

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

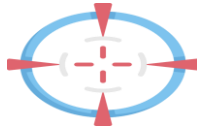
Advantech has established a Sustainable Raw Materials team in 2024 to regularly advance projects and set goals. When prioritizing raw materials-

- 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



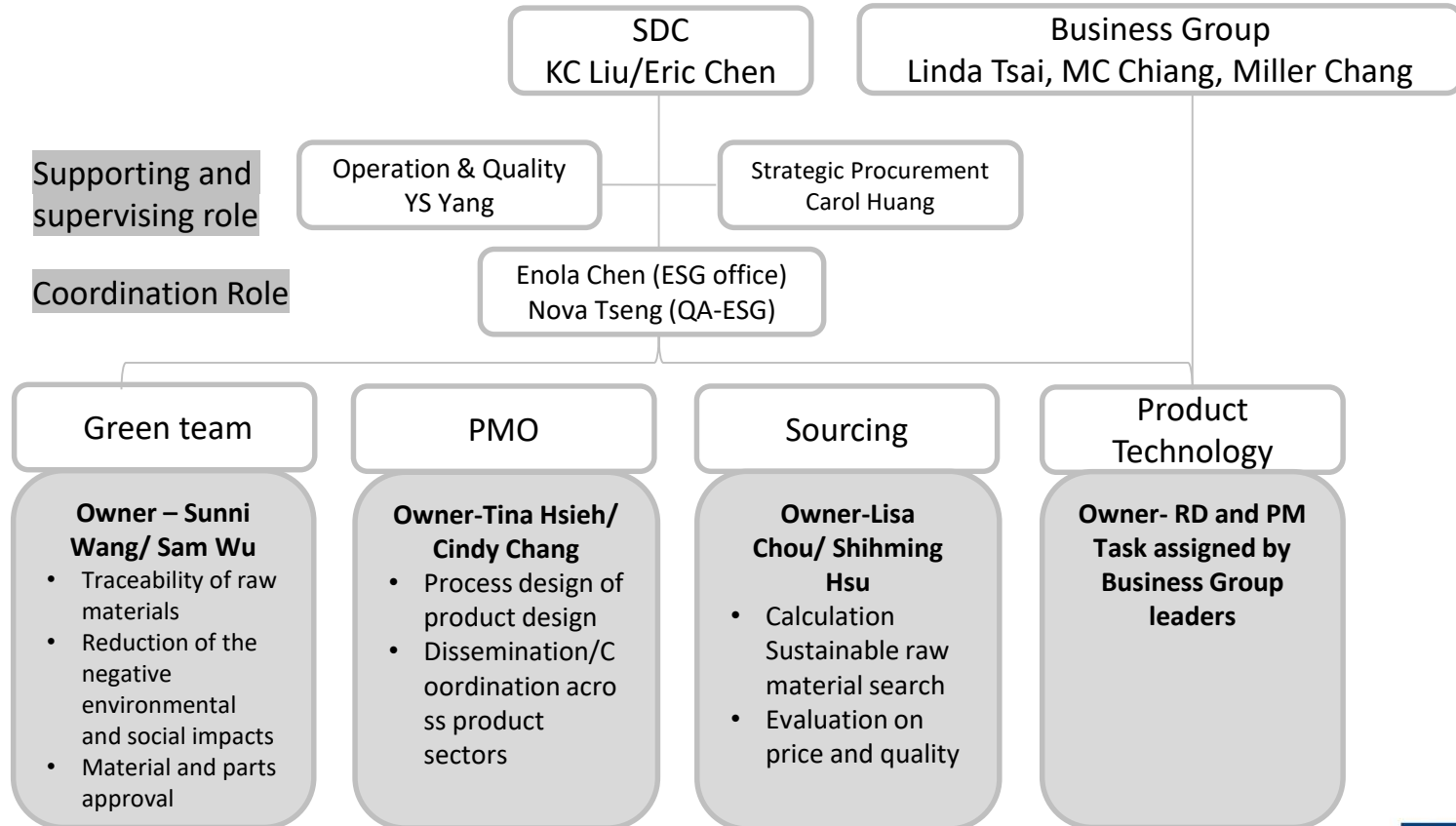
Comprehensive Implementation

- ❑ 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 |
| 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% |
| 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 % (熔体分析 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. | 抗拉 T.S. | 伸长 EL | 值 | 值 | | | | | |
| 1 | 164797104 | 1 | 212229 | 1.00 | 1250 | 2500 | 196 | 4808 | 2 | 13 | 10 | 7 | 35 | | | | | | | | | | | | 182 | 318 | 45 | | |

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