

Imipenem / Cilastatin / Relebactam Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 28.09.2024
8.1	14.04.2025	67732-00030	Date of first issue: 27.02.2015

SECTION 1. IDENTIFICATION

Product identifier : Imipenem / Cilastatin / Relebactam Formulation

Manufacturer or supplier's details

Company : MSD

Address : Avenida Tanner de Melo, Quadra 10 Lote 4A, Galpão A
Parque Industrial Vice Presidente José Alencar Aparecida de
Goiás – GO, Brazil

Telephone : 908-740-4000

Emergency telephone : 1-908-423-6000

E-mail address : EHSDATASTEWARD@msd.com

Recommended use of the chemical and restrictions on use

Recommended use : Pharmaceutical

Restrictions on use : Not applicable

SECTION 2. HAZARDS IDENTIFICATION**GHS Classification in accordance with ABNT NBR 14725 Standard**

Eye irritation : Category 2A

Respiratory sensitization : Category 1

Reproductive toxicity : Category 2

Specific target organ toxicity - repeated exposure : Category 2 (Kidney)

Short-term (acute) aquatic hazard : Category 1

Long-term (chronic) aquatic hazard : Category 1

GHS label elements in accordance with ABNT NBR 14725 Standard

Hazard pictograms :



Signal Word : Danger

**Imipenem / Cilastatin / Relebactam Formula-
tion**

Version 8.1 Revision Date: 14.04.2025 SDS Number: 67732-00030 Date of last issue: 28.09.2024
Date of first issue: 27.02.2015

Hazard Statements : H319 Causes serious eye irritation.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H361d Suspected of damaging the unborn child.
H373 May cause damage to organs (Kidney) through prolonged or repeated exposure.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements : **Prevention:**
P201 Obtain special instructions before use.
P260 Do not breathe dust.
P264 Wash skin thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P284 Wear respiratory protection.
Response:
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P342 + P311 If experiencing respiratory symptoms: Call a POISON CENTER/ doctor.
P391 Collect spillage.
Storage:
P405 Store locked up.

Other hazards which do not result in classification

Contact with dust can cause mechanical irritation or drying of the skin.
May form explosive dust-air mixture during processing, handling or other means.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Classification	Concentration (% w/w)
Cilastatin	81129-83-1	Eye Irrit., 2A	>= 30 -< 50
Imipenem	74431-23-5	Resp. Sens., 1A Repr., 2 Aquatic Acute, 1 Aquatic Chronic, 1	>= 30 -< 50
Relebactam	1174020-13-3	STOT RE, (Kidney) , 2 Aquatic Acute, 3	>= 10 -< 20

Imipenem / Cilastatin / Relebactam Formula- tion

Version 8.1	Revision Date: 14.04.2025	SDS Number: 67732-00030	Date of last issue: 28.09.2024 Date of first issue: 27.02.2015
----------------	------------------------------	----------------------------	---

SECTION 4. FIRST AID MEASURES

General advice	: In the case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt seek medical advice.
If inhaled	: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
In case of skin contact	: In case of contact, immediately flush skin with soap and plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
In case of eye contact	: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lens, if worn. Get medical attention.
If swallowed	: If swallowed, DO NOT induce vomiting. Get medical attention. Rinse mouth thoroughly with water.
Most important symptoms and effects, both acute and delayed	: Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome). Contact with dust can cause mechanical irritation or drying of the skin. Causes serious eye irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Suspected of damaging the unborn child. May cause damage to organs through prolonged or repeated exposure.
Protection of first-aiders	: First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8).
Notes to physician	: Treat symptomatically and supportively.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	: Water spray Alcohol-resistant foam Carbon dioxide (CO ₂) Dry chemical
Unsuitable extinguishing media	: None known.
Specific hazards during fire fighting	: Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a

**Imipenem / Cilastatin / Relebactam Formula-
tion**

Version	Revision Date:	SDS Number:	Date of last issue: 28.09.2024
8.1	14.04.2025	67732-00030	Date of first issue: 27.02.2015

potential dust explosion hazard.
Exposure to combustion products may be a hazard to health.

- | | | |
|--|---|---|
| Hazardous combustion products | : | Carbon oxides
Metal oxides |
| Specific extinguishing methods | : | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use water spray to cool unopened containers.
Remove undamaged containers from fire area if it is safe to do so.
Evacuate area. |
| Special protective equipment for fire-fighters | : | In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment. |

SECTION 6. ACCIDENTAL RELEASE MEASURES

- | | | |
|---|---|---|
| Personal precautions, protective equipment and emergency procedures | : | Use personal protective equipment.
Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8). |
| Environmental precautions | : | Avoid release to the environment.
Prevent further leakage or spillage if safe to do so.
Retain and dispose of contaminated wash water.
Local authorities should be advised if significant spillages cannot be contained. |
| Methods and materials for containment and cleaning up | : | Surround spill with absorbents and place a damp covering over the area to minimize entry of the material into the air.
Add excess liquid to allow the material to enter into solution.
Soak up with inert absorbent material.
Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).
Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration.
Clean up remaining materials from spill with suitable absorbent.
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.
Sections 13 and 15 of this SDS provide information regarding certain local or national requirements. |

SECTION 7. HANDLING AND STORAGE

- | | | |
|--------------------|---|---|
| Technical measures | : | Static electricity may accumulate and ignite suspended dust causing an explosion.
Provide adequate precautions, such as electrical grounding |
|--------------------|---|---|

Imipenem / Cilastatin / Relebactam Formula- tion

Version 8.1 Revision Date: 14.04.2025 SDS Number: 67732-00030 Date of last issue: 28.09.2024
Date of first issue: 27.02.2015

- Local/Total ventilation : and bonding, or inert atmospheres.
Advice on safe handling : Use only with adequate ventilation.
Do not breathe dust.
Do not swallow.
Do not get in eyes.
Avoid prolonged or repeated contact with skin.
Wash skin thoroughly after handling.
Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment
Keep container tightly closed.
Already sensitized individuals, and those susceptible to asthma, allergies, chronic or recurrent respiratory disease, should consult their physician regarding working with respiratory irritants or sensitizers.
Minimize dust generation and accumulation.
Keep container closed when not in use.
Keep away from heat and sources of ignition.
Take precautionary measures against static discharges.
Take care to prevent spills, waste and minimize release to the environment.
- Hygiene measures : If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place.
When using do not eat, drink or smoke.
Wash contaminated clothing before re-use.
The effective operation of a facility should include review of engineering controls, proper personal protective equipment, appropriate degowning and decontamination procedures, industrial hygiene monitoring, medical surveillance and the use of administrative controls.
- Conditions for safe storage : Keep in properly labeled containers.
Store locked up.
Keep tightly closed.
Store in accordance with the particular national regulations.
- Materials to avoid : Do not store with the following product types:
Strong oxidizing agents

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Cilastatin	81129-83-1	TWA	5 mg/m ³ (OEB 1)	Internal
Imipenem	74431-23-5	TWA	3000 µg/m ³ (OEB 1)	Internal
Further information: RSEN, DSEN				
		Wipe limit	100 µg/100 cm ²	Internal
Relebactam	1174020-13-3	TWA	0.3 mg/m ³ (OEB 2)	Internal

**Imipenem / Cilastatin / Relebactam Formula-
tion**

Version	Revision Date:	SDS Number:	Date of last issue: 28.09.2024
8.1	14.04.2025	67732-00030	Date of first issue: 27.02.2015

Engineering measures : Use feasible engineering controls to minimize exposure to compound.
All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment.

Personal protective equipment

Respiratory protection : If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.

Filter type : Particulates type

Hand protection : Chemical-resistant gloves

Material

Eye protection : Wear safety glasses with side shields or goggles.
If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles.
Wear a faceshield or other full face protection if there is a potential for direct contact to the face with dusts, mists, or aerosols.

Skin and body protection : Work uniform or laboratory coat.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state : powder

Color : White to light yellow

Odor : No data available

Odor Threshold : No data available

pH : No data available

Melting point/freezing point : No data available

Initial boiling point and boiling range : No data available

Flash point : Not applicable

Evaporation rate : Not applicable

Flammability (solid, gas) : May form explosive dust-air mixture during processing, handling or other means.

Flammability (liquids) : Not applicable

Upper explosion limit / Upper flammability limit : No data available

Lower explosion limit / Lower flammability limit : No data available

**Imipenem / Cilastatin / Relebactam Formula-
tion**

Version 8.1	Revision Date: 14.04.2025	SDS Number: 67732-00030	Date of last issue: 28.09.2024 Date of first issue: 27.02.2015
----------------	------------------------------	----------------------------	---

Vapor pressure	:	Not applicable
Relative vapor density	:	Not applicable
Relative density	:	No data available
Density	:	No data available
Solubility(ies) Water solubility	:	soluble
Partition coefficient: n- octanol/water	:	Not applicable
Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	Not applicable
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Molecular weight	:	No data available
Particle characteristics Particle size	:	No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Not classified as a reactivity hazard.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reac- tions	:	May form explosive dust-air mixture during processing, handling or other means. Can react with strong oxidizing agents.
Conditions to avoid	:	Heat, flames and sparks. Avoid dust formation.
Incompatible materials	:	Oxidizing agents
Hazardous decomposition products	:	No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation Skin contact Ingestion Eye contact
---	---	--

**Imipenem / Cilastatin / Relebactam Formula-
tion**

Version	Revision Date:	SDS Number:	Date of last issue: 28.09.2024
8.1	14.04.2025	67732-00030	Date of first issue: 27.02.2015

Acute toxicity

Not classified based on available information.

Components:**Cilastatin:**

Acute oral toxicity	:	LD50 (Rat): 8.000 mg/kg
		LD50 (Mouse): 8.000 mg/kg

Imipenem:

Acute oral toxicity	:	LD50 (Mouse): 10.000 mg/kg
Acute toxicity (other routes of administration)	:	LD50 (Rat): > 2.000 mg/kg Application Route: Intravenous
		LD50 (Mouse): 1.500 mg/kg Application Route: Intravenous

Skin corrosion/irritation

Not classified based on available information.

Components:**Cilastatin:**

Species	:	Rabbit
Result	:	No skin irritation

Relebactam:

Method	:	EpiDerm
Result	:	No skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation.

Components:**Cilastatin:**

Species	:	Rabbit
Result	:	Moderate eye irritation

Relebactam:

Result	:	No eye irritation
Method	:	Bovine cornea (BCOP)

Respiratory or skin sensitization**Skin sensitization**

Not classified based on available information.

**Imipenem / Cilastatin / Relebactam Formula-
tion**

Version	Revision Date:	SDS Number:	Date of last issue: 28.09.2024
8.1	14.04.2025	67732-00030	Date of first issue: 27.02.2015

Respiratory sensitization

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Components:**Cilastatin:**

Routes of exposure : Skin contact
Remarks : No data available

Routes of exposure : Inhalation
Remarks : No data available

Imipenem:

Remarks : May cause sensitization of susceptible persons by inhalation of aerosol or dust.

Routes of exposure : Skin contact
Remarks : Not classified due to lack of data.

Relebactam:

Test Type : Local lymph node assay (LLNA)
Routes of exposure : Dermal
Result : Not a skin sensitizer.

Germ cell mutagenicity

Not classified based on available information.

Components:**Cilastatin:**

Genotoxicity in vitro : Test Type: Microbial mutagenesis assay (Ames test)
Result: negative

Imipenem:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster lung cells
Result: negative

Test Type: reverse mutation assay
Result: negative

Test Type: unscheduled DNA synthesis assay
Result: negative

Test Type: Chromosomal aberration
Result: negative

Test Type: sister chromatid exchange assay
Result: negative

Genotoxicity in vivo : Test Type: In vivo micronucleus test

**Imipenem / Cilastatin / Relebactam Formula-
tion**

Version	Revision Date:	SDS Number:	Date of last issue: 28.09.2024
8.1	14.04.2025	67732-00030	Date of first issue: 27.02.2015

Species: Mouse
Application Route: Intravenous
Result: negative

Relebactam:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Test Type: Chromosome aberration test in vitro
Result: negative

Genotoxicity in vivo : Test Type: Mutagenicity (in vivo mammalian bone-marrow
cytogenetic test, chromosomal analysis)
Species: Rat
Application Route: Intraperitoneal injection
Result: negative

Germ cell mutagenicity - Assessment : Weight of evidence does not support classification as a germ
cell mutagen.

Carcinogenicity

Not classified based on available information.

Reproductive toxicity

Suspected of damaging the unborn child.

Components:**Cilastatin:**

Effects on fertility : Test Type: Fertility/early embryonic development
Application Route: Intravenous
Fertility: LOAEL: 1.000
Symptoms: No adverse effects.
Result: No effects on fertility and early embryonic development were detected.

Imipenem:

Effects on fertility : Test Type: Fertility/early embryonic development
Species: Rat, male and female
Application Route: Intravenous
Fertility: LOAEL: 80 mg/kg body weight
Symptoms: No adverse effects., Reduced fetal weight.
Result: No effects on fertility and early embryonic development were detected.

Test Type: Fertility/early embryonic development
Species: Rat, male and female
Application Route: Subcutaneous
Fertility: LOAEL: 320 mg/kg body weight
Symptoms: No adverse effects., Reduced fetal weight.
Result: No effects on fertility and early embryonic development were detected.

**Imipenem / Cilastatin / Relebactam Formula-
tion**

Version	Revision Date:	SDS Number:	Date of last issue: 28.09.2024
8.1	14.04.2025	67732-00030	Date of first issue: 27.02.2015

Effects on fetal development : Test Type: Development
Species: Monkey
Application Route: Intravenous
Developmental Toxicity: LOAEL: 100 mg/kg body weight
Result: Embryotoxic effects and adverse effects on the off-
spring were detected., No teratogenic effects.

Test Type: Development
Species: Rabbit
Application Route: Intravenous
Developmental Toxicity: NOAEL: 60 mg/kg body weight
Result: No teratogenic effects.

Test Type: Development
Species: Rat
Application Route: Intravenous
Developmental Toxicity: NOAEL: 60 mg/kg body weight
Result: No teratogenic effects.

Reproductive toxicity - As-
sessment : Some evidence of adverse effects on development, based on
animal experiments.

Relebactam:

Effects on fertility : Test Type: Pre-/postnatal development
Species: Rat
Application Route: Subcutaneous
Fertility: NOAEL: 450 mg/kg body weight

Effects on fetal development : Test Type: Embryo-fetal development
Species: Rat
Application Route: Intraperitoneal injection
Embryo-fetal toxicity.: NOAEL: 450 mg/kg body weight
Result: No effects on fetal development.

Test Type: Embryo-fetal development
Species: Mouse
Application Route: Intraperitoneal injection
Embryo-fetal toxicity.: NOAEL: 450 mg/kg body weight
Result: No effects on fetal development.

Test Type: Development
Species: Rat
Application Route: Intravenous
Developmental Toxicity: NOAEL: $\geq$ 450 mg/kg body weight
Result: No effects on fertility and early embryonic develop-
ment were detected.

Test Type: Development
Species: Rabbit
Application Route: Intravenous
Developmental Toxicity: NOAEL: 450 mg/kg body weight
Result: No effects on fetal development.

**Imipenem / Cilastatin / Relebactam Formula-
tion**

Version	Revision Date:	SDS Number:	Date of last issue: 28.09.2024
8.1	14.04.2025	67732-00030	Date of first issue: 27.02.2015

STOT-single exposure

Not classified based on available information.

STOT-repeated exposure

May cause damage to organs (Kidney) through prolonged or repeated exposure.

Components:**Relebactam:**

Target Organs	:	Kidney
Assessment	:	May cause damage to organs through prolonged or repeated exposure.

Repeated dose toxicity**Components:****Cilastatin:**

Species	:	Rat
NOAEL	:	>= 500 mg/kg
Application Route	:	Intravenous
Exposure time	:	90 Days
Remarks	:	No significant adverse effects were reported

Species	:	Monkey
NOAEL	:	>= 500 mg/kg
Application Route	:	Intravenous
Exposure time	:	5 Weeks
Remarks	:	No significant adverse effects were reported

Imipenem:

Species	:	Monkey
NOAEL	:	60 mg/kg
LOAEL	:	150 mg/kg
Application Route	:	Intravenous
Exposure time	:	6 Months
Target Organs	:	Kidney

Species	:	Monkey
NOAEL	:	120 mg/kg
Application Route	:	Subcutaneous
Exposure time	:	6 Months
Remarks	:	No significant adverse effects were reported

Species	:	Rat
NOAEL	:	180 mg/kg
Application Route	:	Intravenous
Exposure time	:	6 Months
Remarks	:	No significant adverse effects were reported

Species	:	Rabbit
LOAEL	:	150 mg/kg

**Imipenem / Cilastatin / Relebactam Formula-
tion**

Version	Revision Date:	SDS Number:	Date of last issue: 28.09.2024
8.1	14.04.2025	67732-00030	Date of first issue: 27.02.2015

Application Route : Intravenous
Target Organs : Kidney

Relebactam:

Species : Rat, female
NOAEL : 150 mg/kg
Application Route : Intravenous
Exposure time : 30 d

Species : Rat, male
NOAEL : 450 mg/kg
Application Route : Intravenous
Exposure time : 30 d

Species : Monkey
NOAEL : 25 mg/kg
Application Route : Intravenous
Exposure time : 30 d
Target Organs : Kidney

Species : Monkey
NOAEL : 37,5 mg/kg
Application Route : Intravenous
Exposure time : 30 d

Species : Monkey
NOAEL : 50 mg/kg
LOAEL : 150 mg/kg
Application Route : Intravenous
Exposure time : 3 Months
Target Organs : Kidney

Aspiration toxicity

Not classified based on available information.

Experience with human exposure**Components:****Imipenem:**

Inhalation : Symptoms: Nausea, Vomiting, Diarrhea, Fever, hypotension, Dizziness, Drowsiness, Convulsions, pruritis, Rash
Remarks: May cause sensitization of susceptible persons by inhalation of aerosol or dust.

Relebactam:

Skin contact : Symptoms: Pain, Discomfort, Diarrhea, Abdominal pain, insomnia, Nausea, sore throat, Vertigo

**Imipenem / Cilastatin / Relebactam Formula-
tion**

Version	Revision Date:	SDS Number:	Date of last issue: 28.09.2024
8.1	14.04.2025	67732-00030	Date of first issue: 27.02.2015

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Components:****Cilastatin:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): > 111 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): > 99 mg/l
aquatic invertebrates
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic : EC50 (Anabaena flos-aquae): > 99 mg/l
plants
Exposure time: 72 h
Method: OECD Test Guideline 201

EC50 (Pseudokirchneriella subcapitata (green algae)): > 99 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Anabaena flos-aquae): 99 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 99 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to fish (Chronic tox- : EC10 (Pimephales promelas (fathead minnow)): > 9,9 mg/l
icity)
Exposure time: 32 d
Method: OECD Test Guideline 210

Toxicity to daphnia and other : EC10 (Daphnia magna (Water flea)): > 10 mg/l
aquatic invertebrates (Chron-
ic toxicity)
Exposure time: 21 d
Method: OECD Test Guideline 211

Toxicity to microorganisms : EC50: > 1.000 mg/l
Exposure time: 3 h
Test Type: Respiration inhibition
Method: OECD Test Guideline 209

Imipenem:

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): > 78 mg/l
aquatic invertebrates
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic : EC50 (Anabaena flos-aquae (cyanobacterium)): 0,0046 mg/l

Imipenem / Cilastatin / Relebactam Formula- tion

Version	Revision Date:	SDS Number:	Date of last issue: 28.09.2024
8.1	14.04.2025	67732-00030	Date of first issue: 27.02.2015

plants		Exposure time: 72 h Method: OECD Test Guideline 201 NOEC (Anabaena flos-aquae (cyanobacterium)): 0,002 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 EC50 (Pseudokirchneriella subcapitata (green algae)): > 74 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 NOEC (Pseudokirchneriella subcapitata (green algae)): 74 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
M-Factor (Acute aquatic toxicity)	: 100	
Toxicity to fish (Chronic toxicity)	: NOEC (Pimephales promelas (fathead minnow)): 9,4 mg/l Exposure time: 32 d Method: OECD Test Guideline 210	
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC (Daphnia magna (Water flea)): 11 mg/l Exposure time: 21 d Method: OECD Test Guideline 211	
M-Factor (Chronic aquatic toxicity)	: 10	
Toxicity to microorganisms	: EC50: > 1.000 mg/l Exposure time: 3 h Test Type: Respiration inhibition Method: OECD Test Guideline 209	
Relebactam:		
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): > 100 mg/l Exposure time: 48 h Method: OECD Test Guideline 202	
	: EC50 (Americamysis): > 100 mg/l Exposure time: 96 h	
Toxicity to algae/aquatic plants	: EC50 (Pseudokirchneriella subcapitata (green algae)): 86 mg/l Exposure time: 72 h Method: OECD Test Guideline 201	
	: NOEC (Pseudokirchneriella subcapitata (green algae)): 12 mg/l Exposure time: 72 h Method: OECD Test Guideline 201	
	: EC50 (Anabaena flos-aquae (cyanobacterium)): > 11 mg/l Exposure time: 72 h	

**Imipenem / Cilastatin / Relebactam Formula-
tion**

Version	Revision Date:	SDS Number:	Date of last issue: 28.09.2024
8.1	14.04.2025	67732-00030	Date of first issue: 27.02.2015

Method: OECD Test Guideline 201

NOEC (Anabaena flos-aquae (cyanobacterium)): 11 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 9,2 mg/l
Exposure time: 32 d
Method: OECD Test Guideline 210

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 2,7 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211

Toxicity to microorganisms : EC50: > 1.000 mg/l
Exposure time: 3 h
Test Type: Respiration inhibition
Method: OECD Test Guideline 209

NOEC: 96,3 mg/l
Exposure time: 3 h
Test Type: Respiration inhibition
Method: OECD Test Guideline 209

Persistence and degradability**Components:****Cilastatin:**

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 27 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

Imipenem:

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 29 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

Relebactam:

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 11,3 %
Exposure time: 28 d
Method: OECD Test Guideline 314

Bioaccumulative potential**Components:****Cilastatin:**

Partition coefficient: n- : log Pow: -3,53

**Imipenem / Cilastatin / Relebactam Formula-
tion**

Version	Revision Date:	SDS Number:	Date of last issue: 28.09.2024
8.1	14.04.2025	67732-00030	Date of first issue: 27.02.2015

octanol/water

Imipenem:Partition coefficient: n- : log Pow: < -1
octanol/water**Relebactam:**Partition coefficient: n- : log Pow: < -2
octanol/water**Mobility in soil****Components:****Cilastatin:**Distribution among environ- : log Koc: 2,3
mental compartments**Relebactam:**Distribution among environ- : log Koc: 2,3
mental compartments**Other adverse effects**

No data available

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

Waste from residues	: Do not dispose of waste into sewer. Dispose of in accordance with local regulations.
Contaminated packaging	: Empty containers should be taken to an approved waste handling site for recycling or disposal. If not otherwise specified: Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION**International Regulations****UNRTDG**

UN number	: UN 3077
Proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Imipenem)
Class	: 9
Packing group	: III
Labels	: 9
Environmentally hazardous	: yes

IATA-DGR

UN/ID No.	: UN 3077
Proper shipping name	: Environmentally hazardous substance, solid, n.o.s. (Imipenem)
Class	: 9
Packing group	: III
Labels	: Miscellaneous

**Imipenem / Cilastatin / Relebactam Formula-
tion**

Version	Revision Date:	SDS Number:	Date of last issue: 28.09.2024
8.1	14.04.2025	67732-00030	Date of first issue: 27.02.2015

Packing instruction (cargo aircraft) : 956

Packing instruction (passenger aircraft) : 956

Environmentally hazardous : yes

IMDG-Code

UN number : UN 3077

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Imipenem)

Class : 9

Packing group : III

Labels : 9

EmS Code : F-A, S-F

Marine pollutant : yes

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Domestic regulation**ANTT**

UN number : UN 3077

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Imipenem)

Class : 9

Packing group : III

Labels : 9

Hazard Identification Number : 90

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION**Safety, health and environmental regulations/legislation specific for the substance or mixture**

National List of Carcinogenic Agents for Humans - (LINACH) : Not applicable

Brazil. List of chemicals controlled by the Federal Police : Sodium hydrogencarbonate

The ingredients of this product are reported in the following inventories:

AICS : not determined

DSL : not determined

IECSC : not determined

**Imipenem / Cilastatin / Relebactam Formula-
tion**

Version	Revision Date:	SDS Number:	Date of last issue: 28.09.2024
8.1	14.04.2025	67732-00030	Date of first issue: 27.02.2015

SECTION 16. OTHER INFORMATION

Revision Date : 14.04.2025
Date format : dd.mm.yyyy

Further information

Sources of key data used to compile the Material Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECl - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified

Imipenem / Cilastatin / Relebactam Formula- tion

Version	Revision Date:	SDS Number:	Date of last issue: 28.09.2024
8.1	14.04.2025	67732-00030	Date of first issue: 27.02.2015

in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

BR / Z8