UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-Q

(Mark One)

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended June 29, 2019

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from __________ to __________

Commission file number: 001-32598

Entegris, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**41-1941551**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
129 Concord Road, Billerica, Massachusetts	**01821**
(Address of principal executive offices)	**(Zip Code)**

(978) 436-6500
(Registrant's telephone number, including area code)

None
(Former name, former address and former fiscal year, if changed since last report)

Securities registered pursuant to Section 12(b) of the Act:

Title of class	Trading Symbol(s)	Name of each exchange on which registered
Common stock, $0.01 par value per share	**ENTG**	**The Nasdaq Stock Market LLC**

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐ (Do not check if a smaller reporting company)	Smaller reporting company	☐
		Emerging growth company	☐

If an emerging growth company, indicate by check mark if registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

As of July 22, 2019, there were 135,173,392 shares of the registrant's common stock outstanding.

ENTEGRIS, INC. AND SUBSIDIARIES
FORM 10-Q
TABLE OF CONTENTS
FOR THE QUARTER ENDED JUNE 29, 2019

Cautionary Statements

This Quarterly Report on Form 10-Q contains “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. The words “believe,” “expect,” “anticipate,” “intends,” “estimate,” “forecast,” “project,” “should,” “may,” “will,” “would” or the negative thereof and similar expressions are intended to identify such forward-looking statements. These forward-looking statements may include statements about future period guidance or projections; our performance relative to our markets; market and technology trends, including the duration and drivers of any growth trends; the development of new products and the success of their introductions; the focus of our engineering, research and development projects; our ability to execute on our business strategies; our capital allocation strategy, which may be modified at any time for any reason, including share repurchases, dividends, debt repayments and potential acquisitions; the effect of the Tax Cuts and Jobs Act; future capital and other expenditures, including estimates thereof; the Company's expected tax rate; the impact, financial or otherwise, of any organizational changes; the impact of accounting pronouncements; and other matters. These forward-looking statements are based on current management expectations and assumptions only as of the date of this Quarterly Report, are not guarantees of future performance and involve substantial risks and uncertainties that are difficult to predict and that could cause actual results to differ materially from the results expressed in, or implied by, these forward-looking statements. These risks and uncertainties include, but are not limited to, weakening of global and/or regional economic conditions, generally or specifically in the semiconductor industry, which could decrease the demand for our products and solutions; our ability to meet rapid demand shifts; our ability to continue technological innovation and introduce new products to meet our customers' rapidly changing requirements; our concentrated customer base; our dependence on sole source and limited source suppliers; raw material shortages and price increases; our ability to identify, effect and integrate acquisitions, joint ventures or other transactions; our ability to effectively implement any organizational changes; our ability to protect and enforce intellectual property rights; operational, political and legal risks of our international operations; the level of, and obligations associated with, our indebtedness; and other risk factors and additional information described in our filings with the Securities and Exchange Commission, including under the heading “Risks Factors” in Item 1A of our Annual Report on Form 10-K for the fiscal year ended December 31, 2018, filed on February 11, 2019, and in our other periodic filings. Except as required under the federal securities laws and the rules and regulations of the Securities and Exchange Commission, we undertake no obligation to update publicly any forward-looking statements contained herein.

PART 1. FINANCIAL INFORMATION

Item 1. Financial Statements

ENTEGRIS, INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED BALANCE SHEETS
(Unaudited)

(In thousands, except share and per share data)	June 29, 2019	December 31, 2018
ASSETS		
Current assets:		
Cash and cash equivalents	$ 521,382	$ 482,062
Trade accounts and notes receivable, net of allowance for doubtful accounts of $1,649 and $893	218,682	222,055
Inventories, net	261,934	268,140
Deferred tax charges and refundable income taxes	18,741	17,393
Other current assets	27,715	39,688
Total current assets	1,048,454	1,029,338
Property, plant and equipment, net of accumulated depreciation of $493,641 and $461,222	445,254	419,529
Other assets:		
Right-of-use assets	44,176	—
Goodwill	583,328	550,202
Intangible assets, net of accumulated amortization of $377,799 and $343,088	266,425	295,687
Deferred tax assets and other noncurrent tax assets	23,153	10,162
Other	13,932	12,723
Total assets	$ 2,424,722	$ 2,317,641
LIABILITIES AND EQUITY		
Current liabilities:		
Long-term debt, current maturities	$ 4,000	$ 4,000
Accounts payable	56,986	93,055
Accrued payroll and related benefits	47,520	78,288
Other accrued liabilities	70,263	62,732
Income taxes payable	36,371	31,593
Total current liabilities	215,140	269,668
Long-term debt, excluding current maturities, net of unamortized discount and debt issuance costs of $10,325 and $11,137	933,675	934,863
Pension benefit obligations and other liabilities	42,898	31,795
Deferred tax liabilities and other noncurrent tax liabilities	89,848	69,290
Long-term lease liability	40,612	—
Commitments and contingent liabilities	—	—
Equity:		
Preferred stock, par value $.01; 5,000,000 shares authorized; none issued and outstanding as of June 29, 2019 and December 31, 2018	—	—
Common stock, par value $.01; 400,000,000 shares authorized; issued and outstanding shares as of June 29, 2019: 135,343,680 and 135,141,280; issued and outstanding shares as of December 31, 2018: 136,179,381 and 135,976,981	1,353	1,362
Treasury stock, at cost: 202,400 shares held as of June 29, 2019 and December 31, 2018	(7,112)	(7,112)
Additional paid-in capital	830,922	837,658
Retained earnings	315,511	213,753
Accumulated other comprehensive loss	(38,125)	(33,636)
Total equity	1,102,549	1,012,025
Total liabilities and equity	$ 2,424,722	$ 2,317,641

See the accompanying notes to condensed consolidated financial statements.

ENTEGRIS, INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(Unaudited)

(In thousands, except per share data)	Three months ended		Six months ended	
	June 29, 2019	June 30, 2018	June 29, 2019	June 30, 2018
Net sales	$ 378,874	$ 383,059	$ 769,921	$ 750,258
Cost of sales	212,600	200,681	426,254	391,883
Gross profit	166,274	182,378	343,667	358,375
Selling, general and administrative expenses	64,150	65,200	146,404	123,469
Engineering, research and development expenses	30,624	30,231	59,615	57,817
Amortization of intangible assets	16,591	12,014	35,248	23,683
Operating income	54,909	74,933	102,400	153,406
Interest expense	11,315	8,296	22,199	16,455
Interest income	(1,623)	(1,371)	(2,848)	(2,304)
Other (income) expense, net	(122,015)	3,877	(122,263)	4,016
Income before income tax expense	167,232	64,131	205,312	135,239
Income tax expense	43,235	9,782	48,657	23,328
Net income	$ 123,997	$ 54,349	$ 156,655	$ 111,911
Basic net income per common share	$ 0.92	$ 0.38	$ 1.16	$ 0.79
Diluted net income per common share	$ 0.91	$ 0.38	$ 1.15	$ 0.78
Weighted shares outstanding:				
Basic	135,378	141,701	135,338	141,641
Diluted	136,581	143,238	136,637	143,445

See the accompanying notes to condensed consolidated financial statements.

ENTEGRIS, INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(Unaudited)

	Three months ended		Six months ended	
(In thousands)	**June 29, 2019**	**June 30, 2018**	**June 29, 2019**	**June 30, 2018**
Net income	$ 123,997	$ 54,349	$ 156,655	$ 111,911
Other comprehensive loss, net of tax				
Foreign currency translation adjustments	(1,712)	(12,626)	(4,499)	(8,791)
Pension liability adjustments	(14)	49	10	53
Other comprehensive loss	(1,726)	(12,577)	(4,489)	(8,738)
Comprehensive income	$ 122,271	$ 41,772	$ 152,166	$ 103,173

See the accompanying notes to condensed consolidated financial statements.

ENTEGRIS, INC. AND SUBSIDIARIES

CONDENSED CONSOLIDATED STATEMENTS OF EQUITY

(In thousands)	Common shares outstanding	Common stock	Treasury shares	Treasury stock	Additional paid-in capital	Retained earnings (deficit)	Foreign currency translation adjustments	Defined benefit pension adjustments	Total
Balance at December 31, 2017	141,283	$ 1,413	—	$ —	$ 867,699	$ 147,418	$ (22,593)	$ (919)	$ 993,018
Shares issued under stock plans	815	8	—	—	(13,658)	—	—	—	(13,650)
Share-based compensation expense	—	—	—	—	4,128	—	—	—	4,128
Repurchase and retirement of common stock	(296)	(3)	—	—	(1,809)	(8,187)	—	—	(9,999)
Dividends declared ($0.07 per share)	—	—	—	—	13	(9,926)	—	—	(9,913)
Pension liability adjustment	—	—	—	—	—	—	—	4	4
Foreign currency translation	—	—	—	—	—	—	3,835	—	3,835
Cumulative effect of change in accounting principle	—	—	—	—	—	(591)	—	—	(591)
Net income	—	—	—	—	—	57,562	—	—	57,562
Balance at March 31, 2018	141,802	$ 1,418	—	$ —	$ 856,373	$ 186,276	$ (18,758)	$ (915)	$ 1,024,394
Shares issued under stock plans	171	1	—	—	2,263	—	—	—	2,264
Share-based compensation expense	—	—	—	—	4,429	—	—	—	4,429
Repurchase and retirement of common stock	(282)	(2)	—	—	(1,708)	(8,291)	—	—	(10,001)
Dividends declared ($0.07 per share)	—	—	—	—	—	(9,953)	—	—	(9,953)
Pension liability adjustment	—	—	—	—	—	—	—	49	49
Foreign currency translation	—	—	—	—	—	—	(12,626)	—	(12,626)
Net income	—	—	—	—	—	54,349	—	—	54,349
Balance at June 30, 2018	141,691	$ 1,417	—	$ —	$ 861,357	$ 222,381	$ (31,384)	$ (866)	$ 1,052,905
Balance at December 31, 2018	136,179	$ 1,362	(202)	$ (7,112)	$ 837,658	$ 213,753	$ (32,776)	$ (860)	$ 1,012,025
Shares issued under stock plans	572	5		—	(6,817)	—	—	—	(6,812)
Share-based compensation expense	—	—	—	—	4,653	—	—	—	4,653
Repurchase and retirement of common stock	(1,035)	(10)	—	—	(6,364)	(23,413)	—	—	(29,787)
Dividends declared ($0.07 per share)	—	—	—	—	7	(9,517)	—	—	(9,510)
Pension liability adjustment	—	—	—	—	—	—	—	24	24
Foreign currency translation	—	—	—	—	—	—	(2,787)	—	(2,787)
Net income	—	—	—	—	—	32,658	—	—	32,658
Balance at March 30, 2019	135,716	$ 1,357	(202)	$ (7,112)	$ 829,137	$ 213,481	$ (35,563)	$ (836)	$ 1,000,464
Shares issued under stock plans	49	—		—	(572)	—	—	—	(572)
Share-based compensation expense	—	—	—	—	4,936	—	—	—	4,936
Repurchase and retirement of common stock	(422)	(4)	—	—	(2,579)	(12,417)	—	—	(15,000)
Dividends declared ($0.07 per share)	—	—	—	—	—	(9,550)	—	—	(9,550)
Pension liability adjustment	—	—	—	—	—	—	—	(14)	(14)
Foreign currency translation	—	—	—	—	—	—	(1,712)	—	(1,712)
Net income	—	—	—	—	—	123,997	—	—	123,997
Balance at June 29, 2019	135,343	$ 1,353	(202)	$ (7,112)	$ 830,922	$ 315,511	$ (37,275)	$ (850)	$ 1,102,549

See the accompanying notes to condensed consolidated financial statements.

ENTEGRIS, INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited)

(In thousands)	Six months ended June 29, 2019	Six months ended June 30, 2018
Operating activities:		
Net income	$ 156,655	$ 111,911
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation	35,317	31,699
Amortization	35,248	23,683
Share-based compensation expense	9,589	8,557
Provision for deferred income taxes	(2,157)	(1,757)
Other	8,297	4,640
Changes in operating assets and liabilities:		
Trade accounts and notes receivable	5,436	2,687
Inventories	3,709	(22,472)
Accounts payable and accrued liabilities	(52,707)	(14,966)
Other current assets	13,028	1,976
Income taxes payable and refundable income taxes	15,391	(7,515)
Other	557	(1,337)
Net cash provided by operating activities	228,363	137,106
Investing activities:		
Acquisition of property, plant and equipment	(60,101)	(47,437)
Acquisition of businesses, net of cash acquired	(49,267)	(380,225)
Other	197	1,905
Net cash used in investing activities	(109,171)	(425,757)
Financing activities:		
Payments of long-term debt	(2,000)	(27,000)
Payments for dividends	(18,964)	(19,802)
Issuance of common stock	917	3,027
Repurchase of common stock	(50,321)	(20,000)
Taxes paid related to net share settlement of equity awards	(8,301)	(14,413)
Other	(497)	1,504
Net cash used in financing activities	(79,166)	(76,684)
Effect of exchange rate changes on cash and cash equivalents	(706)	(2,967)
Increase (decrease) in cash and cash equivalents	39,320	(368,302)
Cash and cash equivalents at beginning of period	482,062	625,408
Cash and cash equivalents at end of period	$ 521,382	$ 257,106

Supplemental Cash Flow Information

(In thousands)	Six months ended June 29, 2019	Six months ended June 30, 2018
Non-cash transactions:		
Deferred acquisition payment	$ 14,001	$ —
Contingent consideration obligation	$ 686	$ —
Equipment purchases in accounts payable	$ 5,974	$ 8,090
Dividends payable	$ 96	$ 64
Schedule of interest and income taxes paid:		
Interest paid	$ 21,637	$ 9,159
Income taxes paid, net of refunds received	$ 31,653	$ 31,881

See the accompanying notes to condensed consolidated financial statements.

ENTEGRIS, INC. AND SUBSIDIARIES
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Nature of Operations Entegris, Inc. ("Entegris", "the Company", "us", "we", or "our") is a leading global developer, manufacturer and supplier of microcontamination control products, specialty chemicals and advanced materials handling solutions for manufacturing processes in the semiconductor and other high-technology industries.

Principles of Consolidation The condensed consolidated financial statements include the accounts of the Company and its majority-owned subsidiaries. Intercompany profits, transactions and balances have been eliminated in consolidation.

Use of Estimates The preparation of condensed consolidated financial statements in conformity with accounting principles generally accepted in the United States requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, particularly receivables, inventories, property, plant and equipment, right-of-use assets, goodwill, intangibles, accrued expenses, short-term and long-term lease liability, income taxes and related accounts, and disclosure of contingent assets and liabilities at the date of the condensed consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Basis of Presentation The condensed consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States and contain all adjustments considered necessary, and are of a normal recurring nature, to present fairly the financial position as of June 29, 2019 and December 31, 2018, and the results of operations and comprehensive income for the three and six months ended June 29, 2019 and June 30, 2018, the equity statements as of and for the three and six-months periods ended June 29, 2019 and June 30, 2018, and cash flows for the six months ended June 29, 2019 and June 30, 2018.

The condensed consolidated financial statements and accompanying notes are presented as permitted by Form 10-Q and do not contain certain information included in the Company's annual consolidated financial statements and notes. The information included in this Form 10-Q should be read in conjunction with Management's Discussion and Analysis and consolidated financial statements and notes thereto included in the Company's Form 10-K for the year ended December 31, 2018. The results of operations for the three and six months ended June 29, 2019 are not necessarily indicative of the results to be expected for the full year.

Leases The Company determines if an arrangement is a lease at inception. Right-of-use (ROU) assets include operating leases. Lease liabilities for operating leases are classified in "Other accrued liabilities" and "Long-term lease liabilities" in our condensed consolidated balance sheet. We do not have material financing leases.

Operating assets and liabilities are recognized at commencement date based on the present value of the lease payments over the lease term. As most of our leases do not provide an implicit rate, we use our incremental borrowing rate based on the information available at commencement date in determining the present value of lease payments. We use the implicit rate when readily determinable. The ROU assets includes prepaid lease payments and excludes lease incentives. Lease terms may include options to extend or terminate the lease when it is reasonably certain that the Company will exercise that option. Lease expense for lease payments is recognized on a straight-line basis over the lease term.

Lease and non-lease components are generally accounted for separately for real estate leases. For non-real estate leases, we account for the lease and non-lease components as a single lease component.

Fair Value of Financial Instruments The carrying value of cash equivalents, accounts receivable, accounts payable, accrued payroll and related benefits, and other accrued liabilities approximates fair value due to the short maturity of those items. The fair value of long-term debt, including current maturities, was $946.4 million at June 29, 2019, compared to the carrying amount of long-term debt, including current maturities, of $937.7 million at June 29, 2019.

Recent Accounting Pronouncements Adopted in 2019 In February 2016, the FASB established Topic 842, *Leases*, by issuing Accounting Standards Update (ASU) No. 2016-02, which requires lessees to recognize leases on-balance sheet and disclose key information about leasing arrangements. Topic 842 was subsequently amended by ASU No. 2018-01, Land Easement Practical Expedient for Transition to Topic 842; ASU No. 2018-10, Codification Improvements to Topic 842, Leases; and ASU No. 2018-11, Targeted Improvements. The new standard establishes a right-of-use (ROU) model that requires a lessee to recognize a ROU asset and lease liability on the balance sheet for all leases with a term longer than 12 months. Leases will be classified as finance or operating, with classification affecting the pattern and expense recognition in the income statement.

The Company adopted ASU No. 2016-02 using the modified retrospective method. See Note 9 Leases to the condensed consolidated financial statements for further details.

2. REVENUES

Revenue Recognition Revenue is measured based on consideration specified in a contract with a customer, and excludes any sales incentives and amounts collected on behalf of third parties. The Company recognizes revenue when it satisfies a performance obligation by transferring control over a product or service to a customer.

Taxes assessed by a governmental authority that are both imposed on and concurrent with a specific revenue-producing transaction, that are collected by the Company from a customer, are excluded from revenue.

Shipping and handling costs associated with outbound freight after control over a product has transferred to a customer are accounted for as a fulfillment cost and are included in cost of goods sold.

The Company recognizes the incremental costs of obtaining contracts as an expense when incurred if the amortization period of the assets that the Company otherwise would have recognized is one year or less.

When the Company receives consideration, or such consideration is unconditionally due, from a customer prior to transferring goods or services to the customer under the terms of a sales contract, the Company records deferred revenue, which represents a contract liability. Such deferred revenue typically results from advance payments received on sales of the Company's products. The Company makes the required disclosures below.

The Company does not disclose information about remaining performance obligations that have original expected durations of one year or less.

Nature of goods and services The following is a description of principal activities from which the Company generates its revenues. The Company has three reportable segments. For more detailed information about reportable segments, see note 10 to the condensed consolidated financial statements. For each of the three reportable segments, the recognition of revenue regarding the nature of goods and services provided by the segments are similar and described below. The Company recognizes revenue for product sales at a point in time following the transfer of control of such products to the customer, which generally occurs upon shipment, or delivery depending on the terms of the underlying contracts. For product sales contracts that contain multiple performance obligations, the Company allocates the transaction price to each performance obligation identified in the contract based on relative standalone selling prices, or estimates of such prices, and recognizes the related revenue as control of each individual product is transferred to the customer, in satisfaction of the corresponding performance obligations.

The Company generally recognizes revenue for sales of services over time at which the Company has satisfied the performance obligation.

The Company also enters into arrangements to license its intellectual property. These arrangements typically permit the customer to use a specialized manufacturing process and in return the Company receives a royalty fee. If applicable, the Company recognizes revenue when the subsequent sale or usage occurs.

The Company offers certain customers cash discounts and volume rebates as sales incentives. The discounts and volume rebates are recorded as a reduction in sales at the time revenue is recognized in an amount estimated based on historical experience and contractual obligations. The Company periodically reviews the assumptions underlying its estimates of discounts and volume rebates and adjusts its revenues accordingly.

In addition, the Company offers free product rebates to certain customers. The Company utilizes an adjusted market approach to estimate the stand-alone selling price of the loyalty program and allocates a portion of the consideration received to the free product offering. The free product offering is redeemable upon future purchases of the Company's products. The amount associated with free product rebates is deferred in the balance sheet and is recognized as revenue when the free product is redeemed or when the likelihood of redemption is remote. The Company deems the amount immaterial for disclosure.

The Company provides for the estimated costs of fulfilling our obligations under product warranties at the time the related revenue is recognized. The Company estimates the costs based on historical failure rates, projected repair costs, and knowledge of specific product failures (if any). The specific warranty terms and conditions vary depending upon the product sold and the country in which we do business, but generally include parts and labor over a period generally ranging from 90 days to one year. The Company regularly reevaluates its estimates to assess the adequacy of the recorded warranty liabilities and adjust the amounts as necessary.

The Company's contracts are generally short-term in nature. Most contracts do not exceed twelve months. Payment terms vary by the type and location of the Company's customers and the products or services offered. The term between invoicing and when payment is due is not significant. For certain products or services and customer types, the Company requires payment before the products or services are delivered to the customer. Those customers that prepay are represented by the contract liabilities below until the performance obligations are satisfied.

The following table provides information about contract liabilities from contracts with customers. The contract liabilities are included in other accrued liabilities balance in the condensed consolidated balance sheet.

(In thousands)	June 29, 2019		December 31, 2018	
Contract liabilities - current	$	14,322	$	15,364

Significant changes in the contract liabilities balances during the period are as follows:

(In thousands)	Six Months Ended June 29, 2019	
Revenue recognized that was included in the contract liability balance at the beginning of the period	$	(11,123)
Increases due to cash received, excluding amounts recognized as revenue during the period		10,082

3. ACQUISITIONS

Digital Specialty Chemicals

On March 8, 2019, the Company acquired Digital Specialty Chemicals Limited (DSC), a Toronto, Canada-based provider of advanced materials to the specialty chemical, technology, and pharmaceutical industries. DSC reports into the Specialty Chemicals and Engineered Materials division of the Company. The acquisition was accounted for under the acquisition method of accounting and the results of operations of DSC are included in the Company's condensed consolidated financial statements as of and since March 8, 2019. Costs associated with the acquisition of DSC were $2.1 million for the six months ended June 29, 2019 and were expensed as incurred. These costs are included in selling, general and administrative expense in the Company's condensed consolidated statements of operations. The acquisition does not constitute a material business combination.

The purchase price for DSC is $64.0 million, net of cash acquired. The purchase price includes (1) cash consideration of $49.7 million, or $49.3 million net of cash acquired, subject to revision for customary working capital adjustments, which was funded from the Company's existing cash on hand, (2) a fixed deferred payment of $16.1 million that is due on March 31, 2022, recorded at $14.0 million representing the fair value of this fixed deferred payment as of the acquisition date, and (3) an earnout-based contingent consideration of $0.7 million based on the operating performance of DSC for a twelve-month period ended March 31, 2021.

The fair value of the fixed deferred payment was determined by taking the present value of this fixed deferred payment based on the term and discount factor. The fixed deferred payment is reflected in the pension benefit obligations and other liabilities in the Company's condensed consolidated balance sheets.

Upon closing the acquisition, the Company recorded a contingent consideration obligation of $0.7 million representing the fair value of the earnout-based contingent consideration. This amount was estimated based on a Black Scholes model. Subsequent changes in the fair value of this obligation will be recognized as adjustments to the contingent consideration obligation and reflected within the Company's condensed consolidated statements of operations.

The purchase price of DSC exceeds the net of the acquisition-date amounts of the identifiable assets acquired and the liabilities assumed by $34.5 million. Cash flows used to determine the purchase price included strategic and synergistic benefits (investment value) specific to the Company, which resulted in a purchase price in excess of the fair value of identifiable net assets. This additional investment value resulted in goodwill, which is expected to be deductible for income tax purposes.

The following table summarizes the provisional allocation of the purchase price to the fair values assigned to the assets acquired and liabilities assumed at the date of the acquisition and as adjusted as of June 29, 2019:

(In thousands):	As of March 8, 2019	As of June 29, 2019
Trade accounts and note receivable, net	$ 1,840	$ 1,840
Inventories, net	5,523	4,353
Other current assets	1,389	1,391
Property, plant and equipment	16,791	16,652
Identifiable intangible assets	7,976	6,886
Right-of-use assets	79	79
Deferred tax asset	1,104	1,104
Other noncurrent assets	—	28
Accounts payable and accrued liabilities	(2,461)	(2,540)
Deferred tax liabilities	(2,861)	(318)
Long-term lease liability	(37)	(37)
Net assets acquired	29,343	29,438
Goodwill	35,133	34,516
Total purchase price, net of cash acquired	$ 64,476	$ 63,954

The final valuation of assets acquired and liabilities assumed is expected to be completed as soon as possible, but not later than one year from the acquisition date. Given the size and complexity of the acquisition, the valuation of certain assets and liabilities is still being completed and is subject to final review. To the extent that the Company's estimates require adjustment, the Company will modify the values.

SAES Pure Gas

On June 25, 2018, the Company acquired the SAES Pure Gas business (SPG) from SAES Getters S.p.A. for approximately $352.7 million in cash, or $341.5 million net of cash acquired, funded from the Company's existing cash on hand. The acquisition was accounted for under the acquisition method of accounting and the results of operations of SPG are included in the Company's condensed consolidated financial statements as of and since June 25, 2018. Direct costs of $4.8 million associated with the acquisition of SPG, consisting mainly of professional and consulting fees, were expensed as incurred for the year ended December 31, 2018. These costs are included in selling, general and administrative expense in the Company's condensed consolidated statements of operations.

SPG, based in San Luis Obispo, California, is a leading provider of high-capacity gas purification systems used in semiconductor manufacturing and adjacent markets, and reports into the Microcontamination Control Division of the Company. This acquisition expands the gas purification solutions portfolio in our Microcontamination Control Division with high-capacity products suited for bulk chemical purification applications.

The following table summarizes the final allocation of the purchase price to the fair values assigned to the assets acquired and liabilities assumed at December 31, 2018 and as adjusted as of June 29, 2019:

(In thousands):	As of December 31, 2018	As of June 29, 2019
Trade accounts and note receivable, net	$ 19,173	$ 19,173
Inventories, net	42,758	42,758
Other current assets	1,322	706
Property, plant and equipment	6,653	6,653
Identifiable intangible assets	150,430	150,430
Deferred tax assets	831	734
Other noncurrent assets	12	12
Current liabilities	(26,473)	(26,473)
Deferred tax liabilities	(35,533)	(35,271)
Other noncurrent liabilities	(1,412)	(1,412)
Net assets acquired	157,761	157,310
Goodwill	183,729	184,180
Total purchase price, net of cash acquired	$ 341,490	$ 341,490

The fair value of acquired inventories of $42.8 million is valued at the estimated selling price less cost of disposal and reasonable profit for the selling effort. The fair value write-up of acquired work-in-process and finished goods inventory was $8.9 million, the amount of which was amortized over the expected turn of the acquired inventory. Accordingly, $0.0 million and $2.0 million incremental cost of sales charge associated with the fair value write-up of inventory acquired in the acquisition of SPG was recorded for the three and six months ended June 29, 2019, respectively.

The fair value of acquired property, plant and equipment of $6.7 million is valued at its value-in-use.

The Company recognized the following finite-lived intangible assets as part of the acquisition of SPG:

(In thousands)	Amount	Weighted average life in years
Developed technology	$ 20,070	8.0
Trademarks and trade names	6,670	12.0
Customer relationships	107,790	12.0
Other	15,900	0.9
	$ 150,430	10.0

The acquired identifiable intangible assets are being amortized on a straight-line basis. The fair value of acquired identifiable intangible assets was determined using the "income approach". In performing these valuations, the key underlying probability-adjusted assumptions of the discounted cash flows were projected revenues, gross margin expectations and operating cost estimates. The valuations were based on the information that was available as of the acquisition date and the expectations and assumptions that have been deemed reasonable by the Company's management. There are inherent uncertainties and management judgment required in these determinations. The fair value measurements of the assets acquired and liabilities assumed were based on valuations involving significant unobservable inputs, or Level 3 inputs in the fair value hierarchy.

The purchase price of SPG exceeded the net of the acquisition-date amounts of the identifiable assets acquired and the liabilities assumed by $184.2 million. Cash flows used to determine the purchase price included strategic and synergistic benefits (investment value) specific to the Company, which resulted in a purchase price in excess of the fair value of identifiable net assets. The purchase price also included the fair values of other assets that were not identifiable, not separately recognizable under accounting rules (e.g., assembled workforce) or of immaterial value in addition to a going-concern element that represents the Company's ability to earn a higher rate of return on the group of assets than would be expected on the separate assets as determined during the valuation process. This additional investment value resulted in goodwill. No amount of goodwill is expected to be deductible for income tax purposes.

During the quarter ended June 29, 2019, the Company finalized its fair value determination of the assets acquired and liabilities assumed. The valuation of the assets acquired and liabilities assumed was based on the information that was available as of the acquisitions date, and the expectations and assumptions that have been deemed reasonable by the Company's management.

Particle Sizing Systems

On January 22, 2018, the Company acquired Particle Sizing Systems, LLC (PSS), which provides particle sizing instrumentation for liquid applications to the semiconductor and life science industries. The acquired assets and assumed liabilities became part of the Company's Advanced Materials Handling (AMH) segment. The transaction was accounted for under the acquisition method of accounting and the results of operations of PSS are included in the Company's condensed consolidated financial statements since January 22, 2018. The acquisition does not constitute a material business combination.

The purchase price for PSS was cash consideration of $37.3 million, funded from the Company's existing cash on hand. Costs associated with the acquisition of the product line were not significant and were expensed as incurred.

The purchase price of PSS exceeds the net of the acquisition-date amounts of the identifiable assets acquired and the liabilities assumed by $8.8 million. Cash flows used to determine the purchase price included strategic and synergistic benefits (investment value) specific to the Company, which resulted in a purchase price in excess of the fair value of identifiable net assets. This additional investment value resulted in goodwill, which is expected to be deductible for income tax purposes.

During the year ended December 31, 2018, the Company finalized its fair value determinations of the assets acquired and liabilities assumed. The valuation of the assets acquired and liabilities assumed was based on the information that was available as of the acquisition date, and the expectations and assumptions that have been deemed reasonable by the Company's management.

Flex Concepts

On June 26, 2018, the Company acquired Flex Concepts, Inc. (Flex), a technology company focused on single-use fluid handling bags, tubing manifolds and hardware for the life sciences industry. The purchase price of Flex was for cash consideration of $1.9 million. The transaction was accounted for under the acquisition method of accounting and the results of operations of Flex are included in the Company's condensed consolidated financial statements since June 26, 2018. The acquisition does not constitute a material business combination.

During the year ended December 31, 2018, the Company finalized its fair value determinations of the assets acquired and liabilities assumed. The valuation of the assets acquired and liabilities assumed was based on the information that was available as of the acquisition date and the expectations and assumptions that have been deemed reasonable by the Company's management.

4. INVENTORIES

Inventories consist of the following:

(In thousands)	June 29, 2019	December 31, 2018
Raw materials	$ 84,711	$ 100,770
Work-in process	37,878	31,412
Finished goods	139,345	135,958
Total inventories, net	$ 261,934	$ 268,140

5. GOODWILL AND INTANGIBLE ASSETS

Goodwill activity for each period was as follows:

(In thousands)	Specialty Chemicals and Engineered Materials	Microcontamination Control	Advanced Materials Handling	Total
December 31, 2018	$ 301,423	191,708	$ 57,071	$ 550,202
Addition due to acquisitions	34,516	—	—	34,516
Purchase accounting adjustments	—	451	—	451
Foreign currency translation	(1,850)	9	—	(1,841)
June 29, 2019	$ 334,089	$ 192,168	$ 57,071	$ 583,328

Identifiable intangible assets at June 29, 2019 and December 31, 2018 consist of the following:

June 29, 2019

(In thousands)	Gross carrying Amount	Accumulated amortization	Net carrying value
Developed technology	$ 252,127	$ 190,191	$ 61,936
Trademarks and trade names	26,249	15,403	10,846
Customer relationships	329,545	146,189	183,356
Other	36,303	26,016	10,287
	$ 644,224	$ 377,799	$ 266,425

December 31, 2018

(In thousands)	Gross carrying amount	Accumulated amortization	Net carrying value
Developed technology	$ 248,776	$ 176,421	$ 72,355
Trademarks and trade names	25,643	14,749	10,894
Customer relationships	328,050	133,068	194,982
Other	36,306	18,850	17,456
	$ 638,775	$ 343,088	$ 295,687

Future amortization expense during the remainder of 2019, the next four years and thereafter relating to intangible assets currently recorded in the Company's condensed consolidated balance sheets is estimated at June 29, 2019 to be the following:

(In thousands)	Remaining 2019	2020	2021	2022	2023	Thereafter	Total
Future amortization expense	$ 28,575	43,123	36,655	36,080	34,745	87,247	$ 266,425

6. INCOME TAX

The Company recorded income tax expense of $43.2 million and $48.7 million, respectively, in the three and six months ended June 29, 2019, compared to income tax expense of $9.8 million and $23.3 million, respectively in the three and six months ended June 30, 2018. The Company's year-to-date effective tax rate was 23.7% in 2019, compared to 17.2% in 2018.

The increase in the effective tax rate from 2018 to 2019 primarily relates to a discrete charge of $9.4 million related to the reversal of a dividend received deduction benefit recorded in 2018. This discrete charge was recorded based on the issuance of final regulations during the quarter. Additionally, the Company received a termination fee from Versum Materials, Inc. based on the termination of the Versum Merger Agreement and recorded a discrete charge of $23.5 million related to the termination fee, net of associated expenses. As a result of the termination fee, the Company released a valuation allowance on federal capital loss carryforwards and recorded a discrete benefit of $2.4 million. The year-to-date income tax expense in 2019 and 2018 includes discrete benefits of $3.1 million and $6.1 million, respectively, recorded in connection with share-based compensation. The tax rate in 2018 included a discrete charge of $2.6 million related to an internal repurchase of shares of a Korean subsidiary.

7. EARNINGS PER COMMON SHARE

The following table presents a reconciliation of the denominators used in the computation of basic and diluted earnings per common share (EPS):

	Three months ended		Six months ended	
(In thousands)	June 29, 2019	June 30, 2018	June 29, 2019	June 30, 2018
Basic—weighted common shares outstanding	135,378	141,701	135,338	141,641
Weighted common shares assumed upon exercise of stock options and vesting of restricted common stock	1,203	1,537	1,299	1,804
Diluted—weighted common shares and common shares equivalent outstanding	136,581	143,238	136,637	143,445

The Company excluded the following shares underlying stock-based awards from the calculations of diluted EPS because their inclusion would have been anti-dilutive for the three and six months ended June 29, 2019 and June 30, 2018:

	Three months ended		Six months ended	
(In thousands)	June 29, 2019	June 30, 2018	June 29, 2019	June 30, 2018
Shares excluded from calculations of diluted EPS	295	298	530	231

8. OTHER (INCOME) EXPENSE, NET

Other (income) expense, net for the three and six months ended June 29, 2019 and June 30, 2018 consists of the following:

	Three months ended		Six months ended	
(In thousands)	June 29, 2019	June 30, 2018	June 29, 2019	June 30, 2018
Versum termination fee, net	$ (122,000)	$ —	$ (122,000)	$ —
(Gain) loss on foreign currency remeasurement	(203)	2,987	(923)	2,942
Other, net	188	890	660	1,074
Other (income) expense, net	$ (122,015)	$ 3,877	$ (122,263)	$ 4,016

Versum termination fee, net

On January 28, 2019, the Company and Versum Materials, Inc. ("Versum") announced that they had entered into an Agreement and Plan of Merger, dated as of January 27, 2019 (the "Merger Agreement"), pursuant to which they agreed to combine in a merger of equals. On April 8, 2019, Versum announced that its Board of Directors had received a proposal from Merck KGaA to acquire Versum and that its Board of Directors had deemed such proposal as a "Superior Proposal" defined in the merger agreement. On April 12, 2019, the Company received a termination notice from Versum terminating the Merger Agreement. In accordance with the terms of the Merger Agreement, Entegris received a $140.0 million termination fee from Versum in the second quarter of 2019. Also in the second quarter of 2019, the Company paid a fee of $18.0 million to the third-party financial adviser it had engaged to assist with the transaction.

9. LEASES

Adoption of ASC ASU No. 2016-02, *Leases* On January 1, 2019, the Company adopted ASU No. 2016-02 using the modified retrospective method applied to existing leases in place as of January 1, 2019. Leases entered into after January 1, 2019 are presented under the provisions of ASU No. 2016-02, while prior periods are not adjusted and continue to be reported in accordance with previous accounting guidance. Leases commencing or renewing after the adoption date are evaluated based on the guidance in ASU No. 2016-02 and may result in more finance leases being recognized even for the renewal of previously classified operating leases.

The Company elected to adopt the 'package of practical expedients', which permitted the Company not to reassess under the new standard our prior conclusions about lease identification, lease classification and initial direct costs. The Company also elected the practical expedient pertaining to land easements, which allowed the Company to exclude evaluation of all existing land easements in connection with the adoption of the new lease requirements to assess whether they meet the definition of a lease. The Company did not elect the use-of-hindsight practical expedient and therefore did not reassess the lease terms for purposes of calculation of the lease liabilities and right-of-use assets at the adoption date. The Company elected the short-term lease recognition exemption for all leases that qualified. This means, for those leases that qualified, the Company did not recognize right-of-use assets or lease liabilities, and this included not recognizing right-of-use assets or lease liabilities for existing short-term leases of those assets in transition. The Company also elected the practical expedient to not separate lease and non-lease components for all leases other than leases of real estate, and this included not separating lease and non-lease components for all leases other than leases of real estate in transition.

The Company adopted ASU 2016-02 using the modified retrospective method, recognizing the cumulative effect of application as an adjustment to the opening balance sheet. The standard had a material impact on our condensed consolidated balance sheets, but did not have a material impact on our condensed consolidated statement of income or cash flows. The most significant impact was the recognition of the right-of-use asset and lease liabilities for operating leases. As of June 29, 2019, we do not have any material finance leases.

The details of the impact of the changes made to the Company's condensed consolidated balance sheet date as of January 1, 2019, the date of adoption, are reflected in the following table.

(*In thousands*)		Debit/(Credit)
Right-of-use assets	$	46,162
Prepaid rent		(646)
Short-term lease liability		(8,892)
Short-term deferred rent		274
Long-term lease liability		(42,639)
Long-term deferred rent		5,741
Deferred tax asset		11,629
Deferred tax liability		(11,629)

Leases As of June 29, 2019, the Company was obligated under operating lease agreements for certain sales offices and manufacturing facilities, manufacturing equipment, vehicles, information technology equipment and warehouse space. Our leases have remaining lease terms of 1 year to 13 years, some of which may include options to extend the lease for up to 6 years, and some of which may include options to terminate the leases within 1 year. As of June 29, 2019, the Company has obtained $3.0 million of operating lease assets in exchange for lease obligations.

As of June 29, 2019, the Company's operating lease components with initial or remaining terms in excess of one year were classified on the condensed consolidated balance sheet as follows:

(In thousands)	Classification	June 29, 2019
Assets		
Right-of-use assets	Right-of-use assets	$ 44,176
Liabilities		
Short-term lease liability	Other accrued liabilities	8,820
Long-term lease liability	Long-term lease liability	40,612
Total lease liabilities		$ 49,432

Expense for leases less than 12 months for the three and six months ended June 29, 2019 were not material. The components of lease expense for the three and six months ended June 29, 2019 are as follows:

(In thousands)	Three months ended June 29, 2019	Six months ended June 29, 2019
Operating lease cost	$ 2,792	$ 5,812

The Company combines the amortization of the the ROU assets and the change in the operating lease liability in the same line item in the Statement of Cash Flows. Other information related to the Company's operating leases was as follows:

(In thousands)	June 29, 2019
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash flows from leases	$ 5,020
Lease Term and Discount Rate	
Weighted average remaining lease term (years)	8.43
Weighted average discount rate	5.1%

Future minimum lease payments for noncancellable operating leases as of June 29, 2019, were as follows:

(In thousands)	Operating Leases
Remaining 2019	$ 5,917
2020	9,990
2021	7,898
2022	5,898
2023	5,313
Thereafter	27,149
Total	$ 62,165
Less: Interest	12,733
Present value of lease liabilities	$ 49,432

Future minimum lease payments for noncancellable operating leases as of December 31, 2018, were as follows:

(In thousands)	Operating Leases
2019	$ 11,360
2020	8,906
2021	6,836
2022	5,431
2023	5,208
Thereafter	27,153
Total	$ 64,894

10. SEGMENT REPORTING

The Company's financial segment reporting reflects an organizational alignment intended to leverage the Company's unique portfolio of capabilities to create value for its customers by developing mission-critical solutions to maximize manufacturing yields and enable higher performance of devices. While these segments have separate products and technical know-how, they share common business systems and processes, technology centers, and strategic and technology roadmaps. The Company leverages its expertise from these three segments to create new and increasingly integrated solutions for its customers. The Company's business is reported in the following segments:

- **Specialty Chemicals and Engineered Materials (SCEM):** SCEM provides high-performance and high-purity process chemistries, gases, and materials and safe and efficient delivery systems to support semiconductor and other advanced manufacturing processes.
- **Microcontamination Control (MC):** MC solutions purify critical liquid chemistries and gases used in semiconductor manufacturing processes and other high-technology industries.
- **Advanced Materials Handling (AMH):** AMH develops solutions to monitor, protect, transport, and deliver critical liquid chemistries, wafers, and substrates for a broad set of applications in the semiconductor industry and other high-technology industries.

In the first quarter of 2019, the Company changed its definition of segment profit to include inter-segment sales. The Company updated its recognition of inter-segment sales to recognize the revenue and profit associated with products and components produced in one segment and supplied to another, before being sold to the ultimate end customer. The Company accounts for inter-segment sales and transfers as if the sales or transfers were to third parties, that is, at approximate market prices. Inter-segment sales are presented as an elimination below. Segment profit is defined as net sales less direct and indirect segment operating expenses, including certain general and administrative costs for the Company's human resources, finance and information technology functions. The remaining unallocated expenses consist mainly of the Company's corporate functions as well as interest expense, amortization of intangible assets and income tax expense. Prior quarter information was recast to reflect the change in the Company's definition of segment profit.

Summarized financial information for the Company's reportable segments is shown in the following tables.

	Three months ended		Six months ended	
(In thousands)	June 29, 2019	June 30, 2018	June 29, 2019	June 30, 2018
Net sales				
SCEM	$ 127,552	$ 134,336	$ 252,022	$ 265,079
MC	150,185	124,937	307,891	243,860
AMH	107,515	130,572	223,579	254,650
Inter-segment elimination	(6,378)	(6,786)	(13,571)	(13,331)
Total net sales	$ 378,874	$ 383,059	$ 769,921	$ 750,258

	Three months ended		Six months ended	
(In thousands)	June 29, 2019	June 30, 2018	June 29, 2019	June 30, 2018
Segment profit				
SCEM	$ 24,000	$ 36,728	$ 48,431	$ 67,649
MC	43,126	37,214	90,449	77,525
AMH	15,043	25,542	37,410	51,005
Total segment profit	$ 82,169	$ 99,484	$ 176,290	$ 196,179

The following table reconciles total segment profit to income before income taxes:

(In thousands)	Three months ended June 29, 2019	Three months ended June 30, 2018	Six months ended June 29, 2019	Six months ended June 30, 2018
Total segment profit	$ 82,169	$ 99,484	$ 176,290	$ 196,179
Less:				
Amortization of intangible assets	16,591	12,014	35,248	23,683
Unallocated general and administrative expenses	10,669	12,537	38,642	19,090
Operating income	54,909	74,933	102,400	153,406
Interest expense	11,315	8,296	22,199	16,455
Interest income	(1,623)	(1,371)	(2,848)	(2,304)
Other (income) expense, net	(122,015)	3,877	(122,263)	4,016
Income before income tax expense	$ 167,232	$ 64,131	$ 205,312	$ 135,239

In the following tables, revenue is disaggregated by country or region for the three and six months ended June 29, 2019 and June 30, 2018, respectively.

	Three months ended June 29, 2019					Six months ended June 29, 2019				
(In thousands)	SCEM	MC	AMH	Inter-segment	Total	SCEM	MC	AMH	Inter-segment	Total
Taiwan	$ 21,584	$ 31,205	$ 12,740	$ —	$ 65,529	$ 46,757	$ 69,695	$ 30,863	$ —	$ 147,315
United States	33,676	25,092	35,193	(6,378)	87,583	66,414	52,674	73,739	(13,571)	179,256
South Korea	17,696	28,531	16,766	—	62,993	37,022	54,346	32,744	—	124,112
Japan	15,089	24,721	11,954	—	51,764	26,767	49,816	23,344	—	99,927
China	20,413	22,538	10,653	—	53,604	34,570	44,703	20,499	—	99,772
Europe	7,652	11,402	14,408	—	33,462	16,429	22,177	30,007	—	68,613
Southeast Asia	11,442	6,696	5,801	—	23,939	24,063	14,480	12,383	—	50,926
	$ 127,552	$ 150,185	$ 107,515	$ (6,378)	$ 378,874	$ 252,022	$ 307,891	$ 223,579	$ (13,571)	$ 769,921

	Three months ended June 30, 2018					Six months ended June 30, 2018				
(In thousands)	SCEM	MC	AMH	Inter-segment	Total	SCEM	MC	AMH	Inter-segment	Total
Taiwan	$ 26,575	$ 23,572	$ 17,280	$ —	$ 67,427	$ 54,217	$ 46,104	$ 32,197	$ —	$ 132,518
United States	34,128	20,528	35,996	(6,786)	83,866	66,529	41,589	75,344	(13,331)	170,131
South Korea	20,791	19,982	23,961	—	64,734	41,118	39,805	46,549	—	127,472
Japan	14,060	28,545	12,079	—	54,684	28,566	54,537	23,111	—	106,214
China	16,726	15,753	14,319	—	46,798	31,706	29,057	26,530	—	87,293
Europe	7,970	10,406	17,553	—	35,929	15,766	20,090	32,960	—	68,816
Southeast Asia	14,086	6,151	9,384	—	29,621	27,177	12,678	17,959	—	57,814
	$ 134,336	$ 124,937	$ 130,572	$ (6,786)	$ 383,059	$ 265,079	$ 243,860	$ 254,650	$ (13,331)	$ 750,258

11. SUBSEQUENT EVENTS

On July 15, 2019, the Company acquired MPD Chemicals, a provider of advanced materials to the specialty chemical, technology, and life sciences industries. The Company acquired MPD Chemicals for approximately $165.0 million, subject to customary purchase price adjustments. The Company funded the acquisition from its available cash. MPD Chemicals will be a part of the SCEM segment.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis of the Company's condensed consolidated financial condition and results of operations should be read along with the condensed consolidated financial statements and the accompanying notes to the condensed consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q. The information, except for historical information, contained in this discussion and analysis or set forth elsewhere in this Quarterly Report on Form 10-Q includes forward-looking statements that involve risks and uncertainties. These forward-looking statements could differ materially from actual results. You should review the section entitled "Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2018 as well as in our Quarterly Reports on Form 10-Q and Current Reports on Form 8-K for a discussion of important factors that could cause actual results to differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis. The Company assumes no obligation to publicly release the results of any revision or updates to these forward-looking statements to reflect future events or unanticipated occurrences.

Overview

This overview is not a complete discussion of the Company's financial condition, changes in financial condition and results of operations; it is intended merely to facilitate an understanding of the most salient aspects of the Company's financial condition and operating performance and to provide a context for the detailed discussion and analysis that follows and must be read in its entirety in order to fully understand the Company's financial condition and results of operations.

The Company is a leading global developer, manufacturer and supplier of microcontamination control products, specialty chemicals and advanced materials handling solutions for manufacturing processes in the semiconductor and other high-technology industries. Our mission is to leverage our unique breadth of capabilities to create value for our customers by developing mission-critical solutions to maximize manufacturing yields, reduce manufacturing costs and enable higher device performance.

Our technology portfolio includes approximately 21,000 standard and customized products and solutions to achieve the highest levels of purity and performance that are essential to the manufacture of semiconductors, flat panel displays, light emitting diodes or LEDs, high-purity chemicals, solar cells, gas lasers, optical and magnetic storage devices, and critical components for aerospace, glass manufacturing and biomedical applications. The majority of our products are consumed at various times throughout the manufacturing process, with demand driven in part by the level of semiconductor and other manufacturing activity.

Our most significant customers include semiconductor device manufacturers, semiconductor equipment makers, gas and chemical manufacturing companies, leading wafer grower companies and manufacturers of high-precision electronics. We also sell our products to flat panel display equipment makers, materials suppliers and panel manufacturers, and manufacturers of hard disk drive components and devices. We sell our products worldwide, primarily through our direct sales force and strategic independent distributors located in all major semiconductor markets. Independent distributors are also used in other semiconductor market territories and for specific market segments.

Our business is organized and operated in three operating segments which align with the key elements of the advanced semiconductor manufacturing ecosystem. The Specialty Chemicals and Engineered Materials, or SCEM, segment provides high-performance and high-purity process chemistries, gases, and materials, and safe and efficient delivery systems to support semiconductor and other advanced manufacturing processes. The Microcontamination Control, or MC, segment offers solutions to filter and purify critical liquid chemistries and gases used in semiconductor manufacturing processes and other high-technology industries. The Advanced Materials Handling, or AMH, segment develops solutions to monitor, protect, transport, and deliver critical liquid chemistries, wafers and other substrates for a broad set of applications in the semiconductor industry and other high-technology industries. While these segments have separate products and technical know-how, they share common business systems and processes, technology centers, and strategic and technology roadmaps. We leverage our expertise from these three segments to create new and increasingly integrated solutions for our customers. See note 10 to the condensed consolidated financial statements for additional information on the Company's three segments.

The Company's fiscal year is the calendar period ending each December 31. The Company's fiscal quarters consist of 13-week or 14-week periods that end on Saturday. The Company's fiscal quarters in 2019 end March 30, 2019, June 29, 2019, September 28, 2019 and December 31, 2019. Unaudited information for the three and six months ended June 29, 2019 and June 30, 2018 and the financial position as of June 29, 2019 and December 31, 2018 are included in this Quarterly Report on Form 10-Q.

Key operating factors Key factors, which management believes have the largest impact on the overall results of operations of the Company, include:

- ***Level of sales*** Since a significant portion of the Company's product costs (except for raw materials, purchased components and direct labor) are largely fixed in the short-to-medium term, an increase or decrease in sales affects gross profits and overall profitability significantly. Also, increases or decreases in sales and operating profitability affect certain costs such as incentive compensation and commissions, which are highly variable in nature. The Company's sales are subject to the effects of industry cyclicality, technological change, substantial competition, pricing pressures and foreign currency fluctuation.

- ***Variable margin on sales*** The Company's variable margin on sales is determined by selling prices and the costs of manufacturing and raw materials. This is affected by a number of factors, which include the Company's sales mix, purchase prices of raw material (especially polymers, membranes, stainless steel and purchased components), domestic and international competition, direct labor costs, and the efficiency of the Company's production operations, among others.

- ***Fixed cost structure*** The Company's operations include a number of large fixed or semi-fixed cost components, which include salaries, indirect labor and benefits, facility costs, lease expenses, and depreciation and amortization. It is not possible to vary these costs easily in the short-term as volumes fluctuate. Accordingly, increases or decreases in sales volume can have a large effect on the usage and productivity of these cost components, resulting in a large impact on the Company's profitability.

Overall Summary of Financial Results

For the three months ended June 29, 2019, net sales decreased 1% to $378.9 million, compared to $383.1 million for the three months ended June 30, 2018. Included in the quarterly sales were sales from acquired businesses of $32.3 million and unfavorable foreign currency translation effects of $2.8 million. Exclusive of those factors, the Company's sales decreased 9%. The decrease in revenue resulted from decreased customer demand from the semiconductor market compared to the year-ago quarter.

Sales were down 3% on a sequential basis over the first quarter of 2019, including unfavorable foreign currency translation effects of $0.6 million. Exclusive of that factor, the Company's sales decreased 3%. The decrease in revenue resulted from decreased customer demand from the semiconductor market compared to the prior year quarter.

Reflecting the net sales decrease, the Company's gross profit for the three months ended June 29, 2019 decreased to $166.3 million, down from $182.4 million for the three months ended June 30, 2018. The Company experienced a 43.9% gross margin rate for the three months ended June 29, 2019, compared to 47.6% in the comparable year-ago period. The gross margin decrease reflects lower factory utilization associated with weaker sales levels and an unfavorable sales mix.

The Company's selling, general and administrative (SG&A) expenses decreased by $1.1 million for the three months ended June 29, 2019 compared to the year-ago quarter, mainly due to lower deal costs offset by higher employee costs and professional fees.

The Company's other income, net increased by $125.9 million for the three months ended June 29, 2019 compared to the year-ago quarter, mainly due to the net proceeds received of $122.0 million resulting from the termination of the merger agreement with Versum. See note 8 to condensed consolidated financial statements for additional information.

As a result of the aforementioned factors, the Company reported net income of $124.0 million, or $0.91 per diluted share, for the quarter ended June 29, 2019, compared to net income of $54.3 million, or $0.38 per diluted share, a year ago.

On March 8, 2019, the Company acquired Digital Specialty Chemicals Limited (DSC), which provides advanced materials to the specialty chemical, technology and pharmaceutical industries. The total purchase price of the acquisition was approximately $64.0 million, net of cash acquired. The acquisition does not constitute a material business combination. See note 3 to the condensed consolidated financial statements for additional information on the acquisition.

On July 15, 2019, the Company acquired MPD Chemicals, a provider of advanced materials to the specialty chemical, technology, and life sciences industries. The Company acquired MPD Chemicals for approximately $165 million, subject to customary purchase price adjustments. The Company funded the acquisition from its available cash. The acquisition does not constitute a material business combination.

Cash and cash equivalents were $521.4 million at June 29, 2019, compared with cash and cash equivalents of $482.1 million at December 31, 2018. The Company had outstanding debt of $937.7 million at June 29, 2019, compared to $938.9 million at December 31, 2018.

Critical Accounting Policies

Management's discussion and analysis of financial condition and results of operations are based upon the Company's condensed consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these condensed consolidated financial statements requires the Company to make estimates, assumptions and judgments that affect the reported amounts of assets, liabilities, revenues and expenses and related disclosure of contingent assets and liabilities. Actual results may differ from these estimates under different assumptions or conditions.

The critical accounting policies affected most significantly by estimates, assumptions and judgments used in the preparation of the Company's condensed consolidated financial statements are described in Item 7 of its Annual Report on Form 10-K for the year ended December 31, 2018 filed with the Securities and Exchange Commission. On an ongoing basis, the Company evaluates the critical accounting policies used to prepare its condensed consolidated financial statements, including, but not limited to, those related to impairment of long-lived assets, goodwill, income taxes and business acquisitions. There have been no material changes in these aforementioned critical accounting policies.

Three and Six Months Ended June 29, 2019 Compared to Three and Six Months Ended June 30, 2018 and Three Months Ended March 30, 2019

The following table compares operating results for the three and six months ended June 29, 2019 with results for the three and six months ended June 30, 2018 and three months ended March 30, 2019 both in dollars and as a percentage of net sales, for each caption.

	Three months ended						Six months ended			
(Dollars in thousands)	June 29, 2019		June 30, 2018		March 30, 2019		June 29, 2019		June 30, 2018	
Net sales	$ 378,874	100.0 %	$ 383,059	100.0 %	$ 391,047	100.0 %	$ 769,921	100.0 %	$ 750,258	100.0 %
Cost of sales	212,600	56.1	200,681	52.4	213,654	54.6	426,254	55.4	391,883	52.2
Gross profit	166,274	43.9	182,378	47.6	177,393	45.4	343,667	44.6	358,375	47.8
Selling, general and administrative expenses	64,150	16.9	65,200	17.0	82,254	21.0	146,404	19.0	123,469	16.5
Engineering, research and development expenses	30,624	8.1	30,231	7.9	28,991	7.4	59,615	7.7	57,817	7.7
Amortization of intangible assets	16,591	4.4	12,014	3.1	18,657	4.8	35,248	4.6	23,683	3.2
Operating income	54,909	14.5	74,933	19.6	47,491	12.1	102,400	13.3	153,406	20.4
Interest expense	11,315	3.0	8,296	2.2	10,884	2.8	22,199	2.9	16,455	2.2
Interest income	(1,623)	(0.4)	(1,371)	(0.4)	(1,225)	(0.3)	(2,848)	(0.4)	(2,304)	(0.3)
Other (income) expense, net	(122,015)	(32.2)	3,877	1.0	(248)	(0.1)	(122,263)	(15.9)	4,016	0.5
Income before income taxes	167,232	44.1	64,131	16.7	38,080	9.7	205,312	26.7	135,239	18.0
Income tax expense	43,235	11.4	9,782	2.6	5,422	1.4	48,657	6.3	23,328	3.1
Net income	$ 123,997	32.7 %	$ 54,349	14.2 %	$ 32,658	8.4 %	$ 156,655	20.3 %	$ 111,911	14.9 %

Net sales For the three months ended June 29, 2019, net sales decreased by 1% to $378.9 million, compared to $383.1 million for the three months ended June 30, 2018. An analysis of the factors underlying the increase in net sales is presented in the following table:

(In thousands)	
Net sales in the quarter ended June 30, 2018	$ 383,059
Decrease associated with volume	(33,636)
Decrease associated with effect of foreign currency translation	(2,847)
Increase associated with acquired businesses	32,298
Net sales in the quarter ended June 29, 2019	$ 378,874

Included in the sales decrease were sales associated with acquisitions of $32.3 million. In addition, there were unfavorable foreign currency translation effects of $2.8 million, mainly due to the weakening of the Korean Won relative to the U.S. dollar. Exclusive of these factors, sales decreased 9% for the quarter, mainly from a decreased customer demand from the semiconductor market compared to the year-ago quarter.

Sales percentage on a geographic basis for the three months ended June 29, 2019 and June 30, 2018 and the percentage increase (decrease) in sales for the three months ended June 29, 2019 compared to the sales for the three months ended June 30, 2018 were
as follows:

	Three months ended		
	June 29, 2019	June 30, 2018	Percentage increase (decrease) in sales
Taiwan	17%	18%	(3)%
North America	23%	22%	4 %
South Korea	17%	17%	(3)%
Japan	14%	14%	(5)%
China	14%	12%	15 %
Europe	9%	9%	(7)%
Southeast Asia	6%	8%	(19)%

Sales were down 3% on a sequential basis over the first quarter of 2019, including unfavorable foreign currency translation effects of $0.6 million. Exclusive of that factor, the Company's sales decreased 3%. The decrease in revenue resulted from decreased customer demand from the semiconductor market compared to the previous quarter.

Net sales for the six months ended June 29, 2019 were $769.9 million, up 3% from $750.3 million in the comparable year-ago period. An analysis of the factors underlying the increase in net sales is present in the following table:

(In thousands)		
Net sales in the six months ended June 30, 2018	$	750,258
Decrease associated with volume, pricing and mix		(42,628)
Decrease associated with effect of foreign currency translation		(5,998)
Increase associated with acquired businesses		68,289
Net sales in the six months ended June 29, 2019	$	769,921

Gross profit The Company's gross profit declined 9% for the three months ended June 29, 2019 to $166.3 million, compared to $182.4 million for the three months ended June 30, 2018. The Company experienced a 43.9% gross margin rate for the three months ended June 29, 2019, compared to 47.6% in the comparable year-ago period. The gross profit and gross margin decrease reflects lower factory utilization associated with weaker sales levels and an unfavorable sales mix.

For the six months ended June 29, 2019, the Company's gross profit declined 4% to $343.7 million, compared to $358.4 million for the six months ended June 30, 2018. The Company experienced a 44.6% gross margin rate for the six months ended June 29, 2019, compared to 47.8% in the comparable year-ago period. The gross profit and gross margin decrease reflects lower factory utilization associated with weaker sales levels and an unfavorable sales mix. In addition, the gross profit and gross margin figures include an incremental cost of sales charge of $2.9 million and $0.2 million associated with the sale of inventory acquired in the SAES Pure Gas business and DSC business for the six months ended June 29, 2019 and June 30, 2018, respectively.

Selling, general and administrative expenses Selling, general and administrative (SG&A) expenses were $64.2 million for the three months ended June 29, 2019, down $1.1 million, or 2%, from the comparable three-month period a year earlier. An analysis of the factors underlying the increase in SG&A is presented in the following table:

(In thousands)		
Selling, general and administrative expenses in the quarter ended June 30, 2018	$	65,200
Deal costs		(3,957)
Integration costs		67
Employee costs		1,537
Professional fees		2,035
Other decreases, net		(732)
Selling, general and administrative expenses in the quarter ended June 29, 2019	$	64,150

SG&A expenses were $146.4 million for the first six months of 2019, up 18.6%, compared to SG&A expenses of $123.5 million in the year-ago period. An analysis of the factors underlying changes in SG&A is presented in the following table:

(In thousands)		
Selling, general and administrative expenses in the six months ended June 30, 2018	$	123,469
Deal costs		15,179
Integration costs		2,987
Professional fees		1,846
Employee costs		2,299
Other increases, net		624
Selling, general and administrative expenses in the six months ended June 29, 2019	$	146,404

Engineering, research and development expenses The Company's engineering, research and development (ER&D) efforts focus on the support or extension of current product lines, and the development of new products and manufacturing technologies. ER&D expenses were $30.6 million in the three months ended June 29, 2019 compared to $30.2 million in the year-ago period. The increase for the quarter was mainly due to higher employee costs and the acquired SPG business ER&D infrastructure, offset by lower project costs.

ER&D expenses increased 3% to $59.6 million in the first six months of 2019, compared to $57.8 million in the year ago period, primarily due to higher employee costs and the acquired SPG business ER&D infrastructure, offset by lower project costs.

Amortization expenses Amortization of intangible assets was $16.6 million in the three months ended June 29, 2019 compared to $12.0 million for the three months ended June 30, 2018. The increase reflects the additional amortization expense associated with the SPG acquisition completed in the second quarter of 2018 and the DSC acquisition completed in the first quarter of 2019.

Amortization of intangible assets was $35.2 million in the first six months ended June 29, 2019 compared to $23.7 million for the first six months ended June 30, 2018. The increase reflects the additional amortization for SPG acquisition and DSC acquisition.

Interest income Interest income was $1.6 million and $2.8 million in the three and six months ended June 29, 2019, respectively, compared to $1.4 million and $2.3 million in the three and six months ended June 30, 2018, respectively. The increase in interest income for the three and six months ended June 29, 2019 compared to comparable previous year periods was due to higher average cash levels earning a higher interest rate.

Interest expense Interest expense includes interest associated with debt outstanding and the amortization of debt issuance costs associated with such borrowings. Interest expense was $11.3 million in the three months ended June 29, 2019 compared to $8.3 million in the three months ended June 30, 2018. The increase reflects higher average debt levels.

Interest expense was $22.2 million in the six-month period ended June 29, 2019, compared to $16.5 million in the six-month period ended June 30, 2018. The increase reflects higher average debt levels.

Other (income) expense, net Other income, net was $122.0 million and $122.3 million in the three and six months ended June 29, 2019 and consisted mainly of net proceeds received of $122.0 million resulting from the termination of the merger agreement with Versum.

Other expense, net was $3.9 million in the three months ended June 30, 2018 and consisted mainly of foreign currency transaction losses of $3.0 million and penalty charges of $0.9 million. Other expense, net was $4.0 million in the six months ended June 30, 2018 and consisted mainly of foreign currency transaction losses of $2.9 million and penalty charges of of $0.9 million.

Income tax expense The Company recorded income tax expense of $43.2 million and $48.7 million, respectively, in the three and six months ended June 29, 2019, compared to income tax expense of $9.8 million and $23.3 million, respectively, in the three and six months ended June 30, 2018. The Company's year-to-date effective tax rate was 23.7% in 2019, compared to 17.2% in 2018. The tax rate in 2019 includes a discrete tax charge of $9.4 million related to the reversal of a dividend received deduction recorded in 2018. This discrete charge was recorded based on the issuance of final regulations during the quarter. Additionally, the Company received a termination fee from Versum based on the termination of the Versum Merger Agreement and recorded a discrete charge of $23.5 million related to the termination fee, net of associated expenses. As a result of the termination fee, the Company released a valuation allowance on federal capital loss carryforwards and recorded a discrete benefit of $2.4 million. The tax rate in 2018 included a discrete charge of $2.6 million related to an internal repurchase of shares of a Korean subsidiary.

Net income Due to the factors noted above, the Company recorded net income of $124.0 million, or $0.91 per diluted share, in the three-month period ended June 29, 2019, compared to net income of $54.3 million, or $0.38 per diluted share, in the three-month period ended June 30, 2018. In the six-month period ended June 29, 2019, the Company recorded net income of $156.7 million, or $1.15 per diluted share, compared to net income of $111.9 million, or $0.78 per diluted share, in the six-month period ended June 30, 2018.

Non-GAAP Measures The Company's condensed consolidated financial statements are prepared in conformity with accounting principles generally accepted in the United States (GAAP). The Company also utilizes certain non-GAAP financial measures as a complement to financial measures provided in accordance with GAAP in order to better assess and reflect trends affecting the Company's business and results of operations. See the section "Non-GAAP Information" included below in this section for additional detail, including the definition of non-GAAP financial measures and the reconciliation of GAAP measures to the Company's non-GAAP measures.

The Company's non-GAAP financial measures are Adjusted EBITDA and Adjusted Operating Income, together with related measures thereof, and non-GAAP Earnings Per Share.

Adjusted EBITDA decreased 13% to $95.4 million in the three-month period ended June 29, 2019, compared to $109.3 million in the three-month period ended June 30, 2018. Adjusted EBITDA, as a percent of net sales, decreased to 25.2% from 28.5% in the year-ago period. Adjusted EBITDA decreased 5% to $204.3 million in the six-month period ended June 29, 2019, compared to $215.3 million in the six-month period ended June 30, 2018. In the six-month period ended June 29, 2019, Adjusted EBITDA, as a percent of net sales, decreased to 26.5% from 28.7% in the year-ago period.

Adjusted Operating Income decreased 18% to $76.8 million in the three-month period ended June 29, 2019, compared to $93.5 million in the three-month period ended June 30, 2018. Adjusted Operating Income, as a percent of net sales, decreased to 20.3% from 24.4% in the year-ago period. Adjusted Operating Income decreased 8% to $169.0 million in the six-month period ended June 29, 2019, compared to $183.6 million in the six-month period ended June 30, 2018. In the six-month period ended June 29, 2019, Adjusted Operating Income, as a percent of net sales, decreased to 21.9% from 24.5% in the year-ago period.

Non-GAAP Earnings Per Share decreased 20% to $0.39 in the three-month period ended June 29, 2019, compared to $0.49 in the three-month period ended June 30, 2018. Non-GAAP Earnings Per Share decreased 7% to $0.89 in the six-month period ended June 29, 2019, compared to $0.96 in the six-month period ended June 30, 2018.

Segment Analysis

The Company reports its financial performance based on three reporting segments. The following is a discussion on the results of operations of these three business segments. See note 10 to the condensed consolidated financial statements for additional information on the Company's three segments.

The following table presents selected net sales and segment profit data for the Company's three reportable segments for the three months ended June 29, 2019, June 30, 2018 and March 30, 2019 and six months ended June 29, 2019 and June 30, 2018.

	Three months ended			Six months ended	
(In thousands)	June 29, 2019	June 30, 2018	March 30, 2019	June 29, 2019	June 30, 2018
Specialty Chemicals and Engineered Materials					
Net sales	$ 127,552	$ 134,336	$ 124,470	$ 252,022	$ 265,079
Segment profit	24,000	36,728	24,431	48,431	67,649
Microcontamination Control					
Net sales	150,185	124,937	157,706	307,891	243,860
Segment profit	43,126	37,214	47,323	90,449	77,525
Advanced Materials Handling					
Net sales	107,515	130,572	116,064	223,579	254,650
Segment profit	15,043	25,542	22,367	37,410	51,005

Specialty Chemicals and Engineered Materials (SCEM)

For the second quarter of 2019, SCEM net sales decreased to $127.6 million, compared to $134.3 million in the comparable period last year. The sales decrease was due to decreased sales of specialty materials, specialty gases and surface prep and integration products, partially offset by sales from the acquisition of DSC in the first quarter of 2019 and advanced deposition products. SCEM reported a segment profit of $24.0 million in the second quarter of 2019, down 35% from $36.7 million in the year-ago period. The segment profit decrease was primarily due to lower gross profit related to the decreased sales and unfavorable product mix offset by a 1% decrease in operating expenses.

For the six months ended June 29, 2019, SCEM net sales decreased to $252.0 million, compared to $265.1 million in the comparable period last year. The sales decrease was due to decreased sales of specialty materials, specialty gases and surface prep and integration products, partially offset by sales from the acquisition of DSC in the first quarter of 2019 and advanced deposition products. SCEM reported a segment profit of $48.4 million in the six months ended June 29, 2019, down 28% from $67.6 million in the year-ago period also due to lower sales levels, with operating expenses flat compared to the same period a year-ago.

Microcontamination Control (MC)

For the second quarter of 2019, MC net sales increased to $150.2 million, compared to $124.9 million in the comparable period last year. The sales increase was mainly due to the acquisition of SPG in the second quarter of 2018, which contributed $33.2 million of sales, offset partially by weakened sales from gas microcontamination products. MC reported a segment profit of $43.1 million in the second quarter of 2019, up 16% from $37.2 million in the year-ago period. The segment profit improvement was primarily due to higher gross profit related to the increased sales, partially offset by a 7% increase in operating expenses, primarily due to SPG operating infrastructure.

For the six months ended June 29, 2019, MC net sales increased to $307.9 million, compared to $243.9 million in the comparable period last year. The sales increase was due mainly due to the acquisition of SPG in the second quarter of 2018, which contributed $66.1 million of sales and improved sales from liquid chemistry filters for wet, etch and clean applications, partially offset by weakened sales from gas microcontamination products. MC reported a segment profit of $90.4 million in the six months ended June 29, 2019, up 17% from $77.5 million in the year-ago period. The segment profit improvement was primarily due to higher gross profit related to the increased sales, partially offset by a 11% increase in operating expenses, primarily due to higher employee costs and SPG operating infrastructure.

Advanced Materials Handling (AMH)

For the second quarter of 2019, AMH net sales decreased to $107.5 million, compared to $130.6 million in the comparable period last year. The sales decrease was mainly due to decreased sales of fluid handling products, liquid packaging and dispense products and wafer and reticle handling products. AMH reported a segment profit of $15.0 million in the second quarter of 2019, down 41% from $25.5 million in the year-ago period. The segment profit decrease was primarily due to lower gross profit related to the decreased sales, partially offset by 3% decrease in operating expense.

For the six months ended June 29, 2019, AMH net sales decreased to $223.6 million, compared to $254.7 million in the comparable period last year. This decrease was mainly due to decreased sales of fluid handling products, liquid packaging and dispense products and wafer and reticle handling products. AMH reported a segment profit of $37.4 million in the six months ended June 29, 2019, down 27% from $51.0 million in the year-ago period. The segment profit decrease was primarily due to lower gross profit related the decreased sales, partially offset by a 2% decrease in operating expenses.

Unallocated general and administrative expenses

Unallocated general and administrative expenses totaled $10.7 million in the second quarter of 2019, compared to $12.5 million in the second quarter of 2018. The $1.9 million decrease mainly reflects a decrease in deal costs of $4.0 million, partially offset by higher professional fees of $2.2 million.

Unallocated general and administrative expenses for the six months ended June 29, 2019 totaled $38.6 million, up from $19.1 million in the six months ended June 30, 2018. The $19.6 million increase mainly reflects the deal and integration costs of $18.2 million referenced in the discussion of SG&A above and higher professional fees of $2.3 million.

Liquidity and Capital Resources

Operating activities Cash flows provided by operating activities totaled $228.4 million in the six months ended June 29, 2019. Operating cash flows reflecting net income adjusted for non-cash expenses (such as depreciation, amortization and share-based compensation) was offset by changes in operating assets and liabilities of $14.6 million, mainly reflecting decreases in accounts payable and accrued liabilities, offset by decreases in other current assets and increases in deferred tax liabilities and income tax payable.

Accounts receivable decreased by $3.4 million during the six months ended June 29, 2019, or $5.4 million after accounting for foreign currency translation and receivables acquired from DSC, mainly reflecting the decrease in the Company sales, offset by the increase in the Company's DSO. The Company's DSO was 53 days at June 29, 2019, compared to 50 days at December 31, 2018.

Inventories decreased by $6.2 million during the six months ended June 29, 2019, or $3.7 million after accounting for foreign currency translation, inventory acquired from DSC and the provision for excess and obsolete inventory. The decrease reflects lower levels of raw materials offset by higher levels of WIP and finished goods.

Accounts payable and accrued liabilities decreased $59.3 million during the six months ended June 29, 2019, or decreased $52.7 million after accounting for foreign currency translation and liabilities assumed from DSC. The key component of the decrease was timing of payments related to accounts payable for 2019 compared to previous year and the higher incentive compensation payment paid out in 2019 compared to the comparable previous period.

Working capital at June 29, 2019 was $833.3 million, compared to $759.7 million as of December 31, 2018, and included $521.4 million in cash and cash equivalents, compared to cash and cash equivalents of $482.1 million as of December 31, 2018.

Investing activities Cash flows used in investing activities totaled $109.2 million in the six-month period ended June 29, 2019. Acquisition of property, plant and equipment totaled $60.1 million, which primarily reflected investments in equipment and tooling. As of June 29, 2019, the Company expects its full-year capital expenditures in 2019 to be approximately $110 million. As of June 29, 2019, the Company had outstanding capital purchase obligations of $29.4 million for the construction or purchase of plant and equipment not yet recorded in the Company's condensed consolidated financial statements as the Company had not yet received the related goods or property.

On March 8, 2019, the Company acquired DSC, which provides advanced materials to the specialty chemical, technology and pharmaceutical industries. The total purchase price of the acquisition was approximately $64.0 million. The acquisition does not constitute a material business combination.The transaction is described in further detail in note 3 to the Company's condensed consolidated financial statements.

Financing activities Cash flows used in financing activities totaled $79.2 million during the six-month period ended June 29, 2019. This included the Company's payment of $2 million on its senior secured term loan, cash dividends of $19.0 million and the Company's repurchase of shares of the Company's common stock at a total cost of $50.3 million under the stock repurchase program authorized by the Company's Board of Directors. In addition, the Company expended $8.3 million for taxes related to the net share settlement of equity awards under the Company's stock plans, offset in part by proceeds of $0.9 million in connection with common shares issued under the Company's stock plans.

As of June 29, 2019, the Company had outstanding long-term debt, including the current portion thereof, of $937.7 million, related to debt issued by the Company.

The Company has a senior secured revolving commitment facility (the "Revolving Facility") in an aggregate amount of $300 million maturing November 6, 2023. The Revolving Facility bears interest at a rate per annum equal to, at the Company's option, a base rate (such as prime rate or LIBOR) plus, an applicable margin. At June 29, 2019, the only outstanding amounts under the Revolving Facility were undrawn outstanding letters of credit of $0.2 million.

Through June 29, 2019, the Company was in compliance with all applicable financial covenants included in the terms of its debt obligations.

The Company also has lines of credit with two banks that provide for borrowings of Japanese yen for the Company's Japanese subsidiary, equivalent to an aggregate of approximately $11.1 million. There were no outstanding borrowings under these lines of credit at June 29, 2019.

The Company believes that its cash and cash equivalents, funds available under its Revolving Facility and international credit facilities and cash flow generated from operations will be sufficient to meet its working capital and investment requirements for at least the next twelve months. If available liquidity is not sufficient to meet the Company's operating and debt service obligations as they come due, management would need to pursue alternative arrangements through additional equity or debt financing in order to meet the Company's cash requirements. There can be no assurance that any such financing would be available on commercially acceptable terms.

At June 29, 2019, the Company's shareholders' equity was $1,102.5 million, up from $1,012.0 million at the beginning of the year. The increase mainly reflects an increase in net income of $156.7 million, an increase to additional paid-in capital of $9.6 million associated with the Company's share-based compensation expense and proceeds of $0.9 million in connection with common shares issued under the Company's stock plan. These increases were offset partly by the repurchase of the Company's common stock at a total cost of $44.8 million, cash dividends declared of $19.1 million, the payment of $8.3 million for taxes related to the net share settlement of equity awards under the Company's stock plans and foreign currency translation effects of $4.5 million, mainly associated with the strengthening of the U.S. dollar versus the Korean won.

As of June 29, 2019, the Company's resources included cash and cash equivalents of $521.4 million, funds available under its $300 million Revolving Facility and international credit facilities, and cash flow generated from operations. As of June 29, 2019, the amount of cash and cash equivalents held by foreign subsidiaries was $170.1 million. These amounts held by foreign subsidiaries, certain of which are associated with indefinitely reinvested foreign earnings, may be subject to U.S. income taxation on repatriation to the United States. The Company does not anticipate the need to repatriate funds associated with indefinitely reinvested foreign earnings to the United States to satisfy domestic liquidity needs arising in the ordinary course of business. The Company believes its existing balances of domestic cash and cash equivalents, available cash and cash equivalents held by foreign subsidiaries not associated with indefinitely reinvested foreign earnings and operating cash flows will be sufficient to meet the Company's domestic cash needs arising in the ordinary course of business for the next twelve months.

Recently adopted accounting pronouncements Refer to note 1 to the Company's condensed consolidated financial statements for a discussion of accounting pronouncements recently adopted.

Recently issued accounting pronouncements Refer to note 1 to the Company's condensed consolidated financial statements for a discussion of accounting pronouncements recently issued by not yet adopted.

Non-GAAP Information The Company's condensed consolidated financial statements are prepared in conformity with accounting principles generally accepted in the United States (GAAP).

The Company also provides certain non-GAAP financial measures as a complement to financial measures provided in accordance with GAAP in order to better assess and reflect trends affecting the Company's business and results of operations. Regulation G, "*Conditions for Use of Non-GAAP Financial Measures*," and other regulations under the Securities Exchange Act of 1934, as amended, define and prescribe the conditions for use of certain non-GAAP financial information. The Company provides non-GAAP financial measures of Adjusted EBITDA and Adjusted Operating Income together with related measures thereof, and non-GAAP Earnings Per Share (EPS).

Adjusted EBITDA, a non-GAAP term, is defined by the Company as net income before (1) income tax expense, (2) interest expense, (3) interest income, (4) other (income) expense, net, (5) charge for fair value write-up of acquired inventory sold, (6) deal costs, (7) integration costs, (8) severance and restructuring costs, (9) amortization of intangible assets and (10) depreciation. Adjusted Operating Income, another non-GAAP term, is defined by the Company as Adjusted EBITDA exclusive of the depreciation addback noted above. The Company also utilizes non-GAAP measures whereby Adjusted EBITDA and Adjusted Operating Income are each divided by the Company's net sales to derive Adjusted EBITDA Margin and Adjusted Operating Margin, respectively.

Non-GAAP EPS, a non-GAAP term, is defined by the Company as net income before (1) charge for fair value write-up of acquired inventory sold, (2) deal costs, (3) integration costs, (4) severance and restructuring costs, (5) the Versum termination fee, net, (6) amortization of intangible assets, (7) the tax effect of a legal entity restructuring, (8) the tax effect of those adjustments to net income and certain discrete items and (9) the tax effect of the Tax Cuts and Jobs Act, stated on a per share basis.

The Company provides supplemental non-GAAP financial measures to better understand its business and believes these measures provide investors and analysts additional and meaningful information for the assessment of the Company's ongoing results. Management also uses these non-GAAP measures to assist in the evaluation of the performance of its business segments and to make operating decisions.

Management believes the Company's non-GAAP measures help indicate the Company's baseline performance before certain gains, losses or other charges that may not be indicative of the Company's business or future outlook and offer a useful view of business performance in that the measures provide a more consistent means of comparing performance. The Company believes the non-GAAP measures aid investors' overall understanding of the Company's results by providing a higher degree of transparency for such items and providing a level of disclosure that will help investors understand how management plans, measures and evaluates the Company's business performance. Management believes that the inclusion of non-GAAP measures provides consistency in its financial reporting and facilitates investors' understanding of the Company's historical operating trends by providing an additional basis for comparisons to prior periods.

Management uses Adjusted EBITDA and Adjusted Operating Income to assist it in evaluations of the Company's operating performance by excluding items that management does not consider as relevant in the results of its ongoing operations. Internally, these non-GAAP measures are used by management for planning and forecasting purposes, including the preparation of internal budgets; for allocating resources to enhance financial performance; for evaluating the effectiveness of operational strategies; and for evaluating the Company's capacity to fund capital expenditures, secure financing and expand its business.

In addition, and as a consequence of the importance of these non-GAAP financial measures in managing its business, the Company's Board of Directors uses non-GAAP financial measures in the evaluation process to determine management compensation.

The Company believes that certain analysts and investors use Adjusted EBITDA, Adjusted Operating Income and non-GAAP EPS as supplemental measures to evaluate the overall operating performance of firms in the Company's industry. Additionally, lenders or potential lenders use Adjusted EBITDA measures to evaluate the Company's creditworthiness.

The presentation of non-GAAP financial measures is not meant to be considered in isolation, as a substitute for, or superior to, financial measures or information provided in accordance with GAAP. Management strongly encourages investors to review the Company's condensed consolidated financial statements in their entirety and to not rely on any single financial measure.

Management notes that the use of non-GAAP measures has limitations:

First, non-GAAP financial measures are not standardized. Accordingly, the methodology used to produce the Company's non-GAAP financial measures is not computed under GAAP and may differ notably from the methodology used by other companies. For example, the Company's non-GAAP measure of Adjusted EBITDA may not be directly comparable to EBITDA or an adjusted EBITDA measure reported by other companies.

Second, the Company's non-GAAP financial measures exclude items such as amortization and depreciation that are recurring. Amortization of intangibles and depreciation have been, and will continue to be for the foreseeable future, a significant recurring expense with an impact upon the Company's results of operations, notwithstanding the lack of immediate impact upon cash flows.

Third, there is no assurance the Company will not have future charges for fair value write-up of acquired inventory, restructuring activities, deal costs, integration costs, or similar items and, therefore, may need to record additional charges (or credits) associated with such items, including the tax effects thereon. The exclusion of these items from the Company's non-GAAP measures should not be construed as an implication that these costs are unusual, infrequent or non-recurring.

Management considers these limitations by providing specific information regarding the GAAP amounts excluded from these non-GAAP financial measures and evaluating these non-GAAP financial measures together with their most directly comparable financial measures calculated in accordance with GAAP. The calculations of Adjusted EBITDA, Adjusted Operating Income, and non-GAAP EPS, and reconciliations between these financial measures and their most directly comparable GAAP equivalents, are presented below in the accompanying tables.

Reconciliation of GAAP Net Income to Adjusted Operating Income and Adjusted EBITDA

	Three months ended		Six months ended	
(In thousands)	June 29, 2019	June 30, 2018	June 29, 2019	June 30, 2018
Net sales	$ 378,874	$ 383,059	$ 769,921	$ 750,258
Net income	$ 123,997	$ 54,349	$ 156,655	$ 111,911
Adjustments to net income				
Income tax expense	43,235	9,782	48,657	23,328
Interest expense	11,315	8,296	22,199	16,455
Interest income	(1,623)	(1,371)	(2,848)	(2,304)
Other (income) expense, net	(122,015)	3,877	(122,263)	4,016
GAAP – Operating income	54,909	74,933	102,400	153,406
Charge for fair value write-up of acquired inventory sold	695	208	2,850	208
Deal costs	1,164	5,121	20,300	5,121
Integration costs	1,264	1,197	4,184	1,197
Severance and restructuring costs	2,170	—	3,991	—
Amortization of intangible assets	16,591	12,014	35,248	23,683
Adjusted operating income	76,793	93,473	168,973	183,615
Depreciation	18,596	15,802	35,317	31,699
Adjusted EBITDA	$ 95,389	$ 109,275	$ 204,290	$ 215,314
Adjusted operating income – as a % of net sales	20.3%	24.4%	21.9%	24.5%
Adjusted EBITDA – as a % of net sales	25.2%	28.5%	26.5%	28.7%

Reconciliation of GAAP Earnings per Share to Non-GAAP Earnings per Share

	Three months ended		Six months ended	
(In thousands, except per share data)	June 29, 2019	June 30, 2018	June 29, 2019	June 30, 2018
Net income	$ 123,997	$ 54,349	$ 156,655	$ 111,911
Adjustments to net income				
Charge for fair value write-up of acquired inventory sold	695	208	2,850	208
Deal costs	1,164	5,121	20,711	5,121
Integration costs	1,264	1,197	4,184	1,197
Severance and restructuring costs	2,170	—	3,991	—
Versum termination fee, net	(122,000)	—	(122,000)	—
Amortization of intangible assets	16,591	12,014	35,248	23,683
Tax effect of legal entity restructuring	9,398	—	9,398	—
Tax effect of adjustments to net income and certain discrete tax items[1]	20,153	(3,702)	10,289	(6,412)
Tax effect of Tax Cuts and Jobs Act	$ —	$ 648	$ —	$ 2,142
Non-GAAP net income	$ 53,432	$ 69,835	$ 121,326	$ 137,850
Diluted earnings per common share	$ 0.91	$ 0.38	$ 1.15	$ 0.78
Effect of adjustments to net income	(0.52)	0.11	(0.26)	0.18
Diluted non-GAAP earnings per common share	$ 0.39	$ 0.49	$ 0.89	$ 0.96

[1]The tax effect of pre-tax adjustments to net income was calculated using the applicable marginal tax rate for each respective year.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

The Company's principal financial market risks are sensitivities to interest rates and foreign currency exchange rates. The Company's interest-bearing cash equivalents and senior secured financing obligation are subject to interest rate fluctuations. The Company's cash equivalents are instruments with maturities of three months or less. A 100 basis point change in interest rates would potentially increase or decrease annual net income by approximately $1.0 million annually.

The cash flows and results of operations of the Company's foreign-based operations are subject to fluctuations in foreign exchange rates. The Company occasionally uses derivative financial instruments to manage the foreign currency exchange rate risks associated with its foreign-based operations. At June 29, 2019, the Company had no net exposure to any foreign currency forward contracts.

Item 4. Controls and Procedures

(a) Evaluation of disclosure controls and procedures.
The Company's management, including the Chief Executive Officer (CEO) and Chief Financial Officer (CFO), has conducted an evaluation of the effectiveness of the design and operation of the Company's disclosure controls and procedures (as defined under Rules 13a-15(e) and 15d-15(e) promulgated under the Securities Exchange Act of 1934 (the 1934 Act)) as of June 29, 2019. The term "disclosure controls and procedures" means controls and other procedures of a company that are designed to ensure that information required to be disclosed by us in the reports that we file or submit under the 1934 Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the 1934 Act is accumulated and communicated to the company's management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on management's evaluation (with the participation of our CEO and CFO), as of June 29, 2019, the Company's CEO and CFO have concluded that the disclosure controls and procedures used by the Company, were effective to provide reasonable assurance that information required to be disclosed by the Company in reports that it files or submits under the 1934 Act is recorded, processed, summarized, and reported within the time periods specified in SEC rules and forms, and is accumulated and communicated to management, including its principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure.

The Company acquired the SAES Pure Gas business (SPG) on June 25, 2018. We are continuing to integrate SPG into the Company's internal control over financial reporting.

(b) Changes in internal control over financial reporting.

There has been no change in the Company's internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the 1934 Act) during the most recently completed fiscal quarter that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting.

PART II

OTHER INFORMATION

Item 1. Legal Proceedings
As of June 29, 2019, the Company is subject to various claims, legal actions, and complaints arising in the ordinary course of business. The Company believes the final outcome of these matters will not have a material adverse effect on its condensed consolidated financial statements. The Company expenses legal costs as incurred.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds.

Issuer Purchases of Equity Securities

The following table provides information concerning shares of the Company's Common Stock $0.01 par value purchased during the three months ended June 29, 2019.

Period	(a) Total Number of Shares Purchased[1]	(b) Average Price Paid per Share	(c) Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	(d) Maximum Number (or Approximate Dollar Value) of Shares that May Yet Be Purchased Under the Plans or Programs
March 31, 2019 - April 4, 2019	—	$—	—	$—
April 5, 2019 - June 1, 2019	421,745	$35.57	421,745	$131,341,222
June 2, 2019 - June 29, 2019	—	$—	—	$—
Total	421,745	$35.57	421,745	$131,341,222

[1] On February 13, 2018, the Company's Board of Directors authorized a repurchase program covering up to an aggregate of $100 million of the Company's common stock, during a period of twenty-four months, in open market transactions and in accordance with one or more pre-arranged stock trading plans to be established in accordance with Rule 10b5-1 under the Securities Exchange Act of 1934, as amended. On November 19, 2018, the Company's Board of Directors authorized the repurchase of up to an additional $250 million in aggregate principal amount of the Company's common stock.

The Company issues common stock awards under its equity incentive plans. In the condensed consolidated financial statements, the Company treats shares of common stock withheld for tax purposes on behalf of its employees in connection with the vesting or exercise of the awards as common stock repurchases because they reduce the number of shares that would have been issued upon vesting or exercise. These withheld shares of common stock are not considered common stock repurchases under the Company's authorized common stock repurchase plan and accordingly are not included in the common stock repurchase totals in the preceding table.

Item 6. Exhibits

EXHIBIT INDEX

31.1	Certification of Chief Executive Officer Pursuant to Exchange Act Rule 13a-14(a).
31.2	Certification of Chief Financial Officer Pursuant to Exchange Act Rule 13a-14(a).
32.1	Certification of Chief Executive Officer and Chief Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS	XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

ENTEGRIS, INC.

Date: July 25, 2019

/s/ Gregory B. Graves

Gregory B. Graves
Executive Vice President and Chief Financial Officer (on behalf of the registrant and as principal financial officer)

<u>Exhibit 31.1</u>

CERTIFICATIONS

I, Bertrand Loy, certify that:

1. I have reviewed this Report on Form 10-Q of Entegris, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects, the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: July 25, 2019	/s/ Bertrand Loy
	Bertrand Loy
	Chief Executive Officer
	(Principal Executive Officer)

Exhibit 31.2

CERTIFICATIONS

I, Gregory B. Graves, certify that:

1. I have reviewed this Report on Form 10-Q of Entegris, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects, the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: July 25, 2019

/s/ Gregory B. Graves

Gregory B. Graves
Chief Financial Officer
(Principal Financial Officer)

EXHIBIT 32.1

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906
OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report on Form 10-Q (the "Report") of Entegris, Inc, a Delaware corporation (the "Company"), for the period ended June 29, 2019 as filed with the Securities and Exchange Commission on the date hereof, Bertrand Loy, President and Chief Executive Officer of the Company, and Gregory B. Graves, Chief Financial Officer of the Company, each hereby certify pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: July 25, 2019

/s/ Bertrand Loy

Bertrand Loy
Chief Executive Officer

/s/ Gregory B. Graves

Gregory B. Graves
Chief Financial Officer