
Technical Information

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Luviskol® K Grades

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Polyvinylpyrrolidone for use in cosmetic applications

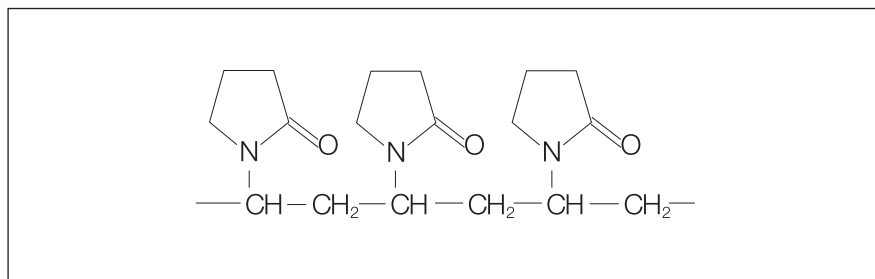
cosmetic
SOLUTIONS

- Hair Care
- Skin Care
- Oral Care

 **BASF**
The Chemical Company

Chemical description

Homopolymers of vinylpyrrolidone

Structural formula**Monomer unit molar mass**

111.14 g/mol

INCI name

Polyvinylpyrrolidone (PVP)

CAS-No.

9003-39-8

Range

Luviskol® K 17 powder

Luviskol® K 30 solution approx. 30%

Luviskol® K 30 powder

Luviskol® K 80 powder

Luviskol® K 85 CQ solution approx. 20%^{a)}

Luviskol® K 90 solution approx. 20%

Luviskol® K 90 powder

^{a)}The solution is preserved with Polyaminopropylbiguanide (Cosmocil® CQ)**Physicochemical properties****Appearance**

The aqueous solutions are clear and colorless to slightly yellowish. The powder products are white.

Odor

Slight, characteristic

Solubility

Soluble in water, ethanol, and isopropanol.

Specifications

	K value (1% in water⁰)	Solids content (%)	Viscosity Brookfield RVT (mPas)	pH of the 10% strength water solution	Content of NVP (%)
Method	02/0086.00	02/0087.01	02/0088.00	02/0089.00	02/0090.00
Luviskol® K 17 powder	15.0-19.0	95.0-100.0	-	3.0-7.0	≤ 0.01
Luviskol® K 30 powder	27.0-33.0	95.0-100.0	-	3.0-7.0	≤ 0.01
Luviskol® K 30 solution (ca. 30%)	27.0-33.0	29.0-31.0	-	4.0-8.0	≤ 0.01
Luviskol® K 80 powder	74.0-82.0	95.0-100.0	2,500-7,000 ¹	5.0-8.0	≤ 0.01
Luviskol® K 85 CQ solution (ca. 20%)	83.0-88.0	19.0-21.0	5,000-15,000 ²	7.0-9.0	≤ 0.01
Luviskol® K 90 powder	88.0-96.0	95.0-100.0	10,000-30,000 ³	5.0-9.0	≤ 0.01
Luviskol® K 90 solution (ca. 20%)	90.0-98.0	19.0-21.0	10,000-40,000 ⁴	7.0-9.0	≤ 0.01

⁰ The K value of Luviskol® K 17 powder is determined in 5% aqueous solution

¹ Spindle 6/100 rpm/23°C, 20% aqueous solution

² Spindle 6/50 rpm/23°C, telquel (ca. 20% aqueous solution)

³ Spindle 7/100 rpm/23°C, 20% aqueous solution

⁴ Spindle 7/100 rpm/23°C, telquel (ca. 20% aqueous solution)

Applications and technical properties

The Luviskol® K grades are used in cosmetics for various applications. They are mainly used as film formers, but also as thickeners.

The Luviskol® K products are nonionic vinylpyrrolidone homopolymers of different molecular weight. The molecular weight determines the setting properties of PVP polymers; the higher the molecular weight, the greater the setting.

The Luviskol® K products are readily soluble in water and are compatible with almost all anionic, cationic, and other non-ionic cosmetic polymers. They are compatible with Carbomer-type thickeners and other crosslinked polyacrylates for gel-type applications. Luviskol® K grades are ideal for use in water-based applications where a high degree of clarity is required in the finished products (e.g. gels).

Hair styling is the main application for the Luviskol® K grades. In hair gels, particularly wetlook gels, hair mousses, pump sprays, and liquid hair setting preparations they provide normal to strong hold. Luviskol® K 30 Powder can be used when manufacturing hair care products such as styling gels or solutions. Besides the use in hair gel formulations, Luviskol® K 30 can be used in pump sprays with normal hold, when low viscosity is important. Luviskol® K 80 and K 90 are for products with a strong hold and high viscosity, e.g. hair gels and hair mousses.

Luviskol® K grades can also be used as thickening agents, emulsifiers, lubricants, and binders. They are particularly suitable for addition to cosmetic products that cleanse, dye or otherwise enhance the appearance of the skin or hair. Luviskol® K 30 Powder and Luviskol® K 90 Powder can be used in the formulation of certain creams, both with an oil base and with an oil-free base. Luviskol® K 30 acts as a stiffening agent in hair setting preparations and improves the consistency of shampoos, hair dyes and similar preparations. In contrast to anionic colloids, the Luviskol® K grades can be combined with cationic substances, e.g. disinfectants or basic dyes, though it must be taken into account that Luviskol® K 30 Powder tends to bind dyes.

Recommended Formulations

Hair Gel, Superstyle, Ultra Strong

No. 04/00105

	%	Ingredients	Supplier	INCI name
A	0,60	Carbopol 940	(6)	Carbomer
	59,40	Water dem.		Aqua
B	0,48	AMP	(56)	Aminomethyl Propanol
C	10,00	Luviskol® K 90 Solution	(1)	PVP
	8,00	Luviskol® VA 64 W	(1)	VP/VA Copolymer
	5,00	Karion F flüssig	(20)	Sorbitol
	0,10	Edeta® BD	(1)	Disodium EDTA
	q.s.	Perfume		
	q.s.	Cremophor® CO 40	(1)	PEG-40 Hydrogenated Castor Oil
	0,05	Uvinul® MS 40	(1)	Benzophenone-4
	q.s.	Preservative		
	10,00	Ethanol 96%		Alcohol
	6,37	Water dem.		Aqua

Production:

Allow phase A to swell and neutralize with phase B.
Dissolve phase C and stir it into phase A+B.

Properties:

Viscosity: 30800 mPa·s Brookfield RVD VII+
pH value: 6,4

„Wet Look“ Styling Gel

No. 04/00095

	%	Ingredients	Supplier	INCI name
A	0.80	Carbopol 940	(6)	Carbomer
	39.20	Water dem.		Aqua
B	0.96	Trietholamine Care	(1)	Trietholamine
C	q.s.	Cremophor® CO 40	(1)	PEG-40 Hydrogenated Castor Oil
	q.s.	Perfume		
	55.04	Water dem.		Aqua
D	4.00	Luviskol® K 90	(1)	PVP
	q.s.	Preservative		

Production:

Allow phase A to swell and neutralize with phase B. Solubilize phase C. Weigh phase D into phase C and dissolve clearly.
Stir phase C+D into phase A+B.

Properties:

Viscosity: 25000 mPa·s
Haake Viscotester VT-02
pH value: 6.5

“Hair Setting Gel with normal hold“**No. 04/00074**

	%	Ingredients	Supplier	INCI name
A	0.50	Carbopol 940	(6)	Carbomer
	40.00	Water, dem.		Aqua
B	0.60	Triethanolamine Care	(1)	Triethanolamine
C	15.00	Ethanol 96%		Alcohol
	q.s.	Perfume		
	37.90	Water, dem.		Aqua
	6.00	Luviskol® K 30	(1)	PVP
	q.s.	Cremophor® CO 40	(1)	PEG-40 Hydrogenated Castor Oil

Production:

Allow phase A to swell and neutralize with phase B. Dissolve phase C and stir it into phase A+B.

Properties:

Viscosity: 7.000 mPa·s Haake Viscotester VT-02
pH value: 6.5

Wet Look Gel with Luviset® Clear**No. 04/00116**

	%	Ingredients	Supplier	INCI name
A	48.85	Water, dem.		Aqua
	q.s.	Preservative		
B	0.50	Ultrez® 21	(6)	Acrylates/C10-30 Alkyl Acrylate Crosspolymer
C	0.75	Triethanolamine Care	(1)	Triethanolamine
D	36.50	Water, dem.		Aqua
	q.s.	Perfume		
	q.s.	Cremophor® CO 40	(1)	PEG-40 Hydrogenated Castor Oil
E	10.00	Luviset® Clear	(1)	VP/Methacrylamide/Vinyl Imidazole Copolymer
	2.00	Glycerin 87%		Glycerin
	1.00	Luviskol® K 30	(1)	PVP
	0.20	D-Panthenol USP	(1)	Panthenol
	0.10	SF® 1288	(195)	PEG-12 Dimethicone
	0.10	Uvinul® P25	(1)	PEG-25 PABA

Production:

Weigh out phase A, give phase B to phase A and let it soak till it has sank down to the bottom. Give phase C into the mixture of A+B and stir till homogenous. Solubilize phase D. Weigh out the compounds of phase E into phase D and stir till it dissolves. Stir the solution of phase D and E slowly into the mixture of phase A, B and C till homogenous.

Properties:

Viscosity: 47600 mPa·s
pH value: 6.9
Transmission: 97.5% (600nm)

“Hair Gum”**No. 03/00113**

	%	Ingredients	Supplier	INCI name
A	0.50	Glucamate SSE-20	(3)	PEG-20 Methyl Glucose
	q.s.	Cremonophor® CO 40	(1)	PEG-40 Hydrogenated Castor Oil
	q.s.	Perfume		
	30.00	Water, dem.		Aqua
B	10.00	Luviquat® Hold	(1)	Polyquaternium-46
	2.00	Luviskol® K 90	(1)	PVP
	0.30	Germall 115	(9)	Imidazolidinyl Urea
	0.10	Euxyl K 100	(42)	Benzyl Alcohol, Methyl-chloroisothiazolinone Methylisothiazolinone
	0.50	D-Panthenol USP	(1)	Panthenol
	5.00	Pluracare® E 6000	(1)	PEG 90
	3.00	1,2 Propylene Glycol Care	(1)	Propylene Glycol
	46.10	Water, dem.		Aqua
C	2.50	Natrosol 250 HR	(4)	Hydroxyethylcellulose

Production:

Solubilize the components of phase A. Dissolve phase B and stir it into phase A. Stir phase C into the solution of the combined phases A and B.

Properties:

Viscosity: 48.000 mPa·s Brookfield RVD VII+
pH value: 6.0

“Hair Setting Cream”**No. 03/00094**

	%	Ingredients	Supplier	INCI name
A	5.00	Lanette 16	(27)	Cetyl Alcohol
	10.00	Tegin	(44)	Glyceryl Stearate SE
	5.00	Isopropyl Myristate	(27)	Isopropyl Myristate
	q.s.	Preservative		
	1.00	Dow Corning 200 fluid	(16)	Dimethicone
B	5.00	Glycerin 87%	(20)	Glycerin
	0.20	Edeta® BD	(1)	Disodium EDTA
	2.00	Luviskol® K 30	(1)	PVP
	71.80	Water, dem.		Aqua
C	q.s.	Perfume		

Production:

Heat phases A and B separately to about 80°C. Stir phase B into phase A and homogenize. Cool to about 40°C, add phase C and homogenize again.

Properties:

Viscosity: 24.000 mPa·s Brookfield RVD VII+
pH value: 6.3

Setting Lotion**No. 02/00062**

%	Ingredients	Supplier	INCI name
5.00	Luviskol® K 30	(1)	PVP
1.00	Luviquat® Style	(1)	Polyquaternium-16
0.10	D-Panthenol USP	(1)	Panthenol
0.10	Perfume		
35.00	Ethanol		Alcohol
58.80	Water, dem.		Aqua

Production: Mix all the components.

Blow Drying Lotion**No. 02/00141**

	%	Ingredients	Supplier	INCI name
A	q.s.	Perfume		
	q.s.	Cremophor® CO 40	(1)	PEG-40 Hydrogenated Castor Oil
	68.30	Water, dem.		Aqua
B	1.50	Luviskol® K 30	(1)	PVP
	0.20	Luviquat® Excellence	(1)	Polyquaternium-16
	30.00	Ethanol		Alcohol

Production: Solubilize the components of phase A. Weigh phase B into phase A and stir until clear and homogeneous.

Mascara***No. 67/00013**

	%	Ingredients	Supplier	INCI name
A	14.00	Water, dem.		Aqua
	q.s.	Preservative		
	2.50	Pluracare® F 127	(1)	Poloxamer 407
	3.50	Luviskol® K 30	(1)	PVP
	11.00	Ethanol		Alcohol
	0.70	Triethanolamine Care	(1)	Triethanolamine
B	0.52	Carbopol 934	(6)	Carbomer
	57.78	Water, dem.		Aqua
C	10.00	Sicovit® Black 80 E 172	(1)	C. I. 77 499, Iron Oxides

Production: Solubilize the components of phase A. Dissolve phase B and stir it into phase A. Stir phase C into the solution of the combined phases A and B and homogenize thoroughly.

Properties: Viscosity: 30.000 mPa·s
pH value: appr. 7

*Please note: formulation not approved in Japan

After Sun Mousse**No. 50/00146**

	%	Ingredients	Supplier	INCI name
A	64.30	Water, dem.		Aqua
	q.s.	Preservative		
	0.50	Allantoin	(20)	Allantoin
	1.35	D-Panthenol USP	(1)	Panthenol
	1.00	Luviskol® K 30	(1)	PVP
	5.00	1,2 Propylene Glycol Care	(1)	Propylene Glycol
B	3.00	Cremophor® A 6	(1)	Ceteareth-6, Stearyl Alcohol
	2.00	Cremophor® A 25	(1)	Ceteareth-25
	0.15	Phytantriol		Phytantriol
	1.00	Dow Corning 200 fluid	(16)	Dimethicone
	8.00	Isopropyl Myristate	(27)	Isopropyl Myristate
	1.00	Lanette 16	(27)	Cetyl Alcohol
C	5.00	Ethanol 96%		Alcohol
	7.70	Luviquat® Care	(1)	Polyquaternium-44
D	q.s.	Perfume		

Production:

Heat phases A and B separately to about 80°C. Stir phase B into phase A whilst homogenizing and continue homogenizing for a while. Cool to about 40°C. Dissolve phase C and stir it into phase A+B. Add phase D.

Filling:

95% active ingredient
5% Propane/Butane 3.5 bar (20°C)

Properties:

Viscosity: 3.000 mPa·s Brookfield RVD VII+
pH value: 7.0

Suppliers:

1. **BASF Aktiengesellschaft**
67056 Ludwigshafen, Germany
Tel.: +49 621 60-0
Fax: +49 621 60-42525
3. **Amerchol Corporation**
136 Talmadge Road / P.O. Box 4051
Edison, 08818-451 NJ, USA
Tel.: +1 908 248-6000
Fax: +1 908 287-4186
4. **Aqualon, A Hercules Incorporated Unit**
1313 North Market Street
DE 19899 Wilmington, USA
Tel.: +1 302 594-5000
Fax: +1 302 594-6660

German address:
Aqualon GmbH, Postfach 130125
40551 Düsseldorf, Germany
Tel.: +49 211 797-0
6. **Noveon Inc.**
9911 Brecksville Road
Cleveland OH 44141-3247, USA
Tel.: +1 216 447-5000
9. **Chemag AG**
Senkenberganlage 10-12
60325 Frankfurt/Main, Germany
Tel. +49 69 7434-0
16. **Dow Corning Corporation**
2200 West Salzburg Road, MI 48686 Midland, USA
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Fax: +1 517 496-4586

Dow Corning GmbH
Schwannstr. 10, 40476 Düsseldorf, Germany
Tel.: +49 211 4557-0
Fax: +49 211 4557-156
20. **Merck KgaA**
Frankfurter Str. 250, 64293 Darmstadt, Germany
Tel.: +49 6151 72-2098
Fax: +49 6151 72-2000
27. **Cognis Deutschland GmbH**
Care Chemicals
Henkelstr. 67 or Postfach 130164
40551 Düsseldorf, Germany
Tel.: +49 211 9740-0
Fax: +49 211 798-4008
42. **Schülke & Mayr GmbH**
Robert-Koch-Str. 2, 22851 Norderstedt, Germany
Tel.: +49 40 52100-0
Fax: +49 40 52100-238
44. **Degussa Care Specialities**
710 South 6th Street, Hopewell VA 23860, USA
Tel.: +1 800 46-1890

Germany address:
Goldschmidtstr. 100, 45127 Essen, Germany
Tel.: +49 201 173-0
56. **Angus Chemical Company**
1500 E. Lake Cook Road, IL 60089, Buffalo Grove, USA
Tel.: +1 847 215-8600
Fax: +1 847 215-8626

Remarks**The use of PVP in pharmaceutical preparations**

The Luviskol® K products are not intended for use in pharmaceutical preparations. The range of Kollidon® products (please ask for technical literature) is available especially for such applications. They are manufactured for this purpose and are subject to special quality and purity controls.

Storage/Stability

Luviskol® K 17, K 30, K 80 and K 90 powders have a shelf life of at least three years in the unopened original packaging below 25°C.

Luviskol® K 30, K 80, K 85 CQ and K 90 solutions have a shelf life of at least two years in the unopened original packaging below 20°C (preferably at 4°C).

Safety data sheet

A safety data sheet is available.

Note

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