Technical Data Sheet

XIAMETER™ MEM-1619 Emulsion

INCI Name: Dimethicone (and) amodimethicone (and) Laureth-23 (and) Laureth-4 (and) Polyquaternium-10

Features & Benefits

- Based on high molecular weight polydimethylsiloxane fluid and amodimethicone fluid
- Significantly improves the wet feeling of shampoo
- Smooth and soft feeling during foam stage
- Smooth feeling during rinse
- Easy combing after rinse
- Excellent dry combing
- Provides enhanced smoothness and soft feel to hair
- Specific benefit for damaged hair
- Good color lock performance
- Easy to formulate with

Applications

- Conditioning 2-in-1 hair shampoos
- Rinse-off hair conditioners

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

CTM[1]	Property	Unit	Result
	Appearance		Milky cream
0208	NVC	%	63–70
0007	pH		7–8
	Emulsifier type		Non-ionic
	Silicone content	%w/w	60

1. CTM: Corporate Test Method, copies of CTMs are available upon request.

Description

XIAMETER™ MEM-1619 Emulsion is a 60% emulsion of high molecular weight polydimethylsiloxane fluid and amodimethicone fluid designed to provide superior wet and dry combing performance. It is ideal for use in 2-in-1 hair shampoo and rinse-off hair conditioners.

How To Use

XIAMETER MEM-1619 Emulsion is water dilutable. Thus it is easy to formulate with. The recommended usage level is 1–5%. It is recommended to add the product below 45°C (113°F) in order to minimize the risk of emulsion instability.

Form No. 95-880-01 A

Handling Precautions

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT WWW.CONSUMER.DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

Usable Life And Storage

Product should be stored at or below 45°C (113°F) in original, unopened containers.

Limitations

This product is neither tested nor represented as suitable for medical or pharmaceutical uses. Not intended for human injection. Not intended for food use.

Health And Environmental Information

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, www.consumer.dow.com or consult your local Dow representative.

Prototype Formulation[1]

Ingredient	1A(wt%)	1B(wt%)	2(wt%)	Trade Name/Supplier
Phase A				
Ammonium laureth sulfate	35.0	35.0	35.0	Texapon® ALES 3-28 / Congnis
Ammonium lauryl sulfate	20.0	20.0	20.0	Texapon® ALS 28 / Congnis
Cocamide monoethanolamide	1.0	1.0	1.0	Comperlan® 100 / Cognis
Cetearyl alcohol	0.6	0.6	0.6	Hydrenol® D / Cognis
Glycol distearate	1.5	1.5	1.5	Alkamuls® EGDS / Rhodia
Cocamidopropyl betaine	6.0	6.0	6.0	Dehyton® K / Cognis
Phase B				
EDTA disodium	0.1	0.1	0.1	
Polyquaternium-10	0.4	0.4	0.4	Amerchol®
Guar hydroxypropyltrimonium chloride	0.0	0.0	0.3	Rhone Ponlenc
Deionized water	To 100	To 100	To 100	
Phase C				
Dimethicone and amodimethicone	3.0	2.0	5.0	XIAMETER MEM™-1619 Emulsion
Dimethicone	0.0	2.0	0.0	XIAMETER MEM™-7137 Emulsion
NaCl	0.2	0.2	0.2	
Preservative	0.2	0.2	0.2	Glydant® Plus / Lonza
Perfume	0.5	0.5	0.5	Symrise

Procedure

1. Mix Phase A and heat to 70°C (158°F), agitate until uniform, cool down below 50°C (122°F)
2. Mix Phase B to be even
3. Mix Phase A and B together to be even
4. Add ingredients of Phase C, mix them to uniform
5. Adjust pH value to 5.5–6.5 with citric acid or TEA, add NaCl to adjust viscosity

1. The prototype formulation is only for your reference. It is your responsibility to identify the potential patent infringement for further practice.

Performance Evaluation

1. Compare With Leading Commercial Shampoo

Test Method Introduction
Dry combing test was done by a specially designed combing machine. The combing force and combing force reduction percentage were compared among different shampoos. Sensory evaluation was performed by the panelists. Pair comparison or multiple pair comparison was carried out after the combing test and then a statistical method was applied to identify the difference.

1.1 Formulation 1B with the combination of 2% XIAMETER MEM-1619 Emulsion and 2% XIAMETER™ MEM-7137 Emulsion

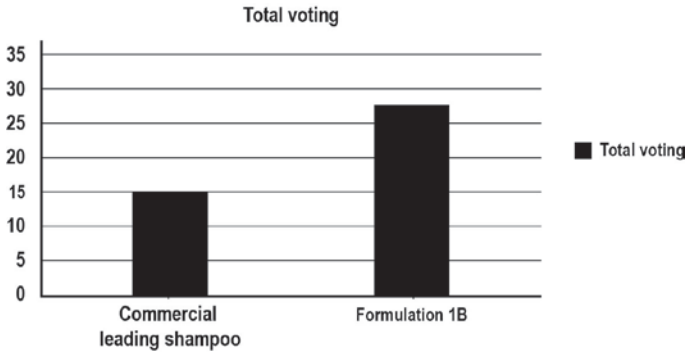


Figure 1.1.1:
Wet sensory evaluation, smooth feeling under rinse water. XIAMETER Formulation 1B is significantly better than commercial leading shampoo.

Based on statistical calculation, the difference is significant with a confidence level on 99%.

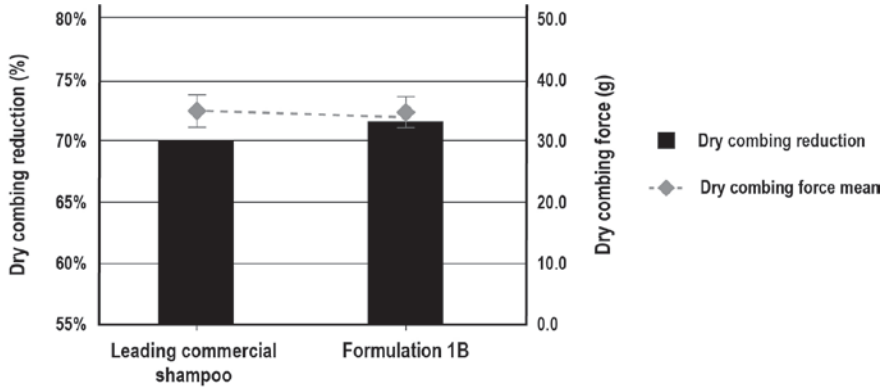


Figure 1.1.2:
Dry combing test by machine

Note: XIAMETER 2 got significant higher dry combing force reduction vs. leading commercial shampoo on confidence level 80%.

Conclusion: XIAMETER MEM-1619 Emulsion can help shampoo formulations have better performance on both dry and wet sensory, especially the wet and dry softness and smoothness feeling under rinse water.

Performance Evaluation (Cont.)

1.2 Formulation 2 with 5% XIAMETER MEM-1619 Emulsion

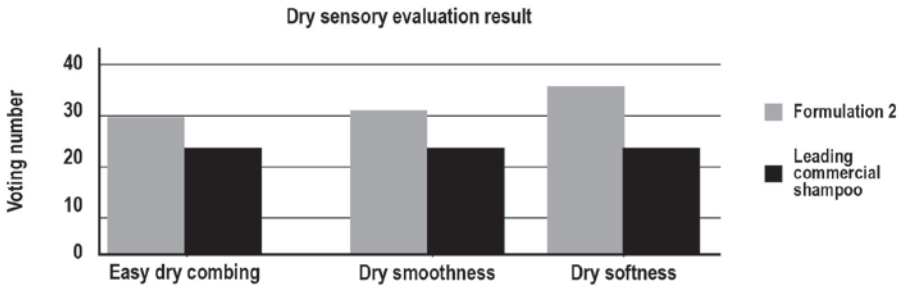


Figure 1.2.1: Dry Sensory Evaluation

XIAMETER formulation 2 got a higher voting number than the leading commercial shampoo if all three attributes were considered. Formulation 2 also performed significantly better on dry softness (confidence level 90%).

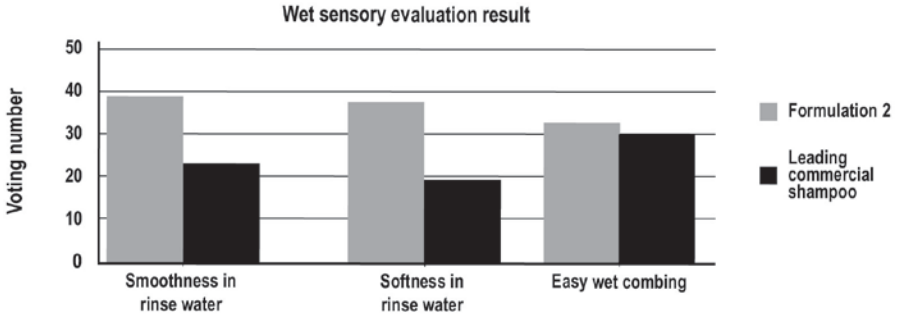


Figure 1.2.2:
Wet Sensory Evaluation

XIAMETER Formulation 2 had significantly better performance on smoothness in rinse water (confidence level 95%) and softness in rinse water (confidence level 99%). The same performance was demonstrated with easy wet combing vs. the leading commercial shampoo.

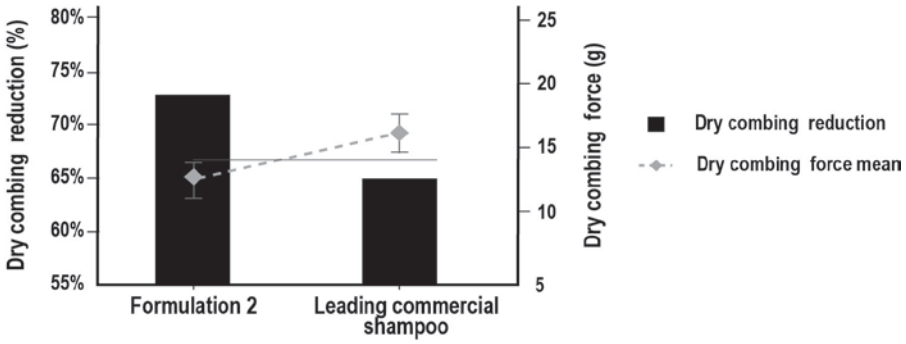


Figure 1.2.3:
Dry Combing Test By Machine

Performance Evaluation (Cont.)

Note: XIAMETER 2 got significant higher dry combing force reduction vs. leading commercial shampoo on confidence level 80%.

Conclusion: XIAMETER MEM-1619 Emulsion can help shampoo formulations have better performance on both dry and wet sensory, especially the wet and dry softness and smoothness feeling under rinse water.

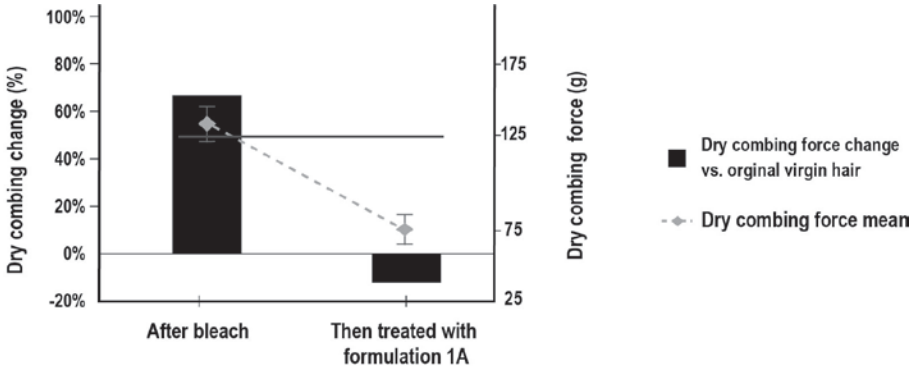
2. Performance Evaluation On Damaged Hair

Test Method Introduction

One virgin hair tress was selected, dry combing was tested by machine, and the dry combing force was treated as the zero control line. The hair tress was then bleached with a standard process and the dry combing was tested again by machine. A significant combing force increase could be found as hair damaged by bleaching. Then the damaged hair was treated with XIAMETER formulation 1A shampoo and the dry combing force was tested again.

Test Result

The dry combing test showed that the bleached hair tress could recover its damaged status by treating with XIAMETER shampoo formulation 1A with 3% XIAMETER MEM-1619 Emulsion. The combing force was even lower than the virgin healthy hair.



3. Color Lock Test

Test Method Introduction

Normally, the value change percentage on the test result between before and after several times of shampoo together with several hours of UV light exposure was compared. A smaller change indicates better color retention performance. The calculation formula of ΔE as following:

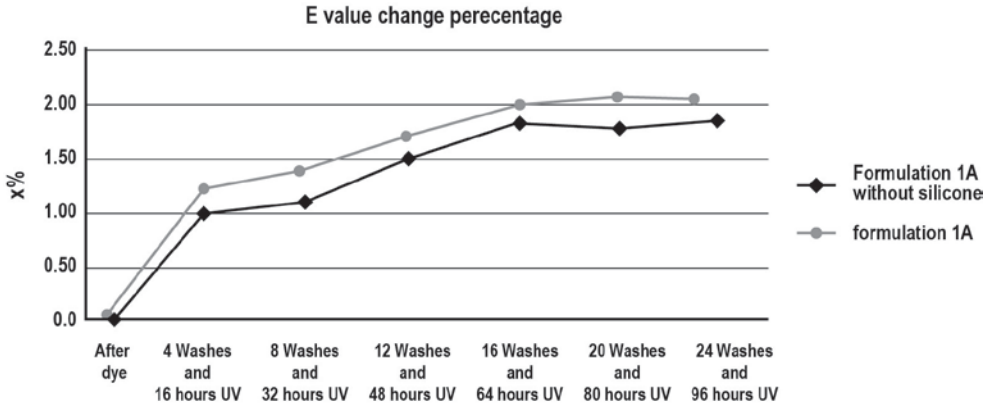
$$\Delta E = ((a-a_0)_2+(b-b_0)_2+(l-l_0)_2)_{½}$$

Note: Three color values were recorded as a, b and l to present a specific color status of hair; “a” indicates red/green, “b” indicates yellow/blue, “l” indicates light/dark.

Test Result

The following results show that XIAMETER formulation 1A with 3% XIAMETER MEM-1619 Emulsion had significant color protection performance vs. control shampoo without anysilicone (confidence level 99.8%).

Performance Evaluation (Cont.)



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