

APPENDIX 1

**APPENDIX 1: FORMULATIONS TESTED AND TESTING
LABORATORY INFORMATION**

MODEL PRODUCTS EVALUATED IN THE TEST PROGRAM

Sample A

A

Lanolin	4.50
Cocoa Butter	2.00
Glyceryl Monostearate	3.00
Stearic Acid	2.00
Padimate O	7.00
Oxybenzone	3.00
Propylparaben	0.10

B

Water	71.60
Sorbitol Solution	5.00
Triethanolamine, 99%	1.00
Methylparaben	0.30

C

Benzyl Alcohol	0.50
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D

Water	Q.S.
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1. Into a suitable stainless kettle equipped with a propeller agitator, add the ingredients of A. Mix with heating of 170 to 180F until uniform.
2. Into a suitable stainless steel manufacturing tank with a counter rotary agitator, add the "water" of B and begin mixing and heating to 170 to 180F. Add the remaining ingredients of B and mix until uniform. Maintain temperature at 170 to 180F.
3. To the batch of step 2 at 170 to 180F, add the oil phase of step 1 at 170 to 180f and mix until smooth and uniform. Slowly cool batch to 120 to 130F.
4. To the batch of step 3 at 120 to 130F, add the Benzyl Alcohol of C. Mix until uniform. Continue to cool batch to 95 to 105F.
5. To the batch of step 4 at 95 to 105F, Q.S. to volume using the "water" of D. Mix until uniform. Cool batch to 80 to 90F.

Sample E

Purified Water	51.200000
C12-15 Alkyl Benzoate	20.000000
Octyl Palmitate	15.000000
Octyl Methoxycinnamate	7.000000
Sorbitol (70% solution)	5.000000
Sodium Stearate	2.000000
Steareth-21	1.000000
Propylparaben	0.300000
Carbomer	0.300000
Methylparaben	0.200000

1. Combine the sequence 1 materials (oil phase) in the support kettle. Heat to 80C under propeller mixer agitation. Mix until all solids are dissolved.
2. Combine the sequence 2 water and Carbomer in the primary kettle mix under propeller mixer agitation until Carbomer is well dispersed and there are no "fish eyes" present. Add the remaining ingredients of sequence 2 (aqueous phase) into the primary kettle. Heat to 80C under propeller mixer agitation. Mix until all solids are dissolved.

3. When both phases are uniform and at their proper temperatures, add sequence 1 (oil phase) at 80C into sequence 2 (aqueous phase) at 80C under homogenizer agitation.
4. Mix under homogenizer until the batch is smooth and uniform then begin slow cooling to 55C.
5. At 55C, remove the homogenizer and begin sidewiping agitation. Continue slow cooling the batch to 25C.
6. At 25C, stop cooling. Take an 8 once sample and take an initial viscosity and pH.

Sample F

Purified Water	53.200000
C12-15 Alkyl Benzoate	20.000000
Octyl Palmitate	15.000000
Benzophenone-3	5.000000
Sorbitol (70% solution)	3.000000
Sodium Stearate	2.000000
Steareth-21	1.000000
Propylparaben	0.300000
Carbomer	0.300000
Methylparaben	0.200000

1. Combine the sequence 1 materials (oil phase) in the support kettle. Heat to 80C under propeller mixer agitation. Mix until all solids are dissolved.
2. Combine the sequence 2 water and Carbomer in the primary kettle mix under propeller mixer agitation until Carbomer is well dispersed and there are no "fish eyes" present. Add the remaining ingredients of sequence 2 (aqueous phase) into the primary kettle. Heat to 80C under propeller mixer agitation. Mix until all solids are dissolved.
3. When both phases are uniform and at their proper temperatures, add sequence 1 (oil phase) at 80C into sequence 2 (aqueous phase) at 80C under homogenizer agitation.
4. Mix under homogenizer until the batch is smooth and uniform then begin slow cooling to 55C.
5. At 55C, remove the homogenizer and begin sidewiping agitation. Continue slow cooling the batch to 25C.
6. At 25C, stop cooling. Take an 8 once sample and take an initial viscosity and pH.

Sample G

Purified Water	48.200000
C12-15 Alkyl Benzoate	20.000000
Octyl Palmitate	15.000000
Octyl Methoxycinnamate	7.000000
Avobenzone	3.000000
Sorbitol (70% solution)	3.000000
Sodium Stearate	2.000000
Steareth-21	1.000000
Propylparaben	0.300000
Carbomer	0.300000
Methylparaben	0.200000

1. Combine the sequence 1 materials (oil phase) in the support kettle. Heat to 80C under propeller mixer agitation. Mix until all solids are dissolved.
2. Combine the sequence 2 water and Carbomer in the primary kettle mix under propeller mixer agitation until Carbomer is well dispersed and there are no "fish eyes" present. Add the remaining ingredients of sequence 2 (aqueous phase) into the primary kettle. Heat to 80C under propeller mixer agitation. Mix until all solids are dissolved.
3. When both phases are uniform and at their proper temperatures, add sequence 1 (oil phase) at 80C into sequence 2 (aqueous phase) at 80C under homogenizer agitation.
4. Mix under homogenizer until the batch is smooth and uniform then begin slow cooling to 55C.
5. At 55C, remove the homogenizer and begin sidewiping agitation. Continue slow cooling the batch to 25C.
6. At 25C, stop cooling. Take an 8 once sample and take an initial viscosity and pH.

Sample H

Purified Water	38.200000
C12-15 Alkyl Benzoate	20.000000
Zinc Oxide	20.000000
Octyl Palmitate	15.000000
Sorbitol (70% solution)	3.000000
Sodium Stearate	2.000000
Steareth-21	1.000000
Propylparaben	0.300000
Carbomer	0.300000
Methylparaben	0.200000

1. Combine the sequence 1 materials (oil phase) in the support kettle. Heat to 80C under propeller mixer agitation. Mix until all solids are dissolved.
2. Combine the sequence 2 water and Carbomer in the primary kettle mix under propeller mixer agitation until Carbomer is well dispersed and there are no "fish eyes" present. Add the remaining ingredients of sequence 2 (aqueous phase) into the primary kettle. Heat to 80C under propeller mixer agitation. Mix until all solids are dissolved.
3. When both phases are uniform and at their proper temperatures, add sequence 1 (oil phase) at 80C into sequence 2 (aqueous phase) at 80C under homogenizer agitation.
4. Mix under homogenizer until the batch is smooth and uniform then begin slow cooling to 55C.
5. At 55C, remove the homogenizer and begin sidewiping agitation. Continue slow cooling the batch to 25C.
6. At 25C, stop cooling. Take an 8 once sample and take an initial viscosity and pH.

Sample I

A

DI Water	80.42
Disodium EDTA	0.10
Glycerin	3.00
Phenoxyethanol, Methylparaben, Butylparaben, Ethylparaben, propylparaben	1.00

B

C12-15 Alkyl Benzoate	2.00
Octyl Methoxycinnamate	6.00
Acrylates/C10-30 Alkyl Acrylates Crosspolymer	0.20

C

Sodium Hydroxide Solution 10%	0.28
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D

Zinc Oxide	4.00
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E

Polyacrylamide, C13-14 Isoparaffin and Laureth-7	3.00
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1. Into tared beaker, combine part A ingredients.
2. In a separate beaker, combine part B ingredients except Acrylates and mix.
3. Heat part B to 70C and add the Acrylates, mix until dispersed uniformly.
4. Heat part A to the same temperature as part B.
5. Add part B to part A with vigorous mixing.
6. Continue stirring for approximately 30 minutes.
7. Add part C to neutralize mixture to pH 5.5.
8. Add part D and continue stirring
9. Add part E and mix well.
10. Q.S. with water and homogenize for 1 minute.

Sample J

A1

Water	38.54
Disodium EDTA	0.050000
Methylparaben	0.350000
Chlorphenesin	0.200000
Phenoxyethanol	0.700000

A2

Glycerin	5.000000
Xanthan Gum	0.010000

B1

Avobenzone	3.000000
Octocrylene	10.000000
Octyl Salicylate	5.000000
Oxybenzone	6.000000

B2

PPG-2 Myristyl Ether Propionate	2.000000
Octyldodecyl Neopentanoate	2.000000
Butyloctyl Salicylate	7.000000
PVP/Eicosene Copolymer	1.300000

B3

Polyglyceryl-3 Methyl Glucose Distearate	2.000000
Cetyl Alcohol	0.500000
Stearic Acid	1.000000
Butylparaben	0.300000

C

Cyclopentasiloxane	3.000000
Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.200000

D

Water	1.000000
Triethanolamine	0.600000

E

Water	10.000000
Potassium Cetyl Phosphate	0.250000

1. Combine A1 into Main Kettle. Heat and mix to 80C.
2. While contents in Main Kettle are heating, pre-mix A2. Add to Main Kettle at 75C. Continue heating and maintain temperature of Main Kettle at 80C
3. Combine B1 into Side Kettle #1. Heat and mix to 80C. Maintain heat and mixing until homogeneous.
4. Combine B2 into Side Kettle #2. Heat and mix to 80C. Maintain heat and mixing until phase is homogeneous. Add B2 to B1. Mix well
5. Combine B3 into Side Kettle #3. Heat and mix to 80C. Maintain heat and mixing until homogeneous. Add B3 to B1/B2. Mix well.
6. Charge B1/B2/B3 into the Main Kettle containing A1/A2. Increase homogenization. Maintain temperature and mixing for 10-15 minutes.
7. Begin cooling to room temperature. Maintain homogenization.
8. At 60C, charge C premix into the Main Kettle. Mix until uniform.
9. At 35-40C, charge D premix into the Main Kettle. Mix until uniform.
10. At 35-40C, charge E premix into the Main Kettle. Mix until uniform.
11. At 30C, charge F into the Main Kettle. Mix until uniform.
12. At 30C, charge G into the Main Kettle. Mix until uniform.
13. Continue cooling to room temperature.
14. Check specifications.

Testing Laboratories:

Studies conducted for this report:

1. Consumer Product Testing Co., Inc. (PFA, PPD and Critical Wavelength)
(CPTC)
70 New Dutch Lane
Fairfield, NJ 07004

2. TKL Research, Inc. (PFA and PPD)
4 Forest Avenue
Paramus, NJ 07652

3. Innovative Measurement Solutions (Critical Wavelength)
(IMSI)
IMS Inc. 282 Quarry Rd.
Milford, CT 06460.