

PROTECTIVE AFTER SHAVE BALM

SUGGESTED FORMULATION Ref. 998PBC

COMPOSITION:

<u>Phase A:</u>	DEMINERALISED WATER	88,70 %
	INCI: Water	
	PHENONIP [1]	0,70 %
	INCI: Phenoxyethanol, Methylparaben, Ethylparaben, Propylparaben, Isobutylparaben, Butylparaben	
	CARBOPOL ULTREZ-10 [2]	0,25 %
	INCI: Carbomer	
	d,I-PANTHENOL [3]	0,20 %
	INCI: Panthenol	
	ALLANTOIN [4]	0,10 %
	INCI: Allantoin	
	PEMULEN TR-2 [5]	0,10 %
	INCI: Acrylates/ C ₁₀₋₃₀ Alkyl Acrylates Crosspolymer	
	NIPAGUARD DCB [6]	0,05 %
	INCI : Phenoxyethanol, Methylidibromoglutaronitril	
<u>Phase B:</u>	TRIETHANOLAMINE [7]	0,30 %
	INCI: Triethanolamine	
<u>Phase C:</u>	AMERCHOL L101 [8]	4,00 %
	INCI: Paraffinum Liquidum, Lanolin Alcohol	
	ABIL 350 [9]	2,00 %
	INCI: Dimethicone	
	GLUCAM P20 [10]	1,00 %
	INCI: PPG-20 Methyl Glucose Ether	
	CHOLESTEROL NF [11]	0,50 %
	INCI: Cholesterol	
	LAMEFORM TGI [12]	0,50 %
	INCI: Polyglyceryl-3 Diisostearate	
	HYDAGEN B [13]	0,30 %
	INCI: Bisabolol	

DISCLAIMER: DISHMAN NETHERLANDS have developed the formulation for PROTECTIVE AFTER SHAVE BALM, Ref. 998PBC to be best of its knowledge and capabilities. However, DISHMAN NETHERLANDS accepts no responsibility or liability for any consequences arising from the use of PROTECTIVE AFTER SHAVE BALM, Ref. 998PBC. DISHMAN NETHERLANDS will not be liable if the use of PROTECTIVE AFTER SHAVE BALM, Ref. 998PBC infringes a patent or any other right belonging to a third party.



<u>Phase D:</u>	FRAGRANCE ZADIG, Code 0/242611 [14]	1,00 %
	INCI : Perfume	
	FRAGRANCE MENTHE, Code 244.869 [15]	0,05 %
	INCI : Perfume	
<u>Phase E:</u>	SYNPERONIC PE/L61 [16]	0,75 %
	INCI: Poloxamer 181	

SUPPLIERS

- [1] NIPA LABORATORIES
- [2] BF GOODRICH
- [3] ROCHE VITAMINS & FINE CHEMICALS
- [4] CLARIANT
- [5] BF GOODRICH
- [6] NIPA LABORATORIES
- [7] BASF
- [8] AMERCHOL
- [9] GOLDSCHMIDT SKW
- [10] AMERCHOL
- [11] DISHMAN NETHERLANDS
- [12] COGNIS
- [13] COGNIS
- [14] DRAGOCO
- [15] DROM
- [16] UNIQEMA

MANUFACTURING PROCEDURE

To prepare phase A the preservatives are dissolved in water while stirring and heating to 90°C. When the preservatives are properly dissolved the solution is cooled to ambient temperature.

→ Alternatively the preservatives may also be introduced in the oil phase of the balm to avoid excessive time & energy losses. If so, thorough micro-biological screening needs to be accomplished to avoid contamination.

Acrylates/C₁₀₋₃₀ alkyl acrylates crosspolymer & carbomer are dispersed at room temperature in the solution of the preservatives using standard procedures to dispersing these resins in water; it is advised against dispersing the resins at elevated temperature. This is done while stirring with a propeller mixer at a velocity of

500-1000 rpm and sifting the resin in the vortex created by the propeller mixer. Special care should be given to proper wetting of the acrylates/C₁₀₋₃₀ alkyl acrylates crosspolymer and full hydration of the carbomer. Subsequently the disper-



sion is heated to 45-50°C and allantoin & panthenol are added while stirring until both products have been completely dissolved. This may be time consuming for allantoin. The dispersion is subsequently stirred with an anchor mixer during 30 minutes. It is essential to use demineralised water as the two resins used form salts with polyvalent metal ions such as Mg^{2+} and Ca^{2+} . These salts deactivate the resins.

Next the dispersed resins are neutralised with triethanolamine. A high viscous gel (BROOKFIELD viscosity ≈ 80.000 cPs) is formed which will contain some entrapped air. This will largely disappear on stirring, although it has no consequences for the formulation to continue with the procedure and later eliminate the entrapped air.

Alternatively aminomethyl propanol may be used, as this neutralising agent does not form nitrosamines. If decided so, it is suggested to use 0,15% aminomethyl propanol, balance water.

Phase C is prepared by heating and mixing the ingredients at 75°C to assure proper dissolution of cholesterol. The presence of polyglyceryl-3 diisostearate and PPG-20 methylglucose ether improve the rate of dissolution of cholesterol. When a clear & transparent mixture is obtained the mixture is cooled to 45-50°C and added to the gel while gently stirring with an anchor. When the oil phase is evenly distributed in the gel, the mixture is homogenised with a high shear Silverson mixer.

The presence of polyglyceryl-3 diisostearate allows for adjustment of the particle size and particle size distribution. When the desired particle size and particle size distribution have been achieved the gel is cooled to 25°C and the mixture of fragrances is added while stirring with an anchor mixer during 30 minutes.

Finally poloxamer 181 is added while gently stirring the gel with an anchor mixer. The greyish look of the balm gradually disappears and the gel becomes more white/yellowish (depending on the choice of the fragrance). Simultaneously the thixotropy of the gel markedly increases, partially eliminating the plastic behaviour of the gel. Finally the gel is confectioned. This should preferably a tube or a dispenser system.

DESCRIPTION AND SUGGESTIONS FOR MODIFICATION

The obtained gel is a soft gel that easily turns into a liquid upon stress. This process is reversible and upon removal of the stress the gel comes back to its original viscosity. The thixotropy is high.

The gel is preferably applied via a tube because of the particular rheology of the gel. The rheology can be further modified using PEMULEN TR-2 instead of PEMULEN TR-2, which will result is a lower thixotropy of the gel, but also a higher

viscosity. In that case the viscosity adjustment is best done with CARBOPOL ETD2050 or a mixture of CARBOPOL ETD2050 & CARBOPOL ULTREZ-10. The plastic behaviour of the gel can be further reduced by application of natural gums such as xanthan gum or locust bean gum. The rheology of these gels is a complex matter, which is only partially understood.



The gel becomes liquid on application, enabling to easily distribute the gel on the face. For the protection of the skin directly after shaving bisabolol and allantoin are applied. The use of cholesterol enables to greatly improve the fragrance retention. It was shown that the formulation without cholesterol had a fragrance retention of less than 1 hour while in the presence of 0,5% cholesterol fragrance retention was increased to 3-4 hours. It is also noteworthy that the difference between top note, middle note and final note was markedly reduced.

The gel was formulated together with two emollients: a medium viscous dimethicone and a mixture of mineral oil and lanolin alcohol, which is an additional support to the activity of cholesterol.

It goes without saying that the choice of fragrance is highly subjective. However, care should be given to the compatibility of the fragrance with the gel. Occasionally the fragrance may separate from the gel in case the fragrance is too hydrophilic in nature.