

2006年 9月 28日

## 環境關理 物質 不使用 證明書

會社名：히로세코리아(주)

部 署：품질보증팀

責任者：차 재환 차장



貴社에 販賣하는 製品 및 製品의 使用材料, 包裝材, 製造工程에  
含有되는 添加劑 等に 對하여 貴社가 要求하는 管理水準  
(使用禁止對象)의 物質을 使用하고 있지 않음을 證明합니다.

當社의 製品 및 製品의 使用材料, 包裝材, 製造工程에 含有되는  
添加劑 等に 對하여 以下の 成分으로 構成되어 있음을 報告 합니다.

### (1) 製品 使用素材

NO	제품명	부품명	원자재명	원자재 MAKER	비 고
1	DF9B-41S-1V(32)	HOUSING	PA TS250F6D	DSM	
		CONTACT	C5210R	HARADA METAL	
		METAL FITTING	C2680R	NIKKO METAL	

(2) 測定可能物質의 ICP Data는 別紙 參照 要望

(3) 測定可能物質의 成分 分析 Data는 別紙 參照 要望

以 上



# Test Report

DSM JAPAN ENGINEERING PLASTIC KK

Report No. : CE/2004/70213A

Date : 2004/07/09

Page : 1 of 1

The following merchandise was (were) submitted and identified by the client as :

Grade : TS250F6D  
Color : 9B0040  
Lot# : A4609P  
Manufacturer/ Vendor : DSM JAPAN ENGINEERING PLASTIC KK  
Country of Origin : JAPAN  
Sample Received : 2004/07/05 & 2004/07/22  
Testing Date : 2004/07/05 TO 2004/07/09 & 2004/07/22 TO 2004/07/27

### Test Result

PART NAME NO.1 : BLACK PLASTIC PELLETS

Test Item (s):	Unit	Method	MDL	Result			
				No.1			
Chromium VI (Cr+6)	ppm	As per US EPA 7196A and US EPA 3060A.	2	N.D.			
Cadmium (Cd)	ppm	ICP-AES after as per EN 1122, method B:2001 or other acid digestion.	2	N.D.			
Mercury (Hg)	ppm	ICP-AES after as per US EPA 3052 or other acid digestion.	2	N.D.			
Lead (Pb)	ppm	ICP-AES after as per US EPA 3050B or other acid digestion.	2	7.1			

NOTE: (1) N.D. = Not detected (<MDL)  
 (2) ppm = mg/ kg  
 (3) MDL = Method Detection Limit

\*This report is re-tested by CE/2004/70213\*

  
 Daniel Yen, M.R. / Operation Manager  
 Signed for and on behalf of  
 SGS TAIWAN LTD.

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# Test Report

DSM JAPAN ENGINEERING PLASTICS K.K.  
2-31-19, SHIBA, MINATO-KU, TOKYO 105-0014 JAPAN

Report No. : CE/2006/14455  
Date : 2006/01/23  
Page : 1 of 3

The following merchandise was (were) submitted and identified by the client as :

Type of Product : STANYL  
Style/Item No : TS250F6D 9B0040 A5802P  
Sample Received : 2006/01/16  
Testing Date : 2006/01/16 TO 2006/01/23

=====  
Test Result : - Please see the next page -

  
Daniel Yeh, M.F., Operation Manager  
Signed for and on behalf of  
SGS TAIWAN LTD.

TS250F6D All Color 7/10

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# Test Report

DSM JAPAN ENGINEERING PLASTICS K.K.  
2-31-19, SHIBA, MINATO-KU, TOKYO 105-0014 JAPAN

Report No. : CE/2006/14455  
Date : 2006/01/23  
Page : 2 of 3

## Test Result

PART NAME NO.1 : BLACK PLASTIC PELLETS

Test Item (s):	Unit	Method	MDL	Result
				No. 1
Monobromobiphenyl	%	With reference to USEPA3540C or USEPA3550C. Analysis was performed by HPLC/DAD, LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS), 83/264/EEC, and 76/769/EEC)	0.0005	N.D.
Dibromobiphenyl	%		0.0005	N.D.
Tribromobiphenyl	%		0.0005	N.D.
Tetrabromobiphenyl	%		0.0005	N.D.
Pentabromobiphenyl	%		0.0005	N.D.
Hexabromobiphenyl	%		0.0005	N.D.
Heptabromobiphenyl	%		0.0005	N.D.
Octabromobiphenyl	%		0.0005	N.D.
Nonabromobiphenyl	%		0.0005	N.D.
Decabromobiphenyl	%		0.0005	N.D.
<b>Total PBBs (Polybrominated biphenyls)/ Sum of above</b>	%		-	N.D.
Monobromobiphenyl ether	%	With reference to USEPA3540C or USEPA3550C. Analysis was performed by HPLC/DAD, LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS), 83/264/EEC, and 76/769/EEC)	0.0005	N.D.
Dibromobiphenyl ether	%		0.0005	N.D.
Tribromobiphenyl ether	%		0.0005	N.D.
Tetrabromobiphenyl ether	%		0.0005	N.D.
Pentabromobiphenyl ether	%		0.0005	N.D.
Hexabromobiphenyl ether	%		0.0005	N.D.
Heptabromobiphenyl ether	%		0.0005	N.D.
Octabromobiphenyl ether	%		0.0005	N.D.
Nonabromobiphenyl ether	%		0.0005	N.D.
Decabromobiphenyl ether	%		0.0005	N.D.
<b>Total PBBEs(PBDEs) (Polybrominated biphenyl ethers)/ Sum of above</b>	%		-	N.D.
<b>Total of Mono to Nonabrominated biphenyl ether. (Note 4)</b>	%		-	N.D.

- NOTE: (1) N.D. = Not detected (<MDL)  
 (2) ppm = mg/kg  
 (3) MDL = Method Detection Limit  
 (4) Decabromodiphenyl ether (DecaBDE) in polymeric applications is exempted by Commission Decision of 13 Oct 2005 amending Directive 2002/95/EC notified under document 2005/717/EC.  
 (5) PBBEs=PBDEs=Polybrominated Diphenyl Ethers=PBDOs=PBBOs.  
 (6) " - " = Not Regulation

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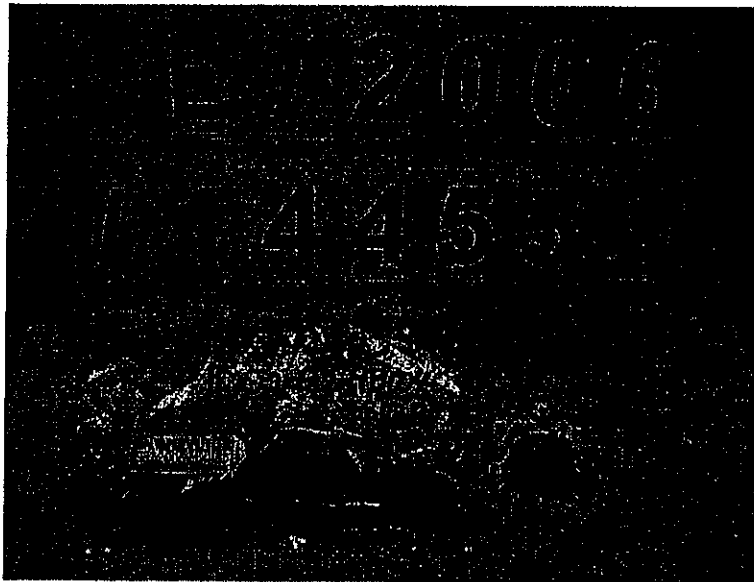
## Test Report

DSM JAPAN ENGINEERING PLASTICS K.K.  
2-31-19, SHIBA, MINATO-KU, TOKYO 105-0014 JAPAN

Report No. : CE/2006/14455

Date : 2006/01/23

Page : 3 of 3



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# Safety Data Sheet

Complies directive 93/112/EC

revision:2.0

with: ISO 11014-1:Safety data sheet for chemical products.

revision date:

10/06/2003

date of issue:

10/06/2003

## 1. Product and company identification

**Product name:** Stanyl®  
**Product code:** TS250F6D  
**Manufacturer:** DSM JAPAN Engineering Plastics K.K.  
6-17-20 shinbashi minato-ku Tokyo  
105-0004  
Japan  
**Emergency number:** Japan +81 (0)3 3431 8161

## 2. Composition/Information on ingredients

This chemical product is a preparation

**Chemical nature:** (poly)amide PA46  
**CAS number:** 50327-77-0

### Components contributing to the hazard:

The material contains  $Sb_2O_3$  as a synergist with an average content of max.6.0%.  $Sb_2O_3$  is classified as a harmful (Xn) substance with a risk phrase R40 carcinogen class 3. However, the  $Sb_2O_3$  is embedded in an impervious matrix of polymer and is therefore less biological available than the free  $Sb_2O_3$  (see also Section 15).

## 3. Hazards identification

### Most important hazards:

Hazard warning not required

### Specific hazards:

Vapour and fumes released at elevated processing temperatures may be irritant for the eyes, the nose, the throat and the respiratory tract and in case of overexposure may cause nausea and headache.

The material is not classified as being a dangerous preparation according to the EEC-Directive 88/379 and the subsequent amendments. See also Section 15.

## 4. First-Aid measures

### Inhalation:

When fumes of molten material have been inhaled;

- Move person to fresh air as quickly as possible
- rest in half upright position
- loosen clothing
- keep warm

In case of respiratory problems move person to first aid station for medical treatment.

### Skin contact:

Any molten material on the skin/burns should be cooled (off) as quickly as possible by means of cold water.

Cover the wound with sterile cloth and move person to first aid station or hospital for medical treatment.

Attention: never pull off the molten material from the wound.

### Eye contact:

Any material entering the eye should be flushed out with copious volumes of water.

### Ingestion:

No danger of toxicity, this material is biologically inactive (see also Section 11).

## 5. Fire-fighting measures

### Extinguishing media:

Water, water/foam,  $CO_2$ , ABC fire extinguisher powder.

### Specific Hazards:

Treat the material as a solid that can burn. Moulded parts or solid granules generally burn slowly with flaming drips.

revision date: 10/06/2003  
date of issue: 10/06/2003

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In case of fire carbon monoxide, ammonia, volatile antimony compounds and brominated organic compounds are released in addition with traces of polybromo-dibenzodioxines and polybromo-dibenzofuranes may originate from the brominated organic flameretardant.

**Protection for the fire-fighters:**

Do not approach fire in confined space without positive pressure self breathing apparatus and full bunker gear: bunker coats, helmet with face shield, gloves, rubberboots.

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**6. Accidental release measures**

**Personal precautions:**

-Apply ample grounding with respect to dust explosion danger caused by released dust from granulate supply (filters): see section 7.

-Protection of skin/eye/hand: see section 8.

**Environmental precautions:**

Disposal considerations- see section 13.

**Cleaning up methods:**

Shovel or sweep up, use especially industrial vacuum cleaner to suck possible fines/dust. Avoid generating dust clouds. Put into containers for reclaiming or disposal.

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**7. Handling and storage**

**Handling**

Technical measures:

Make provisions for sufficient ventilation and local exhaust at vent, nozzle and ejected melt.

Precautions:

Dust and processing fumes must be removed by effective exhaust ventilation.

For safe polymer processing the material should have a water content <2%. In order to prevent a drop in material properties the water content during processing should be <0.1%.

**Storage**

Technical measures and storage conditions:

The material should be stored in a dry place.

Incompatible products:

Stack pallets only two high when storing in order to prevent collapsing.

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**8. Exposure controls/personal protection**

**Control parameters:**

Threshold Limit Value (TLV): a provisional TLV (TWA 8 hours) is advised in accordance with the TLV of non-toxic nuisance dust:

-10 mg/m<sup>3</sup> for total dust.

-5 mg/m<sup>3</sup> for respirable dust.

**Personal protective equipment:**

-Respiratory protection: when TLV is accidentally exceeded see section 7 (prevention of dust generation).

-Hand protection: when handling a hot melt, heat resistant gloves should be worn (e.g. when purging a processing machine).

-Eye protection: when handling a hot melt, heat resistant face shields should be worn (e.g. when purging a processing machine).

-Skin and body protection: the use of apron, boots and/or full protective suit is not prescribed here; it is up to the decision of the processor.

**Hygiene measures:**

revision date: 10/06/2003  
date of issue: 10/06/2003

Adequate washing facilities, with supplies of mild soap and hand cleanser should be available at all working locations. Solvents should never be used as hand cleansers. Smoking, eating and drinking in working and storage area's should be prohibited.

### 9. Physical and chemical properties

Physical state	: solid, at 20C.
Form	: granulate.
Colour	: natural opaque, dependent on added pigment.
Density	: > 1.0 g/cm <sup>3</sup> .
Melting point/range	: 295C.
Softening range	
Odour	: no special odour.
Solubility in water	: insoluble.
Decomposition Temp.	: > 350C.
Flashpoint	: > 375C.
Auto Ignition temp.	: > 420C.
<b>Dust Explosive Properties:</b>	
Lower Explosion Limit (LEL)	: < 10 g/m <sup>3</sup> .
Minimum Ignition Temp.	: 410C.
Dust Explosion Class (st)	: 1

### 10. Stability and reactivity

#### Stability:

The material is chemically unreactive. Under certain conditions however hazardous reactions can take place.

#### Conditions to be avoided:

Temperatures >340C and/or long residence times should be avoided since thermal degradation occurs.

**Materials to be avoided:** Strong oxidising agents.

#### Hazardous decomposition products:

At processing temperatures some degree of thermal degradation will occur. Although highly dependent on temperature and environmental conditions, traces of a variety of toxic and/or irritating gases may be evolved, e.g. cyclopentanone, ammonia, and organic nitrogen compounds such as diaminobutane, pyrrole and pyrroline and brominated organic compounds.

Under normal processing conditions, the concentrations are extremely low and with the health and safety information available these species are not considered to impose any hazard at the concentration level found.

### 11. Toxicological information

<b>Acute toxicity:</b>	None (LD <sub>50</sub> oral rat >5000 mg/kg)
<b>Local effects:</b>	The material appears to be a non-toxic substance in standard toxicological and ecotoxicological tests and is regarded as biologically inactive.

### 12. Ecological information

<b>Persistence/degradability:</b>	very low UV degradability.
<b>Ecotoxicity:</b>	no indication that this material is being a risk to the environment.
<b>Aquatic toxicity:</b>	insoluble non toxic solid material (no water hazard).



revision date: 10/06/2003  
date of issue: 10/06/2003

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**13. Disposal Considerations**

This material - as well as the packaging thereof - presents no danger regarding toxicological and/or ecological considerations. It can be burnt in a controlled way or be disposed of via Landfill, or it can be recycled for - possibly less critical - non food applications.

Note: Additional national or regional provisions may be in force within this matter.

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**14. Transport information**

**General precautions** Keep this material dry during transport.

**Special precautions** No special precautions have to be met.

This material is not classified according to the recommendations of the UN (8.edition) on the transport of dangerous goods.

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**15. Regulatory information**

Labelling according to EEC directive 88/379/EEC and subsequent amendments is not required. Additional national legislation may be in force in this matter.

EEC classification: No dangerous preparation.

R(isk) phrases: N.a.

Polyamide 46 is TSCA registered under number 50327-77-0

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**16. Other information**

None of the materials and/or products referenced herein should be used and/or applied in any product, device or material used or for use as human body implant or otherwise within the human body.

\* represents changes made to the document since the last revision date of the document.

For information on material safety contact:  
DSM JAPAN Engineering Plastics K.K.  
6-17-20 shinbashi minato-ku Tokyo  
105-0004  
Japan  
Tel + 81(0)3 3431 8161 / 3431 8171  
Fax + 81(0)3 3431 8021  
E-mail: noritomo.ezure@dsm.com

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**Test Report No. F690501/LF-CTSGP06-18592**

Date: July 24, 2006

Page 1 of 2

To: HIROSE KOREA  
1261-10  
Jeoungwhang-dong  
Shihung-city  
GYEONGGI-DO  
Korea

The following merchandise was submitted and identified by the client as :

Commodity : C5210R-H  
SGS File No. : GP06-18592  
Received Date : July 14, 2006  
Test Performing Date : July 17, 2006  
Test Performed : SGS Testing Korea tested the sample(s) selected by applicant with following results  
Test Results : For further details, please refer to following page(s)  
Buyer(s) : SAMSUNG, LG

Jade Jang  
Patrick An  
Monet Jeong  
Jinee Song  
/Testing Person

SGS Testing Korea Co. Ltd.

Jeff Jang / Chemical Lab Mgr

The above certificate is the accredited test items by Korea Laboratory Accreditation Scheme (KOLAS), which signed the ILAC-MRA.

This Test Report is issued by the Company subject to its General Conditions of Service printed overleaf. Attention is drawn to the limitations of liability, indemnification and jurisdictional issues defined therein. The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full, without prior written permission of the Company.

Sample No. : GP06-18592.001

Sample Description : C5210R-H

Style/Item No. : 6206274

**Heavy Metals**

Test Items	Unit	Test Method	MDL	Results
Cadmium(Cd)	mg/kg	US EPA 3050E(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3050E(1996), US EPA 6010B(1996), ICP	5	21.7
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

Picture of Sample as Received:



\*\*\* End \*\*\*

- NOTE:
- (1) N.D. = Not detected.(<MDL)
  - (2) ppm = mg/kg
  - (3) MDL = Method Detection Limit
  - (4) Estimated expanded uncertainty U with a coverage factor  $k=2$ , corresponding to a level of confidence of about 95%

The above certificate is the accredited test items by Korea Laboratory Accreditation Scheme (KOLAS), which signed the ILAC-MRA.

This Test Report is issued by the Company subject to its General Conditions of Service printed overleaf. Attention is drawn to the limitations of liability, indemnification and jurisdictional issues defined therein. The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full, without prior written permission of the Company.

2005.5.06

**HIROSE ELECTRIC Co., Ltd.**

# Material Safety Data Sheet

## 1. Manufacturer

- **Company** HARADA Metal Industry Co., Ltd.
- **Address** 10-18 Sasamekitamati, Toda, Saitama 335-0033, Japan  
TEL 048-422-1588  
FAX 048-449-6303
- **Counter** The domestic business department business primary and second section  
TEL 048-441-5115  
FAX 048-444-9104  
The domestic business department OSAKA service office  
TEL 06-531-8094  
FAX 06-531-8096  
The domestic business department NAGOYA service office  
TEL 052-821-9778  
FAX 052-822-7500  
The overseas business department export section  
TEL 048-441-5115  
FAX 048-444-9104
- **Urgent place to contact**  
The quality assurance department  
TEL 048-422-1588  
FAX 048-449-6303

## 2. Products

- Phosphor bronze plates and strips for springs
- Phosphor bronze plates and strips

### 3. Specification of the material

- The division of mixture or single product : Single product
- The chemical name : Copper alloy
- Chemical composition and content rate( wt.%)

Element	Percent					CAS No.
	C5210	C5212	C5191	C5102	C5111	
Copper	rem.	rem.	rem.	rem.	rem.	7440-50-8
Tin	7.0~9.0	7.0~9.0	5.5~7.0	4.5~5.5	3.5~4.5	7440-31-5
Phosphorus	0.03~0.35	0.03~0.35	0.03~0.35	0.03~0.35	0.03~0.35	7723-14-0
Lead	0.05 max	0.05 max	0.05 max	0.05 max	0.05 max	7439-92-1
Iron	0.1 max	0.1 max	0.1 max	0.1 max	0.1 max	7439-89-6
Zinc	0.2 max	0.2 max	0.2 max	0.2 max	0.2 max	7440-66-6

### 4. Classification of harmfulness

- The name of classification : Not classified into the dangerous harmfulness material.
- The danger : No knowledge
- The harmfulness : No knowledge
- The effect for the environment : No knowledge

### 5. First aid

- Eyes : Flush the water. Consult the doctor, when the simulation of the eye continues.
- Skin : Flush the water.
- Inhalation : Consult the doctor, when it was large inhaled.

### 6. The treatment in the fire

- Nonflammable.

### 7. Leakage

- Not applied (because of solid)

### 8. Attention in handling and storage

- Stored at the ordinary—temperature and usual humidity.
- Prohibition of the rapid temperature and humidity change.

9. Treatment on the exposure prevention

- Standard control concentration : Not regulated.
- Allowable temperature : Not regulated.
- Facility countermeasure : The whole ventilation is desirable.
- Protector : For lung ,the wear of protection mask is desirable for the power handling.  
For hand ,the wear of protective glove is desirable.  
For eyes ,the wear of safety goggles is desirable for the power handling.  
For body , the wear of protective clothing is desirable.

10. Physical and chemical characteristic

- Appearance and smell : The solid with the metallic luster. Odoless.
- Boiling point : The indistinctness.
- Solubility : Dissolves in the inorganic acid.

	C5210	C5212	C5191	C5102	C5111
Specific gravity	8.82	8.82	8.85	8.88	8.90
Melting point	1020°C	1020°C	1045°C	1050°C	1060°C

11. Information for danger

- Fire point : The indistinctness.
- Stability : Show the stability at room temperature and in the air.
- The situation to be avoided : —

12. Information for harmfulness

- The powder stimulates eyes , skin and bronchi.
- Produce the ulcer and the hepatic disorder rarely.

13. Information for environment

- No knowledge.

14. Attention for scrapping

- Possible to deal with ,as an industrial waste.

15. Attention for transportation

- No damage transportation is desirable.

16. Applying act

- —

株式会社エノモト 御中

2006年2月6日  
日鉱金属加工株式会社 倉見工場  
技術部 品質保証課

# 分析報告書

承認	作成
	

## 1. 分析結果

No.	試料名	成分	Pb	Cd	Cr	Hg	備考
		定量下限 単位	50ppm ppm	1ppm ppm	5ppm ppm	2ppm ppm	
1	C2680R(2006年2月3日測定)		<50	<1	<5	<2	PBB, PBDEにつきましては測定結果はありませんが弊社での使用はありません
2	C5191R(2006年2月3日測定)		<50	<1	<5	<2	PBB, PBDEにつきましては測定結果はありませんが弊社での使用はありません
3	C5210R(2006年2月3日測定)		<50	<1	<5	<2	PBB, PBDEにつきましては測定結果はありませんが弊社での使用はありません
4							
5							

## 2. 分析方法

- ① 測定試料数：試料数1で分析
- ② 前処理：硝酸での加熱分解
- ③ 六価クロム：総クロムとして分析
- ④ 分析装置：ICP発光分光分析装置(ICP-AES法)

To. HIROSE ELECTRIC CO., LTD.

MATERIAL SAFETY DATA SHEET

MSDS FILE No. (KURAMI WORKS) : 05-1111

(based on Form OSHA-174)

IDENTITY ( AS Used on Label and List )

Product Class : Brass Strip
Trade Name : JIS H3100 C2680R
CAS No. : Copper: 7440-50-8, Zinc: 7440-66-6

Chemical Composition

Table with 3 columns: Component, Content (wt-%), CAS No. Rows include Copper (Cu) and Zinc (Zn).

Section I

Manufacturer's Name: NIKKO METAL MANUFACTURING CO., LTD. KURAMI WORKS. Date Prepared: January 27th, 2005. Signatures of MAKI, Tetsuo and WATANABE, Hiroaki.

Section II Hazardous Ingredients / Identity Information

Hazardous Components (Specific Chemical Identity : Names OSHA PeI ACGIH TLV

Nothing for ordinary service condition

Section III Physical / Chemical Characteristics

Table with 2 columns: Property and Value. Rows include Boiling Point (2630 deg. centi.), Specific Gravity (8.47), Melting Point (930 deg. centi.), etc.

Section IV Fire and Explosion Hazard Data

Table with 4 columns: Property, Flammable Limits, LEL, UEL. Rows include Flash Point (N/A), Extinguishing Media (N/A), Special Fire Fighting Procedures (Not specified).



**Section V Reactivity Data**

Stability	Unstable		Conditions to Avoid
	Stable	X	

Incompatibility (Materials to Avoid) **Nothing**

Hazardous Decomposition or Byproducts **Nothing**

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

**Section VI Health Hazard Data**

Route(s) of Entry :	Inhalation ?	Skin ?	Ingestion ?
	N/A	N/A	N/A

Health Hazardous (Acute and Chronic) **N/A**

Carcinogenicity :	NTP ?	IARC Monographs ?	OSHA Regulated ?
	N/A	N/A	N/A

Signs and Symptoms of Exposure **N/A**

Medical Conditions Generally Aggravated by Exposure **N/A**

Emergency and First Aid Procedures **N/A**

**Section VII Precautions for State Handling and Use**

Steps to Be Taken in Case Material Is Released or Spilled **N/A**

Waste Disposal Method **Collect scrap for remelting.**

Precautions to Be Taken in Handling and storing **For Handling**

- Put safety gloves on to protect your hands from edges of coils which might cut your hands.
- Wear safety glasses when metal powders or chips are expected to be generated in the work.
- Put safety shoes on when handling heavy coils.

- For Storing**
- The environment of stocking area should be free from acid, alkali, chloride, sulfide and other corrosive chemicals to prevent from rusting or corrosion.

Other Precautions **No special requirements**

**Section VIII Control Measures**

Respiratory Protection (Specify Type) **Wearing a mask be recommended in the work such as abrasion and buffing which generates metal powders or chips.**

Ventilation	Local Exhaust	Special
	None	None
	Mechanical (General)	Other
	None	None

Protective Gloves **Put safety gloves on to protect your hands from edges of coils which might cut your hands.**

Eye Protection **Wear safety glasses when metal powder is expected to be generated in the work.**

Other Protective Clothing or Equipment **Put safety shoes on when handling heavy coils.**

Work / Hygienic Practices **None**

Influence to environments **Fish on toxicity : TLm 48 hr. on CuSO4  
Salmogairdeneri : 0.038 ~ 0.8 ppm**