: 4.6+-0.5	

Procedure:

Combine first two ingredients of Part A with mixing. Continue mixing and add TEA until pH is 5.5, at which point mixture will become clear. Add remaining ingredient of Part A and mix well. Add ingredients of Part B individually with mixing. When uniform add Part C and mix until ready to fill.

Formula HP-202

Leave-On Detangling Spray

This formula is an easy cold-mix system and is designed to highlight the detangling effects and wet combing properties of Incroquat Erucyl HE. Hydrotritricum WAA is used to moisturize the hair, and the copolyol, to add shine.

<u>Ingredients:</u>	<u>Wt%</u>
Deionized Water	94.5
Incroquat Erucyl HE (Hydroxyethyl Erucamidopropyl Dimonium Chloride)	3.0
Hydrotritricum WAA (Wheat Amino Acids)	1.0
Dimethicone Copolyol/D.C. Surfactant 193	0.5
Propylene Glycol (and) Diazolidinyl Urea (and) Methyl Paraben (and) Propyl Paraben/Germaben II	1.0
pH: 5.6+-0.5	

Procedure:

Combine ingredients in order given and mix until clear and uniform. Fill.

Formulation HP-200

SOURCE: Croda, Inc.: Suggested Formulations

Deep Conditioning Curl Enhancing Spray

<u>Ingredients/CTFA Name:</u>	<u>Wt%</u>
A) SDA 40 Alcohol	25.00
Herbasol Extract Chamomile/Chamomile Extract	5.00
Schercoquat DAS/Quaternium 61	1.00
Schercoquat IAS/Isostearamidopropyl Ethyldimonium Ethosulfate	1.00
Dow Corning 193 Surfactant/Dimethicone Copolyol	1.50
Germall 115	0.20
Fragrance	q.s.
B) Water, distilled or deionized	66.30

Procedure:

1. Disperse each ingredient in Part A in alcohol, one at a time, stirring until clear after each addition.

2. Add water.

Formula SK 153

Oil Free Clear Hair Conditioner

<u>Ingredients/CTFA Name:</u>	<u>Wt%</u>
Schercomid AME-70/Acetamide MEA	10.0
Arlasolve 200/Isoceteth-20	3.0
Schercoquat 21AP/Bis Isostearamidopropyl Hydroxypropyl Diammonium	1.0
PEG-400/PEG-8	3.0
Water	82.5
Fragrance	0.1
Glycolic Acid (70% Tech)	0.4
Preservative	qs

Procedure:

1. Heat water to 40-50C. With stirring, add Schercoquat 21AP until it is dissolved.

2. With continuous agitation, add Schercomid AME-70, Arlasolve 200, and PEG-400.

3. Adjust pH if necessary to 4.5 with Glycolic Acid.

4. QS with fragrance and preservative.

Formula SK 154

SOURCE: Scher Chemicals, Inc.: Formulas SK 153 and SK 154

Easy to Manufacture Creme Rinse

<u>Raw Materials:</u>	<u>Wt%</u>
Mackadet CBC (Cetyl Alcohol (and) Stearyl Alcohol (and) Stearalkonium Chloride (and) Dimethyl Stearamine (and) Lactic Acid)	4.0-6.0
Potassium Chloride	qs
Paragon III (Phenoxyethanol (and) DMDM Hydantoin (and) Methylparaben (and) Propylparaben)	qs
Water, Dye, Fragrance	qs to 100.0

Procedure:

1. Heat water to 70C.
2. Add Mackadet CBC and mix until completely dispersed.
3. Adjust pH as needed with Citric Acid.
4. Cool to 50C and add Paragon III, Dye and Fragrance.
5. Adjust viscosity with Potassium Chloride if necessary.
6. Cool and fill.

Spray Detangler for Children

<u>Raw Materials:</u>	<u>Wt%</u>
Mackpro WLW (Wheatgermamidopropyl Hydroxypropyl Dimonium Hydrolyzed Wheat Protein)	1.0
Mackalene 426 (Isostearamidopropyl Morpholine Lactate)	3.0
Mackstat DM (DMDM Hydantoin)	qs
Water, Dye, Fragrance	qs to 100.0

Procedure:

1. Add components to water.
2. Heat to 40C and blend until clear.

Natural Lipid Styling Mousse

<u>Raw Materials:</u>	<u>Wt%</u>
PVP/VA E335	4.5
SDA 40 Alcohol	21.5
Mackpro NLP (Quaternium-79 Hydrolyzed Collagen)	4.0
D.I. Water, Dye, Fragrance	qs to 100.0

Procedure:

1. Combine components and blend until clear.
2. Pressurize with suitable propellant.

SOURCE: McIntyre Group Ltd.: Personal Care Formulary: Formulas

Hair Balm with Repair Effect

<u>Raw Materials:</u>	<u>Wt%</u>
A. Softisan 601	18
Maripal 1618/25 (Cetareth-25)	5
Softisan 645	5
Mineral Oil	6
Castor Oil	3
Aloe Vera Lipo Quinon	1
B. Glycerol	5
Propylene Glycol	3
Preservative	q.s.
Water ad	100
C. Extrapon Phytostimulin Spezial	3
Placenta liquid, water soluble	3
D. Fragrance	q.s.

Preparation:

A is heated to about 75C. B is brought to the same temperature and emulsified into A. C is added at about 30C.

Hair Fixative

<u>Raw Materials:</u>	<u>Wt%</u>
Softigen 767	1.5
Luviskol VA 64 (PVA-VA Copolymer)	2
Isopropanol or Ethyl Alcohol	38
Lactic acid	1
Fragrance	q.s.
Water ad	100

Preparation:

All ingredients are mixed and stirred homogeneously.

SOURCE: Huls Aktiengesellschaft: Suggested Formulations

Hair Conditioner for Damaged Hair

SM2115 is a substantive amine functional emulsion, 20% active, which is particularly good for damaged, chemically processed or hard-to-condition hair. At low levels, it can be used in daily use products, providing softness, shine and body. Build-up is a concern at higher levels.

<u>Ingredient/Function:</u>	<u>Wt%</u>
Part A:	
Ceteareth-20/Emulsifier	1.0
Stearyl Alcohol/Refatting agent/Emulsifier/Thickener	2.0
Stearamidopropyl Dimethylamine/Conditioner	0.8
Quaternium-18/Conditioner	1.4
Cyclomethicone (SF1202)(1)/Wet-combing/Quick dry time	3.0
Part B:	
Water	89.7
Part C:	
Trimethylsilylamodimethicone (and) Octoxynol-40 (and) Isolaureth-6 (and) Glycerin (SM2115)(1)/Conditioner/ Shine	2.0
Methylchloroisothiazolinone (and) Methylisothiazolinone (2)/Preservative	0.1

Procedure:

1. Preheat Part A to 75C.
2. Preheat the water in Part B, to 75C.
3. Add Part B to Part A with moderate agitation.
4. Cool with agitation to 40 to 50C.
5. Blend in SM2115.
6. Blend in the preservative.
7. Cool to room temperature.

Trade Names/Suppliers:

- (1) GE Silicones
- (2) Kathon, Rohm and Haas

SOURCE: GE Silicones: Personal Care Formulary: Formula CP 101

Hair Conditioner for Superior Body

SF1214 is a blend of cyclopentasiloxane and high molecular weight dimethicone. It provides wet combing plus imparts body, softness and shine. The high molecular weight dimethicone smooths damaged, split ends.

<u>Ingredient/Function:</u>	<u>Wt%</u>
Part A:	
Ceteareth-20/Emulsifier	0.5
Steareth-20/Emulsifier	0.5
Stearyl Alcohol/Refatting agent/Emulsifier/Thickener	2.0
Stearamidopropyl Dimethylamine/Conditioner	0.8
Dicetyldimonium Chloride/Conditioner	1.5
Part B:	
Water	92.6
Hydroxyethylcellulose (1)/Thickener	0.5
Part C:	
Dimethicone (and) Cyclopentasiloxane (SF1214)(2)/ Conditioner	1.5
Methylchloroisothiazolinone (and) Methylisothiaz- olinone (3)/Preservative	0.1

Procedure:

1. Mix together Part A. Preheat to 75C.
2. Separately mix together the water and the hydroxyethylcellulose. When the hydroxyethylcellulose is dissolved, preheat to 75C.
3. Add Part B to Part A with moderate agitation.
4. Cool with agitation to 60 to 65C.
5. Blend in the SF1214.
6. Cool to 40 to 50C and add the preservative.
7. Cool to room temperature.

Comments:

For thin, straight hair, use only 1% dicetyldimonium chloride. Increase the stearyl alcohol wt% for a thicker system.

Trade Names/Suppliers:

- (1) Natrosol 250 HHR, Aqualon
- (2) GE Silicones
- (3) Kathon, Rohm and Haas

SOURCE: GE Silicones: Personal Care Formulary: Formula CP 100

**Hair Conditioner with Moisturizers and Quaternium-79
Hydrolyzed Collagen**

<u>Raw Materials:</u>	<u>Wt%</u>
Cetearyl Alcohol	3.0
Mackernium SDC-85 (Stearalkonium Chloride)	3.0
Propylene Glycol	1.0
Glycerin	1.0
Mackamide AME-100 (Acetamide MEA)	1.0
Mineral Oil	1.0
Mackpro NLP (Quaternium-79 Hydrolyzed Collagen)	2.0
Mackstat DM (DMDM Hydantoin)	qs
D.I. Water, Dye, Fragrance	qs to 100.0

pH: 3.5-4.5

Viscosity (cps 25C): 1500-3000

Procedure:

1. Melt waxes and oils to 70C.
2. Separately heat water plus Mackpro NLP to 70C.
3. Add hot water solution to hot waxes and oils.
4. Start stirring vigorously for 10 minutes. Then start slow cooling while mixing.
5. At 40C, add Mackstat DM then Dye and Fragrance; slow mixing down close to room temperature and stop mixing at 30C.
6. Adjust pH to 3.5-4.5 with Citric Acid.

Natural Lipid Conditioner for Professional Salon

<u>Raw Materials:</u>	<u>Wt%</u>
Mackernium SDC-85 (Stearalkonium Chloride)	1.5
Mackalene NLC (Oleamidopropyl Dimethylamine Lactate (and) Palmitamidopropyl Dimethylamine Lactate (and) Palmitoleamidopropyl Dimethylamine Lactate)	1.0
Mackpro NLP (Quaternium-79 Hydrolyzed Collagen)	2.0
Cetearyl Alcohol	1.8
Steareth-2	1.8
Mackstat DM (DMDM Hydantoin)	qs
Water, Dye, Fragrance	qs to 100.0

Procedure:

1. Add first five components to water.
2. Heat to 70C.
3. Cool to 45C and add remaining components.

SOURCE: McIntyre Group Ltd.: Personal Care Formulary: Formulas

Hair Defining Complex

Styling aid and anti-frizz oil-in-water/water-in-oil emulsion containing Bentone Gel M10 rheological additive.

<u>Ingredients:</u>	<u>Wt%</u>
Polyvinylpyrrolidone Vinyl Acetate Copolymer	2.0
Cetearyl Alcohol, Behenyl Trimonium Methosulphate	4.0
Cyclomethicone, Dimethiconol	10.0
Glycerin 99.5%	4.0
Perfume	0.3
Methyldibromoglutaronitrile	0.2
and Propylene Glycol	0.4
Bentone Gel M10	1.0
Sodium Hydroxide	qs to pH 5.5
DeminerIALIZED Water	Bal to 100%

Method of Manufacture:

1. Heat the Bentone Gel M10 and Cetearyl Alcohol, Behenyl Trimonium Methosulphate to 75-80C.
2. In a separate vessel, heat the water, glycerine and Polyvinylpyrrolidone Vinyl Acetate Copolymer to 75-80C.
3. Add the two phases together with high shear stirring.
4. Add the Cyclomethicone, Dimethiconol.
5. At 50C, transfer to a propeller stirrer and continue to cool.
6. At 30C, add the perfume and preservative.

Applied sparingly to towel-dried, wet, freshly shampooed hair prior to drying, this formulation containing Bentone Gel M10 at 1% provides noticeable benefits. Direct comparisons against the same formulation without the gel reveals enhanced application, curl definition and style management in salon half-head studies. Without the gel the product sits on the wet hair rather than dissipates into it.

SOURCE: Rheox, Inc.: Elementis Specialties: Suggested Formula

Hair Nourishing Treatment

This formula contains a mixture of Croda ingredients, each of which has 'nourishing' effects that help keep hair looking healthy and shiny. Hydrolupin AA is a plant-based amino acid complex that can moisturize hair from within. Cropure Wheat Germ and Solan 50 both add emolliency. Hydrotriticum QM is a substantive wheat protein with enhanced conditioning. Incroquat Behenyl TMS provides dual action, acting as a detangling aid, as well as the emulsifier.

<u>Ingredients:</u>	<u>Wt%</u>
Part A:	
Incroquat Behenyl TMS (Behentrimonium Methosulfate (and) Cetearyl Alcohol)	4.00
Cropure Wheat Germ (Wheat Germ Oil)	1.00
Crodacol C-70 (Cetyl Alcohol)	0.50
Part B:	
Deionized Water	83.40
Propylene Glycol	5.00
Solan 50 (PEG-60 Lanolin)	1.00
Part C:	
Propylene Glycol (and) Diazolidinyl Urea (and) Methyl Paraben (and) Propyl Paraben/Germaben II	1.00
Part D:	
Panthenol/DL-Panthenol Liquid, 50%	2.00
Hydrolupin AA/Lupin Amino Acids	1.00
Hydrotriticum QM (Cocodimonium Hydroxypropyl Hydrolyzed Wheat Protein)	1.00

pH: 6.0+-0.5

Viscosity: 2,530 cps+-10% (RVT Spindle #3 @ 10 rpm)

Procedure:

Combine ingredients of Part A with mixing and heat to 75C. Combine ingredients of Part B with mixing and heat to 75C. Add Part A to Part B with mixing and cool to 50C. Add Part C with mixing and cool to 40C. Add Part D ingredients individually, mixing well. Cool to 25C and adjust pH to 6.0 with a 10% solution of NaOH.

SOURCE: Croda Inc.: BFGoodrich: Formulation HP-203

Hair Pomade

<u>Raw Materials:</u>	<u>Wt%</u>
Witco White Petrolatum	35.0
Ross Microcrystalline Wax 1275WH	21.0
Ross Microcrystalline Wax 1275W	12.0
Ross Microcrystalline Wax 1329/1	12.0
Finetex Finsolv TN	2.5
Penreco Drakeol #7 Mineral Oil	17.5

Mixing Procedures:

Heat the waxes and the petrolatum in a steam jacketed kettle to 230F. In a separate kettle heat the oils to 200F. Next add the oils to the waxes and agitate down to 225F. Continue to agitate at this temperature for at least 30 minutes. (Note: Time of agitation will change as the batch size changes). Next cool the batch to 165F and pour into containers.

Formula #201

Hair Pomade

<u>Raw Materials:</u>	<u>Wt%</u>
Witco Petrolatum	35.0
Ross Microcrystalline Wax 1275WH	21.0
Ross Microcrystalline Wax 1329/1	24.0
Finetex-Finsolv TN	2.5
Penreco Drakeol #7 Mineral Oil	17.5

Procedure:

Melt the first three waxes to 185F in a steam jacketed vessel and add the last two ingredients that have been heated to 140F in a separate vessel to the wax base under agitation. Cool to 158F and package.

Formula No. 153

SOURCE: Frank B. Ross Co., Inc.: Suggested Formulations

Hair Rinse with Dehyquart L 80

<u>Component:</u>	<u>Wt%</u>
I. Dehyquart L80/Dicocoylethyl Hydroxyethylmonium Methosulfate (and) Propylene Glycol	1.3
Lanette O/Cetearyl Alcohol	2.5
Cutina GMS-V/Glyceryl Stearate	0.5
II. Lamesoft PO 65/Coco-Glucoside (and) Glyceryl Oleate	2.0
III. Water	ad 100.0
IV. Preservative	q.s.

Viscosity Brookfield, mPas: 1800

Preparation in the Laboratory:

Melt the components listed under I at 80-85C and stir until homogeneous. Heat the components listed under III (water) to 80-85C and add to phase I while stirring. Stir for 5 minutes at this temperature. Add the components under II (Lamesoft PO 65, room temperature) to the hot emulsion phase while stirring. Allow the emulsion to cool with stirring in such a way that it remains in continual motion. Avoid the incorporation of air. Add at approx. 40C perfume and preservatives.

Formulation No.: 97/197/9

Hair Rinse with Dehyquart L 80

<u>Component:</u>	<u>Wt%</u>
I. Dehyquart L 80/Dicocoylethyl Hydroxyethylmonium Methosulfate (and) Propylene Glycol	2.5
Lanette O/Cetearyl Alcohol	4.0
Cutina GMS-V/Glyceryl Stearate	0.5
II. Lamesoft PO 65/Coco-Glucoside (and) Glyceryl Oleate	2.5
III. Water	ad 100.0
IV. Preservative	q.s.

Viscosity Brookfield, mPas: 9,500

Preparation in the Laboratory:

Melt the components listed under I at 80-85C and stir until homogeneous. Heat the components listed under III (water) to 80-85C and add to phase I while stirring. Stir for 5 minutes at this temperature. Add the components under II (Lamesoft PO 65, room temperature) to the hot emulsion phase while stirring. Allow the emulsion to cool with stirring in such a way that it remains in continual motion. Avoid the incorporation of air. Add at approx. 40C perfume and preservatives.

Formulation No. 97/197/15

SOURCE: Henkel KGaA: Care Chemicals Division: Suggested Formulas

Hair Silt Conditioner

<u>Sequence:</u>	<u>Raw Material/INCI Name:</u>	<u>Wt%</u>
1	Deionized Water	50.75
1	Methylparaben	0.25
1	Hampene Na3T/Tetrasodium EDTA	0.10
2	Lipocol C/Cetyl Alcohol	4.00
2	Lipo GMS-450/Glyceryl Stearate	3.20
2	Emcol 4/Stearylalkonium Chloride	5.00
2	Lipovol A/Avocado Oil	5.00
2	FG-10 Antifoam Emulsion/Simethicone	0.10
3	Liposilt Green/Silt	30.00
4	Eucalyptus Oil	0.20
4	Spearmint Oil RM-110	0.20
4	Peppermint Oil RM-116	0.20
5	Lipamide LMEA/Lactamide MEA	1.00

Procedure:

1. In main kettle combine Sequence #1 ingredients under moderate Lightnin' mixing and heat to 78C.
2. In auxiliary kettle combine Sequence #2 ingredients under moderate Lightnin' mixing and heat to 80C.
3. Add Sequence #2 to Sequence #1 under moderate Lightnin' mixing. Switch to slow sweep as batch thickens and cool to 35C.
4. At 35C, add Sequence #3 to batch under slow sweep mixing.
5. Add premixed Sequence #4 ingredients, being sure it is thoroughly dispersed.
6. Add Sequence #5 to batch and cool to 25C.

SOURCE: Lipo Chemicals Inc.: Formula No. 681

Hair Styling Gel

A light gel with a soft set. Does not contain any alcohol. If a stronger hold is desired, increase the concentration of H2OLD. The concentration of AMP-95 will also need to be increased, although not proportionately. To use, just apply a small amount to towel dried hair and rub in vigorously. Blow dry as usual.

<u>Material:</u>	<u>Wt%</u>
1 Deionized Water	86.74
2 H2OLD EP-1	5.00
3 AMP-95	0.20
4 Lubrajel Oil	1.00
5 Thixotrate	2.00
6 Deionized Water	4.50
7 Germall 115	0.50
8 Fragrance	0.03
9 Polysorbate 80	0.03

Procedure:

1. Disperse item #2 into #1.
2. Add item #3 and mix until clear.
3. Add item #4 and mix for a few minutes before adding item #5.
4. Premix item #7 and #6 and add into gel.
5. Premix item #8 and #9 and add into the gel.

Hair Treatment Gel

This formulation is a clear, light straw colored gel with excellent flow characteristics. It has excellent substantivity and may be used as a wash-off or leave-on conditioner.

<u>Material:</u>	<u>Wt%</u>
A Deionized Water	76.80
B Dowicil 200	0.20
C Ucare Polymer JR-400	2.00
D Polyjel	20.00
E Crotein CAA SF	0.33
F Aminogluten MG	0.33
G Crotein HKP SF	0.33

Procedure:

1. Dissolve components B and C into A by heating to 60-65C with high shear mixing. Continue mixing until the polymer is in solution.
 2. Remove heat and using a paddle blade mixer, add components D, E, F and G.
 3. Cool to less than 30C and add fragrance if desired.
- Formulation #93-086-M

SOURCE: Guardian Laboratories: Suggested Formulations

High Quality Conditioner

<u>Raw Materials:</u>	<u>Wt%</u>
Mackernium SDC-25 (Stearalkonium Chloride)	10.0
Cetearyl Alcohol	2.0
Brij 72	2.0
Mackstat DM (DMDM Hydantoin)	qs
Water, Dye, Fragrance	qs to 100.0

Procedure:

1. Add components to water and heat to 70C.
2. With mild agitation, blend until homogeneous.
3. Cool to 50C and add Dye and Fragrance.
4. Cool to room temperature.

Mild Opaque Conditioner

<u>Raw Materials:</u>	<u>Wt%</u>
Mackalene 326 (Stearamidopropyl Morpholine Lactate)	8.0
Cetyl Alcohol	1.8
Phosphoric Acid	0.6
Sodium Chloride	0.3
Mackstat DM (DMDM Hydantoin)	qs
Water, Dye, Fragrance	qs to 100.0

Procedure:

1. Add first four components to water.
2. Heat to 70C.
3. With continuous stirring, cool to 40C and add Mackstat DM, Dye and Fragrance.

Mild Pearl Conditioner

<u>Raw Materials:</u>	<u>Wt%</u>
Mackalene 326 (Stearamidopropyl Morpholine Lactate)	7.0
PEG 400 Distearate	0.5
Sodium Chloride	0.5
Paragon II (Propylene Glycol (and) DMDM Hydantoin (and) Methylparaben (and) Propylparaben)	qs
Water, Dye, Fragrance	qs to 100.0

Procedure:

1. Add first three components to water.
2. Heat to 65C.
3. With continuous stirring, cool to 40C and add Paragon II, Dye and Fragrance.

SOURCE: McIntyre Group Ltd.: Personal Care Formulary: Formulas

Intensive Conditioner with Microemulsion of Amine Functional Silicones

This rinse-off conditioner contains SME253 which is a 20% Trimethylsilylamodimethicone micro emulsion with particle size less than 20 nm. All components of SME253 comply with regulations related to personal care products in the U.S., European Union, Canada and China. It gives excellent conditioning effects which are soft, smooth, and silky feel.

<u>Ingredient/Function:</u>	<u>Wt%</u>
Part A:	
Deionized water/Diluent	88.85
Hydroxyethylcellulose/Thickener	0.50
Glycerin/Humectant	2.00
Methylparaben/Preservative	0.20
Propylparaben/Preservative	0.10
Part B:	
Cetearyl alcohol (and) Dicapryldimonium Chloride (and) Stearamidopropyl Dimethylamine(1)/Conditioner	3.00
Glyceryl Stearate/Thickener	0.80
Cetyl Alcohol/Thickener	1.50
Part C:	
Methylchloroisothiazolinone (and) Methylisothiazolinone(2)/Preservative	0.05
Trimethylsilylamodimethicone (and) C11-15 Pareth-7 (and) C12-16 Pareth-9 (and) Glycerin (and) Trideceth-12(SME253)(3)/Conditioner	3.00

Procedure:

1. Heat together all ingredients of Part A at 65C.
2. Heat Part B in a separate container and add to Part A when melted.
3. Cool mixtures to 40C and add Part C in the order listed.

Trade Names/Suppliers:

- (1) Varisoft CRC, Witco Corp.
- (2) Kathon CG, Rohm and Haas
- (3) GE Silicones

SOURCE: GE Silicones: Personal Care Formulary: Formula CP114

Intensive Rinse-off Conditioner

Rinse-off conditioner providing deep, intensive conditioning for damaged or hard-to-condition hair. SM2115 is a 20% micro-emulsion of an amine functional silicone fluid with a high amine content. It is very substantive and provides conditioning durable through several shampoos.

<u>Ingredient/Function:</u>	<u>Wt%</u>
Part A:	
Cetearyl Alcohol (and) Dicapryldimonium Chloride (and) Stearamidopropyl Dimethylamine (1)/Conditioning/Static	5.00
Citric Acid/pH adjustment	0.05
Quaternium-15/Preservative	0.10
Water/Diluent	89.85
Part B:	
Trimethylsilylamodimethicone (and) Octoxynol-40 (and) Isolaureth-6 (and) Glycerin (SM2115) (2)/Conditioning agent	5.00
Citric Acid/pH adjustment	q.s.

Procedure:

1. Heat water, citric acid and quaternium-15 to 65C. Slowly add remaining Part A ingredients until completely melted and emulsion forms.
2. Cool to 45-50C and add SM2115. Adjust pH to 4.5 with citric acid.
3. Cool and package.

Trade Names/Suppliers:

- (1) Varisoft CRC, Witco Corp.
 (2) GE Silicones
 Formula CP 109

Cuticle Coat

An excellent leave-in conditioner which can be used throughout the day to provide shine, split end control and overall conditioning. It is applied to the hands and then smoothed through the hair for a soft, silky feel.

<u>Ingredient/Function:</u>	<u>Wt%</u>
Cyclopentasiloxane (and) Dimethicone (SF1214) (1)/Conditioning/Shine	65.0
Isohexadecane/Carrier/Dry time	33.0
Octyl Methoxycinnamate/UV absorber	2.0

Procedure:

1. Dissolve octyl methoxycinnamate in isohexadecane or isohexadecane/SF1173 blend.
2. Slowly add SF1214 to isohexadecane mixture. Mix until homogeneous.

Trade Names/Suppliers: (1) GE Silicones
 Formula CP106

SOURCE: GE Silicones: Personal Care Formulary: Formulations

Leave-on Conditioner with Gluadin WP

<u>Phase:</u>	<u>Component:</u>	<u>Wt%</u>
I.	Sepigel 305 Thickener	3.0
	Polyacrylamide (and) C13-14 Isoparaffin (and) Laureth-7	
	Water, de-ionized	78.2
II.	Glycerin 86%	5.0
	Ethanol	10.0
	Gluadin WQ/Laurdimonium Hydroxypropyl Hydrolyzed Wheat Protein	0.8
	Gluadin WP/Hydrolyzed Wheat Protein	1.5
	Plantacare 1200 UP/Lauryl Glucoside	0.8
	Cetiol J600/Oleyl Erucate	0.5
	Copherol 1250/Tocopherol	0.2

pH-Value: 7.5

Viscosity (mPas), Brookfield RVF: 6,150

Preparations in the Laboratory:

1. Mix components listed under phase I till homogeneous.
2. Add ingredients of phase II one by one and stir till homogeneous.
3. Finish if necessary with adding the preservative and adjust pH-value.

Formulation No. DE/97/030/16

Sprayable Hair Milk

<u>Component:</u>	<u>Wt%</u>
Dehyquart L 80/Dicocoylethyl Hydroxyethylmonium Methosulfate (and) Propylene Glycol	2.0
Lamesoft PO 65/Coco-Glucoside (and) Glyceryl Oleate	2.0
Water	ad 100
Preservatives	q.s.

pH Value: 3.5

Preparation in the Laboratory:

Mix the ingredients at room temperature.

Formulation No.: 97/203/4

SOURCE: Henkel KGaA: Care Chemicals Division: Suggested Formulas

Leave-on with Gluadin WQ

<u>Component:</u>	<u>Wt%</u>
I. Sepigel 305 Thickener	3
Polyacrylamide (and) C13-14 Isoparaffin (and)	
Laureth-7	1
Comperlan KD/Cocamide DEA	5
Glycerine 86%	76
II. Water, de-ionized	0.5
Plantacare 1200 UP/Lauryl Glucoside	0.5
Cetiol J600/Oleyl Erucate	0.2
Copherol 1250/Tocopherol	3
III. Gluadin Almond/Hydrolyzed Sweet Almond Protein	0.8
Gluadin WQ/Laurdimonium Hydroxypropyl Hydrolyzed	
Wheat Protein	10
IV. Ethanol	q.s.
Perfume	q.s.
Preservative	

pH-value: 7

Viscosity (mPas)/Brookfield RVT, 23C, spindle 4, 10 rpm: 3200

Preparations in the Laboratory:

Mix slowly the Phase I to obtain an homogeneous phase.

Under stirring, add slowly the Phase II.

Add the Phase III.

Formulation DE/96/099/4

Conditioner with Dehyquart L80

<u>Component:</u>	<u>Wt%</u>
I. Dehyquart L80	1.3
Lanette O/Cetearyl Alcohol	3.5
Monomuls 60-35C Powder/Hydrogenated Palm Glycerides	1.0
Eumulgin B2 Flakes/Ceteareth-20	0.8
II. Water, de-ionized/preservative	ad 100
III. Gluadin WQ/Laurdimonium Hydroxypropyl Hydrolyzed	
Wheat Protein	2.0
pH-value: 3.5	
Viscosity (mPas), Brookfield RVF, 23C, spindle 4, 10 rpm: 4800	

Preparations in the Laboratory:

Melt phase I at 80-85C. Heat phase II to 80-85C and stir into phase I. Stir for 5 minutes at this temperature. Cool down to 40C while stirring. Add preservative and, if necessary, heat-sensitive additives. Cool down to 30C while stirring.

Formulation DE97/197/1

SOURCE: Henkel KGaA: Care Chemicals Division: Suggested Formulas

Overnight Repair Gel

SM2115 is a 20% microemulsion of an amine functional fluid with a high amine content which provides substantive conditioning. The overnight repair gel is an intensive conditioner, providing a soft, silky feel to the hair plus does not stain fabric. Apply to the hair before sleeping, wash out in the morning with normal shampooing.

<u>Ingredient/Function:</u>	<u>Wt%</u>
Part A:	
Carbomer (1)/Thickener	0.5
Sodium Hydroxide (50%)/Neutralizer	2.0
Deionized Water/Diluent	73.5
Part B:	
Quaternium-15/Preservative	0.2
Trimethylsilylamodimethicone (and) Octoxynol-40 (and) Isolaureth-6 (and) Glycerin (SM2115) (2)/ Conditioner	5.0
Deionized Water/Diluent	17.8
Part C:	
Glycerin/Humectant	1.0
Fragrance	q.s.
Acetic Acid/pH adjustment	q.s.

Procedure:

1. Mix Part A by slowly adding the carbomer to the water until thoroughly dispersed, then add sodium hydroxide to bring the pH up to 9.
2. Mix together quaternium-15, SM2115 and remaining water.
3. Slowly add Part A to Part B with good stirring.
4. Add glycerin, fragrance and color.
5. Adjust pH to approximately 6 with acetic acid.

Trade Names/Suppliers:

1. Carbopol 980, B.F. Goodrich Co.
2. GE Silicones

SOURCE: GE Silicones: Personal Care Formulary: Formula CP 110

Protein Lotion Conditioner

<u>Raw Materials:</u>	<u>Wt%</u>
Mackine 301 (Stearamidopropyl Dimethylamine)	1.5
Cetyl Alcohol	2.5
Lactic Acid (88%)	0.7
Mackpro NLP (Quaternium-79 Hydrolyzed Collagen)	1.5
Sodium Chloride	0.5
Paragon (Propylene Glycol (and) DMDM Hydantoin (and) Methylparaben)	qs
Water, Dye, Fragrance	qs to 100.0

Procedure:

1. Dissolve sodium chloride in water.
2. Add first four components and heat to 70C.
3. Blend until homogeneous.
4. Cool to 45C and add remaining components.
5. Cool to room temperature.

Pearl Conditioner

<u>Raw Materials:</u>	<u>Wt%</u>
Mackadet LCB (Liquid Conditioner Concentrate that can be cold blended)	10.0
Triethanolamine	1.0
Sodium Chloride	0.5
Mackstat DM (DMDM Hydantoin)	qs
Water, Dye, Fragrance	qs to 100.0

Procedure:

1. Warm water to 40C.
2. Add Sodium Chloride and Triethanolamine.
3. Add Mackadet LCB and blend slowly.
4. When completely dispersed, add Mackstat DM, Dye, and Fragrance
5. Cool to room temperature.

Hair Conditioner

<u>Raw Materials:</u>	<u>Wt%</u>
Mackadet CBC (Conditioner Concentrate for Viscous Cream Consistency)	5.0
Mackstat DM (DMDM Hydantoin)	qs
Water, Dye, Fragrance	qs to 100.0

Procedure:

1. Add Mackadet CBC to water.
2. Heat to 70C.
3. With continuous mixing, cool to 50C.
4. Add remaining components.
5. Cool to room temperature.

SOURCE: McIntyre Group Ltd.: Personal Care Formulary: Formulas

Setting Lotion
for blow-dried hair

<u>Recipe:</u>	<u>Wt%</u>
A Aristoflex A 60/VA/Crotonates Copolymer, Isopropyl Alcohol	1.50
Genamin KSL/PEG-5 Stearyl Ammonium Lactate	1.00
PEG 400/PEG-8	0.20
Iso-Adipate/Diisopropyl Adipate	0.20
Fragrance	0.20
B Isopropyl alcohol	45.00
Water	51.90
Preservative	q.s.

Procedure:

Dissolve the components of A one after another in B.
Formula B V/1020

Antidandruff Setting Lotion

<u>Recipe:</u>	<u>Wt%</u>
A Octopirox/Piroctone Olamine	0.10
Luviskol VA 64I/PVP/VA Copolymer, Isopropyl Alcohol	5.50
Iso-Adipate/Diisopropyl Adipate	0.60
Genamin KSL/PEG-5 Stearyl Ammonium Lactate	0.70
PEG 400/PEG-8	0.50
Fragrance	0.30
B Isopropyl alcohol	35.00
C Water	57.30
D Citric acid-->pH 5.0-6.0	q.s.

Procedure:

1. Dissolve the components of A one after another in B.
2. Stir C into 1.
3. Finally adjust the pH with D.

Formula B V/5002

SOURCE: Hoechst Aktiengesellschaft: Guide Recipes

Simplified Hair Tonic Preparation

<u>Raw Materials:</u>	<u>Wt%</u>
Mackpro WWP (Wheatgermamidopropyl Dimethylamine Hydrolyzed Wheat Protein)	3.0
Hydroxyethylcellulose	0.4
Mackstat DM (DMDM Hydantoin)	0.3
Menthol Crystals	0.2
Ethyl Alcohol	14.0
PEG-8	4.0
Mackamide AME-75 (Acetamide MEA)	1.0
Water, Dye, Fragrance	qs to 100.0

Procedure:

1. Dissolve Hydroxyethylcellulose in water using heat as needed.
2. When dissolved, add Mackpro WWP, PEG-8, Mackamide AME-75, and Mackstat DM.
3. Dissolve Menthol Crystals in Ethyl Alcohol and add to batch
4. Add Dye and Fragrance; cool and fill.

Leave-On Conditioner

<u>Raw Materials:</u>	<u>Wt%</u>
Mackadet INC (Conditioner Concentrate)	10.0-12.5
Mackstat DM (DMDM Hydantoin)	qs
D.I. Water and Fragrance	qs to 100.0

Procedure:

1. Vary the amount of Mackadet INC depending on the set desired. 10% use level is suggested for regular set and 12.5% for firm set.
2. Completely disperse the fragrance in the Mackadet INC.
3. Add Mackstat DM to protect the diluted solution. (Note: The concentrate contains only enough preservative to protect the concentrate. Please add additional preservative to protect diluted solution.)
4. Add D.I. Water.
5. Apply finished product to shampooed and towel dried hair; do not rinse; style hair.

SOURCE: McIntyre Group Ltd.: Personal Care Formulary: Formulas

55% VOC Aerosol Hair Spray

This formula utilizes Eastman AQ 48 Ultra polymer to give fast-drying, moderate hold with good curl retention in a 55% VOC system.

<u>Formula:</u>	<u>Wt%</u>
Part A:	
Eastman AQ 48 Ultra Polymer	5.0
Deionized Water	36.1
Part B:	
Eastman Ethanol (SDA-40)	20.0
AMP-95	0.6
Balance-47 (28-4947)	3.0
Silwet L-7657 (Dimethicone Copolyol)	0.3
Dymel A (Dimethyl Ether)	35.0

Procedure:**Part A:**

Start agitation of deionized water and add Eastman AQ 48 Ultra polymer pellets.

Heat pellet/water mixture to 40C with continuous rapid agitation.

Mix until polymer is completely dispersed.

Part B:

Dissolve AMP-95 in ethanol.

While maintaining good agitation, slowly sift in Balance-47.

Mix until polymer is dissolved.

Add Part B to Part A:

Add dimethicone copolyol.

Mix until homogeneous.

Filter, and fill cans.

Charge with dimethyl ether propellant.

Suggested Valve System:

Item:	Description:
Seaquist Valve	XT-91
Stem Orifice	0.013"
Gasket	Butyl 0.035" THK. Code: 502
Spring	0.023" SS
Body Orifice	0.016" XT-Standard
Cup	XT Aluminum Ann. Ring, Epoxy Top, Micoflex Bottom, Buna-N Cup Gasket
Vapor Tap	0.013"
Dip Tube	0.122" Inside Diameter
Actuator	XT-150 Misty, 0.020" Misty (0702-05480-20)

SOURCE: Eastman Chemical Co.: Formulation No. X23368-79-1

55% VOC Aerosol Hair Spray with AQUAREZ HS Polymer

<u>Formula:</u>	<u>Wt%</u>
Aquarez HS Polymer Emulsion (41% Solids) (a)	17.07
Deionized Water	26.79
Eastman Ethanol (SDA-40), Anhydrous	20.00
AMP-95 (b)	1.14
Fragrance and Other Additives	q.s.
Dymel A (Dimethyl Ether) (c)	35.00

Procedure:

Combine Aquarez HS polymer emulsion and deionized water. While maintaining good agitation, add ethanol. Add AMP-95 sufficient for 75% neutralization of Aquarez HS. Add remaining ingredients. Mix until homogeneous. Fill cans and charge with dimethyl ether propellant.

Valve Recommendations (d):

Item:	Description:
SequistPerfect Valve	XT-91
Stem Orifice	0.013"
Gasket	Butyl 0.035" THK, Code: 502
Spring	0.023" Stainless Steel
Body Orifice	0.016" XT-Standard
Cup	XT Aluminum Ann. Ring, Epoxy Top, Mico-flex Bottom, Buna-N Cup Gasket
Vapor Tap	0.013"
Dip Tube	0.122" Inside Diameter
Actuator	ST-200 Misty, 0.018" Misty (1102-05480-18)

- (a) Eastman Chemical Company
- (b) Angus Chemical Company
- (c) DuPont
- (d) SequistPerfect

SOURCE: Eastman Chemical Co.: Formulation X26330-093

55% VOC High Performance Aerosol Hair Spray

This low VOC formulation is designed to provide excellent spray aesthetics, hold, fast drying time, and less initial curl droop compared to standard 55% VOC systems.

<u>Ingredients:</u>	<u>Wt%</u>
(1) Amphomer LV-71	2.28
(2) Resyn 28-2930	0.97
(3) AMP Regular	0.55
(4) Citroflex 2	0.25
Deionized Water	18.44
Ethanol, SDA-23A (190 proof)	52.51
Propellant, A-17	10.00
Hydrofluorocarbon, 152a	15.00

Valve Specifications: Seaquist VX-81

Stem: 0.011"	Gasket: Buna-P 0.0145"
Body: 008 Standard	Cup: HI Profile, Epoxy Top
Vapor Tap: None	Spring: SS
Tubing ID: 0.122"	Actuator: 0.023" Misty

Preparation:

Dissolve AMP in ethanol and water. While maintaining good agitation, slowly sift in Amphomer LV-71 and Resyn 28-2930. Once in solution, add remaining ingredients and mix until homogeneous. Filter and fill. Charge with propellants.
Formulation 9612:101

High Performance, Low Cost 55% VOC Aerosol Hair Spray

This low VOC formulation is designed to provide excellent sprayability, hold, fast drying time, and less initial curl droop compared to standard 55% VOC systems.

<u>Ingredients:</u>	<u>Wt%</u>
(1) Resyn 28-2930	5.00
(2) AMP Regular	0.47
(3) Fragrance, Q-14662	0.30
Deionized Water	14.23
Acetone	15.00
Anhydrous Ethanol	40.00
(4) N-Butane	15.00
(5) Dymel 152A	10.00

Preparation:

Dissolve AMP in ethanol, acetone and water. While maintaining proper agitation, slowly sift in the Resyn 28-2930. When solution is complete, add remaining ingredients. Filter and fill aerosol containers. Charge cans with propellant.

Valving and Actuators:	Seaquist NS-31
Stem: 0.013"	Vapor Tap: None
Gasket: Butyl .042" thick code: 501	Dip Tube: 0.165"
Spring: 0.020" SS	A-D Dim: 8"
Body: 0.010" STD	Actuator: Excel 200 Misty .023"

Formulation 8897:22-A

SOURCE: National Starch & Chemical Co.: Suggested Formulations

55% VOC Pump Hair Spray

<u>Formula:</u>	<u>Wt%</u>
Eastman AQ48 Ultra Polymer	5.0
Deionized Water	36.1
Eastman Ethanol (SDA-40)	55.0
AMP-95 (a)	0.6
Balance 47 (28-4947) (b)	3.0
Dimethicone Copolyol	0.3

Procedure:

Start agitation of deionized water and add Eastman AQ48 Ultra polymer pellets.

Heat pellet/water mixture to 40C (104F) with continuous rapid agitation.

Mix until polymer is completely dispersed.

Cool to room temperature and add ethanol.

Add AMP-95 sufficient for 80% neutralization of Balance 47.

Add Balance 47 slowly with agitation.

Add dimethicone copolyol.

Mix until uniform.

Suggested Valve System(c):

Item:	Description:
Pump	37MS Air Force II, 20/410 (150 ul Delivery Volume)
Actuator	Smooth Top A-6
Dip Tube	0.055" Inside Diameter
Gasket	GP Plastic/Rubber
Housing	A
Insert	1620-1010 Natural Celcon
Spring	SS (2513)
Stem	Ribbed

- (a) Angus Chemical Company
- (b) National Starch and Chemical
- (c) Emson

SOURCE: Eastman Chemical Co.: Formulation X20190-104

55% VOC Pump Hairspray

This low VOC formulation provides good sprayability, medium hold and good humidity resistance.

<u>Ingredients:</u>	<u>Wt%</u>
(1) Balance 0/55 (50% solids)	7.20
(2) Lovocryl 47	2.40
(3) AMP (reg)	1.01
(4) Silsoft A-843	0.10
Deionized Water	34.29
*Anhydrous Ethanol	55.00

*Substitution of Anhydrous Ethanol with 64.17% SDA-23A (190 proof and containing 7.3% acetone denaturant) would result in improved tack and dry times while maintaining 55% VOC compliance.

Preparation:

Dissolve AMP in ethanol and water. While maintaining proper agitation, slowly sift in Balance 0/55 and Lovocryl-47. Mix until homogeneous. Filter and fill containers.

Valving and Actuators: Seaquist Perfect-Euromist II
 Body: 160 mcl Output Closure: 24-410, White
 Liner: PE/Butyl Blend Insert: .010" X .020" Deep
 Formulation 9612:79B

55% VOC Pump Hairspray

This low VOC formulation provides excellent sprayability, low tack, fast drying, flexible hold and good humidity resistance

<u>Ingredients:</u>	<u>Wt%</u>
(1) Balance CR (45% solids)	8.88
KOH	0.34
Deionized Water	35.78
*Anhydrous Ethanol	55.00

*Substitution of Anhydrous Ethanol with 64.17% SDA-23A (190 proof and containing 7.3% acetone denaturant) would result in improved tack and dry times while maintaining 55% VOC compliance.

Preparation:

Dissolve KOH in ethanol and water. While maintaining proper agitation, slowly sift in Balance CR. Mix until homogeneous. Filter and fill containers.

Valving and Actuators: Seaquist Perfect: Euromist II
 Body: 160 mcl Output Closure: 24-410, White
 Insert: .010" X .010" Deep Liner: PE/Butyl Blend
 Formulation 9612:79C

SOURCE: National Starch & Chemical Co.: Suggested Formulations

55% VOC Pump Hairspray

This low VOC formulation provides good sprayability, low tack, fast drying, max hold and excellent humidity resistance.

<u>Ingredients:</u>	<u>Wt%</u>
(1) Balance CR (45% solids)	8.88
(2) Balance Extra (45% solids)	3.60
KOH (100% active)	0.50
(3) Citroflex-2	0.10
(4) Silsoft A-843	0.10
Deionized Water	31.82
*Anhydrous Ethanol	55.00

*Substitution of Anhydrous Ethanol with 64.17% SDA-23A (190 proof and containing 7.3% acetone denaturant) would result in improved tack and dry times while maintaining 55% VOC compliance.

Preparation:

Dissolve the KOH in ethanol and water. While maintaining proper agitation, slowly sift in Balance CR and Balance Extra. Mix until homogeneous. Filter and fill containers.

Valving and Actuators: Seaquist Perfect: Euromist II
 Body: 160 mcl Output Liner: PE/Butyl Blend
 Closure: 24-410, White Insert: .010" X .010" Deep
 Formulation 9612:80A

55% VOC Pump Hairspray

This low VOC formulation provides excellent sprayability, firm hold and good humidity resistance.

<u>Ingredients:</u>	<u>Wt%</u>
(1) Balance 0/55 (50% solids)	12.00
(2) AMP (reg)	0.85
Deionized Water	32.15
*Anhydrous Ethanol	55.00

*Substitution of Anhydrous Ethanol with 64.17% SDA-23A (190 proof and containing 7.3% acetone denaturant) would result in improved tack and dry times while maintaining 55% VOC compliance.

Preparation:

Dissolve AMP in ethanol and water. While maintaining proper agitation, slowly sift in Balance 0/55. Mix until homogeneous. Filter and fill containers.

Valving and Actuators: Seaquist Perfect: Euromist II
 Body: 160 mcl Output Liner: PE/Butyl Blend
 Closure: 24-410, White Insert: .010" X .010" Deep
 Formulation 9612:80B

SOURCE: National Starch and Chemical Co.: Suggested Formulations

55% VOC Pump Hair Spray with AQUAREZ HS Polymer

<u>Formula:</u>	<u>Wt%</u>
Aquarez HS Polymer Emulsion (41% Solids)	17.07
Deionized Water	27.01
Eastman Ethanol (SDA-40), Anhydrous	55.00
AMP-95	0.92
Fragrance and Other Additives	q.s.

Procedure:

Combine Aquarez HS polymer emulsion and deionized water. While maintaining good agitation, add ethanol. Add AMP-95 sufficient for 60% neutralization of Aquarez HS. Add remaining ingredients. Mix until homogeneous.

Suggested Valve System (c):

<u>Item:</u>	<u>Description:</u>
Pump	Euromist, 160 mcl Output
Body	160 mcl Output
Insert	0.016" X 0.010" Deep (Natural)
Spring	302 SS, 1 lb 0 oz
Piston	Natural
Liner	PE/Butyl Blend
Dip Tube	0.060" Inside Diameter
Seal Valve	Standard
Poppet	Standard
Turret	24 mm

(c) Seaquist Perfect

Formulation X26330-094

Styling Mousse (Alcohol-Free)

This alcohol-free mousse offers styling with a natural look and moderate hold.

<u>Formula:</u>	<u>Wt%</u>
Distilled Water	q.s. to 100
Eastman AQ48 Ultra Polymer	8.0
Myvatex Texture Lite Emulsifier	5.5
Monamid 150 ADD	1.0
Polysorbate 60	0.15
Myvacet 9-45 Distilled Acetylated Monoglyceride	0.15
Preservative	q.s.
Fragrance	q.s.
Citric Acid	q.s.

Procedure:

Heat deionized water to above 40C.

Disperse Eastman AQ48 Ultra polymer with rapid agitation.

Cool to room temperature and add preservative.

Slowly add Myvatex Texture Lite emulsifier with high-speed agitation. Care should be taken when mixing to avoid aeration.

Prewarm and mix polysorbate 60, Myvacet 9-45 distilled acetylated monoglyceride, and Monamid 150, when uniform, add to batch. Add fragrance.

Adjust pH to 6.5-7.0 with citric acid.

Aerosol final concentrate at 5.23 g/mL of A-46 propellant.(1)

(1) Aeropres

Formulation X25231-156

SOURCE: Eastman Chemical Co.: Suggested Formulations

55% VOC Reduced Cost, Hard Holding Hair Spray

This formulation has excellent stiffness, good sprayability, and a reduced cost. The use of acetone results in reduced particle size and improved spray.

<u>Ingredients:</u>		<u>Wt%</u>
(1)	Balance CR (45% active)	5.45
(2)	Resyn 28-2930	3.00
	Potassium Hydroxide (87% active)	0.47
(3)	Citroflex-2	0.25
(4)	Sodium Benzoate	0.25
	Acetone	7.00
	Anhydrous Ethanol	22.00
	Deionized Water	28.58
(5)	DME propellant	33.00

Preparation:

Dissolve potassium hydroxide in ethanol and water. While maintaining proper agitation, slowly sift in Balance-CR and Resyn 28-2930. When the solution is complete, add the remaining ingredients. Mix until homogeneous. Filter and fill containers. Charge cans with propellant.

Valving and Actuators:

Valve Type: Seaquist ST-71/Cup: Hi Prof, Epoxy Top, Laminate
 Stem: 0.013" Vapor Tap: 0.013" Bottom
 Gasket: Butyl .042" thick code: 502 Dip Tube: 0.122"
 Spring: 0.023" SS A-D Dim: 8"
 Body: 0.016" STD Actuator: ST-150 Misty 0.020"
 Formulation 9747:71

Fast Drying 55% VOC Aerosol Hair Spray

This formulation is designed to provide fast drying times, high stiffness, good subjective properties, no initial curl droop, and lower corrosion potential.

<u>Ingredients:</u>		<u>Wt%</u>
(1)	Amphomer 4910	4.00
(2)	AMP regular	0.66
(3)	Citroflex-2	0.10
	Anhydrous Ethanol	55.00
(4)	Dymel 152a	40.24

Preparation:

Dissolve AMP in ethanol and water. While maintaining proper agitation, slowly sift in Balance-CR and Resyn 28-2930. When the solution is complete, add the remaining ingredients. Mix until homogeneous. Filter and fill containers. Charge cans with propellant.

Valving and Actuators:

Valve Type: Seaquist NS-31
 Stem: 0.013" Vapor Tap: None
 Body: 0.010" STD Actuator: Excel 200 Misty 0.023"
 Dip Tube: 0.165"
 Formulation: 8409:85D

SOURCE: National Starch and Chemical Co.: Suggested Formulations

55% VOC Sculpting Aerosol Hair Spray

This formulation is designed to provide fast drying times, flexible stiffness, good hold and subjective properties, no initial curl droop, and lower corrosion potential.

<u>Ingredients:</u>	<u>Wt%</u>
(1) Balance 47	4.50
(2) AMP Regular	0.98
(3) Crotein ADW	0.20
(4) Sodium Benzoate	0.25
Fragrance	0.25
Deionized Water	12.82
(5) SDA-23A	56.00
(6) N-Butane	7.00
(7) Dymel 152A	18.00

Preparation:

Dissolve AMP in ethanol. While maintaining good agitation, slowly sift in the Balance-47. When the solution is complete, add remaining ingredients. Filter and fill aerosol containers. Charge cans with propellant.

Valving and Actuators: Seaquist NS-31

Stem: 0.013"

Vapor Tap: None

Gasket: Butyl .042" thick code: 502 Dip Tube: 0.122"

Body: 0.010" Std

Actuator: 0.023" Excell 200 Misty

Formulation 9612:99

55% VOC Pump Hairspray

This low VOC formulation provides good sprayability, firm hold and excellent humidity resistance.

<u>Ingredients:</u>	<u>Wt%</u>
(1) Balance 0/55 (50% solids)	8.40
(2) Amphomer 4910	1.80
(3) AMP (reg)	0.89
(4) Silsoft A-843	0.20
Deionized Water	33.71
*Anhydrous Ethanol	55.00

*Substitution of Anhydrous Ethanol with 64.17% SDA-23A (190 proof and containing 7.3% acetone denaturant) would result in improved tack and dry times while maintaining 55% VOC compliance.

Preparation:

Dissolve AMP in ethanol and water. While maintaining proper agitation, slowly sift in Balance 0/55 and Amphomer. Mix until homogeneous. Filter and fill containers.

Valving and Actuators: Seaquist Perfect: Euromist II

Output: 160 mcl Output

Liner: PE/Butyl Blend

Closure: 24-410, White

Insert: .010" X .020" Deep

Formulation 9612:79A

SOURCE: National Starch and Chemical Co.: Suggested Formulations