Edition 1/1

PNC 400

Thickening agent

Chemical and physical characteristics (*)

Chemical Name	Carboxyvinyl polymer sodium salt
INCI NAME	Sodium Carbomer
Appearance	Hygroscopic white powder
Bulk density	0.3-0.45 g/cm^3
pH (0.5% water dispersion)	6.0-7.5

Viscosity (mPa·s) of water dispersions
(Brookfield RV, 20 rpm, 25°C)

% Dispersion	Viscosity		Spindle
	Min.	Max	
0.2	13,000	25,000	6
0.5	35,000	55,000	7

(*) Typical values not qualified for quality control purpose

Applications

PNC 400 is a pre-neutralized synthetic polymer that can be used as thickener, suspending agent and stabilizer in most cosmetic products.
The use of pre-neutralized Carbomers provides several advantages:

- superior handling (low dusting powder)
- quick dispersion
- simplification of production process (elimination of neutralizing phase)
- constant pH during all the production process
- possibility to modify the viscosity of finished products

PNC 400 dispersions are characterized by high viscosity and clarity (see Fig. 1 and 2).

Use

Contrary to traditional carbomers, PNC 400 does not require any pre-dispersion and thickens as soon as sprinkled into water or water/alcohol blend (up to 70:30) giving a clear viscous gel.

The shape of the agitator and the agitation speed are different from those used to disperse the acid polymer. The best way to operate is to use the equipment normally employed during the neutralizing phase of carbomer (anchor type). Slow addition of the powder avoids the formation of lumps and guarantees a quick thickening.
During the preparation of emulsions, PNC 400 can be dispersed in the oil or in the water phase before the emulsification step or sprinkled directly into the emulsion, stirring until an homogeneous system is obtained.

Figure 1 - Viscosity vs polymer concentration

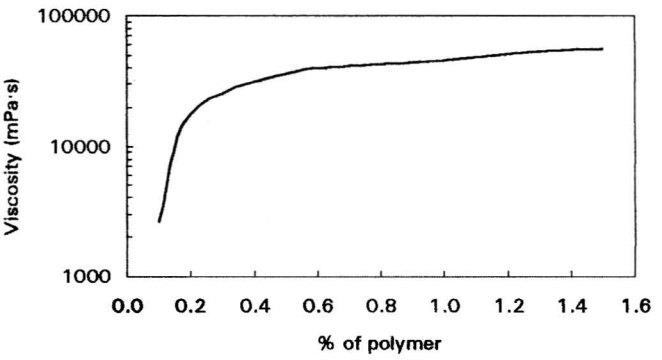
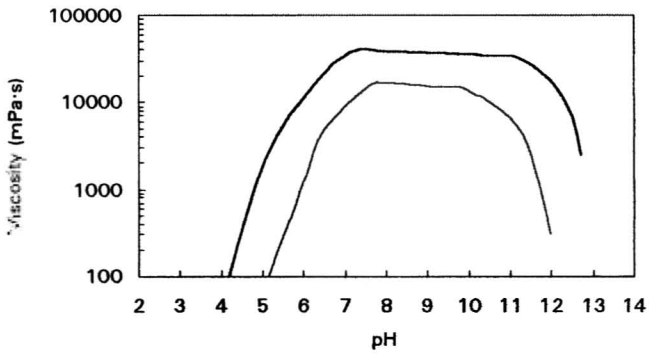


Figure 2 - Viscosity vs pH of polymer dispersion



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The pH achieved at 0.5% in water is around 7. If a lower pH is required, little adjustments are possible by addition of acids (e.g. HCl, H_3PO_4, citric and lactic acid). High amounts of acid should be avoided because of the formation of salt that affects the viscosity widely.
If a strong reduction of pH is needed, the use of blend of PNC 400 and the corresponding acid polymer (i.e. Synthalen K) provides good viscosity in a broad range of pH without using any neutralizing agent.
In normal conditions, gels prepared with PNC 400 neither prevent nor promote the growth of micro-organisms; therefore the addition of a suitable preservative system is advisable.
UV rays can cause loss of viscosity in PNC 400 gels. The addition of water-soluble UV-absorbers, such as UVASORB S5 (Benzophenone-4), can help for preventing polymer degradation.

Toxicological Information

LD_{50} (oral)	> 2000 mg/kg
Acute skin irritation	non irritant
Acute eye irritation	non irritant
Skin sensitization (max. test)	non-sensitizing

(Toxicological tests performed on the acid form)

Transport, storage and handling

Labelling: product not classified as hazardous according to international transport regulations.
Store in the original closed containers in a dry cool place. Protect from moisture. Do not breathe dust and avoid contact with skin, eyes and mucous membranes. In case of contact, wash immediately with plenty of water.

For further information please refer to safety data sheet.

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