

# TEGO® Carbomer 140 G / TEGO® Carbomer 141 G

## Convenient granulated viscosity adjusters and builders, emulsion stabilizers

### Intended use

Rheological additives

Stabilizers

### Benefits at a glance

- Granulated Carbomers with numerous advantages: lower dusting, easier to process, higher bulk density
- First Carbomers for cosmetic application based on : n-Heptane and Ethyl acetate (class 3 solvents according to Pharmacopoe's) with lower toxic potential
- Especially suitable for cosmetic and pharmaceutical emulsions or gels

### INCI (PCPC name)

Carbomer

TEGO® Carbomer 140 G and 141 G correspond to the quality requirements according to Pharmacopoe Européenne.

Chemical and physical properties (not part of the specification)	TEGO® Carbomer 140 G	TEGO® Carbomer 141 G
Appearance	granules	granules
Viscosity, 0.5%, neutralized	40,000 - 60,000 mPas	5,400 - 11,400 mPas
Electrolyte tolerance	low	medium

Easy dispersibility	✓	✓
Emulsion stabilization		✓

### Properties

- excellent viscosity adjuster, viscosity builder and emulsion stabilizer
- first Carbomers on the market based on class 3 solvent according to Pharmacopoe's (US and European; solvents with low toxic potential to man, no health-based exposure limit is needed): n-Heptane and Ethyl acetate are used as solvents in the polymerization step (max. 0.5% residual content)
- soluble in water and alcohol
- can be used over a wide pH range

As granulated quality, TEGO® Carbomer 140 G and 141 G offer numerous advantages:

- Handling advantages:
  - Low dusting
  - High flowability
  - Bulk density 3.5 times higher than powder: less shipping volume
- Performance advantages:
  - Same performance as powder products
  - Easy dispersion
  - Easier handling of the material (no lumps formation during dosage)

#### Countertypes:

	Countertype
TEGO® Carbomer 140 G	Carbopol 980/990 (Noveon)
TEGO® Carbomer 141 G	Carbopol 981 (Noveon)

#### Application

	Application	TEGO® Carbomer 140 G	TEGO® Carbomer 141 G
rinse-off	Clear gels	✓✓	
	Surfactant systems	✓	✓
leave-on	Lotions	✓	✓✓
	Creams	✓	
	Sprays		✓

The electrolyte compatibility of TEGO® Carbomer 141 G is relatively high.

#### Preparation

TEGO® Carbomer 140 G and 141 G are very fast dispersible in water without formation of lumps.

Add TEGO® Carbomer 140 G or 141 G into the Vortex of the agitating liquid. Use dissolver or propeller stirrer or rotor-stator-homogenizer.

Intensive shear may lead to a viscosity reduction of the final product and should be avoided.

Neutralize with triethanolamine, tetrahydroxypropylethylenediamine, sodium hydroxide or other inorganic base.

#### Leave-on applications:

- It is in general recommended to use TEGO® Carbomer 140 G and 141 G for hot processed emulsions.
- TEGO® Carbomer 140 G and 141 G have to be dissolved completely in the hot water phase. It is therefore suggested to dissolve the granules of carbomer under stirring at 70 – 80 °C in the water phase.

- Alternatively, TEGO® Carbomer 140 G and 141 G can be dispersed in the oil phase. Subsequently the oil phase should be heated to 70 – 80 °C.
- Combine oil and water phase and homogenize.
- Avoid prolonged high shear mixing (may lead to a viscosity reduction of the final product).
- Neutralization is typically done at temperatures below 40 °C.
- In case of cold processed O/W lotions and creams the use of TEGO® Carbomer 140 and TEGO® Carbomer 141 (powder version) is preferred.

#### Recommended usage concentration

0.05 – 1.00% TEGO® Carbomer 140 G / 141 G

#### Packaging

480 kg CP3 pallet (24 x 20 kg boxes)

#### Storage

TEGO® Carbomer 140 G and 141 G are hygroscopic. The material should be stored dry and in the dark. Open bags should be used immediately or sealed properly.

#### Hazardous goods classification

Information concerning

- classification and labelling according to regulations for transport and for dangerous substances
- protective measures for storage and handling
- measures in case of accidents and fires
- toxicity and ecological effects

is given in our material safety data sheets.

## Guideline formulations

<b>Conditioning hair gel UW 49/1</b>	
<b>Phase A</b>	
PEG-20 Glyceryl Laurate	3.0%
Perfume	0.5%
ABIL® B 88183 (PEG/PPG-20/6 Dimethicone)	2.0%
<b>Phase B</b>	
TEGO® Carbomer 140 G	1.5%
Water	90.8%
<b>Phase C</b>	
NaOH, 25%	2.2%
Preservatives	q.s.
<b>Preparation:</b> Mix phases A and B separately in the given order until the solutions are homogeneous. Add B to A. After adding the TEGO® Carbomer 140 G solution a precipitate appears, which disappears after neutralizing with NaOH. This hair gel is very susceptible to microbial contamination, it must be carefully preserved.	

<b>“Hair Repair” leave-in Conditioner UW 49/2</b>	
<b>Phase A</b>	
TEGINACID® C (Ceteareth-25)	4.0%
ABIL® OSW 5 (Cyclopentasiloxane; Dimethiconol)	20.0%
ABIL® Soft AF 100 (Methoxy PEG/PPG-7/3 Aminopropyl Dimethicone)	1.0%
TEGO® Alkanol L4 (Laureth-4)	0.5%
<b>Phase B</b>	
TEGO® Carbomer 140 G	0.5%
Water	69.0%
Propylene Glycol	5.0%
<b>Phase Z</b>	
NaOH	ad pH 5-6
Preservative, Perfume	q.s.
<b>Preparation:</b> Dissolve the TEGO® Carbomer 140 G in the water. Heat phases A and B separately to approx 65 °C. Combine both phases and homogenize. Cool down while stirring. Add perfume below 45 °C. Adjust the pH value with NaOH to 5-6.	

<b>Humectant facial cleansing gel</b> UW 49/3	
<b>Phase A</b>	
Sodium Laureth Sulfate, 28%	4.30%
Perfume	0.20%
TEGOSOFT® GC (PEG-7 Glyceryl Cocoate)	0.50%
Glycerin	30.00%
LACTIL® (Sodium Benzoate; Sodium PCA; Glycine; Fructose; Urea; Niacinamide; Inositol; Sodium Benzoate; Lactic Acid)	1.00%
TEGO® Betain 810 (Capryl/Capramidopropyl Betaine)	3.20%
<b>Phase B</b>	
Xanthan Gum (Keltrol F, Lubrizol)	0.10%
TEGO® Carbomer 140 G	1.08%
Water	54.92%
<b>Phase C</b>	
Sodium Hydroxide (10% in water)	4.70%
Preservative	q.s.
<b>Processing</b>	
Phase A: Mix the ingredients in the given order.	
Phase B: Dissolve TEGO® Carbomer 140 G and the Xanthan Gum in the water.	
Add Phase B to A homogeneously and then adjust the pH value with NaOH.	

<b>O/W Moisturizing Soft Cream</b> FU 03/10-6	
<b>Phase A</b>	
AXOL® C 62 Pellets (Glyceryl Stearate Citrate)	1.50%
TEGO® Alkanol 1618 (Cetearyl Alcohol)	1.00%
TEGOSOFT® CT (Caprylic/Capric Triglyceride)	10.30%
TEGOSOFT® MM (Myristyl Myristate)	4.00%
Tocopheryl Acetate	1.00%
<b>Phase B</b>	
Water	74.00%
Glycerin	5.00%
TEGO® Carbomer 140 G	0.20%
<b>Phase C</b>	
Sodium Hydroxide (10% in water)	q.s.
<b>Phase D</b>	
Alcohol	3.00%
<b>Phase Z</b>	
Preservative, Perfume	q. s.
<b>Preparation:</b>	
1. Dissolve TEGO® Carbomer 140 G in the water phase at 70 – 75 °C.	
2. Heat phase A to approx. 75 °C.	
3. Add phase A to phase B with stirring <sup>1)</sup> .	
4. Homogenize.	
5. Cool with gentle stirring and add phase C and D below 40 °C.	
<sup>1)</sup> Important:	
If phase A has to be charged into the vessel first, phase B must be added <b>without stirring</b> .	

<b>O/W Caring Body Lotion BR 7/10-3</b>	
<b>Phase A</b>	
TEGIN® 4100 Pellets (Glyceryl Stearate)	0.50%
Stearic Acid	0.50%
TEGOSOFT® OP (Ethylhexyl Palmitate)	5.00%
TEGOSOFT® P (Isopropyl Palmitate)	6.00%
TEGOSOFT® DC (Decyl Cocoate)	3.00%
TEGOSOFT® CR (Cetyl Ricinoleate)	2.00%
<b>Phase B</b>	
Water	74.30%
TEGO® Care CG 90 (Cetearyl Glucoside)	1.00%
TEGO® Carbomer 141 G	0.20%
Glycerin	2.00%
Panthenol	0.50%
<b>Phase C</b>	
Sodium Hydroxide (10% in water)	q.s.
<b>Phase D</b>	
Alcohol	5.00%
<b>Phase Z</b>	
Preservative, Perfume	q. s.
<b>Preparation:</b>	
<ol style="list-style-type: none"> <li>Combine ingredients of phase B and heat to approx. 80°C. Homogenize in order to dissolve the TEGO® Carbomer 141 G.</li> <li>Heat phase A to approx. 80 °C.</li> <li>Add phase A to phase B with stirring<sup>1)</sup>.</li> <li>Homogenize.</li> <li>Cool with gentle stirring and add phase C and D below 40 °C.</li> </ol>	
<sup>1)</sup> Important:	
If phase A has to be charged into the vessel first, phase B must be added <b>without stirring</b> .	

<b>O/W Skin Care Lotion SZ 11/10-1</b>	
<b>Phase A</b>	
TEGO® Care PSC 3 (Polyglyceryl-3 Dicitrate/Stearate)	2.00%
TEGOSOFT® CT (Caprylic/Capric Triglyceride)	6.50%
TEGOSOFT® OP (Ethylhexyl Palmitate)	7.30%
TEGO® Carbomer 141 G	0.20%
<b>Phase B</b>	
Water	81.00%
Glycerin	3.00%
<b>Phase C</b>	
Sodium Hydroxide (10% in water)	q.s.
<b>Phase Z</b>	
Preservative, Perfume	q.s.
<b>Preparation:</b>	
<ol style="list-style-type: none"> <li>Disperse TEGO® Carbomer 141 G in the oil phase at approx 80 °C.</li> <li>Heat phase B to approx. 80 °C.</li> <li>Add phase A to phase B with stirring<sup>1)</sup>.</li> <li>Homogenize.</li> <li>Cool with gentle stirring and add phase C below 40 °C.</li> </ol>	
<sup>1)</sup> Important:	
If phase A has to be charged into the vessel first, phase B must be added <b>without stirring</b> .	

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