JAPAN CHEMICALS: SPECIALTY

Earnings revisions for 4 semiconductor & electronic materials companies; upgrade Nittobo to Buy, reiterate Buy on SUMCO, Shin-Etsu Chemical, and JX Advanced Metals

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We upgrade **Nittobo** to **Buy** and reiterate our **Buy** ratings on **SUMCO, Shin-Etsu Chemical, and JX Advanced Metals**, while simultaneously revising our earnings forecasts and target prices for all four companies.

For **Nittobo**, we now expect the supply-demand balance for T-glass to remain significantly tighter than our previous assumptions. Based on our assumption that the company will announce new capital investment plans in the near future, we have incorporated another round of price increases in FY3/29. In addition, we expect demand for low-dielectric glass used in AI server PCBs and CCLs to continue expanding strongly, leading us to raise our earnings forecasts. At the same time, given the significant correction in the share price, we upgrade our rating from **Neutral** to **Buy**.

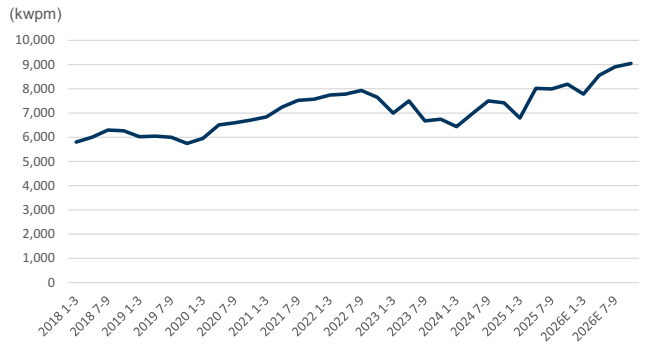
Regarding the **silicon wafer industry**, we maintain the constructive view expressed in our previous earnings revision report (link) and continue to reaffirm our positive outlook. In addition to semiconductors directly used in AI applications such as GPUs/ASICs and HBM, investment in inference infrastructure is accelerating, which we expect will drive rapid growth in demand for CPUs and LPDDR memory. We also expect demand growth for 3D NAND used in enterprise SSDs (eSSDs) as storage solutions, as well as higher wafer unit demand driven by dual-wafer usage in technologies such as CBA. Furthermore, demand for various legacy semiconductor devices associated with AI servers, including power semiconductors, power management ICs, and retimers, is likely to increase steadily as the AI ecosystem broadens. As a result, we expect the supply-demand balance for 300mm wafers to become tight between 2H27 and 2028.

Meanwhile, wafer manufacturers have faced weak earnings in recent years due to higher fixed costs associated with greenfield investments, as well as lower utilization rates resulting from inventory adjustments and deteriorating industry supply-demand conditions. Given the sharp inflation, we believe manufacturers will have little incentive to undertake additional investment without meaningful price increases. Therefore, we believe wafer price increases of around 10% beginning in 2028 are now well within sight. Based on historical industry cycles, prices could continue rising for multiple years thereafter. Looking back at the 2017–2019 cycle, prices in transaction-currency terms increased by approximately 20%/year during the first two years (roughly 50% cumulatively over three years), suggesting there

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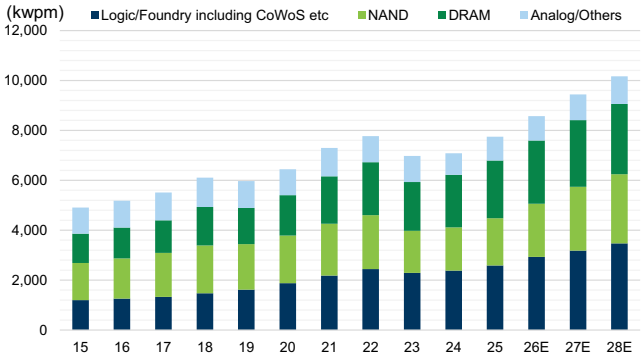
remains further upside potential under a similar scenario. Market attention is likely to increasingly focus on the progress of upcoming LTA negotiations. We reiterate our Buy ratings on both SUMCO and Shin-Etsu Chemical.

Exhibit 1: 300mm wafer shipment (kwpm)



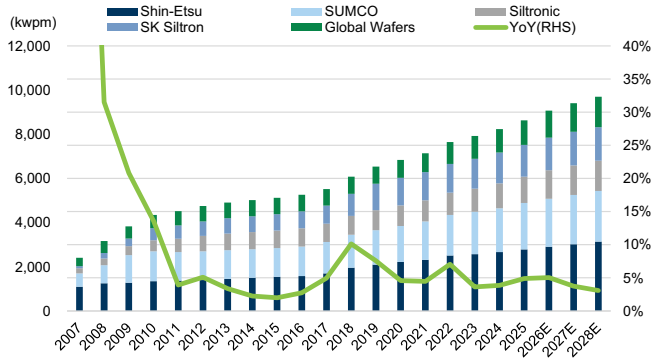
Source: Goldman Sachs Global Investment Research

Exhibit 2: Global demand outlook for 300mm wafers



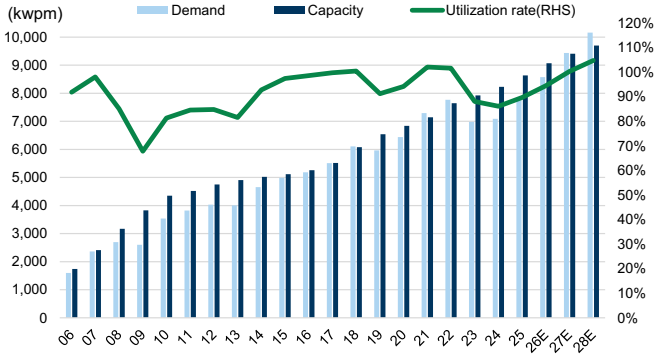
Source: SEMI, Company data, Goldman Sachs Global Investment Research

Exhibit 3: 300mm wafer supply outlook



Source: Goldman Sachs Global Investment Research

Exhibit 4: 300mm supply demand outlook



Source: Goldman Sachs Global Investment Research

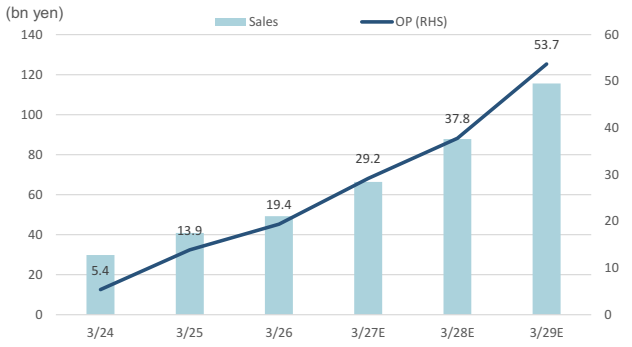
Nitto Boseki

We have raised our forecasts for both volume and pricing of T-glass cloth used in semiconductor packaging substrates, as well as volume assumptions for NER glass cloth used in AI server PCBs. As a result, we increase our operating profit forecasts for FY3/27–FY3/29 by 2% / 9% / 26%, respectively. Taking into account the recent share price decrease, we lower the sector-relative premium applied in our valuation from 70% to 60%, while slightly raising our target price from ¥4,760 to ¥4,820. At the same time, following the recent decline in the share price, we now see 33% upside potential (as of the market close on July 3), which we believe is sufficiently attractive to adopt a more constructive stance on Nittobo.

Nittobo's share price has continued to underperform, declining 38% between the announcement of its full-year results on May 12 and the close on July 3, while the TOPIX rose 5% over the same period. We believe this was driven in part by elevated investor expectations ahead of earnings regarding low-CTE glass cloth (T-glass) used in semiconductor packaging substrates, with some investors estimating cumulative price increases of roughly 60% across two rounds of hikes. Against this backdrop,

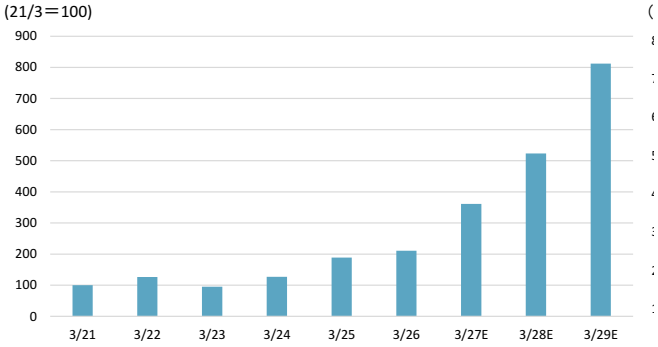
management's indication that it is not currently considering additional price revisions beyond those already incorporated into its earnings outlook in connection with the latest capacity expansion (link) likely triggered disappointment-driven selling. In addition, concerns about the potential adoption of glass-core substrates in ABF substrates, as well as reports suggesting that PTFE resin could be adopted for PCBs used in Nvidia's Rubin Ultra platform, potentially displacing low-dielectric glass materials, also appear to have weighed on sentiment. We believe these negative factors have now largely been reflected in the current share price. By contrast, we maintain a more constructive view on the growth prospects of both low-CTE glass and low-dielectric glass. Our views on T-glass and NE/NER glass are summarized below.

Exhibit 5: Nitto Boseki: GSe earnings trends for electronic materials business



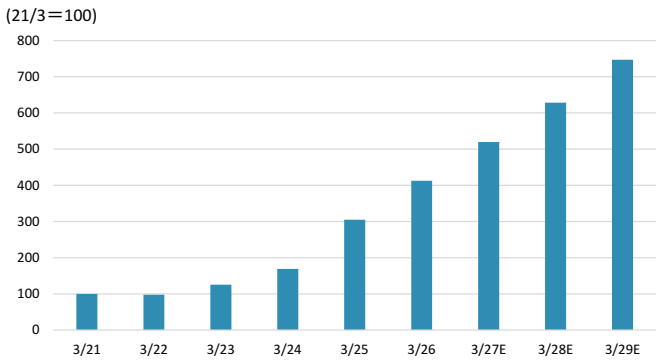
Source: Company data, Goldman Sachs Global Investment Research

Exhibit 6: Nitto Boseki: Low-CTE glass sales (indexed)



Source: Company data, Goldman Sachs Global Investment Research

Exhibit 7: Nitto Boseki: Low-DK glass sales (indexed)



Source: Company data, Goldman Sachs Global Investment Research

Low-CTE glass (T-glass)

We have long incorporated approximately 30% price increases in FY3/27 into our forecasts, and it is difficult to deny that some expectations in the equity market (which we estimate were assuming roughly 60% cumulative price increases) had become somewhat excessive. We had also previously expected the competitive environment to intensify and the supply-demand balance to ease, driven by new market entrants and capacity expansions from competitors such as Taiwan Glass.

However, based on discussions with CCL manufacturers and other participants across

the supply chain, it has become increasingly clear that the product quality of new entrants generally lacks consistency, affecting customer yields and other performance metrics. At the same time, end customers, particularly major tech companies, have demonstrated a very high level of confidence in Nittobo's T-glass. As a result, we believe adoption of competing products has in fact made very limited progress. Meanwhile, we expect growth in ABF substrate demand for GPUs and ASICs on a unit basis, larger package substrate sizes, increasing substrate thickness, and robust demand for BT substrates used in DRAM and NAND applications to drive demand growth beyond our previous assumptions.

Accordingly, we now believe that, in addition to the T-glass cloth capacity expansion plans currently underway in Taiwan and Fukushima (which the company expects to increase capacity to roughly three times the level of 2H FY3/24 by FY3/29), further capacity expansion will be required beyond FY3/29. Given the lead times associated with constructing new production facilities, we believe there is a high likelihood that additional expansion plans will be announced during FY3/27.

The company has indicated that it is not currently considering any further price revisions beyond the price increases already implemented from 1Q FY3/27 in connection with the ongoing investment program. However, we believe the company is likely to take a constructive stance toward additional price increases tied to the next round of investment plans in order to ensure an adequate return on investment. Assuming operations begin around the middle of FY3/29, we have revised our forecasts to incorporate not only a greater volume contribution in FY3/28 (YoY +45% versus our previous assumption of YoY +40%) but also a new price increase effect in FY3/29 (approximately +15% YoY).

Our view on glass substrates

Glass substrates have recently generated a growing number of our investor interests. Broadly speaking, questions regarding glass substrates can be divided into two categories: 1) Replacement of CoWoS silicon interposers and 2) Replacement of ABF core substrates. We believe the equity market may be conflating these two developments, despite the fact that they differ significantly in terms of the materials being replaced, the expected timeline, and the implications for glass-cloth demand.

1) Replacement of silicon interposers

Current CoWoS interposers are fabricated from 300mm silicon wafers, making this segment fundamentally unrelated to glass cloth demand. The key driver behind interest in glass alternatives is the rapid increase in package size. Package sizes are expected to reach approximately 4× reticle size (around 3,320 mm^2) for Rubin and 9× reticle size (around 7,470 mm^2) for Rubin Ultra. As package dimensions increase, cutting large rectangular interposers from circular 300mm wafers leads to a rapid deterioration in utilization efficiency. For Rubin Ultra-class products, the yield may decline to only a few interposers per wafer.

Potential alternatives include glass panels, such as TSMC's CoPoS technology (a large-panel RDL platform that can utilize glass or sapphire substrates), as well as organic interposers (PLP) currently under development by companies such as Resonac. Importantly, even if CoPoS is adopted, the package substrate beneath the interposer is still expected to remain organic and continue using T-glass cloth. In other words, the

adoption of glass materials at the interposer layer does not represent a negative factor for T-glass demand in package substrates. The shift toward glass-based interposers should therefore not be viewed as a source of demand erosion for T-glass.

2) ABF core substrates

As for the replacement of ABF core substrates, which is the key issue considering potential T-glass cloth substitution, industry views from ABF substrate manufacturers such as Ibiden suggest that adoption is unlikely before 2030. Commercial-scale production of glass-core substrates by TSMC is also generally expected to commence only after 2030. We believe that existing glass cloth will most likely continue to be used through at least the Rubin Ultra generation. In the meantime, Nittobo should continue to benefit from volume growth driven by larger package substrate sizes and increasing core thicknesses (resulting in greater T-glass content and additional layers to mitigate warpage).

Looking further ahead, we do not believe replacing glass cloth-based cores with glass-core substrates will be straightforward for four reasons.

First, microcracks generated during processing, particularly during drilling and dicing, remain the most significant obstacle to mass production. These cracks, known in the industry as “SeWaRe” (backside wafer cracking), remain a major unresolved challenge. The fact that Intel highlighted “zero SeWaRe” as a key achievement in its January 2026 sample announcement itself suggests that the issue remains unsolved at the industry level.

Second, the yield of through-glass vias (TGVs) tends to be lower due to factors including variations in via dimensions, difficulties in metallizing ultra-small vias, and stress cracking during thermal cycling caused by differences in the physical properties of copper and glass.

Third, glass is inherently a brittle material, making it more susceptible to cracking and scratching during panel handling. Minor defects can propagate through subsequent manufacturing steps. In particular, preventing cracks in rectangular panels with corners is more challenging than in conventional circular wafers, creating another hurdle for adoption.

Furthermore, ABF build-up substrates are supported by approximately 30 years of mass-production and manufacturing track record. Once the core material changes, not only the core itself but also compatibility with the build-up layers stacked above and below it (including ABF films) must be re-established. As a result, production processes, manufacturing equipment, and inspection systems would all need to be redesigned. Considering the lengthy qualification and certification requirements, we believe that even if the transition to glass-core substrates begins, it will entail a prolonged period of coexistence with existing ABF substrate technology.

Based on the above, we believe there remains substantial room for Nittobo’s T-glass as a low-CTE material, as well as its next-generation T-glass product, “Vlex” (scheduled for commercialization around 2028), which reduces thermal expansion by approximately 30% compared with existing products.

We have raised our T-glass revenue forecast for FY3/26–FY3/29, now projecting a 57% CAGR, significantly higher than our previous estimate of 47%. In addition, while the

low-dielectric glass cloth market is not as tight as the T-glass cloth market, supply-demand conditions remain constrained. We expect this tightness to persist, particularly through the first half of FY3/28, before Nittobo's capacity expansion meaningfully increases supply.

Low-dielectric glass (NE/NER/NEZ glass)

For the 26-layer × 3-stack (78-layer) backplane expected to be adopted in Rubin Ultra, we believe that improvements in the dielectric properties of the resin itself—particularly the use of PTFE, whose intrinsic dissipation factor (Df) of approximately 0.0002 is an order of magnitude lower than that of glass cloth—will allow the laminate's overall Df performance to be achieved primarily through the resin. As a result, we believe the glass cloth component will no longer require extremely low dielectric characteristics, enabling designs based on general-purpose glass cloth such as E-glass.

If this "resin-led" design philosophy becomes established in high-end boards, concerns could emerge regarding Nittobo's NER glass, as the value-added contribution of the glass cloth itself within the high-end segment may decline on a relative basis.

That said, it is important to evaluate this concern by isolating the specific areas that would actually be affected. First, the areas most directly affected by the PTFE approach is likely the ultra-high-end M9 field, where quartz cloth (Q-glass) was originally expected to be used, rather than the core market for NER glass. From the perspective of competition within the high-end glass-cloth market, quartz glass appears attractive in theory due to its superior dielectric properties (intrinsic Df of roughly 0.0005, about half that of the NE family of products). In practice, however, widespread adoption faces significant challenges, including lower drilling yields due to its hardness, higher costs, and supply constraints for quartz yarn. Consequently, we expect the primary glass-cloth configuration in Vera Rubin to be NER combined with HVLP4 electrolytic copper foil, corresponding to an "M8.5" specification.

We believe M9 designs using quartz glass as the primary material will likely remain limited to selected applications requiring the longest and fastest links, such as NVLink 6 switch boards. Our view is supported by indications that the CPX board, which had originally been expected to adopt an M9 specification, has instead shifted to an M8-equivalent design (i.e., NER). In other words, within the highest-performance segment, the competitive landscape is likely to involve coexistence between "PTFE + general-purpose glass cloth" and "hydrocarbon-based resin + quartz cloth." We believe improvements in resin systems and copper foil technology will support NER demand in the volume segment by reducing the need to adopt quartz cloth.

Accordingly, we expect demand for Nittobo's NER glass to continue expanding steadily, driven primarily by its use in the key boards within the compute tray, including the Strata main compute board, Orchid board, and midplane, as well as NVLink 6 switch boards. Growth in NER demand should be driven by increases in board area, layer count, and the number of trays, and we believe this trend is likely to continue into the Rubin Ultra generation.

Even if the backplane ultimately adopts a PTFE + general-purpose glass cloth configuration, we note that this board was not originally viewed as a major NER application. Therefore, the impact on NER adoption within the compute-tray architecture should be limited.

The key risk to monitor is a scenario in which the success of the PTFE approach eventually extends beyond backplanes into mid-tier boards within the compute tray, leading to a broader shift toward a "resin-led, commoditized glass cloth" design approach.

Taking these factors into account, we raise our forecast for NER glass cloth revenue during FY3/26–FY3/29 and now project a 60% CAGR, up from our previous estimate of 55%.

Risks

1. AI server demand fluctuations: Products used directly in semiconductor package substrates and PCBs for AI servers, centered on low thermal expansion glass and low dielectric glass, account for a large portion of profits. Earnings could therefore deteriorate if demand for AI servers declines vs. our assumptions, particularly for high-end applications.

2. Specialty glass market share fluctuations: We expect change in the competitive climate for low thermal expansion glass from around 2027, with full-scale entry by competitors. If the ramp-up of competitor products were to be faster than our assumptions, this could negatively affect the company's earnings via impact on the supply-demand balance.

3. Foreign exchange fluctuations: We estimate that each ¥1/US$ fluctuation will impact operating profits by about ¥0.2 bn (negative effect from yen strength/positive effect from yen weakness). Our forecasts assume ¥160/US$ from 1Q3/27 onward. If yen were to appreciate, there could be downside risks to our earnings estimates.

Exhibit 8: Nitto Boseki: Earnings summary

(Bn JPY)				GSE	GSE	GSE	CoE					GSE	GSE
Sales	3/24	3/25	3/26	3/27E	3/28E	3/29E	3/27E	3/26 1Q	3/26 2Q	3/26 3Q	3/26 4Q	3/27 1Q	3/27 2Q
ElectronicMaterials Business	29.9	40.9	49.3	66.4	87.8	115.6	77.0	11.3	12.2	12.7	13.2	14.4	15.9
Medical Business	12.8	13.6	13.7	14.5	15.2	16.0	15.0	3.5	3.2	3.6	3.4	3.6	3.6
Composite Materials Business	12.7	13.5	13.4	14.0	14.5	14.5	14.5	3.3	3.6	3.2	3.4	3.3	3.4
Materials Solution Business	9.1	9.4	9.5	9.8	9.8	10.0	10.0	2.3	2.2	2.5	2.5	2.4	2.4
Insulation Materials Business	14.8	15.3	15.1	15.5	16.0	16.5	16.0	3.5	3.8	4.1	3.7	3.5	3.6
Other Businesses	14.0	16.3	17.1	17.8	18.0	18.0	21.5	4.3	4.3	4.1	4.4	4.3	4.4
Total	**93.3**	**109.0**	**118.1**	**138.0**	**161.3**	**190.6**	**137.0**	**28.2**	**29.2**	**30.2**	**30.5**	**31.5**	**33.3**
Operating Profit													
ElectronicMaterials Business	5.4	13.9	19.4	29.2	37.8	53.7	26.0	4.1	4.8	4.8	5.6	6.7	7.3
Medical Business	2.4	2.4	2.4	2.5	2.6	2.6	2.5	0.4	0.7	0.8	0.6	0.5	0.6
Composite Materials Business	-0.7	-0.9	-0.1	-0.6	-0.4	-0.4	-0.6	-0.0	-0.1	-0.0	0.1	-0.1	-0.2
Materials Solution Business	0.8	0.8	0.6	0.4	0.5	0.6	0.5	0.1	0.1	0.2	0.2	0.1	0.1
Insulation Materials Business	0.9	0.7	0.2	-0.3	-0.2	0.0	-0.2	-0.1	-0.2	0.3	0.1	-0.1	-0.1
Other Businesses	0.4	0.4	0.5	0.4	0.4	0.4	0.7	0.1	0.2	0.2	0.1	0.1	0.1
Adjustment	-0.8	-0.9	-2.2	-2.9	-3.4	-3.5	-2.9	-0.4	-0.4	-0.7	-0.7	-0.5	-0.6
Total	**8.4**	**16.4**	**20.8**	**28.7**	**37.3**	**53.4**	**26.0**	**4.3**	**5.2**	**5.5**	**5.9**	**6.7**	**7.2**
OPM													
ElectronicMaterials Business	18.0%	33.9%	39.4%	44.0%	43.1%	46.5%	33.8%	36.7%	39.9%	38.2%	42.2%	46.6%	45.8%
Medical Business	18.7%	17.5%	17.7%	17.2%	17.1%	16.3%	16.7%	11.9%	21.0%	21.3%	16.9%	13.9%	16.7%
Composite Materials Business	-5.8%	-6.7%	-0.9%	-4.3%	-2.8%	-2.8%	-4.1%	-0.5%	-3.4%	-1.5%	1.9%	-3.0%	-5.9%
Materials Solution Business	9.0%	8.9%	6.2%	4.1%	5.1%	6.0%	5.0%	4.8%	5.1%	6.4%	8.1%	4.2%	4.2%
Insulation Materials Business	6.2%	4.5%	1.3%	-1.9%	-1.3%	0.0%	-1.3%	-1.4%	-4.2%	7.3%	2.9%	-2.9%	-2.8%
Total	**9.0%**	**15.1%**	**17.6%**	**20.8%**	**23.1%**	**28.0%**	**19.0%**	**15.2%**	**17.7%**	**18.1%**	**19.3%**	**21.3%**	**21.6%**

Source: Company data, Goldman Sachs Global Investment Research

3110.T	12m Price Target: ¥4820	Price: ¥3625	Upside: 33%

Buy

Market cap: ¥659.9bn / $4.1bn
Enterprise value: ¥690.0bn / $4.3bn
3m ADTV :¥53.8bn/ $337.8mn
Japan
Japan Chemicals & Advanced Materials
M&A Rank: 3

GS Forecast

	3/26	3/27E	3/28E	3/29E
Revenue (¥ bn)	118.2	138.0	161.3	190.6
Op. profit (¥ bn) New	**20.8**	**28.7**	**37.3**	**53.4**
Op. profit (¥ bn) Old	20.8	28.0	34.3	42.5
Op. profit CoE (¥ bn)	--	26.0	--	--
EPS (¥) New	**1,147.3**	**110.9**	**142.4**	**210.5**
EPS (¥) Old	229.5	105.8	129.9	165.0
P/E (X)	1.7	32.7	25.4	17.2
P/B (X)	0.4	3.4	3.1	2.7
CROCI (%)	5.9	8.6	9.4	12.4
	3/26	**6/26E**	**9/26E**	**12/26E**
EPS (¥)	182.9	--	--	--

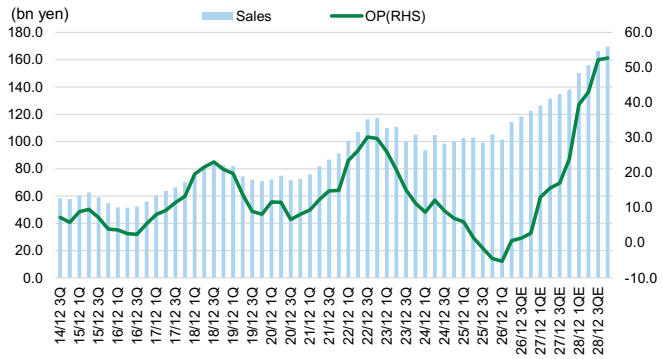
Source: Company data, Goldman Sachs Research estimates, FactSet. Price as of 03 Jul 2026 close.

SUMCO

For SUMCO, we have raised our assumptions for both shipment volumes and pricing of 300mm wafers and wafers below 200mm, while also revising our exchange rate assumption from JPY155/USD to JPY160/USD. As a result, we revise our operating profit forecasts, improving FY12/26 from a ¥3.0bn operating loss to a ¥0.7bn operating loss, and increasing our FY12/27 and FY12/28 operating profit forecasts by 13% and 12%, respectively.

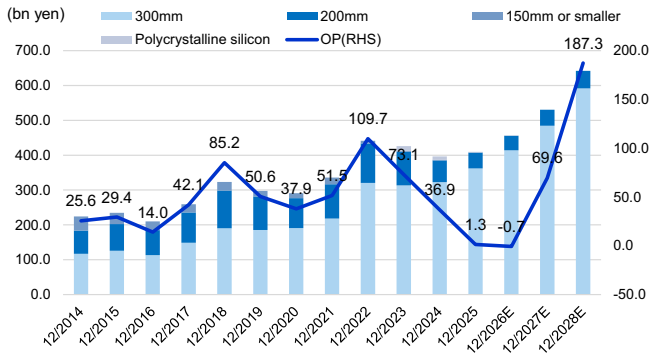
Reflecting our improved earnings outlook driven by the expected tightening of the 300mm wafer supply-demand balance, we remove the 10% valuation discount that we had previously applied. As a result, we raise our target price from ¥5,130 to ¥6,140 and reiterate our Buy rating on the stock.

Exhibit 9: SUMCO: Quarterly sales and operating profit



Source: Goldman Sachs Global Investment Research, Company data

Exhibit 10: SUMCO: Long-term sales and operating profit trends by wafer diameter



Source: Company data, Goldman Sachs Global Investment Research

Exhibit 11: SUMCO: Earnings summary

(Billions of yen, %)	2022/12	2023/12	2024/12	2025/12	GSE 2026/12	GSE 2027/12	GSE 2028/12	25/12 1Q	25/12 2Q	25/12 3Q	25/12 4Q	26/12 1Q	GSE 26/12 2Q	CoE 26/12 2Q
Sales	**441.1**	**425.9**	**396.6**	**409.7**	**456.1**	**530.7**	**642.3**	**102.5**	**102.9**	**99.1**	**105.2**	**101.4**	**114.2**	**112.0**
YoY	31%	-3%	-7%	3%	11%	16%	21%	10%	-2%	1%	5%	-1%	11%	14%
QoQ								3%	0%	-4%	6%	-4%	13%	9%
Operating Profit	**109.7**	**73.1**	**36.9**	**1.3**	**-0.7**	**69.6**	**187.3**	**6.0**	**1.5**	**-1.6**	**-4.5**	**-5.3**	**0.6**	**-2.5**
YoY	113%	-33%	-49%	-96%	-150%	-10442%	169%	-31%	-88%	-117%	-165%	-188%	-59%	-127%
QoQ								-14%	-76%	-208%	185%	16%	-111%	57%
OPM	24.9%	17.2%	9.3%	0.3%	-0.1%	13.1%	29.2%	5.8%	1.4%	-1.6%	-4.3%	-5.2%	0.5%	-2.2%

Source: Company data, Goldman Sachs Global Investment Research

3436.T	12m Price Target: ¥6140	Price: ¥5094	Upside: 20.5%

Buy

Market cap: ¥1.8tr / $11.1bn
Enterprise value: ¥2.1tr / $12.8bn
3m ADTV :¥49.0bn/ $307.1mn
Japan
Japan Chemicals & Advanced Materials
M&A Rank: 3

GS Forecast

	12/25	12/26E	12/27E	12/28E
Revenue (¥ bn)	409.7	456.1	530.7	642.3
Op. profit (¥ bn) New	**1.3**	**(0.7)**	**69.6**	**187.3**
Op. profit (¥ bn) Old	1.3	(3.0)	61.7	167.8
Op. profit CoE (¥ bn)	--	--	--	--
EPS (¥) New	**(33.6)**	**(12.5)**	**139.0**	**379.7**
EPS (¥) Old	(33.6)	(17.4)	122.1	337.7
P/E (X)	NM	NM	36.7	13.4
P/B (X)	0.7	3.1	2.9	2.5
CROCI (%)	5.3	5.8	6.8	9.1
	3/26	**6/26E**	**9/26E**	**12/26E**
EPS (¥)	(24.2)	(3.1)	0.3	14.6

Source: Company data, Goldman Sachs Research estimates, FactSet. Price as of 03 Jul 2026 close.

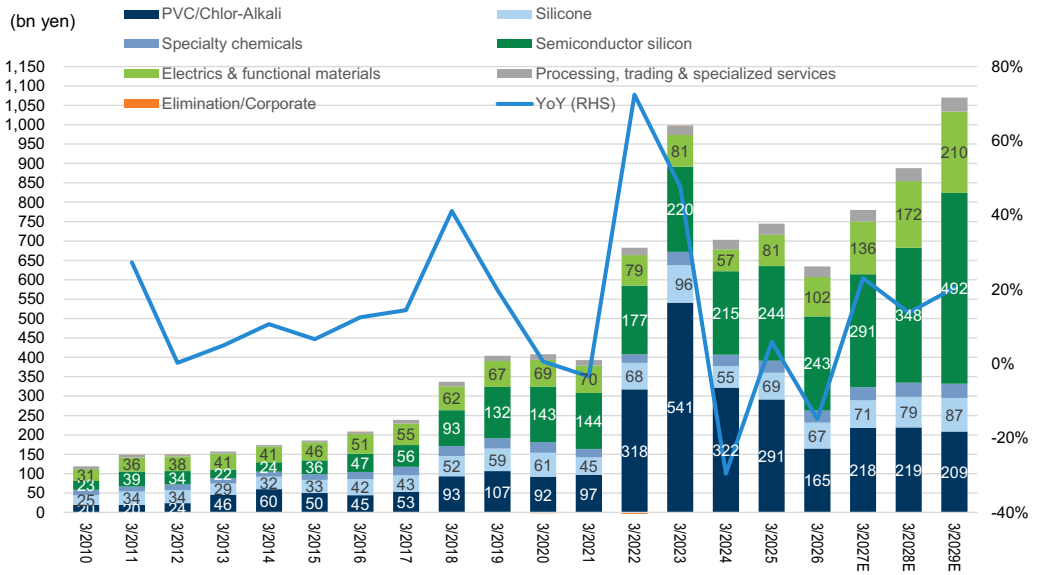
Shin-Etsu Chemical

For Shin-Etsu Chemical, lower crude oil prices following the easing of Middle East disruptions are a negative factor, leading us to reduce our PVC price assumptions, particularly outside North America. As a result, we lower our FY3/27 operating profit forecast by approximately 2%.

On the other hand, beginning in FY3/28, we have raised our forecasts for businesses including silicon wafers and lithography materials, resulting in a slight upward revision to our FY3/28 operating profit forecast and a 3% increase to our FY3/29 forecast.

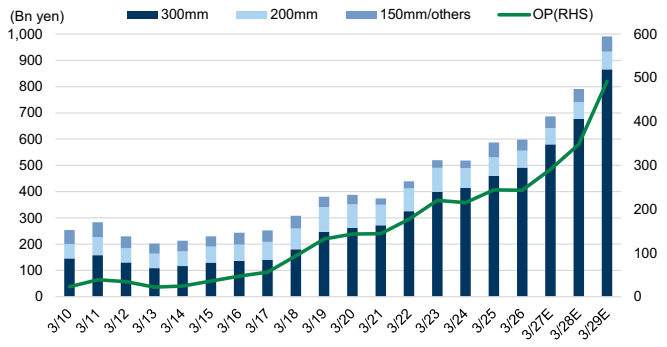
We slightly raise our target price from ¥9,520 to ¥9,610 and reiterate our Buy rating on the stock.

Exhibit 12: Shin-Etsu Chemical: Estimated operating profit trends by segment



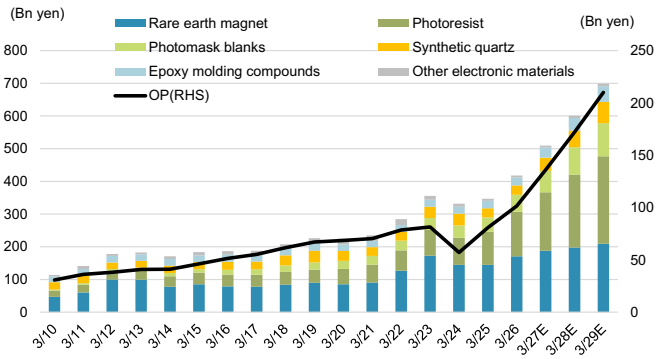
Source: Company data, Goldman Sachs Global Investment Research

Exhibit 13: Shin-Etsu Chemical: Semiconductor silicon business sales and operating profit



Source: Company data, Goldman Sachs Global Investment Research

Exhibit 14: Shin-Etsu Chemical: Electronics & Functional material business sales and operating profit



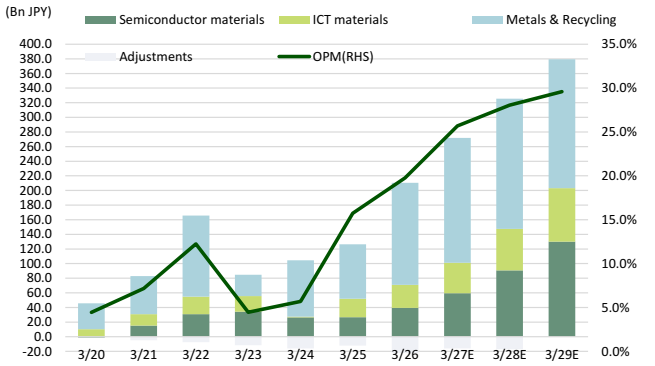
Source: Company data, Goldman Sachs Global Investment Research

Exhibit 15: Shin-Etsu Chemical: Earnings summary

JX Advanced Metals

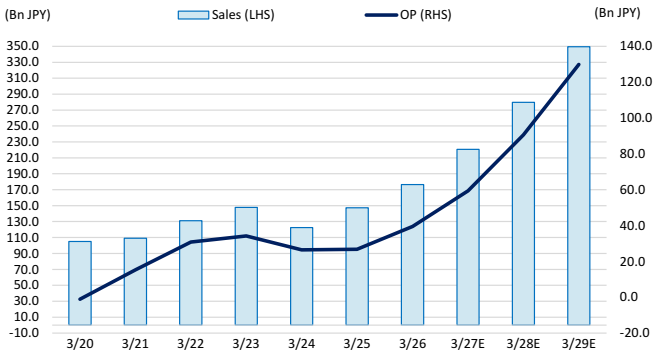
For JX Advanced Metals, we believe our conviction in the company's strong earnings growth trajectory has strengthenedurtherollowing the announcement of a roughly tenfold capacity expansion investment in InP substrates, as well as investments in several other product categories that are expected by the equity market to deliver strong growth. These include high-purity tantalum powderor tantalum capacitors and sputtering targetsor hard disk drives (HDDs), among others. In light of these developments, we raise our target price from ¥4,900 to ¥5,010 and reiterate our Buy rating on the stock.

Exhibit 16: JX Advanced Metals: Operating profit trends by segment



Source: Company data, Goldman Sachs Global Investment Research

Exhibit 17: JX Advanced Metals: Semiconductor business sales and operating profit trends



Source: Company data, Goldman Sachs Global Investment Research

Exhibit 18: JX Advanced Metals: Earnings summary

(bn yen ,%)	3/24	3/25	3/26	GSE 3/27E	GSE 3/28E	GSE 3/29E	CoE 3/27E	3/26 1Q	3/26 2Q	3/26 3Q	3/26 4Q	GSE 3/27 1Q	GSE 3/27 2Q
Sales	**1,512.3**	**714.9**	**884.6**	**995.6**	**1,099.3**	**1,217.7**	**930.0**	**191.3**	**205.1**	**218.1**	**270.1**	**242.0**	**248.3**
YoY	-8%	-53%	24%	13%	10%	11%	5%	12%	23%	21%	36%	27%	21%
QoQ								-3%	7%	6%	24%	-10%	3%
Semiconductor materials	**122.6**	**147.4**	**176.6**	**220.6**	**279.6**	**349.5**	**200.0**	**38.7**	**44.3**	**47.1**	**46.5**	**50.6**	**53.6**
YoY	-17%	20%	20%	25%	27%	25%	13%	1%	26%	27%	26%	31%	21%
ICT materials	**186.3**	**260.9**	**314.6**	**344.5**	**376.4**	**411.8**	**330.0**	**77.2**	**76.5**	**79.2**	**81.7**	**85.7**	**87.0**
YoY	-16%	40%	21%	10%	9%	9%	5%	51%	34%	5%	6%	11%	14%
Metals & Recycling	**1,201.1**	**304.1**	**390.9**	**428.0**	**440.8**	**453.9**	**420.0**	**74.6**	**83.9**	**91.3**	**141.1**	**105.0**	**107.0**
YoY	-8%	-75%	29%	9%	3%	3%	7%	-7%	15%	35%	70%	41%	27%
Adjustments	**2.4**	**2.6**	**2.6**	**2.5**	**2.5**	**2.5**	**-20.0**	**-1.3**	**-3.2**	**-4.1**	**-28.6**	**-4.0**	**-4.0**
YoY	-106%	8%	0%	-3%	0%	0%	-879%		-974%	357%	341%	212%	24%
Operating Profit	**86.2**	**112.5**	**175.0**	**255.8**	**308.5**	**360.4**	**190.0**	**29.6**	**40.5**	**54.8**	**50.2**	**60.6**	**62.8**
YoY	18%	31%	56%	46%	21%	17%	9%	22%	-8%	203%	91%	105%	55%
QoQ								12%	37%	35%	-8%	21%	4%
OPM	5.7%	15.7%	19.8%	25.7%	28.1%	29.6%	20.4%	15.5%	19.7%	25.1%	18.6%	25.0%	25.3%
Semiconductor materials	**26.4**	**26.7**	**39.5**	**59.4**	**90.6**	**129.9**	**50.0**	**8.5**	**10.5**	**10.9**	**9.6**	**12.8**	**14.1**
YoY	-23%	1%	48%	50%	53%	43%	27%	6%	36%	145%	47%	50%	34%
OPM	22%	18%	22%	27%	32%	37%	25%	22%	24%	23%	21%	25%	26%
ICT materials	**0.9**	**25.1**	**31.5**	**41.6**	**56.8**	**73.2**	**32.0**	**7.7**	**7.7**	**8.4**	**7.7**	**9.8**	**10.7**
YoY	-96%	2589%	25%	32%	37%	29%	2%	69%	-24%	35%	83%	28%	39%
OPM	1%	10%	10%	12%	15%	18%	10%	10%	10%	11%	9%	11%	12%
Metals & Recycling	**77.2**	**74.5**	**139.5**	**170.8**	**178.1**	**176.3**	**124.0**	**14.6**	**25.8**	**39.7**	**59.3**	**42.0**	**42.0**
YoY	166%	-4%	87%	22%	4%	-1%	-11%	-13%	0%	396%	150%	187%	63%
OPM	6%	25%	36%	40%	40%	39%	30%	20%	31%	44%	42%	40%	39%
Adjustments	**-18.4**	**-13.9**	**-35.5**	**-16.0**	**-17.0**	**-19.0**	**-16.0**	**-1.3**	**-3.5**	**-4.3**	**-26.4**	**-4.0**	**-4.0**

Source: Company data, Goldman Sachs Global Investment Research

5016.T	12m Price Target: ¥5010	Price: ¥4085	Upside: 22.6%

Buy	GS Forecast				
		3/26	**3/27E**	**3/28E**	**3/29E**
Market cap: ¥3.8tr / $23.5bn	Revenue (¥ bn)	884.6	995.6	1,099.3	1,217.7
Enterprise value: ¥4.4tr / $27.2bn	**Op. profit (¥ bn) New**	**175.0**	**255.8**	**308.5**	**360.4**
3m ADTV :¥141.2bn/ $885.1mn	Op. profit (¥ bn) Old	175.0	253.1	300.9	338.9
Japan	Op. profit CoE (¥ bn)	--	190.0	--	--
Japan Chemicals & Advanced Materials	**EPS (¥) New**	**113.0**	**182.5**	**221.6**	**269.7**
	EPS (¥) Old	113.0	184.1	219.5	256.3
M&A Rank: 3	P/E (X)	15.4	22.4	18.4	15.1
	P/B (X)	1.9	5.0	4.0	3.1
	CROCI (%)	6.6	23.5	21.2	21.0
		3/26	**6/26E**	**9/26E**	**12/26E**
	EPS (¥)	27.0	--	--	--

Source: Company data, Goldman Sachs Research estimates, FactSet. Price as of 03 Jul 2026 close.

Investment Thesis - SUMCO

SUMCO is a pure play in wafers that readily benefits from its high weighting in advanced logic and other high-end products. As 300 mm wafers orders are mostly based on long-term agreements through 2026, we see prospects for a stable earnings recovery and growth. We are Buy rated on SUMCO.

Price Target Risks and Methodology - SUMCO

We are Buy rated on SUMCO with a 12-month target price of ¥6,140. Our target price is based on the FY12/27-FY12/28 average correlation between the materials sector EV/GCI and CROCI/WACC estimate (using a cash return multiple of 0.7x).

Key risks: A slowdown in semiconductor demand, yen appreciation, and a greater-than-expected increase in depreciation and other fixed costs.

Investment Thesis - Shin-Etsu Chemical

Shin-Etsu Chemical is a supplier of metallic silicon (since founding), and also specializes in the inorganic chemicals business through the production of PVC, silicone, and semiconductor silicon, notably expanding its business in the field of silicon-based chemicals. Shin-Etsu's efforts have made it a leading company in the silicon-based chemicals space. We remain constructive on the stock owing to: (1) the company's timely increase in production capacity, (2) the outlook for tight silicon wafer supply/demand over the longer term, (3) its efforts to respond to strong demand for photoresists and rare-earth magnets, and (4) its announcement that it has started to mass produce EUV mask blanks. In particular, we expect mask blanks and rare-earth magnets to become major growth drivers similar to products such as PVC, silicon wafers, and silicone. We are Buy rated on Shin-Etsu Chemical. Key risks include deterioration in semiconductor supply/demand, and a negative earnings impact from swings in market prices for PVC and caustic soda, and in forex.

Price Target Risks and Methodology - Shin-Etsu Chemical

We are Buy rated on Shin-Etsu Chemical with a 12-month target price of ¥9,610. Our

target price is based on the FY3/28-FY3/29 average correlation between the materials sector EV/GCI and CROCI/WACC estimates (using a cash return multiple of 0.7x and a 20% premium to the sector average).

Key risks: Deterioration in semiconductor supply/demand, and a negative earnings impact from swings in market prices for PVC and caustic soda, and in forex.

Investment Thesis - Nitto Boseki

Nitto Boseki (Nittobo) is the top manufacturer of low thermal expansion glass cloth (T-glass) used in semiconductor package substrates, with roughly a 90% global market share. For the thick glass cloth used as a core material in ABF substrates, the company supplied nearly 100% as of the end of 2025. Driven by its electronic materials business, centered on these special glass products, we forecast robust operating profit growth into FY3/29.

Price Target Risks and Methodology - Nitto Boseki

We are Buy rated on Nitto Boseki with a 12-month target price of ¥4,820. Our target price is based on the correlation between the materials sector's EV/GCI and the FY3/28E CROCI/WACC forecast (cash-return multiple of 0.7x plus a 60% premium to the sector average). **Key risks** include fluctuations in semiconductor demand, currency volatility, and changes in the competitive landscape for specialty glass.

Investment Thesis - JX Advanced Metals Corp.

JX Advanced Metals is a global player specializing in advanced materials related to copper and rare metals. It operates under an integrated supply chain that spans across resource procurement to recycling. We expect strong growth in various materials for semiconductors/AI servers (e.g. semiconductor targets, InP substrates, and materials for tantalum capacitors, for which JX Advanced Metals commands high market shares) as well as high profit growth in focus businesses supported by volume increases in high-margin business areas such as aircraft-use titanium sponge made by its subsidiary Toho Titanium. We believe the high growth potential of the company's focus businesses and the stable profit expansion of its base businesses are not yet fully priced in at current valuations.

Price Target Risks and Methodology - JX Advanced Metals Corp.

We are Buy rated on JX Advanced Metals with a 12-month target price of ¥5,010. Our target price is based on the materials sector EV/GCI and FY3/28E CROCI/WACC (CROCI multiple of 0.7x, plus the stock's recent historical premium of 25% to the sector average).

Key risks: (1) Slowdown in semiconductor demand, (2) slowdown in AI server demand, (3) delays in structural reforms, (4) yen appreciation, and (5) fluctuations in copper and other metal prices.

Disclosure Appendix

Reg AC

We, Atsushi Ikeda and Yuri Izumikawa, hereby certify that all of the views expressed in this report accurately reflect our personal views about the subject company or companies and its or their securities. We also certify that no part of our compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed in this report.

Unless otherwise stated, the individuals listed on the cover page of this report are analysts in Goldman Sachs' Global Investment Research division.

Contributing Authors: Atsushi Ikeda Goldman Sachs Japan Co., Ltd., Yuri Izumikawa Goldman Sachs Japan Co., Ltd..

Unless otherwise stated, the individuals listed in the Contributing Authors disclosure of this report are analysts in Goldman Sachs' Global Investment Research division.

GS Factor Profile

The Goldman Sachs Factor Profile provides investment context for a stock by comparing key attributes to the market (i.e. our universe of rated stocks) and its sector peers. The four key attributes depicted are: Growth, Financial Returns, Multiple (e.g. valuation) and Integrated (a composite of Growth, Financial Returns and Multiple). Growth, Financial Returns and Multiple are calculated by using normalized ranks for specific metrics for each stock. The normalized ranks for the metrics are then averaged and converted into percentiles for the relevant attribute. The precise calculation of each metric may vary depending on the fiscal year, industry and region, but the standard approach is as follows:

Growth is based on a stock's forward-looking sales growth, EBITDA growth and EPS growth (for financial stocks, only EPS and sales growth), with a higher percentile indicating a higher growth company. **Financial Returns** is based on a stock's forward-looking ROE, ROCE and CROCI (for financial stocks, only ROE), with a higher percentile indicating a company with higher financial returns. **Multiple** is based on a stock's forward-looking P/E, P/B, price/dividend (P/D), EV/EBITDA, EV/FCF and EV/Debt Adjusted Cash Flow (DACF) (for financial stocks, only P/E, P/B and P/D), with a higher percentile indicating a stock trading at a higher multiple. The **Integrated** percentile is calculated as the average of the Growth percentile, Financial Returns percentile and (100% - Multiple percentile).

Financial Returns and Multiple use the Goldman Sachs analyst forecasts at the fiscal year-end at least three quarters in the future. Growth uses inputs for the fiscal year at least seven quarters in the future compared with the year at least three quarters in the future (on a per-share basis for all metrics).

For a more detailed description of how we calculate the GS Factor Profile, please contact your GS representative.

M&A Rank

Across our global coverage, we examine stocks using an M&A framework, considering both qualitative factors and quantitative factors (which may vary across sectors and regions) to incorporate the potential that certain companies could be acquired. We then assign a M&A rank as a means of scoring companies under our rated coverage from 1 to 3, with 1 representing high (30%-50%) probability of the company becoming an acquisition target, 2 representing medium (15%-30%) probability and 3 representing low (0%-15%) probability. For companies ranked 1 or 2, in line with our standard departmental guidelines we incorporate an M&A component into our target price. M&A rank of 3 is considered immaterial and therefore does not factor into our price target, and may or may not be discussed in research.

Quantum

Quantum is Goldman Sachs' proprietary database providing access to detailed financial statement histories, forecasts and ratios. It can be used for in-depth analysis of a single company, or to make comparisons between companies in different sectors and markets.

Disclosures

The rating(s) for JX Advanced Metals Corp., Nitto Boseki Co, SUMCO and Shin-Etsu Chemical is/are relative to the other companies in its/their coverage universe: Asahi Kasei, Daicel, Denka, Fujimi Inc., JX Advanced Metals Corp., Kuraray, Mitsubishi Gas Chemical, Mitsui Chemicals Inc., Mitsui Kinzoku Co., Nippon Paint Holdings, Nitto Boseki Co, Resonac Holdings, SUMCO, Shin-Etsu Chemical, Tokyo Ohka Kogyo, Toray Industries, Tri Chemical Laboratories Inc., Zeon

Company-specific regulatory disclosures

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Goldman Sachs beneficially owned 1% or more of common equity (excluding positions managed by affiliates and business units not required to be aggregated under US securities law) as of the second most recent month end: Nitto Boseki Co (¥3,505) and SUMCO (¥5,111)

Goldman Sachs has received compensation for investment banking services in the past 12 months: JX Advanced Metals Corp. (¥4,009)

Goldman Sachs expects to receive or intends to seek compensation for investment banking services in the next 3 months: JX Advanced Metals Corp. (¥4,009), Shin-Etsu Chemical (¥7,359) and SUMCO (¥5,111)

Goldman Sachs has received compensation for non-investment banking services during the past 12 months: JX Advanced Metals Corp. (¥4,009)

Goldman Sachs had an investment banking services client relationship during the past 12 months with: JX Advanced Metals Corp. (¥4,009), Shin-Etsu Chemical (¥7,359) and SUMCO (¥5,111)

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Goldman Sachs had a non-securities services client relationship during the past 12 months with: JX Advanced Metals Corp. (¥4,009), Shin-Etsu Chemical (¥7,359) and SUMCO (¥5,111)

Goldman Sachs has managed or co-managed a public or Rule 144A offering in the past 12 months: JX Advanced Metals Corp. (¥4,009)

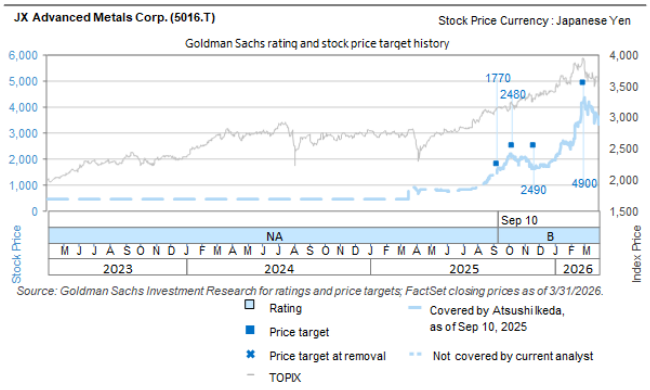
Distribution of ratings/investment banking relationships

Goldman Sachs Investment Research global Equity coverage universe

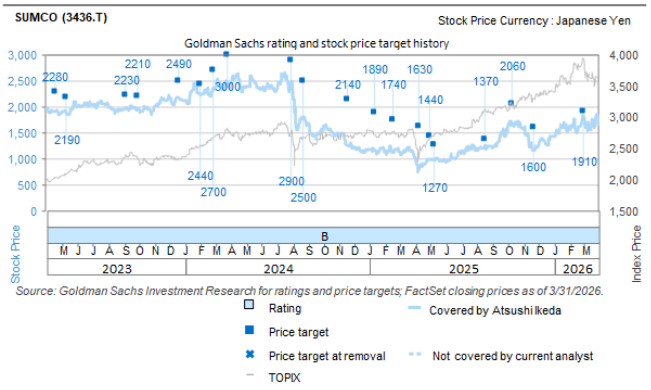
	Rating Distribution			Investment Banking Relationships		
	Buy	Hold	Sell	Buy	Hold	Sell
Global	50%	34%	16%	65%	60%	45%

As of April 1, 2026, Goldman Sachs Global Investment Research had investment ratings on 3,074 equity securities. Goldman Sachs assigns stocks as Buys and Sells on various regional Investment Lists; stocks not so assigned are deemed Neutral. Such assignments equate to Buy, Hold and Sell for the purposes of the above disclosure required by the FINRA Rules. See 'Ratings, Coverage universe and related definitions' below. The Investment Banking Relationships chart reflects the percentage of subject companies within each rating category for whom Goldman Sachs has provided investment banking services within the previous twelve months.

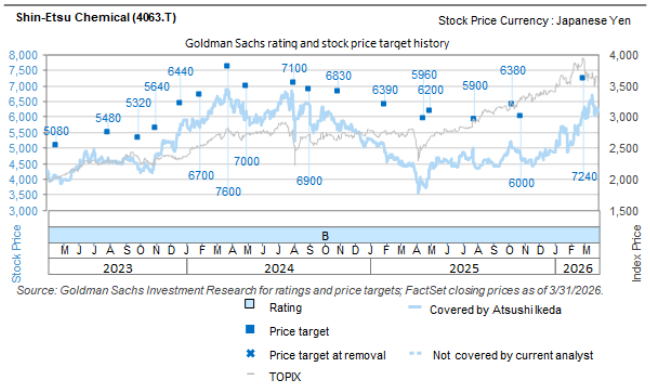
Price target and rating history chart(s)



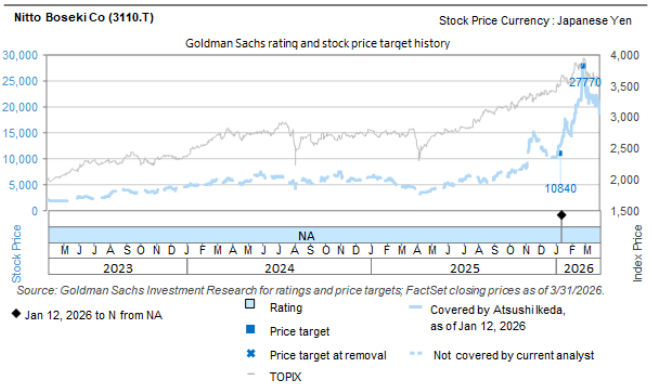
The price targets shown should be considered in the context of all prior published Goldman Sachs research, which may or may not have included price targets, as well as developments relating to the company, its industry and financial markets.



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The price targets shown should be considered in the context of all prior published Goldman Sachs research, which may or may not have included price targets, as well as developments relating to the company, its industry and financial markets.

Target price history table(s)

JX Advanced Metals Corp. (5016.T)

Date of report	Target price (¥)	Closing price (¥)
08-Jun-26	4,900	3,532
01-Mar-26	4,900	4,159
21-Nov-25	2,490	1,602
10-Oct-25	2,480	2,102
10-Sep-25	1,770	1,471

SUMCO (3436.T)

Date of report	Target price (¥)	Closing price (¥)
05-Jun-26	5,130	4,041
01-Mar-26	1,910	1,828
21-Nov-25	1,600	1,175
10-Oct-25	2,060	1,658
17-Aug-25	1,370	1,201
08-May-25	1,270	994
30-Apr-25	1,440	984
09-Apr-25	1,630	779
17-Feb-25	1,740	1,114
10-Jan-25	1,890	1,155
18-Nov-24	2,140	1,270
23-Aug-24	2,500	1,807
30-Jul-24	2,900	2,465

JX Advanced Metals Corp. (5016.T)

Date of report	Target price (¥)	Closing price (¥)

SUMCO (3436.T)

Date of report	Target price (¥)	Closing price (¥)
25-Mar-24	3,000	2,425
26-Feb-24	2,700	2,374
31-Jan-24	2,440	2,256
19-Dec-23	2,490	2,186
28-Sep-23	2,210	1,945
06-Sep-23	2,230	1,998

Shin-Etsu Chemical (4063.T)

Date of report	Target price (¥)	Closing price (¥)
05-Jun-26	9,520	7,350
01-May-26	8,300	7,104
01-Mar-26	7,240	6,168
28-Oct-25	6,000	4,672
10-Oct-25	6,380	5,020
28-Jul-25	5,900	4,480
30-Apr-25	6,200	4,330
17-Apr-25	5,960	3,861
30-Jan-25	6,390	4,900
30-Oct-24	6,830	5,680
02-Sep-24	6,900	6,400
04-Aug-24	7,100	5,921
01-May-24	7,000	6,074
25-Mar-24	7,600	6,750
30-Jan-24	6,700	5,822
22-Dec-23	6,440	5,781
03-Nov-23	5,640	4,806
28-Sep-23	5,320	4,319
31-Jul-23	5,480	4,679

Nitto Boseki Co (3110.T)

Date of report	Target price (¥)	Closing price (¥)
05-Jun-26	23,800	4,050
01-Mar-26	27,770	5,040
12-Jan-26	10,840	2,508

Price targets shown in table(s) are unadjusted for corporate actions.

Regulatory disclosures

Disclosures required by United States laws and regulations

See company-specific regulatory disclosures above for any of the following disclosures required as to companies referred to in this report: manager or co-manager in a pending transaction; 1% or other ownership; compensation for certain services; types of client relationships; managed/co-managed public offerings in prior periods; directorships; for equity securities, market making and/or specialist role. Goldman Sachs trades or may trade as a principal in debt securities (or in related derivatives) of issuers discussed in this report.

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