

Equities

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Chemicals Q3 preview

Deteriorating earnings environment in Q3 points to a number of downward revisions

■ Industry Overview

Takao Kanai

+81-3-6270-4776
takao.kanai@citi.com

Atsushi Ikeda

+81-3-6270-4777
atsushi.ikeda@citi.com

- **Conclusions** — Given the very harsh earnings environment in Oct–Dec, we expect to see a number of companies fall short of estimates announced after Q2 results. Share prices are, to a large extent, reflecting sluggish earnings, but we think this will point investors in the near-term to companies with relatively stable earnings such as Shin-Etsu Chemical, JSR, Toray, and Kuraray. From a somewhat longer-term perspective, we would also highlight companies like Hitachi Chemical and Sumitomo Bakelite that, while earnings are weak at present, have potential growth products; Sumitomo Chemical, which is finally showing signs of emerging from its earnings trough; and Daicel, which is poised for earnings recovery in FY3/13. On the other hand, we would look for continued weak share price performances from companies with substantial earnings undershoots, such as Teijin, Mitsui Chemicals, and Mitsubishi Gas Chemical.
- **Integrated chemical makers** — Petrochemical prices have been squeezed even further since October. Asian prices of terephthalic acid, acrylonitrile, and phenol have been knocked down another notch, and even products such as MMA and caprolactam, which had been sustaining high levels, have dipped. Recent production adjustments appear to have arrested price declines, but lackluster demand has not supported substantial recovery. Operating rates for commodity-grade petrochemicals are down across the board and ethylene production has been cut back, as weak Asian prices have led to reduced exports and yen strength to higher imports. We look for modest price recovery with the start of Chinese New Year holidays in late January, but given factors such as the European economic slump, we expect the recovery to lack punch.
- **Electronic materials** — Demand for silicon wafers (particularly 200mm and smaller), sealants, and other semiconductor material dropped sharply QoQ in Oct–Dec. We gather photoresists found relatively firm underlying strength on advancing miniaturization. LCD materials were patchy, with demand for products including Nitto Denko's polarizing films and Hitachi Chemical's anisotropic conductive films down QoQ, and JSR's orientation films and color resists continuing to languish around the low levels of Jul–Sep. We expect products such as sealant materials that went through severe production adjustments in Jul–Sep will see some demand recovery in Jan–Mar as inventory adjustments wind down, but for most electronic materials we do not expect clear recovery before March.
- **Derivatives and fine chemicals/textiles and fibers** — We expect little progress toward H2 targets at MGC, due to sluggish ultrapure isophthalic acid and BT materials, and at DKK, due to inventory adjustments in chloroprene rubber and electronic materials. While Nippon Shokubai is seeing solid SAP demand, we think there is some downside earnings risk from sharply lower acrylic acid prices. We expect a substantial impact from FPD materials inventory adjustments on Toray, but think it can generally achieve targets on strong fiber demand, led by aircraft-use carbon fiber and textile products. At Kuraray, PVA film is likely to rebound off a September bottom and Eval demand looks firm, so we think earnings are unlikely to fall short of target.

See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

Integrated chemicals

Companies other than Showa Denko looking at earnings downside

With the exception of Showa Denko, we expect the integrated chemical makers in our coverage to fall short of their FY3/12 full-year earnings estimates. Showa Denko's FY12/11 earnings are likely to show some impact on hard disk business from flooding in Thailand, but the company is likely to beat its targets due to its high rate of progress in the first three quarters of the year. At Ube Industries, mainstay caprolactam prices are lower than anticipated, but the company had built up earnings through October and therefore we expect only a slight shortfall.

Deteriorating mainstay businesses at Mitsui Chemicals and Mitsubishi Chemical Holdings

On the other hand, earnings are likely to be badly squeezed at Mitsui Chemicals and Mitsubishi Chemical Holdings. Mitsui Chemicals' mainstay businesses such as terephthalic acid, phenol chain, and urethane have been sluggish. Medical business supported Mitsubishi Chemical's earnings, but due to deteriorating terephthalic acid business, soft MMA earnings, and weakness in LCD materials we do not expect the company to reach its targets. Our forecasts for both companies were already below guidance, but we think further downside is a real possibility.

Asahi Kasei, Sumitomo Chemical also likely to come up short

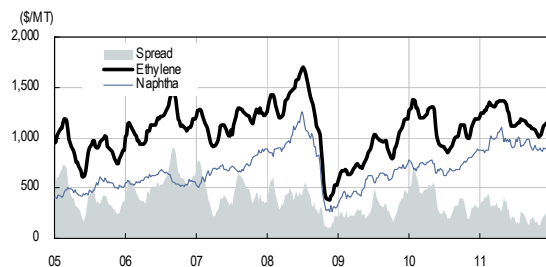
At Asahi Kasei, acrylonitrile prices have recovered only slightly on production cutbacks, and electronics-related business is tough as well, leading us to expect a profit shortfall. Sumitomo Chemical's investment gains from projects like Petro Rabigh are likely to be less than we forecast. Meanwhile, Tosoh's FY3/12 earnings prospects are unclear given the potential impact of an explosion and fire at its Nanyo Plant.

Figure 1. Integrated chemical makers: OP forecast and comparison with consensus

(¥bn) Code	Company	Full					Half			Quarter						results release
		FY10	FY11			FY12	FY11			FY10				FY11		
		A FY	Co FYCE	CIRA FYE	Cons Ave	CIRA FYE	A H1CE	Co H2CE	CIRA H2E	A Q1	A Q2	A Q3	A Q4	A Q1	A Q2	
3407	Asahi Kasei	122.9	124.0	118.0	119.9	123.0	63.8	60.2	54.2	22.8	40.7	31.0	28.4	30.2	33.5	3-Feb
	YoY	113%	1%	-4%	-3%	4%	0%	1%	-9%	NM	122%	41%	61%	32%	-18%	
4004	Showa Denko	38.7	45.0	46.0	47.1	54.0	22.1	22.9	23.9	7.0	10.7	9.8	11.2	9.4	12.7	9-Feb (scheduled)
	YoY	NM	16%	19%	NM	17%	NM	9%	14%	NM	NM	47%	0%	33%	19%	
4005	Sumitomo Chemical	88.0	75.0	72.0	76.4	82.0	54.0	21.0	18.0	34.0	19.0	26.2	8.7	34.8	19.3	3-Feb
	YoY	71%	-15%	-18%	-13%	14%	2%	-40%	-49%	NM	-63%	41%	-47%	2%	1%	
4042	Tosoh	33.5	41.0	34.0	35.5	43.0	21.7	19.3	12.3	4.3	5.7	10.9	12.6	10.4	11.3	3-Feb
	YoY	157%	22%	1%	6%	26%	115%	-18%	-47%	NM	-22%	726%	37%	142%	96%	
4183	Mitsui Chemicals	40.5	50.0	46.0	49.9	48.0	28.7	21.3	17.3	11.8	5.6	9.5	13.6	22.0	6.8	3-Feb
	YoY	NM	23%	13%	23%	4%	66%	-8%	-26%	NM	NM	37%	436%	87%	21%	
4188	Mitsubishi Chemical HD	226.5	200.0	195.0	191.6	204.0	95.7	104.3	99.3	60.8	50.6	69.4	45.7	59.8	35.9	3-Feb
	YoY	241%	-12%	-14%	-15%	5%	-14%	-9%	-14%	NM	299%	54%	138%	-2%	-29%	
4208	Ube Industries	44.4	50.0	49.0	51.4	50.0	22.6	27.4	26.4	4.4	12.4	14.0	13.6	8.7	13.9	3-Feb
	YoY	61%	13%	10%	16%	2%	0.0	-1%	0.0	NM	106%	56%	74%	100%	13%	

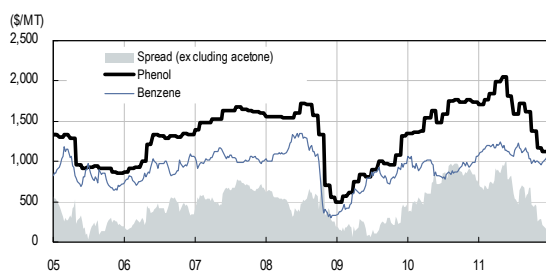
Source: IFIS, Citi Investment Research and Analysis.

Figure 2. Ethylene: Asian price and spread



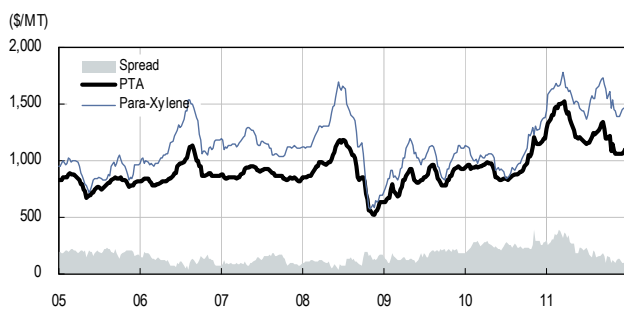
Source: Datastream, Citi Investment Research and Analysis.

Figure 4. Phenol: Asian price and spread



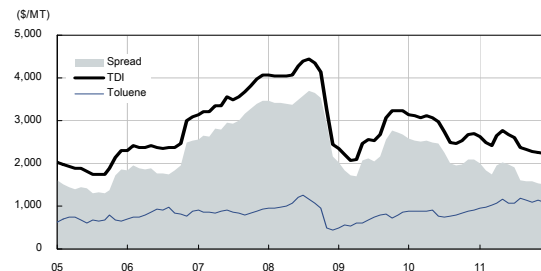
Source: Datastream, Citi Investment Research and Analysis.

Figure 6. Terephthalic acid: Asian price and spread



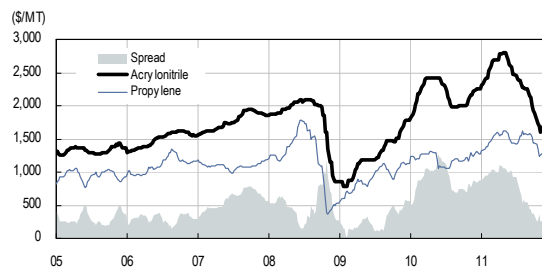
Source: Datastream, Citi Investment Research and Analysis.

Figure 8. TDI: Asian price and spread



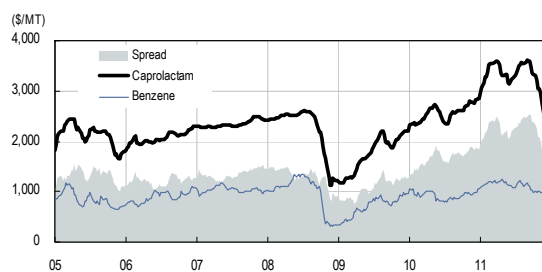
Source: ICIS, Citi Investment Research and Analysis.

Figure 3. Acrylonitrile: Asian price and spread



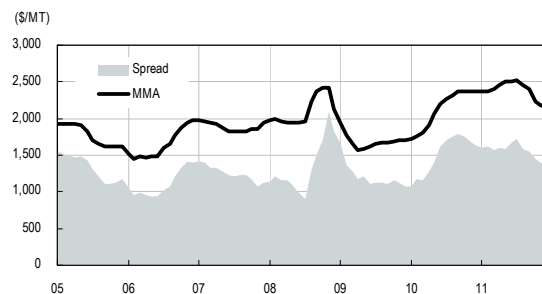
Source: Datastream, Citi Investment Research and Analysis.

Figure 5. Caprolactam: Asian price and spread



Source: Datastream, Citi Investment Research and Analysis.

Figure 7. MMA monomer: Asian price and spread



Source: ICIS, Citi Investment Research and Analysis.

Figure 9. Butadiene: Asian price



Source: Datastream, Citi Investment Research and Analysis.

Electronic materials

Shin-Etsu Chemical, Zeon set to clear targets

We think electronic materials makers such as Shin-Etsu Chemical, Zeon, and Tokyo Ohka Kogyo will be able to reach their earnings estimates. While Shin-Etsu Chemical may see weakened demand for silicon wafers, we think solid performances by US PVC resin and other electronic materials businesses can make up the difference. Zeon's guidance looks somewhat conservative, but synthetic rubber business is also firm and we anticipate an overshoot. At TOK, we expect a firm undertone for advanced resists for semiconductor applications. SUMCO ends its fiscal year in January, but the company substantially lowered its estimates for FY1/12 after Q3, and we think new guidance is within reach.

Tough sledding for Hitachi Chemical, Sumitomo Bakelite, Nitto Denko

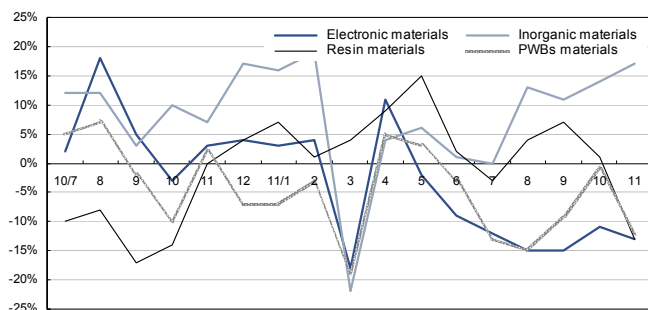
We expect earnings to fall short of estimates at Hitachi Chemical, Sumitomo Bakelite, and Nitto Denko. We see weakness across the board for Hitachi Chemical's semiconductor and LCD material, including sealants, die-bonding materials, and anisotropic conductive film. However, we expect firm earnings from negative electrode materials for automotive LiBs as well as from Fineset transparent interlayer film for touch panels. Sumitomo Bakelite is likely to be hit by a sharp decline in earnings from mainstay sealant materials. However, here too we look for growth in LaZ semiconductor package substrate materials. Nitto Denko's October and November sales of polarizing film were sluggish. We have recently revised our own forecasts for Hitachi Chemical and Sumitomo Bakelite; we also think Nitto Denko's earnings could fall short of our forecasts, although that will depend on sales trends going forward.

Figure 10. Electronic materials makers: OP forecast and comparison with consensus

Code	Company	Full					Half			Quarter						results release
		FY10	FY11			FY12	FY11			FY10				FY11		
		A FY	Co FYCE	CIRA FYE	Cons Ave	CIRA FYE	A H1CE	Co H2CE	CIRA H2E	A Q1	A Q2	A Q3	A Q4	A Q1	A Q2	
3436	SUMCO	-8.4	1.0	1.0	3.0	23.0	5.4	-4.4	-4.4	-2.5	1.4	-1.4	-5.9	1.9	3.5	NA
	YoY	NM	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	153%	
4063	Shin-Etsu Chemical	149.2	155.0	158.0	155.9	188.0	80.4	74.6	77.6	36.1	40.0	37.9	35.2	40.0	40.4	26-Jan
	YoY	27%	4%	6%	4%	19%	6%	2%	6%	75%	24%	20%	8%	11%	1%	
4185	JSR	39.1	41.0	39.0	40.0	46.0	19.5	21.5	19.5	10.0	10.0	9.9	9.2	9.2	10.2	23-Jan
	YoY	93%	5%	0%	2%	18%	-3%	13%	3%	NM	55%	23%	3%	-8%	2%	
4186	Tokyo Ohka Kogyo	6.0	6.4	6.7	6.7	7.6	4.1	2.3	2.6	1.1	1.7	1.6	1.6	2.1	2.0	2-Feb
	YoY	NM	6%	11%	11%	13%	43%	-27%	-18%	NM	-807%	204%	190%	88%	13%	
4203	Sumitomo Bakelite	11.2	8.5	6.3	8.9	15.0	4.3	4.2	2.0	3.3	3.0	2.8	2.0	2.5	1.7	3-Feb
	YoY	48%	-24%	-44%	-21%	138%	-32%	-11%	-57%	NM	84%	-2%	-1%	-22%	-42%	
4205	Zeon	35.3	32.0	35.0	35.3	32.5	21.3	10.7	13.7	10.4	8.3	8.0	8.5	11.8	9.5	8-Feb
	YoY	279%	-9%	-1%	0%	-7%	13%	-35%	-17%	NM	585%	55%	45%	13%	13%	
4217	Hitachi Chemical	43.5	32.0	29.0	33.6	43.0	15.8	16.2	13.2	12.8	12.1	10.8	7.7	9.3	6.5	25-Jan
	YoY	13%	-26%	-33%	-23%	48%	-37%	-12%	-28%	129%	16%	-10%	-26%	-28%	-46%	
6988	Nitto Denko	85.2	65.0	64.0	66.5	78.0	36.3	28.7	27.7	24.8	21.7	21.2	17.0	20.9	15.4	31-Jan
	YoY	52%	-24%	-25%	-22%	22%	-23%	-26%	-28%	194%	27%	23%	28%	-16%	-29%	

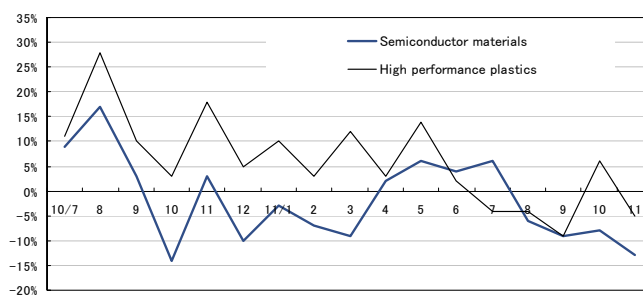
Source: IFIS, Citi Investment Research and Analysis.

Figure 11. Hitachi Chemical: Monthly sales (YoY)



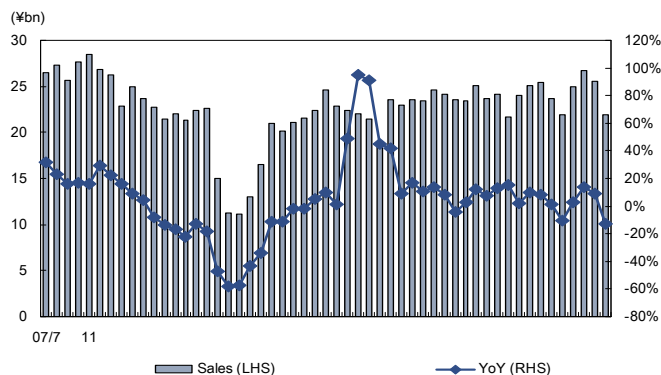
Source: Company data, Citi Investment Research and Analysis.

Figure 12. Sumitomo Bakelite: Monthly sales (YoY)



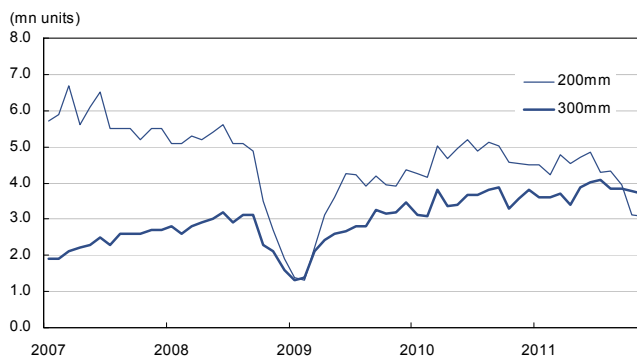
Source: Company data, Citi Investment Research and Analysis.

Figure 13. Nitto Denko: Monthly sales of LCD related materials



Source: Company data, Citi Investment Research and Analysis.

Figure 14. Global silicon wafer shipments



Source: Citi Investment Research and Analysis.

Derivatives and fine chemicals/fibers and textiles

Particularly harsh conditions for MGC; DKK also set to fall short. Daicel's inflator business faring well

We expect poor progress toward Mitsubishi Gas Chemical's H2 earnings targets in October–December, due to a narrower spread and weakened demand for ultrapure isophthalic acid, the impact of inventory adjustments on BT materials for BGA applications, and lackluster demand for petrochemicals including MXDA, MMA, and neopentyl glycol. At Denki Kagaku Kogyo, we look for the effects of weaker Chinese demand for chloroprene rubber and inventory adjustments in semiconductor materials such as carrier tape and fused silica, and we think earnings are likely to fall short of target. Despite severe inventory adjustments in TAC and acetic acid derivatives, the anticipated shortfall at Daicel is likely to be mitigated to some extent by brisk business in airbag inflators and engineering plastics for automotive applications. Demand for Nippon Shokubai's SAP is firm, but operating rates turned down from November, and acrylic acid ester prices are down sharply, so we see some further downside risk to company estimates.

Underlying earnings strength at Toray, Kuraray; some risk to Teijin's PC resin and carbon fiber businesses

Toray is feeling significant heat from inventory adjustments on its FPD materials business, but demand for fibers and textiles—particularly carbon fibers for aircraft applications and woven textiles—is strong, on top of which it has the capacity to cut both fixed and variable costs, and we expect earnings to be generally on target. At Kuraray, PVA films have been recovering off their September bottom and Eval demand is firm, so we think a substantial earnings shortfall is unlikely. Kuraray is doing well in aramid fibers for optical fiber applications, and automotive business remains firm. However, in its PC resins business, demand for electrical and electronics applications is weak and competition from overseas rivals has stiffened, while carbon fibers for industrial applications in Europe are sagging, so earnings are difficult to predict.

Figure 15. Derivatives and fine chemical makers: OP forecast and comparison with consensus

Code	Company	Full				Half				Quarter						Results Release
		FY10	FY11	CIRA	Cons	FY12	FY11	CIRA		FY10	FY11					
		A	Co	FYE	Ave	FYE	A	Co	H2E	A	A	A	A	A	A	
		FY	FYCE	FYE		FYE	H1CE	H2CE		Q1	Q2	Q3	Q4	Q1	Q2	
3405	Kuraray	53.1	60.0	60.0	59.5	63.0	29.4	30.6	30.6	12.5	12.9	14.1	13.5	15.8	13.5	2-Feb
	YoY	74%	13%	13%	12%	5%	15%	11%	11%	624%	61%	43%	25%	26%	5%	
4061	Denki Kagaku Kogyo	24.6	26.0	23.0	24.9	25.0	11.8	14.2	11.2	6.1	6.5	5.9	6.2	5.9	5.9	7-Feb
	YoY	14%	6%	-7%	1%	9%	-7%	18%	-7%	437%	6%	-25%	-6%	-4%	-9%	
4114	Nippon Shokubai	29.8	23.0	31.0	32.1	26.0	18.1	4.9	12.9	7.5	5.9	8.5	7.9	9.6	8.5	3-Feb
	YoY	115%	-23%	4%	8%	-16%	34%	-70%	-21%	227%	65%	56%	208%	28%	43%	
4118	Kaneka	21.2	17.5	17.0	17.0	23.0	6.4	11.1	10.6	6.3	4.1	6.5	4.2	3.6	2.8	8-Feb
	YoY	21%	-18%	-20%	-20%	35%	-38%	3%	-2%	48%	10%	22%	3%	-42%	-32%	
4182	Mitsubishi Gas Chemical	23.4	14.0	10.0	14.6	8.0	7.5	6.5	2.5	6.3	6.3	7.3	3.5	5.6	1.9	3-Feb
	YoY	471%	-40%	-57%	-38%	-20%	-41%	-40%	-77%	NM	542%	537%	-14%	-11%	-69%	
4202	Dicel	32.7	23.0	22.0	23.3	29.0	11.5	11.5	10.5	11.1	9.8	7.4	4.5	6.1	5.4	2-Feb
	YoY	57%	-30%	-33%	-29%	32%	-45%	-3%	-11%	835%	149%	-20%	-31%	-45%	-45%	
4631	DIC	37.2	36.0	36.0	36.3	39.0	17.9	18.1	18.1	10.2	10.5	11.3	5.2	10.3	7.6	8-Feb
	YoY	34%	-3%	-3%	-2%	8%	-14%	10%	10%	385%	88%	18%	-51%	1%	-28%	

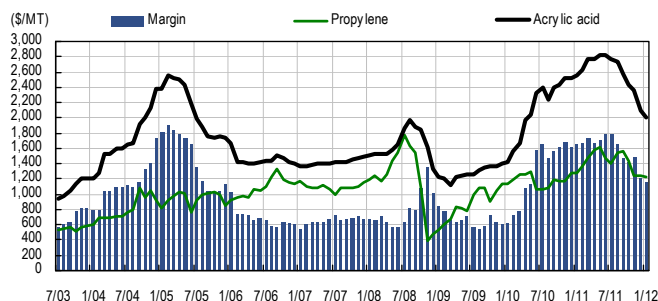
Source: IFIS, Citi Investment Research and Analysis.

Figure 16. Textile and fiber makers: OP forecast and comparison with consensus

(¥bn) Code	Company	Full					Half			Quarter						Results Release
		FY10	FY11			FY12	FY11	Co	CIRA	FY10	A	A	A	FY11		
		A FY	Co FYCE	CIRA FYE	Cons Ave	CIRA FYE	A H1CE	H2CE	H2E	A Q1	A Q2	A Q3	A Q4	A Q1	A Q2	
3401	Teijin	48.6	50.0	44.5	48.8	33.0	20.7	29.3	23.8	8.1	12.4	15.9	12.2	11.0	9.6	3-Feb
		261%	3%	-8%	0%	-26%	1%	5%	-15%	NM	189%	85%	487%	37%	-23%	
3402	Toray	100.1	120.0	118.0	119.4	125.0	63.4	56.6	54.6	16.2	26.3	27.4	30.1	27.3	36.2	7-Feb
		150%	20%	18%	19%	6%	49%	-2%	-5%	NM	238%	86%	51%	68%	37%	

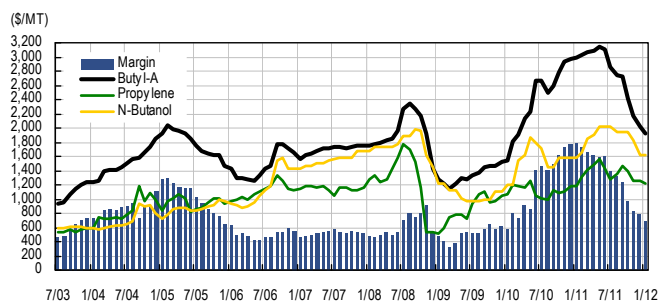
Source: IFIS, Citi Investment Research and Analysis.

Figure 17. Acrylic acid historical price & margin



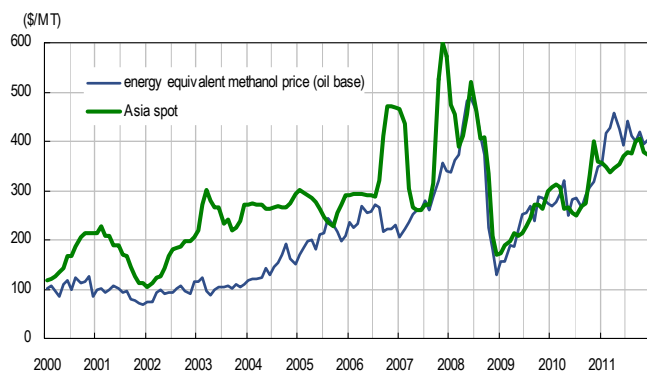
Source: ICIS, Citi Investment Research and Analysis.

Figure 18. Acrylic ester historical price & margin



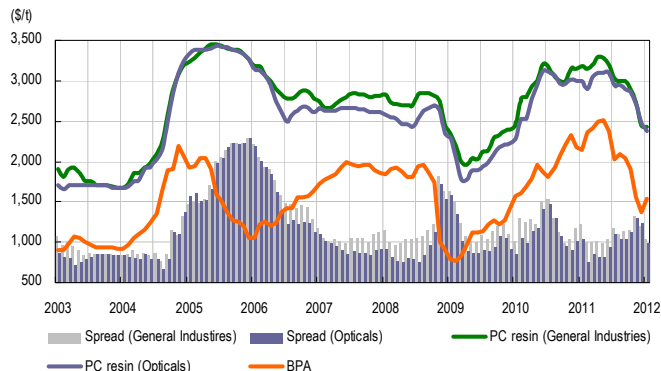
Source: ICIS, Citi Investment Research and Analysis.

Figure 19. Methanol historical price



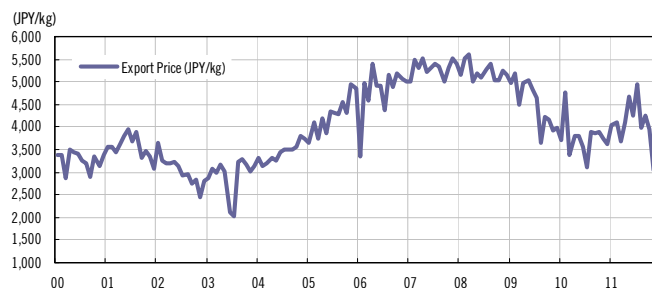
Source: ICIS, Citi Investment Research and Analysis.

Figure 20. PC resin historical price & margin



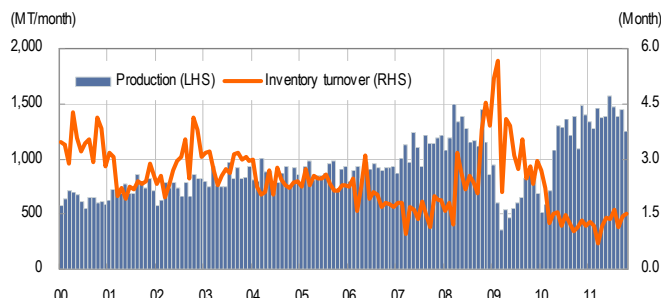
Source: ICIS, Citi Investment Research and Analysis.

Figure 21. Carbon fiber historical export price



Source: METI, Trade statistics, Citi Investment Research and Analysis.

Figure 22. Carbon fiber production & inventory turnover



Source: METI, Citi Investment Research and Analysis.

Valuation

		Rating		Price	Mkt	FY1E=	EPS		PER (x)		PBR (x)	OPM		EV/EBITDA (x)		RoE	
Code	Company				Cap		FY1E	FY2E	FY1E	FY2E	FY1E	FY1E	FY2E	FY1E	FY2E	FY1E	FY2E
Integrated chemicals					(\$ bn)												
3407.T	Asahi Kasei	1	JPY	469.00	8.5	3/12	50.1	53.6	9.4	8.7	0.9	7.1%	7.2%	2.5	2.2	10.2%	10.1%
4004.T	Showa Denko	1	JPY	159.00	3.1	12/11	14.0	18.4	11.3	8.7	0.9	5.4%	6.5%	5.0	4.5	8.4%	10.2%
4005.T	Sumitomo Chemical	1	JPY	294.00	6.2	3/12	0.6	37.0	nm	7.9	1.0	3.7%	4.1%	5.5	5.0	0.2%	11.5%
4042.T	Tosoh	2	JPY	212.00	1.6	3/12	19.2	34.3	11.0	6.2	0.7	4.9%	6.0%	4.9	4.4	6.8%	11.2%
4183.T	Mitsui Chemicals	2	JPY	239.00	3.1	3/12	24.0	27.9	10.0	8.6	0.6	3.1%	3.3%	4.2	4.0	6.1%	6.8%
4188.T	Mitsubishi Chemical	1	JPY	436.00	8.3	3/12	48.8	50.9	8.9	8.6	0.8	5.9%	6.1%	4.4	4.2	9.1%	8.9%
4208.T	Ube	1	JPY	213.00	2.8	3/12	23.4	24.4	9.1	8.7	1.0	7.4%	7.4%	4.6	4.3	12.0%	11.4%
Electronic materials																	
3436.T	SUMCO	2	JPY	564.00	1.9	1/12	-34.9	60.1	nm	9.4	0.8	0.4%	9.4%	4.5	3.1	-4.7%	7.9%
4063.T	Shin-Etsu	1	JPY	3,790.00	20.8	3/12	244.9	303.8	15.5	12.5	1.1	14.8%	16.4%	4.3	3.6	7.1%	8.4%
4185.T	JSR	1	JPY	1,441.00	4.5	3/12	111.9	134.7	12.9	10.7	1.2	10.7%	11.8%	3.6	3.1	9.9%	11.0%
4186.T	Tokyo Ohka Kogyo	2	JPY	1,559.00	0.9	3/12	97.8	111.1	15.9	14.0	0.6	8.4%	10.3%	0.1	nm	3.7%	4.1%
4203.T	Sumitomo Bakelite	1	JPY	432.00	1.3	3/12	14.5	41.5	29.7	10.4	0.9	3.4%	7.6%	4.4	2.8	2.9%	8.1%
4205.T	Zeon	2	JPY	662.00	2.0	3/12	90.9	82.2	7.3	8.1	1.1	13.4%	12.3%	3.0	2.9	16.9%	13.4%
4217.T	Hitachi Chemical	1	JPY	1,365.00	3.7	3/12	72.0	129.6	19.0	10.5	1.0	6.0%	8.2%	3.3	2.5	5.4%	9.3%
6988.T	Nitto Denko	1	JPY	2,846.00	6.1	3/12	243.2	304.0	11.7	9.4	1.1	10.1%	11.6%	2.7	2.2	9.3%	11.0%
Derivatives and specialty chemicals																	
3405.T	Kuraray	1	JPY	1,106.00	5.0	3/12	99.4	107.4	11.1	10.3	1.1	15.4%	15.3%	2.7	2.6	9.7%	9.9%
4061.T	DKK	1	JPY	284.00	1.8	3/12	26.1	32.2	10.9	8.8	0.8	6.1%	6.4%	4.2	4.0	7.6%	8.9%
4114.T	Nippon Shokubai	2	JPY	856.00	2.2	3/12	107.4	91.1	8.0	9.4	0.8	9.6%	7.9%	2.9	3.2	10.9%	8.6%
4118.T	Kaneka	2	JPY	413.00	1.8	3/12	21.5	35.4	19.2	11.7	0.6	3.5%	4.6%	2.0	1.7	2.9%	4.7%
4182.T	MGC	2	JPY	425.00	2.5	3/12	45.3	42.9	9.4	9.9	0.7	2.2%	1.9%	3.8	3.8	7.2%	6.4%
4202.T	Daicel	1	JPY	462.00	2.1	3/12	36.0	42.4	12.8	10.9	0.7	6.3%	7.9%	3.2	2.7	5.9%	6.7%
4631.T	DIC	2	JPY	141.00	1.7	3/12	18.5	20.6	7.6	6.8	1.2	4.9%	5.2%	4.8	4.6	15.5%	15.9%
Synthetic fibers																	
3401.T	Teijin	3	JPY	239.00	3.0	3/12	22.8	14.3	10.5	16.7	0.8	5.1%	4.0%	3.2	3.5	7.6%	4.6%
3402.T	Toray	1	JPY	552.00	11.6	3/12	44.6	47.1	12.4	11.7	1.4	7.2%	7.3%	5.4	5.1	11.7%	11.3%
Overseas chemical majors																	
DOW.N	Dow Chemical	1	USD	30.14	35.6	12/11	2.6	2.7	11.7	11.1	1.1	9.1%	9.2%	6.4	6.1	12.5%	12.0%
DD.N	DuPont	2	USD	46.70	43.1	12/11	3.9	4.2	11.8	11.0	3.8	15.7%	15.1%	6.7	6.8	35.9%	31.6%
BASFn.DE	BASF	1	EUR	56.75	66.6	12/11	6.4	5.8	8.8	9.7	2.1	10.9%	10.0%	6.3	6.1	24.6%	17.4%
WCHG.DE	Wacker Chemie	3	EUR	68.46	4.6	12/11	9.0	3.7	7.6	18.4	1.3	13.5%	6.6%	4.3	6.2	16.8%	7.3%
051910.KS	LG Chem	1	KRW	331,500.00	19.0	12/11	33,862.3	38,912.5	9.8	8.5	2.3	13.2%	14.0%	6.0	5.2	25.8%	23.8%
001300.KS	Cheil Ind	1	KRW	106,000.00	4.8	12/11	4,944.6	6,137.3	21.4	17.3	1.7	5.3%	6.0%	8.1	6.4	8.5%	9.5%
011170.KS	Honam Petrochem	2H	KRW	319,500.00	8.8	12/11	35,364.8	39,668.8	9.0	8.1	1.8	10.5%	10.7%	4.3	4.2	22.4%	20.4%
1301.TW	Formosa Plastics	2	TWD	80.20	16.2	12/11	7.1	8.0	11.3	10.0	1.9	13.6%	14.5%	9.2	8.9	16.7%	18.4%
6505.TW	Formosa Petro	3	TWD	90.10	28.4	12/11	3.6	5.0	24.7	18.0	3.5	4.3%	6.7%	14.9	12.2	14.3%	19.0%

Note: Share prices as of 1/5 close.

Source: Citi Investment Research and Analysis.

Appendix A-1

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