Chemical Stability of Drugs for Use with InfuLife® Disposable Elastomeric Infusion Pumps

InfuLife® is a disposable elastomeric infusion system manufactured by First Medical Source, LLC, indicated for continuous infusion of medications for antibiotic therapy, chemotherapy, and pain management through intravenous, intra-arterial, intramuscular, subcutaneous, or epidural routes. InfuLife® is suitable for ambulatory patients and patients receiving home or alternate-site care.

Source of the data. The stability information below is compiled from published peer-reviewed studies of drug solutions in elastomeric infusion devices, standard drug-compatibility references and drug manufacturers' product information (see References). The InfuLife® fluid path is made of material types commonly used in elastomeric infusion pumps, including a silicone drug reservoir; studies performed in silicone-reservoir devices are marked †. Unless otherwise indicated, the studies were not performed in InfuLife® pumps. As with any admixture, the pharmacist determines the suitability of each preparation, storage condition and in-use period, and follows the drug manufacturer's package insert.

The data relate to the chemical stability of the drugs tested and not to sterility. See the Notes following the table for important conditions of use.

Reported Chemical Stability of Drugs in Elastomeric Infusion Devices

Medication	Concentration	Diluent	Room	Refrigerated	Frozen	References
ACYCLOVIR Na *	10 mg/ml	NS	10 days	30 days	--	1
AMIKACIN SO4	10 mg/ml	NS	24 hrs	14 days	--	19
	10 mg/ml	NS	24 hrs	10 days	30 days	1
	10-20 mg/ml	NS	24 hrs	28 days	--	16
AMINOPHYLLINE	5-20 mg/ml	NS	24 hrs	28 days	--	16
AMOXICILLIN	25 mg/ml	SW	12 hrs	24 hrs	--	41
AMPHOTERICIN B **	0.2 mg/ml	D5W	24 hrs	10 days	--	1
AMPICILLIN Na	20 mg/ml	NS	8 hrs	3 days	--	1
AMPICILLIN Na-SULBACTAM Na	30 + 15 mg/ml	NS	--	3 days	--	2
AZITHROMYCIN	1-2 mg/ml	NS/D5W	24 hrs	7 days	--	8
AZLOCILLIN	50 mg/ml	NS	24 hrs	7 days	--	2
AZTREONAM	13.3-26.7 mg/ml	NS	7 days	7 days	--	3
	20-30 mg/ml	NS	--	14 days	--	2
	5-20 mg/ml	NS	--	28 days	--	15
	60 mg/ml	NS	24 hrs	28 days	--	15
CARBENICILLIN	2 gm/50 cc	D5W	24 hrs	3 days	4 wks	21,23,25
CEFAZOLIN Na	20 mg/ml	NS	24 hrs	7 days	--	1
	5, 40 mg/ml †	NS/D5W	3 days	26 days	--	27
	25 mg/ml	NS	24 hrs ‡	--	--	32
CEFEPIME	20 mg/ml	NS	24 hrs	14 days	--	2
	12.5 mg/ml	NS	24 hrs ‡	--	--	32
CEFONICID	1 gm/50 cc	D5W	24 hrs	3 days	8 wks	20,21,23
CEFOPERAZONE Na	2-50 mg/ml	NS/D5W	24 hrs	5 days	3 wks	8,9
CEFOTAXIME	20 mg/ml	NS	24 hrs	14 days	--	19
	16.66 mg/ml (Na)	NS	24 hrs	--	--	1
CEFOTETAN Disodium	10-40 mg/ml	NS/D5W	24 hrs	4 days	1 wk	8
CEFOXITIN Na	10 mg/ml	NS/D5W	24 hrs	7 days	--	8,9
CEFPIROME SO4	20 mg/ml	NS	--	3 days	--	2
CEFTAROLINE	6 mg/ml	NS/D5W	24 hrs	44 hrs	--	38

Medication	Concentration	Diluent	Room	Refrigerated	Frozen	References
CEFTAZIDIME	40 mg/ml	NS	24 hrs	14 days	--	19
	20 mg/ml	NS	18 hrs	7 days	84 days	1
	5-30 mg/ml	NS	--	28 days	--	15
	5-40 mg/ml	NS	24 hrs	14 days	--	2
	60 mg/ml	NS	--	14 days	14 days	18
	60 mg/ml	NS	--	14 days	--	15
	5-60 mg/ml †	NS/D5W	1 day	4 days	--	27
CEFTIZOXIME Na	20-40 mg/ml	NS/D5W	48 hrs	7 days	--	8
CEFTOLOZANE-TAZOBACTAM	1.25+0.63 – 25+12.5 mg/ml	NS	24 hrs	7 days	--	33
CEFTRIAXONE Na	20 mg/ml	NS	72 hrs	--	--	1
	10-100 mg/ml	NS	72 hrs	10 days	--	8
	10-40 mg/ml	NS/D5W	--	--	26 wks	8
	5, 40 mg/ml †	NS/D5W	2 days	14 days	--	27
CEFUROXIME Na	1-30 mg/ml	NS/D5W	24 hrs	7 days	6 mths	8,9
CEPHALOTHIN Na	1 gm/50 cc	D5W	12 hrs	4 days	6 wks	20,21,24
CEPHAPIRIN Na	1 gm/50 cc	D5W	24 hrs	10 days	8 wks	20,21,23
CEPHRADINE	500 mg/50 cc	D5W	10 hrs	2 days	6 wks	21,24
CHLORAMPHENICOL	1 gm/50 cc	D5W	30 days	30 days	6 mths	20,21,22,24
CIMETIDINE HCl	300 mg/50 cc	D5W	48 hrs	8 days	4 wks	20,21,24
CIPROFLOXACIN	2 mg/ml	None	24 hrs	28 days	--	16
CISPLATIN *	0.2 mg/ml	NS	24 hrs	14 days	--	19
	0.2 mg/ml	NS	14 days	--	--	8
CLINDAMYCIN PO4	10 mg/ml	NS	24 hrs	10 days	--	1
	6, 9, 12 mg/ml	NS/D5W	16 days	32 days	8 wks	8
	1, 12 mg/ml †	NS/D5W	7 days	27 days	--	27
CLOXACILLIN	50 mg/ml	NS	24 hrs	7 days	--	19
COLISTIMETHATE Na	0.8 mg/ml	NS	--	7 days	--	39
CYCLOPHOSPHAMIDE	4.5 mg/ml	NS	7 days	7 days	--	3
DAPTOMYCIN	5 mg/ml	NS	24 hrs	24 hrs	--	19
	5 mg/ml	NS	7 days	7 days	--	19
DEFEROXAMINE MESYLATE	0.1 mg/ml	NS	48 hrs	14 days	--	19
	5 mg/ml	NS	12 days	--	--	2
	5-160 mg/ml	NS	--	28 days	--	15
	73 mg/ml	NS	7 days	28 days	--	16
DEXAMETHASONE	40 mg/50 cc	D5W	24 hrs	--	--	22,23
DOXORUBICIN HCl	2 mg/ml	NS	24 hrs	14 days	--	19
	2 mg/ml	NS	--	48 hrs	--	1
DOXYCYCLINE	0.1-1 mg/ml	NS/D5W	48 hrs	3 days	--	8
	1 mg/ml	D5W	--	--	8 wks	8
ERTAPENEM	10 mg/ml	NS	24 hrs	7 days	--	19
	10 mg/ml	NS	--	72 hrs	--	36
ERYTHROMYCIN	500 mg/100 cc	D5W	8 hrs	1 day	4 wks	20,21,23
ETOPOSIDE	0.1-0.4 mg/ml	NS	9 days	--	--	4
FENTANYL + HYDROMORPHONE + NEFOPAM + ONDANSETRON or RAMOSETRON (mixture)	0.016 + 0.08 + 0.8 + 0.32 (or 0.012) mg/ml §	NS	96 hrs	--	--	43
FENTANYL + OXYCODONE + NEFOPAM + ONDANSETRON or RAMOSETRON (mixture)	0.016 + 0.4 + 0.8 + 0.32 (or 0.012) mg/ml §	NS	96 hrs	--	--	43

Medication	Concentration	Diluent	Room	Refrigerated	Frozen	References
FLUCLOXACILLIN	10 mg/ml	NS	24 hrs	21 days	--	16
	20, 30 mg/ml	NS	24 hrs	14 days	--	16
	40, 50 mg/ml	NS	24 hrs	7 days	--	16
	10, 50 mg/ml † #	NS-CB	24 hrs at 32 ℃	13 days	--	30
FLUCONAZOLE	2 mg/ml	RTU	24 hrs	14 days	--	2
FLUOROURACIL *	50 mg/ml	RTU	8 wks	--	--	1
	1-25 mg/ml	NS	45 days	45 days	--	14
	50 mg/ml	RTU	45 days	--	--	14
	0.1, 25 mg/ml #	NS/D5W	7 days at 30 ℃	42 days	--	42
	50 mg/ml #	RTU	42 days + 7 days at 30 ℃	--	--	42
FOLINIC ACID	4 mg/ml	NS	48 hrs	14 days	--	19
	4 mg/ml (leucovorin Ca)	NS	7 days	7 days	--	3
FOSCARNET Na	12 mg/ml	NS	7 days	14 days	--	1
	24 mg/ml	RTU	7 days	14 days	--	1
FUROSEMIDE	0.5-10 mg/ml	NS	4 days	7 days	--	16
GANCICLOVIR Na *	1 mg/ml	NS	24 hrs	14 days	--	19
	5 mg/ml	NS	24 hrs	15 days	--	1
	2-5 mg/ml	NS	7 days	--	--	3
GENTAMICIN SO4	1 mg/ml	NS	24 hrs	14 days	--	19
	0.8 mg/ml	NS	24 hrs	--	--	1
	4.8 mg/ml	NS	24 hrs	28 days	--	15
	1 mg/ml	NS/D5W	--	--	30 days	8
GRANISETRON HCl	0.02 mg/ml	NS	--	7 days	--	7
	0.02 mg/ml	D5W	--	14 days	--	7
IMIPENEM	5 mg/ml	NS	24 hrs	7 days	--	19
IMIPENEM-CILASTATIN Na	5 mg/ml	NS	--	1 day	--	1
	5 mg/ml	NS	10 hrs	2 days	--	8
LEVOFLOXACIN	5 mg/ml	NS/D5W	72 hrs	14 days	6 mths	8
LINCOMYCIN HCl	1 gm/100 cc	D5W	24 hrs	1 day	--	20,21,23
MEROPENEM	5 mg/ml	NS	26 hrs	4 days	--	13
	5-10 mg/ml	NS	--	4 days	--	15
	10 mg/ml	NS	20 hrs	4 days	--	13
	20 mg/ml	NS	14 hrs	3 days	--	13
	4 mg/ml	NS	--	7 days	--	28
	10, 20 mg/ml	NS	--	5 days	--	28
	6 mg/ml (pH 6.5)	NS	--	6 days	--	29
MEROPENEM-VABORBACTAM	5.7 + 5.7 mg/ml	NS	12 hrs	120 hrs	--	37
METHICILLIN Na	1 gm/50 cc	D5W	24 hrs	4 days	4 wks	20,21,22
METHOTREXATE Na	0.03 mg/ml	D5W	7 days	--	--	8
	1.25-12.5 mg/ml	NS	7 days	105 days	--	8
METHYLPREDNISOLONE Na	10 mg/ml	NS	24 hrs	7 days	--	2
METRONIDAZOLE	5 mg/ml	RTU	24 hrs	10 days **	--	2
MEZLOCILLIN Na	1 gm/50 cc	D5W	48 hrs	7 days	4 wks	20,21
MINOCYCLINE	100 mg/500 cc	D5W	24 hrs	1 day	--	20,21,23
MORPHINE HCl	10-40 mg/ml	RTU	6 wks	6 wks	--	5
MORPHINE SO4	20 mg/ml	NS	7 days	--	--	3
MOXALACTAM Na	1 gm/50 cc	D5W	24 hrs	4 days	6 mths	20,21,23

Medication	Concentration	Diluent	Room	Refrigerated	Frozen	References
NAFCILLIN Na	10 mg/ml	NS	24 hrs	3 days	--	1
NETILMICIN	100 mg/100 cc	D5W	72 hrs	3 days	--	21,23
OFLOXACIN	0.4-4 mg/ml	NS/D5W	72 hrs	14 days	6 mths	9
ONDANSETRON HCl	0.03-0.3 mg/ml	NS/D5W	--	14 days	--	6
OXACILLIN	10-100 mg/ml	NS	7 days	8 days	30 days	17
	10-100 mg/ml	D5W	2 days	8 days	30 days	17
PENICILLIN G – K	10,000 U/ml	D5W	24 hrs	24 hrs	30 days	8
	2,000 U/ml	NS	24 hrs	4 days	--	8
PENICILLIN G – Na	2,500, 50,000 U/ml	NS/D5W	--	21 days	--	35
PIPERACILLIN Na	0.8 mg/ml	NS	24 hrs	7 days	--	19
	30 mg/ml	NS	24 hrs	14 days	30 days	1,2
	10-80 mg/ml	NS	24 hrs	14 days	--	2
PIPERACILLIN-TAZOBACTAM	40 mg/ml	NS	24 hrs	24 hrs	--	19
	40 mg/ml	NS	7 days	7 days	--	19
	18 + 2.3 mg/ml	D5W	7 days	--	--	3
	10+1.25 – 80+10 mg/ml	NS	24 hrs	28 days	--	16
	22+3, 80+10 mg/ml #	NS-CB	24 hrs at 32 °C	13 days	--	31
	50 + 6.25 mg/ml	NS	24 hrs ‡	--	--	32
QUINUPRISTIN-DALFOPRISTIN	2 mg/ml	D5W	5 hrs	54 hrs	--	10
RANITIDINE HCl	0.5-2 mg/ml	NS/D5W	7 days	30 days	30 days	8,11
RIFAMPIN	0.75 mg/ml	NS	24 hrs	14 days	--	19
	0.75 mg/ml	D5W	7 days	--	--	3
TEICOPLANIN	1-4 mg/ml	NS	24 hrs	28 days	--	16
TEMOCILLIN	10, 20 mg/ml #	WFI	24 hrs at 25 °C	4 wks	--	34
TERBUTALINE SO4	4, 150, 300, 500 µg/ml	D5W	7 days	28 days	--	16
TICARCILLIN Disodium-CLAVULANATE K	31 mg/ml	NS	24 hrs	7 days	--	2
TOBRAMYCIN SO4	0.75 mg/ml	NS	24 hrs	14 days	--	19
	0.8 mg/ml	NS	24 hrs	14 days	--	1,2
	0.2 mg/ml	NS	24 hrs	7 days	--	2
VANCOMYCIN HCl	5 mg/ml	NS	24 hrs	14 days	--	19
	5 mg/ml	NS	24 hrs	14 days	--	1
	5, 10, 15 mg/ml	NS	24 hrs	28 days	--	16
	5 mg/ml	D5W	17 days	63 days	--	12
	1, 5 mg/ml †	NS/D5W	7 days	27 days	--	27
VORICONAZOLE	2 mg/ml	NS/D5W	4 hrs	96 hrs	--	40

NS: Normal Saline (0.9% sodium chloride) NS-CB: citrate-buffered 0.9% sodium chloride D5W: 5% Dextrose in Water RTU: Ready to Use (undiluted) SW: Sterile Water WFI: Water for Injection

NOTES

The storage times reflect the times selected by the investigators or manufacturers in the cited sources and do not necessarily represent the limits of acceptable stability.

* Attention must be paid to the drug's potential for precipitation, which may occur depending on preparation, storage conditions, concentration, pH and diluent.

** Susceptible to crystallization when refrigerated.

Room temperature is as defined in the cited source. An elastomeric pump worn close to the body may reach 30–33 °C. For drugs with limited room-temperature stability (e.g., meropenem, ampicillin, imipenem-cilastatin, penicillin G), keep the filled pump refrigerated until use and limit the in-use period accordingly.

Where several entries are listed for the same drug and concentration, they reflect different studies and conditions. Select the entry that matches the actual preparation, diluent and storage conditions.

† Study performed in an elastomeric device with a silicone reservoir. The InfuLife® reservoir is also silicone, but results may still differ between devices.

‡ Tested at 26–31 °C to simulate a pump worn close to the body.

Combined: tested under refrigeration for the time in the Refrigerated column, followed by the in-use period stated in the Room column.

§ Tested as an analgesic mixture in a portable balloon infuser at 24 °C, protected from light; the chemical assay was performed on reduced-strength mixtures.

Drug stability can be influenced by the materials in contact with the solution. Some drugs have shown different results in silicone and polyisoprene devices (for example, caspofungin, which is therefore not listed). Because these data were not generated in InfuLife®, the pharmacist should apply professional judgment and consult the drug manufacturer's product information and current compatibility references.

INFULIFE® FLUID-PATH MATERIALS

The components of InfuLife® that contact the drug solution are made of the following material types:

Component	Material
Elastomeric reservoir (bladder)	Medical-grade silicone elastomer
Pump core	ABS (acrylonitrile butadiene styrene)
Fill port (Y-site with check valve)	ASA, MABS, silicone
Protective caps	Polypropylene
Extension tubing	PVC (polyvinyl chloride)
In-line 1.2 µm filter	Acrylic housing; PTFE and polyethersulfone membranes
Flow restrictor	Glass capillary in silicone tubing
Luer connectors	MABS (methyl methacrylate ABS)

INFULIFE® BIOLOGICAL SAFETY TESTING

The finished, sterilized InfuLife® device was tested in 2024 by WuXi AppTec (Suzhou) Co., Ltd., an independent laboratory accredited under the FDA Accreditation Scheme for Conformity Assessment (ASCA). The in vivo studies were conducted in compliance with Good Laboratory Practice (21 CFR Part 58). Extracts were prepared in polar (saline) and non-polar (sesame oil) vehicles unless noted.

Test	Method	Result
Cytotoxicity	ISO 10993-5, MEM elution, L-929 cells	Grade 0 – non-cytotoxic
Sensitization	ISO 10993-10, guinea pig maximization	0% sensitization – not a sensitizer
Intracutaneous reactivity	ISO 10993-23, rabbit	Score 0 – meets requirements
Acute systemic toxicity	ISO 10993-11, mouse	No systemic toxicity
Subchronic systemic toxicity	ISO 10993-11, 14-day, rat (IV and IP)	No subchronic toxicity
Material-mediated pyrogenicity	USP <151>, rabbit (saline extract)	Non-pyrogenic
Hemolysis	ASTM F756, extract method	Hemolytic index 0.7% – non-hemolytic

Biological safety testing shows that extracts of the InfuLife® fluid path did not cause adverse biological responses. It does not measure drug stability, and it is not a substitute for the stability references listed in this document.

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InfuLife® is a registered trademark of First Medical Source, LLC.

REVISION HISTORY

Rev	Date	Description
A	—	Initial release.
B	October 2026	Added data and references 27–38; added storage-condition and in-use temperature notes. Superseded.
C	November 2026	Removed all data, references, source documents and trademarks introduced in Rev B (references 27–38) and the fluid-path material statement. Drug table restored to the Rev A data set with editorial corrections to drug names and citations; added data from published peer-reviewed studies (new references 26–43); removed the Normal Saline entry and its manufacturer data-on-file reference. Added source-of-data statement, conditions-of-use notes, InfuLife® fluid-path materials and biological safety test summary.

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