

SDC(Sustainable Development Committee)

Sustainable Raw Materials Advancement Plan



Advantech's Blueprint for the Sustainable Materials Advancement Plan

2024Q3 – 2025Q3

Preliminary Work



Feasibility Assessment

- Phase Objective: Select representative products; Trial Evaluation: Procure sustainable materials for testing.
- Implementation Direction: Confirm whether the material can be applied to the products, including material substance tests, reliability test, and more.

- Participating Units: Green Design Committee, Product Department, Procurement, Component Engineering, Quality Assurance.

Conducting an assessment to prioritize raw materials

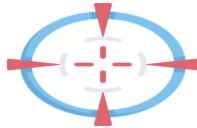
Advantech has established a Sustainable Raw Materials team in 2024 to regularly advance projects and set goals. When prioritizing raw materials-

- Subsequently, the priority order for raw materials will be determined based on either the risk method or the scale method.
- Relevant progress and phased objectives have been planned, and the annual targets will be confirmed in the third quarter of 2024.

Advantech's Blueprint for the Sustainable Materials Advancement Plan

2025Q3 – 2025Q4

First Phase Plan



Goal Setting

- ❑ Phase Objective: Formulate actionable goals and plans.
- ❑ Implementation Direction: Set future goals, such as the proportion of sustainable materials used, procurement ratios, carbon reduction ratios, post-consumer recyclability ratios, etc.
- Participating Units: Green Innovation Product Strategy Management Unit (QA-ESG), Green Design Committee.

2026Q1 - 2026Q4

Second Phase Plan

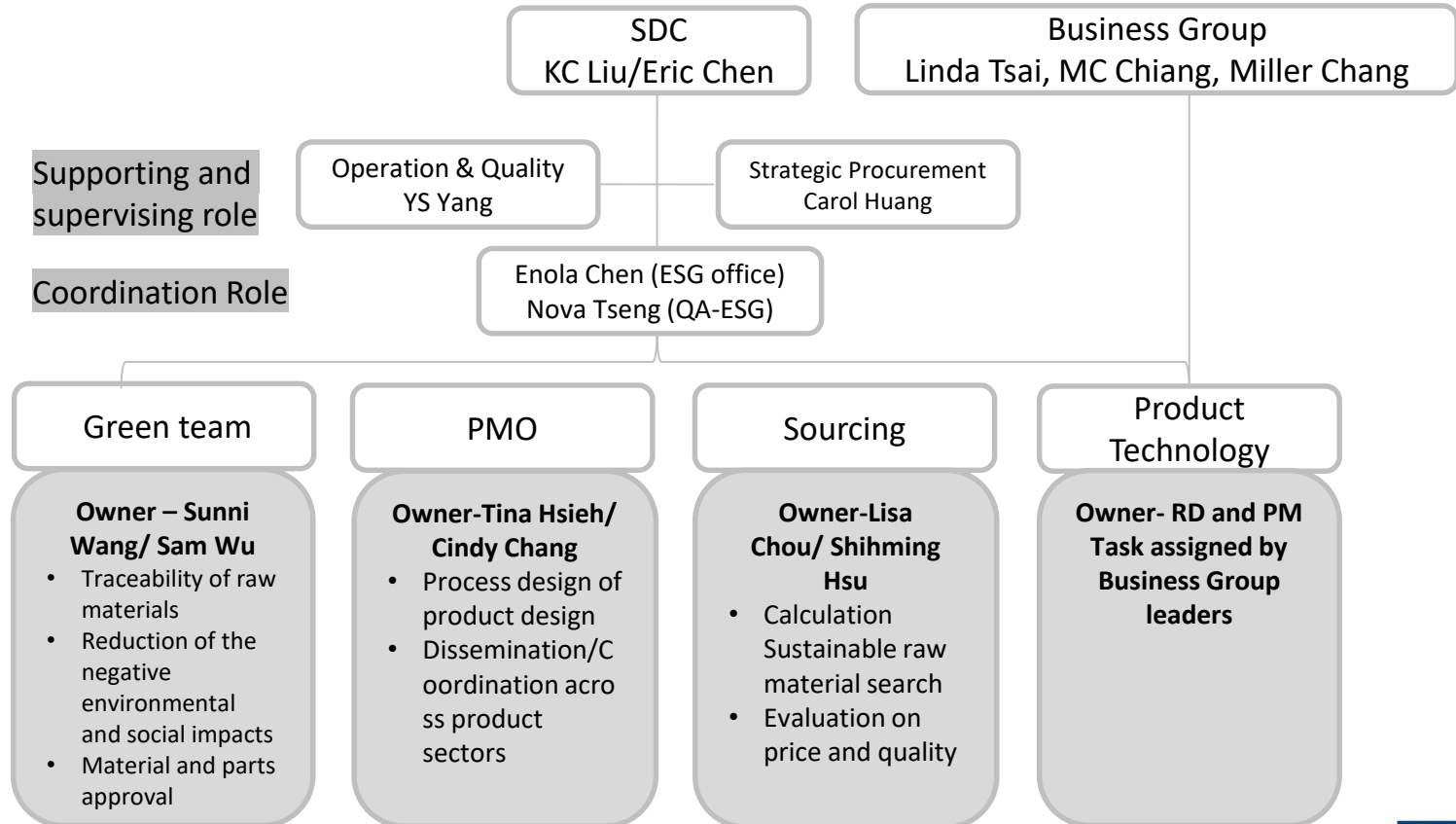


Comprehensive Implementation

- ❑ Phase Objective: Select and classify product categories that can be implemented and achieve implementation year by year.
- ❑ Implementation Direction: Fully implement sustainable material design goals.
- Participating Units: Green Design Committee, Product Department, R&D (Mechanical), Procurement, Component Engineering, Quality Assurance.

*Relevant progress and phased objectives have been planned, and the annual targets will be confirmed in the third quarter of 2024.

Sustainable Raw Material Group



Raw Material Policy & Commitment

Advantech's Sustainable Raw Materials Policy and Commitment

- Minimize the negative sustainable impact of raw materials.
- Collaborate with external stakeholders to pursue best practices in the use of sustainable raw materials.
- Increase the use of third-party certified raw materials and recycled raw materials.
- Avoid using raw materials from globally or nationally significant biodiversity areas.

1

The draft will be refined in Q3 and Q4 of 2024, eventually forming a complete policy document.

2

Future adjustments will be made based on domestic and international sustainability trends.

3

Internal Training on sustainable raw materials

2024 Q1-Q2

Completed Training



- The Corporate Social Responsibility Association visit and exchange forum with the Renewable Plastics Industry Development Center in Taiwan
- B-Corp Association Forum at the Renewable Plastics Industry Development Center in Taiwan

- Participating Units: PMO, Green Product, ESG Office

Internal Training on sustainable raw materials

2024 Q2

Planned Training

- Sustainable Development Strategies and Green Business Opportunities in the Asian Packaging Industry Forum
- Green Materials and Product Innovation Seminar
- Moving Towards Net-Zero Emissions by 2050, Circular Economy Trends and Challenges Forum

- Invited Units: Procurement, PMO, Green Product, ESG Office

2024 Q3-Q4

Categorized Training Plan

Conduct training at least once a quarter :

- Conceptual: Invite relevant international organizations to hold circular economy courses
- Technical: Invite external benchmark companies (Lite-On, TSMC) to share experiences, REnato Lab corporate case studies.

External Training Information Sharing

- Regularly collect and share information
- Invited Units: Green Design Committee, Product Department, R&D (Mechanical), Procurement, Component Engineering, Quality Assurance
- Planned by: ESG Office

Raw Materials Programs

2024 Q3-Q4

Procurement

- **Identify and assess the current status of sustainable raw material suppliers.**
- **Negotiate with suppliers on the feasibility of sustainable raw materials.**
- **Support sustainable raw material project needs for representative products.**

Green Team and Green Product

- **Integrate natural raw materials into product use** : replace plastic with metal, use paper and plastic instead of EPE (Expandable Polyethylene) for packaging of products under 5 kg.
- **Reduce the use of toxic and hazardous raw materials** :
 - ① Implement Advantech's low-halogen control plan, enforcing low-halogen requirements for external components of newly developed models in the second half of the year.
 - ② Follow domestic and international regulations, conditionally ban PVC and inks to comply with the French mineral oil directive.
- **Source Management** : **Incorporate raw materials (e.g., the use of recycled materials) into the green product design management mechanism.**
- **Supply Chain Information Transparency** :
 - ① **Enhance and track the traceability of raw material sources** and guarantee sustainability.
 - ② Supply chain management

Sustainable Material- Plastic Raw Materials/Metals Raw Materials

2024 Q3-Q4

- Procurement has completed supplier identification and survey, confirming that PVL suppliers can meet future representative product demands without issues
- Collaborate with CE to plan part numbers for future calculations of Plastic Raw Materials and Metal Raw Materials.
 - ① Plastic Raw Materials Part numbers are expected to be completed by Q3.
 - ② Metal Raw Materials Part numbers are expected to be completed by Q4.
- Notes: Future considerations must include market testing and relevant certification tests for products using sustainable raw materials.

List of Key Materials

- Based on the results of Scope 3 Category C1 inventory, the classification is as follows :

Major Categories	Categories Components and Parts
Paint	Paint
Software	Software
Electronics	Active components, printed circuit board assemblies (PCBA), bare printed circuit boards (PCB), memory, passive components, cables, connectors, batteries, power supplies, touch panels
Mechanica I	Metal hardware parts, plastics, aluminum parts

Sustainable Material - Recycled Material (%) Overview for TW PVL

Recycled Material: Post-consumer recycled content + Pre-consumer recycled content + Virgin material content

Cat.	category	Supplier	Material specifications	Supply situation	Certificate	Recycled material %	Advantech's use of recycled materials
Sheet Metal	SGCC	Non-disclosure Information	RC12	MP	UL 2809	12%	0%
			RC20	MP	UL 2809	20%	0%
			RC40	MP	UL 2809	40%	0%
	SUS (不銹鋼)		410/420/430	MP	ISO 14021	> 80%	0%
			301/304/316/316L	MP	ISO 14021	> 80%	0%
Die Casting	Al-Alloy		ADC-12	MP	UL 2809 /ASI	> 80%	0%
			ADC-12	MP	ISO 14021	> 80%	0%
			ADC-12	MP	Self-declaration	> 80%	0%
			A791D	MP	Self-declaration	> 80%	0%
Plastic	Plastic		ABS	MP	SCS	> 90%	0%
		PC (阻燃)	MP	SCS	> 60%	0%	
		PC/ABS	MP	SCS	> 80%	0%	
		PC (不含阻燃)	MP	SCS	> 90%	0%	
Packaging	Carton/Box	瓦楞紙板雙層	MP	ISO 14024	80 - 85%	100%	
		瓦楞紙板單層	MP	ISO 14024	80 - 85%	100%	
	緩衝材	EPE	MP	Self-declaration	< 35%		
	Bag	LDPE	MP	Self-declaration	< 10%		
		LDPE	MP	GRS	> 20%		

Virgin material vs. recycled material, 27.73% of Carbon Emission Reduction

綠色物料	原生材料 碳係數 (kg CO2e / kg)	再生材料 碳係數 (kg CO2e / kg)
Cover-Cage(METAL)_Aluminum	9.85	0.843

- SGCC Custom Materials Order: Minimum Order Quantity (MOQ) of 30 tons, with a 10% cost difference.
 - Plastic: The higher the recycled content, the higher the cost, leading to a 20% increase in product cost.
- v v 199L: Low Halogen
x 199R: Recycled + Low Halogen

Carton/Box: FSC certified material, with a 15-20% increase in cost, longer lead time (LT), and large batch MOQ.

According to product demand planning

Sustainable Material - Recycled Material (%) Overview for CN PVL

Recycled Material: Post-consumer recycled content + Pre-consumer recycled content + Virgin material content

Cat.	category	Supplier	Material specifications	Supply situation	Certificate	Recycled material %	Advantech's use of recycled materials	
Sheet Metal	SECC/SGCC	Non-disclosure Information	SECC/SECD/SGCC/SPCC	MP	RCS	SCS	>11%	0%
			SECC	MP	RCS	SCS	>11%	0%
			SGCC	MP	RCS	SCS	>11%	0%
	SUS (不銹鋼)		201/301/304/316/430	MP	RCS	SCS	>11%	0%
	AL		1050/5052	MP	RCS	SCS	>11%	0%
Die Casting	Al-Alloy	AL 6063、AL 5052、ADC12	MP	Self-declaration		>80%	0%	
		AL 6063、AL 5052、ADC12	MP			>80%	0%	
Plastic	Plastic	ABS	MP	SCS	SCS	>90%	0%	
		PC (阻燃)	MP	SCS	SCS	>60%	0%	
		PC/ABS	MP	SCS	SCS	>80%	0%	
		PC(不含阻燃)	MP	SCS	SCS	>90%	0%	
Packaging	Carton/BOX	瓦楞紙板	MP	FSC	FSC	>80%	100%	
	緩衝材	EPE	MP	Certificate		>90%	According to product demand planning	
		EPE	MP	Self-declaration		<35%		
	Bag	LDPE	MP	Self-declaration		>20%		

- Sheet Metal SECC/SGCC: Cost increase of 4% to 8% Lead Time (LT): Increased by 30%, from 45 to 60 days

- Die-casting: Performance needs verification; quality issues such as porosity are present, and its use is not recommended

- Plastic: The higher the recycled content, the higher the cost, leading to a 20% increase in product cost.
 - √ 199L: Low Halogen
 - x 199R: Recycled + Low Halogen

- Carton/Box: FSC certified material, with a 15-20% increase in cost, longer lead time (LT), and large batch MOQ

Additional Information

The primary metals used are aluminum, copper, and steel. Information on other precious metals is as follows :

- Cobalt (鈷)
- Nickel (鎳): Electroplated nickel is used for screws & chemical nickel is used in PCBs or terminals.
- Lithium (鋰): Lithium batteries
- Titanium (鈦): Please refer to the approval document on the right for the analysis of the smelting composition, which includes the content of TIA.

宝**钢**® 宝山钢铁股份有限公司
BAOSHAN IRON & STEEL CO.,LTD.

产品质量证明书
INSPECTION CERTIFICATE

制造厂: 宝钢分公司

Manufacturer: BAOSTEEL BRANCH

订货单位 CUSTOMER	上海宝钢钢材贸易有限公司	产品名称 PRODUCT	电镀锌
收货单位 PURCHASER	上海联达运输有限公司	代号 CUSTOMER'S NO.	00
标准 SPECIFICATION	BXY712004-149 SECCN5 2D/2D PT.A-PII.A-PF.B-PL.A	客户订单编号 CUSTOMER ORDER NO.	
		签发日期 DATE OF ISSUE	2008/1
		许可证号 LICENSE NO.	

序 号 NO.	钢卷/捆包号 COIL/PACK NO.	件 数 QTY	炉 号 HEAT NO.	规格及重量 MATERIAL DESCRIPTION				化学成分 CHEMICAL COMPOSITION % (熔炼分析 HEAT ANALYSIS)										拉伸试验 TENSILE TEST (G.L= L2)									
				厚度 THICK mm	宽度 WIDTH	长度 LENGTH	张 数 SHEETS	重量 MASS (kg)	C	Mn	P	S	Ti							屈服 Y.S. MPa	抗拉 T.S. %	伸长 EL %					
									x10 ²	x10 ²	x10 ²	x10 ²	x10 ²	x10	x10	x10	x10	x10	x10				值	值			
1	164797104	1	212229	1.00	1250	2500	196	4808	2	13	10	7	35										182	318	45		

Co-Creating the Future of the IoT World

