5N PLUS INC.

Consolidated Financial Statements

for the years ended December 31, 2021 and 2020

(in thousands of United States dollars)

MANAGEMENT’S RESPONSIBILITY FOR FINANCIAL REPORTING

The consolidated financial statements and related notes have been prepared by management in conformity with generally accepted accounting principles in Canada which incorporate International Financial Reporting Standards as issued by the IASB (IFRS). Management is responsible for the selection of accounting policies and making significant accounting judgements and estimates.

Management is also responsible for all other information included in the management’s discussion and analysis and for ensuring that this information is consistent with the information contained in the consolidated financial statements.

Management is responsible for establishing and maintaining adequate internal control over financial reporting which includes those policies and procedures that provide reasonable assurance over the safeguarding of assets and over the completeness, fairness and accuracy of the consolidated financial statements.

The Audit and Risk Management Committee, which is comprised entirely of independent directors, reviews the quality and integrity of the Company’s financial reporting and provides its recommendations, in respect of the approval of the financial statements, to the Board of Directors; oversees management’s responsibilities as to the adequacy of the supporting systems of internal controls; provides oversight of the independence, qualifications, and appointment of the external auditor; and, review audit, audit-related, and non-audit fees and expenses. The Board of Directors approves the Company’s consolidated financial statements and management’s discussion and analysis disclosures prior to their release. The Audit and Risk Management Committee meets with management, the internal auditors and external auditors at least four times each year to review and discuss financial reporting, disclosures, auditing and other matters.

The external auditors, PricewaterhouseCoopers LLP, conduct an independent audit of the consolidated financial statements in accordance with Canadian generally accepted auditing standards and express their opinion thereon. Those standards require that the audit is planned and performed to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement. The external auditors have unlimited access to the Audit and Risk Management Committee and meet with the Committee on a regular basis.

(signed) Gervais Jacques	*(signed) Richard Perron*
Gervais Jacques	Richard Perron
Interim President and Chief Executive Officer	Chief Financial Officer

Montreal, Canada
February 22, 2022

Independent auditor's report

To the Shareholders of 5N Plus Inc.

Our opinion

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the financial position of 5N Plus Inc. and its subsidiaries (together, the Company) as at December 31, 2021 and 2020, and its financial performance and its cash flows for the years then ended in accordance with International Financial Reporting Standards as issued by the International Accounting Standards Board (IFRS).

What we have audited

The Company's consolidated financial statements comprise:

- the consolidated statements of financial position as at December 31, 2021 and 2020;
- the consolidated statements of earnings for the years then ended;
- the consolidated statements of comprehensive income for the years then ended;
- the consolidated statements of changes in equity for the years then ended;
- the consolidated statements of cash flows for the years then ended; and
- the notes to the consolidated financial statements, which include significant accounting policies and other explanatory information.

Basis for opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the *Auditor's responsibilities for the audit of the consolidated financial statements* section of our report.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Independence

We are independent of the Company in accordance with the ethical requirements that are relevant to our audit of the consolidated financial statements in Canada. We have fulfilled our other ethical responsibilities in accordance with these requirements.

PricewaterhouseCoopers LLP/s.r.l./s.e.n.c.r.l.
1250 René-Lévesque Boulevard West, Suite 2500, Montréal, Quebec, Canada H3B 4Y1
T: +1 514 205 5000, F: +1 514 876 1502

Key audit matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements for the year ended December 31, 2021. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

Key audit matters	How our audit addressed the key audit matters
Valuation of inventories *Refer to note 2 – Summary of principal accounting policies and note 6 – Inventories to the consolidated financial statements.* The carrying value of inventories on the Company's consolidated financial statements was $96 million as at December 31, 2021. Inventories are carried at the lower of cost and net realizable value. In estimating net realizable value, management takes into account the most reliable evidence available at the time the estimates are made. The Company's core business is subject to changes in foreign policies and internationally accepted metal prices, which may cause future selling prices to change rapidly. Management applied judgment in estimating the net realizable value of inventories, which involved the use of significant assumptions, including the consideration of prices of similar products in the market at the time the estimates are made and expected future selling prices. We considered this a key audit matter due to the magnitude of the inventory balance, the various types of inventory items and the judgment made by management in determining the net realizable value of inventories, which in turn led to increased audit effort in performing audit procedures.	Our approach to addressing the matter included the following procedures, among others: • Tested how management estimated the net realizable value of inventories, which included the following: – Tested the data used by management in determining the net realizable value. – Evaluated the appropriateness of the method of estimating net realizable value. – Evaluated the reasonableness of significant assumptions used by management in the calculation of net realizable value of inventories, by comparing them to: o Prices of similar products in the market at the time the estimates are made; and o Expected future selling prices. • For a sample of inventory items, compared the prior year estimates of inventory prices to their actual selling prices during the year.

Key audit matters	How our audit addressed the key audit matters
Valuation of intangible assets acquired in the AZUR SPACE Solar Power GmbH business combination *Refer to note 2 – Summary of principal accounting policies, note 4 – Business combinations and note 9 – Intangible assets to the consolidated financial statements.* On November 5, 2021, the Company acquired AZUR SPACE Solar Power GmbH for a total consideration of $57.7 million. The preliminary fair value of the identifiable assets acquired included $32.1 million in intangible assets, which relate to customer relationships, technology and trade name. Management applied significant judgment in estimating the preliminary fair value of the intangible assets. To estimate the preliminary fair value of the intangible assets, management used the excess earnings method to value customer relationships and the royalty relief method to value technology and trade name using discounted cash flow models. Management developed significant assumptions related to revenue and gross margin forecasts, customer retention rates, royalty rates and discount rates. We considered this a key audit matter due to the significant judgment by management in estimating the preliminary fair value of the intangible assets, including the development of significant assumptions. This in turn led to a high degree of auditor judgment, subjectivity and effort in performing procedures and evaluating audit evidence relating to the significant assumptions used by management. The audit effort involved the use of professionals with specialized skill and knowledge in the field of valuation.	Our approach to addressing the matter included the following procedures, among others: • Tested how management estimated the preliminary fair value of the intangible assets, which included the following: o Read the purchase agreement. o Tested the mathematical accuracy of the discounted cash flow models. o Tested the underlying data used by management in the discounted cash flow models. o Evaluated the reasonableness of significant assumptions used by management related to revenue and gross margin forecasts by considering the past performance of the acquired company AZUR SPACE Solar Power GmbH, growth assumptions from management’s four-year plan (2022–2025), as well as third-party economic and industry data. o Professionals with specialized skill and knowledge in the field of valuation assisted in evaluating the appropriateness of management’s excess earnings and royalty relief methods and discounted cash flow models, as well as certain significant assumptions such as customer retention rates, royalty rates and discount rates.

Other information

Management is responsible for the other information. The other information comprises the Management's Discussion and Analysis, which we obtained prior to the date of this auditor's report, and the information, other than the consolidated financial statements and our auditor's report thereon, included in the annual report, which is expected to be made available to us after that date.

Our opinion on the consolidated financial statements does not cover the other information and we do not and will not express an opinion or any form of assurance conclusion thereon.

In connection with our audit of the consolidated financial statements, our responsibility is to read the other information identified above and, in doing so, consider whether the other information is materially inconsistent with the consolidated financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated.

If, based on the work we have performed on the other information that we obtained prior to the date of this auditor's report, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard. When we read the information, other than the consolidated financial statements and our auditor's report thereon, included in the annual report, if we conclude that there is a material misstatement therein, we are required to communicate the matter to those charged with governance.

Responsibilities of management and those charged with governance for the consolidated financial statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with IFRS, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Company or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Company's financial reporting process.

Auditor’s responsibilities for the audit of the consolidated financial statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor’s report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company’s internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management’s use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Company’s ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor’s report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor’s report. However, future events or conditions may cause the Company to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Company to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

The engagement partner on the audit resulting in this independent auditor's report is Marc-Stéphane Pennee.

/s/PricewaterhouseCoopers LLP[1]

Montréal, Quebec
February 22, 2022

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[1] CPA auditor, CA, public accountancy permit No. A123642

(in thousands of United States dollars)

	Notes	**December 31 2021**	December 31 2020
		$	$
Assets			
Current			
Cash and cash equivalents		**35,940**	39,950
Accounts receivable	5	**42,098**	30,110
Inventories	6	**95,526**	67,139
Income tax receivable	16	**5,054**	5,440
Other current assets	17	**16,904**	8,256
Total current assets		**195,522**	150,895
Property, plant and equipment	7	**81,526**	53,191
Right-of-use assets	8	**32,198**	5,047
Intangible assets	9	**40,474**	9,668
Goodwill	11	**13,841**	-
Deferred tax assets	16	**7,007**	6,789
Other assets	10	**3,022**	1,088
Total non-current assets		**178,068**	75,783
Total assets		**373,590**	226,678
Liabilities			
Current			
Trade and accrued liabilities	12	**56,848**	31,671
Income tax payable	16	**5,615**	3,328
Derivative financial liabilities	17	**109**	-
Current portion of long-term debt	13	**-**	109
Current portion of lease liabilities	8	**2,487**	1,442
Total current liabilities		**65,059**	36,550
Long-term debt	13	**116,000**	50,000
Deferred tax liabilities	16	**7,645**	-
Employee benefit plan obligations	14	**17,231**	17,202
Derivative financial liabilities	17	**-**	439
Lease liabilities	8	**30,153**	3,916
Other liabilities	15	**1,255**	195
Total non-current liabilities		**172,284**	71,752
Total liabilities		**237,343**	108,302
Equity		**136,247**	118,376
Total liabilities and equity		**373,590**	226,678

Commitments and contingencies (Note 23)

The accompanying notes are an integral part of these consolidated financial statements.

5N PLUS INC.

CONSOLIDATED STATEMENTS OF EARNINGS

Years ended December 31

(in thousands of United States dollars, except per share information)

	Notes	2021	2020
		$	$
Revenue		**209,990**	177,192
Cost of sales	27	**171,214**	140,806
Selling, general and administrative expenses	27	**21,883**	19,874
Other expenses (income), net	27	**4,022**	3,015
		197,119	163,695
Operating earnings		**12,871**	13,497
Financial expenses			
Interest on long-term debt		**2,865**	2,666
Imputed interest and other interest expense	8, 13	**848**	824
Foreign exchange and derivative loss		**418**	2,798
		4,131	6,288
Earnings before income taxes		**8,740**	7,209
Income tax expense			
Current	16	**5,580**	3,385
Deferred	16	**50**	1,638
		5,630	5,023
Net earnings		**3,110**	2,186
Earnings per share	21	**0.04**	0.03
Basic earnings per share	21	**0.04**	0.03
Diluted earnings per share	21	**0.04**	0.03

Net earnings are completely attributable to equity holders of 5N Plus Inc.

The accompanying notes are an integral part of these consolidated financial statements.

(in thousands of United States dollars)

	Notes	**2021**	2020
		$	$
Net earnings		**3,110**	2,186
Other comprehensive (loss) income			
Items that may be reclassified subsequently to net earnings			
Currency translation adjustment		**(31)**	1,621
		(31)	1,621
Items that will not be reclassified subsequently to net earnings			
Remeasurement of employee benefit plan obligations	14	**814**	(858)
Income taxes		**(256)**	271
		558	(587)
Other comprehensive income		**527**	1,034
Comprehensive income		**3,637**	3,220

Comprehensive income is completely attributable to equity holders of 5N Plus Inc.

The accompanying notes are an integral part of these consolidated financial statements.

CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY

Years ended December 31

(in thousands of United States dollars, except per share information)

				Attributable to equity holders of the Company			
2021	**Number of shares**	**Share capital**	**Contributed surplus**	**Accumulated other comprehensive loss**	**Deficit**	**Total shareholders' equity**	**Total equity**
		$	$	$	$	$	$
Balances at beginning of year	**81,651,130**	**5,835**	**342,802**	**(5,716)**	**(224,545)**	**118,376**	**118,376**
Net earnings for the year	**-**	**-**	**-**	**-**	**3,110**	**3,110**	**3,110**
Other comprehensive income	**-**	**-**	**-**	**527**	**-**	**527**	**527**
Comprehensive income	**-**	**-**	**-**	**527**	**3,110**	**3,637**	**3,637**
Issuance of shares (Note 19 and 20)	**6,500,000**	**14,249**	**-**	**-**	**-**	**14,249**	**14,249**
Common shares repurchased and cancelled (Note 20)	**(249,572)**	**(17)**	**-**	**-**	**(792)**	**(809)**	**(809)**
Exercise of stock options	**428,678**	**937**	**(291)**	**-**	**-**	**646**	**646**
Share-based compensation (Note 22)	**-**	**-**	**148**	**-**	**-**	**148**	**148**
Balances at end of year	**88,330,236**	**21,004**	**342,659**	**(5,189)**	**(222,227)**	**136,247**	**136,247**

				Attributable to equity holders of the Company			
2020	Number of shares	Share capital	Contributed surplus	Accumulated other comprehensive loss	Deficit	Total shareholders' equity	Total equity
		$	$	$	$	$	$
Balances at beginning of year	83,401,558	5,961	342,737	(6,750)	(224,651)	117,297	117,297
Net earnings for the year	-	-	-	-	2,186	2,186	2,186
Other comprehensive loss	-	-	-	1,034	-	1,034	1,034
Comprehensive income	-	-	-	1,034	2,186	3,220	3,220
Common shares repurchased and cancelled (Note 20)	(1,750,428)	(126)	-	-	(2,080)	(2,206)	(2,206)
Share-based compensation (Note 22)	-	-	65	-	-	65	65
Balances at end of year	81,651,130	5,835	342,802	(5,716)	(224,545)	118,376	118,376

The accompanying notes are an integral part of these consolidated financial statements.

(in thousands of United States dollars)

	Notes	2021	2020
		$	$
Operating activities			
Net earnings		**3,110**	2,186
Adjustments to reconcile net earnings to cash flows			
Depreciation of property, plant and equipment	7	**8,969**	8,805
Depreciation of right-of-use assets	8	**1,764**	1,451
Amortization of intangible assets	9	**1,802**	1,469
Amortization of other assets		**253**	177
Impairment of inventories	6	**-**	2,411
Impairment of non-current assets	27	**-**	4,934
Increase for loss allowance	5, 25	**3**	26
Share-based compensation (recovery) expense	22	**(623)**	2,825
Deferred income taxes	16	**50**	1,638
Imputed interest	8, 13	**336**	246
Employee benefit plan obligations	14	**(481)**	(443)
Loss (gain) on disposal of property, plant and equipment		**171**	(64)
Unrealized loss (gain) on non-hedge financial instruments		**982**	(585)
Unrealized foreign exchange loss on assets and liabilities		**217**	754
Funds from operations before the following :		**16,553**	25,830
Net change in non-cash working capital balances	19	**(6,283)**	10,975
Cash from operating activities		**10,270**	36,805
Investing activities			
Acquisition of subsidiary, net of cash acquired	4	**(33,284)**	-
Cash outflows to cash held in escrow	4	**(9,004)**	-
Additions to property, plant and equipment	7, 19	**(5,385)**	(8,421)
Additions of intangible assets	9	**(541)**	(133)
Acquisition of investment in equity instruments	17	**(2,000)**	-
Proceeds on disposal of property, plant and equipment	7	**285**	93
Cash used in investing activities		**(49,929)**	(8,461)
Financing activities			
Repayment of long-term debt	4, 13	**(32,505)**	(10,000)
Proceeds from issuance of long term debt	13	**71,000**	5,000
Deferred costs related to long-term debt	10	**(260)**	-
Common shares repurchased	20	**(809)**	(2,206)
Issuance of common shares	20	**646**	-
Principal elements of lease payments		**(1,872)**	(1,598)
Increase in Other liabilities		**19**	-
Cash from (used in) financing activities		**36,219**	(8,804)
Effect of foreign exchange rate changes on cash and cash equivalents		**(570)**	345
Net (decrease) increase in cash and cash equivalents		**(4,010)**	19,885
Cash and cash equivalents, beginning of year		**39,950**	20,065
Cash and cash equivalents, end of year		**35,940**	39,950
Supplemental information[(1)]			
Income tax paid		**2,493**	3,103
Interest paid		**2,790**	2,908

[(1)] Amounts paid for income tax and interest were reflected as cash flows from operating activities in the consolidated statements of cash flows.

The accompanying notes are an integral part of these consolidated financial statements.

1. Nature of Activities

5N Plus Inc. ("5N Plus" or the "Company") is a Canadian-based international company. 5N Plus is a leading global producer of specialty semiconductors and performance materials. The Company's ultra-pure materials often form the core element of its customer products. These customers rely on 5N Plus's products to enable performance and sustainability in their own products. 5N Plus deploys a range of proprietary and proven technologies to develop and manufacture its products. The Company's products enable various applications in a number of key industries including renewable energy, security, space, pharmaceutical, medical imaging, and industrial. The Company is headquartered at 4385 Garand Street, Montreal, Quebec (Canada) H4R 2B4. The Company operates R&D, manufacturing and commercial centers in strategically located facilities around the world including Europe, North America and Asia. The Company's mission is to be critical to its customers, valued by its employees and trusted by its shareholders. The Company's core values focus on integrity, commitment and customer development along with emphasis on sustainable development, continuous improvement, health and safety. The Company's shares are listed on the Toronto Stock Exchange ("TSX"). 5N Plus and its subsidiaries represent the "Company" mentioned throughout these consolidated financial statements. The Company has two reportable business segments, namely Specialty Semiconductors and Performance Materials.

These consolidated financial statements were approved by the Board of Directors on February 22, 2022.

Since January 2020, the gradual outbreak of the novel strain of the coronavirus, COVID-19 and its declaration as a pandemic by the World Health Organization, has resulted in governments worldwide enacting emergency measures to combat the spread of the virus. These measures have caused material disruption to businesses globally resulting in an economic slowdown. While the Company has been able to mitigate the on-going impact from the crisis, it is not possible to reliably estimate the length, severity and long-term impact the global pandemic may have on the Company's financial results, conditions and cash flows. The outbreak of the COVID-19 should be considered a risk factor.

2. Summary of Principal Accounting Policies

The principal accounting policies applied in the preparation of these consolidated financial statements are set out below. These policies have been consistently applied to all periods presented, unless otherwise stated.

Basis of preparation

The consolidated financial statements have been prepared in accordance with International Financial Reporting Standards as issued by the IASB (IFRS). The consolidated financial statements have been prepared under the historical cost convention, except for derivative financial instruments which are recorded at fair value.

The preparation of consolidated financial statements in conformity with IFRS requires the use of certain critical accounting estimates. It also requires management to exercise its judgment in the process of applying the Company's accounting policies. The areas involving a higher degree of judgment or complexity, or areas where assumptions and estimates are significant to the consolidated financial statements, are also further disclosed in this note, in the "Significant management estimation and judgment in applying accounting policies" section.

Subsidiaries

Subsidiaries are all entities (including structured entities) over which the Company has control. Control exists when the Company is exposed to, or has the rights to, variable returns from its involvement with the entity and has the ability to affect those returns through the power over the entity.

The subsidiaries are fully consolidated from the date on which control is transferred to the Company. They are deconsolidated from the date that control ceases.

(in thousands of United States dollars, unless otherwise indicated)

The following table includes the principal entities which significantly impact the results or assets of the Company:

		% Equity interest	
	Country of incorporation	2021	2020
5N Plus Inc.	Canada	100%	100%
5N PV GmbH	Germany	100%	100%
AZUR SPACE Solar Power GmbH (Note 4)	Germany	100%	-
5N Plus Lübeck GmbH	Germany	100%	100%
5N Plus Belgium SA	Belgium	100%	100%
5N Plus Asia Limited	Hong Kong	100%	100%
5N Plus Wisconsin Inc.	United States	100%	100%

Intercompany transactions, balances, income and expenses on transactions between group companies are eliminated. Profits and losses resulting from intercompany transactions that are recognized in assets are also eliminated. Accounting policies of subsidiaries have been changed where necessary to ensure consistency with the policies adopted by the Company.

Foreign currency translation

a) Functional and presentation currency

The Company's functional and presentation currency is the US dollar. Functional currency is determined for each of the Company's entities, and items included in the financial statements of each entity are measured using that functional currency.

b) Transactions and balances

Monetary assets and liabilities denominated in foreign currencies are translated at the prevailing exchange rate at the reporting date. Non-monetary assets and liabilities, and revenue and expense items denominated in foreign currencies are translated into the functional currency using the exchange rate prevailing at the date of the respective transactions. Foreign exchange gains and losses resulting from the settlement of such transactions are recognized in the consolidated statement of earnings.

Foreign exchange gains and losses are presented in the consolidated statement of earnings within "foreign exchange and derivative gain (loss)".

c) Foreign operations

Assets and liabilities of subsidiaries that have a functional currency other than US dollar are translated from their functional currency to US dollars at exchange rates in effect at the reporting date. The resulting translation adjustments are included in the currency translation adjustment in other comprehensive income (loss). Revenue and expenses are translated at the average exchange rates for the period.

Business combination

Business combinations are accounted for using the acquisition method. Under this method, the identifiable assets acquired and liabilities assumed, including contingent liabilities, are recorded at their fair value at the date of acquisition. The acquisition date is the date at which the Company obtains control over the acquiree, which is generally the date that consideration is transferred and the Company acquires the assets and assumes the liabilities of the acquiree.

The consideration transferred in a business combination is measured at fair value, which is calculated as the sum of the fair values of the assets at the acquisition date transferred by the Company, the liabilities incurred or assumed, including contingent liabilities, and equity instruments issued by the Company in exchange for control of the acquiree. The excess of the consideration transferred over the fair value of the net identifiable assets acquired is recorded as goodwill. Any negative goodwill is recognized directly in the consolidated statement of earnings. Acquisition costs are expensed as incurred in the consolidated statement of earnings.

Segment reporting

Following the acquisition of AZUR and the subsequent integration of its activities within the Company's operations, the Company deemed it appropriate to reposition certain products and applications between its two reportable segments which resulted in a change in the two principal reportable segments from Electronic Materials and Eco-Friendly to Specialty Semiconductors and Performance Materials. For the two new principal segments, Specialty Semiconductors and Performance Materials, corresponding operations and activities are managed accordingly by the Company's key decision makers. Segmented operating, financial information and labelled key performance indicators are available and used to manage these business segments, review performance and allocate resources.

The Specialty Semiconductors segment operates in North America and Europe and is similar to the former Electronic Materials segment, and now integrating the products and operations of AZUR since November 5, 2021. The segment manufactures and sells products used in several applications such as renewable energy, space satellites and imaging. Typical end markets include photovoltaics (terrestrial and spatial solar energy), medical imaging, infrared imaging, optoelectronics and advanced electronics. These products are sold either in semiconductor compounds, semiconductor wafers, ultra high purity metals, epitaxial semiconductor substrates and solar cells. Revenues and earnings associated with recycling services and activities provided to Specialty Semiconductors customers are captured in this segment.

The Performance Materials segment operates in North America, Europe and Asia, and is similar to the former Eco-Friendly Materials segment. The segment manufactures and sells products that are used in several applications in pharmaceutical & healthcare, industrial, and catalytic and extractive. Main products are sold as active pharmaceutical ingredients, animal feed additives, specialized chemicals, commercial grade metals, alloys, and engineered powders. All commercial grade metal and engineered powder sales have been regrouped under Performance Materials. Revenues and earnings associated with recycling services and activities provided to Performance Materials customers are captured in this segment.

Corporate expenses associated with the head office and unallocated selling, general and administrative expenses, together with financing expenses have been regrouped under the heading "Corporate and unallocated".

Each operating segment is managed separately as each of these service lines requires different technologies, resources and marketing approaches. The financial information of the recycling and trading of complex material is allocated to the two main segments. All intersegment transactions between the Specialty Semiconductors and the Performance Materials segments have been eliminated on consolidation.

Revenue recognition

Revenue comprises the sale of manufactured products and the rendering of services and is measured at the amounts specified in the customer's arrangement.

Sales of manufactured products are recognized when products are delivered to the customer, which is also the moment when control of the products is transferred, and when there is no unfulfilled obligation that could affect the customer's acceptance of the products. Delivery occurs when the products have been shipped to the specific location, the risks of loss have been transferred to the customer and has accepted the products in accordance with the sales contract. Revenue from custom refining activities, often referred to as tolling, is recognized when services are rendered, at a point in time.

Accounts receivable are recognized when the products are delivered or services are rendered, as this is the point in time that the consideration is unconditional because only the passage of time is required before the payment is due. The Company does not expect to have any contracts where the period between the transfer of the promised products or services to the customer and payment by the customer exceeds one year. As a consequence, the Company does not adjust any of the transaction prices for the time value of money. Cash payments received or advances due pursuant to contractual arrangements are recorded as deferred revenue until all of the foregoing conditions of revenue recognition have been met.

Government grants

Grants from the government are recognized at their fair value where there is a reasonable assurance that the grant will be received and the Company will comply with all attached conditions.

Grants that compensate the Company for a specific expense incurred are recognized in the consolidated statement of earnings against the expenses.

Grants that are related to assets are recognized by deducting the grant from the carrying amount of the specific asset. The grant is recognized in the consolidated statement of earnings over the life of a depreciable asset as a reduced depreciation expense.

Property, plant and equipment

Property, plant and equipment are recorded at cost, net of accumulated depreciation, accumulated impairment losses and subsequent reversals, if applicable. Property, plant and equipment are depreciated using the straight-line method over their estimated useful lives, taking into account any residual values. Useful lives are as follows:

	Period
Land	Not depreciated
Building	25 years
Production equipment	Up to 15 years
Furniture	3 to 10 years
Office equipment	3 to 10 years
Rolling stock	3 to 10 years
Leasehold improvements	Over the term of the lease

Major overhaul and replacement are capitalized in the consolidated statement of financial position as a separate component, with the replaced part or previous overhaul derecognized from the consolidated statement. Maintenance and repairs are charged to expense as incurred.

Construction in progress is not depreciated until the assets are put into use. Costs are only capitalized if they are directly attributable to the construction or development of the assets.

Residual values, method of depreciation and useful life of the assets are reviewed annually and adjusted if appropriate.

Leases

Leases are recognized as a right-of-use asset and a corresponding liability at the date at which the leased asset is available for use by the Company. Assets and liabilities arising from a lease are initially measured on a present value basis.

Right-of-use assets
Right-of-use assets are measured at cost comprising the following:
- the amount of the initial measurement of lease liability;
- any lease payments made at or before the commencement date less any lease incentives received;
- any initial direct costs; and
- estimated restoration costs.

The right-of-use asset is depreciated over the shorter of the asset's useful life and the lease term on a straight-line basis.

Lease liabilities
Lease liabilities include the net present value of the following lease payments:
- fixed payments (including in-substance fixed payments), less any lease incentives receivable;
- variable lease payment that are based on an index or a rate;
- amounts expected to be payable by the lessee under residual value guarantees;
- the exercise price of a purchase option if the lessee is reasonably certain to exercise that option; and
- payments of penalties for terminating the lease, if the lease term reflects the lessee exercising that option.

The lease payments are discounted using the interest rate implicit in the lease. If that rate cannot be determined, the lessee’s incremental borrowing rate is used, being the rate that the lessee would have to pay to borrow the funds necessary to obtain an asset of similar value in a similar economic environment with similar terms and conditions.

Each lease payment is allocated between the liability and finance cost. The finance cost is charged to the consolidated statement of earnings over the lease period so as to produce a constant periodic rate of interest on the remaining balance of the liability for each period.

Payments associated with short-term leases and leases of low-value assets are recognized on a straight-line basis as an expense in the consolidated statement of earnings. Short-term leases are leases with a lease term of 12 months or less. Low-value assets comprise IT-equipment and small items of office furniture.

Extension options are included in a number of property and equipment leases across the Company. These terms are used to maximise operational flexibility in terms of managing contracts. The majority of extension options held are exercisable only by the Company and not by the respective lessor.

Intangible assets

Intangible assets acquired separately are recorded at cost, net of accumulated amortization, accumulated impairment losses and reversals, if applicable. Intangible assets acquired through a business combination are recognized at fair value at the date of acquisition. Intangible assets are amortized on a straight-line basis over their useful lives according to the following annual terms:

	Period
Customer relationships	15 years
Technology	Not exceeding 15 years
Trade name	10 years
Software	5 years
Development costs	Not exceeding 10 years
Backlog	3 years

Goodwill

Goodwill represents the excess of the consideration transferred over the fair value of the identifiable net assets acquired in a business combination and is initially measured at the acquisition date. Goodwill is subsequently carried at cost less any accumulated impairment losses.

At the date of acquisition, goodwill is assigned to the cash-generating unit (CGU) or group of CGUs that is expected to benefit from the synergies of the business combination. For the purposes of impairment testing, goodwill is allocated to the Company's operating segments, which is the level at which the chief operating decision maker monitors goodwill. The CGU is tested for impairment annually, or more frequently when there is indication that the CGU may be impaired. If the recoverable amount of the CGU is less than its carrying amount, the impairment loss is allocated first to reduce the goodwill allocated to the CGU and then, to reduce the carrying amounts of the other assets in the CGU on a pro-rata basis. Any impairment loss is recognized in the consolidated statement of earnings. An impairment loss recognized for goodwill is not reversed in subsequent periods.

Impairment of non-financial assets

The carrying amounts of the Company's non-financial assets that have an indefinite useful life, such as goodwill, are not subject to amortization and are tested annually for impairment or whenever indicators of impairment exist. Assets that are subject to amortization are tested for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. Assets that are not yet available for use are tested for impairment annually or at any time if an indicator of impairment exists.

An impairment loss is recognized if the carrying amount of an asset or a cash-generating unit (CGU) exceeds its recoverable amount. The recoverable amount of an asset or CGU is the greater of its value in use and its fair value less cost of disposal. The recoverable amount is determined for an individual asset; unless the asset does not generate cash inflows that are largely independent of those from other assets or groups of assets. In such case, the CGU's belonging asset is used to determine the recoverable amount. Impairment losses are recognized in the consolidated statement of earnings.

The Company evaluates impairment losses for potential reversals at each reporting date. An impairment loss is reversed if there is any indication that the loss has decreased or no longer exists due to changes in the estimates used to determine the recoverable amount. An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortization, if no impairment loss had been recognized. Such reversal is recognized in the consolidated statement of earnings.

Financial instruments

Financial assets and liabilities are recognized when the Company becomes a party to the contractual provisions of the instrument. Financial assets are derecognized when the rights to receive cash flows from the assets have expired or have been transferred and the Company has transferred substantially all risks and rewards of ownership.

Financial assets and liabilities are offset and the net amount is reported in the consolidated statement of financial position when there is a legally enforceable right to offset the recognized amounts and there is an intention to settle on a net basis, or realize the asset and settle the liability simultaneously.

Measurement

At initial recognition, the Company measures a financial asset or financial liability at its fair value plus or minus, in the case of a financial asset or financial liability not at fair value through profit or loss (FVPL), transaction costs that are directly attributable to the acquisition or issue of the financial asset or financial liability. Transaction costs of financial assets or financial liabilities carried at FVPL are expensed in the consolidated statement of earnings.

Financial assets with embedded derivatives are considered in their entirety when determining whether their cash flows are solely payment of principal and interest.

Measurement in subsequent periods depends on the classification of the financial instrument. The Company has classified its financial instruments in the following categories depending on the purpose for which the instruments were acquired and their characteristics.

Financial assets

Debt instruments
For the subsequent measurement, there are two measurement categories into which the Company classifies its debt instruments:

- Amortized cost: Assets that are held for collection of contractual cash flows where those cash flows represent solely payments of principal and interest are measured at amortized cost. Interest income from these financial assets is included in finance income using the effective interest rate method. Any gain or loss arising on derecognition is recognized directly in the consolidated statement of earnings and presented in other gains (losses), together with foreign exchange gains and losses. Impairment losses are presented as separate line item in the consolidated statement of earnings.
- Fair value through profit or loss (FVPL): Assets that do not meet the criteria for amortized cost or fair value through other comprehensive income (FVOCI) are measured at FVPL. A gain or loss on a debt investment that is subsequently measured at FVPL is recognized in the consolidated statement of earnings and presented net within other gains (losses) in the period in which it arises.

Investment in equity instruments
For the subsequent measurement, investments in equity instruments which the Company did not make an irrevocable election to present in FVOCI are measured at FVPL. A gain or loss on an investment in equity instruments that is subsequently measured at FVPL is recognized in the consolidated statement of earnings and presented net within Other expenses (income) in the period in which it arises.

Financial liabilities

Financial liabilities are subsequently measured at amortized cost using the effective interest method, except for financial liabilities at FVPL. Such liabilities, including derivatives that are liabilities, shall be subsequently measured at fair value.

The Company has classified its financial instruments as follows:

Category	Financial instrument
Financial assets and liabilities at fair value through profit and loss	Other current assets
	Derivative financial assets
	Other assets
	Derivative financial liabilities
Financial assets and liabilities at amortized cost	Cash and cash equivalents
	Accounts receivable
	Trade and accrued liabilities
	Long-term debt

Impairment

At each reporting date, the Company assesses, on a forward-looking basis, the expected credit losses associated with its debt instruments carried at amortized cost. The impairment methodology applied depends on whether there has been a significant increase in credit risk.

For trade receivables, the Company applies the simplified approach permitted by IFRS 9, which requires expected lifetime losses to be recognized from initial recognition of the receivables (Note 25). The Company assumes that there is no significant increase in credit risk for instruments that have a low credit risk.

Derivative financial instruments and hedging activities

Derivatives are initially recognized at fair value on the date a derivative contract is entered into and are subsequently remeasured at their fair value. The method of recognizing the resulting gain or loss depends on whether the derivative is designated as a hedging instrument and, if so, the nature of the item being hedged. The Company designates certain derivatives as hedges of a particular risk associated with a recognized asset or liability or a highly probable forecast transaction (cash flow hedge).

The Company will apply cash flow hedge accounting to certain foreign exchange forward contracts entered into to hedge forecasted transactions. In a cash flow hedge relationship, the portion of gains or losses on the hedging item that is determined to be an effective hedge is recognized in other comprehensive income (loss), while the ineffective portion is recorded in the consolidated statement of earnings. The amounts recognized in other comprehensive income (loss) are reclassified in the consolidated statement of earnings as a reclassification adjustment when the hedged item affects net earnings.

For the year ended December 31, 2021 and 2020, the Company has no derivative financial instruments designated as a hedging instrument.

Embedded financial liabilities derivatives

Embedded derivatives are recorded at fair value separately from the host contract when their economic characteristics and risks are not clearly and closely related to those of the host contract. Subsequent changes in fair value are recorded in financial expenses in the consolidated statement of earnings. For the year ended December 31, 2021 and 2020, the Company has no embedded derivative.

Cash and cash equivalents

Cash and cash equivalents comprise cash on hand.

Inventories

Inventories are carried at the lower of cost and net realizable value. Cost includes all expenditures directly attributable to the manufacturing process as well as suitable portions of related production overheads based on normal operating capacity. Costs of ordinarily interchangeable items are assigned using weighted average cost. Net realizable value is the estimated selling price in the ordinary course of business less costs of completion and any applicable selling expenses. When the circumstances that previously caused inventories to be written down below cost no longer exist or when there is clear evidence of an increase in net realizable value because of changed economic circumstances, the amount of the impairment is reversed (i.e. the reversal is limited to the amount of the original impairment) so that the new carrying amount is the lower of the cost and the revised net realizable value.

From time to time, when substantially all required raw materials are in inventory, the Company may choose to enter into long-term fixed-price sales contracts. The quantity of raw materials required to fulfill these contracts is specifically assigned, and the average cost of these raw materials is accounted for separately throughout the duration of the contract.

Income taxes

The tax expense for the year comprises current and deferred tax is recognized in the consolidated statement of earnings, except to the extent that it relates to items recognized in other comprehensive income (loss) or directly in equity. In which case, the tax expense is also recognized in other comprehensive income (loss) or directly in equity, respectively.

a) Current tax

The current income tax charge is calculated on the basis of the tax laws enacted or substantively enacted at the date of the consolidated statement of financial position in the countries where the Company and its subsidiaries operate and generate taxable income. Management periodically evaluates positions taken in tax returns with respect to situations in which applicable tax regulation is subject to interpretation. It establishes provisions where appropriate on the basis of amounts expected to be paid to the tax authorities.

b) Deferred tax

Deferred income tax is recognized using the liability method on temporary differences arising between the tax bases of assets and liabilities and their carrying amounts in the consolidated financial statements. However, deferred tax liabilities are not recognized if they arise from the initial recognition of goodwill; deferred income tax is not accounted for, if it arises from initial recognition of an asset or liability in a transaction other than a business combination that at the time of the transaction affects neither accounting nor taxable profit or loss. Deferred income tax is determined using tax rates (and laws) that are enacted or substantively enacted at the date of the consolidated statement of financial position and are expected to apply when the related deferred income tax asset is realized or the deferred income tax liability is settled.

Deferred income tax assets are recognized only to the extent that it is probable that future taxable profit will be available against which the temporary differences can be used.

Deferred income tax is presented to provide impact of temporary differences arising on investments in subsidiaries, except for deferred income tax liability where the timing of the reversal of the temporary difference is controlled by the Company and it is probable that the temporary difference will not be reversed in the foreseeable future.

Deferred income tax assets and liabilities are offset when there is a legally enforceable right to offset current tax assets against current tax liabilities, and when the deferred income tax assets and liabilities relate to income taxes levied by the same taxation authority, on either the same taxable entity or different taxable entities where there is an intention to settle the balances on a net basis.

Provisions

A provision is recognized when the Company has a present legal or constructive obligation as a result of past events; it is probable that an outflow of resources will be required to settle the obligation; and the amount has been reliably estimated. Restructuring provisions comprise mainly employee termination payments. Provisions are not recognized for future operating losses.

Where there are a number of similar obligations, the likelihood that an outflow will be required in settlement is determined by considering the class of obligations as a whole. A provision is recognized even if the likelihood of an outflow with respect to any one item included in the same class of obligations may be small.

Provisions are measured at the present value of the expenditures expected to be required to settle the obligation using a pre-tax rate that reflects current market assessment of the time value of money and the risks specific to the obligation. The increase in the provision due to passage of time is recognized as interest expense.

Restructuring provisions, consisting of severance and other related costs to sites closure, are recognized when a detailed formal plan identifies the business or part of the business concerned, the location and number of employees affected, detailed estimates of the associated costs, and an appropriate timelines which has been communicated to those affected by it.

Research and development expenses

Research expenses are charged to the consolidated statement of earnings in the period they are incurred and are included under other expenses. Development expenses which are directly attributable expenses, either internal or external, are charged to the consolidated statement of earnings, except if the Company can demonstrate all of the following (in that case capitalised as an intangible assets – development costs):

- The technical feasibility of completing the intangible asset so that it will be available for use or sale;
- Its intention to complete the intangible asset and use or sell it;
- Its ability to use or sell the intangible asset;
- How the intangible asset will generate probable future economic benefits. Among other things, the Company can demonstrate the existence of a market for the output of the intangible asset or the intangible asset itself or, if it is to be used internally, the usefulness of the intangible asset;
- The availability of adequate technical, financial and other resources to complete the development and to use or sell the intangible asset; and
- Its ability to measure reliably the expenditure attributable to the intangible asset during its development.

Employee future benefits

The Company contributes to two defined benefit pension plans. The significant policies related to employee future benefits are as follows:

- The cost of pension and other post-retirement benefits earned by employees is actuarially determined using the projected benefit method prorated on service, market interest rates and management's best estimate of expected plan investment performance, retirement age of employees and expected health care costs;
- Fair value is used to value the plan assets for the purpose of calculating the expected return on plan assets; and
- Actuarial gains and losses arising from experience adjustment and change in actuarial assumptions are charged or credited to equity in other comprehensive income (loss) in the period in which they arise.

Share-based payments

The fair value of the equity-settled share-based payment plan is determined using the Black-Scholes model on the grant date. Measurement inputs include the share price on the measurement date, the exercise price of the instrument, expected volatility, weighted average expected life of the instrument, expected dividends, expected forfeiture rate, and the risk-free interest rate. The impact of service and non-market vesting conditions is not taken into account in determining fair value. The compensation expense of the equity-settled awards is recognized in the consolidated statement of earnings over the graded vesting period, where the fair value of each tranche is recognized over its respective vesting period.

For cash-settled share-based payment plans, the compensation expense is determined based on the fair value of the liability incurred at each reporting date until the award is settled. The fair value of compensation expense is calculated by multiplying the number of units expected to vest with the fair value of one unit as of grant date based on the market price of the Company's common shares. Until the liability is settled, the Company re-mesures the fair value of the liability at the end of each reporting period and at the date of settlement, with any changes in fair value recognized in the consolidated statement of earnings.

Earnings per share

Basic earnings per share is calculated by dividing net earnings for the year by the weighted average number of common shares outstanding during the year.

Diluted earnings per share assume the conversion, exercise or contingent issuance of securities only when such conversion, exercise or issuance would have a dilutive effect on the income per share. The treasury stock method is used to determine the dilutive effect of share options.

Significant management estimation and judgment in applying accounting policies

The following are significant management judgments used in applying the accounting policies of the Company that have the most significant effect on the consolidated financial statements.

Estimation uncertainty
When preparing the consolidated financial statements, management undertakes a number of judgments, estimates and assumptions about recognition and measurement of assets, liabilities, revenues and expenses. Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimates are revised and in any future periods affected.

Information about the significant judgments, estimates and assumptions that have the most significant effect on the recognition and measurement of assets, liabilities, revenues and expenses are discussed below.

Impairment of non-financial assets
Non-financial assets are reviewed for an indication of impairment at each consolidated statement of financial position date upon the occurrence of events or changes in circumstances indicating that the carrying value of the assets may not be recoverable, which requires significant judgement.

An impairment loss is recognized for the amount by which an asset's or CGU's carrying amount exceeds its recoverable amount, which is the higher of fair value less cost of disposal and value in use.

An intangible asset and related equipment that are not yet available for their intended use and CGUs to which goodwill is allocated are tested for impairment at least annually, which also requires significant judgement. To determine the recoverable amount (value in use or fair value less cost to dispose of these assets), management estimates expected future cash flows from the asset or CGU and determines a suitable interest rate in order to calculate the present value of those cash flows. In the process of measuring expected future cash flows for intangible and tangible assets not yet available for their intended use and CGUs to which goodwill is allocated, management makes assumptions about future operating results using the estimated forecasted prices obtained from various market sources. These key assumptions relate to future events and circumstances. The actual results will vary and may cause adjustments to the Company's assets in future periods. In most cases, determining the applicable discount rate involves estimating the appropriate adjustment to market risk and to asset-specific risk factors.

By their nature, assets not yet available for intended use have a higher estimation uncertainty, as they depend on future market development and the Company's ability to commercialize and manufacture new products to realize forecasted earnings. For example new manufacturing processes may not be scalable to industrial level within expected timeframe and new products might not receive sufficient market penetration. Management believes that the following assumptions are the most susceptible to change and impact the valuation of these assets in time: a) expected significant growth of the market for different metal products (demand), b) selling prices which have an impact on revenues and metal margins (pricing), and c) the discount rate associated with new processes and products (after considering a premium over the Company's weighted average cost of capital (WACC) to reflect the additional uncertainty).

Inventories
Inventories are carried at the lower of cost and net realizable value, with cost determined using the average cost method. In estimating net realizable values, management takes into account the most reliable evidence available at the time the estimates are made. The Company's core business is subject to changes in foreign policies and internationally accepted metal prices which may cause future selling prices to change rapidly. The Company evaluates its inventories using a group of similar items basis and considers expected future prices as well as events that have occurred between the consolidated statement of financial position date and the date of the completion of the consolidated financial statements. Net realizable value for inventory to satisfy a specific sales contract is measured at the contract price.

Business Combination
The Company must make assumptions and estimates to determine the fair value of identifiable assets acquired and liabilities assumed. These estimates are based on future events, forecasts of future cash flows, future operating costs, future capital expenditures and estimated discount rates. Changes to the preliminary measurements of assets and liabilities acquired may be retrospectively adjusted when new information is obtained until the final measurements are determined within one year of the acquisition date.

Income taxes
The Company is subject to income taxes in numerous jurisdictions. Significant judgment is required in determining the worldwide provision for income taxes. There are many transactions and calculations for which the ultimate tax determination is uncertain. The Company recognizes liabilities for anticipated tax audit issues based on estimates of whether additional taxes will be due. Where the final tax outcome of these matters is different from the amounts that were initially recorded, such differences will impact the current and deferred income tax assets and liabilities in the period in which such determination is made.

The Company has deferred income tax assets that are subject to periodic recoverability assessments. Realization of the Company's deferred income tax assets is largely dependent on its achievement of projected future taxable income and the continued applicability of ongoing tax planning strategies. The Company's judgments regarding future profitability may change due to future market conditions, changes in tax legislation and other factors that could adversely affect the ongoing value of the deferred income tax assets. These changes, if any, may require a material adjustment of these deferred income tax asset balances through an adjustment to the carrying value thereon in the future. This adjustment would reduce the deferred income tax asset to the amount that is considered to be more likely than not to be realized and would be recorded in the period such a determination was to be made (Note 16).

3. Adoption of New Accounting Standards and Future Changes in Accounting Policies

Adoption of new accounting standards

IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16 – Interest Rate Benchmark Reform (Phase 2)
On January 1, 2021, the Company adopted the amendments regarding the Interest Rate Benchmark Reform (Phase 2) which impact IFRS 9 Financial Instruments, IAS 39 Financial Instruments: Recognition and measurement, IFRS 7 Financial Instruments: Disclosures and IFRS 16 Leases. The Phase 2 amendments address issues that might affect financial reporting after the reform of an interest rate benchmark, including its replacement with alternative benchmark rates. These amendments complement those issued in 2019 and focus on issues that might affect financial reporting during the reform of an interest rate benchmark, including the effects of changes to contractual cash flows arising from the replacement of an interest rate benchmark with an alternative benchmark rate. The amendments are effective for annual periods beginning on or after January 1, 2021, with earlier application permitted. In adopting the amendments, there has been no significant impact to the financial statements for the year ended December 31, 2021.

Future Changes in accounting policies

The following standards have been issued but not yet effective:

IFRS 3 – Business combinations
In May 2020, the IASB issued amendments to IFRS 3 regarding its reference to the Conceptual Framework. With this amendment, IFRS 3 will reference the current version of the Conceptual Framework rather than the Conceptual Framework in effect at the time of IFRS 3's development. The amendments to IFRS 3 also indicate that for the purposes of identifying certain liabilities within the context of a business combination, the definition of a liability as per IAS 37 – Provisions Contingent Liabilities and Contingent assets, shall supersede the definition within the Conceptual Framework. The amendments are effective for annual periods beginning on or after January 1, 2022, with earlier application permitted.

(in thousands of United States dollars, unless otherwise indicated)

IAS 16 – Property, plant and equipment
In May 2020, the IASB issued amendments to IAS 16 regarding the accounting of Proceeds before Intended Use. Proceeds received from the sale of items produced by property, plant and equipment (PPE) which is still being prepared for its intended use cannot be deducted from the PPE's cost. Instead proceeds must be immediately recognized in the consolidated statement of earnings. The amendments are effective for annual periods beginning on or after January 1, 2022, with earlier application permitted.

IFRS 9 – Financial Instruments
In May 2020, the IASB issued an amendment to IFRS 9 to clarify which fees should be considered for the purpose of applying the derecognition test to a modified financial liability. The IASB clarified that only fees paid or received between the borrower and the lender should be considered. The amendment is effective for annual periods beginning on or after January 1, 2022, with earlier application permitted.

4. Business Combination

On November 5, 2021, the Company acquired all of the issued and outstanding shares of AZUR SPACE Solar Power GmbH (AZUR) for a purchase price of 50.1 million euros, subject to post-closing adjustments. The consideration transferred was comprised of 6.5 million shares of 5N Plus, which were issued from the treasury at 12.4 million euros, along with a cash payment of 37.7 million euros. Furthermore, the Company financed the working capital and equipment loans for an amount of 23.8 million euros. The cash portion and the working capital of the transaction are funded through the Company's liquidity and senior debt facility. Transaction fees for an amount of $666 for 2021 (2020 - $490) were expensed as incurred in the consolidated statement of earnings.

Located in Heilbronn, Germany, AZUR develops and manufactures multi-junction solar cells based on III-V compound semiconductor materials. The integration of AZUR will not only expand the Company's position within renewable energy, but, through Canada's membership in the European Space Agency (ESA), will also establish 5N Plus as a supplier to the European and U.S. space programs.

To estimate the fair value of the intangible assets, management used the excess earnings method to value customer relationships and the royalty relief method to value technology and trade names using discounted cash flow models. Management developed significant assumptions related to revenue and gross margin forecasts, customer retention rates, royalty rates and discount rates.

The tables below present the consideration paid and the Company's preliminary assessment of the fair values of the assets acquired and the liabilities assumed. The assessment of the fair values will be finalized after the values of the assets and liabilities have been definitively determined.

Consideration transferred	
	$
Cash and cash equivalents	**34,301**
Consideration payable[(1)]	**9,158**
Common shares issued	**14,249**
	57,708

1) This amount of 7,950 euros, held in escrow and recorded in Other current assets, will be released within 12 months in accordance with the terms of the Share Purchase Agreement (Note 12).

(in thousands of United States dollars, unless otherwise indicated)

Preliminary recognized amounts of identified assets acquired and liabilities assumed	
	$
Cash and cash equivalents	**1,017**
Accounts receivable	**8,342**
Inventories	**21,394**
Other current assets	**256**
Property, plant and equipment	**31,128**
Right-of-use assets	**21,626**
Intangible assets	**32,144**
Other assets	**5**
Goodwill	**13,841**
Total assets acquired	**129,753**
Trade and accrued liabilities	**12,197**
Long-term debt[1]	**27,396**
Employee benefit plan obligations	**2,673**
Lease liabilities	**21,626**
Other liabilities	**1,059**
Deferred tax liabilities	**7,094**
Total liabilities assumed	**72,045**
Total net assets	**57,708**

1) The long-term debt acquired was repaid in full on November 5, 2021.

For the 57-day period ended December 31, 2021, AZUR contributed $17,034 of revenue and $2,342 of net earnings to the Company's consolidated statement of earnings based on operations after the acquisition date. If the acquisition of AZUR had been completed as of January 1, 2021, the Company estimates that its consolidated revenues and net earnings for the year would have totalled $260,990 and $nil respectively, inclusive of the additional depreciation and amortization expenses recorded in reference to the preliminary purchased price allocation. Azur delivers products to its customers on a project basis creating an unequal distribution of revenue and profitability from one period to another.

The amount recorded for goodwill is not deductible for tax purposes. The accounts receivable are presented net of a loss allowance of $28.

5. Accounts Receivable

	2021	2020
	$	$
Gross trade receivables	**35,014**	23,374
Loss allowance (Note 25)	**(149)**	(146)
Trade receivables	**34,865**	23,228
Sales taxes receivable	**3,508**	2,377
Other receivables	**3,725**	4,505
Total accounts receivable	**42,098**	30,110

All of the Company's accounts receivable are short term. The net carrying value of accounts receivable is considered a reasonable approximation of fair value.

The Company's exposure to credit risks and the calculation of the loss allowance related to accounts receivable are disclosed in Note 25.

Most of the accounts receivable are pledged as security for the revolving credit facility (Note 13).

(in thousands of United States dollars, unless otherwise indicated)

6. Inventories

	2021	2020
	$	$
Raw materials	**30,845**	21,272
Finished goods	**64,681**	45,867
Total inventories	**95,526**	67,139

For the year ended December 31, 2021, a total of $94,881 of inventories was included as an expense in cost of sales (2020 – $74,352). In 2020, this includes $2,411 of impairment of inventories ($244 for the Specialty Semiconductors segment and $2,167 for the Performance Materials segment).

For the year ended December 31, 2021, a total of $815 previously written down was recognized as a reduction of expenses in cost of sales concurrently with the related inventories being sold ($169 for the Specialty Semiconductors segment and $646 for the Performance Materials segment). For the year ended December 31, 2020, no amount previously written down was recognized as a reduction of expenses in cost of sales concurrently with the related inventories being sold.

The majority of inventories are pledged as security for the revolving credit facility (Note 13).

7. Property, Plant and Equipment

	Land and buildings	**Production equipment**	**Furniture, office equipment and rolling stock**	**Leasehold improvements**	**Total**
	$	**$**	**$**	**$**	**$**
Net book value as at December 31, 2019	17,680	36,786	2,797	1,327	58,590
Additions	394	7,069	602	119	8,184
Disposals	-	(29)	-	-	(29)
Depreciation	(1,032)	(6,652)	(884)	(237)	(8,805)
Impairment (Note 27)	(989)	(3,936)	(9)	-	(4,934)
Effect of foreign exchange and others	150	23	12	-	185
Net book value as at December 31, 2020	16,203	33,261	2,518	1,209	53,191
Business combination (Note 4)	**-**	**28,874**	**472**	**1,782**	**31,128**
Additions	**290**	**6,971**	**429**	**15**	**7,705**
Disposals	**-**	**(456)**	**-**	**-**	**(456)**
Depreciation	**(951)**	**(6,334)**	**(1,263)**	**(421)**	**(8,969)**
Effect of foreign exchange and others	**43**	**(1,460)**	**350**	**(6)**	**(1,073)**
Net book value as at December 31, 2021	**15,585**	**60,856**	**2,506**	**2,579**	**81,526**
As at December 31, 2020					
Cost	23,591	67,813	4,088	3,453	98,945
Accumulated depreciation	(7,388)	(34,552)	(1,570)	(2,244)	(45,754)
Net book value	16,203	33,261	2,518	1,209	53,191
As at December 31, 2021					
Cost	**23,916**	**100,973**	**5,116**	**5,244**	**135,249**
Accumulated depreciation	**(8,331)**	**(40,117)**	**(2,610)**	**(2,665)**	**(53,723)**
Net book value	**15,585**	**60,856**	**2,506**	**2,579**	**81,526**

As at December 31, 2021, property, plant and equipment that were not depreciated until ready for their intended use amounted to $14,418 (2020 – $7,017) (mainly production equipment).

Most of the property, plant and equipment are pledged as security for the revolving credit facility (Note 13).

(in thousands of United States dollars, unless otherwise indicated)

8. Leases

Right-of-use assets

	Buildings	Production equipment	Office equipment and rolling stock	Total
	$	$	$	$
Net book value as at December 31, 2019	5,239	468	343	6,050
Additions	209	43	196	448
Depreciation	(1,092)	(155)	(204)	(1,451)
Net book value as at December 31, 2020	4,356	356	335	5,047
Business combination (Note 4)	**21,559**	**-**	**67**	**21,626**
Additions	**-**	**27**	**217**	**244**
Modification to lease contracts	**7,402**	**-**	**5**	**7,407**
Depreciation	**(1,413)**	**(145)**	**(206)**	**(1,764)**
Effect of foreign exchange and others	**(361)**	**-**	**(1)**	**(362)**
Net book value as at December 31, 2021	**31,543**	**238**	**417**	**32,198**
As at December 31, 2020				
Cost	6,324	632	635	7,591
Accumulated depreciation	(1,968)	(276)	(300)	(2,544)
Net book value	4,356	356	335	5,047
As at December 31, 2021				
Cost	**34,923**	**619**	**790**	**36,332**
Accumulated depreciation	**(3,380)**	**(381)**	**(373)**	**(4,134)**
Net book value	**31,543**	**238**	**417**	**32,198**

Lease liabilities

	2021	2020
	$	$
Current portion	**2,487**	1,442
Non-current portion	**30,153**	3,916
Total lease liabilities	**32,640**	5,358

Amounts recognized in the consolidated statements of earnings:

	2021	2020
	$	$
Interest on lease liabilities(1)	**336**	246
Income from sub-leasing right-of-use assets(2)	**(33)**	-
Expenses relating to short-term leases(3)	**251**	188
Expenses relating to leases of low-value assets, excluding short-term leases of low-value assets(3)	**284**	273

(1) Included in financial expenses.

(2) Included in other expenses (income), net.

(3) Included in cost of sales and selling, general and administrative expenses.

(in thousands of United States dollars, unless otherwise indicated)

9. Intangible Assets

	Customer relationship	Technology	Trade name, software, development costs and others	Total
	$	$	$	$
Net book value as at December 31, 2019	-	1,751	9,239	10,990
Additions	-	-	133	133
Disposals and others	-	-	14	14
Amortization	-	(219)	(1,250)	(1,469)
Net book value as at December 31, 2020	-	1,532	8,136	9,668
Business combination (Note 4)	**15,971**	**9,899**	**6,274**	**32,144**
Additions	**-**	**-**	**541**	**541**
Amortization	**(166)**	**(348)**	**(1,288)**	**(1,802)**
Effect of foreign exchange and others	**-**	**(11)**	**(66)**	**(77)**
Net book value as at December 31, 2021	**15,805**	**11,072**	**13,597**	**40,474**
As at December 31, 2020				
Cost	-	2,189	13,153	15,342
Accumulated amortization	-	(657)	(5,017)	(5,674)
Net book value	-	1,532	8,136	9,668
As at December 31, 2021				
Cost	**15,971**	**12,077**	**19,799**	**47,847**
Accumulated amortization	**(166)**	**(1,005)**	**(6,202)**	**(7,373)**
Net book value	**15,805**	**11,072**	**13,597**	**40,474**

As at December 31, 2021, intangible assets that were not depreciated until ready for their intended use amounted to $1,963 (2020 – $nil). The category of development costs which includes capitalized costs of $14,367 (2020 - $10,625), primarily consists of internally generated intangible assets.

10. Other Assets

	2021	2020
	$	$
Deferred costs	**305**	298
Investment in equity instruments	**2,000**	-
Other[1]	**717**	790
Total other assets	**3,022**	1,088

1) Includes a restricted investment of $713 (2020 - $790) which is valued at fair value through profit or loss (Note 17).

11. Goodwill

	2021	2020
	$	$
Net book value as at December 31, 2020	**-**	-
Business combination (Note 4)	**13,841**	-
Net book value as at December 31, 2021	**13,841**	-

Goodwill recognized as part of the acquisition of AZUR on November 5, 2021 is allocated to the Specialty Semiconductor segment. For the purposes of the Company's annual goodwill impairment test, AZUR is considered as its own CGU. Based on the result of this test, no impairment charges are required. The recoverable amount was determined based on the CGU's value in use which was calculated by using a discounted cash flow (DCF) approach.

(in thousands of United States dollars, unless otherwise indicated)

The key assumptions used for the purposes of the DCF are outlined below:

- Cash flows: Estimated cash flows were projected based on actual operating results from internal sources as well as industry and market trends. The first year of the four-year projection period was forecasted by Management. The extended three-year period was calculated using the 2017-2022 Compound Annual Growth Rate for the revenues.
- Terminal growth rate: A terminal growth rate of 5.0% is used to extrapolate the Company's projection and it was determined using the industry expectation and market trends.
- Discount rate: Cash flows are discounted using pre-tax discount rate which is estimated based on the historical industry average weighted-average cost of capital. The discount rate used is 7.4%.

12. Trade and Accrued Liabilities

	2021	2020
	$	$
Trade payables	**32,212**	11,926
Accrued liabilities[1]	**15,632**	19,745
Consideration payable (Note 4)	**9,004**	-
Total trade and accrued liabilities	**56,848**	31,671

(1) As at December 31, 2021, an amount of $258 was still outstanding with respect to the provision of $1,349 outstanding as at December 31, 2020.

13. Bank Indebtedness and Long-Term Debt

a) Bank indebtedness

During the year ended December 31, 2021, the Company terminated its Chinese renminbi (RMB) credit line which the Company held with a financial institution in China as at December 31, 2020.

		2021		2020
	Contractual Currency RMB	**Reporting Currency US$**	Contractual Currency RMB	Reporting Currency US$
Facility available	**-**	**-**	10,000	1,533
Amount drawn	**-**	**-**	-	-

b) Long-term debt

	2021	2020
	$	$
Senior secured revolving facility of $124,000 with a syndicate of banks, maturing in April 2023[1]	**91,000**	25,000
Unsecured subordinated term loan, maturing in March 2024[2]	**25,000**	25,000
Term loan, repaid in full in March 2021	**-**	109
	116,000	50,109
Less current portion of long-term debt	**-**	109
	116,000	50,000

(1) In March 2021, the Company signed a senior secured multi-currency revolving credit facility of $79,000 maturing in April 2023 to replace its existing $79,000 senior secured revolving facility maturing in April 2022. As a result of the acquisition of AZUR in November 2021, the senior secured multi-currency revolving credit facility of $79,000 increased to $124,000. At any time, the Company has the option to request that the credit facility be expanded through the exercise of an additional $30,000 accordion feature, subject to review and approval by the lenders. This revolving credit facility can be drawn in US dollars, Canadian dollars or Hong Kong dollars (up to $4,000). Drawings bear interest at either the Canadian prime rate, US base rate, Hong Kong base rate or LIBOR, plus a margin based on the Company's senior net debt to consolidated EBITDA ratio. Under the terms of its credit facility, the Company is required to satisfy certain restrictive covenants as to financial ratios. As at December 31, 2021, the Company had met all covenants.

In February 2020, the Company entered into an interest rate swap agreement with a major Canadian financial institution to reduce its financial expense fluctuations on Libor rate on a portion of its credit facility (Note 17).

(in thousands of United States dollars, unless otherwise indicated)

(2) In February 2019, the Company signed a five-year unsecured subordinated term loan with Investissement Québec. The loan was disbursed in two tranches: the first tranche of $5,000 on February 6, 2019 and the second tranche of $20,000 on March 22, 2019. The two tranches of the term loan bear interest equivalent to the 5-year US dollar swap rate plus a margin of 4.19%, which equals to 6.82% and 6.64% respectively. Under the terms of the loan, the Company is required to satisfy certain restrictive covenants as to financial ratios. As at December 31, 2021, the Company has met all covenants.

14. Employee Benefit Plan Obligations

The Company operates two defined pension plans in Germany based on employee pensionable earnings and length of service.

Unfunded defined benefit plan
Former general and senior managers had been provided with direct benefit commitments. Employees had been provided with indirect benefit commitments via the Unterstützungseinrichtung der HEK GmbH e.V. Such promises had been made for employees with an entry date of December 31, 1993 or earlier.

Funded defined benefit plan
The pension obligations are via a pension fund with commitments to old-age, disability and survivors' pension to managers as well as employees. Such promises had been made for employees with an entry date of December 31, 2007 or earlier. Vesting of benefits is being determined by the employers' pension-plan act (Gesetz über die Verbesserung der betrieblichen Altersversorgung). The pension scheme is fully funded by two absolute return strategies funds at Generali Pensionsfond AG. These investment funds have quoted prices in active markets.

	2021	2020
	$	$
Fair value of plan assets	**3,069**	-
Present value of funded obligation	**5,575**	-
Present value of net obligation for funded obligation	**2,506**	-
Present value of unfunded obligation	**14,725**	17,202
Present value of net obligations	**17,231**	17,202

Movement in the defined benefit obligations is as follows:

			2021		2020
	Unfunded	**Funded**	**Total**	Unfunded	Total
	$	**$**	**$**	$	$
Beginning of year	**17,202**	**-**	**17,202**	15,398	15,398
Business combination (Note 4)	**-**	**5,782**	**5,782**	-	-
Current service cost	**89**	**-**	**89**	80	80
Interest cost	**147**	**10**	**157**	183	183
Effect of foreign exchange	**(1,308)**	**(93)**	**(1,401)**	1,389	1,389
Benefits paid	**(722)**	**(34)**	**(756)**	(706)	(706)
Actuarial (gains) losses	**(683)**	**(90)**	**(773)**	858	858
End of year	**14,725**	**5,575**	**20,300**	17,202	17,202

Movement in plan assets is as follows:

	2021
	$
Beginning of year	**-**
Business combination (Note 4)	**3,109**
Interest income	**5**
Return on plan assets, excluding amounts included in interest income	**41**
Pension benefits paid	**(34)**
Effect of foreign exchange	**(52)**
End of year	**3,069**

(in thousands of United States dollars, unless otherwise indicated)

The principal actuarial assumptions as at December 31 were as follows:

		2021	2020
	Unfunded	**Funded**	Unfunded
Discount rate	**1.2%**	**1.2%**	0.9%
Salary growth rate	**2.0%**	**2.0%**	2.0%
Pension growth rate	**1.8%**	**2.0%**	1.8%

Assumptions regarding mortality are based on mortality tables "Richttafeln 2018 G" by Prof. Dr. Klaus Heubeck as biometrical basis in accordance with age of earliest retirement by law RV-Altersgrenzenanpassungsgesetz, dated April 20, 2007 for the unfunded defined benefit plan and with age of earliest retirement by 65 years for the funded defined benefit plan.

The sensitivity of the defined benefit obligations to changes in assumptions is set out below. The effects on each plan of a change in an assumption are weighted proportionately to the total plan obligations to determine the total impact for each assumption presented.

	Impact on defined benefit obligations					
	Change in assumption		**Increase in assumption**		**Decrease in assumption**	
	Unfunded	**Funded**	**Unfunded**	**Funded**	**Unfunded**	**Funded**
Discount rate	0.50%	0.50%	(6.19%)	(7.61%)	6.90%	8.63%
Salary growth rate	0.50%	0.50%	0.38%	-%	(0.37%)	-%
Pension growth rate	0.50%	0.50%	6.51%	6.51%	(5.96%)	(5.94%)

	Increase by 1 year in assumption		**Decrease by 1 year in assumption**	
	Unfunded	**Funded**	**Unfunded**	**Funded**
Life expectancy	4.48%	4.17%	(3.93%)	3.67%

The weighted average duration of the unfunded and funded defined benefit obligations are 13.03 years (2020 – 13.69 years) and 16.13 years.

Though its defined benefit pension plans, the Company is exposed to a number of risks, the most significant of which are detailed below:

Specific to employee benefit obligations, the Company is mainly exposed to economic and demographic risks such as salary inflation and changes in life expectancy. The plans' obligations are to provide benefits for the duration of the life of its members, therefore, increases in life expectancy will result in an increase in the plans' liabilities. In addition, the obligations are impacted by the discount rate.

Defined benefit pension plan assets are invested in order to meet funded pension obligations. The ability of the Company's fund assets to meet employee benefit obligations is subject to market risk such as foreign currency risk, interest rate risk, and other price risk. Credit risk also affects plan assets, as they are partially comprised of investments in bonds. The default of a bond issuer would decrease plan assets and the Company's corresponding ability to meet employee benefit obligations.

(in thousands of United States dollars, unless otherwise indicated)

Expected maturity analysis of undiscounted pension liability:

			2021		2020
	Unfunded	Funded	Total	Unfunded	Total
	$	$	$	$	$
Less than a year	693	189	882	755	755
Between 1 and 5 years	2,794	806	3,600	3,072	3,072
Over 5 years	13,954	5,887	19,841	15,732	15,732
Total	17,441	6,882	24,323	19,559	19,559

Expected contributions to pension benefit plans for the year ending December 31, 2022 are $882.

15. Other Liabilities

	2021	2020
	$	$
Beginning of year	195	195
Business combination (Note 4)	1,059	-
Increase in liabilities	19	-
Utilized	-	-
Effect of foreign exchange	(18)	-
End of year	1,255	195

16. Income Taxes

	2021	2020
	$	$
Current tax:		
Current tax for the year	5,309	3,106
Adjustment in respect of prior years' estimates	271	279
Total current tax	5,580	3,385
Deferred tax:		
Recognition and reversal of temporary differences	826	1,474
Adjustment in respect of prior years' estimates	(776)	164
Total deferred tax	50	1,638
Income tax expense	5,630	5,023

A reconciliation of income taxes at Canadian statutory rates with the reported income taxes is as follows:

	2021	2020
	$	$
Earnings before income tax	8,740	7,209
Canadian statutory income tax rates	26.5%	26.5%
Income tax on earnings at Canadian statutory rate	2,316	1,910
Increase (decrease) resulting from:		
Unrecorded losses carried forward	553	1,964
Non-deductible expense (non-taxable gain) for tax purposes	622	199
Non-deductible (non-taxable) foreign exchange	1,599	(241)
Effect of difference of foreign tax rates compared to Canadian tax rates	1,048	141
Withholding tax on group dividend	-	600
Adjustment in respect of prior years' estimates	(505)	443
Other	(3)	7
Income tax expense	5,630	5,023

The Company's applicable tax rate is the Canadian combined rates applicable in the jurisdiction in which the Company operates.

(in thousands of United States dollars, unless otherwise indicated)

The movement in deferred income tax assets and liabilities during the year, without taking into consideration the offsetting of balances within the same jurisdiction, is as follows:

Deferred tax assets	**Property, plant and equipment**	**Inventories**	**Intangible assets**	**Loss carry forward**	**Retirement benefit obligation**	**Others**	**Total**	**Offset by jurisdiction**	**Total**
	$	$	$	$	$	$	$	$	$
As at December 31, 2019	1,367	787	307	3,135	3,858	1,032	10,486	(2,061)	8,425
(Charged) credited to consolidated statements of earnings	308	271	-	(3,100)	231	73	(2,217)		
Credited to comprehensive income	-	-	-	-	271	-	271		
As at December 31, 2020	1,675	1,058	307	35	4,360	1,105	8,540	(1,751)	6,789
Business combination (Note 4)	**-**	**-**	**-**	**1,660**	**816**	**-**	**2,476**		
(Charged) credited to consolidated statements of earnings	**(767)**	**(634)**	**-**	**2,181**	**(461)**	**(245)**	**74**		
Credited to comprehensive income	**-**	**-**	**-**	**-**	**(256)**	**-**	**(256)**		
Effect of foreign exchange	**-**	**-**	**-**	**-**	**-**	**(27)**	**(27)**		
As at December 31, 2021	**908**	**424**	**307**	**3,876**	**4,459**	**833**	**10,807**	**(3,800)**	**7,007**

Deferred tax liabilities	**Property, plant and equipment**	**Inventories**	**Intangible assets**	**Others**	**Total**	**Offset by jurisdiction**	**Total**
	$	$	$	$	$	$	$
As at December 31, 2019	1,493	92	566	179	2,330	(2,061)	269
Charged (credited) to consolidated statements of earnings	(348)	(92)	-	(139)	(579)		
As at December 31, 2020	1,145	-	566	40	1,751	(1,751)	-
Business combination (Note 4)	**-**	**-**	**9,570**	**-**	**9,570**		
Charged (credited) to consolidated statements of earnings	**(260)**	**426**	**(68)**	**26**	**124**		
As at December 31, 2021	**885**	**426**	**10,068**	**66**	**11,445**	**(3,800)**	**7,645**

(in thousands of United States dollars, unless otherwise indicated)

Movement in the deferred income tax amounts is as follows:

	2021	2020
	$	$
Beginning of year	**6,789**	8,156
Business combination	**(7,094)**	-
Tax charge relating to components of other comprehensive income (loss)	**(256)**	271
Credited to consolidated statement of earnings	**(50)**	(1,638)
Impact of foreign exchange	**(27)**	-
End of year	**(638)**	6,789

Deferred tax assets of $3,161 (2020 – $nil), included in the consolidated statements of financial position, are dependent on projection of future taxable profits for entities that have suffered a loss in the current period.

Deferred income tax liabilities have not been recognized for the withholding tax and taxes that would be payable on the unremitted earnings of certain subsidiaries. Such amounts are permanently reinvested. Unremitted earnings totalled $41,329 as at December 31, 2021 (2020 - $25,592).

As at December 31, 2021, the Company had the following operating tax losses available for carry forward for which no deferred tax benefit has been recorded in the accounts:

	$	**Expiry**
Belgium	49,495	No limit
United States	29,516	No limit
Hong Kong	7,901	No limit
China	1,148	2022-2026

As at December 31, 2021, the Company had other deductible temporary differences of $375 for which no deferred tax benefit has been recorded (2020 – $353).

17. Fair Value of Financial Instruments

The fair value of a financial instrument is determined by reference to the available market information at the reporting date. When no active market exists for a financial instrument, the Company determines the fair value of that instrument based on valuation methodologies as discussed below. In determining assumptions required under a valuation model, the Company primarily uses external, readily observable market data inputs. Assumptions or inputs that are not based on observable market data incorporate the Company's best estimates of market participant assumptions, and are used when external data is not available. Counterparty credit risk and the Company's own credit risk are taken into account in estimating the fair value of all financial assets and financial liabilities.

The following assumptions and valuation methodologies have been used to measure fair value of financial instruments:

- The fair value of its short-term financial assets and financial liabilities, including cash and cash equivalents, accounts receivable, cash held in escrow and trade and accrued liabilities approximates their carrying value due to the short-term maturities of these instruments;
- The fair value of its investment in equity is determined using significant unobservable inputs such as the best information available.
- The fair value of its restricted investment is determined using the expected mortality of life, present value of the estimated future cash flows and estimated discount rates. Assumptions are based on market conditions prevailing at each reporting date.
- The fair value of derivative instruments, which include the indexed deposit agreement and the interest rate swap, is calculated as the present value of the estimated future cash flows using an appropriate interest rate yield curve, foreign exchange rate and the stock price. Assumptions are based on market conditions prevailing at each reporting date. Derivative instrument reflect the estimated amount that the Company would receive or pay to settle the contracts at the reporting date; and
- The fair value of long-term debt is estimated based on discounted cash flows using current interest rate for instruments with similar terms and remaining maturities.

(in thousands of United States dollars, unless otherwise indicated)

The carrying values which approximates the fair values of financial instruments, by class, are as follows as at December 31, 2021 and 2020:

As at December 31, 2021				**Carrying value**
	At fair value through profit or loss	**At amortized cost**	**Financial liabilities at amortized cost**	**Total**
	$	**$**	**$**	**$**
Financial assets				
Cash and cash equivalents	**-**	**35,940**	**-**	**35,940**
Accounts receivable	**-**	**42,098**	**-**	**42,098**
Other current assets	**4,819**	**9,004**	**-**	**13,823**
Other non-current assets	**2,713**	**-**	**-**	**2,713**
Total	**7,532**	**87,042**	**-**	**94,574**
Financial liabilities				
Trade and accrued liabilities	**-**	**-**	**56,848**	**56,848**
Long-term debt	**-**	**-**	**116,000**	**116,000**
Derivative financial liabilities	**109**	**-**	**-**	**109**
Total	**109**	**-**	**172,848**	**172,957**

As at December 31, 2020				Carrying value
	At fair value through profit or loss	At amortized cost	Financial liabilities at amortized cost	Total
	$	$	$	$
Financial assets				
Cash and cash equivalents	-	30,950	-	30,950
Accounts receivable	-	30,110	-	30,110
Other current assets	5,950	-	-	5,950
Other non-current assets	790	-	-	790
Total	6,740	61,060	-	67,800
Financial liabilities				
Trade and accrued liabilities	-	-	31,671	31,671
Current portion of long-term debt	-	-	109	109
Long-term debt	-	-	50,000	50,000
Derivative financial liabilities	439		-	439
Total	439	-	81,780	82,219

(in thousands of United States dollars, unless otherwise indicated)

Fair value hierarchy

The fair value hierarchy reflects the significance of the inputs used in making the measurements and has the following levels:

- Level 1: Quoted prices (unadjusted) in active markets for identical assets or liabilities;
- Level 2: Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (i.e. as prices) or indirectly (i.e. derived from prices); and
- Level 3: Inputs for the asset or liability that are not based on observable market data (unobservable inputs).

The following table presents the financial instruments, by level, which are recognized at fair value in the consolidated statements of financial position:

As at December 31, 2021	**Level 1**	**Level 2**	**Level 3**
	$	**$**	**$**
Financial assets (liabilities)			
At fair value through profit or loss			
Indexed deposit agreement (Note 22)[1]	**-**	**4,819**	**-**
Investment in equity instruments (Note 10)[2]	**-**	**-**	**2,000**
Restricted investment (Note 10)[3]	**-**	**-**	**713**
Interest rate swap agreement (Note 13)[4]	**-**	**(109)**	**-**
Total	**-**	**4,710**	**2,713**

As at December 31, 2020	Level 1	Level 2	Level 3
	$	$	$
Financial assets (liabilities)			
At fair value through profit or loss			
Indexed deposit agreement (Note 22)[1]	-	5,950	-
Restricted investment (Note 10)[3]	-	-	790
Interest rate swap agreement (Note 13) [4]	-	(439)	-
Total	-	5,511	790

(1) In June 2017, the Company entered into an indexed deposit agreement with a major Canadian financial institution to reduce its income exposure to fluctuations in its share price relating to the DSU, PSU, RSU and SAR programs. Pursuant to the agreement, the Company receives the economic benefit of share price appreciation while providing payments to the financial institution for the institution's cost of funds and any share price depreciation. The net effect of the indexed deposit partly offset movements in the Company's share price impacting the cost of the DSU, PSU, RSU and SAR programs. As at December 31, 2021, the indexed deposit agreement recorded under other current assets, covered 2,571,569 common shares of the Company.

(2) In January 2021, the Company acquired a minority equity stake in Microbion Corporation (Microbion) for an amount of $2,000 recorded in Other assets (Note 10).

(3) The fair value of the restricted investment is recorded in Other assets (Note 10).

(4) In February 2020, the Company entered into an interest rate swap agreement with a major Canadian financial institution to reduce its financial expense fluctuations on Libor rate on a portion of its credit facility (Note 13). Under this interest rate swap, the Company exchanges interest payments. The terms are such that on each interest payment date, the Company will receive or pay the net difference between the fixed rate of 1.435% and its Libor rate on a notional amount of $25,000.

(in thousands of United States dollars, unless otherwise indicated)

18. Operating Segments

Following the acquisition of AZUR (Note 4) and the subsequent integration of its activities within the Company's operations, the Company deemed it appropriate to reposition certain products and applications between the segments which resulted in a change in reportable segments. Accordingly, the Company has adjusted the previously reported segment information for the year ended December 31, 2020.

The following tables summarize the information reviewed by the entity's chief operating decision maker when measuring performance:

	2021	2020 adjusted
	$	$
Specialty Semiconductors	70,655	57,640
Performance Materials	139,335	119,552
Total revenue	209,990	177,192
Specialty Semiconductors	18,817	21,329
Performance Materials	18,957	17,037
Corporate and unallocated	(9,535)	(9,575)
Adjusted EBITDA[1]	28,239	28,791
Interest on long-term debt, imputed interest and other interest expense	3,713	3,490
Share-based compensation expense	689	1,801
Litigation and restructuring costs (income), net (Note 27)	2,144	(5,577)
Foreign exchange and derivative loss	418	2,798
Impairment of inventories (Note 6)	-	2,411
Impairment of non-current assets (Note 27)	-	4,934
Depreciation and amortization	12,535	11,725
Earnings before income tax	8,740	7,209

[1] Earnings before income tax, depreciation and amortization, impairment of inventories, impairment of non-current assets, share-based compensation expense, litigation and restructuring costs (income), net and financial expense.

Capital expenditures	2021	2020 adjusted
	$	$
Specialty Semiconductors	595	1,447
Performance Materials	4,790	6,974
Total	5,385	8,421

Assets excluding the deferred tax asset	2021	2020 adjusted
	$	$
Specialty Semiconductors	189,022	56,864
Performance Materials	146,111	133,298
Corporate and unallocated	31,450	29,727
Total	366,583	219,889

(in thousands of United States dollars, unless otherwise indicated)

The geographic distribution of the Company's revenues based on the location of the customers for the years ended December 31, 2021 and 2020, and the identifiable non-current assets as at December 31, 2021 and 2020 are summarized as follows:

Revenues	**2021**	2020
	$	$
Asia		
China	**10,531**	7,526
Japan	**4,545**	3,423
Other[1]	**24,056**	35,325
Americas		
United States	**66,077**	57,143
Other[1]	**19,206**	13,804
Europe		
Germany	**29,738**	18,577
Belgium	**11,229**	7,043
Netherlands	**9,945**	5,772
France	**6,285**	5,708
Other[1]	**23,931**	18,560
Other	**4,447**	4,311
Total	**209,990**	177,192

[1] None exceeding 10%

Non-current assets (other than deferred tax assets)	**2021**	2020
	$	$
Asia[1]	**7,850**	9,629
United States	**12,836**	13,673
Canada	**25,176**	15,606
Europe		
Belgium	**8,631**	9,652
Germany	**116,568**	20,434
Total	**171,061**	68,994

[1] None exceeding 10%

For the year ended December 31, 2021, one customer represented approximately 19% (2020 – 28%) of revenues of which 13% (2020 – 18%) is within the Specialty Semiconductors segment and 6% (2020 – 10%) is within the Performance Materials Segment.

19. Supplemental Cash Flow Information

a) Net change in non-cash working capital balances related to operations consists of the following:

	2021	2020
	$	$
(Increase) decrease in assets:		
Accounts receivable	**(3,649)**	(1,659)
Inventories	**(6,993)**	13,817
Income tax receivable	**386**	(7)
Other current assets	**(9,560)**	167
Increase (decrease) in liabilities:		
Trade and accrued liabilities	**11,246**	(1,297)
Income tax payable	**2,287**	(46)
Net change	**(6,283)**	10,975

(in thousands of United States dollars, unless otherwise indicated)

b) The reconciliation of assets/liabilities arising from financing activities consists of the following:

			Non-Cash changes				
	December 31 2020	Cash flows	Imputed interest	Foreign exchange movement	Fair value changes	Non-cash working capital	**December 31 2021**
	$	$	$	$	$	$	**$**
Long-term debt	50,109	38,495[1]	-	-	-	27,396[1]	**116,000**
Interest rate swap	439	-	-	-	(330)	-	**109**
Lease liabilities	5,358	(1,872)	336	(459)	-	29,277[2]	**32,640**
Total net liabilities from financing liabilities	55,906	36,623	336	(459)	(330)	56,673	**148,749**

			Non-Cash changes				
	December 31 2019	Cash flows	Imputed interest	Foreign exchange movement	Fair value changes	Non-cash working capital	December 31 2020
	$	$	$	$	$	$	$
Long-term debt	55,107	(5,000)	-	2	-	-	50,109
Interest rate swap	-	-	-	-	439	-	439
Lease liabilities	6,236	(1,598)	246	26	-	448	5,358
Total net liabilities from financing liabilities	61,343	(6,598)	246	28	439	448	55,906

(1) Includes an amount of $27,396 following the acquisition of AZUR which was repaid in full on November 5, 2021 (Note 4).

(2) Includes an amount of $21,626 following the acquisition of AZUR (Note 4).

c) The consolidated statements of cash flows exclude or include the following transactions:

	2021	2020
	$	$
Excluded additions unpaid at end of the year:		
Additions to property, plant and equipment	**3,095**	775
Included additions unpaid at beginning of year:		
Additions to property, plant and equipment	**775**	1,012
Excluded share issuance related to the acquisition of AZUR (Note 4)	**14,249**	-

20. Share Capital

Authorized:

- An unlimited number of common shares, participating, with no par value, entitling the holder to one vote per share; and
- An unlimited number of preferred shares, issuable in one or more series with specific terms, privileges and restrictions to be determined for each class by the Board of Directors. As at December 31, 2021 and 2020, no preferred shares were issued.

On November 5, 2021, in connection with the acquisition of AZUR (Note 4), the Company issued 6,500,000 common shares at an average price of $1.90 to finance the purchase.

On March 5, 2020, the TSX approved the Company's normal course issuer bid (NCIB). Under this NCIB, the Company had the right to purchase for cancellation, from March 9, 2020 to March 8, 2021, a maximum of 2,000,000 common shares.

(in thousands of United States dollars, unless otherwise indicated)

In 2021, the Company repurchased and cancelled 249,572 common shares at an average price of $3.24 for a total amount of $809. An amount of $17 has been applied against share capital, and an amount of $792 has been applied against the deficit.

In 2020, the Company repurchased and cancelled 1,750,428 common shares at an average price of $1.26 for a total amount of $2,206. An amount of $126 has been applied against share capital, and an amount of $2,080 has been applied against the deficit.

21. Earnings per Share

The following table reconciles the numerators and denominators used for the computation of basic and diluted earnings per share:

Numerators	**2021**	2020
	$	$
Net earnings for the year	**3,110**	2,186

Denominators	**2021**	2020
Basic weighted average number of shares	**82,636,023**	82,431,659
Dilutive effect:		
Stock options	**151,297**	36,380
Diluted weighted average number of shares	**82,787,320**	82,468,039

As at December 31, 2021, a total number of 79,152 stock options was excluded from the diluted weighted average number of shares due to their anti-dilutive effect because of the Company's stock price.

As at December 31, 2020, a total number of 301,600 stock options was excluded from the diluted weighted average number of shares due to their anti-dilutive effect because of the Company's stock price.

22. Share-Based Compensation

Restricted Share Unit and Performance Share Unit Plan

On November 4, 2015, the Company adopted a new Restricted Share Unit ("RSU") and Performance Share Unit ("PSU") Plan (the "RSU & PSU Plan") to replace the previous RSU Plan, for the purpose of enhancing the Company's ability to attract and retain talented individuals to serve as employees, officers and executives of the Company and its affiliates and promoting a greater alignment of interests between such employees, officers and executives and the shareholders of the Company. The RSU & PSU Plan enables the Company to award eligible participants: (i) phantom RSUs that vest no later than three years following the grant date; and (ii) phantom PSUs that vest after certain periods of time, not exceeding three years, and subject to the achievement of certain performance criteria as determined by the Board of Directors. Such plan provides for the settlement of RSUs and PSUs through either cash or the issuance of common shares of the Company from treasury, for an amount equivalent to the volume weighted average of the trading price of the common shares of the Company on the TSX for the five trading days immediately preceding the applicable RSU vesting determination date or PSU vesting determination date.

In the case of a participant's termination by the Company for cause or as a result of a voluntary resignation by the participant before the end of a performance cycle, all RSUs and PSUs will be forfeited immediately as of the date on which the participant is advised of his termination or resigns.

In the case of a participant's termination by the Company other than for cause, if such participant is deemed to be on long-term disability or if such participant retires before the end of a performance cycle, the number of RSUs which will vest at such event will be prorated based on the number of months worked at the end of the performance cycle and all PSUs will be forfeited immediately.

In the case of a participant's death before the end of a performance cycle, the number of RSUs which will vest will be prorated based on the number of months worked at the end of the fiscal year preceding the participant's death and all PSUs will be forfeited immediately.

The maximum number of common shares which may be issued under the RSU & PSU Plan is 5,000,000. Common shares in respect of RSUs or PSUs to be settled through the issuance of common shares but that have been forfeited, cancelled or settled in cash shall be available for RSUs or PSUs to be granted thereafter pursuant to this plan. No RSUs or PSUs to be settled through the issuance of common shares may be granted to any participant unless the number of common shares: (a) issued to "Insiders" within any one-year period; and (b) issuable to "Insiders" at any time, under the plan, or when combined with all of the Company's other security-based compensation arrangements, could not exceed 10% of the total number of issued and outstanding common shares, respectively.

For the year ended December 31, 2021, the Company granted 164,412 RSUs (2020 – 234,770), 413,710 RSUs were paid (2020 – 322,540) and 143,851 RSUs were forfeited (2020 – 41,250). As at December 31, 2021, 342,259 RSUs were outstanding (2020 – 735,408).

For the year ended December 31, 2021, the Company granted nil PSUs (2020 – nil), 166,700 PSUs were paid (2020 – 168,300) and 230,000 were cancelled (2020 – nil). As at December 31, 2021, 200,000 PSUs were outstanding (2020 – 596,700).

Stock Appreciation Rights Plan

On June 7, 2010, the Company adopted a Restricted Share Unit for Foreign Employees Plan (the "RSUFE Plan") which was slightly amended on November 7, 2012 by the Company to become the Stock Appreciation Rights plan (the "SAR Plan") which replaced the RSUFE Plan. The SAR Plan enables the Company to award eligible participants phantom stock options to foreign directors, officers and employees. SARs usually have a six-year term and vest equally over a four-year period at an annual rate of 25% per year beginning one year following the SARs grant date. The amount of cash payout is equal to the sum of the positive differences between the volume weighted average trading price of the common shares of the Company on the TSX in the last twenty (20) trading days immediately preceding the exercise date and the grant price of each SAR redeemed.

At the end of each financial period, changes in the Company's payment obligations due to changes in the market value of the common shares on the TSX are recorded as an expense. For the year ended December 31, 2021, the Company granted 1,116,244 SARs (2020 – 450,542), 364,499 SARs were paid (2020 – nil), nil SARs were expired (2020 – 35,000) and 678,813 SARs were forfeited (2020 – nil). As at December 31, 2021, 1,330,632 SARs were outstanding (2020 – 1,257,700).

Deferred Share Unit Plan

On May 7, 2014, the Company adopted a Deferred Share Unit ("DSU") Plan (the "DSU Plan") which enables the Company to provide Board directors and key officers and employees designated by the Board with phantom share units to enhance the Company's ability to attract and retain individuals with the right combination of skills and experience to serve on the Company's Board or as Company's executives. DSUs vest entirely at their date of grant (with the exception of the 400,000 DSUs granted to the Company's CEO on March 2, 2016 which vested on March 2, 2019) and become payable in cash upon termination of services of a director, designated officer or employee with the Company. The amount of cash payout is equal to the volume weighted average trading price of the common shares of the Company on the TSX of the twenty (20) trading days immediately preceding the date of payment of the DSU.

For the year ended December 31, 2021, the Company granted 220,073 DSUs (2020 – 289,454) and 650,000 DSUs were paid (2020 – 318,939). As at December 31, 2021, 1,574,968 DSUs were outstanding (2020 – 2,004,895).

(in thousands of United States dollars, unless otherwise indicated)

Stock Option Plan

On April 11, 2011, the Company adopted a new stock option plan replacing the previous plan (the "Old Plan"), in place since October 2007, with the same features as the Old Plan with the exception of a maximum number of options granted which cannot exceed 5,000,000. The aggregate number of shares which could be issued upon the exercise of options granted under the Old Plan could not exceed 10% of the issued shares of the Company at the time of granting the options. Options granted under the Stock Option Plan may be exercised during a period not exceeding ten years from the date of grant. The stock options outstanding as at December 31, 2021 may be exercised during a period not exceeding six years from their date of grant. Options vest at a rate of 25% (100% for directors) per year, beginning one year following the grant date of the options. Any unexercised options will expire one month after the date a beneficiary ceases to be an employee, director or officer and one year for retired directors.

The following table presents information concerning all outstanding stock options:

	2021		2020	
	Number of options	**Weighted average exercise price**	Number of options	Weighted average Exercise price
		CA$		CA$
Outstanding, beginning of year	**672,600**	**2.09**	932,041	2.58
Granted	**648,212**	**2.49**	86,240	2.10
Exercised	**(428,678)**	**1.88**	-	-
Forfeited	**(66,166)**	**2.78**	(133,681)	2.43
Expired	**-**	**-**	(212,000)	4.03
Outstanding, end of year	**825,968**	**2.46**	672,600	2.09
Exercisable, end of year	**267,007**	**2.33**	472,975	1.94

The outstanding stock options as at December 31, 2021 are as follows:

	Exercise price		Number of options	
	Low	High	Exercisable	Outstanding
	CA$	CA$		
February 2023	1.75	1.75	63,000	63,000
February 2024	2.71	2.71	26,374	35,165
March 2025	3.43	3.43	15,470	30,940
March 2026	2.10	2.10	12,163	48,651
May 2027	3.38	3.38	-	48,212
December 2027	2.42	2.42	150,000	600,000
			267,007	825,968

The fair value of stock options at the grant date was measured using the Black-Scholes option pricing model. The historical share price of the Company's common shares is used to estimate expected volatility, and government bond rates are used to estimate the risk-free interest rate.

The following table illustrates the inputs used in the average measurement of the fair values of the stock options at the grant date granted during the years ended December 31, 2021 and 2020:

	2021	2020
Expected stock price volatility	**48%**	44%
Dividend	**None**	None
Risk-free interest rate	**1.24%**	1.10%
Expected option life	**4 years**	4 years
Fair value – weighted average of options issued	**CA$0.96**	CA$0.74

(in thousands of United States dollars, unless otherwise indicated)

The following table shows the share-based compensation expense recorded in the consolidated statements of earnings for the years ended December 31, 2021 and 2020:

Expense	**2021**	2020
	$	$
RSUs	**432**	635
PSUs	**(552)**	312
SARs	**(331)**	479
DSUs	**(320)**	1,334
Stock options	**148**	65
Indexed deposit	**1,312**	(1,024)
Total	**689**	1,801

In June 2017, the Company entered into an indexed deposit agreement to reduce its earnings exposure on the fluctuation in the Company's share price since this has an effect on the evaluation of the DSU, PSU, RSU and SAR plans. The fair value of this indexed deposit is recorded under other current assets. Any further change in the fair value is recorded against the share-based compensation expense (Note 17).

The following amounts were recorded:

Liability	**2021**	2020
	$	$
RSUs	**433**	1,167
PSUs	**-**	994
SARs	**455**	1,046
DSUs	**2,957**	4,522
Total	**3,845**	7,729
Intrinsic value of vested units	**4,469**	5,668

23. Commitments and Contingencies

Commitments

As at December 31, 2021, in the normal course of business, the Company contracted letters of credit for an amount of $953 (2020 – $699).

Contingencies

In the normal course of operations, the Company is exposed to events that could give rise to contingent liabilities or assets. As at the date of issue of the consolidated financial statements, the Company was not aware of any significant events that would have a material effect on its consolidated financial statements.

24. Related Party Transactions

The Company's related parties are its directors and executive members.

Unless otherwise stated, none of the transactions incorporated special terms and conditions and no guarantees were given or received. Outstanding balances are settled in cash.

(in thousands of United States dollars, unless otherwise indicated)

Key management compensation

Key management includes directors (executive and non-executive) and certain senior management. The compensation expense paid or payable to key management for employee services is as follows:

	2021	2020
	$	$
Wages and salaries	**3,597**	2,482
Share-based compensation and others (Note 22)	**(914)**	2,504
Total	**2,683**	4,986

25. Financial Risk Management

In the normal course of operations, the Company is exposed to various financial risks. These risk factors include market risk (foreign currency risk, interest rate risk and other price risk), credit risk and liquidity risk.

Market risk

Market risk is the risk that changes in market price, such as foreign exchange rates, equity prices and interest rates, will affect the Company's net earnings or the value of financial instruments.

The objective of market risk management is to mitigate exposures within acceptable limits, while maximizing returns.

a) Foreign currency risk

Foreign currency risk is defined as the Company's exposure to a gain or a loss in the value of its financial instruments as a result of fluctuations in foreign exchange rates. The Company is exposed to foreign exchange rate variability primarily in relation to certain sale commitments, expected purchase transactions, certain local operating expenses and debt denominated in a foreign currency. In addition, these operations have exposure to foreign exchange rates primarily through cash and cash equivalents and other working capital accounts denominated in currencies other than their functional currencies.

The following table summarizes in US dollar equivalents the Company's major currency exposures as at December 31, 2021:

						2021
	CA$	**EUR**	**GBP**	**RMB**	**MYR**	**Other**
	$	**$**	**$**	**$**	**$**	**$**
Cash and cash equivalents	**302**	**3,356**	**(53)**	**(4)**	**311**	**23**
Accounts receivable	**830**	**9,778**	**-**	**-**	**-**	**199**
Other current assets	**4,819**	**9,004**	**-**	**-**	**-**	**-**
Other non current assets	**-**	**713**	**-**	**-**	**-**	**-**
Trade and accrued liabilities	**(7,890)**	**(20,295)**	**(4,718)**	**(212)**	**(169)**	**(638)**
Long-term debt	**-**	**-**	**-**	**-**	**-**	**-**
Lease liabilities	**(6,906)**	**(577)**	**-**	**-**	**-**	**(69)**
Net financial assets (liabilities)	**(8,845)**	**1,979**	**(4,771)**	**(216)**	**142**	**(485)**

For the Company's subsidiaries with a functional currency other than the US dollar, their exposures of financial assets and financial liabilities denominated in US dollars are $5,966 and $4,542 respectively with a net position of $1,424. A variation in the exchange rate between the functional currencies of these subsidiaries and the US dollar of five-percentage points does not result in a material impact.

(in thousands of United States dollars, unless otherwise indicated)

The following table shows the impact on earnings before income tax of a five-percentage point strengthening or weakening of foreign currencies against the US dollar as at December 31, 2021 for the Company's financial instruments denominated in non-functional currencies:

	CA$	EUR	GBP	RMB	MYR	Other
	$	$	$	$	$	$
5% Strengthening	(442)	99	(239)	(11)	7	(24)
5% Weakening	442	(99)	239	11	(7)	24

The Company will occasionally enter into foreign exchange forward contracts to sell US dollars in exchange for Canadian dollars and Euros. These contracts would hedge a portion of ongoing foreign exchange risk on the Company's cash flows since much of its non-US dollar expenses are incurred in Canadian dollars and Euros. The Company may also enter into foreign exchange contracts to sell Euros for US dollars. As at December 31, 2021, the Company has no foreign exchange contracts outstanding.

b) Interest rate risk

Interest rate risk refers to the risk that future cash flows will fluctuate as a result of changes in market interest rates. The Company's policy is to limit its exposure to interest rate risk fluctuation by ensuring that a reasonable portion of its long-term debt, made of subordinated debts at fixed rate. The Company is exposed to interest rate fluctuations on its revolving credit facility, which bears a floating interest rate. A 1% increase/decrease in interest rates would have an impact of approximately $910 on the Company's net earnings on a twelve-month horizon based on the balance outstanding on December 31, 2021.

In February 2020, the Company entered into an interest rate swap agreement with a major Canadian financial institution to reduce its financial expense fluctuations on Libor rate on a portion of its credit facility (Note 13). Under this interest rate swap, the Company exchanges interest payments. The terms are such that on each interest payment date, the Company will receive or pay the net difference between the fixed rate of 1.435% and its Libor rate on a notional amount of $25,000.

c) Other price risk

Other price risk is the risk that fair value or future cash flows will fluctuate because of changes in market prices, other than those arising from interest rate risk or currency risk.

Credit risk

Credit risk refers to the possibility that a customer or counterparty will fail to fulfill its obligations under a contract and, as a result, create a financial loss for the Company. The Company has a credit policy that defines standard credit practice. This policy dictates that all new customer accounts be reviewed prior to approval and establishes the maximum amount of credit exposure per customer. The creditworthiness and financial well-being of the customer are monitored on an ongoing basis.

The outbreak of the COVID-19 is disrupting many sectors of the global economy and, consequently, some of the Company's customers. The Company has strengthened its strict controls on credit, including a tighter monitoring of customers that are severely affected by the pandemic.

The Company applies the IFRS 9 simplified approach to measuring expected credit losses using a lifetime expected credit loss allowance for trade receivables.

(in thousands of United States dollars, unless otherwise indicated)

The expected loss rates are based on the Company's historical credit losses experienced over the three-year period prior to the period end. The historical loss rates are then adjusted for current and forward-looking information on macroeconomic factors affecting the Company's customers. Historically, the Company has not incurred any significant losses in respect of its trade receivables. Therefore, the loss allowance at the end of each period and the change recorded for each period is insignificant.

The past due receivables are as follows:

	2021	2020
	$	$
Current	**33,838**	23,093
More than 30 days past due	**413**	230
More than 60 days past due	**763**	51
Gross carrying amount	**35,014**	23,374
Loss allowance	**(149)**	(146)
Total trade receivables	**34,865**	23,228

The following table summarizes the changes in the loss allowance for trade receivables:

	2021	2020
	$	$
Beginning of year	**146**	120
Increase during the year	**119**	29
Trade receivables written off during the year as uncollectible	**-**	(3)
Unused amounts reversed	**(116)**	-
End of year	**149**	146

The loss allowance is included in selling, general and administrative expenses in the consolidated statement of earnings, and is net of any recoveries that were provided for in prior periods.

Amounts charged to the loss allowance account are generally written off when there is no reasonable expectation of recovery.

Counterparties to financial instruments may also expose the Company to credit losses in the event of non-performance. Counterparties for derivative and cash transactions are limited to high credit quality financial institutions, which are monitored on an ongoing basis. Counterparty credit assessments are based on the financial health of the institutions and their credit ratings from external agencies, therefore no impairment loss was identified as at December 31, 2021.

(in thousands of United States dollars, unless otherwise indicated)

Liquidity risk

Liquidity risk is the risk that the Company will not be able to meet its financial obligations as they come due. The Company manages liquidity risk through the management of its capital structure. It also manages liquidity risk by continually monitoring actual and projected cash flows, taking into account the Company's sales and receipts and matching the maturity profile of financial assets and financial liabilities. The Board of Directors reviews and approves the Company's annual operating and capital budgets as well as any material transactions out of the ordinary course of business, including proposals on acquisitions and other major investments.

The following table reflects the contractual cash flows of the Company's financial liabilities as at December 31, 2021:

							2021
	Carrying amount	**1 year**	**2 years**	**3 years**	**4 years**	**Over 5 years**	**Total**
	$	**$**	**$**	**$**	**$**	**$**	**$**
Trade and accrued liabilities	**56,848**	**56,848**	**-**	**-**	**-**	**-**	**56,848**
Long-term debt	**116,000**	**3,311**	**93,217**	**25,418**	**-**	**-**	**121,946**
Lease liabilities	**32,640**	**2,998**	**2,543**	**2,324**	**2,278**	**26,756**	**36,899**
Total	**205,488**	**63,157**	**95,760**	**27,742**	**2,278**	**26,756**	**215,693**

26. Capital Management

The Company's objective when managing capital is to safeguard its ability to continue as a going concern in order to provide returns for shareholders and benefits for other stakeholders and to maintain an optimal capital structure to reduce the cost of capital.

The Company requires the approval of its lenders on some of the capital transactions such as the payment of dividends and capital expenditures over a certain level.

The Company monitors capital on the basis of the debt-to-equity ratio. This ratio is calculated as net debt divided by total equity. Net debt is calculated as total borrowings (comprising long-term debt in the consolidated statement of financial position) less cash and cash equivalents. Any introduced IFRS 16 reporting measures in reference to lease liabilities are excluded from the calculation.

Debt-to-equity ratios as at December 31, 2021 and 2020 are as follows:

	2021	2020
	$	$
Long-term debt including current portion	**116,000**	50,109
Total debt	**116,000**	50,109
Less: Cash and cash equivalents	**(35,940)**	(39,950)
Net debt	**80,060**	10,159
Shareholders' equity	**136,247**	118,376
Debt-to-equity ratio	**59%**	9%

In 2021, the debt-to-equity ratio is higher following the increase in the debt required for the acquisition of AZUR (Note 13).

(in thousands of United States dollars, unless otherwise indicated)

27. Expenses by Nature

Expenses by nature include the following:

	2021	2020
	$	$
Wages and salaries[(1)]	**40,353**	34,535
Share-based compensation expense (Note 22)	**689**	1,801
Impairment of inventories (Note 6)	**-**	2,411
Depreciation of property, plant and equipment (Note 7)	**8,969**	8,805
Impairment of non-current assets (Note 7)[(2) (3)]	**-**	4,934
Depreciation of right-of-use assets (Note 8)	**1,764**	1,451
Amortization of intangible assets (Note 9)	**1,802**	1,469
Amortization of other assets	**253**	177
Loss (gain) on disposal of property, plant and equipment	**171**	(64)
Research and development, net of tax credit[(1)]	**736**	1,930
Litigation and restructuring costs (income), net[(2) (3) (4)]	**2,144**	(5,577)

(1) Reduced wages and salaries by an amount of $1,166 for the year ended December 31, 2020 resulting from the Canada Emergency Wage Subsidy. There is no outstanding balance of deferred income or receivable related to this grant as at December 31, 2020.

Reduced research and development, net of tax credit by an amount of $1,590 for the year ended December 31, 2021 resulting from research and development subsidies. There is no outstanding balance of deferred income or receivable related to this grant as at December 31, 2021.

(2) During the third quarter of 2020, the Company recorded an impairment charge on non-current assets of $2,512 ($989 for Land and buildings and $1,523 for Production equipment), included in Specialty semiconductors segment, to reflect the assessment of the carrying value related to the planned closure of one of the Company's subsidiary situated in Asia. This decision was taken solely due to unfavorable business conditions arising from abrupt changes in the regulatory environment and inconsistent enforcement practices.

In addition, a provision for restructuring costs was recorded in accordance with IAS 37 “Provision, contingent liabilities and contingent assets” for an amount of $610 during 2021, compared to an amount of $2,339 during 2020. This provision consists of severances and other related costs to site closure.

(3) During the third quarter of 2020, the Company recorded a non-recurring income of $8,000 resulting from a deed of termination of an offtake agreement with a supplier, net of associated costs of $84. At the same time, the Company recorded an impairment charge on non-current assets of $2,422 to reflect the assessment of the carrying value of some production equipment related to the site affected by this termination agreement.

(4) During the fourth quarter of 2021, the Company recorded a charge of $1,534 following the announcement of a change to its senior executive management for which a balance of $94 is outstanding as at December 31, 2021.