

*Easypump® II* are disposable elastomeric infusion systems. They are indicated for continuous infusion of medications for antibiotic therapy, chemotherapy, and pain management through intravenous, intra-arterial, intramuscular, subcutaneous or epidural routes. Their application is ideal for ambulatory patients or patients receiving home or alternate site care.

The drug stability data provided in this document relates only to chemical and physical stability of the drugs tested using *Easypump® II* Elastomeric infusion pumps, and not to sterility.

Such data does neither constitute a recommendation, nor does it claim appropriateness of the listed combinations. The trade name of the drug used for testing is explicitly mentioned, and it is not licit to conclude that similar drug preparations behave in the same way. If conditions of use, e.g. diluents or infusion rates, are different from those stated in this document, this may have an adverse effect on the drug stability.

The below list of drug stability data was compiled from test results of independent IEC 17025 certified laboratories, and reviews of various medical publications and manufacturers' product information. All results are effective for the period of the investigation. The investigations indicate the progress of science and are not intended to dismiss or devalue single products. The pharmacist or medical personnel dispensing the drug is responsible for ensuring proper preparation using validated aseptic techniques to prevent contamination.

Medication	Concentration	Diluent	Refrigerated	Room Temperature	Storage condition	Reference	stable / not stable
5-FU + SODIUM FOLINATE (ONCOFOLIC + RIBOFLUOR)	5 + 2 mg/ml	NS	--	7 days	separate	1	stable
	36 + 8.8 mg/ml	NS	--	7 days	separate	1	stable
ACYCLOVIR Na	10 mg/ml	NS	--	5 days	separate	6	stable
AMIKACIN SO <sub>4</sub>	10 mg/ml	NS	7 days	24 hrs	separate	3	stable
AMOXICILLINE	1 mg/ml	NS	6 hrs	2 hrs	combined	5	stable
	40 mg/ml	NS	6 hrs	2 hrs	combined	5	stable
AMOXICILLINE + CLAVULANATE	10 + 2 mg/ml	NS	6 hrs	--	separate	6	stable
	20 + 4 mg/ml	NS	6 hrs	--	separate	6	stable
AMPICILLIN Na	20 mg/ml	NS	3 days	24 hrs	separate	5	stable
AMPICILLIN Na-SULBACTAM Na	30 + 15 mg/ml	NS	2 days	6 hrs	separate	5	stable
AMPHOTERICIN B **	0.1 mg/ml	D5W	4 days	24 hrs	combined	1	stable
	0.5 mg/ml	D5W	4 days	24 hrs	combined	1	stable
	2 mg/ml	D5W	4 days	24 hrs	combined	1	stable
AZITHROMYCIN	1 mg/ml	NS	7 days	24 hrs	separate	6	stable
	2 mg/ml	NS	7 days	24 hrs	separate	6	stable
AZTREONAM	10 mg/ml	NS	7 days	24 hrs	combined	4	stable
	30 mg/ml	NS	7 days	24 hrs	combined	4	stable
BUPIVACAINE HCl	5 mg/ml	RTU	15 days	2 days	combined	1	stable
BUPIVACAINE	0.125 %	NS	--	30 days	Separate	5	stable
	0.75 %	NS	--	30 days	separate	5	stable

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**Storage condition:**            **separate – tested only refrigerated and only room temperature**  
   **combined – tested refrigerated + room temperature**

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Medication	Concentration	Diluent	Refriger- ated	Room Temperature	Storage condition	Refer- ence	stable / not stable
BUMETANIDE	0.016 mg/ml	D5W	--	24 hrs	separate	5	stable
	0.16 mg/ml	D5W	--	24 hrs	separate	5	stable
CASPOFUNGIN ACETATE	0.2 mg/ml	NS	14 day	60 hrs	separate	5	stable
	0.5 mg/ml	NS	14 day	60 hrs	separate	5	stable
CEFAZOLIN Na	16.7 mg/ml	NS	14 days	2 days	combined	1	stable
CEFEPIME	20 mg/ml	NS	14 days	24 hrs	separate	6	stable
CEFOTAXIME Na	16.66 mg/ml	NS	3 days	24 hrs	separate	6	stable
CEFOTIAME	20 mg/ml	NS/D5W	24 hrs	6 hrs	combined	5	stable
CEFTAZIDIME	1 mg/ml	NS	2 days	24 hrs	combined	5	stable
	40 mg/ml	NS	2 days	12 hrs	combined	5	stable
CEFTAZIDIME	40 mg/ml	NS	14 days	24 hrs	separate	3	stable
CEFTRIAXONE	10 mg/ml	NS/D5W	6 days	24 hrs	combined	1	stable
	50 mg/ml	NS	6 days	24 hrs	combined	1	stable
CEFUROXIME	1 mg/ml	NS	3 days	24 hrs	combined	6	stable
	30 mg/ml	NS	3 days	24 hrs	combined	6	stable
CEFUROXIME	1 mg/ml	D5W	3 days	12 hrs	combined	6	stable
	30 mg/ml	D5W	3 days	12 hrs	combined	6	stable
CIMETIDINE	1 mg/ml	NS	--	7 days	separate	5	stable
	6 mg/ml	NS	--	7 days	separate	5	stable
CIPROFLOXACIN	2 mg/ml	D5W	30 days	10 days	separate	6	stable
CISPLATIN *	0.2 mg/ml	NS	7 days	24 hrs	separate	3	stable
CISPLATIN *	0.1 mg/ml	NS	--	14 days	separate	5	stable
	0.5 mg/ml	NS	--	14 days	separate	5	stable
CLINDAMYCIN PO <sub>4</sub>	6 mg/ml	NS	30 days	3 days	separate	6	stable
	12 mg/ml	NS	30 days	3 days	separate	6	stable
COLISTIMETHATE SODIUM	3 mg/ml	NS	24 hrs	2 hrs	combined	5	stable
CLOXACILLIN	50 mg/ml	NS	7 days	24 hrs	separate	3	stable
CYCLOPHOSPHAMID	2 mg/ml	NS	14 days	2 days	combined	5	stable
	20 mg/ml	NS	7 days	2 days	combined	5	stable
DAPTOMYCIN (CUBICIN)	10 mg/ml	NS	1 day	1 day	combined	1	stable
	20 mg/ml	NS	10 days	1 day	combined	1	stable
DEFEROXAMINE	0.022 mg/ml	NS	14 days	2 days	separate	3	stable
DEFEROXAMINE MESYLATE	5 mg/ml	NS	14 days	2 days	combined	1	stable
	100 mg/ml	NS	14 days	2 days	combined	1	stable
DOXORUBICIN	2 mg/ml	NS	22 days	14 days	combined	1	stable
DOXYCYCLINE	1 mg/ml	NS/D5W	3 days	12 hrs	combined	2	stable
	1.5 mg/ml	NS/D5W	3 days	12 hrs	combined	2	stable
ERTAPENEM	5 mg/ml	NS	24 hrs	6 hrs	combined	6	stable
	20 mg/ml	NS	24 hrs	6 hrs	combined	6	stable
ERTAPENEM	5 mg/ml	NS	7 days	--	separate	1	stable
	10 mg/ml	NS	7 days	24 hrs	separate	5	stable
	20 mg/ml	NS	5 days	24 hrs	separate	5	stable

**Storage condition:**            separate – tested only refrigerated and only room temperature

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ETOPOSIDE	0.2 mg/ml	NS	--	4 days	separate	5	stable
	0.4 mg/ml	NS	--	24 hrs	separate	5	stable
FERINJECT (IRON (III) SUCROSE COMPLEX)	2 mg/ml	NS	--	3 days	separate	1	stable
	5 mg/ml	NS	--	3 days	separate	1	stable
FLUCLOXACILLIN	10 mg/ml	NS	2 days	24 hrs	combined	5	stable
	70 mg/ml	NS	2 days	24 hrs	combined	5	stable
FLUCONAZOLE	2 mg/ml	RTU	7 days	2 days	combined	1	stable
FLUOROURACIL (5-FU) *	5 mg/ml	NS/D5W	--	45 days	separate	1	stable
	50 mg/ml	NS	--	45 days	separate	1	stable
FOLINIC ACID	4 mg/ml	NS	14 days	2 days	separate	3	stable
FOSFOMYCIN DISODIUM	16.6 mg/ml	D5W	--	2 days	separate	1	stable
	40 mg/ml	D5W	--	2 days	separate	1	stable
FOSFOMYCIN SODIUM	20 mg/ml	NS	--	24 hrs	separate	1	stable
	20 mg/ml	NS	--	1h at 37°C	separate	1	stable
FUROSEMIDE	10 mg/ml	NS	7 days	4 days	combined	2	stable
GANCICLOVIR *	1 mg/ml	NS	14 days	2 days	combined	1	stable
	10 mg/ml	NS	14 days	2 days	combined	1	stable
GANCICLOVIR *	1 mg/ml	D5W	14 days	2 days	combined	5	stable
	10 mg/ml	D5W	14 days	2 days	combined	5	stable
GENTAMYCIN SO <sub>4</sub>	0.5 mg/ml	NS	7 days	7 days	combined	1	stable
	5 mg/ml	NS	14 days	7 days	combined	1	stable
GRANISETRON	0.02 mg/ml	NS	7 days	2 days	combined	5	stable
	0.5 mg/ml	NS	7 days	2 days	combined	5	stable
GRANISETRON	0.02 mg/ml	D5W	3 days	6 hrs	combined	5	stable
	0.5 mg/ml	D5W	3 days	6 hrs	combined	5	stable
IFOSFAMIDE	0.6 mg/ml	NS/D5W	3 days	24 hrs	combined	6	stable
	40 mg/ml	NS/D5W	3 days	24 hrs	combined	6	stable
IFOSFAMIDE	0.6 mg/ml	D5W	--	7 days	separate	1	stable
	40 mg/ml	D5W	--	3 days	separate	1	stable
IMIPENEM-CILASTATIN Na (PRIMAXIN)	5 mg/ml + 5 mg/ml	NS	3 days	24 hrs	separate	5	stable
KETAMINE	1 mg/ml	NS	--	2 days	separate	5	stable
	2 mg/ml	NS	--	2 days	separate	5	stable
LEVOBUPIVACAINE	0.125 %	NS	--	30 days	separate	5	stable
	0.75 %	NS	--	30 days	separate	5	stable
LEVOFLOXACIN	0.5 mg/ml	NS/D5W	14 days	7 days	combined	6	stable
	5 mg/ml	NS/D5W	14 days	7 days	combined	6	stable
LINCOMYCIN	1.2 mg/ml	NS	1 days	1 days	combined	1	stable
	10 mg/ml	NS/D5W	1 days	1 days	combined	1	stable
LIDOCAINE	0.5 %	NS	--	30 days	separate	5	stable
	2 %	NS	--	30 days	separate	5	stable

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LINEZOLID	0.15 mg/ml	NS	13 days	24 hrs	combined	1	stable
	2 mg/ml	NS	13 days	24 hrs	combined	1	stable
MAGNESIUM SULFATE	20 mg/ml	NS	29 days	24 hrs	combined	5	stable
MEROPENEM	5 mg/ml	NS	10 days	21 hrs	separate	5	stable
	20 mg/ml	NS	3 days	13 hrs	separate	5	stable
MEROPENEM	2.5 mg/ml	NS	24 hrs	6 hrs	combined	6	stable
	20 mg/ml	NS	24 hrs	6 hrs	combined	6	stable
MEROPENEM	20 mg/ml	NS	4 days	12 hrs	separate	6	stable
METHOTREXATE	0.3 mg/ml	NS	7 days	7 days	combined	6	stable
	25 mg/ml	NS	7 days	7 days	combined	6	stable
METHYLPREDNISOLONE	10 mg/ml	NS	7 days	2 hrs	combined	2	stable
METRONIDAZOLE	5 mg/ml	RTU	10 days	24 hrs	combined	2	stable
MICA FUNGIN	0.5 mg/ml	NS	4 days	24 hrs	combined	1	stable
	2 mg/ml	NS	4 days	24 hrs	combined	1	stable
MORPHINE SO <sub>4</sub>	1 mg/ml	NS	--	7 days	separate	1	stable
	20 mg/ml	NS	--	7 days	separate	1	stable
NAFCILLIN Na	5 mg/ml	NS	3 days	24 hrs	separate	6	stable
	50 mg/ml	NS	3 days	24 hrs	separate	6	stable
NEFOPAM	10 mg/ml	NS	1 days	1 days	combined	5	stable
NORMAL SALINE	0.9% NaCl	--	15 days	15 days	combined	5	stable
OFLOXACIN	0.4 mg/ml	NS	14 days	7 days	combined	5	stable
	2 mg/ml	NS	14 days	7 days	combined	5	stable
ONDANSETON HCL	0.03 mg/ml	NS/D5W	21 days	7 days	combined	6	stable
	0.7 mg/ml	NS/D5W	10 days	4 days	combined	6	stable
OXACILLIN	10 mg/ml	NS	8 days	4 days	separate	6	stable
	100 mg/ml	NS	8 days	4 days	separate	6	stable
PACLITAXEL	0.3 mg/ml	NS/D5W	7 days	24 hrs	combined	1	stable
	1.2 mg/ml	NS/D5W	7 days	24 hrs	combined	1	stable
PENICILLIN G (K)	20.000 units/ml	NS	4 days	24 hrs	separate	5	stable
PENICILLIN G (Na)	2000 units/ml	NS	3 days	2 hrs	combined	6	stable
	100.000 units/ml	NS	1 day	2 hrs	combined	6	stable
	100.000 units/ml	NS	--	6 hrs	separate	5	stable
PIPERACILLIN	10 mg/ml	NS	14 days	3 days	combined	5	stable
	80 mg/ml	NS	5 days	24 hrs	combined	5	stable
PIPERACILLIN Na / TAZOBACTAM Na	10 mg/ml + 1.25 mg/ml	NS	28 days	24 hrs	separate	5	stable
	80 mg/ml + 10 mg/ml	NS	28 days	24 hrs	separate	5	stable
RANITIDINE	0.5 ml/ml	NS	21 days	2 days	combined	1	stable
	2 mg/ml	NS	21 days	7 days	combined	1	stable
RANITIDINE	0.5 ml/ml	D5W	21 days	2 days	combined	1	stable
	2 mg/ml	D5W	21 days	7 days	combined	1	stable

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Medication	Concentration	Diluent	Refrigerated	Room Temperature	Storage condition	Reference	stable / not stable
RIBODRONAT (PAMIDRONIC ACID SODIUM SALT)	30 µg/ml	NS/D5W	27 days	2 days	combined	1	stable
	0.4 mg/ml	NS	27 days	2 days	combined	1	stable
	30 µg/ml	NS	--	29 days	separate	1	stable
RIFAMPICIN	0.5 ml/ml	NS	6 days	24 hrs	combined	1	stable
	3 mg/ml	NS	6 days	24 hrs	combined	1	stable
ROPIVACAINE	0.2 mg/ml	NS	14 days	24 hrs	combined	1	stable
	5 mg/ml	NS	14 days	24 hrs	combined	1	stable
ROPIVACAINE	0.1 %	NS	--	30 days	separate	5	stable
	0.75 %	NS	--	30 days	separate	5	stable
TEICOPLANIN	1 mg/ml	NS	7 days	24 hrs	combined	5	stable
	20 mg/ml	NS	7 days	24 hrs	combined	5	stable
TEMOCILLIN	10 mg/ml	NS	14 days	24 hrs	combined	5	stable
	20 mg/ml	NS	14 days	24 hrs	combined	5	stable
TEMOCILLIN	10 mg/ml	NS	-	24 hrs	separate	1	stable
	80 mg/ml	NS	-	24 hrs	separate	1	stable
TIGECYCLINE	0.5 mg/ml	NS	2 days	24 hrs	combined	1	stable
	1 mg/ml	NS	2 days	24 hrs	combined	1	stable
TOBRAMYCIN	0.2 mg/ml	NS	14 days	24 hrs	combined	1	stable
	10 mg/ml	NS	14 days	24 hrs	combined	1	stable
VANCOMYCIN	4 mg/ml	NS/D5W	21 days	4 days	combined	6	stable
	15 mg/ml	NS/D5W	14 days	2 days	combined	6	stable
VANCOMYCIN	15 mg/ml	NS	30 days	2 days	separate	6	stable
VINCRISTINE	1 mg/ml	NS	--	21 days	separate	5	stable
VENOFER (IRON (III) HYDROXIDE SUCROSE)	1 mg/ml	NS	24 hrs	24 hrs	combined	1	stable

Table 1: stable drugs

NS: Normal Saline

D5W: 5% Dextrose in Water

RTU: Ready to Use

W: Water

### NOTES

When several concentrations of a drug were positively tested, it can be assumed that intermediate concentrations are also stable.

The storage times reflect the times selected by the manufacturer and do not necessarily represent the limits of acceptable stability.

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

\*\* Susceptible to crystallization when refrigerated.

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**Drug stability compliance statement.**

The drug stability data obtained after optimum days of conservation show no significant degradation and change in potency of drugs in B.Braun Elastomeric Infusion Pump.

**REFERENCES**

1. Testing completed by ECOTOX Testing Service, Oldenburg, Germany
2. Testing completed by Henkel AG & Co. KGaA, Düsseldorf, Germany
3. Testing completed by Laboratory Faculte de Medecine et Pharmacie, France
4. Testing completed by Philips Innovation Service, Eindhoven, Netherland
5. Testing completed by Toxikon Europe NV, Leuven, Belgium
6. Testing completed by SGS Life Science Services, Lincolnshire IL, USA

**Guidelines**

1. EU-GMP regulations
2. cGMP regulations
3. Drug manufacturer product information
4. European Pharmacopoeia
5. USP chapter on stability studies and good chromatographic practices

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