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## -Hydro gelling agent - ADEKA NOL GT-700

ADEKA NOL GT-700 is a water soluble polymer which has urethane bond in the structure. It associates water molecule and show thickening effect on water by forming water gel. It is used for cosmetics as hydro gelling agent.

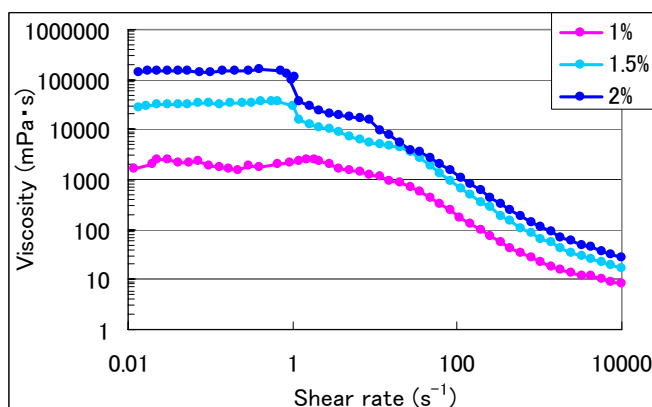


INCI name : PEG-240/HDI COPOLYMER BIS-DECYLTETRADECETH-20 ETHER  
 CAS RN : 428442-71-1

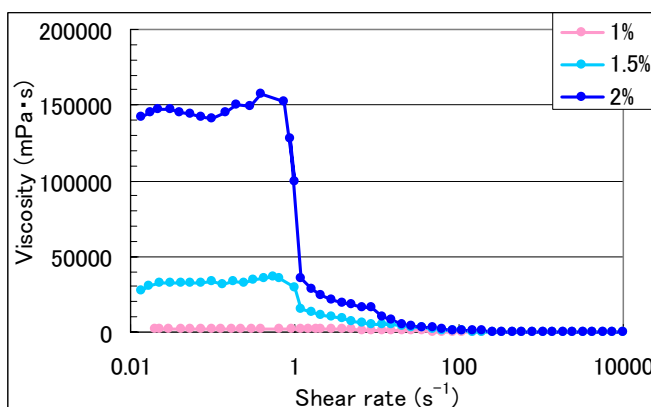
### Physical and chemical properties

Purity	Appearance	Melting point	Viscosity of aqueous solution (1%aq)	Cloud point (1%aq)
>99%	White~yellow flake with mild odor	55~65°C	1000~5000mPa·s	60~75°C

Viscosity of ADEKA NOL GT-700 aq. (Lot.024X5, 25°C, Conc. : 1~2%)



Logarithmic axis



Integer axis

## Dissolution method

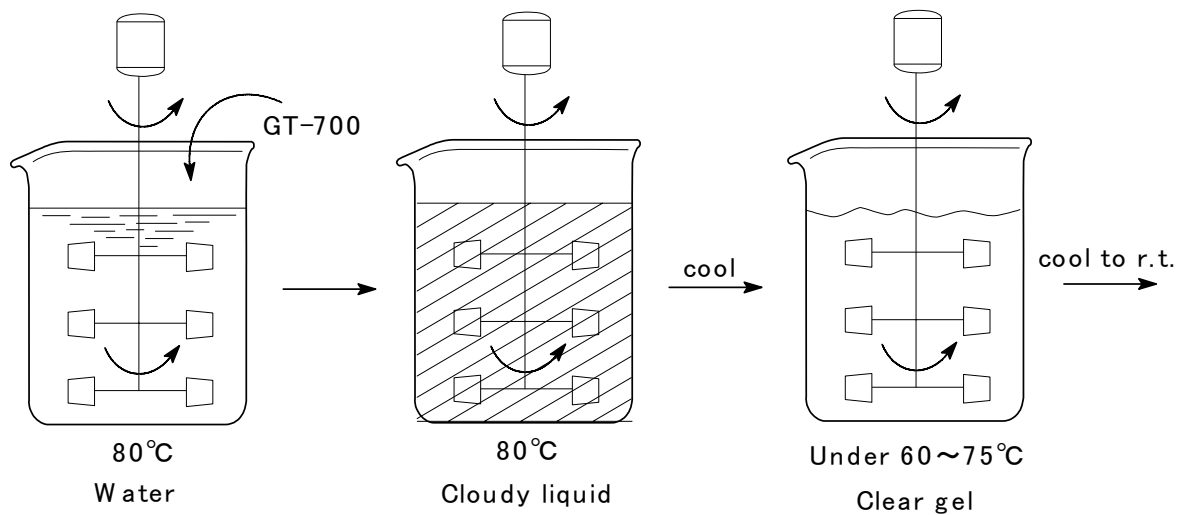
It is necessary to dissolve GT-700 in water by the following methods because of highly melting point and existence of cloud point.

### ***Example of dissolution method***

Prescribed amount of ADEKA NOL GT-700 is added to the water kept at 80°C, and stirred. After it is confirmed to have become homogeneously cloudiness, it cools while stirring. When it cools to 60 ~ 75°C, it dissolves clearly, and the viscosity increases rapidly.

In order to obtain the homogeneously clear gel, it's necessary to stirrer carefully during cooling.

\*The cloud point ranges from 60 to 75°C by production lot.

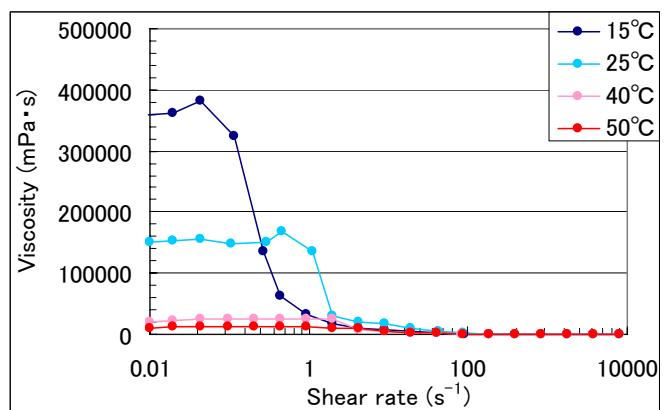
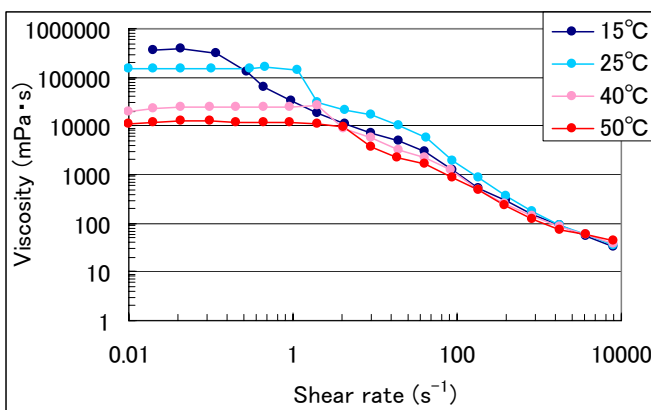


# Application data of GT-700 gel

## Influence of temperature

The viscosity of the GT-700 gel decreases gradually as the temperatures rise. The gel becomes cloudy and collapses at 60°C or more, because of cloud point. Please note that the cloud point decreases under the inorganic salt existence, and a heatproof temperature decreases further.

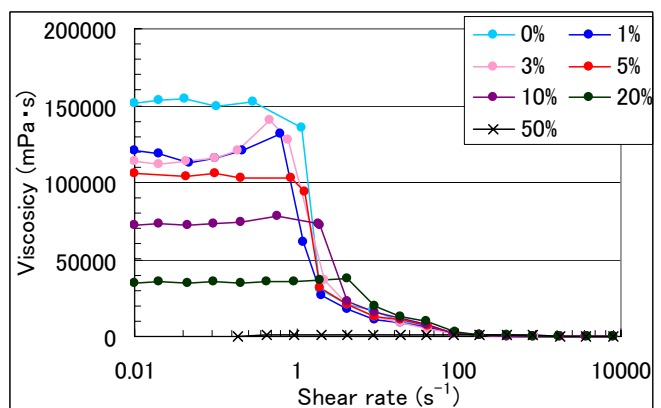
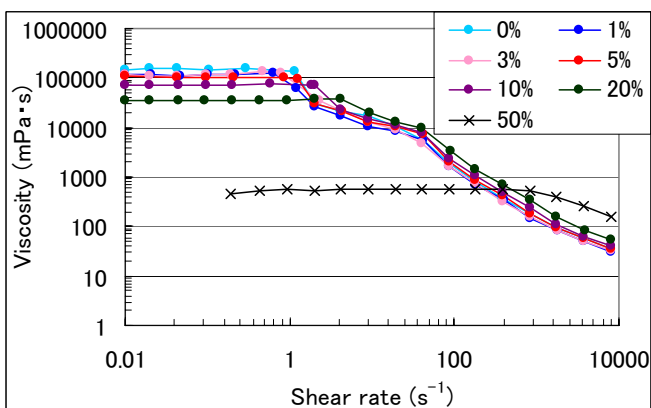
The viscosity of ADEKA NOL GT-700 2%aq. (Temperature: 15~50°C)



## Influence of solvent

The viscosity of the gel decreases gradually by adding the propylene glycol.

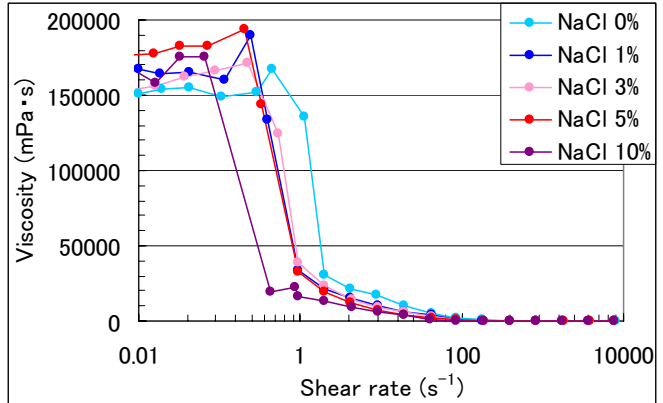
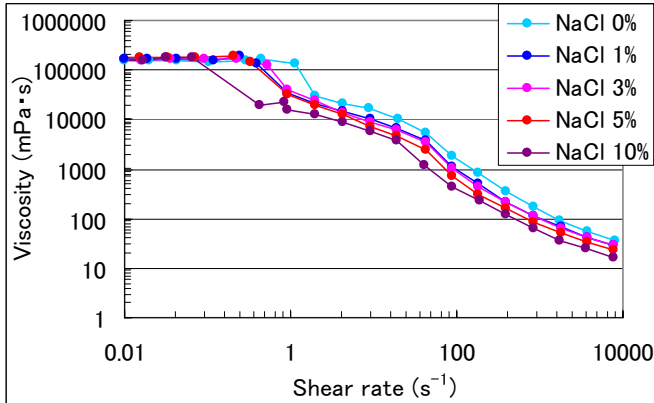
Viscosity dependency with propylene glycol (ADEKA NOL GT-700 2%aq., Conc. of NaCl:0~50%)



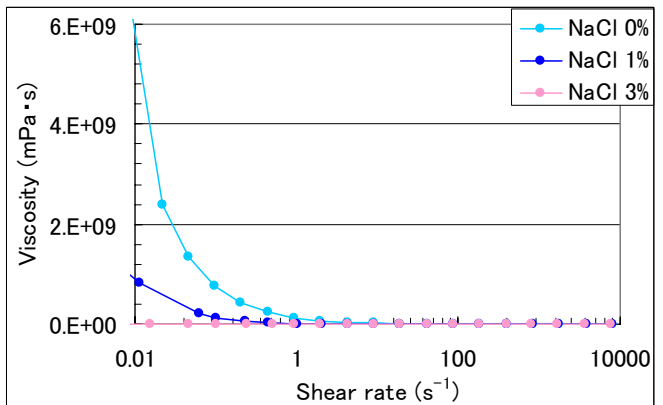
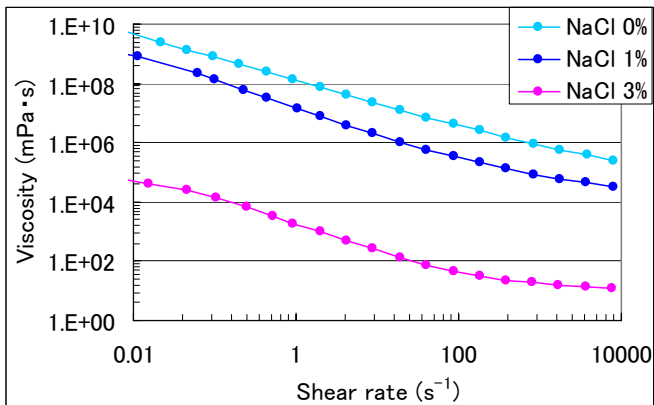
## Influence of inorganic salt

ADEKA NOL GT-700 maintains the gel also under the inorganic salt existence.

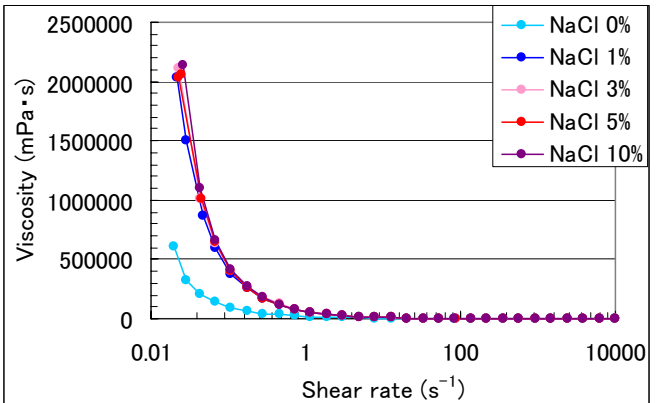
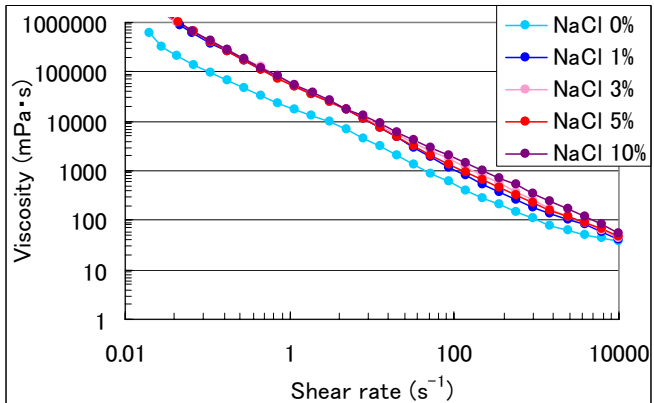
The viscosity of ADEKA NOL GT-700 2%aq. (25°C, Conc. of NaCl : 0~10%)



Carbomer :1%, Triethanolamine: 0.6% aq. (25°C, Conc. of NaCl : 0~3%)



Xthantam gum 3% aq. (25°C, Conc. of NaCl : 0~10%)



## Influence of surfactant

The gel collapses rapidly when surfactant/GT-700 = 1/1 or more though the viscosity rises when the concentration of the surfactant is low.

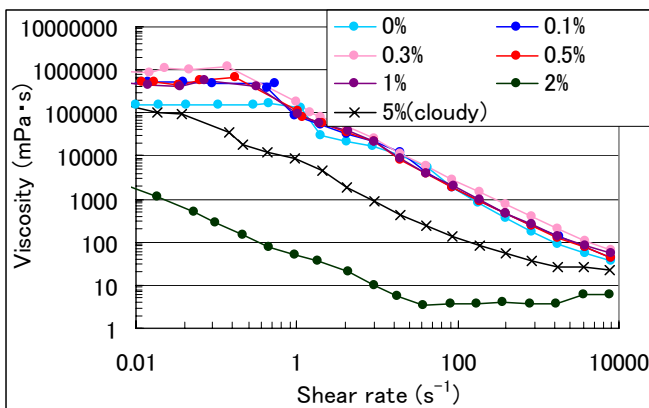
GT-700	Surfactant*	Gel properties	GT-700	Surfactant*	Gel properties
2%	0%	O	3%	3%	▲
	0.1%	O	5%		O
	0.3%	O	7%		O
	0.5%	▲	5%	5%	O
	1%	▲			
	2%	X			
	5%	X(cloudy)			

O :Strong gel    ▲ : The strength of gel decreases    X :Gel collapse

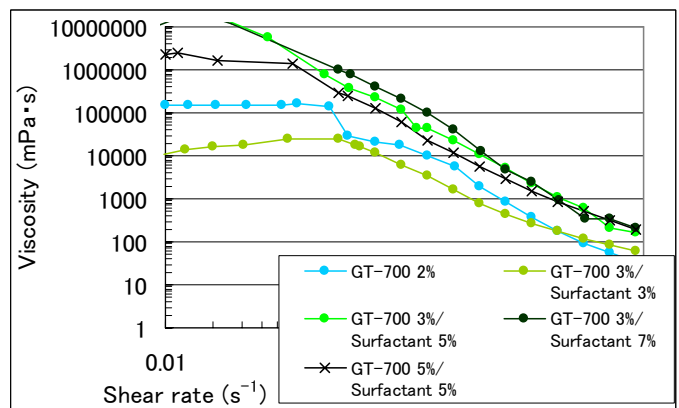
\*Surfactant : SODIUM LAURETH SULFATE (ADEKA HOPE YES-25)

## **Viscosity dependency with concentration of surfactant**

ADEKA NOL GT-700 2%aq.  
(25°C, Conc. of surfactant : 0~5%)



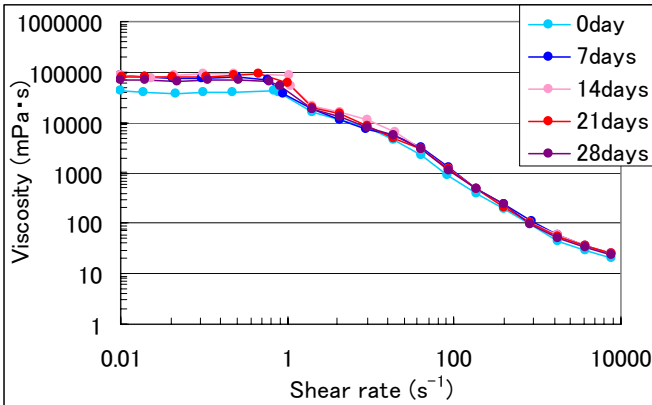
ADEKA NOL GT-700 3%, 5% aq.  
(25°C, Conc. of surfactant : 3~7%)



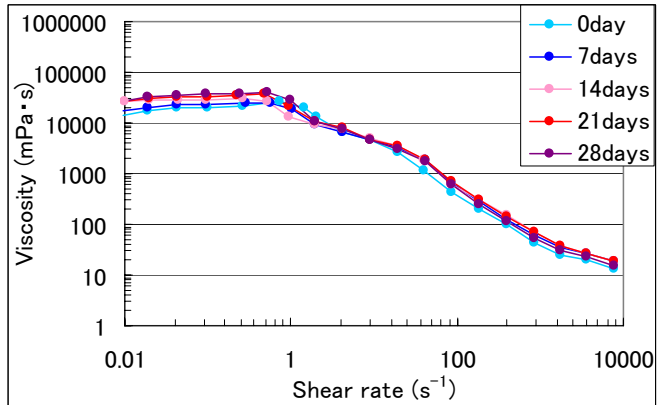
## Suitability of aquarius solution

The gel is steady in the buffer solution of pH 1.68 ~ pH10.0 for more than one month.

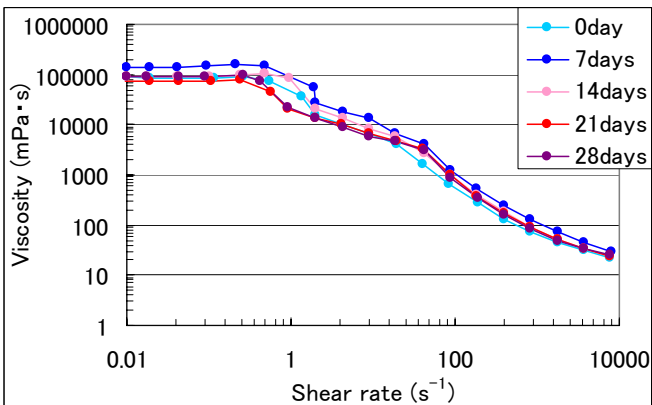
**pH 1.68 buffer solution**



**pH 10.0 buffer solution**

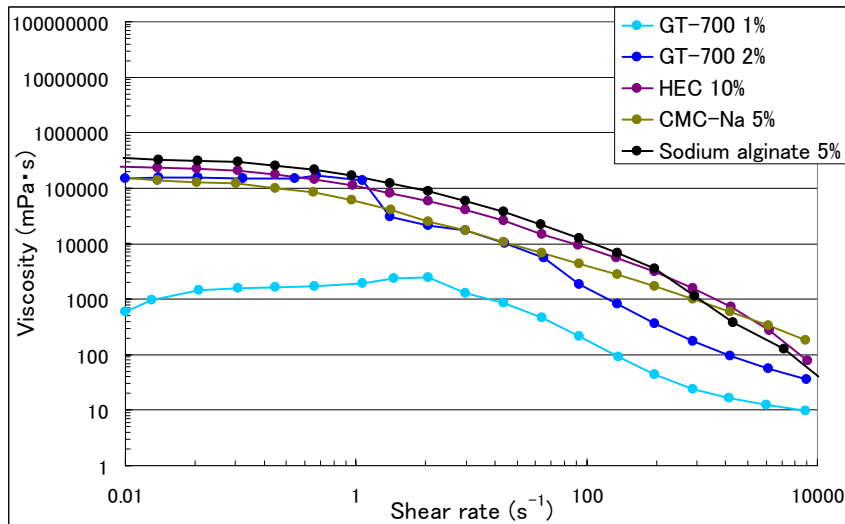
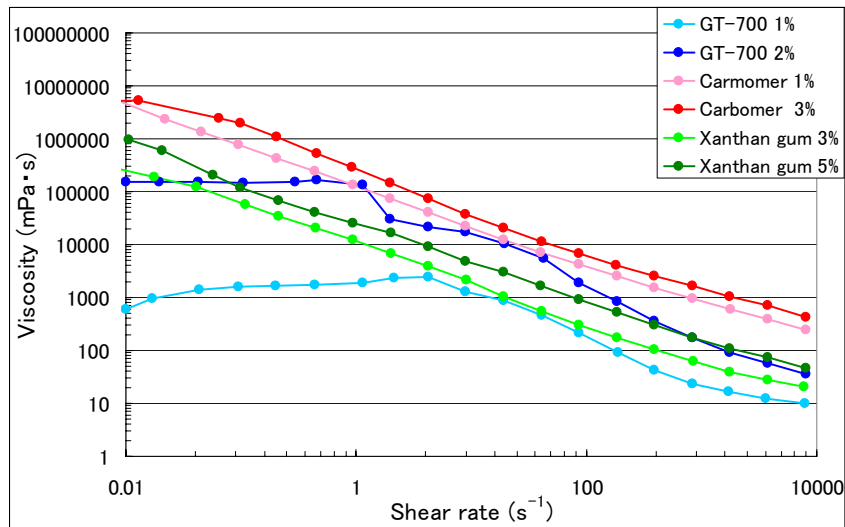


**pH6.86 buffer solution**



GT-700 2%aq (storage temperature:40°C / measurement temperature 25°C)

## Comparison of other thickeners



- \* Triethanolamine is added as the neutralizing agent in carbomer solution. (Carbomer/TEA=1wt/0.6wt)
- \* HEC :Hydroxyethyl Cellulose, CMC-Na :Carboxymethyl Cellulose sodium salt

GT-700 2%aq



Carbomer 1%  
TEA 0.6%



Xanthan gum 3% aq

