Safety Data Sheet

according to Regulation (EC) No 1907/2006 (REACH),
GHS Rev 04 (2011): US, OSHA, CMA, ANSI,

PS4668-25 IN718 alloy

Revision Date: November 20th , 2014

1. IDENTIFICATION OF THE PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1 Identification of the mixture: PS4668-25 IN718 alloy

1.2 Type: IN718

Contains the following substances with hazardous properties: Nickel

1.3 Use of the preparation: For use with Phenix™ and ProX™100, 200, 300 systems

1.4 Uses advised against:

Use of nickel in articles intended for direct and prolonged contact with the skin where the release of nickel exceeds the limit set out in Directives 94/27/EC and 2004/6/EC and REACH regulation 1907/2009 (Annex XVII).

Use of nickel in nickel-containing food contact materials for which migration into foodstuff would exceed more than 0.1 mg/kg of nickel in accordance with the Council of Europe Guidelines on metals and alloys used as food contact materials

Use of nickel in immersion-type kettles which would release more than 0.05 mg/l of nickel into the water in accordance with the Council of Europe Guidelines on metals and alloys used as food contact materials

Use of nickel in commercially available "do-it-yourself" home electroplating kits.

1.5 Company/undertaking identification:

3D Systems, Inc.
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Rock Hill, South Carolina U.S.A.
Phone: 803.326.3900 or
Toll-free Phone: 800.793.3669
e-mail: moreinfo@3dsystems.com
Chemical Emergency: 800.424.9300 – Chemtrec

3D Systems
Parc Européen d'Entreprises
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e-mail: moreinfo@3dsystems.com
Chemical Emergency: +1 703-527-3887- Chemtrec

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture:

2.1.1 CLP

Danger

Harmful

Hazard statements	
Aquatic Chronic 3 H412	Harmful to aquatic life with long lasting effects.
Carc.2 H351.1	Suspected of causing cancer if inhaled
STOT RE 1 H372	Causes damage to organs (or state all organs affected, if known) through prolonged or repeated exposure (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard).
Skin Sens. 1 H317	May cause an allergic skin reaction.
Precautionary statements	
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P232	Protect from moisture.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.

P280	Wear protective gloves/protective clothing/eye protection/face protection.
P281	Use personal protective equipment as required.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P314	Get medical advice/attention if you feel unwell.
P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention.
P335 + P334	Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.
P363	Wash contaminated clothing before reuse.
P370 + P378.2	In case of fire: Use extinguishing powder or sand for extinction.
P402 + P404	Store in a dry place. Store in a closed container.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local and national regulations

2.1.2 CHIP

T

CHIP	
R40	Limited evidence of a carcinogenic effect.
R43	May cause sensitisation by skin contact.
R48/23	Toxic: danger of serious damage to health by prolonged exposure through inhalation.
R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S2	Keep out of the reach of children.
S20/21	When using do not eat, drink or smoke.
S22	Do not breathe dust.
S36	Wear suitable protective clothing.
S43.5	For extinguishing, use extinguishing powder or sand.
S60	This material and its container must be disposed of as hazardous waste.
T	Toxic

2.2 Label element:

Danger

Hazard Statements	
Aquatic Chronic 3 H412	Harmful to aquatic life with long lasting effects.
Carc. 2 H351.1	Suspected of causing cancer if inhaled.
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Skin Sens. 1 H317	May cause an allergic skin reaction.

Precautionary statements:	
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P232	Protect from moisture.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P273	Avoid release to the environment.
P280	Wear protective gloves / protective clothing / eye protection / face protection.

2.3 Other Hazards: no information

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Mixture

Concentration %	CAS No	CE No	REACH Registration No	Classification according to CHIP (Chemicals Hazard Information for Packaging and Supply) Regulations 2002	Classification according to 67/548/EEC
Nickel					
50.00-60.00	7440-02-0	231-111-4	01-2119438727-29-0000	R40 R43 R48/23 R52/53 S20/21 S22 S36 S60 T	Aquatic Chronic 3 H412 Carc. 2 H351.1 STOT RE 1 H372 Skin Sens 1 H317 P201 P202 P260 P261 P264 P270 P272 P273 P280 P281 P302 + P352 P308 + P313 P314 P333+P313 P363 P405 P501
Chromium					
10.00-25.00	7440-47-3	231-157-5	01-2119485652-31-0000	S20/21 S22 S60	P202 P260 P270 P272 P281 P501
Iron					
10.00-25.00	7439-89-6	231-096-4	01-2119462838-24-0000	S20/21 S22 S60	P202 P260 P270 P272 P281 P501

Niobium					
1.00-10.00	7440-03-1	231-113-5		S20/21 S22 S60	P202 P260 P270 P272 P281 P501
Molybdenum					
1.00-10.00	7439-98-7	231-107-2		S20/21 S22 S60	P202 P260 P270 P272 P281 P501
Aluminium					
0.10- 1.00	7429-90-5	231-072-3	05-2115146653-51-0000	S2 S20/21 S22 S43.5 S60	P202 P232 P260 P270 P272 P280 P281 P335 + P334 P370 + P378.2 P402 + P404 P501

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

Skin contact : Wash off thoroughly with soap and water. If rash develops, seek medical attention.

Eye contact : . Irrigate thoroughly with water for at least 10 minutes Obtain medical attention if irritation persists.

Inhalation : Remove from exposure, rest and keep warm. In severe cases or if exposure has been great, obtain medical attention.

Ingestion : Wash out mouth thoroughly with water. Obtain medical attention if further symptoms develop.

4.2 Most important symptoms and effects, both acute and delayed

Skin Contact: Rash may develop.

Eye Contact: Mechanical irritation.

Inhalation: Possible asthma like symptoms.

Ingestion: No information

4.3 Indications of any immediate medical attention and special treatment needed

Skin Contact: Treat symptomatically

Eye Contact: Treat symptomatically

Inhalation: Treat symptomatically

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing Media: DO NOT use water jet. Use extinguishing type D powder or sand.

5.2 Special Hazards arising from the substance or mixture: Avoid formation of dust cloud as this may lead to an increased risk of a dust explosion.

5.3 Special Hazards caused by the substance, its products of combustion or resulting gases: Avoid formation of dust cloud as this may lead to an increased risk of a dust explosion.

5.4 Advice for fire fighters: No information.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions: Wear suitable protective clothing and equipment.

6.2 Environmental precautions: Take precautions to ensure product does not contaminate ground or enter the drainage system.

6.3 Methods and material for containment and for cleaning up:
For containment: not applicable
For cleaning up small spillage: vacuum with equipment fitted with HEPA filtration.
For cleaning up large spillage: solids should be carefully transferred to salvage containers. Any residues should be treated as small spillages.
Other information: no information.

6.4 Reference to other sections: no information.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Protective measures:.	Avoid contact with skin and eyes. Do not breathe dust. Wash hand and face thoroughly after working with material
Measures to prevent fire:	Not applicable.
Measures to protect the environment:	Use appropriate containment to avoid environmental hazard.
Advice on general occupational hygiene:	Work using a suitable extraction/ventilation system. Contaminated clothing should be removed and washed before re-use.

7.2 Conditions for safe storage

Technical measures and storage conditions:	Store sealed container in dry conditions and keep the container closed when not in use.
Packaging materials:	Keep in the container supplied, or suitable metal, plastic or polythene container.
Requirements for storage rooms and vessels:	Containers should be stored under cover in a clean and dry environment
Storage class:	Not applicable.
Further information on storage conditions:	Local regulations should be followed regarding the storage of this material.

7.3. Specific end uses :
No additional information available

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Exposure control parameters

CAS No	Name	Legal Basis	PEL 8hr limit		PEL 15min limit	
			ppm TWA (8 hour)	mg/m3 TWA (8 hour)	ppm TWA (short term)	mg/m3 TWA (sort term)
7440-02-0	Nickel	OSHA 29 CRF 1910.1000 Z1	-	1	-	-
7440-47-3	Chromium	OSHA 29 CRF 1910.1000 Z1	-	1.0	-	-
7439-89-6	Iron	OSHA 29 CRF 1910.1000 Z3	-	Total dust 15, Respirable 5.	-	-
7439-98-7	Molybdenum	OSHA 29 CRF 1910.1000 Z1	-	15	-	-
7429-90-5	Aluminium	OSHA 29 CRF 1910.1000 Z1	-	Total dust 15, Respirable 5	-	-

8.2 Exposure controls

Appropriate engineering controls
Substance/mixture related measures to prevent exposure during identified uses: Not applicable
Structural measures to prevent exposure: Enclosed processes
Organisational measures to prevent exposure: Substance/Mixture only to be used by those trained in its safe use
Technical measures to prevent exposure: Enclosed processes or local exhaust ventilation

Personal protection equipment:
Eye and face protection: Safety glasses.
Hand Protection: Impervious gloves.
Other Skin protection: Barrier cream
Respiratory protection: A suitable respirator complying with Respiratory Protection standard (CFR 1910.134).
Thermal hazards: NA

Environmental exposure controls:
Substance/mixture related measures to prevent exposure: NA
Instruction measures to prevent exposure: NA
Organisational measures to prevent exposure: Substance/Mixture only to be used by those trained in its safe use.
Technical measures to prevent exposure: NA

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance:	Grey powder
Odour:	Odourless
Odour Threshold:	no data

9.2 Important health, safety and environmental information

pH :	No data
Melting point/freezing point (°C):	-
Initial boiling point and boiling range (°C):	No data
Flash point (°C):	No data
Evaporation rate	No data
Flammability (solid, gas)	No data
Upper/lower flammability or explosive limits	No data
Vapour pressure	No data
Vapour density	No data
Autoflammability	No data
Explosive Properties	No data
Relative density	7.91
Solubility(ies)	No data
Partition coefficient ; n-octanol/water	No data
Auto-ignition temperature	No data
Decomposition temperature	No data
Viscosity	No data
Explosive properties	No data
Oxidising properties	No data
Particle size	100% <1mm

9.3 Other information

No data

10. STABILITY AND REACTIVITY

10.1 Chemical Stability: Stable under normal conditions

10.2 Reactivity: No data.

10.3 Possibility of hazardous reactions: No data

10.4 Conditions to avoid: oxidizing agents.

10.5 Incompatible materials: No data.

10.6 Hazardous decomposition products: No data.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:

Acute Toxicity	No data.
Skin corrosion/irritation	No data
Serious eye damage/irritation	Mechanical irritation may be expected.
Respiratory or skin sensitization	Respiratory tract: Nickel metal induced asthma is very rare. The data is not sufficient to conclude that nickel metal is classified as a respiratory sensitizer. Skin: Nickel metal is a well-known skin sensitizer. Direct and prolonged skin contact with metallic nickel may induce nickel allergy and elicit nickel allergic skin reactions in those people already sensitised to nickel, so called nickel allergic contact dermatitis.
Germ cell mutagenicity	No data

Carcinogenicity	Ingestion: The U.S. National Institute for Occupational Safety and Health (NIOSH) concluded that there is no evidence that nickel metal is carcinogenic when ingested. Inhalation: To date, there is no evidence that nickel metal causes cancer in humans based on epidemiology data from workers in the nickel producing and nickel consuming industries. A recent animal (rat) inhalation study showed no increased respiratory cancer risk for nickel metal powder indicating that no carcinogen classification is warranted for nickel metal. The U.S. National Toxicology Program has listed metallic nickel as reasonably anticipated to be a human carcinogen. The International Agency for Research on Cancer (IARC) (Vol 49) found there was inadequate evidence that metallic nickel is carcinogenic to humans but since there was sufficient evidence that it is carcinogenic to animals, IARC concluded that metallic nickel is possibly carcinogenic to humans (Group 2B)
Reproductive toxicity	No data.
Summary of evaluation of the CMR properties	No data.
STOT – single exposure	No data.
STOT – repeated exposure	No data.
Aspiration hazard	No data.

12. Ecological information

12.1.	Toxicity	
	Long-term Ecotoxicity	No data
12.2.	Persistence and degradability	
	Abiotic Degradation	No data
	Physical- and photo-chemical elimination	No data
	Biodegradation	No data
12.3.	Bioccumulative potential	
	Partition coefficient n-octanol/water (log Kow)	No data
	Bioconcentration factor (BCF)	No data
12.4.	Mobility in soil	
	Known or predicted distribution to environmental compartments	No data
	Surface tension	No data
	Adsorption/Desorption	No data
12.5	Results of PBT & vPvB assessment	No data
12.6	Other adverse effects	No data
12.7	Additional information	No data

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods:

Product/packaging disposal: Consult local and national guidelines for the disposal of discarded packaging.
Waste treatment – relevant information: Chemical residues are generally classified as special waste. Contact your local waste disposal authority for advice or pass to a chemical recovery company.
Sewage disposal – relevant informaton:
Other disposal recommendations:

14. TRANSPORT INFORMATION

UN Number None

UN proper shipping name Not classified hazardous for transport

Transport hazard class(es) Not applicable

Packing group Not applicable

Environmental hazards Not applicable

Special precautions for user None

Transport in bulk according to Annex II of MARPOL73/78 and the IPBC code Not applicable

Transport Regulations

International Maritime Dangerous Goods Code Not regulated

International civil aviation organisation technical instructions for the carriage of dangerous goods by air Not regulated

U.S. Dept. of transport regulations Not regulated

Canadian transportation of dangerous goods act Not regulated

European agreement concerning the international carriage of dangerous goods by road

Not regulated

15. REGULATORY INFORMATION

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

UK The use of this product must be assessed in accordance with the requirements of the COSHH Regulations 2002 as amended.

This preparation contains substances which are listed in the Toxic Substances Control Act (TSCA). Substances on the TSCA Inventory are considered "existing" chemicals in U.S. commerce, and substances not on the TSCA Inventory are considered "new" chemicals. If a substance is determined to be a "new" chemical substance for TSCA purposes, it is subject to TSCA section 5 Premanufacture Notice (PMN) requirements, unless the substance meets a TSCA reporting exclusion (e.g., is a naturally-occurring material) or is exempt from PMN reporting (e.g., is an exempted polymer). (The TSCA Inventory must be consulted to determine if a specific substance is "new" or "existing.") For substances that are "existing" chemical substances in U.S. commerce, the TSCA Inventory can be used to determine if there are restrictions on manufacture or use.

Authorisation and/or restrictions on use

Authorisations : Not applicable
Restrictions : see section 1.4 on uses advised against

Chemical safety assessment: No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

OTHER INFORMATION

16.1 List of abbreviations

ATE	Acute Toxicity Estimate
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
CEN	European Committee for Standardisation
C&L	Classification and Labelling
CLP	Classification Labelling Packaging Regulation ; Regulation (EC) No

	1272/2008
CAS#	Chemical Abstracts Service number
COM	European Commission
CMR	Carcinogen, Mutagen, or Reproductive Toxicant
COSHH	Control of Substances Hazardous to Health
CSA	Chemical Safety Assessment
CSR	Chemical Safety Report
DNEL	Derived No Effect Level
DPD	Dangerous Preparations Directive 1999/45/EC
DSD	Dangerous Substances Directive 67/548/EEC
DU	Downstream Users
DUCC	Downstream Users of Chemicals Co-ordination platform
EEA	European Economic Area (EU + Iceland, Liechtenstein and Norway)
ECB	European Chemicals Bureau
ECHA	European Chemicals Agency
EC Number EINECS and ELINCS Number	(see also EINECS and ELINCS)
EINECS	European Inventory of Existing Commercial Substances
ELINCS	European List of notified Chemical Substances
EN	European Standard
EP	European Parliament
EQS	Environmental Quality Standard
ES	Exposure Scenario
ext-SDS Extended	Safety Data Sheet (SDS with ES attached)
EU	European Union
Euphrac	European Phrase Catalogue
EWC	European Waste Catalogue (replaced by LoW – see below)
GES	Generic Exposure Scenario
GHS	Globally Harmonized System
HH	Human Health
IATA	International Air Transport Association
ICAO-TI	Technical Instructions for the Safe Transport of Dangerous Goods by Air
IMDG	International Maritime Dangerous Goods
IT	Information Technology
IUCLID	International Uniform Chemical Information Database
IUPAC	International Union for Pure Applied Chemistry
JRC	Joint Research Centre
Kow	octanol-water partition coefficient
LC50	Lethal Concentration to 50 % of a test population
LD50	Lethal Dose to 50% of a test population (Median Lethal Dose)
LE	Legal Entity
LoW	List of Wastes (see http://ec.europa.eu/environment/waste/framework/list.htm)
LR	Lead Registrant
M/I	Manufacturer / Importer
MS	Member States
MSDS	Material Safety Data Sheet
OC	Operational Conditions
OECD	Organization for Economic Co-operation and Development
OECDWPMNM	OECD Working Party on Manufactured Nanomaterials
OEL	Occupational Exposure Limit
OH	Occupational Health
OR	Only Representative
OSHA	European Agency for Safety and Health at work
PBT	Persistent, Bioaccumulative and Toxic substance
PEC	Predicted Effect Concentration
PNEC(s)	Predicted No Effect Concentration(s)
PPE	Personal Protection Equipment
(Q)SAR	Qualitative Structure Activity Relationship
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID	Regulations concerning the International Carriage of Dangerous

	Goods by Rail
RIP REACH	Implementation Project
RMM	Risk Management Measure
SC	Supply Chain
SCBA	Self-Contained Breathing Apparatus
SDS	Safety Data Sheet
SIEF	Substance Information Exchange Forum
SME	Small and Medium sized Enterprises
STOT	Specific Target Organ Toxicity
(STOT)RE	Repeated Exposure
(STOT)SE	Single Exposure
SVHC	Substances of Very High Concern
TWA	Time Weighted Average (long term 8 hours) (short term 15 minutes unless specified otherwise)
UIC	Union des Industries Chimiques
UN	United Nations
VCI	Verband der Chemischen Industrie
vPvB	Very Persistent and Very Bioaccumulative

16.2 Key literature references and sources for data

Testing in accordance with the method described in 49 CFR 173 Appendix E and UN Recommendations on the Transport of Dangerous Goods for flammability was used to establish the non-flammability of this product.

16.3 Classification and procedure used to derive the classification for mixtures according to Regulation 1272/2008/EC & 1907/2006/EC which implement the UN Global Harmonization of Safety Data Sheets within Europe and Hazard Communication Standard 29 CFR 1910.1200 within the United States of America.

Classification in accordance with 67/458/EEC & 1999/45/EC until 1st June 2015.

16.4 Training advice

16.5 Further information:

SDS Creation Date: .....26 September 2014
SDS Revision #: .....-01-A
SDS Revision Date: .....17 October 2014
Reason for Revision: .....Update format, section 1 and section 16

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