

BAYCUSAN® C 1000

FOR SUN CARE FORMULATIONS

BAYCUSAN® C 1000: A FILM FORMER WITH EXCELLENT SENSORY PROPERTIES AND A UV »BOOSTING EFFECT«

DESCRIPTION

Baycusan® C 1000 is a low-viscosity milky liquid that consists of 40% of a high molecular weight polyurethane and 60% water. An internal emulsifier is incorporated into the polymer backbone to ensure the stability of the polymer dispersion. The polymer structure contains both hydrophilic and hydrophobic segments which impart a unique combination of water resistance and breathability.

INCI NAME

Polyurethane-34

PHYSICAL PROPERTIES

Solids	40.0 ± 2.0%
Viscosity at 23 °C	≤ 500 mPas
pH	7.5 ± 1.0
Glass transition temperature of polymer*	-51.5 °C
Minimal film formation temperature of polymer*	< 0 °C

* These values provide general information and are not part of the product specification.

KEY FEATURES

- SPF boosting effect
- Outstanding water resistance
- Easy to use
- High formulation flexibility
- No "balling" effect
- Non-greasy and non-sticky afterfeel on skin

FILM FORMATION

Baycusan® C 1000 functions as a film former. When incorporated into sun care formulations, Baycusan® C 1000 forms a highly flexible, breathable film that mimics the movement of skin. This film creates a naturally soft feel on the skin without any tightening sensation.

To determine the breathability of Baycusan® C 1000, the water vapor transmission of its film on hydrated vitro skin was measured. For comparison, hydrated vitro skin was coated with either Baycusan® C 1000 or with a competitive polymer solution (40% solids) at a concentration of 2 mg/cm. **Figure 1** shows clearly that Baycusan® C 1000 forms a breathable film whereas the competitive film formers are more occlusive than either the control or Baycusan® C 1000.

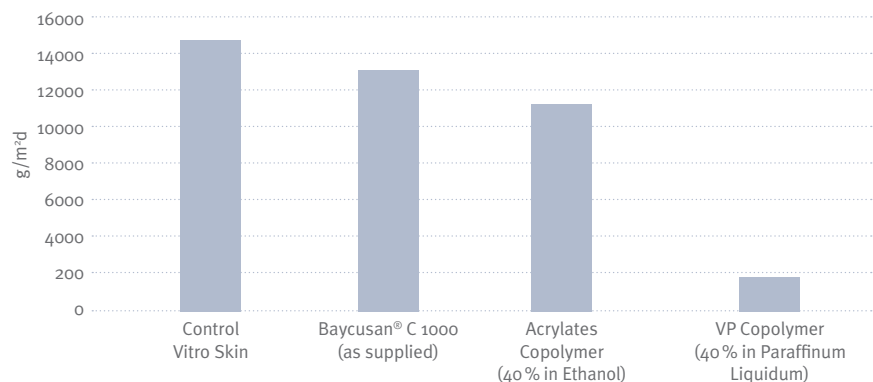


Figure 1 : Water Vapor Transmission Results

WATER RESISTANCE

The water resistance of oil-in-water formulations was evaluated according to the COLIPA Guidelines (December, 2005) on 3 formulations with 5 subjects.

Formulation	Baycusan® C 1000, wt. %	Water Resistance Retention, %
RR 8020	7.5	54.1
RR 8021	5.0	61.6
RR 8022	7.5	66.8

Table 1: In vivo water resistance data

SPF BOOSTING EFFECT

Figure 2 shows results of in vitro SPF measurement of oil-in-water formulations containing different UV filter combination:

- A – 10 % Ethylhexyl Methoxycinnamate
- B – 10 % Octocrylene
- C – 5 % Ethylhexyl Salicylate
- D – 10 % Homosalate
- E – 3 % Butyl Methoxydibenzoylmethane + 10 % Octocrylene + 5 % Ethylhexyl Salicylate + 10 % Homosalate
- F – 3 % Butyl Methoxydibenzoylmethane + 13 % Homosalate + 5 % Ethylhexyl Salicylate + 4 % Benzophenone-3

As shown in **Figure 2**, Baycusan® C 1000 is an effective SPF booster with Octocrylene. In sun care formulations containing a combination of Octocrylene with other UV filters, the SPF boosting effect of Baycusan® C 1000 is confirmed by in vitro measurement as well as in vivo measurement (**Figure 3**).

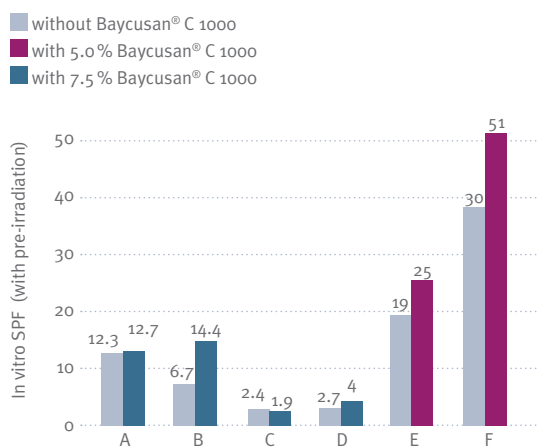


Figure 2
In vitro data for formulation with and without Baycusan® C 1000

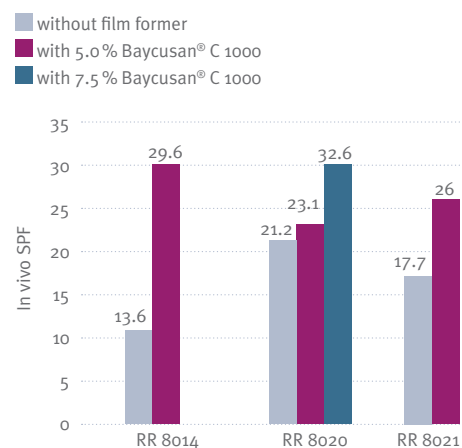


Figure 3
In vivo SPF data formulations with and without Baycusan® C 1000

FORMULATING GUIDANCE

In emulsion systems, we recommend the incorporation of Baycusan® C 1000 after the emulsion has formed – during the cooling down step at about 40 °C. Recommended use level is 5 to 10 wt. % (as supplied).

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