

## Safety Data Sheet

### PD4-FE - Palladium iron plating solution, 4g/l

Safety Data Sheet dated 3/3/2025 version 4

Compliant with regulation (CE) n. 1907/2006 REACH, Annex II, and subsequent amendments introduced by Commission Regulation (EU) no. 2020/878

---

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

Mixture identification:

Trade name: PD4-FE - Palladium iron plating solution, 4g/l

Trade code: PD4-FE

Product type and use: SL

Registration Number N/A

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use: For jewelry industry; For electroplating industry

Uses advised against: All other uses not intended for the electroplating and jewellery industry are not recommended.

### 1.3. Details of the supplier of the safety data sheet

Company: LEGOR GROUP S.p.A.

Via del Lavoro, 1

36050 Bressanvido (VI)

Italy

Tel.: +39.0444.467911

Fax.: +39.0444. 660677

Competent person responsible for the safety data sheet: info@legor.com

### 1.4. Emergency telephone number

CENTRO ANTIVELENO: "Ospedale Pediatrico Bambino Gesù" – Roma

Tel. (+39) 06.6859.3726

CENTRO ANTIVELENO: "Azienda Ospedaliera Università di Foggia" – Foggia

Tel. 800.183.459

CENTRO ANTIVELENO: "Azienda Ospedaliera A. Cardarelli" – Napoli

Tel. (+39) 081.545.3333

CENTRO ANTIVELENO: Policlinico "Umberto I" – Roma

Tel. (+39) 06.4997.8000

CENTRO ANTIVELENO: Policlinico "A. Gemelli" – Roma

Tel. (+39) 06.305.4343

CENTRO ANTIVELENO: Azienda Ospedaliera "Careggi" U.O. Tossicologia Medica – Firenze

Tel. (+39) 055.794.7819

CENTRO ANTIVELENO: Centro Nazionale di Informazione Tossicologica – Pavia

Tel. (+39) 0382.24.444

CENTRO ANTIVELENO: Ospedale Niguarda – Milano

Tel. (+39) 02.66.1010.29

CENTRO ANTIVELENO: Azienda Ospedaliera Papa Giovanni XXIII – Bergamo

Tel. 800.88.33.00

CENTRO ANTIVELENO Centro Antiveneni Veneto – Verona

Tel. 800.011.858

---

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

#### Regulation (EC) n. 1272/2008 (CLP)

Aquatic Chronic 3 Harmful to aquatic life with long lasting effects.

Adverse physicochemical, human health and environmental effects:

No other hazards

## 2.2. Label elements

### Hazard statements

H412 Harmful to aquatic life with long lasting effects.

### Precautionary statements

P273 Avoid release to the environment.

P501 Dispose of contents/container in accordance with applicable regulations.

### Special provisions according to Annex XVII of REACH and subsequent amendments:

None.

## 2.3. Other hazards

No PBT, vPvB or endocrine disruptor substances present in concentration  $\geq 0.1\%$

Other Hazards: No other hazards

---

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

N.A.

### 3.2. Mixtures

Mixture identification: PD4-FE - Palladium iron plating solution, 4g/l

### Hazardous components within the meaning of the CLP regulation and related classification:

Qty	Name	Ident. Numb.	Classification	Registration Number
$\geq 0.1 - < 1\%$	Tetramine palladium (II) sulphate	CAS:13601-06-4 EC:640-425-4	Acute Tox. 4, H302; Aquatic Acute 1, H400; Aquatic Chronic 1, H410	

---

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

In case of skin contact:

Wash with plenty of water and soap.

In case of eyes contact:

Wash immediately with water.

In case of Ingestion:

Do not induce vomiting, get medical attention showing the SDS and label hazardous.

In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

### 4.2. Most important symptoms and effects, both acute and delayed

N.A.

### 4.3. Indication of any immediate medical attention and special treatment needed

N.A.

---

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media:

Water.

Carbon dioxide (CO<sub>2</sub>).

Extinguishing media which must not be used for safety reasons:

None in particular.

### 5.2. Special hazards arising from the substance or mixture

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

### 5.3. Advice for firefighters

Use suitable breathing apparatus .

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

---

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

#### For non emergency personnel:

Wear personal protection equipment.  
Remove persons to safety.  
See protective measures under point 7 and 8.

#### **For emergency responders:**

Wear personal protection equipment.

#### **6.2. Environmental precautions**

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.  
Retain contaminated washing water and dispose it.  
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.  
Suitable material for taking up: absorbing material, organic, sand

#### **6.3. Methods and material for containment and cleaning up**

Suitable material for taking up: absorbing material, organic, sand  
Wash with plenty of water.

#### **6.4. Reference to other sections**

See also section 8 and 13

---

### **SECTION 7: Handling and storage**

#### **7.1. Precautions for safe handling**

Avoid contact with skin and eyes, inhalation of vapours and mists.  
Don't use empty container before they have been cleaned.  
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.  
Contaminated clothing should be changed before entering eating areas.  
Do not eat or drink while working.  
See also section 8 for recommended protective equipment.

#### **7.2. Conditions for safe storage, including any incompatibilities**

Incompatible materials:

None in particular.

Instructions as regards storage premises:

Adequately ventilated premises.

#### **7.3. Specific end use(s)**

Recommendation(s)

None in particular

Industrial sector specific solutions:

None in particular

---

### **SECTION 8: Exposure controls/personal protection**

#### **8.1. Control parameters**

No data available

#### **8.2. Exposure controls**

Eye protection:

Not needed for normal use. Anyway, operate according good working practices.

Protection for skin:

No special precaution must be adopted for normal use.

Protection for hands:

Not needed for normal use.

Respiratory protection:

N.A.

Thermal Hazards:

N.A.

Environmental exposure controls:

N.A.

Hygienic and Technical measures

N.A.

---

### **SECTION 9: Physical and chemical properties**

#### **9.1. Information on basic physical and chemical properties**

**Physical State:** Liquid

**Color:** yellow

**Odour:** Typical

**Odour threshold:** N.A.  
**pH:** 6,80  
**Kinematic viscosity:** N.A.  
**Melting point / freezing point:** N.A.  
**Initial boiling point and boiling range:** N.A.  
**Flash point:** > 93°C  
**Upper/lower flammability or explosive limits:** N.A.  
**Vapour density:** N.A.  
**Vapour pressure:** N.A.  
**Relative density:** 1,09 g/cm<sup>3</sup>  
**Solubility in water:** Total  
**Solubility in oil:** N.A.  
**Partition coefficient (n-octanol/water):** N.A.  
**Nanoforms dispersion stability:** N.A.  
**Auto-ignition temperature:** N.A.  
**Decomposition temperature:** N.A.  
**Flammability:** N.A.

**Particle characteristics:**

**Particle size:** N.A.

**9.2. Other information**

**VOC:** N.A.

**Miscibility:** N.A.

**Conductivity:** N.A.

**Evaporation rate:** N.A.

**No other relevant information**

---

**SECTION 10: Stability and reactivity**

**10.1. Reactivity**

Stable under normal conditions

**10.2. Chemical stability**

Data not available.

**10.3. Possibility of hazardous reactions**

None.

**10.4. Conditions to avoid**

Stable under normal conditions.

**10.5. Incompatible materials**

None in particular.

**10.6. Hazardous decomposition products**

None.

---

**SECTION 11: Toxicological information**

**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**

**Toxicological Information of the Preparation**

a) acute toxicity	Not classified Based on available data, the classification criteria are not met
b) skin corrosion/irritation	Not classified Based on available data, the classification criteria are not met
c) serious eye damage/irritation	Not classified Based on available data, the classification criteria are not met
d) respiratory or skin sensitisation	Not classified Based on available data, the classification criteria are not met
e) germ cell mutagenicity	Not classified Based on available data, the classification criteria are not met
f) carcinogenicity	Not classified Based on available data, the classification criteria are not met
g) reproductive toxicity	Not classified Based on available data, the classification criteria are not met
h) STOT-single exposure	Not classified

i) STOT-repeated exposure	Based on available data, the classification criteria are not met Not classified
j) aspiration hazard	Based on available data, the classification criteria are not met Not classified Based on available data, the classification criteria are not met

## 11.2. Information on other hazards

### Endocrine disrupting properties:

No endocrine disruptor substances present in concentration  $\geq 0.1\%$

---

## SECTION 12: Ecological information

### 12.1. Toxicity

Adopt good working practices, so that the product is not released into the environment.

Eco-Toxicological Information:

Harmful to aquatic life with long lasting effects.

### List of Eco-Toxicological properties of the product

The product is classified: Aquatic Chronic 3(H412)

### 12.2. Persistence and degradability

N.A.

### 12.3. Bioaccumulative potential

N.A.

### 12.4. Mobility in soil

N.A.

### 12.5. Results of PBT and vPvB assessment

No PBT Ingredients are present

### 12.6. Endocrine disrupting properties

No endocrine disruptor substances present in concentration  $\geq 0.1\%$

### 12.7. Other adverse effects

N.A.

---

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Recover if possible. In so doing, comply with the local and national regulations currently in force.

---

## SECTION 14: Transport information

### 14.1. UN number or ID number

N/A

### 14.2. UN proper shipping name

ADR-Shipping Name: N/A

IATA-Technical name: N/A

IMDG-Technical name: N/A

### 14.3. Transport hazard class(es)

ADR-Class: N/A

IATA-Class: N/A

IMDG-Class: N/A

### 14.4. Packing group

ADR-Packing Group: N/A

IATA-Packing group: N/A

IMDG-Packing group: N/A

### 14.5. Environmental hazards

Toxic ingredients quantity: 0,00

Very toxic ingredients quantity: 0,00

No

Environmental Pollutant: No

### 14.6. Special precautions for user

Road and Rail (ADR-RID):

ADR-Label: N/A  
ADR - Hazard identification number: N/A  
ADR-Special Provisions: N/A  
ADR-Transport category (Tunnel restriction code): N/A

**Air (IATA):**

IATA-Passenger Aircraft: N/A  
IATA-Cargo Aircraft: N/A  
IATA-Label: N/A  
IATA-Subsidiary hazards: N/A  
IATA-Erg: N/A  
IATA-Special Provisions: N/A

**Sea (IMDG):**

IMDG-Stowage Code: N/A  
IMDG-Stowage Note: N/A  
IMDG-Subsidiary hazards: N/A  
IMDG-Special Provisions: N/A  
IMDG-EMS: N/A  
IMDG-MFAG: N/A

**14.7. Maritime transport in bulk according to IMO instruments**

N.A.

---

**SECTION 15: Regulatory information**

**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

Dir. 98/24/EC (Risks related to chemical agents at work)  
Dir. 2000/39/EC (Occupational exposure limit values)  
Regulation (EC) n. 1907/2006 (REACH)  
Regulation (EC) n. 1272/2008 (CLP)  
Regulation (EC) n. 790/2009 (ATP 1 CLP) and (EU) n. 758/2013  
Regulation (EU) n. 2020/878  
Regulation (EU) n. 286/2011 (ATP 2 CLP)  
Regulation (EU) n. 618/2012 (ATP 3 CLP)  
Regulation (EU) n. 487/2013 (ATP 4 CLP)  
Regulation (EU) n. 944/2013 (ATP 5 CLP)  
Regulation (EU) n. 605/2014 (ATP 6 CLP)  
Regulation (EU) n. 2015/1221 (ATP 7 CLP)  
Regulation (EU) n. 2016/918 (ATP 8 CLP)  
Regulation (EU) n. 2016/1179 (ATP 9 CLP)  
Regulation (EU) n. 2017/776 (ATP 10 CLP)  
Regulation (EU) n. 2018/669 (ATP 11 CLP)  
Regulation (EU) n. 2018/1480 (ATP 13 CLP)  
Regulation (EU) n. 2019/521 (ATP 12 CLP)  
Regulation (EU) n. 2020/217 (ATP 14 CLP)  
Regulation (EU) n. 2020/1182 (ATP 15 CLP)  
Regulation (EU) n. 2021/643 (ATP 16 CLP)  
Regulation (EU) n. 2021/849 (ATP 17 CLP)  
Regulation (EU) n. 2022/692 (ATP 18 CLP)

Restrictions related to the product or the substances contained according to Annex XVII Regulation (EC) 1907/2006 (REACH) and subsequent modifications:

Restrictions related to the product: 3  
Restrictions related to the substances contained: 65, 75

Provisions related to directive EU 2012/18 (Seveso III):

N.A.

Regulation (EU) No 649/2012 (PIC regulation)

No substances listed

German Water Hazard Class.

Class 3: extremely hazardous.

SVHC Substances:

No SVHC substances present in concentration  $\geq 0.1\%$

**15.2. Chemical safety assessment**

No Chemical Safety Assessment has been carried out for the mixture.

## SECTION 16: Other information

Code	Description
H302	Harmful if swallowed.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

Code	Hazard class and hazard category	Description
3.1/4/Oral	Acute Tox. 4	Acute toxicity (oral), Category 4
4.1/A1	Aquatic Acute 1	Acute aquatic hazard, category 1
4.1/C1	Aquatic Chronic 1	Chronic (long term) aquatic hazard, category 1
4.1/C3	Aquatic Chronic 3	Chronic (long term) aquatic hazard, category 3

### Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Classification according to Regulation (EC) Nr. 1272/2008	Classification procedure
---	--------------------------

4.1/C3	Calculation method
--------	--------------------

This document was prepared by a competent person who has received appropriate training.

Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.

It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.

This MSDS cancels and replaces any preceding release.

Legend to abbreviations and acronyms used in the safety data sheet:

ACGIH: American Conference of Governmental Industrial Hygienists

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.

AND: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

ATE: Acute Toxicity Estimate

ATEmix: Acute toxicity Estimate (Mixtures)

BCF: Biological Concentration Factor

BEI: Biological Exposure Index

BOD: Biochemical Oxygen Demand

CAS: Chemical Abstracts Service (division of the American Chemical Society).

CAV: Poison Center

CE: European Community

CLP: Classification, Labeling, Packaging.

CMR: Carcinogenic, Mutagenic and Reprotoxic

COD: Chemical Oxygen Demand

COV: Volatile Organic Compound

CSA: Chemical Safety Assessment

CSR: Chemical Safety Report

DMEL: Derived Minimal Effect Level

DNEL: Derived No Effect Level.

DPD: Dangerous Preparations Directive

DSD: Dangerous Substances Directive

EC50: Half Maximal Effective Concentration

ECHA: European Chemicals Agency

EINECS: European Inventory of Existing Commercial Chemical Substances.

ES: Exposure Scenario

GefStoffVO: Ordinance on Hazardous Substances, Germany.

GHS: Globally Harmonized System of Classification and Labeling of Chemicals.

IARC: International Agency for Research on Cancer

IATA: International Air Transport Association.

IATA-DGR: Dangerous Goods Regulation by the "International Air Transport Association" (IATA).

IC50: half maximal inhibitory concentration

ICAO: International Civil Aviation Organization.

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO).  
IMDG: International Maritime Code for Dangerous Goods.  
INCI: International Nomenclature of Cosmetic Ingredients.  
IRCCS: Scientific Institute for Research, Hospitalization and Health Care  
KAFH: KAFH  
KSt: Explosion coefficient.  
LC50: Lethal concentration, for 50 percent of test population.  
LD50: Lethal dose, for 50 percent of test population.  
LDLo: Leathal Dose Low  
N.A.: Not Applicable  
N/A: Not Applicable  
N/D: Not defined/ Not available  
NA: Not available  
NIOSH: National Institute for Occupational Safety and Health  
NOAEL: No Observed Adverse Effect Level  
OSHA: Occupational Safety and Health Administration.  
PBT: Persistent, Bioaccumulative and Toxic  
PGK: Packaging Instruction  
PNEC: Predicted No Effect Concentration.  
PSG: Passengers  
RID: Regulation Concerning the International Transport of Dangerous Goods by Rail.  
STEL: Short Term Exposure limit.  
STOT: Specific Target Organ Toxicity.  
TLV: Threshold Limiting Value.  
TWATLV: Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard).  
vPvB: Very Persistent, Very Bioaccumulative.  
WGK: German Water Hazard Class.

**Paragraphs modified from the previous revision:**

- 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING
- 2. HAZARDS IDENTIFICATION
- 3. COMPOSITION/INFORMATION ON INGREDIENTS
- 7. HANDLING AND STORAGE
- 9. PHYSICAL AND CHEMICAL PROPERTIES
- 12. ECOLOGICAL INFORMATION
- 16. OTHER INFORMATION