

2008年 11月 28日

## 環境關理 物質 不使用 證明書

會社名：히로세코리아(주)

部 署：품질경영팀

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	FH19SC-20S-0.5SH(05)	CASE	LCP 2140GM	UENO	
		SLIDER	LCP 2030G	UENO	
		CONTACT	C5191R	NIHON MINING &METALS	
		METLA FITTING	C5191R	NIHON MINING &METALS	

(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

Applicant : Ueno Fine Chemicals Industry Ltd.  
Address : 1-127, Higashiarioka, Itami, Hyogo, Japan 664-0845

Page: 1 of 6

Report No. RT08R-8739-001-A

Date: May 09, 2008

Sample Description : The following submitted sample(s) said to be:-

Name/Type of Product : Plastic pellet  
Name of Material : Liquid Crystal Polymer  
Sample ID No. : RT08R-8739-001  
Item No. : 2140GM-BK Lot No.HD205-61099  
Manufacturer/Vender : Ueno Fine Chemicals Industry Ltd.

Sample received : May 02, 2008  
Testing Date : May 02, 2008 ~ May 09, 2008  
Testing Laboratory : Intertek Testing Center  
Testing Environment : Temperature : ( 22 ~ 26 ) °C      Relative Humidity: ( 55 ~ 65 ) %

Test Method(s) : Please see the following page(s).  
Test Result(s) : Please see the following page(s).

- \* Note 1 : The test results presented in this report relate only to the object tested.
- \* Note 2 : This report shall not be reproduced except in full without the written approval of the testing laboratory.
- \* Note 3 : The item no. is assigned by client and indicated according to their requirement and guarantee letter.

Approved by,

Authorized by,

Jade Jang / Lab. Technical Manager

Bo Park / Lab. General Manager

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Intertek Testing Center



# TEST REPORT

Page: 2 of 6  
Date: May 09, 2008

Report No. RT08R-8739-001-A

Sample ID No. : RT08R-8739-001

Sample Description : Plastic pellet

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	With reference to US EPA 3052, by acid digestion and determined by ICP-OES	0.5	N.D.
Lead (Pb)	mg/kg	With reference to US EPA 3052, by acid digestion and determined by ICP-OES	5	N.D.
Mercury (Hg)	mg/kg	With reference to US EPA 3052, by acid digestion and determined by ICP-OES	2	N.D.
Hexavalent Chromium (Cr <sup>6+</sup> )	mg/kg	With reference to US EPA 3060A and determined by UV-VIS	1	N.D.
Polybrominated Biphenyl (PBBs)				
Monobromobiphenyl	mg/kg	With reference to US EPA 3540C, by solvent extraction and determined by GC/MS	5	N.D.
Dibromobiphenyl	mg/kg		5	N.D.
Tribromobiphenyl	mg/kg		5	N.D.
Tetrabromobiphenyl	mg/kg		5	N.D.
Pentabromobiphenyl	mg/kg		5	N.D.
Hexabromobiphenyl	mg/kg		5	N.D.
Heptabromobiphenyl	mg/kg		5	N.D.
Octabromobiphenyl	mg/kg		5	N.D.
Nonabromobiphenyl	mg/kg		5	N.D.
Decabromobiphenyl	mg/kg		5	N.D.
Polybrominated Diphenyl Ether (PBDEs)				
Monobromodiphenyl ether	mg/kg	With reference to US EPA 3540C, by solvent extraction and determined by GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg		5	N.D.
Tribromodiphenyl ether	mg/kg		5	N.D.
Tetrabromodiphenyl ether	mg/kg		5	N.D.
Pentabromodiphenyl ether	mg/kg		5	N.D.
Hexabromodiphenyl ether	mg/kg		5	N.D.
Heptabromodiphenyl ether	mg/kg		5	N.D.
Octabromodiphenyl ether	mg/kg		5	N.D.
Nonabromodiphenyl ether	mg/kg		5	N.D.
Decabromodiphenyl ether	mg/kg		5	N.D.

Tested by : Nikkie Lee, HR Kim, JM You, Ellen Jung

Notes : mg/kg = ppm = parts per million  
< = Less than  
N.D. = Not detected (<MDL)  
MDL = Method detection limit

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Seoul Lab. : #709, 7Fl, Ace Techno Tower V, 197-22, Guro-3Dong, Guro-Gu, Seoul 152-766 Korea Tel : 02-2109-1260 Fax : 02-2109-1258  
Ulsan Lab. : #340-2, Yongam-Ri, Chongryang-Myun, Ulsu-Gun, Ulsan 689-865 Korea Tel : 052-257-6754 Fax : 052-276-6792

# TEST REPORT

Report No. RT08R-8739-001-A

Sample ID No. : RT08R-8739-001  
Sample Description : Plastic pellet

Test Items	Unit	Test Method	MDL	Results
Bromine (Br)	mg/kg	With reference to EN 14582, by oxygen combustion with bomb and determined by IC	30	N.D.
Chlorine (Cl)	mg/kg	With reference to EN 14582, by oxygen combustion with bomb and determined by IC	30	N.D.

Tested by : Nikkie Lee

Notes : mg/kg = ppm = parts per million  
 < = Less than  
 N.D. = Not detected ( <MDL )  
 MDL = Method detection limit

\* View of sample as received;-



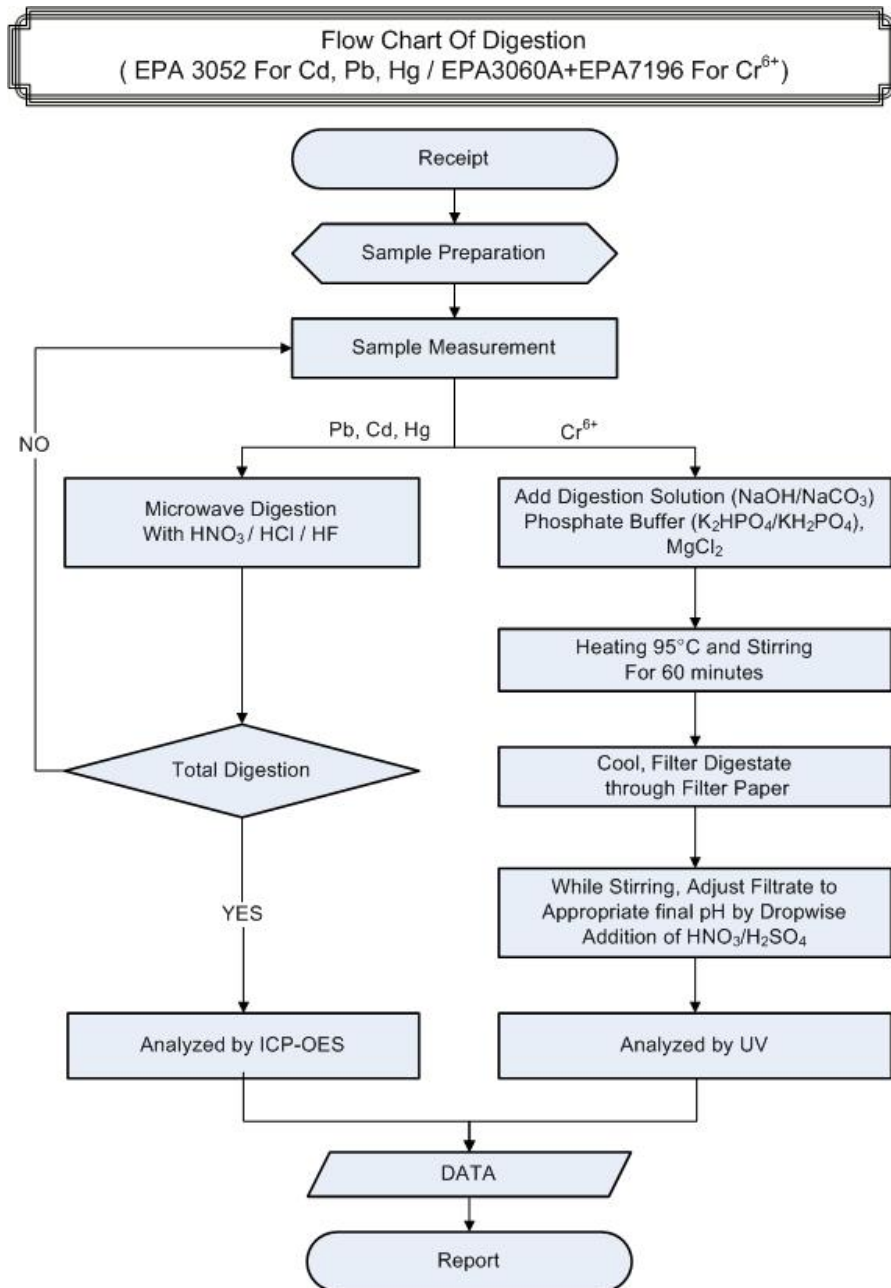
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## Intertek Testing Center

# TEST REPORT

Report No. RT08R-8739-001-A

Sample ID No. : RT08R-8739-001  
Sample Description : Plastic pellet



\*\* Remarks : The samples were dissolved totally by pre-conditioning method according to above flow chart.

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# TEST REPORT

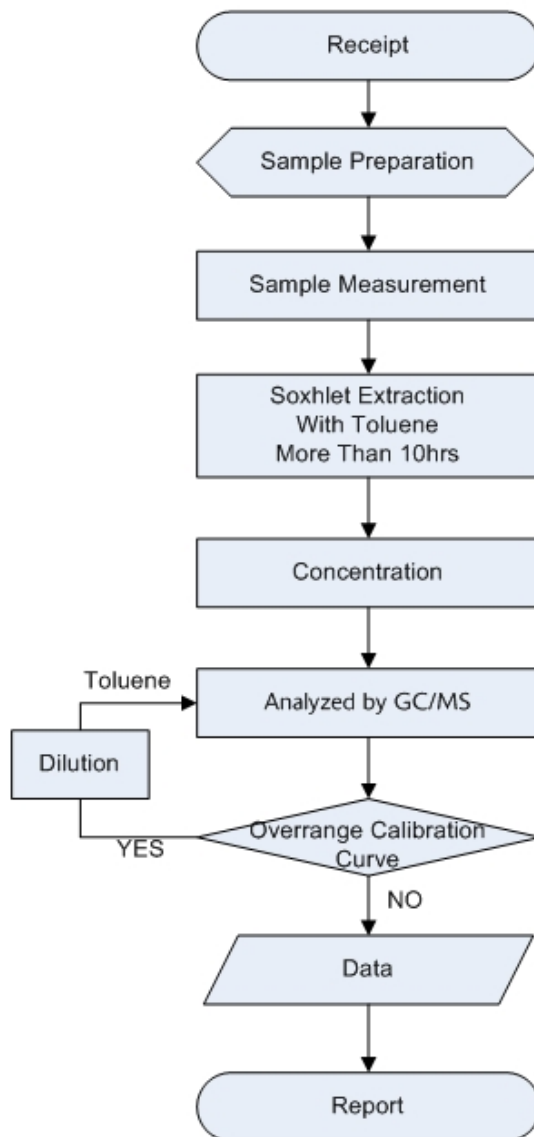
Report No. RT08R-8739-001-A

Page: 5 of 6  
Date: May 09, 2008

Sample ID No. : RT08R-8739-001

Sample Description : Plastic pellet

## Flow Chart Of Digestion ( EPA 3540C For PBB<sub>5</sub>/PBDE<sub>5</sub> )



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# TEST REPORT

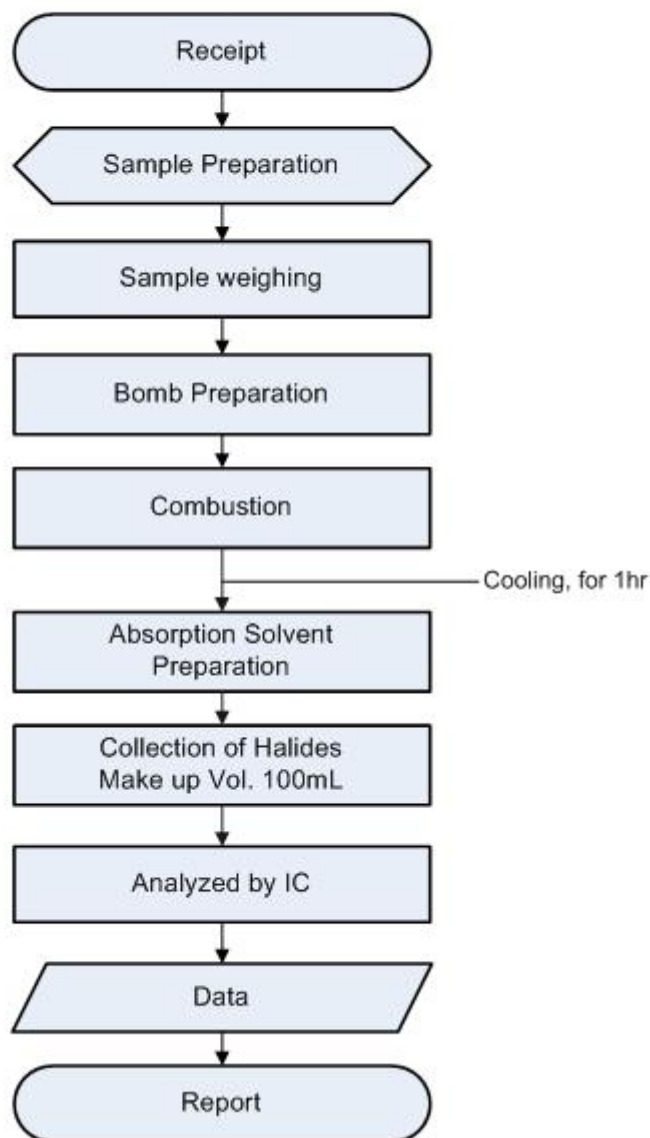
Report No. RT08R-8739-001-A

Page: 6 of 6  
Date: May 09, 2008

Sample ID No. : RT08R-8739-001

Sample Description : Plastic pellet

## Flow Chart Of Halogen Testing (EN14582)



\*\*\*\*\* End of Report \*\*\*\*\*

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Intertek Testing Center

# Material Safety Data Sheet

Revised date Oct. 30, 2002

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name : UENO LCP 2140GM  
Name of Company : UENO FINE CHEMICALS INDUSTRY,LTD.  
Section in Charge : QUALITY ASSURANCE DEPT.  
Address : 2-4-8,KORAIBASHI,CHUO-KU OSAKA, 541-8543 JAPAN  
Phone No. : 81-6-6203-6193  
Fax No. : 81-6-6222-2413  
Emergency : UENO INSITUTE FOR CHEMICAL SCIENCE  
Emergency Phone No. : 81-795-68-7205

## 2. COMPOSITION INFORMATION ON INGREDIENTS

Chemical Family : Wholly Aromatic Liquid Crystal Polyester resin  
Specification of division : Composition  
Ingredients and Composition : Resin 60wt%  
Glass Fiber + Mineral 40wt%  
Small amount of pigments may contain.  
Serial No. in Official Gazette : (7)-2365 ( base resin )  
CAS-No. : 90967-43-4 ( base resin )

## 3. HAZARDS IDENTIFICATION

Hazards : Not applicable  
Harmfulness : Not applicable

## 4. FIRST-AID TREATMENT

Eye Contact : In the case of molten material , immediately flush and cool with clean water and seek medical attention.  
In the case of solid or powder materials, immediately flush with clean water.  
Seek medical attention if discomfort and incompatibility persist.  
Skin Contact : In the case of molten material , immediately cool with clean water.  
Do not forcedly peel off the solidified resin on the skin.  
Seek medical attention if burned.  
Inhalation : If nausea is caused by gas from the molten materials , remove immediately to flesh air.  
When nausea persists, seek medical attention.  
Ingestion : Help to vomit as much as possible . Seek medical attention if discomfort persists.

## 5. FIRE-FIGHTING MEASURES

Extinguishing Media : Water, Form fire-extinguishing agent, Powder fire-extinguishing agent, Carbon dioxide gas  
Extinguishing Measure : Recommend to use water for extinguishing.  
Usual extinguishing measure is applicable.  
Specific Harm : Incomplete combustion of the material may cause carbon mono-oxide , phenol and other toxic gases.



Protect of Extinguisher :Protective equipment such as gas mask should be worn.

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6. ACCIDENTAL RELEASE MEASURES

Precautions of human :Clean up by broom or vacuum-cleaner to avoid slipping and tumbling by spilt pellets.

Precautions of environment:Follow the "Manual for preventing release of resin pellets " to avoid ingestion by marine organism and birds.

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7. HANDLING AND STORAGE

HANDLING :Avoid to inhale emitted gas during molding.  
Do not directly touch heated resin.

STORAGE :Do not store in high temperature and high humidity conditions, and avoid sunlight.  
Stored away from fire and sources of heat.

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8. EXPOSURE CONTROL /PERSONAL PROTECTION

Facility measures :In case of using molten material during molding , establish suitable local ventilation.  
In case of using dust, use an airtight container with dust explosion proof.  
Establish bodywash and eyewash equipments.

Protection

Eye protection :Wear safety glasses or goggles.

Body protection :In case of handling molten material during molding , wear heatproof gloves and long sleeve clothes in order to prevent thermal burns.

Respiratory protection :Wear dustproof mask.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance :Solid ( pellet )

Melting Point :330°C

Boiling Point :Not applicable

Vapor pressure :Not applicable

Specific Gravity :1.74

Solubility in water :Insoluble

Flash Point :No data

Ignition Point :>540°C

Explosion Limit :Not applicable

Flammability :Flammable but self-extinguishing as keeping away from flame.

Ignitivity :Nonspontaneous ignition  
Nonreactive with water

Oxidativity :None

Self-reactivity·explosively :None

Dust explosively :No data

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10. STABILITY AND REACTIVITY

Stability·Reactivity :Stable and nonreactive on general handling and storage conditions.

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## 11. TOXICOLOGICAL INFORMATION

Corrosive Property	: Unknown
Irritant Property	: Vapor generated during drying and molding may cause irritation to eyes and skins.
Acute Toxicity	: Unknown
Subacute Toxicity	: Unknown
Chronic Toxicity, Long-term toxicity	: Unknown
Carcinogenicity	: Unknown
Mutagenicity	: Unknown
Reproductive toxicity	: Unknown
Teratogenicity	: Unknown
Others	
Harmfulness of glass fibers	: Glass fibers of more than 5 $\mu\text{m}$ may cause itching . Skin irritation might form on occasion.

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## 12. ECOLOGICAL INFORMATION

Biodegradability	: Unknown
Bioaccumulation	: Unknown
Fish Toxicity	: Unknown

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## 13. DISPOSAL CONSIDERATIONS

This materials is classified as industrial waste and waste plastics based on "Law for treatment and cleaning of waste".

In case of disposal, ask approved industrial waste disposal agency or commission local governments in accordance with waste disposal law.

In case of burnout, use well-controlled incinerator and treat them in accordance with waste disposal law ,air pollution control law, and water pollution control law.

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## 14. TRANSPORT INFORMATION

UN class and UN number	: Not applicable
Notice	: Avoid rough handling and contact with water in order to prevent break of bags. Stack without drop and damage, and make sure to provide preventing load collapse.

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## 15. REGULATORY INFORMATION

Disposal Regulation	: Law for treatment and cleaning disposal waste.
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## 16. OTHER INFORMATION

Ueno Fine Chemicals Industry, LTD. do not assume any liability whatsoever for the accuracy or completeness of the information contained herein, although stated information is prepared based on the documents, information and data that can be obtained as far as possible.

This material safety data sheet is prepared for general use. Adequate safety and environmental countermeasures for actual uses and applications should be provided in case of unusual use.



## TEST REPORT

Applicant : Ueno Fine Chemicals Industry Ltd.  
Address : 1-127, Higashiarioka, Itami, Hyogo, Japan 664-0845

Page: 1 of 6

Report No. RT08R-9002

Date: Jun. 03, 2008

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Sample Description : The following submitted sample(s) said to be:-

Name/Type of Product : Plastic pellet  
Name of Material : Liquid Crystal Polymer  
Sample ID No. : RT08R-9002  
Item No. : 2030G-BK Lot No.HD200-22483  
Manufacturer/Vender : Ueno Fine Chemicals Industry Ltd.

Sample received : May 28, 2008  
Testing Date : May 28, 2008 ~ Jun. 03, 2008  
Testing Laboratory : Intertek Testing Center  
Testing Environment : Temperature : ( 22 ~ 26 ) °C      Relative Humidity: ( 55 ~ 65 ) %

Test Method(s) : Please see the following page(s).  
Test Result(s) : Please see the following page(s).

\* Note 1 : The test results presented in this report relate only to the object tested.

\* Note 2 : This report shall not be reproduced except in full without the written approval of the testing laboratory.

\* Note 3 : The item no. is assigned by client and indicated according to their requirement and guarantee letter.

Approved by,

Jade Jang / Lab. Technical Manager

Authorized by,

Bo Park / Lab. General Manager

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Intertek Testing Center



# TEST REPORT

Page: 2 of 6  
Date: Jun. 03, 2008

Report No. RT08R-9002

Sample ID No. : RT08R-9002  
Sample Description : Plastic pellet

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	With reference to US EPA 3052, by acid digestion and determined by ICP-OES	0.5	N.D.
Lead (Pb)	mg/kg	With reference to US EPA 3052, by acid digestion and determined by ICP-OES	5	N.D.
Mercury (Hg)	mg/kg	With reference to US EPA 3052, by acid digestion and determined by ICP-OES	2	N.D.
Hexavalent Chromium (Cr <sup>6+</sup> )	mg/kg	With reference to US EPA 3060A and determined by UV-VIS	1	N.D.
Polybrominated Biphenyl (PBBs)				
Monobromobiphenyl	mg/kg	With reference to US EPA 3540C, by solvent extraction and determined by GC/MS	5	N.D.
Dibromobiphenyl	mg/kg		5	N.D.
Tribromobiphenyl	mg/kg		5	N.D.
Tetrabromobiphenyl	mg/kg		5	N.D.
Pentabromobiphenyl	mg/kg		5	N.D.
Hexabromobiphenyl	mg/kg		5	N.D.
Heptabromobiphenyl	mg/kg		5	N.D.
Octabromobiphenyl	mg/kg		5	N.D.
Nonabromobiphenyl	mg/kg		5	N.D.
Decabromobiphenyl	mg/kg		5	N.D.
Polybrominated Diphenyl Ether (PBDEs)				
Monobromodiphenyl ether	mg/kg	With reference to US EPA 3540C, by solvent extraction and determined by GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg		5	N.D.
Tribromodiphenyl ether	mg/kg		5	N.D.
Tetrabromodiphenyl ether	mg/kg		5	N.D.
Pentabromodiphenyl ether	mg/kg		5	N.D.
Hexabromodiphenyl ether	mg/kg		5	N.D.
Heptabromodiphenyl ether	mg/kg		5	N.D.
Octabromodiphenyl ether	mg/kg		5	N.D.
Nonabromodiphenyl ether	mg/kg		5	N.D.
Decabromodiphenyl ether	mg/kg		5	N.D.

Tested by : Nikkie Lee, HR Kim , JM You, Ellen Jung

Notes : mg/kg = ppm = parts per million  
< = Less than  
N.D. = Not detected ( <MDL )  
MDL = Method detection limit

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Seoul Lab. : #709, 7Fl, Ace Techno Tower V, 197-22, Guro-3Dong, Guro-Gu, Seoul 152-766 Korea Tel : 02-2109-1260 Fax : 02-2109-1258  
Ulsan Lab. : #340-2, Yongam-Ri, Chongryang-Myun, Ulju-Gun, Ulsan 689-865 Korea Tel : 052-257-6754 Fax : 052-276-6792



# TEST REPORT

Page: 3 of 6  
Date: Jun. 03, 2008

Report No. RT08R-9002

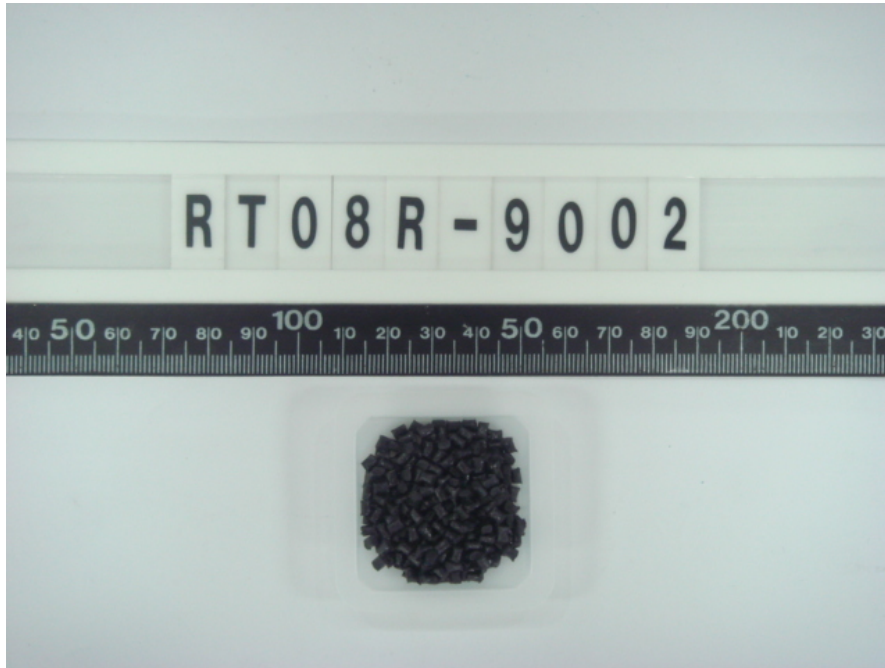
Sample ID No. : RT08R-9002  
Sample Description : Plastic pellet

Test Items	Unit	Test Method	MDL	Results
Bromine (Br)	mg/kg	With reference to EN 14582, by oxygen combustion with bomb and determined by IC	30	N.D.
Chlorine (Cl)	mg/kg	With reference to EN 14582, by oxygen combustion with bomb and determined by IC	30	N.D.

Tested by : Nikkie Lee

Notes : mg/kg = ppm = parts per million  
< = Less than  
N.D. = Not detected ( <MDL )  
MDL = Method detection limit

\* View of sample as received;-



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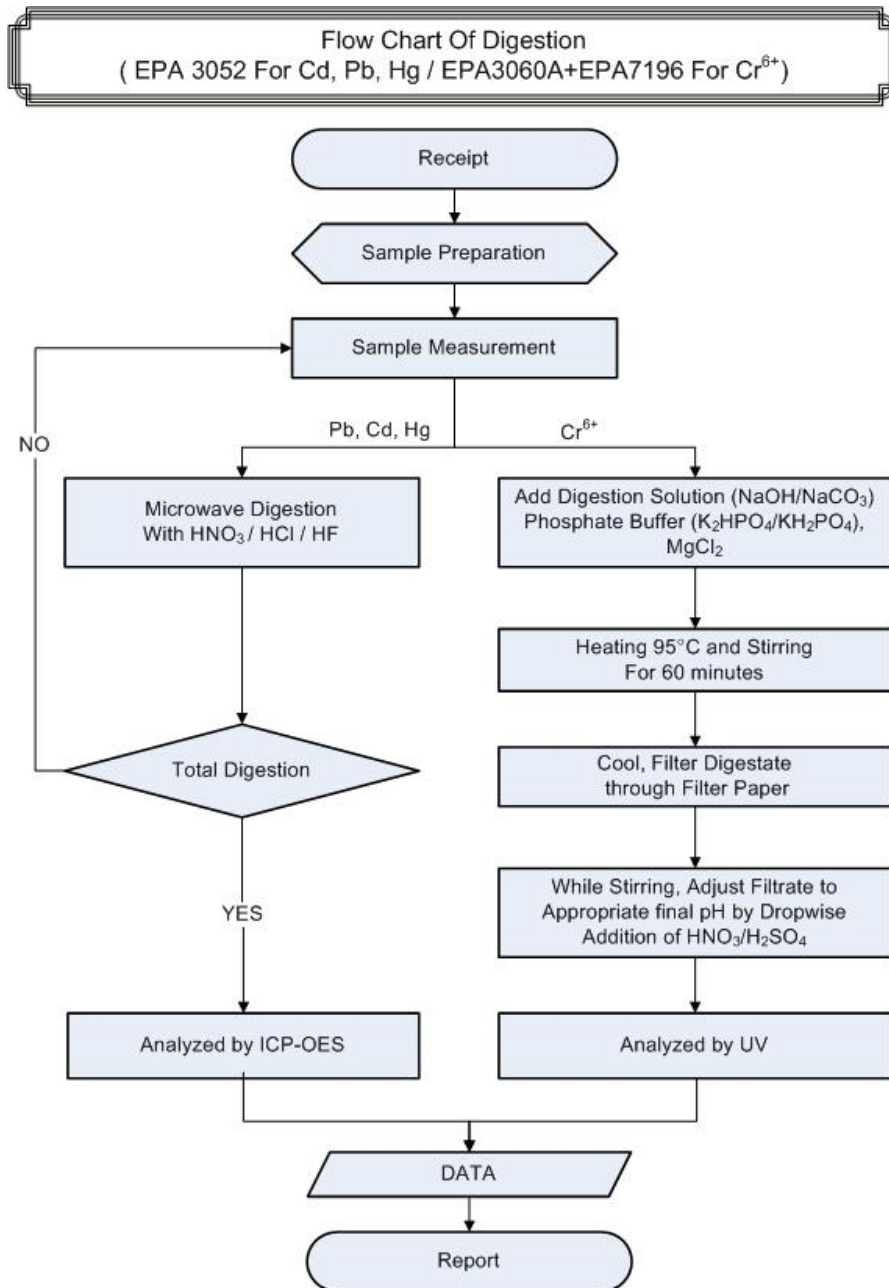
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Ulsan Lab. : #340-2, Yongam-Ri, Chongryang-Myun, Ulju-Gun, Ulsan 689-865 Korea Tel : 052-257-6754 Fax : 052-276-6792

# TEST REPORT

Report No. RT08R-9002

Sample ID No. : RT08R-9002  
Sample Description : Plastic pellet



\*\* Remarks : The samples were dissolved totally by pre-conditioning method according to above flow chart.

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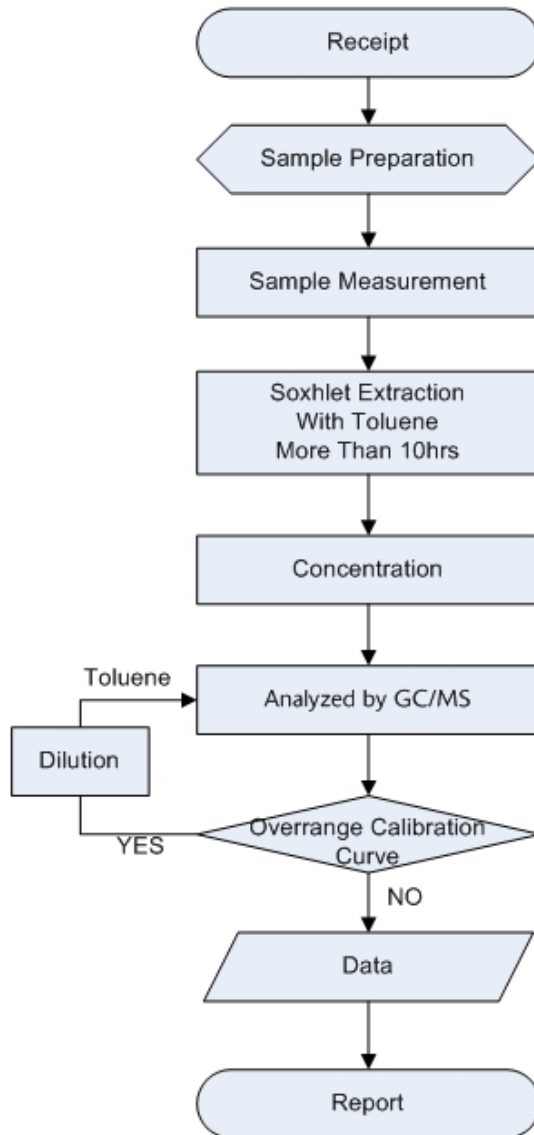
# TEST REPORT

Report No. RT08R-9002

Page: 5 of 6  
Date: Jun. 03, 2008

Sample ID No. : RT08R-9002  
Sample Description : Plastic pellet

## Flow Chart Of Digestion ( EPA 3540C For PBB<sub>5</sub>/PBDE<sub>5</sub> )



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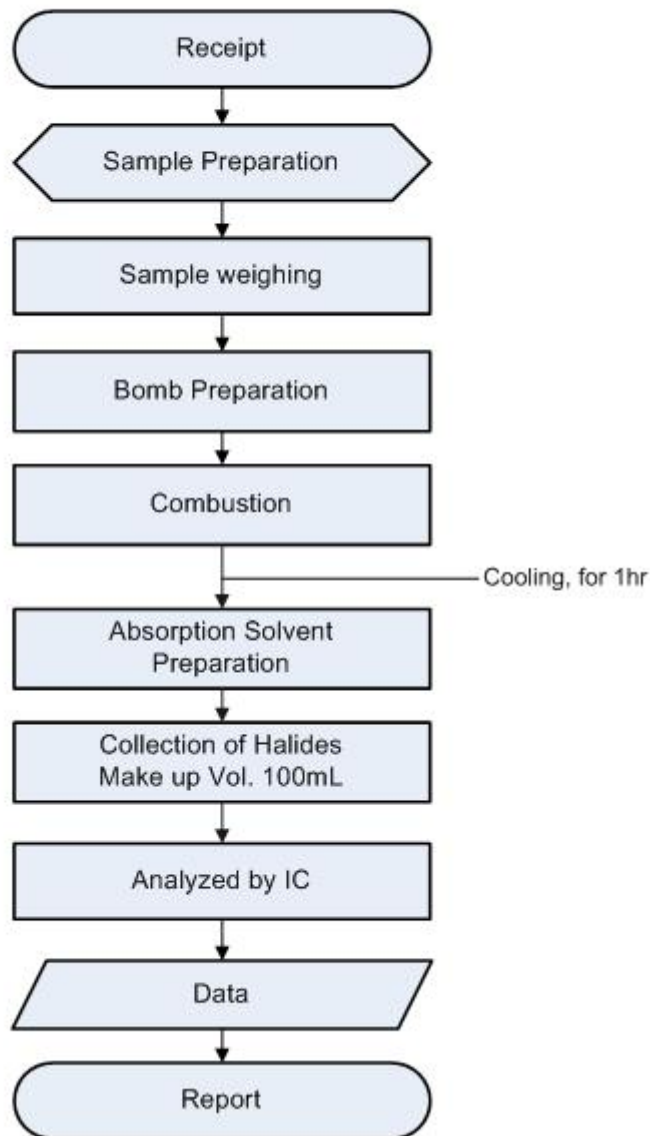
# TEST REPORT

Report No. RT08R-9002

Page: 6 of 6  
Date: Jun. 03, 2008

Sample ID No. : RT08R-9002  
Sample Description : Plastic pellet

## Flow Chart Of Halogen Testing (EN14582)



\*\*\*\*\* End of Report \*\*\*\*\*

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Intertek Testing Center

# Material Safety Data Sheet

Revised date Dec. 20, 2002

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name : UENO LCP 2030G  
 Name of Company : UENO FINE CHEMICALS INDUSTRY,LTD.  
 Section in Charge : QUALITY ASSURANCE DEPT.  
 Address : 2-4-8, KORAIBASHI, CHUO-KU OSAKA, 541-8543 JAPAN  
 Phone No. : 81-6-6203-6193  
 Fax No. : 81-6-6222-2413  
 Emergency Phone No. : 81-795-68-7205

## 2. COMPOSITION INFORMATION ON INGREDIENTS

Chemical Family : Wholly Aromatic Liquid Crystal Polyester resin  
 Specification of division : Composition  
 Ingredients and Composition : Resin 70wt%  
                                         Glass Fiber 30wt%  
                                         Small amount of pigments may contain.  
 Serial No. in Official Gazette : (7)-2365 ( base resin )  
 CAS-No. : 90967-43-4 ( base resin )

## 3. HAZARDS IDENTIFICATION

Hazards : Not applicable  
 Harmfulness : Not applicable

## 4. FIRST-AID TREATMENT

Eye Contact : In the case of molten material , immediately flush and cool with clean water and seek medical attention.  
                                         In the case of solid or powder materials, immediately flush with clean water.  
                                         Seek medical attention if discomfort and incompatibility persist.  
 Skin Contact : In the case of molten material , immediately cool with clean water.  
                                         Do not forcedly peel off the solidified resin on the skin.  
                                         Seek medical attention if burned.  
 Inhalation : If nausea is caused by gas from the molten materials , remove immediately to fresh air.  
                                         When nausea persists, seek medical attention.  
 Ingestion : Help to vomit as much as possible . Seek medical attention if discomfort persists.

## 5. FIRE-FIGHTING MEASURES

Extinguishing Media : Water, Form fire-extinguishing agent, powder fire-extinguishing agent, Carbon dioxide gas  
 Extinguishing Measure : Recommend to use water for extinguishing.  
                                         Usual extinguishing measure is applicable.  
 Specific Harm : Incomplete combustion of the material may cause carbon mono-oxide , phenol and other toxic gases.  
 Protect of Extinguisher : Protective equipment such as gas mask should be worn.

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## 6. ACCIDENTAL RELEASE MEASURES

Precautions of human : Clean up by broom or vacuum-cleaner to avoid slipping and tumbling by spilt pellets.

Precautions of environment: Follow the "Manual for preventing release of resin pellets" to avoid ingestion by marine organism and birds.

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## 7. HANDLING AND STORAGE

HANDLING : Avoid to inhale emitted gas during molding.  
Do not directly touch heated resin.

STORAGE : Do not store in high temperature and high humidity conditions, and avoid sunlight.  
Stored away from fire and sources of heat.

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## 8. EXPOSURE CONTROL /PERSONAL PROTECTION

Facility measures : In case of using molten material during molding , establish suitable local ventilation.  
In case of using dust, use an airtight container with dust explosion proof.  
Establish bodywash and eyewash equipments.

### Protection

Eye protection : Wear safety glasses or goggles.

Body protection : In case of handling molten material during molding , wear heatproof gloves and long sleeve clothes in order to prevent thermal burns.

Respiratory protection : Wear dustproof mask.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Solid ( pellet )

Melting Point : 330°C

Boiling Point : Not applicable

Vapor pressure : Not applicable

Specific Gravity : 1.62

Solubility in water : Insoluble

Flash Point : No data

Ignition Point : >540°C

Explosion Limit : Not applicable

Flammability : Flammable but self-extinguishing as keeping away from flame.

Ignitivity : Nonspontaneous ignition  
Nonreactive with water

Oxidativity : None

Self-reactivity\* explosively : None

Dust explosively : No data

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## 10. STABILITY AND REACTIVITY

Stability\* Reactivity : Stable and nonreactive on general handling and storage conditions.

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## 11. TOXICOLOGICAL INFORMATION

Corrosive Property	: Unknown
Irritant Property	: Vapor generated during drying and molding may cause irritation to eyes and skins.
Acute Toxicity	: Unknown
Subacute Toxicity	: Unknown
Chronic Toxicity, Long-term toxicity	: Unknown
Carcinogenicity	: Unknown
Mutagenicity	: Unknown
Reproductive toxicity	: Unknown
Teratogenicity	: Unknown
Others	
Harmfulness of glass fibers	: Glass fibers of more than 5 $\mu\text{m}$ may cause itching . Skin irritation might form on occasion.

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## 12. ECOLOGICAL INFORMATION

Biodegradability	: Unknown
Bioaccumulation	: Unknown
Fish Toxicity	: Unknown

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## 13. DISPOSAL CONSIDERATIONS

This materials is classified as industrial waste and waste plastics based on "Law for treatment and cleaning of waste".

In case of disposal, ask approved industrial waste disposal agency or commission local governments in accordance with waste disposal law.

In case of burnout, use well-controlled incinerator and treat them in accordance with waste disposal law ,air pollution control law, and water pollution control law.

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## 14. TRANSPORT INFORMATION

UN class and UN number: Not applicable

Notice : Avoid rough handling and contact with water in order to prevent break of bags.  
Stack without drop and damage, and make sure to provide preventing load collapse.

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## 15. REGULATORY INFORMATION

Disposal Regulation : Law for treatment and cleaning disposal waste.

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## 16. OTHER INFORMATION

Ueno Fine Chemicals Industry, LTD. do not assume any liability whatsoever for the accuracy or completeness

of the information contained herein, although stated information is prepared based on the documents, information and data that can be obtained as far as possible.

This material safety data sheet is prepared for general use. Adequate safety and environmental countermeasures for actual uses and applications should be provided in case of unusual use.



## TEST REPORT

REPORT NO. JP/2008/050912  
DATE: June 19, 2008  
PAGE: 1 OF 1

CLIENT : NIPPON MINING & METALS CO., LTD. KURAMI WORKS  
SAMPLE DESCRIPTION : C5191R (NIPPON MINING & METALS CO.,LTD.)  
CLIENT REF.NO :  
TESTING DATE : 2008/05/19 TO 2008/05/26  
SAMPLE RECEIVED : 2008/05/16

WE HAVE TESTED THE SAMPLE(S) SUBMITTED AS REQUESTED AND THE FOLLOWING RESULTS WERE OBTAINED.

TEST ITEM(S)	UNIT	RESULT	METHOD	INSTRUMENT	R.L.
CADMIUM(Cd)	ppm	N.D.	EPA3051A	ICP-OES	1
LEAD(Pb)	ppm	12	EPA3051A	ICP-OES	10
MERCURY(Hg)	ppm	N.D.	EPA3051A	ICP-OES	5
CHROMIUM VI(Cr(VI))	ppm	N.D.	EPA3060A, EPA7196A	UV/VIS	2

NOTES : R.L. = reporting limit N.D. = not detected

Test process and/or expression of test result for Cr(VI) have been specified by client.

The content of Cr(VI) has been calculated with regard to the sample weight as specified by client.

<END>

後藤 邦之



Kuniyuki Goto / Laboratory Manager  
SGS Far East Ltd., Green Testing Center

JP 825809

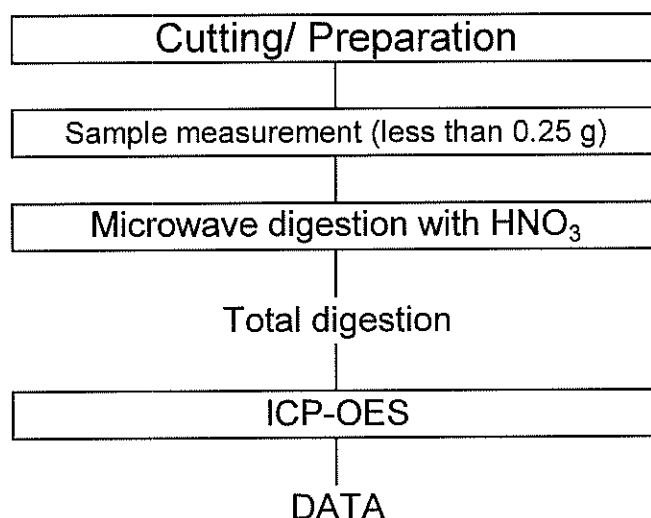
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REPORT NO. JP/2008/050912

## Flow chart of digestion (EPA 3051A)



The samples were dissolved totally by pre-conditioning method according to above flow chart.

Section Chief Yukihiro Ouchi

The flowchart can be applied for Cd, Pb testing.

JP 825810

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Attn: Mash from Kelvin (NMS)  
MSDS for C5191R (pg 1/2)

**MATERIAL SAFETY DATA SHEET**

MSDS FILE No. (KURAMI WORKS) : 05-1287

(based on Form OSHA-174)

IDENTITY (AS Used on Label and List)

Product Class : Phosphor Bronze Strip  
Trade Name : JIS.H3110, C5191R. (Equivalent to ASTM.B103, C51900),  
CAS No : (Copper 7440-50-8, Tin 7440-31-5, Phosphorus 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**

<b>Manufacturer's Name</b> NIKKO METAL MANUFACTURING CO., LTD. KURAMI WORKS	<b>Date Prepared</b> August 26th, 2005
	<b>Signature of Person in Charge</b> <i>Chitro Izumi</i> IZUMI, Chitro Senior Technical Supervisor, Quality Assurance
<b>Address</b> 3 Kurami Samukawa-cho Kouza-gun Kanagawa prefecture 253-0101 JAPAN	<b>Signature of Person Responsible</b> <i>Hitaki Watanabe</i> WATANABE, Hitaki Manager, Quality Assurance Section
<b>Telephone Number for Information (Quality Assurance)</b> +81-467-75-7285	
<b>Facsimile Number for Information (Quality Assurance)</b> +81-467-74-6971	

**Section II Hazardous Ingredients / Identity Information**

Hazardous Components (Specific Chemical Identity - Names OSHA Fed ACGIH TLV)

Nothing for ordinary service condition

**Section III Physical / Chemical Characteristics**

<b>Boiling Point</b> 2630 °C for Copper 2275 °C for Tin	<b>Specific Gravity (H<sub>2</sub>O = 1)</b> 8.83
<b>Vapor Pressure (mmHg)</b> N/A	<b>Melting Point</b> 1045 deg. cent. for C5191 Phosphor Bronze
<b>Vapor Density (Air = 1)</b> N/A	<b>Evaporation Rate (Butyl Acetate - 1)</b> N/A
<b>Solubility in Water</b> N/A	
<b>Appearance and Odor</b> Brown - Red (solid) ; Odor - None	

**Section IV Fire and Explosion Hazard Data**

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



MSDS C5191R

17 1/2

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 Apparent by Exposure			
	N/A		
Emergency and First Aid Procedures			
	N/A		
Section VII Precautions for Safe Handling and Use			
Steps to Be Taken in Case Material is Released or Spilled			
	N/A		
Where Disposal Method			
	Collect scrap for remelting.		
Precautions to Be Taken in Handling and storing			
<u>For Handling</u>			
•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.			
<u>For Storing</u>			
•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 / Hygiene Practices			
	None		
Influence to environment	Fish on toxicity : TLm 48 hr. on CuSO4		
	Salinogalderert : 0.038 ~ 0.8 ppm		
	Oryzias Latipes : 2.1 ~ 24ppm		