

2007年 01月 17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	PCC7-20DG-4DS	MOLD	PBT 3500G30	삼양사	
		PIN	C5191R	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 No.** F690501/LF-CTSGP06-15452

**Date:** June 22, 2006

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**To:** SAMYANG CORP  
407 3-ga  
Deokjin-gu  
Jeongju-city  
JEONBUK 561-203  
Korea

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

**Commodity** : TRIREX 3500G30 BL  
**SGS File No.** : GP06-15452  
**Received Date** : June 15, 2006  
**Test Performing Date** : June 16, 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)

SGS Testing Korea Co. Ltd.

Jade Jang  
Monet Jeong  
Jully Oh  
Jerry Jung  
/Testing Person

Jeff Jang / Technical Mgr

Jason Han / Lab Director



Test Report No. F690501/LF-CTSGP06-15452

Date: June 22, 2006

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Sample No. : GP06-15452.001

Sample Description : TRIREX 3500G30 BL

Style/Item No. : N/A

**Heavy Metals**

Test Items	Unit	Test Method	MDL	Results
Cadmium(Cd)	mg/kg	EN 1122(2001), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	5	N.D.
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.

**Flame Retardants-PBBs/PBDEs**

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

- NOTE: (1) N.D. = Not detected. (<MDL)  
(2) ppm = mg/kg  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

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## Picture of Sample as Received:



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

- NOTE:
- (1) N.D. = Not detected.(<MDL)
  - (2) ppm = mg/kg
  - (3) MDL = Method Detection Limit
  - (4) - = No regulation
  - (5) \*\* = Qualitative analysis (No Unit)
  - (6) Negative = Undetectable / Positive = Detectable

# MATERIAL SAFETY DATA SHEET

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING(제품 및 제조회사)

PRODUCT NAME(제품명) TRIREX 3500G30 ALL COLOR

SUPPLIER(제조회사) 주식회사 삼양사.  
서울특별시 종로구 연지동 263번지.

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

GENERAL DESCRIPTION OF CHEMICAL CHARACTER(재료의 성분,화학적특성)

조성: Bisphenol A - Polycarbonate( 70%), 유리섬유( 30%)

HAZARDOUS INGREDIENTS(위험성분) CAS NO HAZARD RISK PHRASES SYMBOL

알려지지 않음, Pb,Cd,Hg,Cr6+의 중금속을 포함하지 않음. 유리섬유: 14808-60-7

## 3. HAZARDOUS IDENTIFICATION(위험물)

위험스럽지 않음

## 4. FIRST AID MEASURES(응급조치)

EYES(눈) 본제품이 눈에 들어가면 물로 씻어내거나 의사에게 진료를 받는다

SKIN(피부) 물로 씻어낸다

INGESTION(섭취) 즉시 의사의 진료를 받는다

## 5. FIRE FIGHTING MEASURES(화재시 응급조치)

EXTINGUISHING MEDIA (소화물)

물, 소화기, 이산화탄소, FOAM, 모래, 흙등을 뿌린다

UNUSUAL FIRE AND EXPLOSION HAZARD(폭발위험)

갑작스런 화재나 폭발의 위험은 없음.

PROTECTIVE EQUIPMENT(보호장비)

환기가 잘되지 않는 곳에서는 숨을 쉴 수 있는 장비를 준비한다

**PRODUCT NAME : TRIREX 3500G30 ALL COLOR**

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**6. ACCIDENTAL RELEASE MEASURES(폐기시 조치사항)**

- 폐기물 처리시 생물에 거의 무해함
  - 폐기물 처리시 해당관청의 규정에 따라 처리한다
- 

**7. HANDLING AND STORAGE(취급 및 저장)**

**HANDLING(취급)**

작업장에 적절한 환기, 통풍이 되도록 한다.

제품건조시 제습드라이 또는 HOOD가 있는곳에서 건조를 하고 제품 성형시 HOOD가 있는 곳에서 보호구(보호의,보호장갑,보호장화,고글등)를 착용하여 화상이나 GAS에 중독됨을 방지한다

**STORAGE(저장)**

환기, 통풍이 잘되는 곳에 보관한다

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**8. EXPOSURE CONTROLS/PERSONAL PROTECTION(취급 시 보호구)**

특별한 장비가 요구되지 않는다

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**9. PHYSICAL AND CHEMICAL PROPERTIES(물리 화학적 성질)**

Forms(형태)	고체상, 원통모양의 PELLET
Color(색상)	모든 칼라
Odour(냄새)	무취
PH(산성도)	알려지지 않음
Boiling point (°C)(비등점)	알려지지 않음
Melting point (°C)(녹는점)	220 - 230
Flash point (°C)(발화점)	FIT > 450°C
Flammability(난연성)	HB (UL94)
Solubility in water(용해성)	녹지않음
Specific gravity(비중)	1.43
Viscosity(점성)	알려지지 않음
Bulk density	
Decomposition temperature(분해온도)	380 °C

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**10 STABILITY AND REACTIVITY(안정 및 반응성)**

**STABILITY(안정)** 안정하다

**INCOMPATIBILITY(비상용성)** 알칼리에 가수분해 된다

**HAZARDOUS DECOMPOSITION PRODUCTS(유해분해물질)**

폴리카보네이트가 분해시 생성되는 aliphatic,aromatic hydrocarbons, aldehydes, acids, phenol과 페놀유도체 등이 있고 불완전 연소시 일산화탄소,이산화탄소를 포함한 독성연기가 난다.

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## PRODUCT NAME : TRIREX 3500G30 ALL COLOR

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### 11. TOXICOLOGICAL INFORMATION(유해물)

폴리카보네이트의 통상 성형조건에서 소량의 증기, 이산화탄소, CHLOROBENZENE 과 DIPHENYLCARBONATE, PHENOL 등이 방출된다.

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### 12. ECOLOGICAL INFORMATION(환경적 영향)

Water pollution(수질오염)                      일반적으로 물을 오염시키지 않는다

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### 13. DISPOSAL CONSIDERATION(폐기시 고려할 사항)

관할 관청의 허가시 가정쓰레기와 함께 폐기하거나 소각해도 된다

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### 14. TRANSPORT INFORMATION(운반시 주의사항)

위험물이 아니므로 특별히 주의를 요하지 않고, 건조하고, 통풍이 잘되게 하여 운반한다

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### 15. REGULATORY INFORMATION(법규표기)

식별표기가 필요하지 않다

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### 16. OTHER INFORMATION(기타)

본 MATERIAL SAFETY DATA SHEET는 TRIREX 3500G30 GRADE의 모든 칼라를 포함한다.

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이상의 정보는 폴리카보네이트의 일반적인 참고자료이므로 사용자의 사용처의 환경과 상황에 맞도록 보완하여야 한다



**Test Report No.** F690501/LF-CTSGP06-25993

Date: October 17, 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** : C5191R  
**SGS File No.** : GP06-25993  
**Received Date** : October 10, 2006  
**Test Performing Date** : October 11, 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.

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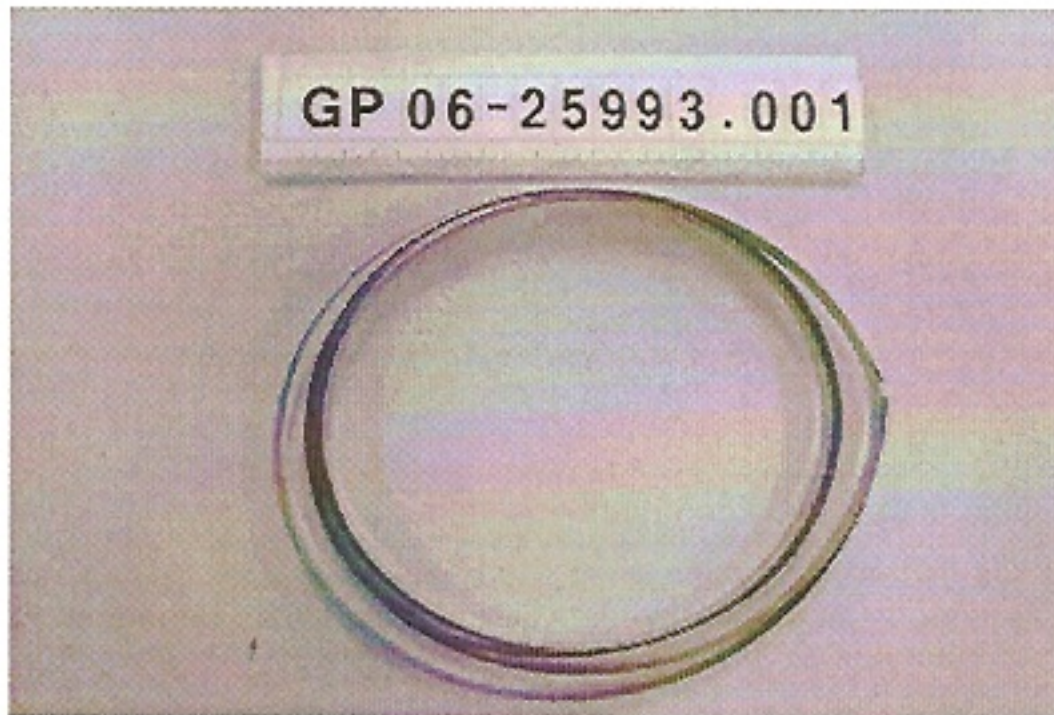


Sample No. : GP06-25993.001  
 Sample Description : C5191R  
 Style/Item No. : N/A  
 Comments : Material is C5191R.

**Heavy Metals**

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3050B(1996); US EPA 6010B(1996), ICP	5	18.1
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	26.2
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.

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To. HIROSE ELECTRIC CO., LTD.

**MATERIAL SAFETY DATA SHEET**

MSDS FILE No. (KURAMI WORKS) : 05-1113

(based on Form OSHA-174)

IDENTITY ( AS Used on Label and List )

Product Class : Tin Plated Phosphor Bronze Strip  
 Trade Name : JIS H3110 C5191R(SM)  
 CAS No. : Copper: 7440-50-8, Tin: 7440-31-5, Phosphor: 7723-14-0  
 Chemical Composition

	Content(wt-%)	CAS No.
Tin(Sn)	5.5~7.0	7440-31-5
Phosphor(P)	0.03~0.35	7723-14-0
Copper(Cu)	Balance	7440-50-8
Sn+P+Cu	99.5≤	-

**Section I**

Manufacturer's Name NIKKO METAL MANUFACTURING CO., LTD. KURAMI WORKS	Date Prepared January 27th, 2005
Address 3 Kurami Samukawa-cho Kouza-gun Kanagawa prefecture 253-0101 JAPAN	Signature of Person in Charge <i>Tetsuo Maki</i> MAKI, Tetsuo Senior Technical Supervisor, Quality Assurance
	Signature of Person Responsible <i>Hiroaki Watanabe</i> WATANABE, Hiroaki Manager, Quality Assurance Section
Telephone Number for Information (Quality Assurance) +81-467-75-7285	
Facsimile Number for Information (Quality Assurance) +81-467-74-6971	

**Section II Hazardous Ingredients / Identity Information**

Hazardous Components (Specific Chemical Identity : Names OSHA Pel ACGIH TLV)

Nothing for ordinary service condition

**Section III Physical / Chemical Characteristics**

Boiling Point 2630 deg. centi.	Specific Gravity (H2O = 1) 8.83
Vapor Pressure (mmHg) N/A	Melting Point 1045 deg. centi. for C5191 Phosphor Bronze 232 deg. centi. for Plated Tin
Vapor Density (Air = 1) N/A	Evaporation Rate (Butyl Acetate = 1) N/A
Solubility in Water N/A	
Appearance and Odor Shiny Silver (solid) : Odor - None	

**Section IV Fire and Explosion Hazard Data**

Flash Point (Method Used) N/A	Flammable Limits N/A	LEL N/A	UEL N/A
Extinguishing Media N/A ( stable , nonflammable substance )			
Special Fire Fighting Procedures Not specified			
Unusual Fire and Explosion Hazards Metal products do not present fire or explosion hazards under normal conditions.			

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
	Oryzias Latipes : 2.1 ~ 24ppm