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# High Purity Excipients for Parenteral Formulation

Application and Sterilization Data



# High Purity Excipients for Parenteral Formulation



✓ Kolliphor® HS 15: The potent IID-listed nonionic with low histamine release



✓ Kolliphor® ELP: The highly purified solubilizer for oral, parenteral and topical applications



✓ Kollidon® 12 PF and Kollidon® 17 PF: The endotoxin-controlled PVP-based solubilizers for parenteral and oral formulations



### BASF's quality and regulatory standards for excipients for parenterals:

- Manufacturing according to IPEC-PQG GMP
- Compendial compliance covering current and proposed major global pharmacopoeia standards
- Endotoxin and microbial testing
- Elemental impurity limits according to ICH Q3D
- Regulatory documentation
- Registration and submission support
- Non-clinical safety data available

## Sterilization Testing\*

Test	Autoclave Sterilization	Sterile Filtration	Heat Stress Test
Test parameters	20% aqueous solution autoclaved at 121 °C for 20 minutes.	20% aqueous solution passed through a sterile 0.20 µm cellulose acetate filter.	20 heat-cool cycles* of product as supplied. *One cycle: heat to 65 °C, hold for 24 h, cool to 4 °C, hold for 24 h.

## Kolliphor® HS 15: Test results

	Native sample	Autoclaved sample	Filtered sample	Heat-stressed sample
pH (20% aq. solution)	6.6	6.3	6.6	5.6
Viscosity [mPas], 25°C @1000 1/s	5.5	5.3	5.6	5.8
<b>Aldehyde [mg/kg]</b>				
Formaldehyde	<1	2	<1	3
Acetaldehyde	4	3	4	4
Propionaldehyde	<1	<1	<1	1
Peroxide value [meq/kg]	<2	<2	<2	1
Hydroxyl value [mg KOH/kg]	27	23	23	33
Iodine value [g I <sub>2</sub> /100g]	0.3	0.3	0.4	0.2
Acid value [mg KOH/g]	0.1	0.1	0.1	0.2

\* Tested parameters are considered stability indicating. For more information please contact your local BASF representative.

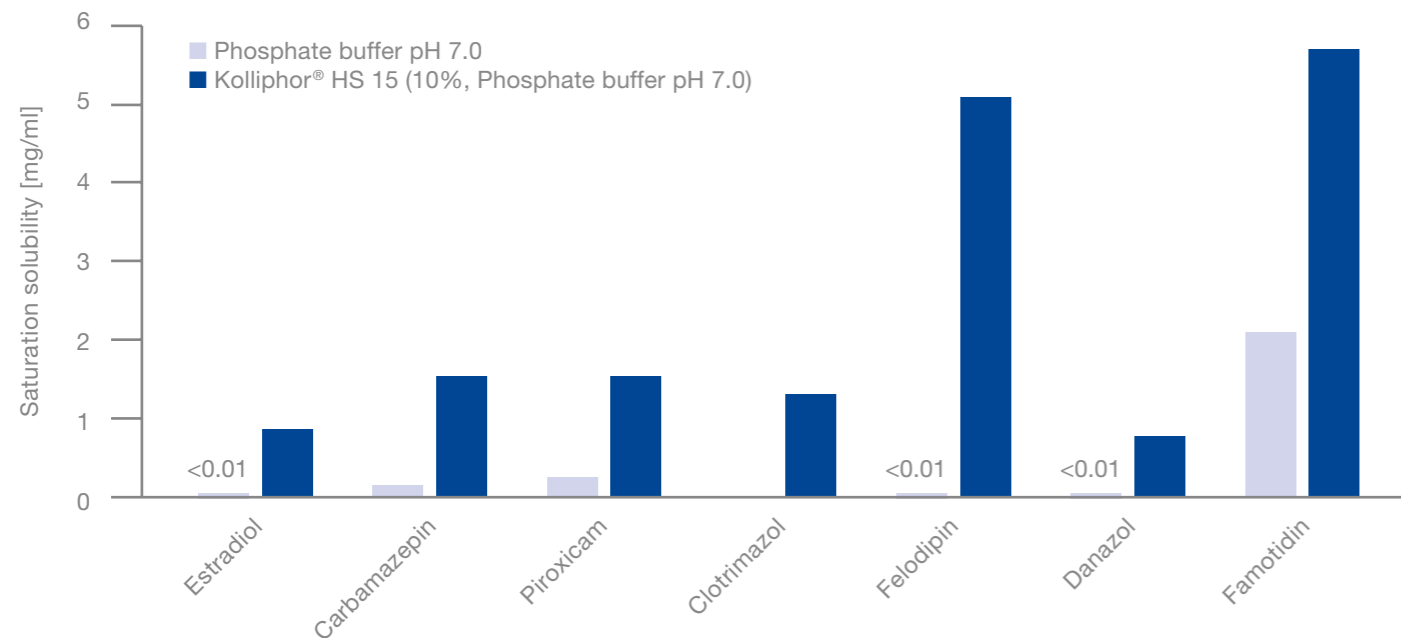
### Kolliphor® HS 15: Low histamine release for fewer side effects

	Haemolytic activity [% Haemolysis]			Serum histamine level (beagle dogs) [nM]		
	0.1%	1%	10%	0 min	15 min	60 min
Kolliphor® HS 15	0	0	8.7	5	220	8
Polysorbate 80	0	0	11.1	3	>50,000	247

The haemolytic activity of Kolliphor® HS 15 is much lower than for other polyoxyethylene-based surfactants.

While its performance is comparable to Polysorbate 80, however it shows a much lower histamine release making it ideal for parenteral applications.

### Potent solubilizer for poorly water soluble drugs



Comparison of saturation solubility of representative poorly water soluble APIs.

### Kolliphor® ELP: Test results

	Native sample	Autoclaved sample	Filtered sample	Stress test
pH (20% aq. solution)	6.0	4.9	5.9	6.1
Viscosity [mPas], 25°C @1000 1/s	7.4	7.0	7.3	7.0
<b>Aldehyde [mg/kg]</b>				
Formaldehyde	<1	4	1	2
Acetaldehyde	4	3	4	4
Propionaldehyde	<1	<1	<1	<1
Peroxide value [meq/kg]	5	2	2	1
Hydroxyl value [mg KOH/kg]	21	19	18	28
Iodine value [g I <sub>2</sub> /100g]	6.3	6.5	6.3	6.1
Acid value [mg KOH/g]	0.1	0.1	0.1	<0.1



## Test results

	Kollidon® 12 PF			Kollidon® 17 PF		
	Native sample	Autoclaved sample	Filtered sample	Native sample	Autoclaved sample	Filtered sample
pH	4.0	4.0	4.0	3.9	4.0	3.9
Dynamic viscosity [mPas]	4.1	3.9	4.0	5.1	5.0	5.2
K value	13.3	13.4	13.6	17.4	17.4	17.9
Molecular weight [g/mol]						
Mw	2910	2830	2820	7320	7240	7050
Mn	1040	1040	1030	2070	2060	2020
Aldehyde [ppm]						
Formaldehyde	<1	<1	1	1	1	2
Acetaldehyde	1	4	<1	1	<1	1
Propionaldehyde	<1	<1	<1	<1	<1	<1
Hydrazine [ppm]	<1	<1	<1	<1	<1	<1
Peroxide value [meq/kg]	4	<2	<2	6	2	4

## Application Data Highlights

More parenteral products to come!

### Kolliphor® HS 15

- ✓ Proven stability after sterile filtration, autoclave sterilization and heat stress cycling
- ✓ Potent non-ionic solubilizer
- ✓ Recently approved (FDA IID) in parenteral and ophthalmic drug formulations
- ✓ Extremely low histamine release compared to standard parenteral excipients

### Kolliphor® ELP

- ✓ Proven stability after sterile filtration, autoclave sterilization and heat stress cycling
- ✓ Highly purified and endotoxin controlled version of Kolliphor® EL – particularly suitable for parenteral formulations
- ✓ Widely used in approved drug formulations worldwide
- ✓ Tightly controlled water, potassium and free fatty acid content for particularly sensitive API formulations

### Kollidon® 12 PF and 17 PF

- ✓ Proven stability after sterile filtration and autoclave sterilization
- ✓ The endotoxin-controlled PVP-based solubilizers for parenteral and oral formulations
- ✓ Low viscosity for easy filtration

## Our service offer

For our parenteral excipients we provide comprehensive documentation including toxicological assessments, regulatory & quality packages, certificates and more.

Please contact us regarding your specific applications and needs:

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