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

1.1 Product identifier
Trade name: 1,1'-Bis(diphenylphosphino)ferrocene
Stock number: B21166, L14988
CAS Number: 12150-46-8

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

1.3 Details of the supplier of the safety data sheet
Manufacturer/Supplier: Thermo Fisher (Kandel) GmbH
Zeppelinstr. 7b
76185 Karlsruhe / Germany
Tel: +49 (0) 721 84007 280
Fax: +49 (0) 721 84007 300
Email: tech@alfa.com
www.alfa.com
Informing department: Product safety Tel + +049 (0) 7275 988687-0

1.4 Emergency telephone number:
Carechem 24: +44 (o) 1235 239 670 (Multi-language emergency number)
Poison Information Center Mainz
www.giftinfo.uni-mainz.de Telephone: +49(0)6131/19240

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008

GHS07
Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2 H319 Causes serious eye irritation.
STOT SE 3 H335 May cause respiratory irritation.

Other hazards that do not result in classification
No information known.

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008
The substance is classified and labelled according to the CLP regulation.

Hazard pictograms

GHS07

Signal word Warning
Hazard statements
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

Precautionary statements
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

3.1 Substances
CAS# Designation: 12150-46-8 1,1'-Bis(diphenylphosphino)ferrocene

SECTION 4: First aid measures

4.1 Description of first aid measures
After inhalation
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
Seek immediate medical advice.

After skin contact
Instantly wash with water and soap and rinse thoroughly.
Seek immediate medical advice.

After eye contact
Rinse opened eye for several minutes under running water. Then consult doctor.

After swallowing
Seek medical treatment.

4.2 Most important symptoms and effects, both acute and delayed
Causes skin irritation.
Causes serious eye irritation.
May cause respiratory irritation.

4.3 Indication of any immediate medical attention and special treatment needed
No further relevant information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing agents: CO2, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.

5.2 Special hazards arising from the substance or mixture
If this product is involved in a fire, the following can be released:
Carbon monoxide and carbon dioxide
Phosphorus oxides
Iron oxides

5.3 Advice for firefighters
Protective equipment:
Wear self-contained breathing apparatus.

(Contd. on page 2)
Safety data sheet
according to 1907/2006/EC, Article 31

Trade name 1,1’-Bis(diphenylphosphino)ferrocene

Wear full protective suit.

SECTION 6: Accidental release measures
6.1 Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation.
6.2 Environmental precautions: Do not allow product to reach sewage system or water bodies.
6.3 Methods and material for containment and cleaning up: Ensure adequate ventilation.
Prevention of secondary hazards: No special measures required.
6.4 Reference to other sections
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for information on disposal.

SECTION 7: Handling and storage
7.1 Precautions for safe handling
Handle under dry protective gas.
Keep containers tightly sealed.
Ensure good ventilation/exhaustion at the workplace.
Information about protection against explosions and fires: No information known.
7.2 Conditions for safe storage, including any incompatibilities
Storage
Requirements to be met by storerooms and containers: Refrigerate
Information about storage in one common storage facility:
Store away from air.
Protect from heat.
Store away from oxidising agents.
Further information about storage conditions:
Store under dry inert gas.
This product is air sensitive.
Keep container tightly sealed.
Refrigerate
7.3 Specific end use(s) No further relevant information available.

SECTION 8: Exposure controls/personal protection
Additional information about design of technical systems:
Property operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.
8.1 Control parameters
Components with critical values that require monitoring at the workplace:
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
Additional information: No data
8.2 Exposure controls
Personal protective equipment
General protective and hygienic measures
The usual precautionary measures should be adhered to in handling the chemicals.
Keep away from foodstuffs, beverages and food.
Instantly remove any soiled and impregnated garments.
Wash hands during breaks and at the end of the work.
Avoid contact with the eyes and skin.
Maintain an ergonomically appropriate working environment.
Breathing equipment:
Use breathing protection with high concentrations.
Recommended filter device for short term use:
Use a respirator with type N95 (USA) or PE (EN 143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards.
Protection of hands:
Check protective gloves prior to each use for their proper condition.
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
Material of gloves Nitrile rubber, NBR
Penetration time of glove material (in minutes) 480
Glove thickness 0.11 mm
Eye protection:
Face protection
Body protection: Protective work clothing.

SECTION 9: Physical and chemical properties
9.1 Information on basic physical and chemical properties
General Information
Appearance:
Form: Powder
Smell: Not determined
Odour threshold: Not determined.
P-value: Not applicable.

Change in condition
Melting point/Melting range: ca 182 °C (dec)
Boiling point/Boiling range: Not determined.
Sublimation temperature / start: Not determined.
Inflammability (solid, gaseous) Not determined.
Ignition temperature: Not determined.
Decomposition temperature: Not determined.
Self-inflammability: Not determined.

Danger of explosion: Not determined.
Critical values for explosion:
Lower: Not determined.
Upper: Not determined.
Steam pressure: Not applicable.
Density Not determined.
Relative density Not determined.
Vapour density: Not applicable.
Evaporation rate: Not applicable.
Solvability in / Miscibility with
Water: Insoluble
Partition coefficient (n-octanol/water): Not determined.

(Contd. of page 3)
### SECTION 10: Stability and reactivity

#### 10.1 Reactivity
No information known.

#### 10.2 Chemical stability
Stable under recommended storage conditions.

#### Thermal decomposition / conditions to be avoided
No decomposition if used and stored according to specifications.

#### 10.3 Possibility of hazardous reactions
Reacts with strong oxidising agents

#### 10.4 Conditions to avoid
No further relevant information available.

#### 10.5 Incompatible materials:
- Air
- Oxidising agents
- Heat

#### 10.6 Hazardous decomposition products:
- Carbon monoxide and carbon dioxide
- Phosphorus oxides (e.g. P2O5)
- Iron oxides

### SECTION 11: Toxicological information

#### 11.1 Information on toxicological effects

- **Acute toxicity:** No effects known.
- **LD/LC50 values that are relevant for classification:** No data
- **Skin irritation or corrosion:** Causes skin irritation.
- **Eye irritation or corrosion:** Causes serious eye irritation.
- **Sensitization:** No sensitizing effect known.
- **Germ cell mutagenicity:** No effects known.
- **Carcinogenicity:** No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.
- **Reproductive toxicity:** No effects known.
- **Specific target organ system toxicity - repeated exposure:** May cause respiratory irritation.
- **Aspiration hazard:** No effects known.
- **Subacute to chronic toxicity:** No effects known.
- **Additional toxicological information:** To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

### SECTION 12: Ecological information

#### 12.1 Toxicity
- **Aquatic toxicity:** No further relevant information available.
- **Bioaccumulative potential:** No further relevant information available.
- **Mobility in soil:** No further relevant information available.

#### Additional ecological information:
- **General notes:** Generally not hazardous for water.
- **Avoid transfer into the environment.
- **Subacute to chronic toxicity:** No effects known.
- **Additional toxicological information:** To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

### SECTION 13: Disposal considerations

#### 13.1 Waste treatment methods

- **Recommendation:** Hand over to disposers of hazardous waste.
- **Must be specially treated under adherence to official regulations.
- **Consult state, local or national regulations for proper disposal.
- **Uncleaned packagings:** Disposal must be made according to official regulations.

### SECTION 14: Transport information

#### UN-Number
- Not applicable

#### ADR, ADN, IMDG, IATA
- Not applicable

#### ADR proper shipping name
- Not applicable

#### ADR, ADN, IMDG, IATA
- Not applicable

#### ADR, ADN, IMDG, IATA
- Not applicable

#### Packing group
- Not applicable

#### ADR, IMDG, IATA
- Not applicable

#### Environmental hazards:
- Not applicable

#### Special precautions for user:
- Not applicable

#### Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
- Not applicable

#### UN "Model Regulation":
- Not applicable

### SECTION 15: Regulatory information

#### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
- **Australian Inventory of Chemical Substances:** Substance is not listed.
- **Standard for the Uniform Scheduling of Medicines and Poisons:** Substance is not listed.
- **National regulations:**
- **Information about limitation of use:** For use only by technically qualified individuals.
- **Employment restrictions concerning young persons must be observed.
- **Water hazard class:** Generally not hazardous for water.
- **Other regulations, limitations and prohibitive regulations:**
- **ELINCS (European List of Notified Chemical Substances):** Substance is not listed.
Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed.

The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.

Substance is not listed.

Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed.

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing SDS: Global Marketing Department

Abbreviations and acronyms:
- ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
- GHS: Globally Harmonized System of Classification and Labelling of Chemicals
- CAS: Chemical Abstracts Service (division of the American Chemical Society)
- LC50: Lethal concentration, 50 percent
- LD50: Lethal dose, 50 percent
- vPvB: very Persistent and very Bioaccumulative
- ACGIH: American Conference of Governmental Industrial Hygienists (USA)
- OSHA: Occupational Safety and Health Administration (USA)
- NTP: National Toxicology Program (USA)
- IARC: International Agency for Research on Cancer
- EPA: Environmental Protection Agency (USA)
- Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
- Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2
- STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3