

20
YEARS
ANNIVERSARY

PRODUCT BROCHURE

More Innovation
Less Heat

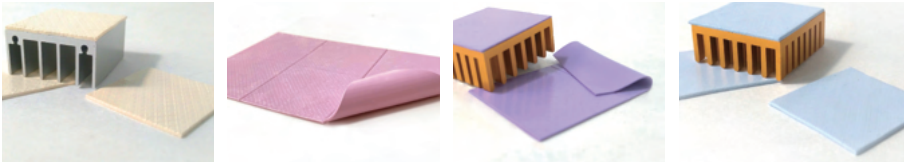
- 導熱介面材料
Thermal Interface Materials
- 散熱片
Heat Sink
- 熱導管
Heat Pipe
- 均溫板
Vapor Chamber
- 致冷晶片
TEC
- 電磁波吸收材料
FAM
- 風扇
Fan
- 熱模擬分析服務
Thermal Simulation



TG-A series 導熱矽膠片

Ultra Soft Thermal Pad

高導熱特性，超軟特性和壓縮性好，絕緣性佳，具自黏性
High thermal conductivity. High compressibility and compliancy.
Electrical insulation. Natural tack.



Properties	Unit	TG-A2200	TG-A3500	TG-A4500	TG-A6200	TG-A9000	TG-A1250	TG-A1450	TG-A1660	TG-A1780	TG-AH25	Test Method
Thermal Conductivity	W/mK	2.2	3.5	4.5	6.2	9.0	12.5	14.5	16.6	17.8	25	ASTM D5470
Thickness	mm	0.5~2.0	0.5~8.0	0.5~8.0	0.5~8.0	0.5~8.0	0.5~8.0	0.5~2.0	0.5~2.0	0.5~2.0	0.8~2.0	ASTM D374
Color	-	Gray	Yellow	Purple	Blue	Pink	Green	Pink	Dark Gray	Light Gray	Dark Gray	Colorimeter
Flame Rating	-	V-1	V-0	V-0	V-0	V-0	V-0	V-0	V-0	V-0	V-0	UL94
Dielectric Breakdown Voltage	KV/mm	≥13	≥13	≥10	≥10	≥8	≥10	≥8	≥7	≥8	≥1	ASTM D149
Weight Loss	%	< 1										ASTM E595
Density	g/cm³	2.7	2.3	3.1	3.1	3.2	3.3	3.6	3.6	3.5	3.3	ASTM D792
Operating Temperature	°C	-40~+180	-50~+180									-
Volume Resistivity	Ohm-m	3x10 ¹²	8x10 ¹²	1x10 ¹³	1x10 ¹³	1x10 ¹²	1x10 ¹³	7x10 ¹²	5x10 ¹²	6x10 ¹²	1×10 ⁸	ASTM D257
Elongation	%	55	80	50	50	40	40	30	20	20	10 (J5V-H1000)	ASTM D412
Standard Format	-	Sheet										-
Hardness (Silicone Side)	Shore OO	15	35	50	50	50	55	55	65	70	85	ASTM D2240

TG-A 玻纖系列導熱矽膠片

Fiberglass Mesh Series Thermal Pad

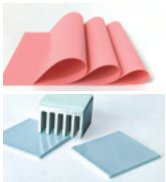
良好的導熱特性，表面附著玻纖，不易變形，絕緣耐電壓高
Very good thermal conductivity. Fiberglass on one side.
Non deforming. Electrical insulation.



超薄高性能導熱矽膠片

Ultra Thin Thermal Pad

光滑的表面，可適用於恆溫輻射範圍之內，電氣隔離與高耐電壓
Smooth surface. Usable over a wide temperature range.
Electrical insulation and high breakdown voltage.



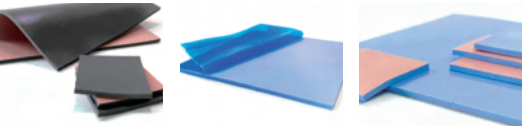
Properties	Unit	TG-A3500F	TG-A4500F	TG-A6200F	Test Method
Thermal Conductivity	W/mK	3	4	5	ASTM D5470
Thickness	mm	0.5~8.0			ASTM D374
Color	-	Yellow	Purple	Blue	Colorimeter
Reinforcement Carrier	-	Fiberglass Mesh			-
Flame Rating	-	V-0			UL94
Dielectric Breakdown Voltage	KV/mm	≥18	≥11	≥12	ASTM D149
Weight Loss	%	<1			ASTM E595
Density	g/cm³	2.3	3.1	3.1	ASTM D792
Operating Temperature	°C	-50~+180			-
Volume Resistivity	Ohm-m	8x10 ¹²	1x10 ¹³	1x10 ¹³	ASTM D257
Elongation	%	80	50	50	ASTM D412
Standard Format	-	Sheet			-
Hardness (Silicone Side)	Shore OO	35	50	50	ASTM2240

Properties	Unit	GT10D	TG-ALC	TG-A6200LC	TG-A1250LC	Test Method
Thermal Conductivity	W/mK	1.5	4.2	5	10	ASTM D5470
Thickness	mm	0.25	0.2/0.3	0.5~2.5	1.0~4.0	ASTM D374
Color	-	Pink	Green	Pad-Blue LC-Green	Pad-Green LC-Green	Colorimeter
Reinforcement Carrier	-	Fiberglass mesh	-	-	-	-
Flame Rating	-	-	V-0			UL94
Dielectric Breakdown Voltage	KV	≥6	≥4	≥6	≥6	ASTM D149
Weight Loss	%	<0.2	<1			ASTM E595
Density	g/cm³	2	2.9	3	3.3	ASTM D792
Operating Temperature	°C	-45~+180	-50~+180			-
Volume Resistivity	Ohm-m	>10 ¹²	1X10 ¹²	1X10 ¹⁰		ASTM D257
Elongation	%	50	10	50	40	ASTM D412
Tensile Strength	kgf/cm²	150	-	-	-	ASTM D412
Standard Format	-	Sheet				-
Hardness (Silicone Side)	Shore	A 75	A 60	OO 50	OO 60	ASTM D2240

TG-AK series 高性能導熱矽膠片

High Performance Thermal Pad

導熱良好，不易變形，施工性佳
Great thermal conductivity.
Difficult to be deformed.
Easy to assemble.



Properties	Unit	TG-20KX	TG-A38KX	TG-A20KF	TG-A38KF	Test Method
Thermal Conductivity	W/mK	2	3.8	1.8	3.3	ASTM D5470
Thickness	mm	0.3~10.0		0.5~10.0		ASTM D374
Color	-	Dark Gray	Blue	Dark Gray	Blue	Colorimeter
Reinforcement Carrier	-	-		Fiberglass Mesh		-
Flame Rating	-	V-0				UL94
Dielectric Breakdown Voltage	KV/mm	≥12	≥10	≥13	≥10	ASTM D149
Weight Loss	%	<1				ASTM E595
Density	g/cm³	2	3.1	2.1	3.1	ASTM D792
Operating Temperature	°C	-40~+180	-40~+200	-40~+180	-40~+200	-
Volume Resistivity	Ohm-m	3x10 ¹²				ASTM D257
Elongation (Silicone side)	%	160	110	160	110	ASTM D412
Standard Format	-	Sheet				-
Hardness (Silicone Side)	ShoreOO	55	60	55	60	ASTM2240

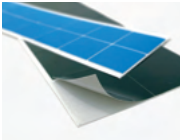
- ※ The thickness is less than 1.0mm, considering that it's too soft to pick up from the bottom paper, therefore, adjusting the hardness to 50~75 for production line.
- ※ Different tolerances according to the selected thickness.
- ※ Diecut for different shapes.

TG-T1000 Series 導熱膠帶

Thermal Tape

良好的黏著性，高可靠度，C/P值高，加工容易，依需求客製化

Good adhesion(Acrylic PSA). Great reliability. Cost effective with great performance. Easy to assemble. Customization services for different industries.



Properties	Unit	TG-T1000		TG-T1000T	Test Method
Thermal Conductivity	W/mK	1	1	1.3	ASTM D5470
Thickness	mm	0.15	0.25	0.11	ASTM D374
Color	-	White		Gray	Visual
Reinforcement Carrier	-	Fiberglass Mesh		PET	-
Continuous Operating Temperature	°C	-30~+120		-40~+120	-
Short Time Use Temperature (30sec)	°C	180		200	-
Density	g/cm³	1.2		1.5	ASTM D792
Initial Tack	cm	19	11	24	PSTC-6
Holding Power 1000g @25° Cusing 1in²	min	>3000		>1000	PSTC-7
180° Peeling Strength (aluminum)	N/25mm	>14	>16	≥7	PSTC-101
Dielectric Breakdown Voltage (AC)	KV	≥3	≥6	≥4	ASTM D149
Thermal Impedance @10psi	°C-in²/W	0.93	1.26	0.68	ASTM D5470
Thermal Impedance @30psi	°C-in²/W	0.76	1.06	0.66	ASTM D5470
Thermal Impedance @50psi	°C-in²/W	0.61	1.05	0.65	ASTM D5470

導熱膠泥

Thermal Putty

超低熱阻，可任意塑型與下壓

Low thermal resistance. Shapeable and compressible.



Properties	Unit	TG4040 PUTTY	TG6060 PUTTY	TG-A7000 PUTTY	Test Method
Thermal Conductivity	W/mK	3.2	6.3	7.0	ASTM D5470
Color	-	Blue		Green	Visual
Viscosity	Pa·s	@0.5rpm 3000	@0.5rpm 2,500~3,000	@1rpm/5mins 180~270	Brookfield
Density	g/cm³	3	3.3	3.5	ASTM D792
Volume Resistivity	Ohm-m	10 ¹³			ASTM D257
Operating Temperature	°C	-50~+180			-
Standard Package	-	Tube/Pot			-

導熱封膠

Potting Compound

高穩定性，加熱熟化

High stability. Heat curing.



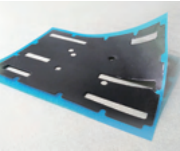
Properties	Unit	TG-A09AB	Test Method
Thermal Conductivity	W/mK	2.8	ASTM D5470
Color	-	Gray(Mix)	Visual
Dielectric Breakdown Voltage	KV/mm	≥11	ASTM D149
Volume Resistivity	Ohm-m	≥10 ¹²	ASTM D257
Density	g/cm³	2.52	ASTM D792
Operating Temperature	°C	-50~+150	-
Tensile Strength @3.0mm	kgf/cm²	230	ASTM D412
Elongation	%	55	ASTM D412
Viscoity @1RPM/5mins	Pa·s	100~250	Brookfield
Weight Loss	%	< 1	ASTM E595
Curing Time @25° C	Hrs	6	-
Curing Time @80° C	Hrs	0.08	-
Standard Package	-	Pot	-
Hardness	Shore OO	90	-
Mixing Ratio	gram	1:1	-

T68 人造石墨

Artificial Graphite Sheet

優秀的橫向傳導性，重量輕

High thermal conductivity. Low mass.



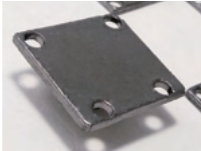
Properties	Unit	T68	Test Method
Thermal Conductivity (XY axis)	W/mK	1500	AC Calorimeter
Thermal Conductivity (Z axis)	W/mK	5	Laser Flash
Thickness	µm	25	Micrometer
Color	-	Black	Visual
Flame Rating	-	V-0	UL94
Thermal Diffusivity	cm²/s	8.5	AC Calorimeter
Density	g/cm³	2.1	Archimedes Law
Electrical Conductivity	S/cm	>13000	JIS K7194
Bending Test	times	10000	-
Operating Temperature	%	-40~+400	AC Calorimeter
Heat Capacity (SHC)	J/g-K	0.895	-

T62 天然石墨

Natural Graphite Sheet

體積輕薄減低安裝空間，降低電磁干擾

Low mass decreases space, EMI reduction



Properties	Unit	T62	T62-1	T62-2	Test Method
Thermal Conductivity (XY axis)	W/mK	400			AC Calorimeter
Thermal Conductivity (Z axis)	W/mK	20	15	5	Laser Flash
Thickness	mm	0.13	0.16	0.2	Micrometer
Color	-	Black			Visual
Structure	-	Graphite	Graphite +Adhesive	PET+Graphite +Adhesive	-
Density	g/cm³	1.5	1.5~1.8		ASTM D792
Graphite Contained	%	>98			-
Operating Temperature	°C	-30~+100			-

導熱膏

Thermal Grease

流平性佳，不溢流，有效填補表面不平整處

Good leveling agent. No overflow. Effectively fill the gap of the interface.

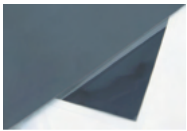


Properties	Unit	TG-AS808 / TG-S808	TG-N909	TG-AS606B / S606B	TG-AS606C / S606C	Test Method
Thermal Conductivity	W/mK	8	9	1.9	5.3	ASTM D5470
Color	-	Gray	Gray	White	Gray	Visual
Oil Dispersible	wt%	< 0.1	< 0.1	< 0.2	< 0.05	24hrs@150°C
Weight Loss	wt%	< 0.1	< 0.1	< 0.5	< 0.5	ASTM E595
Density	g/cm³	3.2	2.8	2.3	2.3	ASTM D792
Operating Temperature	°C	-40~+200		-40~+180		-
Viscosity	Pa·s	-	-	30	125	ASTM D2196
Volume Resistivity	Ohm-m	> 10 ¹³		> 10 ¹¹	> 10 ¹²	ASTM D257
Standard Package	-	Pot		Tube/Pot		-

TG-P100 series 石墨烯均溫片
Graphene

超薄，適用不通風環境，無剝離及掉粉問題
Ultra thin, Available for unventilated design,
No dusting issue

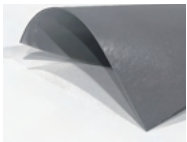
Table with 5 columns: Properties, Unit, TG-P10050, TG-P10090, Test Method. Rows include Thermal Conductivity (XY axis), Thermal Conductivity (Z axis), Total Thickness, Copper Foil Thickness, Coating Thickness, Vertical Resistivity, Parallel Resistivity, Cross-Cut Tape Test, Pencil Hardness Test, Solvent Resistance (Alcohol), Rubber Abrasive Test, High Temperature & Humidity Test, Thermal Shock Test, and Temperature Range of Utility.



TG-V series 相變化材料
Phase Change Material

藉由材料熱溶後良好的流動性，完整填充表面
With the good flow ability over phase change temperature,
surface irregularities can be well filled.

Table with 5 columns: Properties, Unit, TG-V833, TG-V838, Test Method. Rows include Thermal Conductivity, Thickness, Color, Phase Transition Temperature, Breakdown Voltage (AC), Density, Operating Temperature, Volume Resistivity, Thermal Impedance @10psi, Thermal Impedance @30psi, Thermal Impedance @50psi, and Dielectric Constant @1KHz.



TG-FAM series 電磁波吸收材料
Flexible Absorbent Material

有效抑制電磁波干擾
Provide effective EMI suppression in a wide frequency range.

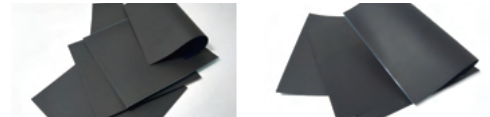


Table with 6 columns: Properties, Unit, TG-FAM1, TG-FAM3, TG-FAM6, TG-FAM7. Rows include Frequency, Thickness, Maximum Size, Material, Magnetic Inductivity, Halogen, Operating Temperature, Density, and Surface Resistivity.

CP series 導熱絕緣帽套
Thermal Insulation Rubber Cap

低熱阻抗，高絕緣性，簡易安裝組件
Low thermal contact resistance. Electrically isolating. Easy to assemble.

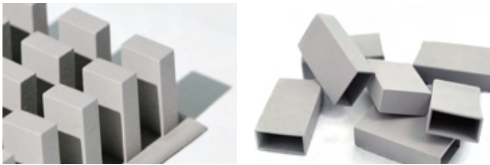


Table with 4 columns: Properties, Unit, CP22/CP23/CP33, Test Method. Rows include Thermal Conductivity, Thickness, Color, Operating Temperature, Density, Dielectric Breakdown Voltage (AC), Dielectric Breakdown Voltage (DC), Dielectric Constant, Thermal Impedance @10psi, Thermal Impedance @20psi, Thermal Impedance @50psi, and Hardness.

3種線上試算器
快速評估導熱散熱材料

煩瑣用甚麼導熱介面材料? 我的設計可以解多少熱? 機構散熱測試一直卡關?

幫助您省去多次測試的時間 找到更多可能的散熱解決方案

簡單三步驟: 1. 輸入散熱機構數據 2. 獲取建議購買材料 3. 改善設計節省成本

封閉系統, 開放系統, 熱導管

新上架!

立即測試

XL-25 陶瓷散熱片

Ceramic Heat Spreader



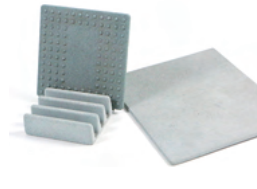
開放性多孔結構增加空氣接觸面積

Open-porous structure increases air contact area.

Properties	Unit	XL-25	Test Method
Thermal Conductivity	W/mK	10	-
Color	-	Gray/Green	Visual
Dielectric Breakdown Voltage	KV/mm	≥0.5	ASTM D149
Bulk Density	g/cm³	1.89	CNS 619
Flexural Strength	kgf/cm²	47.5	CNS 12701
Porosity	%	25	CNS 619
Water Absorption	%	16	CNS 619
Operating Temperature	°C	<500	-
Linear Thermal Expansion Coefficient	10 ⁻⁶	4.13	RT-300°C
Main Composition	-	SiC/Al ₂ O ₃ /SiO ₂	-
Hardness	Moh's	5-6	DIN En101-1992

XL-25 series 陶瓷散熱片

Ceramic Heat Spreader



冷熱衝擊性佳，可適應環境劇烈變動，無毒，耐高溫

High reliability. Non toxic. High temperature resistance.

Properties	Unit	XL-25W	XL-25D	Test Method
Thermal Conductivity	W/mK	25	190~210	-
Color	-	White	Dark Gray	Visual
Dielectric Breakdown Voltage	KV/mm	≥15	≥18.45	ASTM D149
Bulk Density	g/cm³	≥3.8	3.32	CNS 619
Volume Resistivity	Ohm-m	10 ¹²	1.4x10 ¹³	-
Flexural Strength	kgf/cm²	4078.8	3416	CNS 12701
Linear Thermal Expansion Coefficient	10 ⁻⁶	6.6~8	2.805	RT~300°C
Main Composition	-	Al ₂ O ₃	AlN	-

均溫板
Vapor Chamber



二維面傳導，被動元件，高穩定性，較熱管高十倍性能

Horizontally conduction. Passive components. High stability.

Efficiency higher than heat pipe 10 times.

Properties	Unit	XVC-A001	XVC-A002	Tolerance
Size	mm	90x60	80x80	±0.3
Thickness	mm	0.4		±0.05
Thermal Resistance	°C/W	<0.02		-
Material	-	Copper Alloy		-
Surface Finishing	-	Anti-oxidation		-
Extra Components	-	-		-
Operation Power (Q _{max})	W	10		-

熱導管 Heat Pipe

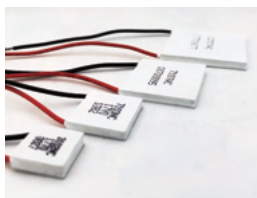


快速均溫性，被動元件，重量輕

Fast heat-balancing.

Passive components. Light-weighted.

TEC 致冷晶片



體積小、輕量化，無動件、低噪音，精確控溫，適用於極端環境

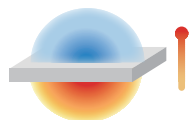
Small bulk. Light weight. Vibration-free. Noise-free.

Precise temperature control. High strength for rugged environments.

Diameter(mm)	Thickness(mm)	Width(mm)
Ø4	2	5.65
	2.5	5.55
	3	5.45
Ø5	2	6.91
	2.5	6.59
	3	6.32
	3.5	6.01
	4	5.68
Ø6	2	8.50
	2.5	8.18
	3	7.95
	3.5	7.65
	4	7.39
Ø8	2	11.65
	2.5	11.39
	3	11.15
	3.5	10.83
	4	10.60
	4.5	10.27
	5	10.01
6	9.36	
• Thickness tolerance: +0.05/-0.10mm • Width tolerance: +0.15/-0.20mm		

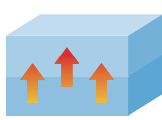
Size(mm)	Height(mm)	I _{max} (A)	V _{max} (V)	Watt(W)	@27° Q _{max} (W)	@50° Q _{max} (W)	R(Ω)
15×15	3.1	6.0	3.8	22.8	13	14.3	0.45Ω±10%
	3.4	8.5	2.1	17.9	10.3	11.3	0.20Ω±10%
	3.6	3.9	3.8	14.8	8.6	9.5	0.85Ω±10%
	3.8	3.0	3.8	11.4	7.3	8.0	1.00Ω±10%
	3.9	6.0	2.1	12.6	7.4	8.2	0.30Ω±10%
	4.7	2.0	3.8	7.6	4.4	5.0	1.65Ω±10%
20×20	3.1	6.0	8.8	52.8	29.7	32.7	1.05Ω±10%
	3.4	8.5	3.8	32.3	18.8	20.8	0.35Ω±10%
	3.6	3.9	8.8	34.3	18.7	20.9	1.95Ω±10%
	3.8	3.0	8.8	26.4	16.6	18	2.20Ω±10%
	3.9	6.0	3.8	22.8	13.6	14.9	0.55Ω±10%
	4.7	2.0	8.8	17.6	10.2	11.2	3.70Ω±10%
30×30	3.15	6.0	15.7	94.2	53.1	59.1	1.90Ω±10%
	3.45	8.5	8.8	74.8	43.1	48	0.85Ω±10%
	3.65	3.9	15.7	61.2	35.2	39	3.50Ω±10%
	3.85	3.0	15.7	47.1	29.8	32.5	4.00Ω±10%
	3.95	6.0	8.8	52.8	31.1	34.2	1.25Ω±10%
	3.95	6.0	11.8	70.8	48	52.8	1.65Ω±10%
	4.75	2.0	15.7	31.4	18.2	19.5	6.70Ω±10%
40×40	3.45	8.5	15.7	133.5	77.1	85	1.50Ω±10%
	3.95	6.0	15.7	94.2	55.6	61	2.20Ω±10%
• The above are our standard sizes. For other special sizes, please contact our product consultants.							

你最適合什麼高柏熱工程產品呢？



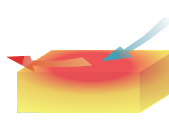
控制溫度

精確的控制溫度並實現致冷的目的



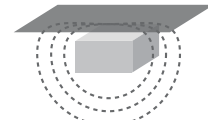
導熱

減少熱源與散熱器件接觸面產生的接觸熱阻



散熱

將熱透過主動或被動的方式散至空氣中



電磁波吸收

吸收特定頻段之電磁波抑制電磁波干擾

10W以上

10W以下

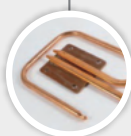
被動元件

主動元件



致冷晶片

精確的控制溫度並實現致冷的目的



熱導管

將局部熱源快速傳導到另一端的高性能導熱裝置



均溫板

將局部熱源快速傳導到大面積的高性能導熱裝置



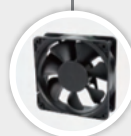
導熱介面材料

減少熱源與散熱器件接觸面之間產生的接觸熱阻



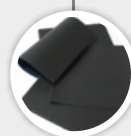
散熱片

貼於發熱元件表面是目前最普遍的散熱產品之一



散熱風扇

透過空氣的流動從而對設備提供足夠的冷空氣



電磁波吸收材料

有效抑制電磁波干擾

直向導熱(Z軸)

片狀

高K值

導熱矽膠片

有效減少熱源表面與散熱器件接觸面之間產生的接觸熱阻

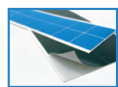


1.5-17.8 W/mk

高黏性

導熱膠帶

高熱傳導性、高黏度低熱阻抗、耐電壓高



高電壓絕緣

低熱阻

導熱膏

填補表面不平整處且不溢流，有機矽基材無環境污染



膏狀

高黏性

導熱膠泥

介於液態和固態的物理特性擁有非常低的熱阻抗



熱成固化

導熱封膠

高硬度可用於支撐固化後保護機構防止受外界環境影響

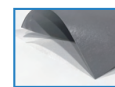


特殊型

快速降溫

相變化材料

材料熱溶後表面良好的流動性完整填充表面不平整縫隙



常用於溫度變化較大的產品

絕緣

導熱絕緣帽套

簡易安裝組件降低產品重量熱傳導與緩衝效果



橫向導熱(XY軸)

石墨材

體積輕薄

石墨片

具有高效導熱性/導電性/可做EMI遮蔽效果

常用於手機散熱

含銅箔

石墨烯

適用於不通風環境/無剝離及掉粉問題



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