

APPROVAL SHEET

Customer: _____

Customer P/N: _____

Geatsink Model: AAEXT-LA67-GP

Geatsink P/N : _____

Edition: A1.0

Issued Date: 2023/03/15

(Application : FT-E2000 芯片)
 (Heat Sink: 铝挤&4010 支架风扇,胶钉固定)

Revision History:

Version	Date	Description of Change	Drafted by	Checked by	Sales
A1.0	2023.03.15	初版发行	Liwei	Greg	Peter

供货商确认签/章			客户承认签/章	
制作	审核	核准		
李伟	汪雨佳	王曾仁		

变更前后对照表

对照表 1()	
变更前	变更后

对照表 2()	
变更前	变更后

对照表...()	
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1. Contents

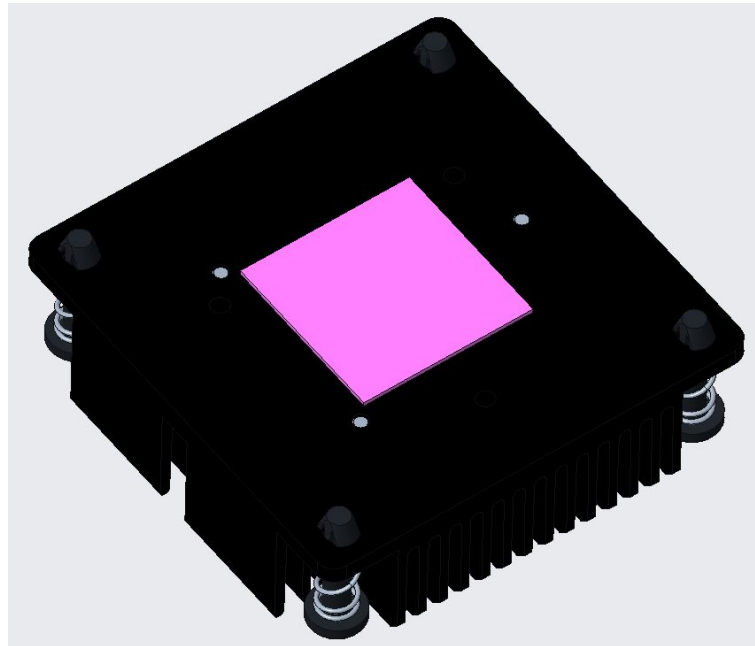
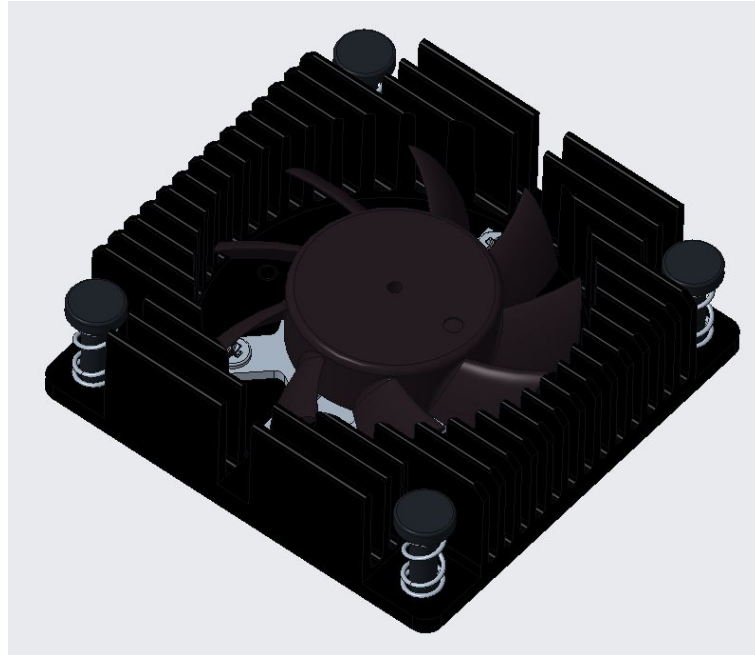
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2. Component List

BOM LIST				
ITEM	PART NAME	MATERIAL	QTY'	NOTE
1	HS	AL6063-T5/阳极黑色	1pcs	50*50*15mm
2	FAN	组合件	1pcs	4010mm/4500RPM
3	PIN	PA66&SUS304/黑色	4pcs	L11.4mm
4	SCREW	AISI1018/镀镍	3pcs	M2*L3mm
5	PAD	TIF600/浅紫色	1pcs	20*20*0.5mm

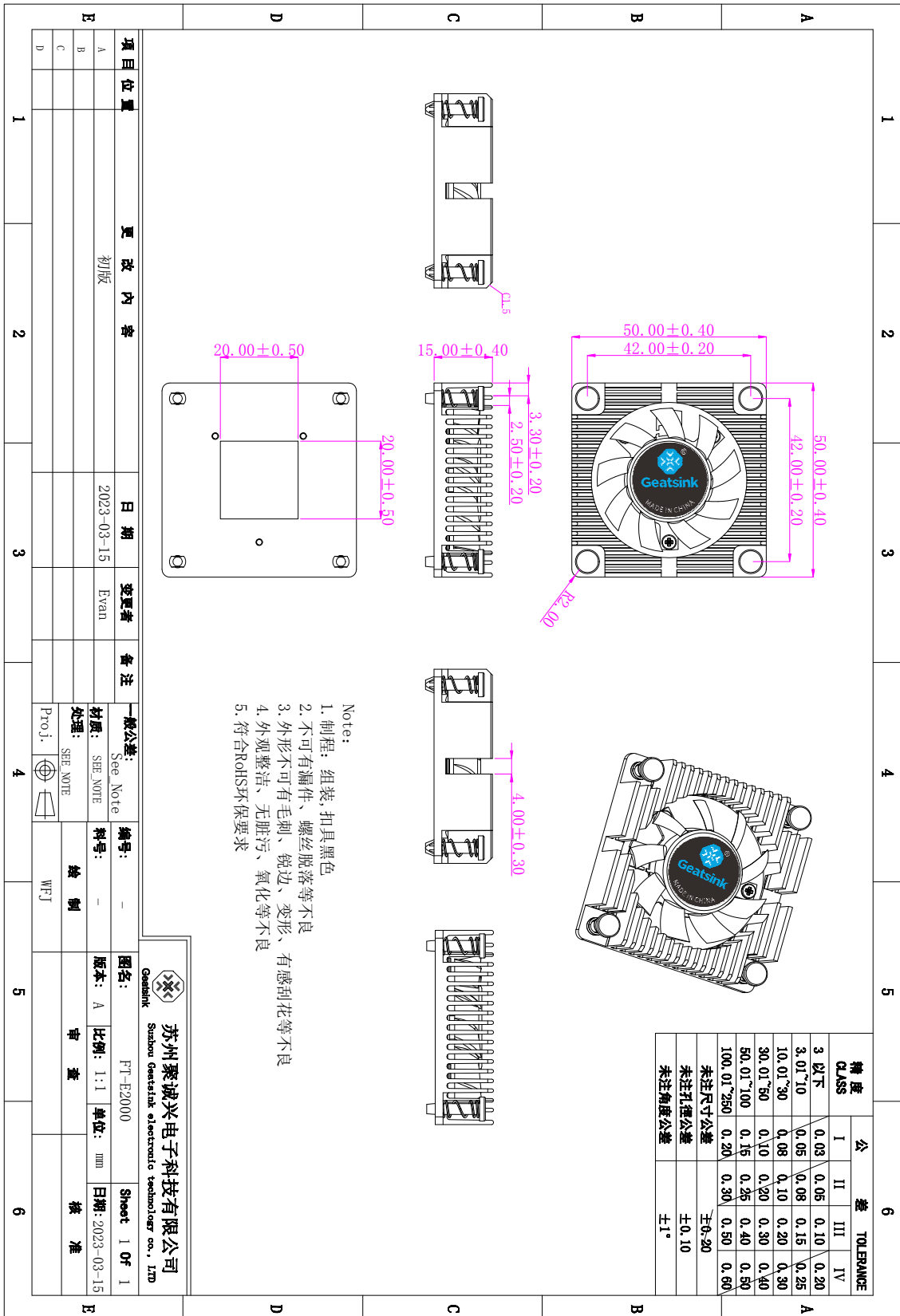
3. Product picture

3.1 产品外观图



4. Drawing

4.01. Cooler Assembly



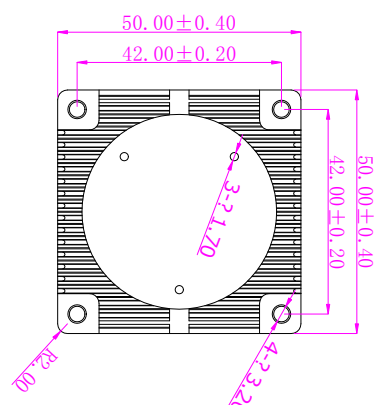
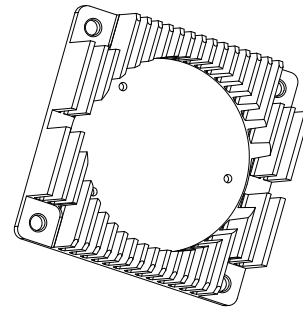
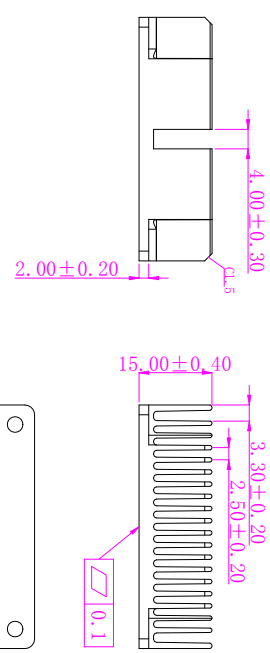
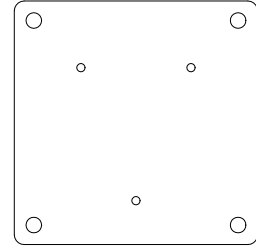


项目位置	更改内容	日期	变更者	备注
A	初版	2023-03-15	Evan	
B				
C				
D				

一般公差: See Note	编号: -	图名: FT-E2000	Sheet 1 of 1
材料: SEE NOTE	料号: -	版本: A	比例: 1:1
处理: SEE NOTE	图号: WPTJ	单位: mm	日期: 2023-03-15
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Geatsink
 Suzhou Geatsink Electronic Technology Co., Ltd

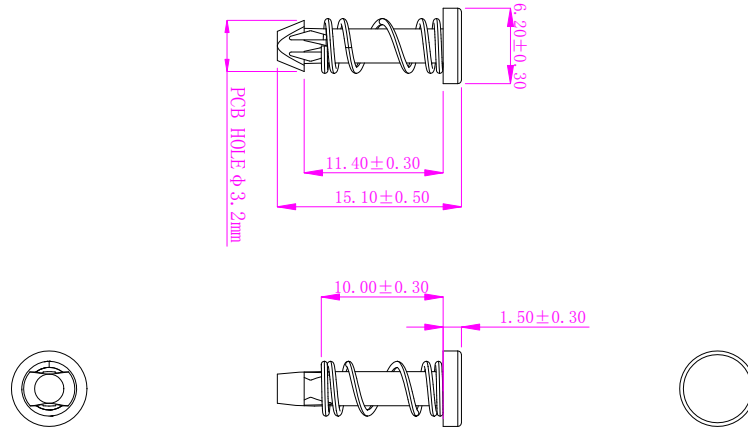
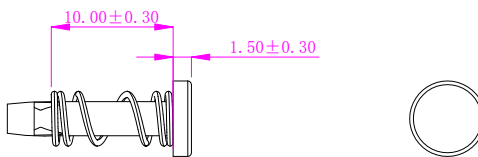
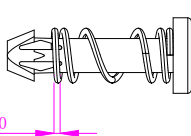

APPROVAL SHEET

4.02 HS

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<p>Note:</p> <ol style="list-style-type: none"> 1、材质：阳极黑色 2、孔需自然倒角 3、表面不可有毛刺、锐边、变形、有感刮花等不良 4、外观整洁、无脏污、氧化等不良 5、符合RoHS环保要求 																																												
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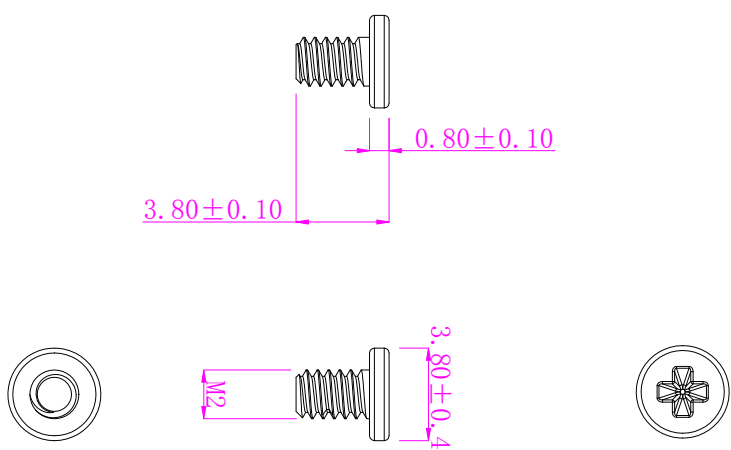
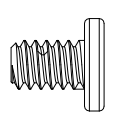
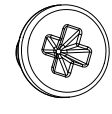
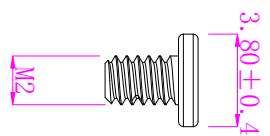
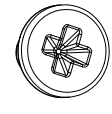
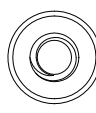
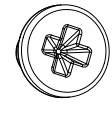
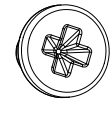
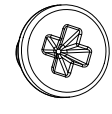




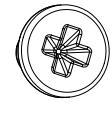


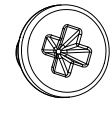
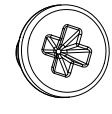
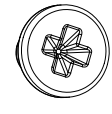
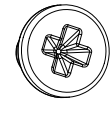
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4.03 PIN

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<p>PIN:</p> <ol style="list-style-type: none"> 1. 材质: NYLON66 2. 表面处理: 黑色 3. 穿过 $\phi 3.0-3.3$ 的孔扣点不能断裂 4. 表面光滑, 无毛刺 5. 符合RoHS环保要求 <p>SPRING:</p> <ol style="list-style-type: none"> 1. 材质: SUS304 2. 颜色: 原色 3. 弹性系数: 下压6.5mm产生$2.2 \pm 10\%$磅压力 4. 保证弹性系数和压缩量, 圈数, 线径, 外径可调整 5. 符合RoHS环保要求 																																																											
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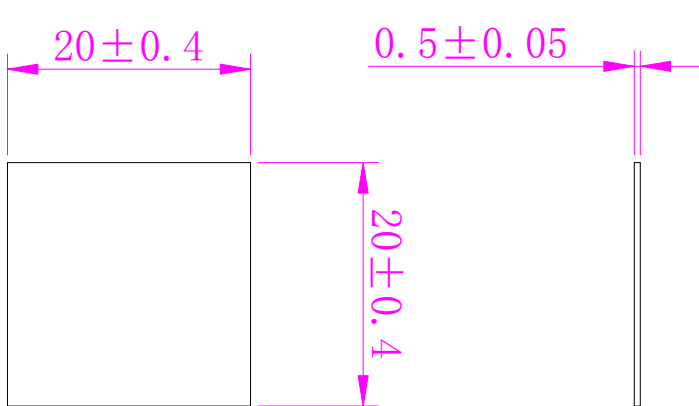



4.04 SCREW

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E	<p>Note:</p> <ol style="list-style-type: none"> 1. 材质: AISI1018 2. 表面处理: 镀镍 3. 热处理硬度: HV450~HV600 4. 表面光滑, 无毛刺、生锈等不良 5. 符合RoHS2环保要求 6. 盐雾测试时间6H. 																																																											
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苏州聚城兴电子科技有限公司
 Suzhou Geatsink electronic technology co., LTD

APPROVAL SHEET

4.05 PAD

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4.06 Fan

1.0 一般规格 (General Specification)

项目 Item	规格/条件 Specifications/Condition		
1.1 型号 Model No.	TD4010B12LY		
1.2 外型尺寸 Outline Dimension	40*40*10mm		
1.3 工作电压 Operating Voltage	DC6~13.2V		
1.4 额定电压 Rated voltage	DC 12.0V		
1.5 启动电压 Starting Voltage	≤DC 6.0V on/off		
1.6 标签电流 Rated current	0.10A	a. 额定电压 Rated voltage b. 25 °C 65% RH C. Testing Speed After Continuous 3Minutes Operation At Ambient Temperature Of 25°C	
1.7 运转电流 Operating current	0.05A MAX		
1.8 额定功率 Rated Power	0.60W MAX		
1.9 转速 Speed	4500±10% RPM		
1.10	风量 Airflow	2.39CFM	a. 额定电压 Rated voltage b. AMCA 标准 Standard c. 额定电流 Rated current
	静压 Air. Static Pressure	2.26mm-H2O	
1.11	噪音标准 Noise Level	26.9dB(A)	a. 18dB 无响室 18dB Non-Echo Chamber b. 标准 Standard: CNS 8753/ ISO 374 c. Test Condition :ISO 7779 d. 距离 Distance: 1.0 M
1.12	寿命 Life expectancy	<input type="checkbox"/> 50000 hours at temp40 °C <input type="checkbox"/> 40000 hours at temp40 °C <input checked="" type="checkbox"/> 30000 hours at temp40 °C	MTTF Mean Time To Failure Conf. Level 90% Humidity15%~65%
1.13	极性保护 Polarity Protection	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	VCC 与 GND 反接时 不导通. Open circuit when Vcc & GND are exchanged
1.14	锁住保护 Lock Protection	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	1. 额定电压堵转 2~3 秒 自动断电 降低内部温升 Auto power off after locked at rated voltage for 2~3 sec. Reduce internal temperature rise 2. 自动断电后 2 至 6 秒自动尝试启动 After auto power off, circuit attempt to restart in 2 to 6 sec
1.15	软启动 Soft Starting	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
1.16	PWM 功能 PWM function	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	NOTES: PWM duty@25kHz
1.17	FG	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
1.18	扇叶数 No. of the Blade	<input type="checkbox"/> 5 叶 <input type="checkbox"/> 7 叶 <input checked="" type="checkbox"/> 9 叶 <input type="checkbox"/> 11 叶 <input type="checkbox"/> 其他	
1.19	极数 No. of the Pole	<input checked="" type="checkbox"/> 4 极 <input type="checkbox"/> 8 极 <input type="checkbox"/> 12 极	
1.20	轴承类型 Bearing Type	<input type="checkbox"/> Two ball <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> FDB	
1.21	安规认证 Safety Approval	<input type="checkbox"/> UL <input checked="" type="checkbox"/> CE	
1.22	环保类型 Environmental protection type	<input checked="" type="checkbox"/> Rohs2.0 <input type="checkbox"/> HF <input type="checkbox"/> GP	

2.0 主要材料/ 零件规格 (Main Materials/parts Specification)

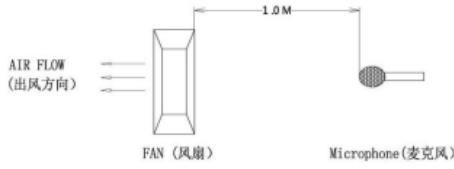
	材料/零件 Materials/parts	规格 Specification
2.1	外框 Frame	<input checked="" type="checkbox"/> PBT(BLACK)Plastic UL94-V0 <input type="checkbox"/> PC Plastic UL94-V2
2.2	扇叶 Impeller	<input checked="" type="checkbox"/> PBT(BLACK)Plastic UL94-V0 <input type="checkbox"/> PC Plastic UL94-V2
2.3	重量 Weight	7.74g

3.0 电性规格 (Electrical Specifically)

3.1	绝缘阻抗 Insulation Resistance	10MΩ/裸线与外框间测量, 500VDC/min 10MΩ/between unshackled wire and frame at 500VDC/min
3.2	防水等级 Waterproof level	IP XO

4.0 环境测试 (Environmental Specification)

4.1	运转温/湿度范围 (Operating Temp .Range)	温度/Temperature:-10°C ~ 70°C 湿度/Humidity:5% ~ 95%RH
4.2	保存温/湿度范围 (Storage Temperature)	温度/Temperature:-40°C ~ 70°C 湿度/Humidity:5% ~ 95%RH
4.3	耐湿性 (Humidity)	电气规格依据 MIL-STD 202F Method 103B 湿度: 65%RH 温度: 25±2°C
4.4	介电强度(Dielectric strength)	在外壳和引线之间施加交流 600V 两秒钟 Apply AC 600V for two seconds between housing and the leads wire(+)
4.5	绝缘强度(Insulation strength)	在直流 500v 下测量的 500 欧姆以上的内部定子和引线 More than 500M ohm internal stator and lead wire(+)-measured at DC 500v
4.6	冲击试验(Shock Test)	a.温度 Temperature:25℃ b.方向 Orientation X,Y,Z c. power:Non-operating d. Acceleration:50g max e. 脉冲 pulse:11MS half-sin wave f. 冲击次数 number of shocks:5 shocks for each direction
4.7	跌落测试(Drop test)	在最小包装条件下, 风扇能承受从 60cm 高度到 2cm 厚度的底板上每三个面上的一次 In minimum packaging condition ,fan withstands each one drop of three faces from 60cm distance height on to 2cm thickness of soleplate
4.8	旋转方向(Direction of rotation)	<input checked="" type="checkbox"/> 顺时针方向 Clockwise <input type="checkbox"/> 逆时针方向 counter-clockwise (从标签面看 Viewed from label side)

<p>4.9 包装耐振动试验 Packing Vibration Test</p>		<p>a.方向 Orientation X,Y,Z.(3 Axes) b.Overall Rms=3.2G c.频率 uency(Hz) SD(G2/HZ)</p> <table border="1"> <tr><td>10</td><td>0.04</td></tr> <tr><td>20</td><td>0.1</td></tr> <tr><td>40</td><td>0.1</td></tr> <tr><td>800</td><td>0.002</td></tr> <tr><td>1000</td><td>0.002</td></tr> </table> <p>d. 持续时间 Duration:2hours on each orientation</p>	10	0.04	20	0.1	40	0.1	800	0.002	1000	0.002
10	0.04											
20	0.1											
40	0.1											
800	0.002											
1000	0.002											
<p>4.10 包装耐冲击试验 Packing Shock Proof Test</p>		<p>据包后, 高 60cm, 1 棱角 3 边 6 面自然落下, 无严重损坏. 1corner,3edges, 6faces natural drop from 60cm high packing No serious damage</p>										
<p>4.11 风量/压测试 air performance</p>		<p>通过设备测量, 当风扇在额定电压转速稳定时记录数值 measured by equipment the values are recorded when the fan speed has stabilized at rated voltage</p> <p>a.在无暗室中测量 Measured in a semi-anechoic chamber b.背景噪音低于 18dB(A)with background noise level below 18dB(A) c.风扇在自由空气中运转, 麦克风距离风扇入口 1 米距离 The fan operates in free air, and the microphone is 1 meter away from the fan inlet</p>										
<p>4.12 噪音测试 Noise Test</p>		<p>d. 测试示意图</p>  <p>The diagram shows a fan labeled 'FAN (风扇)' with 'AIR FLOW (出风方向)' indicated by arrows. A microphone labeled 'Microphone (麦克风)' is positioned 1.0M away from the fan's inlet.</p>										

5.0 注意事项 (NOTES)

5.1 The above standard should be the specified value at normal temperature(25°C) and normal humidity (60~65%)unless otherwise noticed.

除特别注明外, 上述标准应为常温 (25°C)、常湿 (60~65%) 下的规定值。

5.2 Before use, make sure the supply voltage to meet the use of the product range,line-powered load exceeds the maximum power consumption of this product 120%. And the voltage is stable without clutter.

使用前, 确认供电电压能满足本产品的使用范围, 供电电路负载超过本产品的最大功耗的 120%且电压是稳定不含杂波干扰。

5.3 Please when ventilator circular telegram normal work do not use the hand to bump touches fan blade border.

请在风扇通电正常运转时不要用手碰触扇叶边沿。

5.4 Please do not touch the impeller and never carry the lead wires. The bearings and the lead wires may be damaged. Additionally, static electricity may damage the internal circuits of the fan.

请不要碰触扇叶和拉扯线材, 以免损坏轴承及导线。此外, 静电可能损坏内部的风扇组件。

5.5 Please do not use the fan in the environment of corrosive gas or liquid.

请不要将风扇置于腐蚀的气体和液体内。

5.6 Please do not store the fan in the environment of high humidity. Please avoid storage of the fan over 6 months.For long term storage, please connect power to the fan shortly every 6 months even through the fan is stored in room temperature.

请不要将风扇储存在高湿度的环境中,请尽量避免将风扇储存期超过 6 个月,如果要长期储存, 请将其在室温的环境下,且每隔 6 个月须上电源让风扇短时间运转。

5.7 It is important to check the polarity correctly before connecting the power source positive (+) and negative(-).Damge may caused to the fans if connected the reverse polarity ,and there is no foolproof method to protect against such error specifically mentioned in this spec.

在将 FANS 连接到电源正极和负极之前, 正确检查极性是非常重要的。如果连接极性相反, 如果没有万无一失的方法来防止本规范中特别提到的此类错误, 风扇可能会损坏。

5.8 Unless prior agreement, We reserve the right to use components with equivalent specifications from multiple sources, so material and construction are subject to change without advance notice.

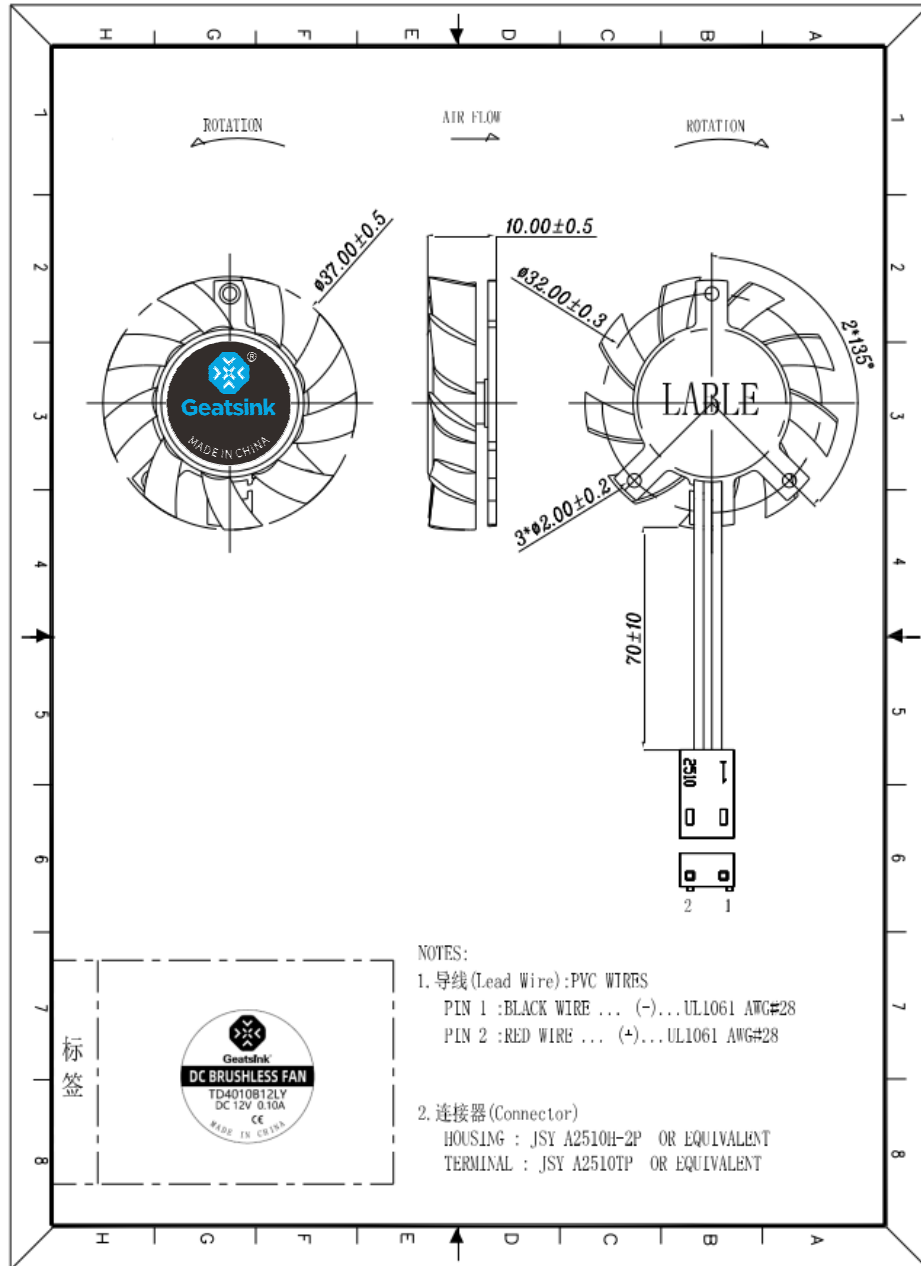
在保证产品性能及寿命不变, 或者得以提升的条件下。除非事先约定, 我司保留使用同等规格多种来源零件的权利, 原材料和结构的变更不做预先通知。

5.9 Specification change:

Any changes to the parameters specified in this document will be determined by mutual agreement on both parties.

规格变更:对本文件中规定的参数的任何更改将由双方的协议决定。

6.0 尺寸与结构 (Dimensions & Structure) : (单位: mm)



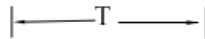
NOTES:

- 导线 (Lead Wire): PVC WIRES
PIN 1 : BLACK WIRE ... (-)...UL1061 AWG#28
PIN 2 : RED WIRE ... (+)...UL1061 AWG#28
- 连接器 (Connector)
HOUSING : JSY A2510H-2P OR EQUIVALENT
TERMINAL : JSY A2510TP OR EQUIVALENT

7.0 特征和定义(characteristics&definition)

7.1 4 Pole Motor:Fan with 4 pole motor

T1 T2 T3 T4



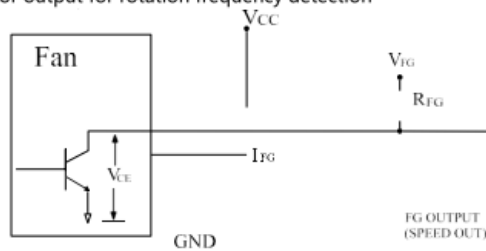
1 Rotation T

T T1·T2 T3 T4=1 Rotation

$$T_1=T_2=T_3=T_4=\frac{60}{4 \times \text{r.p.m}} \text{Sec}$$

7.2 FG(Frequency Generator) signal External Circuit:

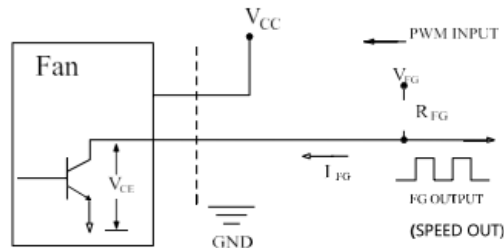
Open-collector output for rotation frequency detection



Note:Max.VFG=13.2v DC,Max.IFG=5mA $\rightarrow R_{FG} \geq V_{FG} / I_{FG}$

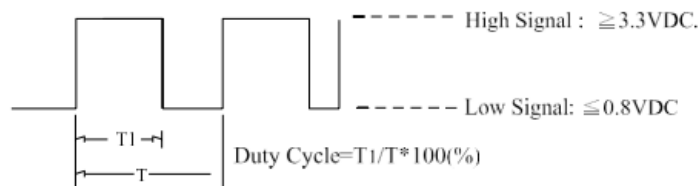
We Recommend $R_{FG}=10K\Omega$

7.3 PWM Circuit:(for reference)



7.4 PWM Control Signal Input:

Signal Voltage Range :DC 0V~5.5V (V=5V)



- The 25KHz operating frequency(customer preferred)has been tested and checked.
- At 100% duty cycle,The fan will operate at maximum speed.
- The fan will default to operate at maximum speed when the speed control input(PWM input)is left unconnected.

5. Certificate of Materials

5.01 Al6063 T5



广东润华铝业有限公司

地址：东莞市寮步镇华南工业园金富二路8号

DongGuan RunHua Aluminum Co., Ltd

CERTIFICATE OF QUALITY / 质量证明书

Ship to / 客户:		Order No. / 订单号码:	
Spec 规格(mm):		Product Model / 产品型号:	
Lot No. / 批号:		Material / 材质:	6063-T5
Quantity / 数量	1PCS	Product Standard / 产品标准:	客户要求

1. Chemical composition / 化学成分 %:

元素 Elemental	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Others	Others	Al
									Each	Total	
测量 Measureme	0.39	0.14	0.05	0.013	0.59	0.0015	0.03	0.027	< 0.05	< 0.15	98.75
要求 Requiremen	0.20-0.60	≤0.35	≤0.1	≤0.1	0.45-0.90	≤0.1	≤0.1	≤0.1	< 0.05	< 0.15	> 98

2. Mechanical property / 力学性能:

Item / 项目	Tensile strength / 抗拉强度 (MPa)	Yield Strength / 屈服强度 (MPa)	Elongation / 断后伸长率 (%)	Hardness / 布氏硬度HBW
测量 Measurement	241	220	13%	68HBA
要求 Requirement	≥175	≥130	6%	66-70HBA

3. 其他项目 Other items

显微组织/Microstructures	低倍组织/Macrostructure	几何尺寸 / Dimensin	外观 / Surface
/	合格	合格	合格

Checked by / 测量: 杨健

Approved by / 验证: 刘秀容

Company stamp / 公司印章

Date / 日期: 2021-7

Date / 日期: 2021-7

Signature / 签名: 杨健

Signature / 签名: 刘秀容



东莞市润华铝业有限公司是一家集铝合金材料工艺设计研发、铝合金加工设备研发、铝合金管棒型材生产、铝合金产品深加工、铝合金产品表面处理及销售为一体的高科技民营企业。公司下辖模具厂、熔铸厂、挤压车间、冷加工车间、热处理车间、机械加工车间、铝合金表面处理车间、高合金事业部（广东润华铝业有限公司）。

5.02 TIF600



專業導熱材料生產廠
Professional TIM Manufacturer
<http://www.ziitek.com>

TIF™ 600系列热导热硅胶垫



TIF™600 系列热传导界面材料是填充发热器件和散热片或金属底座二者之间的空气间隙。它们的柔性、弹性特征使其能够用于覆盖非常不平整的表面。

其优异的效能使热量从发热器件或整个PCB传导到金属外壳或扩散板上，从而能提高发热电子组件的效率和使用寿命。

特性

- › 良好的热传导率: **4.7 W/mK**
- › 带自粘而无需额外表面粘合剂
- › 高可压缩性,柔软兼有弹性,适合于在低压力应用环境
- › 可提供多种厚度选择

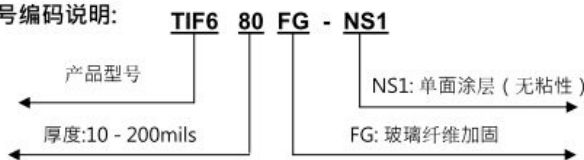
应用

- › 散热器底部或框架
- › 机顶盒
- › 电源与车用蓄电池
- › 充电桩
- › LED电视 LED灯具
- › RDRAM内存模块
- › 微型热管散热器

TIF600 系列特性表

颜色	藍紫色	Visual	击穿电压(T= 1mm 以上)	>5000 VAC	ASTM D149
结构&成份	陶瓷填充硅橡胶	*****	介电常数	7.5 MHz	ASTM D150
导热率	4.7 W/mK	ASTM D5470	体积电阻率	8.0X10 ¹³ Ohm-meter	ASTM D257
硬度	45 Shore 00	ASTM 2240	使用温度范围	-40 To 160 °C	*****
比重	2.88 g/cc	ASTM D297	总质量损失 (TML)	0.35%	ASTM E595
厚度范围	0.010"-0.200" (0.25mm-5.0mm)	ASTM D374	防火等级	94 V0	UL E331100

产品型号编码说明:

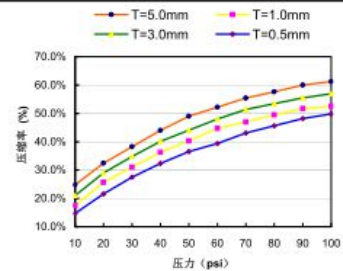


标准厚度:

0.010-inch to 0.200-inch (0.25mm to 5.0mm)

选项:

特殊NS1处理后可以产品单面无粘性



如果您想了解更多导热材料的产品信息，请访问我司官网：<http://www.ziitek.com>

导热灌封胶 | 相变化材料 | 导热矽胶布 | 导热膏 | 导热双面胶 | 导热硅胶片 | 陶瓷散热片 | 石墨片 | 导热塑料

加拿大: Tel: +001-604-2998559 E-mail: sales@thermazig.com	台湾: Tel: +886-2-22771007 Fax: +886-2-22771075 E-mail: jerry@ziitek.com.tw	东莞: Tel: +86-769-38801208 Fax: +86-769-83791290 E-mail: angus@ziitek.com	昆山: Tel: +86-512-57816297 Fax: +86-512-57816327 E-mail: kelvin@ziitek.com	成都: Tel: +86-28-62379168 Fax: +86-28-62379168 E-mail: david_cd@ziitek.com
--------------------------------------------------------------	------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------	------------------------------------------------------------------------------------	------------------------------------------------------------------------------------

以上资料与说明相信是可靠的但不作为法律的解释或保证,用户须进行充分的测试与确认上述讯息适合用户所提出任何特殊的产品与应用。

Rev#:01

5.03. SUS304

Kiswire
HONGDUK INDUSTRIAL CO., LTD
 FACTORY:#1855, JANGHUNG-DONG, NAM-GU, POHANG-CITY, KYOUNGBUK, (790-240), KOREA
 TEL.:+82-54-271-3600 FAX:+82-54-271-3699

TEST CERTIFICATE 시험성적서

Date of Shipment : 2017 - 07 - 12
 선적/출하일차
 Date of Issue : 2017 - 07 - 07
 발행일차

Customer 고객	EMPEROR RESOURCES INT LTD	Wire Dimension & Grade(線徑, 標別)	1.3 mm SWP-B	Commodity 제품	Piano Wires	Specification 規格규격	JIS G 3522
Customer's PO No. 수주번호	102400	Hongduk Industrial's Lot No / EX No. 지시번호	HS-7025/45	L/C No.(T/T No./D/A No)	DC MGRK13683	Total Coils 수량	17
						C	Total Net weight 총중량
							1.721 kgs

Heat No : SF80315

A. Chemical Composition(%)

		Chemical Composition(%)											
		C	Si	Mn	P	S	Cu	Cr	V	Al	O2	Ti	Ni
Specification	Min	0.80	0.12	0.30	0.025	0.025	0.20						
	Max	0.85	0.32	0.60	0.025	0.025	0.20						
Actual		0.819	0.193	0.502	0.018	0.003	0.023						

B. Mechanical Properties

Item	Diameter 선경	1.3 mm		Tensile Strength 인장강도 (N/mm ²)	Torsion Value 비틀림강도 (Turns)	Torsion State 비틀림상태	Wrap 관기시험 (4x3)	Bend 굽힘시험 (90°)	Coiling 코일링시험	Reduction of Area 단면감소율 (%)	Decarbur- ization 탈탄	Defects 불량이 (mm)	Appearance 외관	Hardness 경도	Coil weight 중량 (kgs)	Remark 비고
		Overly 편경차	Min 최소													
Spec.	Min	1.285	0.006	2,160	25	Good					Good	0.020	Good			
	Max	1.315	0.015	2,350												
Coil No																
36		1.296	0.006	2,316	40	Pass					Pass	0.008	Pass	100		
37		1.296	0.006	2,316	40	Pass					Pass	0.008	Pass	100		
38		1.296	0.006	2,316	40	Pass					Pass	0.008	Pass	100		
39		1.296	0.006	2,316	40	Pass					Pass	0.008	Pass	100		
40		1.296	0.006	2,316	40	Pass					Pass	0.008	Pass	100		
41		1.296	0.006	2,316	40	Pass					Pass	0.008	Pass	100		


CK.KANG

KANG, CHANG-KI
 Quality Control Team Manager

Continue

APPROVAL SHEET

5.04. AISI1018


中國鋼鐵
 CHINA STEEL

品質證明書
 TEST CERTIFICATE


CHINA STEEL, LUFRUKA/RUN
 1 Chung Kang Road, Hsiao Kang, Kaohsiung 8123
 Taiwan
 Tel: 886 (7) 802 1111 Fax: 886 (7) 802 2511

客戶名稱 SOLD TO	友聯金屬工業 (昆山) 有限公司		江蘇省昆山市運東鎮大通路 168 號 TEL: 0512-57811688 FAX: 0512-57619768						
規格名稱 SPEC	SAE 1018, ALKILLED (HCMQ2)		B0006-01 COMPANY REGISTRATION NUMBER: 30414175 0104						
檢驗	CSC MILL INSPECTION		T/C 01 - 01						
項目 ITEM	產品序號 SEQ. NO.	直徑/厚 DIAM/THICK	寬度 WIDTH	長度 LENGTH	數量 QTY	重量 WEIGHT	爐號 HEAT NO.	化學成分 CHEMICAL ANALYSIS %	備註 REMARKS
001	DY986201	8.35	TOTAL:	COIL	86129, 858K	86129, 858	237	C Mn P S Si Cu Ni Cr Mo Al 2 2 3 3 2 2 3 3 Y10 Y10 Y10 Y10 Y10 Y10 Y10 Y10 20 77 19 8 6 39	

註釋
NOTES

SUPERIOR TO

茲證明本表所列產品，均依材料規格製造及試驗，並符合規格之要求。
 WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HEREIN HAS BEEN MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENT OF THE ABOVE MATERIAL SPECIFICATION


 冶金技術處 盧慶表
 GENERAL MANAGER METALLURGICAL DEPARTMENT

5.05. PA66



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

Page 1

"ZYTEL" NYLON RESIN ON SYNONYM LIST ZYT022
ZYT022 Revised 4-OCT-2005

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"ZYTEL" is a registered trademark of DuPont.

Tradenames and Synonyms

"ZYTEL" AFE1000 NC010,
"ZYTEL" AFE1001 NC010,
"ZYTEL" AFE1002 NC010,
"ZYTEL" AFE1002I NC010,
"ZYTEL" AFE1003 NC010,
"ZYTEL" AFE1003I NC010,
"ZYTEL" AFE1111 NC010,
"ZYTEL" CFE1111 NC010.
"ZYTEL" E50 NC010, E51HSB NC010, E51HSB NC010J,
"ZYTEL" E53 NC010, E55 NC010,
"ZYTEL" E101L NC010,
"ZYTEL" E103HSL NC010,
"ZYTEL" EFE1032 NC010E,
"ZYTEL" EFE1068 NC010, EFE1068 NC010T,
"ZYTEL" EFE1117 NC010,
"ZYTEL" EFE1150 NC010, EFE1151 NC010,
"ZYTEL" FE1111 NC010,
"ZYTEL" FE210021 NC010,
"ZYTEL" FE3370 NC010, FE3399 BKB160,
"ZYTEL" FE3415 NC010, FE3421 NC010,
"ZYTEL" FE3491C NC010,
"ZYTEL" FE3606 NC010, FE3653 NC010,
"ZYTEL" FE3677 NC010, FE3684 NC010,
"ZYTEL" FE3701 NC010A, FE3704 NC010, FE3705 NC010,
"ZYTEL" FE3747 NC010, FE3748 NC010, FE3749 NC010,
"ZYTEL" FE3754 NC010, FE3755 NC010, FE3756 NC010,
"ZYTEL" FE3797 NC010, FE3807 NC010,
"ZYTEL" FE3826 BKB160, FE3827 NC010, FE3832 NC010,
"ZYTEL" FE310036 NC010, #
"ZYTEL" FE310043 NC010, FE310045 NC010
"ZYTEL" FE310050 NC010, FE310052F NC010
"ZYTEL" FE310063 NC010,
"ZYTEL" VLM NC010,
"ZYTEL" 10ABG NC010, 10ABGD NC010, 10ANG NC010,
"ZYTEL" 101 NC010,
"ZYTEL" 101F NC010, 101F NC010N, 101F NC999,
"ZYTEL" 101L NC010,

ZYT022

DuPont
Material Safety Data Sheet

Page 2

(CHEMICAL PRODUCT/COMPANY IDENTIFICATION - Continued)

"ZYTEL" 103FHS NC010, 103HS NC010, 103HSL NC010,
"ZYTEL" 113 NC010,
"ZYTEL" 122L NC010,
"ZYTEL" 132F NC010.
"ZYTEL" 135F NC010,
"ZYTEL" 148 NC010,
"ZYTEL" 42A NC010,
"ZYTEL" 42HSX NC010,
"ZYTEL" 45HSB NC010,

Company Identification

MANUFACTURER/DISTRIBUTOR

DuPont Engineering Polymers
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
POLYHEXAMETHYLENE ADIPAMIDE (NYLON 66)	32131-17-2	>98
LUBRICANTS & STABILIZERS		<2

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read the datasheet for this product or the molding guide for this resin family.

POLYHEXAMETHYLENE ADIPAMIDE

ZYT022

DuPont
Material Safety Data Sheet

Page 3

(HAZARDS IDENTIFICATION - Continued)

In general, skin irritation has not been produced in human patch tests with Nylon 66. However, a small percentage of subjects may respond to prolonged contact with redness of skin. Significant skin permeation, and systemic toxicity, after contact appears unlikely. There are no reports of human sensitization.

If particles of Nylon 66 contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

INHALATION

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

Fire and Explosion Hazards:

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

ZYT022

DuPont
Material Safety Data Sheet

Page 4

(FIRE FIGHTING MEASURES - Continued)

Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice.

Hazardous gases/vapors produced in fire are ammonia, carbon monoxide, traces of hydrogen cyanide, aldehydes.

Extinguishing Media

Water, Foam, Dry Chemical, CO₂.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

Storage

Store in a cool, dry place. Keep containers tightly closed to prevent moisture absorption and contamination.

ZYT022

DuPont
Material Safety Data Sheet

Page 5

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

A NIOSH/MSHA approved air-purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

ZYT022 DuPont Page 6
Material Safety Data Sheet

Exposure Limits

"ZYTEL" NYLON RESIN ON SYNONYM LIST ZYT022

PEL (OSHA) : Particulates (Not Otherwise Regulated)
15 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

POLYHEXAMETHYLENE ADIPAMIDE (NYLON 66)

PEL (OSHA) : None Established
TLV (ACGIH) : None Established
AEL * (DuPont) : 10 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

----- PHYSICAL AND CHEMICAL PROPERTIES -----

Physical Data

Melting Point : >200 C (>392 F)
Solubility in Water : Insoluble
Odor : None
Form : Pellets
Specific Gravity : >1.0

----- STABILITY AND REACTIVITY -----

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Temperatures above 340 C (644 F) .

Incompatibility with Other Materials

Incompatible or can react with strong acids, oxidizing agents.

Decomposition

Hazardous gases or vapors can be released, including ammonia, carbon monoxide, cyclopentanone, hydrogen cyanide, nitrogen oxides.

Polymerization

Polymerization will not occur.

ZYT022

DuPont
Material Safety Data Sheet

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TOXICOLOGICAL INFORMATION

Animal Data

Nylon 66

Oral LD50, rat: > 10,000 mg/kg

Nylon 66 is not a skin irritant in tests with animals.

Single exposure by ingestion to high doses caused decreased body weight. Long-term exposure caused no significant toxicological effects.

Repeated inhalation exposure caused histopathological changes of the lungs, and kidneys.

In animal testing Nylon 66 has not caused carcinogenicity. No animal data are available to define developmental, reproductive or mutagenic hazards.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

ZYT022

DuPont
Material Safety Data Sheet

Page 8

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory
requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW LAWS

No substances on the state hazardous substances list, for the
states indicated below, are used in the manufacture of products on
this Material Safety Data Sheet.SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT
AT A CONCENTRATION OF 1% OR MORE (0.01% FOR SPECIAL HAZARDOUS
SUBSTANCES): None known.WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE
CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None known.SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST
PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES
IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS): None known.-----
OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications
involving permanent implantation in the human body. For other
medical applications see DuPont CAUTION Bulletin No. H-50102.-----
The data in this Material Safety Data Sheet relates only to the
specific material designated herein and does not relate to use in
combination with any other material or in any process.Responsibility for MSDS : REGULATORY AFFAIRS
DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be
reliable. It is subject to revision as additional knowledge and
experience is gained.

End of MSDS