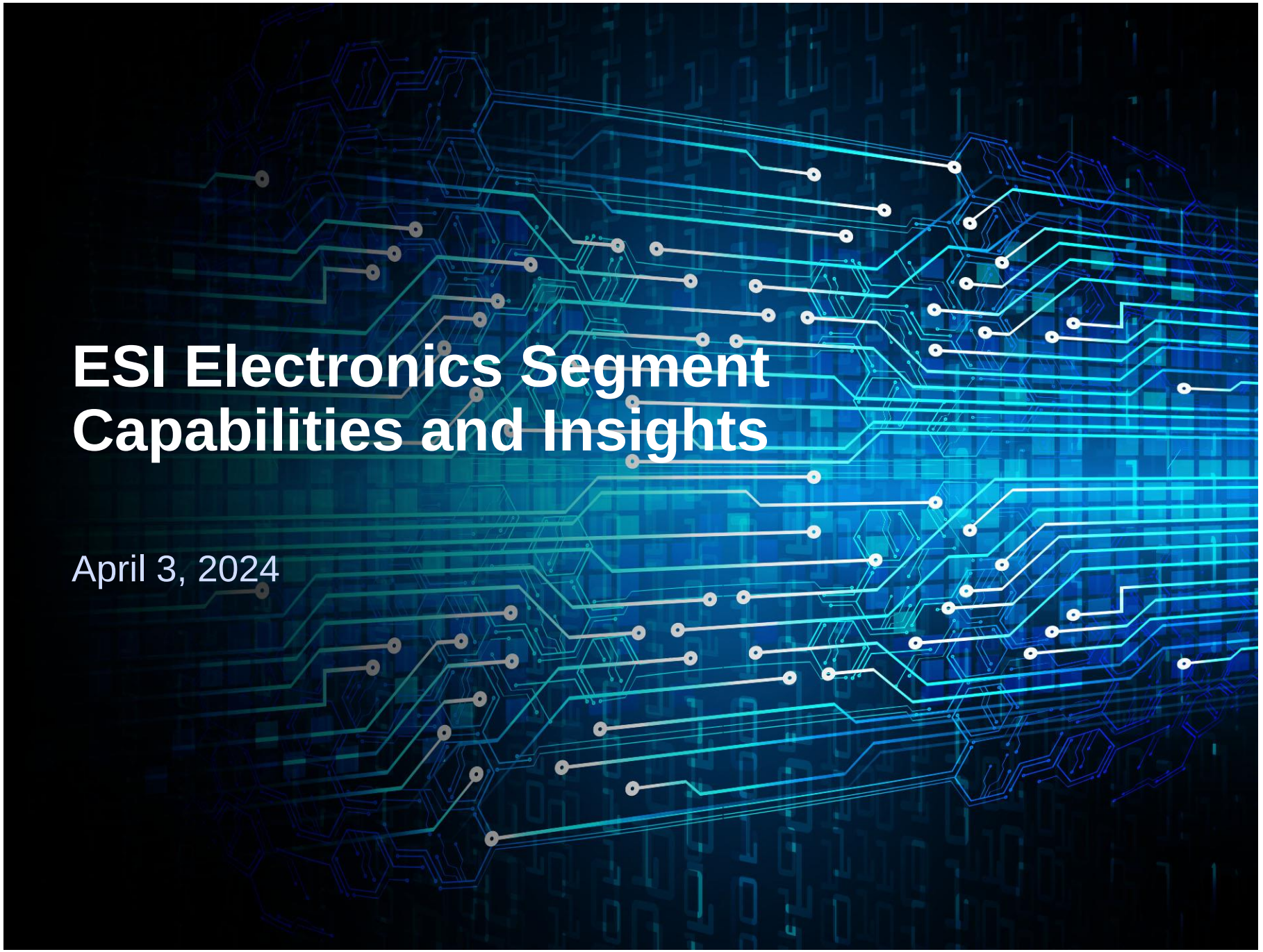


ESI Electronics Segment Capabilities and Insights

April 3, 2024

element solutions

Enabling Technology. Growing Sustainably.

Legal Notices

SAFE HARBOR

Please note that in this presentation, we may discuss events or results that have not yet occurred or been realized, commonly referred to as forward-looking statements. The Private Securities Litigation Reform Act of 1995 provides a safe harbor for forward-looking statements made by or on behalf of the Company. Such discussion and statements will often contain words such as “expect,” “anticipate,” “project,” “will,” “should,” “believe,” “intend,” “plan,” “assume,” “estimate,” “predict,” “seek,” “continue,” “outlook,” “may,” “might,” "aim," “can have,” “likely,” “potential,” “target,” “hope,” “goal,” “priority,” “guidance” or "confident" and variations of such words and similar expressions, and relate in this presentation, without limitations, the Company’s growth opportunities and product positioning; key megatrends, including artificial intelligence, electrification and sustainability; the Company’s Electronics earnings growth algorithm and target market outperformance.

These projections and statements are based on management's estimates, assumptions and expectations with respect to future events and financial performance and are believed to be reasonable, though are inherently uncertain and difficult to predict. Such projections and statements are based on the assessment of information available as of the current date, and the Company does not undertake any obligations to provide any further updates. Actual results could differ materially from those expressed or implied in the forward-looking statements if one or more of the underlying estimates, assumptions or expectations prove to be inaccurate or are unrealized. Important factors that could cause actual results to differ materially from those suggested by the forward-looking statements include, but are not limited to, the war between Russia and Ukraine and the Israel-Hamas conflict and other hostilities in the Middle-East as well as actions in response thereto and their impact on market conditions and the global economy; the continuing economic impact of the coronavirus (COVID-19) and its variants on the global economy and supply chains; price volatility and cost environment; inflation and fluctuations in foreign exchange rates; outstanding debt and debt leverage ratio; shares repurchases; debt and/or equity issuance or retirement; expected returns to stockholders; and the impact of acquisitions, divestitures, restructurings, refinancings, impairments and other unusual items, including the Company's ability to integrate and obtain the anticipated benefits, results and synergies from these items or other related strategic initiatives. Additional information concerning these and other factors that could cause actual results to vary is, or will be, included in the periodic and other reports of Element Solutions filed with the Securities and Exchange Commission. Element Solutions undertakes no obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise.

Certain product information, competitive position information and market trends contained in this presentation have been prepared internally. Use of different methods for preparing, calculating or presenting such information may lead to different results and such differences may be material. In addition, certain industry and market data described in this presentation was obtained from industry and general publications and research, surveys and studies conducted by third parties. While the Company believes this information is reliable and appropriate, such information has not been verified by any independent source. You are cautioned not to place undue reliance on this product, competitive and market information or on this industry and market data.

In all cases where historical performance is presented, please note that past performance is not a reliable indicator of future results and should not be relied upon as the basis for making an investment decision.

NON-GAAP FINANCIAL MEASURES

To supplement the financial measures prepared in accordance with generally accepted accounting principles in the United States (“GAAP”), the Company uses the following non-GAAP financial measures: EBITDA, adjusted EBITDA, adjusted EBITDA margin; and organic net sales growth. The Company also evaluates and presents its results of operations on a constant currency basis and pass-through metal price adjusted basis. The definitions and reconciliations of these non-GAAP measures to the most directly comparable financial measures calculated and presented in accordance with GAAP can be found in the footnotes and appendix of this presentation.

Management internally reviews each of these non-GAAP measures to evaluate performance on a comparative period-to-period basis in terms of absolute performance, trends and expected future performance of the Company’s businesses and believes that these non-GAAP measures provide investors with an additional perspective on trends and underlying operating results on a period-to-period comparable basis. The Company also believes that investors find this information helpful in understanding the ongoing performance of its operations separate from items that may have a disproportionate positive or negative impact on its financial results in any particular period. These non-GAAP financial measures, however, have limitations as analytical tools, and should not be considered in isolation from, a substitute for, or superior to, the related financial information that the Company reports in accordance with GAAP. Investors are encouraged to review the reconciliations of these non-GAAP financial measures to their most comparable GAAP financial measures included herein and not to rely on any single financial measure to evaluate the Company’s businesses.

Element Solutions Overview

Chemical technology enabling performance & innovation

$ 2.33B 2023 Net Sales

$ 282M 2023 Free Cash Flow* Generated

5,300+ Employees

$482M 2023 Adj. EBITDA*

21% 2023 Adj. EBITDA* Margin

50+ Countries We Service



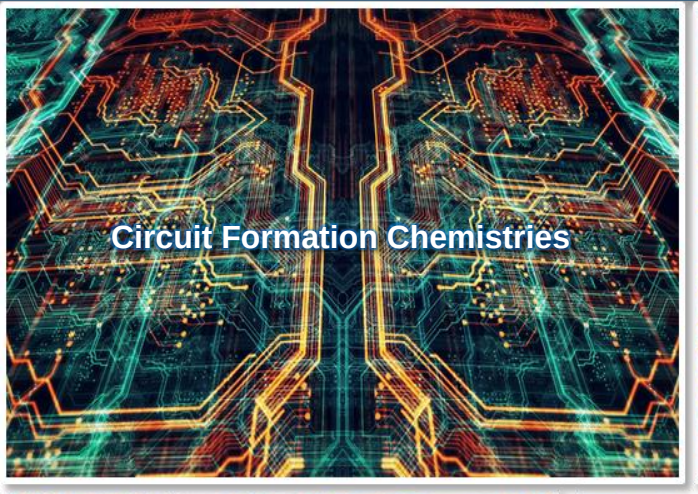
2023 Segment Net Sales

Electronics	61%
Industrial & Specialty	39%

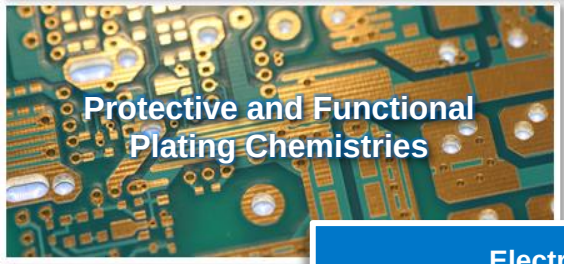


2023 Regional Net Sales

Americas	31%
EMEA	30%
Asia	39%



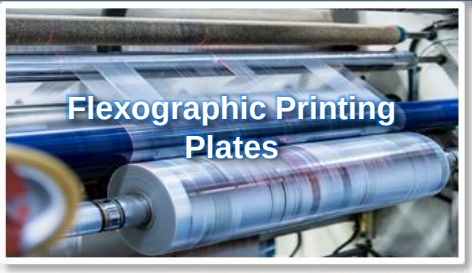






Electronics









Industrial & Specialty

* These financial measures, on this slide and on subsequent slides, are not prepared in accordance with GAAP. For definitions, discussions of adjustments and reconciliations, please refer to the footnotes or appendix of this presentation.

element solutions

Element Solutions Electronics Segment

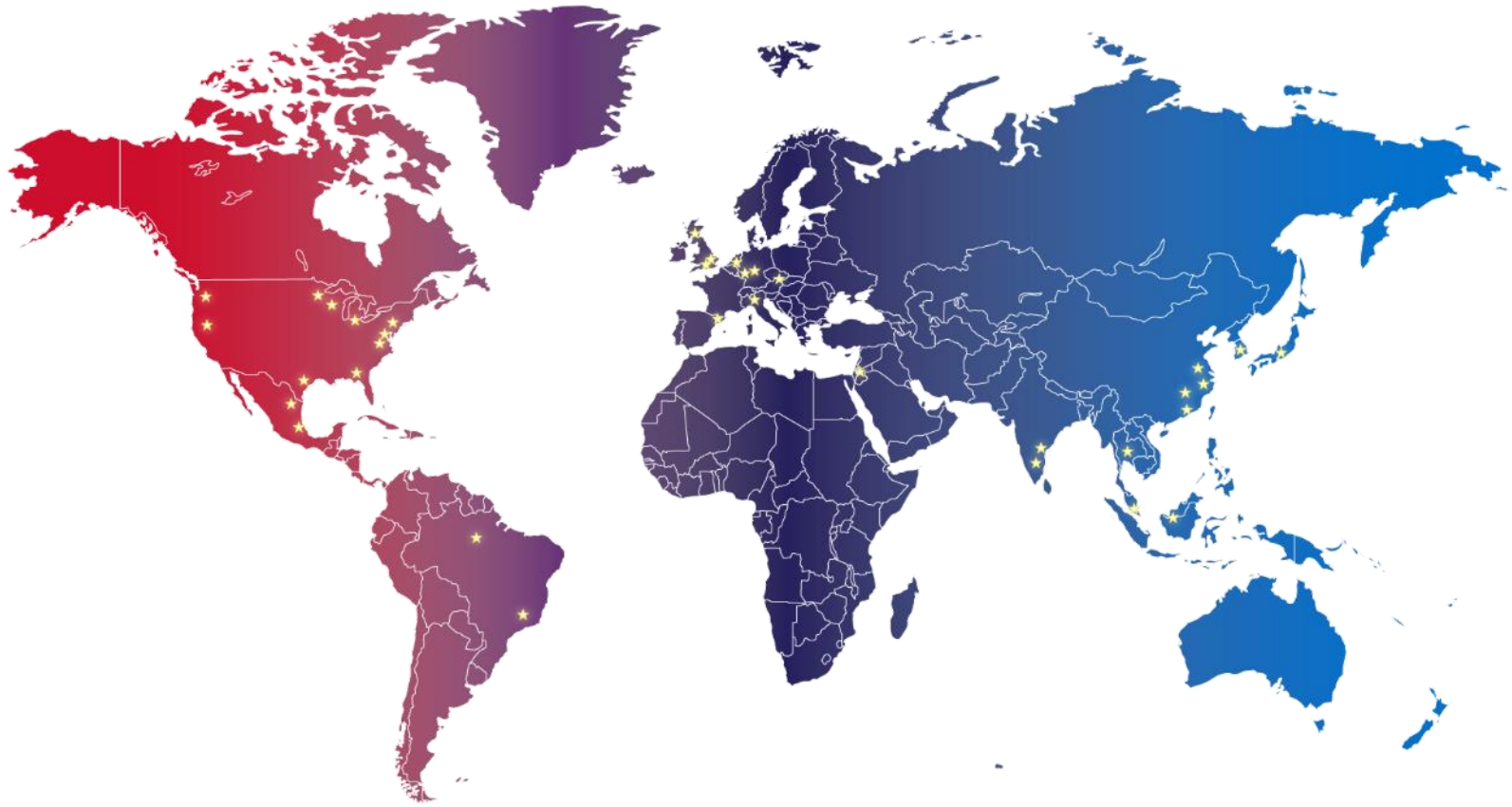
MacDermid Alpha Electronic Solutions at a glance

$1.4 B
2023 NET SALES

>30 COUNTRIES
WITH FACILITY OPERATIONS

>6,800
CUSTOMERS WORLDWIDE

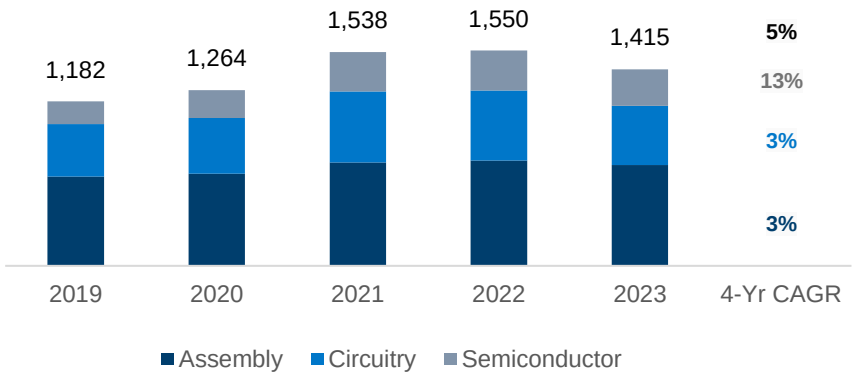
>2,200
EMPLOYEES



Electronic Solutions Historical Financial Performance

Record of growth through a challenging cycle

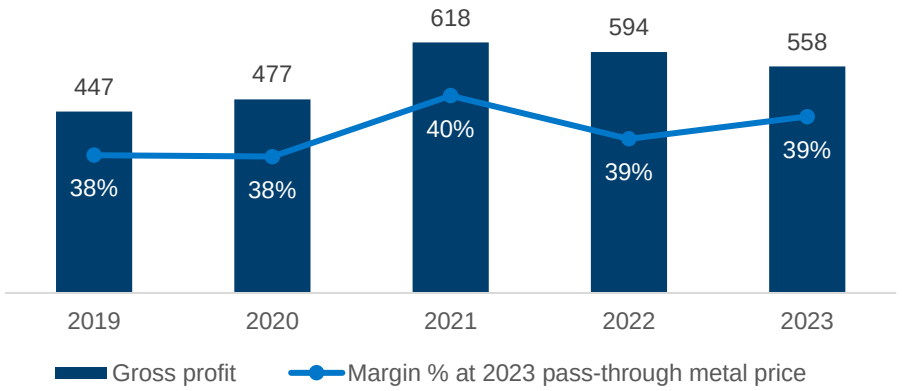
Net sales at 2023 pass-through metal prices* ($M)[1]



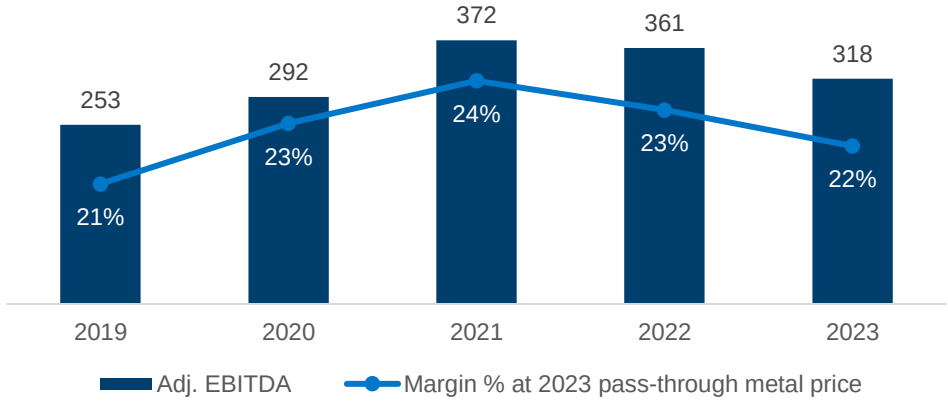
Organic Growth* vs. Market Indicators

	2019	2020	2021	2022	2023	19-23 CAGR
PCB M[2]	(3)%	(4)%	13%	(9)%	(5)%	(2)%
MSI	(7)%	5%	14%	4%	(14)%	2%
ESI Electronics	**(4)%**	**2%**	**13%**	**5%**	**(7)%**	**3%**

Gross Profit ($M)



Adj. EBITDA* ($M)

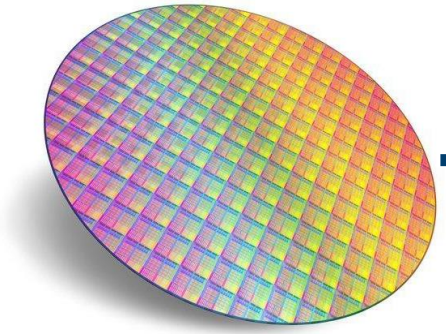


* See non-GAAP definitions and reconciliations in the appendix
1. Net sales adjusted historically to reflect constant 2023 pass-through metals price of tin and silver in the Assembly business unit
Source: Company financials, SEMI, Prismark Partners

Electronics Manufacturing – 30,000 Foot View

From Wafer to device

Level 1:

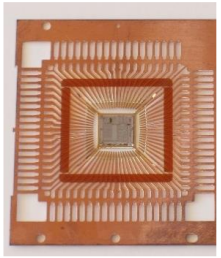


Wafer

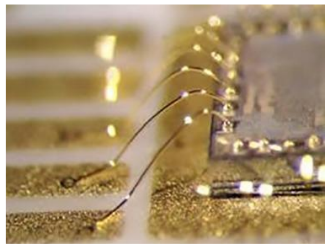


Die

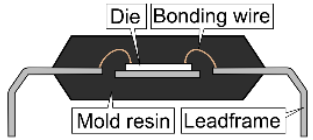
Traditional Semiconductor Packaging



Lead-Frame



Wire Bond



Plastic Enclosure

Circuitry & Assembly

Level 2:



Chip Package



Printed Circuit Board (PCB)

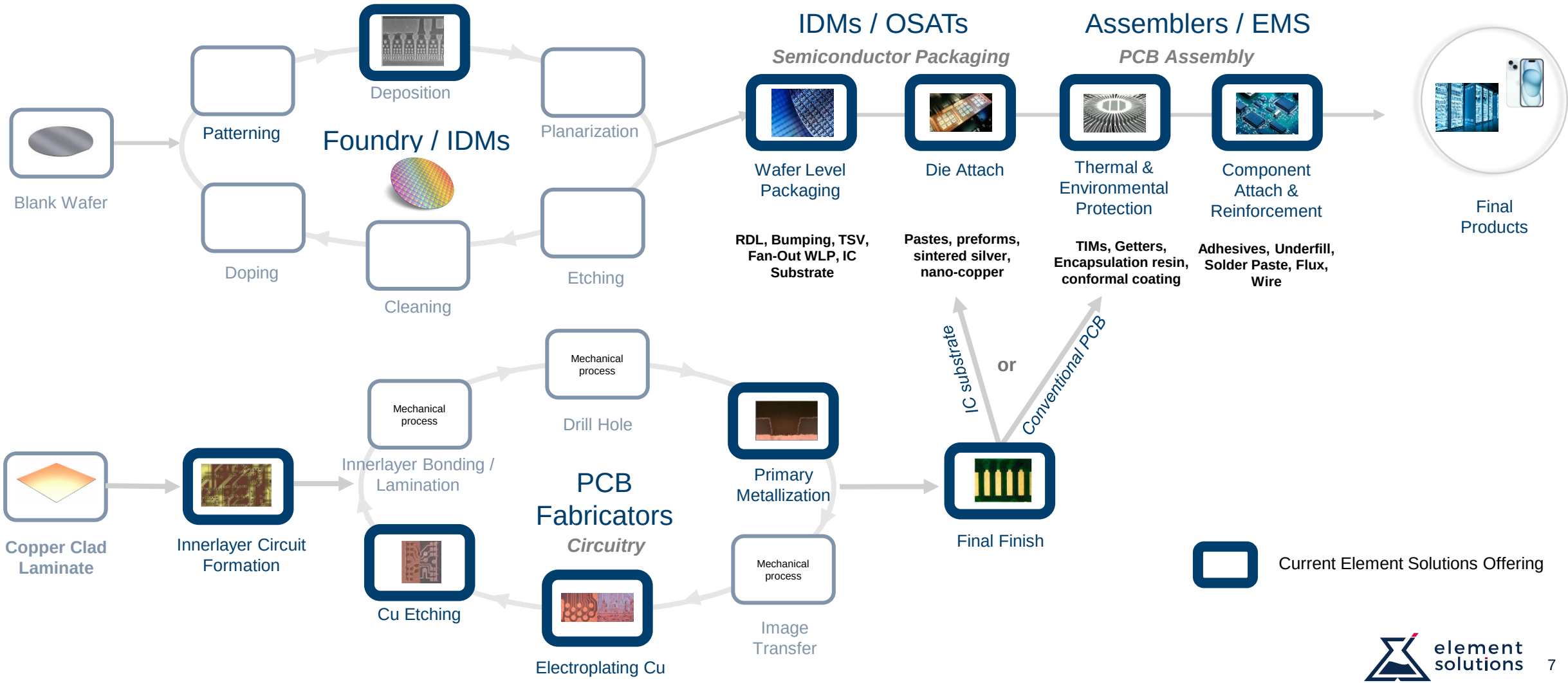
Level 3:



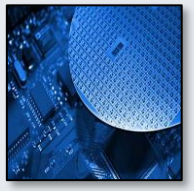
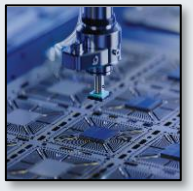
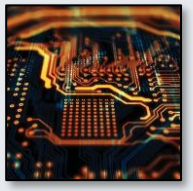
Final Enclosure

Enabling Chemistries For The Electronics Industry

Our customer base spans the full breadth of electronics manufacturing



Our Lines of Business

Vertical:	Semiconductor		Assembly	Circuitry		
Line of Business:	**Wafer Level Packaging** 	**Semiconductor Assembly** 	**Circuit Board Assembly** 	**Circuitry Solutions** 	**Memory Disk** 	**Films & Smart Surface Solutions** 
Customer Base	Foundries, IDMs	IDMs, OSATs	Assemblers	PCB Fabs	Data Storage	Automotive Tier 1
Key Capabilities:	*Wafer Metallization (Damascene Copper RDL, Pillar, Bump Metallization)*	*Die & Chip Attach Die Protection & Reinforcement Thermal Management*	*Component Attach Component Protection & Reinforcement Thermal Management*	*Adhesion Promotion Metal Etching Circuit Metallization Solderability Preservation*	*Nickel Metallization*	*Formable 3D structures Printable circuit formation Flexible Transparent Conductors*
Revenue (FY23)	~$130M[1]	~$110M	~$730M[2]	~$330M	~$50M	~$50M
Growth Themes	▪ High performance compute (HPC) demand for AI / ML ▪ Mobile market recovery ▪ Innovative heterogeneous package designs	▪ Advanced packaging capacity investment ▪ Thermal and power management requirements for AI/HPC processors ▪ Demand for higher reliability material sets for power electronics in EV	▪ Growing electronics content in cars ▪ Increased component reliability demands for ADAS ▪ Reliable package attach for power electronics in EV	▪ Heterogenous integration driving innovative substrate materials and designs ▪ Reducing water & power usage	▪ Data center expansion ▪ Cloud computing	▪ Enhanced human-machine interfaces (HMI) in automotive applications ▪ Vehicle light-weighting

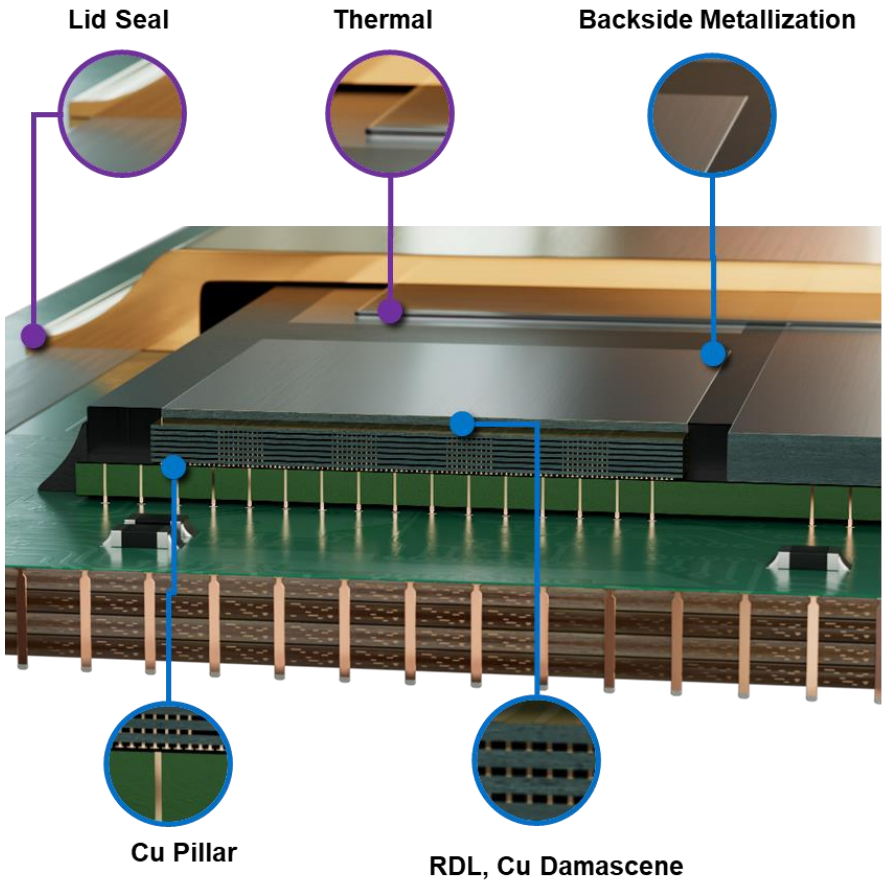
Source: Management estimates
1. Revenue as reported, does not include the estimated annual benefit from the June 2023 Viaform transaction
2. Includes ~$350M of low margin pass-through tin and silver revenue

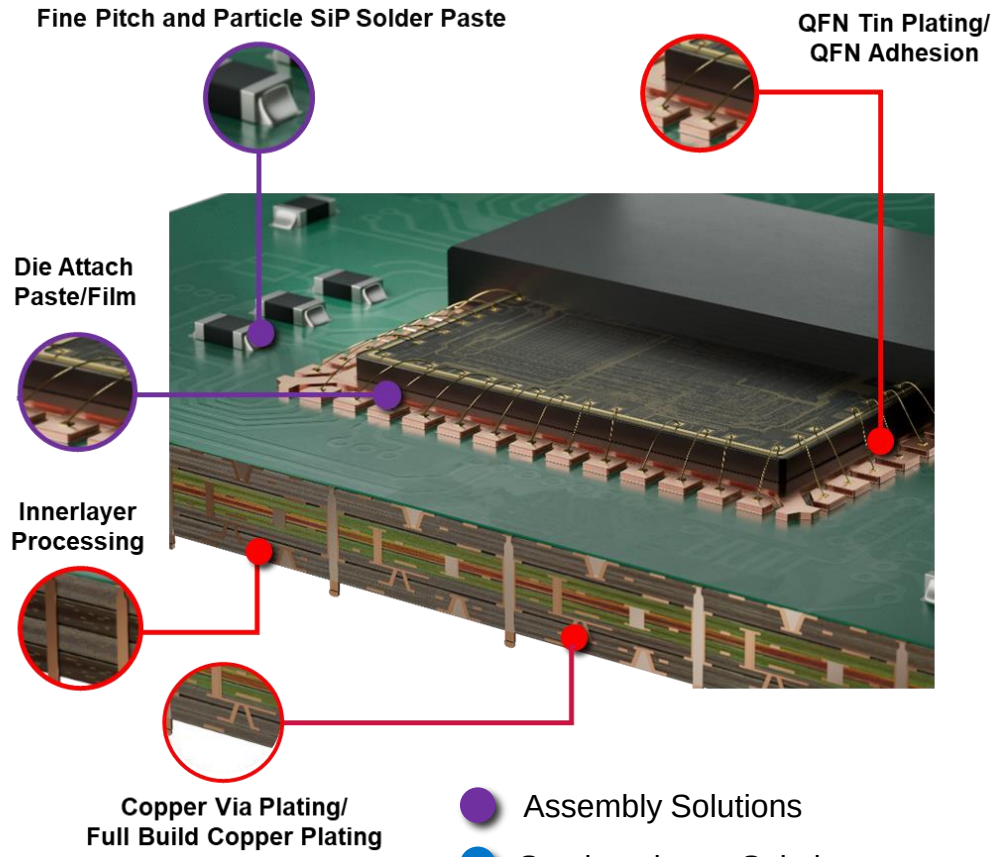
element solutions

Our Solutions Sit At The Convergence Of Chips And Boards

Semiconductor, assembly and circuitry products integral to electronics manufacturing

Silicon chips in package attached to a complex multi-layer printed circuit board





- Assembly Solutions
- Semiconductor Solutions
- Circuitry Solutions

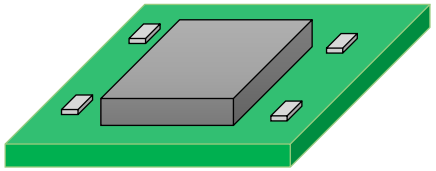
Source: Macdermid Alpha Electronics Solutions

element solutions

… Driving Growth Opportunities Created By “More than Moore”

Advantageous product positioning designed to enable next wave of computing performance

NON-INTEGRATED CHIP PACKAGE

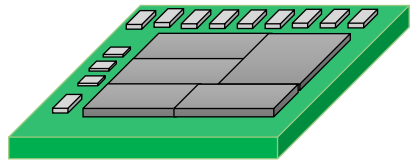


Monolithic Design:
Single Die / Passives / Memory

2-3x
$ value / IC unit

ESI value opportunity multiple often greater

HETEROGENEOUS INTEGRATION



Disaggregated SoC:
Multiple Die of Varying Silicon Nodes

Customer Challenge	Requirements	ESI Solutions
▪ High Performance Computing for AI, IOT, and mobile devices requires more computing power / more powerful chip designs	▪ Advanced substrates for chiplets that connect multiple functional die manufactured on different process nodes (2.5D packaging)	▪ Metallization chemistry for IC substrate, Si Interposer
▪ Moore’s Law 2D scaling of transistor density is reaching physical & cost limitations	▪ Innovative bonding techniques for stacked conductive components (3D packaging)	▪ Microbumps, copper-to-copper hybrid bonding, metallization for Through Silicon Via (TSV)
▪ Scaling through larger die sizes increases probability of defects (lower yields)	▪ Customized thermal & power management solutions	▪ Thermal interface materials, sintered silver & copper attachment chemistry

Heterogeneous packaging requires a significantly greater quantity of ESI highly specialized consumables relative to legacy chip designs – translating to meaningful profit growth opportunity

Source: Prismark Partners, Management estimates

element solutions

Key Megatrends – Durable, secular growth drivers

Key Megatrends ▶ **Artificial Intelligence** | **Electrification** | **Sustainability**

Description: **High performance computing, storage and networking solutions for training & inference and the proliferation of intelligent IOT and industrial automation**

ESI Lines of Business		Wafer Level Packaging	Semiconductor Assembly	Circuit Board Assembly	Circuitry Solutions
Customer Needs	Computing density	✓	✓		✓
	Power delivery & efficiency	✓	✓		✓
	Reliability for chiplet integration	✓		✓	✓
	Heat removal	✓	✓	✓	✓
	Higher bandwidth networking	✓			
The Solutions:		*RDLs, Hybrid Bonding, Copper Damascene*	*Solder Thermal Interface Materials (TIMs), GaN Die Attach*	*Polymer-based adhesives (Underfills)*	*Kuprion ActiveCopper*

element solutions

Key Megatrends – Durable, secular growth drivers

Key Megatrends | **Artificial Intelligence** | **Electrification** | **Sustainability**

Description: Increasing electronics content in transportation and the infrastructure supporting energy transition

ESI Lines of Business		Wafer Level Packaging	Semiconductor Assembly	Circuit Board Assembly	Circuitry Solutions
Customer Needs	Reducing convertor size (power density)	✓	✓		
	System lifetime	✓	✓	✓	✓
	Longer vehicle range		✓		
	Safety / managing thermal runaway			✓	✓
The Solutions:		*SiC Metallization*	*Argomax Sintered Silver, Kuprion ActiveCopper*	*Fire Resistant Polymers Innolot High Reliability Alloys*	*Through Hole Fill Metallization for ADAS Circuitry*

element solutions

Key Megatrends – Durable, secular growth drivers

Key Megatrends | **Artificial Intelligence** | **Electrification** | **Sustainability**

Description: Greener chemistries with lower energy and water usage in electronics manufacturing

ESI Lines of Business		Wafer Level Packaging	Semiconductor Assembly	Circuit Board Assembly	Circuitry Solutions
Customer Needs	Material certification		✓	✓	
	Water usage reduction				✓
	Power efficiency		✓	✓	✓
	Material recycling			✓	
	SVHC* reduction	✓	✓		
The Solutions:		*Boric-acid free nickel barrier*	*Argomax Sintered Products* *Kuprion ActiveCopper*	*High reliability solder alloys* *Tin recycling*	*Direct metallization*

element solutions

Kuprion – Nano-Copper Example Applications

A new material to solve emerging customer pain points

	Organic ICS/PCB	Glass Substrates	Thermal Transfer
Pain Point	▪ Incompletely filled through-vias in multi-layer circuit boards	▪ Substrate cracking due to thermal expansion mismatch	▪ Poor heat dissipation impacting/limiting device performance
Legacy Solutions	▪ Conductive Epoxy Fill	▪ Copper Electroplating	▪ Tin Solder
The Solutions	**Sintered, high thermal conductivity nano-copper with "tunable" thermal expansion characteristics to fill through holes and match thermal expansion rates of substrates**		
Customer Value Proposition	▪ Higher-reliability substrate package with improved heat dissipation	▪ Reliable use of glass core substrates to improve package rigidity	▪ Greater power density and package reliability with more efficient heat emission
Key End Markets	▪ HPC ▪ Networking	▪ HPC	▪ EV drivetrain ▪ EV infrastructure
Early Assessment of Potential Opportunity	$200M	$50M	$100M

Source: Management estimates

Electronics Near Term Growth Algorithm

Triangulating from trends to profit

Related Megatrend

- Artificial Intelligence
- Electrification
- Sustainability

	% Of Electronics Sales[2]	5-Yr Market Growth Expectation	ESI Target Near-Term Market Outperformance	Sources Of Outperformance
Circuitry Solutions[1]	31%	7%	2-3%	Substrate metallization for advanced packaging Heat transfer & thermal conductivity solutions Sustainable direct metallization technologies
Circuit Board Assembly	35%	4-5%	2-3%	High reliability alloys for telematics & power modules Thermal interface materials Certified recycled tin solutions
Semiconductor Assembly	11%	15-20%	10%+	Thermally efficient packaging solutions for datacenter Power module growth for EV applications Attachment solutions for microelectronics & sensors
Wafer Level Packaging	12%	6%	5-10%	2.5D/3D packaging solutions Hybrid bonding Boric-acid free nickel barrier

HSD Electronics Organic Growth

…only considering modest near-term contribution from Kuprion

Incremental margins in Electronics segment before metal price are north of 35%, translating into long-term adj. EBITDA growth rate in excess of 10%

1. Excludes memory disk and films and smart surface solutions revenues from reported Circuitry Solutions business unit
2. Excludes pass-through metals sales of ~$350M in 2023

Sources: Prismark Partners, SEMI, Yole Group, management estimates

Appendix

element solutions

Enabling Technology. Growing Sustainably.

Glossary

Key Terms

Acronym	Term	Definition
2.5D		Advanced packaging technique that connects multiple integrated circuit dies in a single package side-by-side
3D		Advanced packaging technique connecting stacked integrated circuits using through-silicon vias or copper-copper connections
BEOL	Back-end-of-line	Portion of integrated circuit fabrication process where individual devices are interconnected by deposited metallization layers
EMS	Electronics manufacturing services	Companies that design, manufacture, test, distribute and provide repairs services for electronic components and assemblies
FEOL	Front-end-of-line	First portion of integrated circuit fabrication process where transistors, capacitors and resistors are patterned in the semiconductor
HBM	High bandwidth memory	A computer memory interface for 3D stacked memory chips to provide high bandwidth and lower power consumption
HPC	High performance computing	Computers with the ability to process data and perform complex calculation at high speeds
ICS	Integrated circuit substrate	A fine feature printed multi-layer structure providing connectivity between semiconductor chips and printed circuit boards
IC	Integrated circuit	A device made of multiple interconnected electronic components performing functions such as processing & storing information
IDM	Integrated Device Manufacturer	A company that designs, manufactures and sells integrated circuit products such as Intel, Samsung and Texas Instruments
OSAT	Outsourced Semiconductor Assembly and Test	A company that assembles chips into packages, ensures they work properly and completes quality testing
PCB	Printed circuit board	Board made of conductive layers used to connect components to one another in a circuit, used in nearly all electronics products
QFN	Quad flat no-lead	Leadless packages that connect a silicon die in an integrated circuit to a printed circuit board
RDL	Redistribution layer	Extra metal layer on an integrated circuit that makes its input/output pads available in other location of the chip
SiP	System-in-package	Multiple integrated circuits enclosed in a single chip carrier package to perform the functions of an entire system
TIMs	Thermal interface materials	Materials inserted between two components to enhance thermal coupling, often for heat dissipation in electronics
TSV	Through silicon via	A packaging technology consisting of a precise vertical electrical connection that passes through a silicon wafer or die
WLP	Wafer level packaging	Packaging components attached to an integrated circuit before the wafer is diced

Free Cash Flow & Electronics net sales growth reconciliations

	FY 2019	FY 2020	FY 2021	FY 2022	FY2023
Electronics Net Sales Growth	**(6%)**	**8%**	**31%**	**1%**	**(12%)**
Impact of Currency	3%	0%	(4%)	5%	2%
Constant Currency	**(4%)**	**8%**	**27%**	**7%**	**(10%)**
Change in Pass-Through Metals Pricing	0%	0%	(12%)	(1%)	4%
Acquisitions	(1%)	(5%)	(2%)	(1%)	(1%)
Organic Net Sales Growth	**(4%)**	**2%**	**13%**	**5%**	**(7%)**

($ millions)	FY 2019	FY 2020	FY 2021	FY 2022	FY2023
Electronics net sales	$ 1,086	$ 1,172	$ 1,590	$ 1,611	$ 1,415
Historical adjustment for Assembly metals pass-through price impact	97	92	(52)	(61)	
Adjusted net sales	**$ 1,182**	**$ 1,264**	**$ 1,538**	**$ 1,550**	**$ 1,415**

(dollars in millions)	2023
Cash flows from operating activities	$334
Capital expenditures	(53)
Proceeds from disposal of property, plant and equipment	1
Free cash flows	**$282**

Note: Totals may not sum due to rounding
1. The adjustments for 2019 assume the Arysta divestiture had occurred and ESI's current capital structure had been in place as of January 1, 2019
2. Adjustment for the payment of the contingent consideration related to the MacDermid Acquisition and payment for employee expenses associated with the Arysta divestiture that did not qualify for discontinued operations

element solutions

Net Income Reconciliation to Adjusted EBITDA

($ millions)	FY 2023
Net income	**$118**
Add (subtract):	
(Income) from discontinued operations, net of tax	(2)
Income tax expense	13
Interest expense, net	49
Depreciation expense	43
Amortization expense	124
EBITDA	**345**
Adjustments to reconcile to Adjusted EBITDA:	
Inventory step-up	3
Restructuring expense	11
Acquisition and integration expense	17
Foreign exchange (gain) on intercompany loans	(10)
Debt refinancing costs	8
Goodwill impairment	80
Kuprion Acquisition research and development charge	16
Other, net	12
Adjusted EBITDA	**$482**
Net income margin %	**5.1%**
Adjusted EBITDA margin %	**20.7%**

Non-GAAP definitions

EBITDA and Adjusted EBITDA: EBITDA represents earnings before interest, provision for income taxes, depreciation and amortization. Adjusted EBITDA is defined as EBITDA, excluding the impact of additional items included in GAAP earnings which the Company believes are not representative or indicative of its ongoing business or are considered to be associated with its capital structure. Adjusted EBITDA for each segment also includes an allocation of corporate costs, such as compensation expense and professional fees. Management believes adjusted EBITDA and adjusted EBITDA margin provide investors with a more complete understanding of the long-term profitability trends of the Company's business and facilitate comparisons of its profitability to prior and future periods. However, these measures, which do not consider certain cash requirements, should not be construed as an alternative to net income or cash flow from operations as a measure of profitability or liquidity.

Free Cash Flow: Free cash flow is defined as net cash flows from operating activities less net capital expenditures. Net capital expenditures include capital expenditures less proceeds from the disposal of property, plant and equipment. Management believes that free cash flow, which measures the Company's ability to generate cash from its business operations, is an important financial measure in evaluating the Company's financial performance. However, free cash flow should be considered in addition to, rather than as a substitute for, net cash provided by operating activities as a measure of the Company's liquidity.

Organic Net Sales Growth: Organic net sales growth is defined as net sales excluding the impact of foreign currency translation, changes due to the pass-through pricing of certain metals, and acquisitions and/or divestitures, as applicable. Management believes this non-GAAP financial measure provides investors with a more complete understanding of the underlying net sales trends by providing comparable net sales over differing periods on a consistent basis.

For the twelve months ended December 31, 2023, Electronics' consolidated results were negatively impacted by $61.5 million of pass-through metals pricing and positively impacted by $9.8 million of acquisitions

For the twelve months ended December 31, 2022, Electronics' consolidated results were negatively impacted by $9.7 million of pass-through metals pricing and $13.5 million of acquisitions

For the twelve months ended December 31, 2021, Electronics' consolidated results were positively impacted by $143.4 million of pass-through metals pricing and $25.8 million of acquisitions

For the twelve months ended December 31, 2020, Electronics' consolidated results were positively impacted by $53.6 million of acquisitions and $5.2 million of pass-through metals pricing

For the twelve months ended December 31, 2019, Electronics' and the Company's consolidated results were positively impacted by $7.8 million of acquisitions and negatively impacted by $1.2 million of pass-through metals pricing.