緯銓科技有限公司

HUEY-CHYUAN TECHNOLOGY CO.,LTD
http://www.huey-chyuan.com.tw
E-mail:hc0219@ms57.hinet.net

電腦\電子連接器線材\端子加工・輕觸開關・通訊產品 CONNECTORS・ muRata 系列產品

承認書
APPROVAL SHEET

華凌光電股份有限公司

日期 DATE	2015 年 12 月 16 日
料號 PART NO.	P-NZ11-032-TF13-TZ
品名 MODEL	FPC 0.5mmZIF SMD 32P 上接式 90 度 2K/REEL
規格 DESCRIPTION	
客戶料號 CUSTOMER P/NO.	CNJ5231XXXXXXXXXX01
承認號碼 FILE NO.	

緯銓科技有限公司 TEL:(04)2205-9121 FAX:(04)2206-5416 台中市北區忠明路432號3F-2

經理	課長	股長	經辦

台中市北區忠明路43
3F-2 NO.432 Chang-Ming Rd., Taichung
TEL:886-4-2205-9121 FAX:886-

Represented by:

first FC components

FIRST Components srl Via Cavour 69, 21020 Buguggiate (VA)

T. +39 0332 1888005 web: www.first-components.com

REV	MODIFICATION	DRAWN	APPROVED

ORDERING CODE

JF 5 1 - 1 X X - X 2 2 X - X

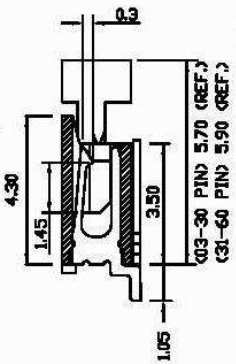
- FFC\FPC
- PITCH 0.5mm
- HORIZONTAL
- CONTACT TYPE
  1:UPPER CONTACT
- NO. OF CONTACTS
  03-60 PIN
- HOUSING & ACTUATOR MATERIALS
  5:HOUSING PA-46, ACTUATOR PPS (BLACK)UL 94V-0
- TAIL LENGTH
  2:TAIL LENGTH 1.05mm.
- HOLDDOWN TYPE
  2:HOLDDOWN TYPE 2.
- PACKING TYPE
  1:TUBE
  2:REEL
- PLANTING
  1: BRIGTE TIN 100u" MIN,OVER 50u"MIN NI ON CONTACT
  2: GOLD FLASH
  3: Au 3u"
  4: Au 5u"
  A: MATTE TIN 100u" MIN,OVER 50u"MIN NI ON CONTACT

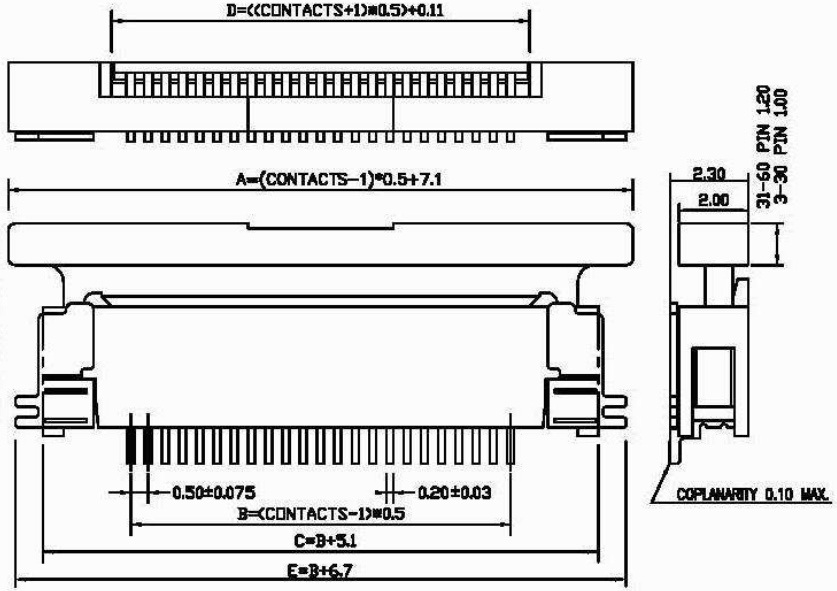
FEATURE AND SPECIFICATIONS

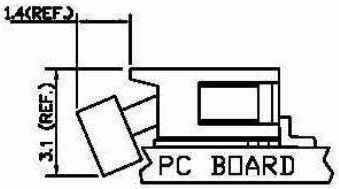
SIZES 03 TO 60 PIN.
FOR 0.3mm THICKNESS FFC/FPC.
VOLTAGE: 50V MAX.
CURRENT: 0.5A MAX.
CONTACT RESISTANCE: 20 milliohms MAX.
INSULATION RESISTANCE: 50 Megohms MIN.
DIELECTRIC WITHSTANDING VOLTAGE: 250V AC.
TEMPERATURE: -40℃ TO 85℃

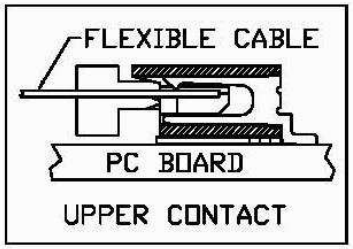
MATERIAL AND FINISH

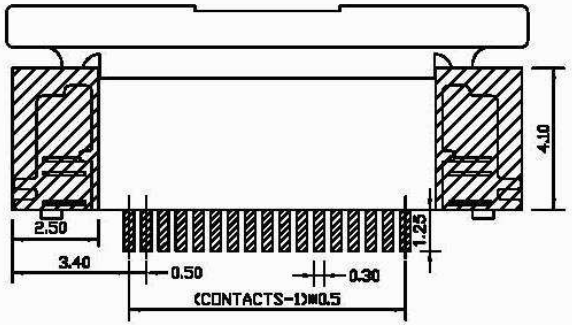
HOUSING: HIGH-TEMP. THERMOPLASTIC. UL 94V-0.
ACTUATOR: HIGH-TEMP. THERMOPLASTIC. UL 94V-0.
CONTACT: SEE ORDERING CODE
HOLDDOWN: BRASS. PLATING: Tin 100u",over Ni50u"



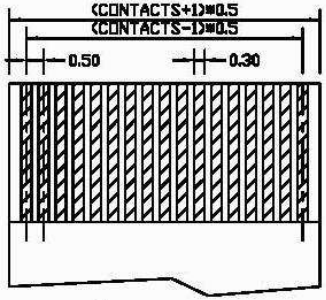








RECOMMENDED PCB LAYOUT



FFC/FPC DIMENSION
THICKNESS 0.30 mm

.X±0.20	.X±	單位 MM	料號 JF51-1XX-X22X-X	諱銓科技有限公司
.XX±0.15	.XX±	材質		名稱 TITLE: ZIF FPC 0.5mm SMT CONN. HORIZONTAL SIDE ENTRY TYPE
.XXX±0.10	.XXX±	表面	日期 2007.03.05	圖號 DWG NO.: JF51-1XX-X22X-X
		數量	審核	SCALE 5:1 / SHEET 1/1 / REV. A
			製圖 DANIEL	

FIRST Components s.r.l. Via Cavour, 69 21020 Buguggiate (VA) Italy Tel. +39 0332 1888005 Fax +39 0332 320856
web: www.first-components.com

更改 REV	設變內容 MODIFICATION	修改 DRAWN	核准 APPROVED

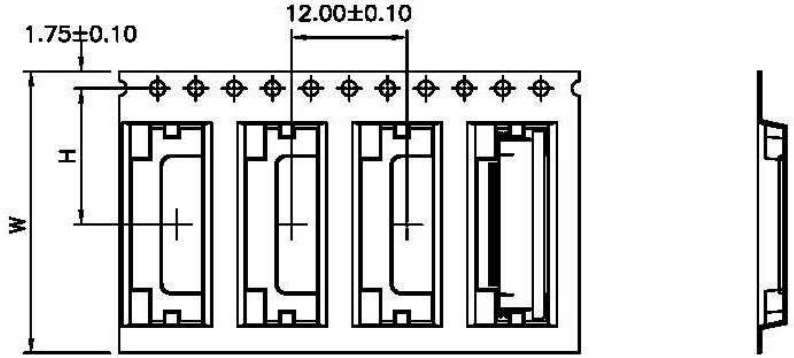
PIN	A	B	C	D	E
3	8.10	1.00	6.10	2.11	7.70
4	8.60	1.50	6.60	2.61	8.20
5	9.10	2.00	7.10	3.11	8.70
6	9.60	2.50	7.60	3.61	9.20
7	10.10	3.00	8.10	4.11	9.70
8	10.60	3.50	8.60	4.61	10.20
9	11.10	4.00	9.10	5.11	10.70
10	11.60	4.50	9.60	5.61	11.20
11	12.10	5.00	10.10	6.11	11.70
12	12.60	5.50	10.60	6.61	12.20
13	13.10	6.00	11.10	7.11	12.70
14	13.60	6.50	11.60	7.61	13.20
15	14.10	7.00	12.10	8.11	13.70
16	14.60	7.50	12.60	8.61	14.20
17	15.10	8.00	13.10	9.11	14.70
18	15.60	8.50	13.60	9.61	15.20
19	16.10	9.00	14.10	10.11	15.70
20	16.60	9.50	14.60	10.61	16.20
21	17.10	10.00	15.10	11.11	16.70
22	17.60	10.50	15.60	11.61	17.20
23	18.10	11.00	16.10	12.11	17.70
24	18.60	11.50	16.60	12.61	18.20
25	19.10	12.00	17.10	13.11	18.70
26	19.60	12.50	17.60	13.61	19.20
27	20.10	13.00	18.10	14.11	19.70
28	20.60	13.50	18.60	14.61	20.20
29	21.10	14.00	19.10	15.11	20.70
30	21.60	14.50	19.60	15.61	21.20

PIN	A	B	C	D	E
31	22.10	15.00	20.10	16.11	21.70
32	22.60	15.50	20.60	16.61	22.20
33	23.10	16.00	21.10	17.11	22.70
34	23.60	16.50	21.60	17.61	23.20
35	24.10	17.00	22.10	18.11	23.70
36	24.60	17.50	22.60	18.61	24.20
37	25.10	18.00	23.10	19.11	24.70
38	25.60	18.50	23.60	19.61	25.20
39	26.10	19.00	24.10	20.11	25.70
40	26.60	19.50	24.60	20.61	26.20
41	27.10	20.00	25.10	21.11	26.70
42	27.60	20.50	25.60	21.61	27.20
43	28.10	21.00	26.10	22.11	27.70
44	28.60	21.50	26.60	22.61	28.20
45	29.10	22.00	27.10	23.11	28.70
46	29.60	22.50	27.60	23.61	29.20
47	30.10	23.00	28.10	24.11	29.70
48	30.60	23.50	28.60	24.61	30.20
49	31.10	24.00	29.10	25.11	30.70
50	31.60	24.50	29.60	25.61	31.20
51	32.10	25.00	30.10	26.11	31.70
52	32.60	25.50	30.60	26.61	32.20
53	33.10	26.00	31.10	27.11	32.70
54	33.60	26.50	31.60	27.61	33.20
55	34.10	27.00	32.10	28.11	33.70
56	34.60	27.50	32.60	28.61	34.20
57	35.10	28.00	33.10	29.11	34.70
58	35.60	28.50	33.60	29.61	35.20
59	36.10	29.00	34.10	30.11	35.70
60	36.60	29.50	34.60	30.61	36.20

.X±0.20	.X±	單位 MM	料號 JF51-XXX-X22X-1	諱銓科技有限公司
.XX±0.15	.XX±	材質		名稱 TITLE ZIF FPC 0.5mm SMT CONN. HORIZONTAL
.XXX±0.10	.XXX±	表面	日期 2007.03.05	圖號 DWG NO. JF51-XXX-X22X-1
		數量	審核	SCALE 5:1 / SHEET 2/2 / REV. A
			製圖 GAVIN	

REV	MODIFICATION	DRAWN	APPROVED

03 PIN-20 PIN



CARRIER TAPE PART NUMBER

R F 5 1 - X X

PRODUCT TYPE

F51 = FPC 0.5mm HORIZONTAL

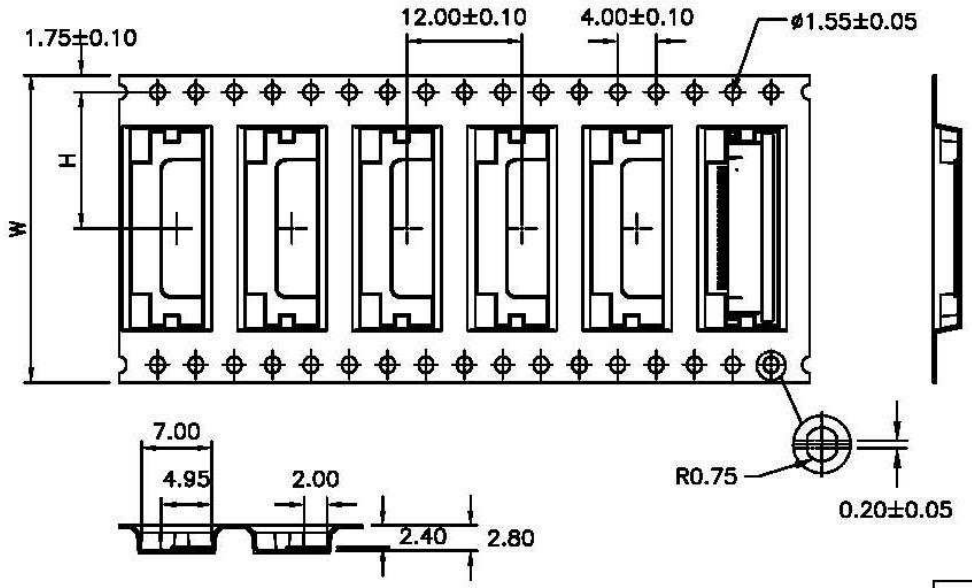
NO. OF CONTACT

03 = 03 PIN.

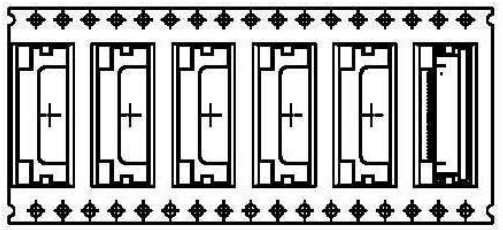
:

60 = 60 PIN.

21 PIN-60 PIN



USER DIRECTION OF FEED



PIN= XX	03 — 04	05 — 20	21 — 30	31 — 50	51 — 60
W±0.30	16.00	24.00	32.00	44.00	56.50
H±0.10	7.50	11.50	14.20	20.20	26.20

1. 10 sprocket hole pitch cumulative tolerance ±0.20 .
2. Carrier camber is within 1 mm in 250mm.
3. Material : Black Conductive Polystyrene Alloy (UP-6100).
4. All dimensions meet EIA-481-B requirements.
5. Thickness : 0.35±0.05mm.
6. Packing length per 22" reel : 75.0 Meters.
7. Components load per 13" reel : 2000 pcs.

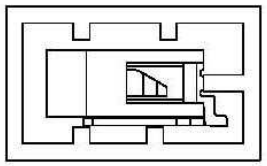
.XX±0.15	.XX±	單位 MM	料號 RF51-XX	諱銓科技有限公司
.XXX±0.10	.XXX±	材質		名稱 TITLE CARRIER TAPE FPC 0.5mm HORIZONTAL TYPE
		處理	日期 2002.11.16	圖號 DWG NO. RF51-XX
		數量	審核	SCALE 1/1 / SHEET 1/1 / REV. X2
			製圖 DANIEL	

諱 銓 科 技 有 限 公 司

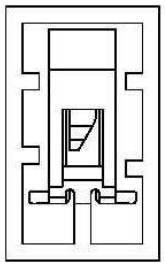
包 裝 規 範

規範編號 PAK-F5X-XXX-XXX	適用產品名稱: ZIF FPC 0.5mm CONNECTOR FOR TUBE				適用產品料號 JF5X-XXX-XXX1			版次 X1	頁次 1/1
包 裝 材 料 明 細 (每 外 箱 用 量)						包 裝 容 量		日期 2002.10.15	
材 料 名 稱	材 料 料 號	NET W.(KG)	GROSS(KG)	數 量 Q'TY	PRODUCT P/N	PCS/TUBE	TUBE/外箱	NET W.(KG)	GROSS.(KG)
CARTON	CF5X-01			1	JF5X-X12-XXX1	35	200		
PVC TUBE	TF5X-XX			200	JF5X-X13-XXX1	34	200		
LABEL				1	JF5X-X14-XXX1	32	200		
					JF5X-X15-XXX1	31	200		
					JF5X-X16-XXX1	30	200		
					JF5X-X17-XXX1	29	200		
					JF5X-X18-XXX1	28	200		
					JF5X-X19-XXX1	27	200		
					JF5X-X20-XXX1 ~ JF5X-X21-XXX1	26	200		
					JF5X-X22-XXX1	25	200		
					JF5X-X23-XXX1 ~ JF5X-X24-XXX1	24	200		
					JF5X-X25-XXX1	23	200		
					JF5X-X26-XXX1 ~ JF5X-X27-XXX1	22	200		
					JF5X-X28-XXX1 ~ JF5X-X29-XXX1	21	200		
					JF5X-X30-XXX1 ~ JF5X-X31-XXX1	20	200		
					JF5X-X32-XXX1 ~ JF5X-X33-XXX1	19	200		
					JF5X-X34-XXX1 ~ JF5X-X36-XXX1	18	200		
					JF5X-X37-XXX1 ~ JF5X-X39-XXX1	17	200		
					JF5X-X40-XXX1 ~ JF5X-X42-XXX1	16	200		
					JF5X-X43-XXX1 ~ JF5X-X46-XXX1	15	200		
					JF5X-X47-XXX1 ~ JF5X-X50-XXX1	14	200		
					JF5X-X51-XXX1 ~ JF5X-X55-XXX1	13	200		
					JF5X-X56-XXX1 ~ JF5X-X60-XXX1	12	200		

裝管方向示意圖

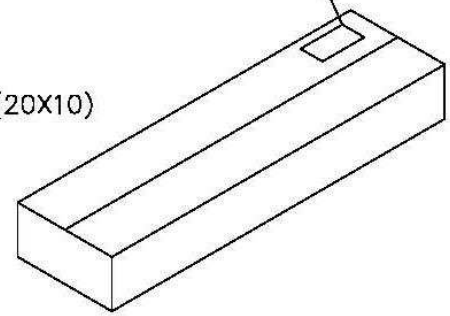


裝管方向示意圖



每層20管共10層(20X10) LABEL

(20X10)



PRODUCT P/N	包 裝 容 量			
	PCS/TUBE	TUBE/外箱	NET W.(KG)	GROSS.(KG)
JF5X-X03-XXX1	55	200		
JF5X-X04-XXX1	51	200		
JF5X-X05-XXX1	48	200		
JF5X-X06-XXX1	46	200		
JF5X-X07-XXX1	44	200		
JF5X-X08-XXX1	42	200		
JF5X-X09-XXX1	40	200		
JF5X-X10-XXX1	38	200		
JF5X-X11-XXX1	36	200		

備註

審 核: 核 對: 製 表 *DANIEL*

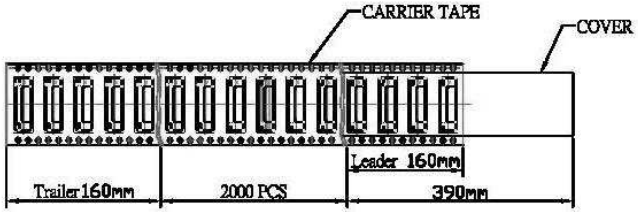
諱 銓 科 技 有 限 公 司
HUEY-CHYUAN TECHNOLOGY CO., LTD.

包 裝 規 範
PACKING LIST

FILE NO. : PAK-JF51-XX

PRODUCT NAME : ZIF FPC/FFC Connector PH=0.5mm H=2.0mm Right Angel SMT TYPE

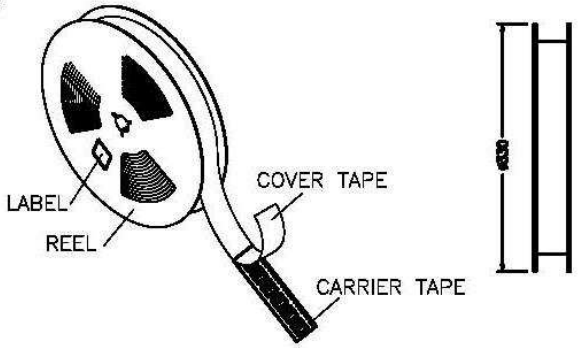
1-1. PUT PRODUCT IN COMPONENT AREA,FORMING OF PRODUCT IS THE SAME DIRECTION TO CARRIER TAPE..
1-2. SMT SURFACE TOWARDS TO THE BOTTOM.



2-1. ADHERE OR HEAT COVER TAPE & CARRIER FOR SEALING. STICK END OF THE CARRIER ON THE HUB'S OPENING WITH TRANSPARENT TAPE.

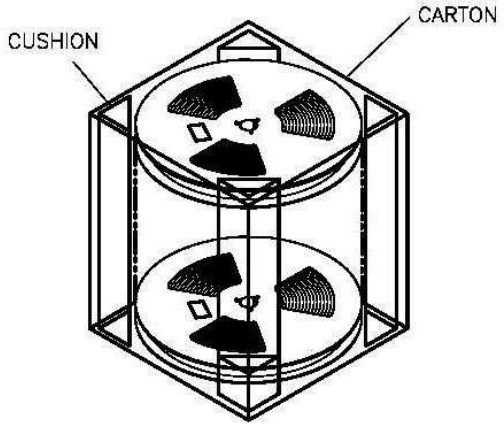
2-2. LABLE MUST BE STICKED ON THE OUTSIDE OF THE REEL, NEARLY THE START POINT.

2-3 PARTS PER RELL 2000PCS



3-1. REEL FACE WITH LABEL UP.

3-2. PUT CUSHION INTO 4 CORNERS OF BOX. AS INDICATED IN PACKING LIST.



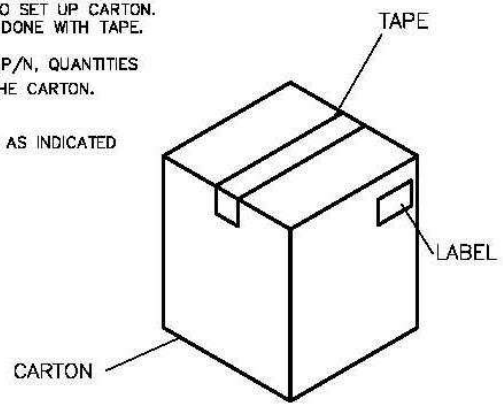
4-1. CARTON DIMENSION : 350 X 350 X 340 mm

4-2. STAPLES SHOULD ONLY BE USED TO SET UP CARTON. ALL CARTONS CLOSURES MUST BE DONE WITH TAPE.

4-3. MUST STICK THE PRODUCT LABEL (P/N, QUANTITIES & DATE) ON THE LEFT SIDE OF THE CARTON.

4-4. FILL CARTON WITH THE QUANTITIES AS INDICATED IN PACKING LIST.

4-5 PARTS PER CARTON 8000PCS



NOTE :

核 准: Jason APPROVED | 審 核: Jay CHECKED | 製 表: Johnny DRAWN

更改 REV A | 張數 SHEET 1 / 1

Rev:2

HUEY-CHYUAN TECHNOLOGY CO.,LTD.

Product Specification

1. SCOPE

THIS SPECIFICATION COVERS THE ZIF FFC/FPC SERIES CONNECTOR , SMT HORIZONTAL UPPER/LOWER CONTACT TYPE.

2. PART NUMBER AND PRODUCT NAME

Part number	Product Name
JF51-XXX-X22X-X	ZIF FFC/FPC CONNECTOR SERIES. SMT HORIZONTAL TYPE.

3. ELECTRICAL PERFORMANCE

Item	Requirement	Test Condition
Rated Voltage (MAX)	50V(AC/DC)	Ambient Temperature Range -40°C~+85°C
Rated current (MAX)	0.5A(AC/DC)	
Contact resistance	20mΩ (MAX.)	Mate applicable FPC and measure by dry circuit 20mV MAX, 10mA. (MIL-STD-1344A METHOD 3004.1)
Insulation resistance	50MΩ (MIN.)	Mate applicable FPC and apply 500V DC between adjacent terminal or ground. (MIL-STD-1344A METHOD 3003.1)
Dielectric strength	250V AC No breakdown	Mate applicable FPC and apply 250V AC (rms) for 1 minute between adjacent terminal or ground. (MIL-STD-1344A METHOD 3001.1)

4. MECHANICAL PERFORMANCE

Item	Requirement	Test Condition
FPC Retention Force	Per pin 0.3N(0.03kgf) MIN.	Insert the actuator, pull the FPC at the speed rate 25±3 mm/minute. (MIL-STD-1344A METHOD 2012.1.)
Durability Repeated insertion/withdrawal	Contact resistance 40mΩ MAX	Insert and withdraw up to 20 cycles at the speed rate of less than 10 cycles/minute. (MIL-STD-1344A METHOD 2016.)
Vibration	Discontinut : 1 microsecond MAX. No damage	Amplitude1.5mm P-P. Sweep time :10-55-10 Hz/1min. Duration : 2 hrs/axis (MIL-STD-202F METHOD 201.)
Shock	Discontinut : 1 microsecond MAX. No damage	(50G), 3 strokes in each X.Y.Z. axes. (MIL-STD-202F METHOD 213.)

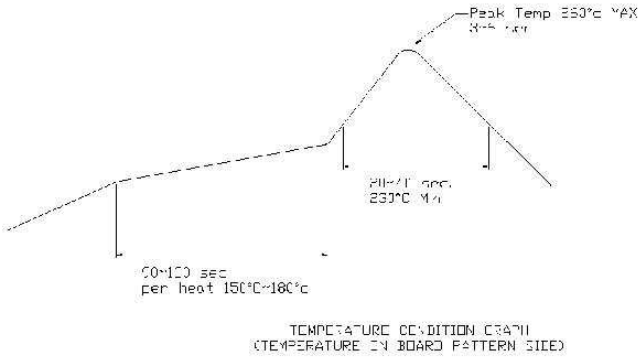
5. ENVIRONMENTAL PERFORMANCE

Item	Requirement	Test Condition
Heat resistance	Appearance : No Damage Contact Resistance : 40mΩMAX	85±2°C,96 hours. (MIL-STD-202F METHOD 108.)
Humidity	Appearance : No Damage Contact Resistance : 40mΩMAX	Temperature : 60±2°C Relative humidity : 90~95% Duration : 96 hours. (MIL-STD-202F METHOD 103.)
Salt spray	Appearance : No Damage Contact Resistance : 40mΩMAX	48 hours exposure to a salt spray form the 5± 1% solution at 35±2°C (MIL-STD-1344A METHOD 1001.)

6. RELIABILITY PERFORMANCE

Item	Requirement	Test Condition
Solder ability	Solder wetting : 90% of immersed area must show no voids pin holes.	Soldering time : 3±0.5sec Solder temperature : 230±5°C

7. INFRARED REFLOW CONDITION

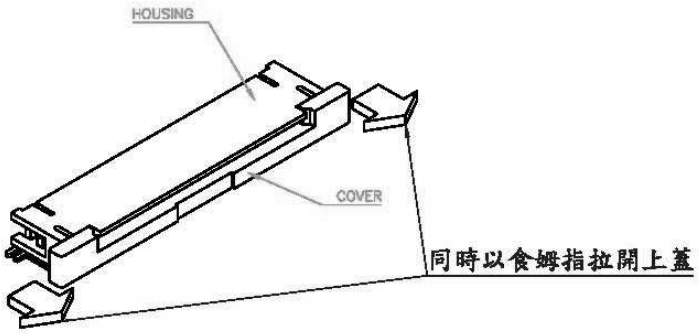


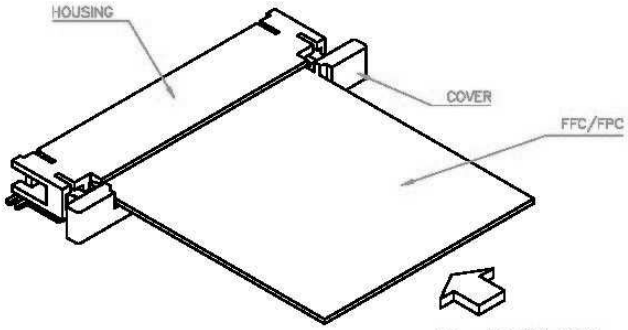
TEMPERATURE CONDITION GRAPH
(TEMPERATURE IN BOARD PATTERN SIDE)

8. PRODUCT SHAPE DIMENSIONS AND MATERIALS

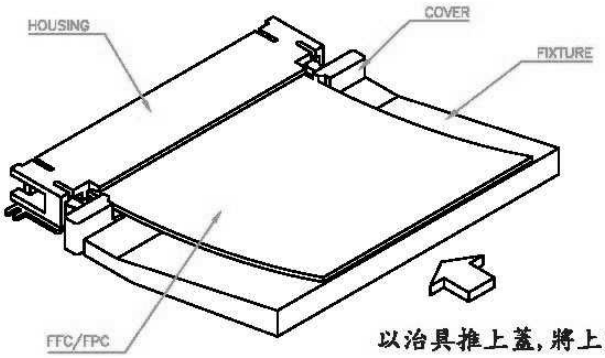
Refer to the drawing

8. NOTES

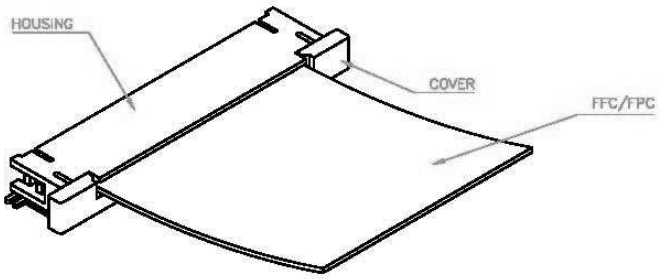




插入FFC/FPC



以治具推上蓋,將上蓋推至定位



上蓋推至定位

Safety Data Sheet

DSM

complies with: directive 91/155/EEC
ISO 11014-1:Safety data sheet for chemical products.

revision: 2.0
revision date: 18/11/1998
date of issue: 20/11/1998

1. Product and company identification

Product name: Stanyl®

Product code: TE250F8

Manufacturer: DSM Engineering Plastics
P.O. Box 43,
6130 AA Sittard
The Netherlands

Emergency number: The Netherlands +31 (0)46 4 76 55 55

2. Composition/Information on ingredients

This chemical product is a preparation

Chemical nature: (poly)amide PA 46

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. 7%. 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.

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.

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.

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.

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^3 for total dust.
- 5 mg/m^3 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:

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 20°C.
Form	: granulate.
Colour	: natural opaque, dependent on added pigment.
Density	: > 1.0 g/cm³.
Melting point/range	: 295°C.
Softening range	
Odour	: no special odour.
Solubility in water	: insoluble.
Decomposition Temp.	: > 350°C.
Flashpoint	: > 375°C.
Auto Ignition Temp.	: > 420°C.
Dust Explosive Properties:	
Lower Explosion Limit (LEL)	: < 10 g/m³.
Minimum Ignition Temp.	: 410°C.
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 >340° C 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 compunds.
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

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

12. Ecological information

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

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.

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.

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

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 Engineering Plastics
Technical Marketing
P.O.Box 604
6160 AP Geleen
The Netherlands
Tel +31(0) 46 4767847 / 4767411
Fax +31(0) 46 4760796
E-mail: dietmar.kleborn@dsm-group.com

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Title Block.品號(Number):CNJ5231XXXXXXXXXX(R60010004

DSM ENGINEERING PLASTICS B V

POSTBUS 604 GELEEN 6160 AP NL

Material Designation: **TE250F8(h1)(j)**

Product Description: Polyamide 4/6 (PA4/6), glass reinforced, flame retardant, designated "Stanyl" furnished as pellets.

Color	Min. Thick. (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str	IEC GWIT	IEC GWFI
ALL	0.35	V-0	-	-	65	65	65	-	-
	0.75	V-0	0	0	140	110	120	825	-
	1.5	V-0	0	0	140	125	125	825	-
	3.0	V-0	0	0	140	130	130	960	-

CTI: 2 **IEC CTI** (V): - **HVTR:** 1 **D495:** 7 **IEC Ball Pressure** (°C): -

Dielectric Strength (kV/mm): - **Volume Resistivity** (10^ohm-cm): - **Dimensional Stability**(%): -

ISO Tensile Strength (MPa): - **ISO Flexural Strength** (MPa): - **ISO Heat Deflection** (°C): -

ISO Tensile Impact (kJ/m²): - **ISO Izod Impact** (kJ/m²): - **ISO Charpy Impact** (kJ/m²): -

(h1) Virgin and regrind, up to 50% by weight inclusive, in thicknesses of 0.75mm and greater, have the same basic material characteristics, except for CTI.

(j) Virgin and regrind, up to 100% by weight inclusive, have the same basic material characteristics with respect to Flammability in the 0.75mm thickness and greater.

Report Date: 1/1/2003 Underwriters Laboratories Inc®

UL94 small-scale test data does not pertain to building materials, furnishings and related contents. UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in components and parts of end-product devices and appliances, where the acceptability

Title Block.Lifecycle Phase:Approval

鄭雅菁[Doris], 台中廠國外業務部歐洲課副課 (w060007) 2020-06-03 13:30:48

MATERIAL SAFETY DATA SHEET (MSDS)

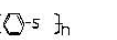
Issued: Mar 12 , 2002
Revised: Mar 22 , 2002

File No. 3002-1

1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

CHEMICAL PRODUCT NAME :	FORTRON 1140A6
NAME OF COMPANY :	Polyplastics Co.,Ltd.
SECTION IN CHARGE :	Quality Assurance Dept.
ADDRESS :	3-2-5 Kasumigaseki, Chiyoda-ku, Tokyo
TELEPHONE NUMBER :	03-3593-2280
FACSIMILE NUMBER :	03-3593-2189

2. COMPOSITION/INFORMATION ON INGREDIENTS

SUBSTANCE/PREPARATION	:	Preparation
COMMON CHEMICAL NAME	:	Polyphenylene sulfide
SYNONYMS	:	Polyphenylene sulfide(PPS)
INGREDIENTS AND COMPOSITION	:	PPS≧58%, Glass fiber 40%, others ≦2%
CHEMICAL FORMURA	:	
SERIAL № IN OFFICIAL GAZETTE	:	7-1143(base resin) (Law Concerning Examination and Regulation of Manufacture,etc.,of Chemical Substances)
CAS №	:	26125−40−6(base resin)

3. HAZARDS IDENTIFICATION

PHYSICAL AND CHEMICAL HAZARDS	:	Not applicable
HUMAN HEALTH EFFECTS	:	Not applicable
ENVIRONMENTAL EFFECTS	:	Not applicable
PHYSICAL AND CHEMICAL HAZARDS	:	It is inflammable substance and combustible if an igniting source is existent. Neither dangerous reaction,fire nor explosion can be caused under normal conditions.
THE CLASSIFICATION	:	Not applicable

4. FIRST-AID MEASURES

INGESTION	:	Help to vomit as much as possible. If sick feeling continues,and ask a physician for advice.
INHALATION	:	When a gas generated from the molten polymer,especially fume generated during combustion or heat, has been inhaled,remove fresh air without delay and wait until the victim is recovered. If sick feeling continues,ask a physician for advice.
SKIN CONTACT	:	Cool the contacted skin with clean water without delay,if a contact with the polymer In a molten form. Do not force to remove the solid resin on the skin. If any burns are observed on the skin,ask a physician for advice.

EYE CONTACT	:	Cool and rinse the eye with clean water for at least 15 minutes when the eyes had contact with molten polymer. In case of wearing contact lenses,remove the lenses as soon as possible,and ask a physician for advice. When the eye had contact with the polymer in an ordinary solid form,rinse the eye with clean water without delay. If the discomfort persists,ask a physician for advice.

5. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA	:	Water,form fire-extinguishing agent,powder fire-extinguishing agent,and carbon dioxide gas.
SPECIFIC METHODS	:	Extinguish the fire with water. A method of extinguishing an ordinary fire may be applied. Do not apply water directly to processing machines.
SPECIFIC HAZARDS	:	Incomplete combustion leads to generation of toxic gases such as carbon monoxide or sulfur compound gas,in addition to carbonic acid gas and water.
SPECIAL EQUIPMENT FOR THE PROTECTION OF FIREFIGHTERS	:	In case the fire gained force,use a gas mask or other protective equipment.

6. ACCIDENTAL LEAKAGE MEASURES

PERSONAL PRECAUTIONS	:	When pellets were spilled on the road or floor,wipe them off with a besom or cleaner not to cause slipping.
ENVIRONMENTAL PRECAUSION	:	Handle the spillage in accordance with provisions given in the "Resin pellet spillage preventive manual",in order to prevent intakes by marine animals and birds.

7. HANDLING AND STORAGE

HANDLING	:	PPS resin in a pellet form will neither ignite nor explode at room temperatures.
HANDLING 2	:	For molding work,effective means for local exhaust are required to discharge gases generated by melt processing.
HANDLING 3	:	Avoid inhaling of gases generated in moulding work. Do not directly touch resin of high temperature.
HANDLING 4	:	Avoid retaining hot resin in the processing machines for many hours.
HANDLING 5	:	This pellets spilled on the floor are likely to cause slipping. Remove such spillage at any times.
STORAGE	:	Keep the substance away from any fire or heat sources for the sake of safe storage.
RECOMMENDED PACKAGING MATERIALS	:	No information.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

CONTROL CONCENTRATION	:	None at present
PERMISSIBLE CONCENTRATION	:	OSHA PEL/1985 Max. permissible concentration of inactive powder 15mg/m³ - ditto - (Aspiration) 5 mg/m³ ACGIH TLV/1992 1993 Exposure limit of the powder TWA 10 mg/m³
ENGINEERING MEASURE	:	When handling dust: Use totally enclosed containers resisting dust explosion. When heat melted in molding: Effective local ventilation must be provided.

PERSONAL PROTECTIVE EQUIPMENT	:	
RESPIRATORY PROTECTION	:	Wear a dust-proof mask.
EYE PROTECTION	:	Wear protective glases or goggles.
HAND PROTECTION	:	Wear heat-resisting gloves against burns, when handling molten polymer.
SKIN & BODY PROTECTION	:	Wear long sleeve clothes against burns, when handling molten polymer.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE etc.	:	Pellet
BOILING POINT	:	Not applicable
VAPOUR PRESSURE	:	Not applicable
VOLATILITY	:	Not applicable
SUBLIMATION	:	None
MELTING POINT	:	275℃～285℃
DENSITY	:	1.66
SOLUBILITY	:	Insolube in water
FLASH POINT	:	500℃ or higher
IGNITION POINT	:	480℃ or higher
EXPLOSION PROPERTY	:	Not applicable
INFLAMMABILITY	:	None
REACTIVITY WITH WATER	:	None
OXIDIZABILITY	:	None
SELF-REACTIVITY	:	None
DUST EXPLOSIVENESS	:	Upper explosion limit : Not applicable. Lower explosion limit : 35g/m^3

10. STABILITY AND REACTIVITY

STABILITY AND REACTIVITY	:	Stable for nomal storage or handling.

11. TOXICOLOGICAL INFORMATION

SKIN CORROSIVE OROPERTIES	:	No finding.
SENSITIZING & IRRITANT EFFECTS	:	Gas generated in drying or melting is irritating eyes and skins.
ACUTE TOXICITY(INCLUDING LD50)	:	No finding.
SUBACUTE TOXICITY	:	No finding.
CHRONIC TOXICITY	:	No finding.

CARCINOGENECITY	:	No finding.
MUTAGENECITY(Micro organisms,chromosomal aberration)	:	No finding.
REPRODUCTIVE TOXICITY	:	No finding.
TERATOGENICITY	:	No finding.
OTHERS(Including generation of hazardous gases by reaction with water,for ezample)	:	No finding in this report means that there will be no hazard in general,but no proving data available at the time of reporting.
OTHER CAUTIONS	:	With regard to dust,the maximum permissible concentration and limits are fixed by OSHA and ACGIH.
OTHER CAUTIONS 2	:	Information on hazards of glass fibers as filler. 〈Effects on Human Bodies〉 (1) Effects on skin Stimulation to the skin with glass fibers may be caused when glass fibers diameter is larger than 4.5～5μm. They give mechanical stimulation followed by itchiness to the skin, but further continuous exposure reportedly results in extinction of stimulation. It may sometimes leads to irritable dermatitis complicated with urticaria or eczema-like reaction. It is, however reported that such dermatitis is not so serious in general and does not last too long. Therefore, skin stimulation can be prevented by proper use of glass fibers. (2) Effects on Tumor Investigations made on glass fibers till today reveal that there is neither increase in mortality of glass fiber production workers due to lung cancer or mesothelioma nor such cases reported. 〈Animal Test Report〉 It is suggested that carcinogenecity of mineral fibers is dependent on their shapes rather than on their constituents. According to a report on experiments using 17 kinds of artificial mineral fibers in various sizes prepared by Dr.Stanton of National Cancer Institute, in USA, statistical studies on corelations between the diameter and length of fibers and the coincidence of mesothelioma have revealed that mineral fibers having a diameter smaller than 0.25μm and a length larger than 8μm are closely related to the coincidence of cancers. Since these experiments were performed by artificially dosing the subject animals with a large quantity of glass fibers and consequently they are quite different from the actual exposures to human bodies, it is told to be problematic to make a conclusion that mineral fibers are hazardous to human health, basing on the results obtained from these experiments. Upto the present time, there is no result obtainable to demonstrate a mechanism of glass fibers causing lung cancers in spite of experiment by long exposure to glass fibers with high concentration.

12. ECOLOGICAL INFORMATION

BIODEGRADABILITY	:	No finding.
BIOACCUMULATION	:	No finding.
FISH TOXICITY	:	No finding.

13. DISPOSAL CONSIDERATION

WASTE FROM RESIDUES	:	This is designated as waste plastics among industrial wastes by the Wastes Disposal Law. Disposal waste pellets through licensed wastes handlers or local autonomous bodies if they are handling wastes disposal.

WASTE FROM RESIDUES 2	:	When disposed by incineration,use the well controlled incinerators in accordance with the Wastes Disposal Law,Air Pollution Control Law and Water Pollution Prevention Law.

14. TRANSPORT CONSIDERATION

UN CLASSIFICATION NUMBER	:	Not applicable
OTHER CAUSIONS	:	Handle with care so as not to give damages to containers or not to be subjected to wetting.
OTHER CAUSIONS 2	:	Secure the containers firmly so as not to cause collapsing.

15. REGULATORY INFORMATION

WASTE DISPOSAL LAW	:	Waste plastics among industrial wastes.

16. OTHER INFORMATION

HANDLING OF THE DETAILS GIVEN ABOVE	:	This MSDS is the English version translated from the Japanese MSDS which is prepared for domestic use. Details given above are based on references, information and data available at this moment, but no warranty can be made on exactness of these details. They are also prepared on the assumption that the product will be handled in a normal way. For special handling, adequate safety and environmental measures should be taken in respect to its applications. Our products are not specifically intended for implants for medical and dental applications, and therefore they are not recommended for such applications. "No finding" in this report means that there will be no hazard in general, but no proving data is available at the time of reporting.
WHERE TO CALL FOR FURTHER INFORMATION	:	Polyplastics Co.,Ltd. Quality Assurance Dept. Tel. No 03-3593-2280

QMFZ2 Component - Plastics Tuesday, April 28, 1998 E109088

POLYPLASTICS CO LTD

FORTRON DIV, KASUMIGASEKI BLDG, 6TH FL 2-5 KASUMIGASEKI 3-CHOME CHIYODA-KU TOKYO 100-6006 JAPAN

Material Designation: **1140(a)(c)**

Product Description: Polyphenylene Sulfide (PPS), designated "Fortron" furnished as pellets.

Color	Min. Thick. (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str	IEC GWIT	IEC GWFI
BK	0.24	V-0	-	-	130	130	130	-	-

CTI: - **HVTR: -** **D495: -** **IEC BP: -**

(a) May be followed by an A, B or L to indicate lubricity.

(c) May be followed by the digit 6 to indicate molecular weight.

Report Date: 04/01/1992 Underwriters Laboratories Inc® 593273004

UL94 small-scale test data does not pertain to building materials, furnishings and related contents. UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in components and parts of end-product devices and appliances, where the acceptability of the combination is determined by ULI.

物質安全資料表

MSDS$_{C5102 \sim C5210}$

名佳利物質安全資料表編號： MCL001	改版日期：02-20-2008
版次：3	前次改版：04-28-2003

1.物品與廠商資料

物品中（英）文名稱：	磷青銅(PHOSPHOR BRONZE ALLOYS)		
物品代號：	JIS C5102～C5210		
化學名稱：	Cu-Tin 金屬合金		
類別：	銅金屬合金		
製造商或供應商名稱：	名佳利金屬工業股份有限公司		
製造商或供應商地址：	台灣省桃園縣中壢工業區北園路 11 號		
製造商或供應商電話：	8863-4519898	傳真：	8863-4514870
製造商或供應商網址：	www.minchali.com.tw		
緊急聯絡電話：	8863-4519898		

2.產品成份

CAS 編號	化學名稱	重量比例%
7440-50-8	銅(Cu)	90～95
7440-31-5	錫(Sn)	4.5～9.0
7723-14-0	磷(P)	0.03～0.35.
7440-66-6	鋅(Zn)	＜0.20
7439-92-1	鉛(Pb)	＜0.05
7439-89-6	鐵(Fe)	＜0.10

OSHA 管理狀態：在固體時不具危害性。其粉塵及燻煙對肺臟、血液、腎臟具有致癌、刺激性。反覆產生之毒性及神經性毒素。

OHSA：本合金產品在固體時不具危害性。其粉塵及燻煙具有危害性。

3.危害辨識資料

警告！

曝露於粉塵及燻煙的工作環境下，對於眼睛、呼吸系統、皮膚會造成刺激傷害。其含有之金屬可能對血液、腎臟產生反覆行及神經性之影響，也可能致癌。必須保持足夠且良好之通風。避免直接接觸眼睛、皮膚及衣物。配戴保護器具，包括護目鏡、適當衣物，必須要保護全部身體。身體及衣物被接觸之部位，必須徹底清洗乾淨。

種類的名稱：	銅、錫之金屬合金混合物。
危險標示類別：	金屬粉塵或燻煙將對皮膚、眼睛造成刺激性且對肺具有毒性，但金屬合金本身不具危害性。

HMIS 危害級數(粉塵及燻煙)：	健康 ：1 ；可燃性：0 (0=低、4=極高)； 物性危害：無
IDLH 對生命或健康有立即性危害濃度值	NIOSH IDLH(3/1/95)無本金屬立即性危險濃度數值 。 銅(Cu)粉塵或燻煙及 鉛(Pb) ：100 mg / m^3 氧化鐵(Fe)粉塵或燻煙 ：2500 mg / m^3 氧化鋅 ：500 mg / m^3

Hazardous Materials Identification System (HMIS)

嚴重症狀：

眼睛：其粉塵或燻煙皆具刺激性，會引起紅腫及疼痛。經常曝露於此環境時，可能導致結膜炎。

皮膚：此物質不會經由皮膚滲入體內被吸收。但接觸其粉塵時，皮膚有可能會引起輕微刺激而出現紅腫現象。

吸入：吸入人體是有害的。吸入高濃度粉塵或燻煙可能會導致劇烈呼吸、鼻刺激、咳嗽、呼吸困難。吸入高濃度銅金屬粉塵或燻煙也可能出現噁心、嘔吐及胃痛現象。金屬燻煙可能引起類似流行性感冒(flu-like)症狀之金屬燻煙熱；其症狀包括喉嚨不適、呼吸困難、咳嗽、哮喘、嘶啞、嘔吐、頭痛、發冷、發熱、肌痛、虛弱、昏睡、流汗、關節痛。這些症狀通常會在 24 小時後消失，但也有可能更長時間。

食入：大量食入粉塵時，可能引起噁心、腹瀉及/或胃痛現象。

慢性影響：皮膚長期或者重複性接觸其粉塵時可能引起劇烈刺激或皮膚炎。長期或者重複性吸入其粉塵或燻煙可能會導致更劇烈刺激。慢性曝露於鉛中會引起人體腎臟損害、貧血症、復發性及成長性影響、永久性神經系統損傷。

4.急救措置

對於粉塵及燻煙危害：

眼睛接觸：	以大量清淨水沖洗上下眼皮內部（至少 15 分鐘），若眼睛被刺激不適者，立即送醫檢查
皮膚接觸：	以清水清洗乾淨。衣物被接觸之部位，必須徹底清洗乾淨後才能再穿戴。若仍有皮膚發生刺激、出疹現象或情況持續、復發時，應至醫院診療。
吸入時：	送至通風良好較陰涼處休息，以毛布保暖，嚴重者迅速送醫院檢查診斷。
食入時：	大量喝水並催吐，迅速送醫院檢查

醫療提示：對於本產品組成之元素物質並無特殊解毒劑可供使用。必須視不同症狀給予適當治療。

5.火災及爆炸危害資料

燃燒性資料：

爆炸性：	無
可燃性：	無
燃燒性：	無
閃火點：	不適用

自燃性：	不適用

滅火劑：

小區域之材料粉末起火時，可使用乾沙、乾石灰粉、食鹽或蘇打粉予以悶熄。其它周邊處起火時需以適當之滅火器滅火。

意外及爆炸危害：

注意粉塵可能導致爆炸或產生可燃燒氣體。

6.洩漏的處置

本產品在加工中產生粉塵時，有可能產生爆炸危害，必須將火源移除。也惟有粉塵型態時才可能產生洩漏，所以必須裝設通風設備及集塵裝置過濾空氣中之粉塵，以降低其粉塵濃度。

7.取用及儲運方式

取用注意事項：

板帶產品之端面易割傷皮膚應小心取用。
切削加工時會產生粉塵應小心眼睛、皮膚及呼吸應配戴保護器具。
小心粉塵不可洩漏至空氣中。
需注意產品有翻倒之危險性易造成壓傷，吊運時要十分注意。
打包帶剪除時，小心其末端會彈起，對人員之身體、皮膚及眼睛造成割傷。
衣物或器具上之粉塵應以水洗或HEPA吸塵器清潔，不可用拍打或其它方式處理。

儲存條件：

倉儲最高容許溫度：無
避免放置於潮濕或酸／鹼性物質或酸／鹼性氣體之場所

8.人員曝露防護措施

CAS 編號	曝露標準：	OSHA(PEL-TWA)	IDLH
銅(Cu) 7440-50-8	燻煙	0.1 mg/m^3	100 mg/m^3
	粉塵及霧狀	1 mg/m^3	100 mg/m^3
錫(Sn) 7440-31-5	粉狀	2 mg/m^3	100 mg/m^3
磷(P) 7723-14-0	—	0.1 mg/m^3	5 mg/m^3
鋅(Zn) 7440-66-6	—	無資料	無資料
鉛(Pb) 7439-92-1	粉塵及燻煙	0.05 mg/m^3	100 mg/m^3
鐵(Fe) 7439-89-6	—	無資料	無資料
本產品材料若經加熱會產生燻煙，氧化鋅燻煙可能形成。 OSHA(PEL) 以及 ACGIH(TLV)對氧化鋅燻煙之限制值爲 5 mg/m^3			
呼吸防護：	一般情況下不需配戴口罩。但當超過上述 PEL/TLV 標準值時必須配戴 NIOSH 認證之全罩或半罩式 HEPA 濾心防塵口罩。		
通風防護：	工作場所中，若是會產生燻煙及粉塵時，必須要有通風設		

	備裝置及集塵裝置，且工作中不可飲食及抽煙
眼睛及臉部防護：	需要配戴護目鏡。
皮膚防護：	作業時應穿著適當之工作服、安全鞋及防護手套，以避免皮膚與材料直接接觸並防止割傷。

(美國）職業安全衛生署**OSHA**(Occupational Safety and Health Administration)

(美國）國家職業安全衛生研究所 **NIOSH**(National Institute for Occupational Safety and Health)

立即對生命或健康有危險 **IDLH**(Immediately Dangerous to Life or Health)

時量平均濃度 **TWA**(Time Weighted Average)；

容許暴露濃度值 **PEL**(Permissible Exposure Limit)

9.物理及化學性質

外觀：	淺紅色光澤的固態金屬
熔點：	1000-1075℃
沸點：	無資料
比重：	8.84
蒸氣壓：	不適用
溶解度：	不適用
PH 值 25℃：	不適用

10.穩定性及活性資料

穩定性	在正常一般室溫及大氣壓下爲穩定性物質，非活性物質。
應避免之狀況	遭受機械撞擊或通電時並不會產生化性反應。
應避開之材料	氨　：與金屬黃銅、銅細粉塵形成劇烈或爆炸性反應。 乙炔：與銅形成爆炸性化合物。
危害之分解物	當加熱至分解溫度時，會產生金屬氧化物和金屬燻煙。有可能引起類似流行性感冒（flu-like）症狀之金屬燻煙熱。
危害之聚合反應	無。

11.毒性資料

潛在之曝露途徑：

粉塵：食入、皮膚接觸、吸入、眼睛接觸。
煙霧：吸入、睛眼接觸。
本合金產品不具毒性。

動物急毒性資料：動物半致死劑量(LD_{50})及濃度(LC_{50})

針對本合金產品之粉塵或燻煙	銅(Cu)	錫(Sn)	磷(P)	鋅(Zn)	鉛(Pb)	鐵(Fe)
口服 (LD_{50})	3.5mg/Kg(鼠，	無資料	無資料	無資料	無資料	30mg/Kg

	腹腔內)					(鼠)
皮膚 (LD_{50})	375mg/Kg(兔，皮下注射)	無資料	無資料	無資料	無資料	無資料
吸入 (LC_{50})	無資料	無資料	無資料	無資料	無資料	無資料

亞慢性及慢性毒性：本合金產品不具毒性。鉛對實驗室中動物之血液、腎臟及神經系統會造成損害。

致癌性：本合金產品尚未被報告具致癌性。鉛被 IARC(International Agency for Research on Cancer)列入對人類可能致癌，屬 2B 類。

致基因突變性：本合金產品尚未被報告具致基因突變性。鉛則在幾項細胞體外試驗中顯示有致基因突變性。

復發性及成長性影響：本合金產品不具復發性及成長性影響。鉛會導致實驗室中動物之胎兒發育，包括天生畸形缺陷及影響雄性生殖能力。

神經性影響：本合金產品尚未被報告具有神經性影響。鉛會導致實驗室中動物之中樞、末稍神經系統損傷及行爲影響。

12.生態資料

本合金產品對生態之毒性：無資料

其單一成份之毒性說明如下：

生態毒性 ecotoxicity：水中的銅濃度，在 0.1～1.0mg/l 範圍內已備許多研究者證實對大多數魚類不具有毒性。但濃度在 0.015-3.0mg/l 時，尤其在軟水中，曾有報告會對許多種類的魚、甲殼類的動物及軟體動物、浮游生物具有毒性。

鉛對大翻車魚(Bluegill)/藍鰓魚(Lepomis macrochirus)LC_{50}(48Hrs)資料爲 2～5mg/l。鉛對水鳥類皆具毒性。

流動性：分解的鉛會轉移入土壤內。

持續性/可分解性：鉛在環境中會持續且積存。

生物累積性(Bioaccumulation)：無資料。

13.廢棄處理

本合金產品不屬於危害性廢棄物；須丟棄時可以委託當地回收商予以回收再生利用。

14.運輸資料

USA DOT：未被列入。

運送時本產品不要直接與水接觸，並且要注意會有滑落、翻落的危險發生。

15.法規資料

通常無特定法令規定，但是在會產生粉塵的場所必須遵守勞工安全衛生法勞工作業環境空氣中有害物質容許濃度標準。

USA／OHSA：Occupational Safety & Health Administration

USA／ACGIH Guide to protective Clothing. Cincinnati, OH:American Conference of Government Industrial Hygienists,1987
USA／SARA313

16.其他資料

初版：04-28-2003

製表單位：名佳利金屬工業股份有限公司

注意：本 MSDS 內容資料應被所有使用、運送、儲存或曝露於本合金產品之公司／人員充份了解與接受並將其應用於使用、加工、製造或管理與本合金產品有關之相關作業規定上；使用者請依應用需求，自行判斷其可用性。本 MSDS 資料內容在編訂時已盡可能將最新之資料納入，但對所有內容並不能予以任何保證。

Title Block.品號(Number):CNJ5231XXXXXXXXXXR0010004
Title Block.Lifecycle Phase:Approval
鄭雅菁[Doris], 台中廠國外業務部歐洲課副課 (w060007)
2020-06-03 13:31:14

REPORT OF MATERIAL TEST

MINCHALI

DATE: DEC.28,2007

Customer:風發精密股份有限公司	Commodity: C 5191 R PHOSPHOR BRONZE STRIP (H)
Applied Standard: CNS 9503 Phosphor Bronze Sheets,Plates and Strips	ISO 9002:4M8Y085-00 台正字第 3545 號

Chemical Analysis Test

Work No.	Size of Product Thickness (mm)	Width (mm)	Length (mm)	P(%)	Sn(%)	Cu+Sn+P(%)				
	Standard			0.030 - 0.350	5.50 - 7.00	min. 99.50				
6CC001A	0.200	623.000		0.147	5.845	99.862				
6CC001B	0.200	623.000		0.147	5.845	99.862				

Mechanical & Physical Test

Work No.	Size of Product Thickness (mm)	Width (mm)	Length (mm)	Dimension Test Thickness (mm)	Width (mm)	Tension Test Tensile Strength (kgf/mm²)	Elongation (%)	Hardness Test HV	Grain Size (mm)	Electric Conductirity (%)
	Standard			-	(-) 0.10 - (+) 0.00	60 - 70	min. 8	180 - 230	-	-
6CC001A	0.200	623.000		GOOD.	GOOD.	63.20	24.50	196.0 - 198.0	0.010	14.1
6CC001B	0.200	623.000		GOOD.	GOOD.	63.20	24.50	196.0 - 198.0	0.010	14.1

QC Supervisor

MINCHALI METAL INDUSTRY CO., LTD.
11, Pei Yuan Road, Chung Li City, Taiwan, R. O. C.

名佳利金屬 MSDS MCL 002

物質安全資料表

MSDS$_{C2600 \sim C2801}$

名佳利物質安全資料表編號： MCL002	改版日期：03-17-2008
版次：4	前次改版：02-15-2008

1.物品與廠商資料

物品中（英）文名稱：	黃銅(BRASS ALLOY)		
物品代號：	JIS C2600～C2801		
化學名稱：	Cu-Zn 金屬合金		
類別：	銅金屬合金		
製造商或供應商名稱：	名佳利金屬工業股份有限公司		
製造商或供應商地址：	台灣省桃園縣中壢工業區北園路 11 號		
製造商或供應商電話：	8863-4519898	傳真：	8863-4514870
製造商或供應商網址：	www.minchali.com.tw		
緊急聯絡電話：	8863-4519898		

2.產品成份

CAS 編號	化學名稱	重量比例%
7440-50-8	銅(Cu)	59.0～71.5
7440-66-6	鋅(Zn)	41.0～28.5
7439-92-1	鉛(Pb)	＜0.1
7439-89-6	鐵(Fe)	＜0.07

OSHA 管理狀態：在固體時不具危害性。其粉塵及燻煙對肺臟、血液、腎臟具有致癌、刺激性。反覆產生之毒性及神經性毒素。

OHSA：本合金產品在固體時不具危害性。其粉塵及燻煙具有危害性。

(美國)職業安全衛生署 OSHA

3.危害辨識資料

警告！

曝露於粉塵及燻煙的工作環境下，對於眼睛、呼吸系統、皮膚會造成刺激傷害。其含有之金屬可能對血液、腎臟產生反覆行及神經性之影響，也可能致癌。必須保持足夠且良好之通風。避免直接接觸眼睛、皮膚及衣物。配戴保護器具，包括護目鏡、適當衣物，必須要保護全部身體。身體及衣物被接觸之部位，必須徹底清洗乾淨。

種類的名稱：	銅、鋅之金屬混合物。
危險標示類別：	金屬粉塵或燻煙將對皮膚、眼睛造成刺激性且對肺具有毒性，但金屬成品本身不具危害性。
HMIS 危害級數(粉塵及燻煙)：	健康 ：2 ；可燃性：0 (0＝低、4＝極高)： 物性危害：無

IDLH 對生命或健康有立即性危害濃度值	NIOSH IDLH(3/1/95)無本金屬立即性危險濃度數值 。 銅(Cu)粉塵或燻煙及 鉛(Pb) ：100 mg / m^3 氧化鐵(Fe)粉塵或燻煙 ：2500 mg / m^3 氧化鋅 ：500 mg / m^3

Hazardous Materials Identification System (HMIS)

嚴重症狀：

眼睛：其粉塵或燻煙皆具刺激性，會引起紅腫及疼痛。經常曝露於此環境時，可能導致結膜炎。

皮膚：此物質不會經由皮膚滲入體內被吸收。但接觸其粉塵時，皮膚有可能會引起輕微刺激而出現紅腫現象。

吸入：吸入人體是有害的。吸入高濃度粉塵或燻煙可能會導致劇烈呼吸、鼻刺激、咳嗽、呼吸困難。吸入高濃度銅金屬粉塵或燻煙也可能出現噁心、嘔吐及胃痛現象。金屬燻煙可能引起類似流行性感冒（flu-like）症狀之金屬燻煙熱；其症狀包括喉嚨不適、呼吸困難、咳嗽、哮喘、嘶啞、嘔吐、頭痛、發冷、發熱、肌痛、虛弱、昏睡、流汗、關節痛。這些症狀通常會在 24 小時後消失，但也有可能更長時間。

食入：大量食入粉塵時，可能引起噁心、腹瀉及/或胃痛現象。

慢性影響：皮膚長期或者重複性接觸其粉塵時可能引起劇烈刺激或皮膚炎。長期或者重複性吸入其粉塵或燻煙可能會導致更劇烈刺激。慢性曝露於鉛中會引起人體腎臟損害、貧血症、復發性及成長性影響、永久性神經系統損傷。

4.急救措置

對於粉塵及燻煙危害：

眼睛接觸：	以大量清淨水沖洗上下眼皮內部（至少 15 分鐘），若眼睛被刺激不適者，立即送醫檢查
皮膚接觸：	以清水清洗乾淨。衣物被接觸之部位，必須徹底清洗乾淨後才能再穿戴。若仍有皮膚發生刺激、出疹現象或情況持續、復發時，應至醫院診療。
吸入時：	送至通風良好較陰涼處休息，以毛布保暖，嚴重者迅速送醫院檢查診斷。
食入時：	大量喝水並催吐，迅速送醫院檢查

醫療提示：對於本產品組成之元素物質並無特殊解毒劑可供使用。必須視不同症狀給予適當治療。

5.火災及爆炸危害資料

燃燒性資料：

爆炸性：	無
可燃性：	無
燃燒性：	無
閃火點：	不適用
自燃性：	不適用

滅火劑：

小區域之材料粉末起火時，可使用乾沙、乾石灰粉、食鹽或蘇打粉予以悶熄。其它周邊處起火時需以適當之滅火器滅火。

意外及爆炸危害：

注意粉塵可能導致爆炸或產生可燃燒氣體。

6.洩漏的處置

本產品在加工中產生粉塵時，有可能產生爆炸危害，必須將火源移除。也惟有粉塵型態時才可能產生洩漏，所以必須裝設通風設備及集塵裝置過濾空氣中之粉塵，以降低其粉塵濃度。

7.取用及儲運方式

取用注意事項：

板帶產品之端面易割傷皮膚應小心取用。
切削加工時會產生粉塵應小心眼睛、皮膚及呼吸應配戴保護器具。
小心粉塵不可洩漏至空氣中。
需注意產品有翻倒之危險性易造成壓傷，吊運時要十分注意。
打包帶剪除時，小心其末端會彈起，對人員之身體、皮膚及眼睛造成割傷。
衣物或器具上之粉塵應以水洗或 HEPA 吸塵器清潔，不可用拍打或其它方式處理。

儲存條件：

倉儲最高容許溫度：無
避免放置於潮濕或酸／鹼性物質或酸／鹼性氣體之場所

8.人員曝露防護措施

CAS 編號	曝露標準：	OSHA(PEL)	IDLH
銅(Cu) 7440-50-8	燻煙	0.1 mg/m^3	100 mg/m^3
	粉塵及霧狀	1 mg/m^3	100 mg/m^3
鋅(Zn) 7440-66-6	無資料	無資料	無資料
鉛(Pb) 7439-92-1	粉塵及燻煙	0.05 mg/m^3	100 mg/m^3
鐵(Fe) 7439-89-6		無資料	無資料

本產品材料若經加熱會產生燻煙，氧化鋅燻煙可能形成。
OSHA(PEL) 以及 ACGIH(TLV)對氧化鋅燻煙之限制值爲 5 mg/m^3

呼吸防護：	一般情況下不需配戴口罩。但當超過上述 PEL/TLV 標準值時必須配戴 NIOSH 認證之全罩或半罩式 HEPA 濾心防塵口罩。
通風防護：	工作場所中，若是會產生燻煙及粉塵時，必須要有通風設備裝置及集塵裝置，且工作中不可飲食及抽煙
眼睛及臉部防護：	需要配戴護目鏡。
皮膚防護：	作業時應穿著適當之工作服、安全鞋及防護手套，以避免

	皮膚與材料直接接觸並防止割傷。

(美國）職業安全衛生署**OSHA**(Occupational Safety and Health Administration)

(美國）國家職業安全衛生研究所 **NIOSH**(National Institute for Occupational Safety and Health)

立即對生命或健康有危險 **IDLH**(Immediately Dangerous to Life or Health)

時量平均濃度 **TWA**(Time Weighted Average)；

容許暴露濃度值 **PEL**(Permissible Exposure Limit)

9.物理及化學性質

外觀：	黃色光澤的固態金屬
熔點：	930-1065℃
沸點：	無資料
比重：	8.66
蒸氣壓：	不適用
溶解度：	不適用
PH 值 25℃：	不適用

10.穩定性及活性資料

穩定性	在正常一般室溫及大氣壓下爲穩定性物質，非活性物質。
應避免之狀況	遭受機械撞擊或通電時並不會產生化性反應。
應避開之材料	氨　：與金屬黃銅、銅細粉塵形成劇烈或爆炸性反應。 乙炔：與銅形成爆炸性化合物。
危害之分解物	當加熱至分解溫度時，會產生金屬氧化物和金屬燻煙。有可能引起類似流行性感冒（flu-like）症狀之金屬燻煙熱。
危害之聚合反應	無。

11.毒性資料

潛在之曝露途徑：

粉塵：食入、皮膚接觸、吸入、眼睛接觸。 煙霧：吸入、睛眼接觸。 本合金產品不具毒性。

動物急毒性資料：

合金元素	銅(Cu)	鋅(Zn)	鉛(Pb)	鐵(Fe)
口服 (LD_{50})	3.5mg/Kg(鼠，腹腔內)	無資料	無資料	30mg/Kg (鼠)
皮膚 (LD_{50})	375mg/Kg(兔，皮下注射)	無資料	無資料	無資料
吸入 (LC_{50})	無資料	無資料	無資料	無資料

亞慢性及慢性毒性：本合金產品不具毒性。鉛對實驗室中動物之血液、腎臟及神經系統會造成損害。 致癌性：本合金產品尚未被報告具致癌性。鉛被 IARC(International Agency for Research on Cancer)列入對人類可能致癌，屬 2B 類。 致基因突變性：本合金產品尚未被報告具致基因突變性。鉛則在幾項細胞體外試驗中顯示有致基因突變性。 復發性及成長性影響：本合金產品不具復發性及成長性影響。鉛會導致實驗室中動物之胎兒發育，包括天生畸形缺陷及影響雄性生殖能力。 神經性影響：本合金產品尚未被報告具有神經性影響。鉛會導致實驗室中動物之中樞、末稍神經系統損傷及行爲影響。

動物半致死劑量(LD_{50})及濃度(LC_{50})

12.生態資料

本合金產品對生態之毒性：無資料
其單一成份之毒性說明如下： 生態毒性 ecotoxicity：水中的銅濃度，在 0.1～1.0mg/l 範圍內已備許多研究者證實對大多數魚類不具有毒性。但濃度在 0.015-3.0mg/l 時，尤其在軟水中，曾有報告會對許多種類的魚、甲殼類的動物及軟體動物、浮游生物具有毒性。 鉛對大翻車魚(Bluegill)/藍鰓魚(Lepomis macrochirus)LC_{50}(48Hrs)資料爲 2～5mg/l。鉛對水鳥類皆具毒性。 流動性：分解的鉛會轉移入土壤內。 持續性/可分解性：鉛在環境中會持續且積存。 生物累積性(Bioaccumulation)：無資料。

13.廢棄處理

本合金產品不屬於危害性廢棄物；須丟棄時可以委託當地回收商予以回收再生利用。

14.運輸資料

USA DOT：未被列入。 運送時本產品不要直接與水接觸，並且要注意會有滑落、翻落的危險發生。

15.法規資料

通常無特定法令規定，但是在會產生粉塵的場所必須遵守勞工安全衛生法勞工作業環境空氣中有害物質容許濃度標準
USA／OHSA：Occupational Safety & Health Administration
USA／ACGIH Guide to protective Clothing. Cincinnati, OH:American Conference of Government Industrial Hygienists,1987
USA／SARA313

16.其他資料

初版：04-28-2003

製表單位：名佳利金屬工業股份有限公司

注意：本 MSDS 內容資料應被所有使用、運送、儲存或曝露於本合金產品之公司／人員充份了解與接受並將其應用於使用、加工、製造或管理與本合金產品有關之相關作業規定上；使用者請依應用需求，自行判斷其可用性。本 MSDS 資料內容在編訂時已盡可能將最新之資料納入，但對所有內容並不能予以任何保證。

鄭雅菁[Doris], 台中廠國外業務部歐洲課副課 (w060007)
2020-06-03 13:31:31
01/04/2008 - 17:06 886-2-29090351 HI-TECH CO.,LTD. PAGE 01
Title Block.品號(Number):CNJ5231XXXXXXXXXX001
Title Block.Lifecycle Phase:Approval
2 / 2 # 08-1-4 4:24PM

REPORT OF MATERIAL TEST

DATE: DEC.27.2007

Customer: 精密股份有限公司	Commodity: C 2680 R BRASS STRIP (H)
Applied Standard: CNS 4383 Brass Sheets,Plates and Strips	ISO 9002:4M8Y035-00 台正字第 3544 號

Chemical Analysis Test

Work No.	Size of Product Thickness (mm)	Width (mm)	Length (mm)	Cu(%)	Fe(%)	Pb(%)	Zn(%)			
Standard				64.00 - 68.00	max. 0.050	max. 0.014	REM.			
6BA568A	0.200	618.000		66.109	0.018	0.006	REM.			

Mechanical & Physical Test

Work No.	Size of Product Thickness (mm)	Width (mm)	Length (mm)	Dimension Test Thickness (mm)	Width (mm)	Tension Test Tensile Strength (kgf/mm²)	Elongation (%)	Hardness Test HV	Grain Size (mm)	Electric Conductirity (%)
Standard				-	(-) 0.10 - (+) 0.00	42 - 55	-	105 - 175	-	-
6BA568A	0.200	618.000		GOOD.	GOOD.	48.00	21.56	151.0 - 153.0	-	24.8

QC Supervisor

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