



19 July, 2019

## Tsaker Chemical (1986.HK)

# Long history, well-organized operation, a big boost towards industrial leadership worldwide

*Tsaker Chemical is a world leading manufacturer of fine chemicals with a leading market share of its core products worldwide. The operation of the company dates back to 1997 and currently the company has 1,500 employees. Headquartered in Beijing, the scope of business of the company covers four segments including dye and agricultural chemical intermediates, pigment intermediates, battery materials and environmental protection consultancy services with production bases located in Cangzhou, Hebei Province and Dongying, Shandong Province.*

## Key Highlights

**The increasing prices of DSD acid drive revenue growth of the company.** The DSD acid is the main product of the dye intermediate segment of the company and mainly applied to optical brightening agents (OBAs) for papermaking or laundry detergent industries. Frost & Sullivan forecasts that the global consumption of DSD acid will grow 3.3% YoY and is estimated to reach 66,000 tonnes by 2020. As a world leading manufacturer of DSD acid, the company currently boasts an annual capacity of 35,000 tonnes with additional 20,000 tonnes under construction and a global market share of 53%. In April 2018, Lianyungang Lion Chemical, the world's second largest manufacturer of DSD acid, was shut down due to environmental issues, and followed by the explosion accident in Xiangshui in March 2019, the chances of its resumption of operation is undermined. Consequently, the prices of DSD acid will continue soaring. We expect that for the year 2019 and 2020, the average selling prices of DSD acid will stand at RMB100,000/tonne and RMB90,000/tonne, respectively; revenues of dye intermediate segment will be RMB2.163 billion and RMB2.708 billion, respectively, with gross margins at 80.4% and 79.0%, respectively.

**The pigment intermediate segment witnesses steady growth.** DMSS, DMAS and DATA are main products of the pigment intermediate segment of the company and mainly applied to the production of automotive coatings, premium construction coatings and artificial food colouring, etc. According to the estimates of Frost & Sullivan, by 2020, the CARG of the global consumption of DMSS and DMAS will stand at 11.9% and 3.9%, respectively. Currently, the company has an annual capacity of 4,500 tonnes for DMSS, 4,500 for DMAS and 2,000 for DATA, which makes it the world's largest producer of DMSS and second largest producer of DMAS. Along with the steady growth of pigment intermediate market, we expect the company will witness steady growth in revenues of this segment while its gross margin will see continued increase with rising sales volume of DATA with high gross margin.

**The battery material segment will become a new growing point in the long run.** Strong government incentives drive the rapid development of the green vehicle industry in China and become a big boost towards growing demand for battery materials. The company has constructed a production line in Cangzhou, Hebei Province for ferrous phosphate – a precursor of lithium battery positive electrode materials with a capacity of 15,000 tonnes equipped with state-of-the-art processes and completed its pilot production. The company also has a production line for CNT as a conductive paste with a capacity of 2,000 tonnes. In addition, it also collaborates with Tsinghua University in the R&D of ternary precursor products. We expect this segment will see promising growth potential.

**Initiate coverage of Tsaker Chemical with a Buy rating and price target at HK\$5.20.** We believe the industry is smoothly run with no additional capacity and hence the prices of DSD acid will continue to increase and the financial

## Dynamic Analysis of the Company

Stock Research Report

Fine Chemical

**Investment Rating: Buy**

**Price Target: HK\$5.20**

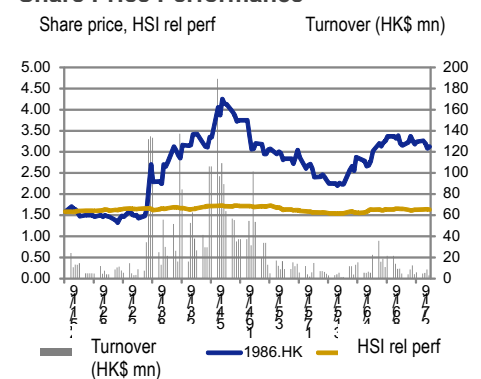
Current Price (2019-7-18): HK\$3.12

Total Market Cap (HK\$ mn)	3,243.17
H-Share Market Cap (HK\$ mn)	3,243.17
Total Equity (mn shs)	1,039.48
H-Share Equity (mn shs)	1,039.48
52-Week High/Low (HK\$)	0.81/6.5
ADT (HK\$ mn)	13.91

### Ownership Structure

Ge Yi (Chairman)	53.8%
Winshare Hongtai	6.3%
Success Asia Global Limited	2.5%
Others	37.4%

### Share Price Performance



%	1 Month	3 Months	12 Months
Rel. Return	13.79	-11.79	-45.11
Abs. Return	17.29	-16.80	-43.88

Source: Bloomberg, HKEx, Company

**Yu Wang**

**Energy Sector Analyst**

+86-21-35082192

wangyu2@essence.com.cn



## 安信國際

performance of the company will be substantially improved in the short term. Meanwhile, the company keeps its payout ratio at 30% and for 2019, its dividend yield ratio will rise to 12.5%, very attractive. In addition, The battery material segment will become a new growing point for the company in the long run. We initiate coverage of the company with a Buy rating and price target at HK\$5.20, 67% to go compared with current price. The P/E ratios corresponding to our price targets for 2019E and 2020E will be 4.0x and 3.3x, respectively.

**Risk factors:** the prices of DSD acid may plunge; the production may be restricted due to environmental concerns; and the development of the battery material segment may be below expectation.

(YE 31 Dec; RMB mn)	2017A	2018A	2019E	2020E	2021E
<b>Revenue</b>	<b>1,247</b>	<b>1,516</b>	<b>2,875</b>	<b>3,528</b>	<b>3,773</b>
Growth (%)	19.8	21.5	89.7	22.7	6.9
Net profit	136	223	1,192	1,469	1,517
Growth (%)	12.6	63.7	435.0	23.2	3.3
Gross margin (%)	29.1	34.6	66.8	66.7	64.6
Net margin (%)	10.9	14.7	41.5	41.6	40.2
<b>EPS</b>	<b>0.14</b>	<b>0.23</b>	<b>1.14</b>	<b>1.41</b>	<b>1.45</b>
BPS	1.11	1.26	2.34	3.41	4.44
PER	19.88	11.92	2.40	1.95	1.89
PB	2.47	2.17	1.17	0.81	0.62
ROE (%)	13.5	19.5	63.4	49.0	37.1
Dividend yield ratio	1.4	1.5	2.3	12.5	15.4

Source: Bloomberg, Essence Int'l estimates

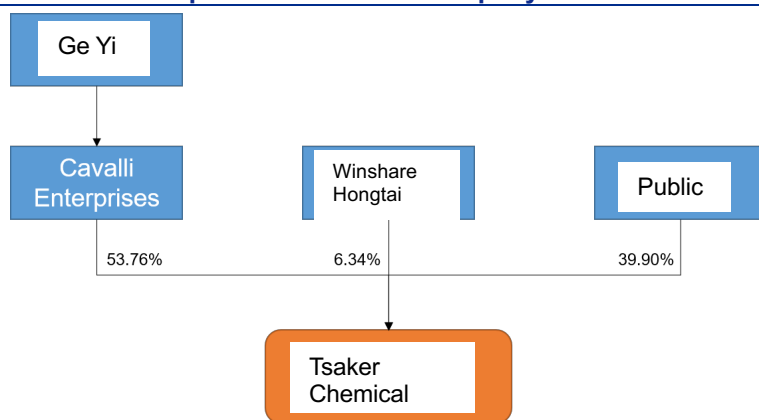
## Tsaker Chemical: a leading niche player

Tsaker Chemical is a world leading manufacturer of fine chemicals with a leading market share of its core products worldwide. The operation of the company dates back to 1997 and currently it has 1,500 employees. Headquartered in Beijing, the scope of business of the company covers four segments: dye and agricultural chemical intermediates, pigment intermediates, battery materials and environmental protection consultancy services with production bases located in Cangzhou, Hebei Province and Dongying, Shandong Province. Currently, the company has the world's largest production bases for DSD acid and DMSS, second largest for DMAS and third largest for mononitrotoluenes.

### History of the Company

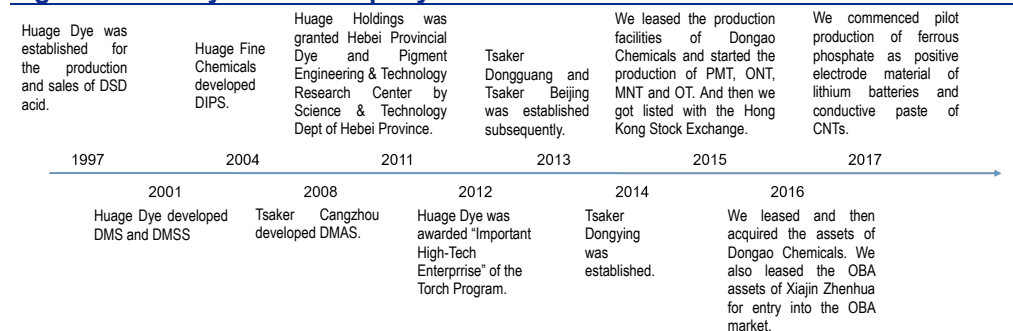
The operation of the Company can be traced back to the establishment of Huage Dye in 1997 which was principally engaged in the production and sale of DSD acid. In 2001, Huage Fine Chemicals developed DMS and DMSS and started its business in pigment intermediates. In 2004 and 2008, it developed DIPS and DMAS. In 2015, the company leased the production facilities of Donggao Chemicals and embarked on its production of PNT, ONT, MNT and OT. It got listed with HKEX on the exact same year. In 2016, the company acquired the production facilities for mononitrotoluenes and relevant products from Donggao Chemicals and then leased the OBA assets of Xiajin Zhenhua to expand downstream into the DSD acid industry. In 2017, the company constructed a production line for ferrous phosphate with a capacity of 15,000 tonnes and became a player in the market of precursors for positive electrode materials of batteries. Up till now, Mr. Ge Yi, son of the founder – Mr. Ge Jianhua, holds the largest equity stake in the company of 53.8%.

Figure 1: Ownership Structure of the Company



Source: Company materials, Essence Int'l

Figure 2: History of the Company

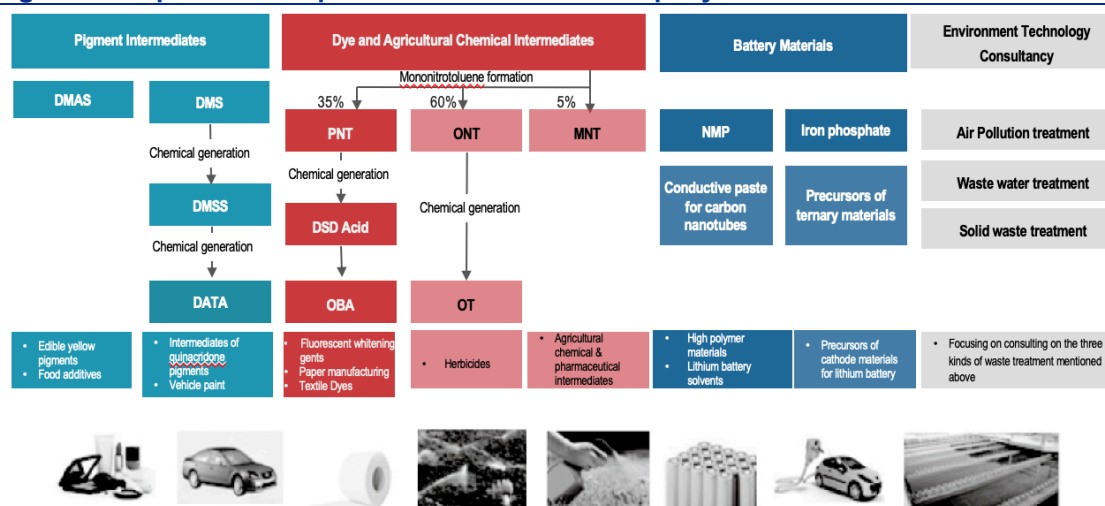


Source: Company materials, Essence Int'l

## Scope of Business of the Company

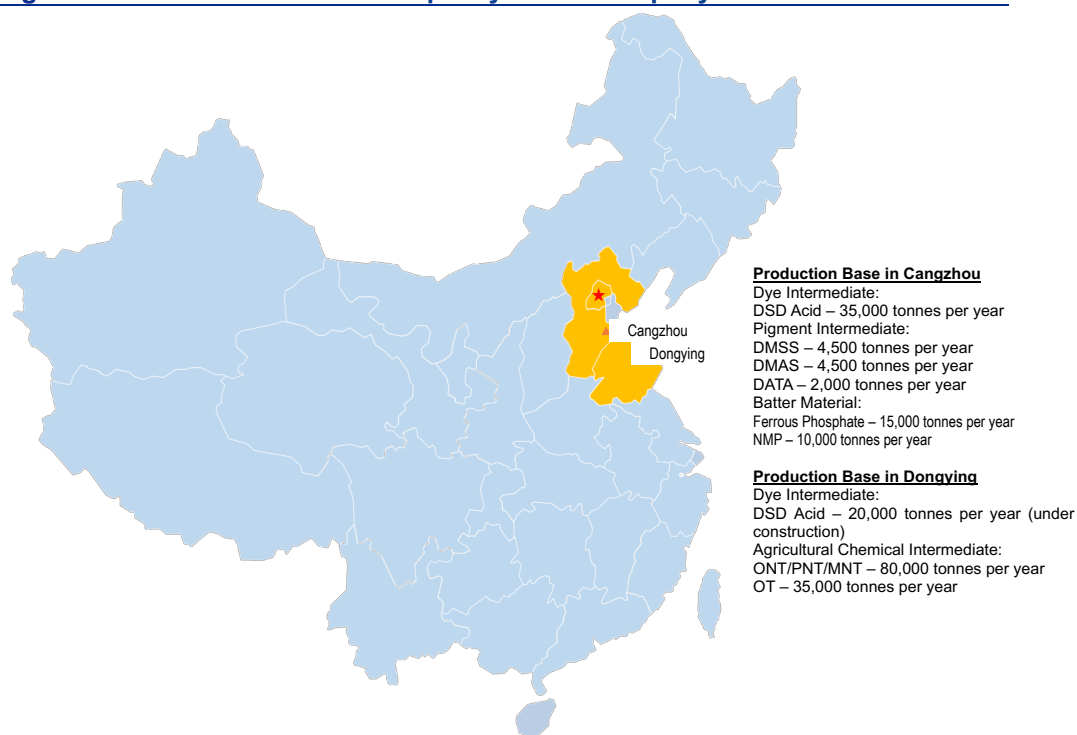
The scope of business of the company covers four segments: dye and agricultural chemical intermediates, pigment intermediates, battery materials and environmental protection consultancy services with primary products such as DSD acid, DMSS, DMAS, DATA and ONT/OT, etc. The company is now the world's largest producer for DSD acid and DMSS, second largest for DMAS and third largest for mononitrotoluenes.

Figure 2: Snapshot of Scope of Business of the Company



Source: Company materials, Essence Int'l

Figure 3: Production Base and Capacity of the Company



Source: Company materials, Essence Int'l

**Table 1: Primary products, production bases and capacity of Tsaker Chemical**

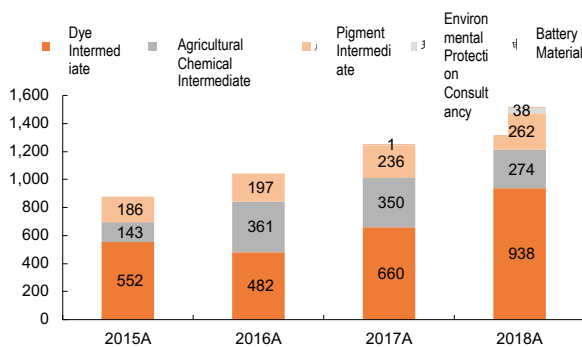
Line of Business	Product	Production Base	Capacity (in tonnes)
Dye Intermediate	DSD Acid	Cangzhou, Hebei	35,000
		Dongying, Shandong	20,000 (under construction)
Agricultural Chemical Intermediate	ONT/PNT/MNT	Dongying, Shandong	80,000
	OT	Dongying, Shandong	35,000
Pigment Intermediate	DMSS	Cangzhou, Hebei	4,500
	DMAS	Cangzhou, Hebei	4,500
	DATA	Cangzhou, Hebei	2,000
Battery Material	Ferrous Phosphate	Cangzhou, Hebei	15,000
	NMP	Cangzhou, Hebei	10,000

Source: Company materials, Essence Int'l

Since it went public in 2015, both revenues and profits of the company have continued on a rising trend. Between 2015 and 2018, the CARG for revenues and net profits was 20% and 32% a year, respectively.

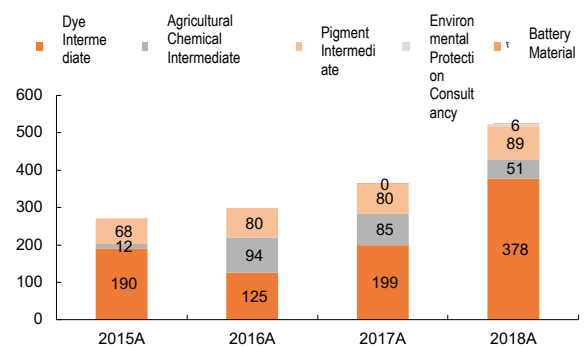
From the revenue structure we can see that dye intermediates become a major source of revenues and profits for the company, accounting for 62% of revenues and 72% of gross profit for FY 2018. Another large source of revenue is pigment intermediates, accounting for 17% of revenues and 17% of gross profit for FY 2018. Environmental protection consultancy services and battery materials are small-scale new business at present and account for 3% and 0% of revenues, and 1% and 0% of gross profit for FY 2018, respectively.

**Figure 4: Revenue Breakdown of Tsaker Chemical for Recent Years (RMB mn)**



Source: Company materials, Essence Int'l

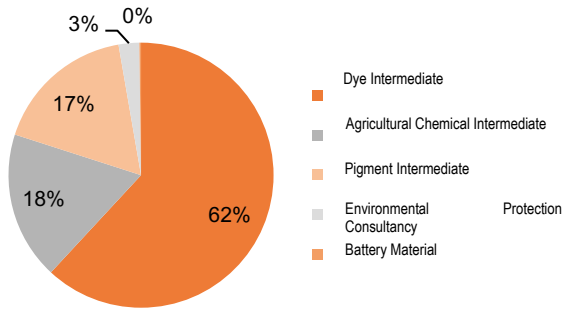
**Figure 5: Gross Profit Breakdown of Tsaker Chemical for Recent Years (RMB mn)**



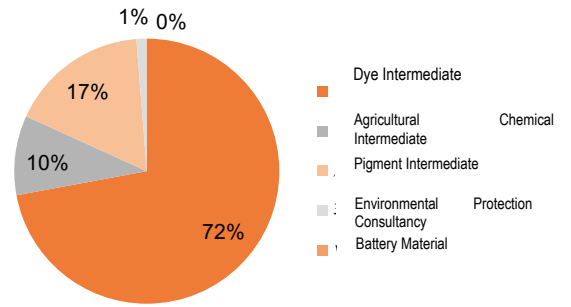
Source: Company materials, Essence Int'l

**Figure 6: Different Segments' Share within Tsaker Chemical's Revenues for FY2018**

**Figure 7: Different Segments' Share within Tsaker Chemical's Gross Profit for FY2018**



Source: Company materials, Essence Int'l



Source: Company materials, Essence Int'l

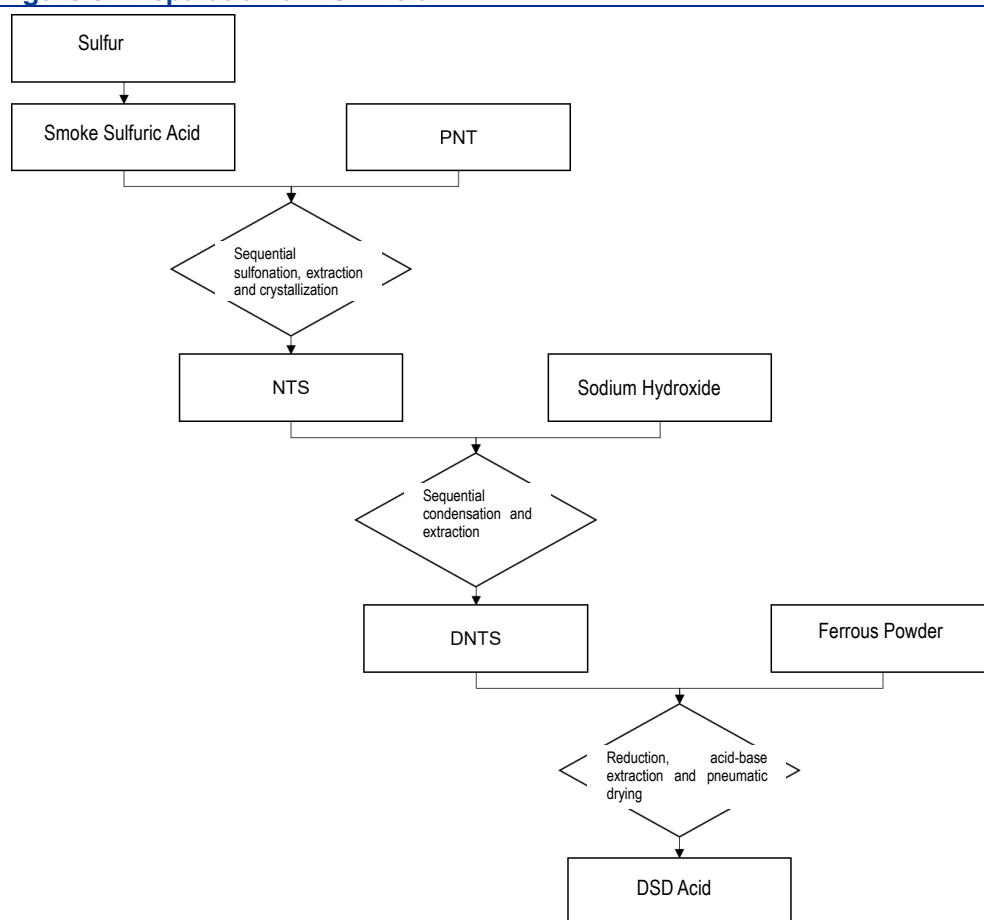
## DSD Acid: Global leader in the industry

The DSD acid is the main product of the dye intermediate segment of the company and mainly applied to optical brightening agents (OBAs) for papermaking or laundry detergent industries. Frost & Sullivan forecasts that the global consumption of DSD acid will grow 3.3% YoY and is estimated to reach 66,000 tonnes by 2020. As a world leading manufacturer of DSD acid, the company currently boasts an annual capacity of 35,000 tonnes with additional 20,000 tonnes under construction. In 2016, the company's global market share was 53%, largest in the world. In April 2018, Lianyungang Lion Chemical, the world's second largest manufacturer of DSD acid, was shut down due to environmental issues, and followed by the explosion accident in Xiangshui in March 2019, its chances of rectification is undermined. Consequently, the prices of DSD acid will continue soaring.

### Competition in the DSD acid market on the right track

The chemical name of DSD acid is 4,4'- Diaminostilbene-2,2'- disulfonic acid; DSD acid, pale yellow paste or powder, is prepared via sulfonation, condensation and reduction with PNT, smoke sulfuric acid and sodium hydroxide as raw materials, and mainly used in the synthesis of Optical Brightening Agents (OBAs) with no effective alternatives by far. OBAs are mainly applied to papermaking and laundry detergent industries as an important additive. In 2016, the global consumption of DSD acid reached 57,700 tonnes and according to the forecasts by Frost & Sullivan, the consumption will grow 3.3% YoY and is estimated to reach 65,800 tonnes by 2020.

Figure 8: Preparation of DSD Acid

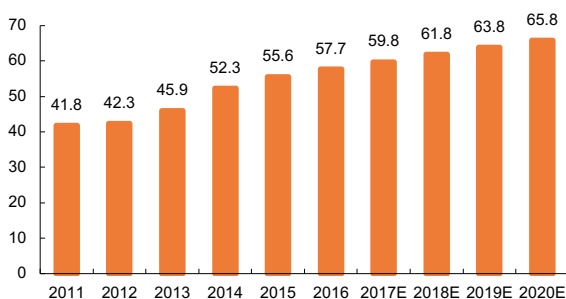


Source: Company materials, Essence Int'l

The competition in the DSD acid market is on the right track. As the world's largest producer of DSD acid, Tsaker Chemical accounts for 53% of global market share in terms of its capacity in 2016. Its second rival is Lion Chemical that accounts for 13% of global market share; followed by Deepak from India that accounts for 12.5% of global market share. The top three players account for approximately 80% of global market share and dominate the market as an oligopoly.

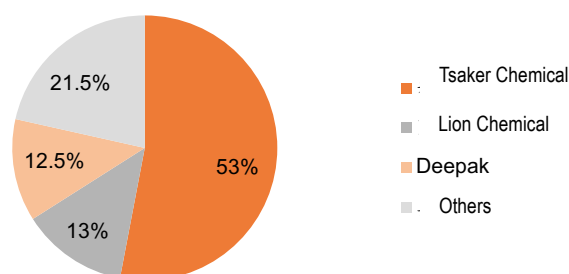
On the other hand, DSD acid is prepared by reduction with ferrous powder that inevitably generates iron mud which is highly polluting hazardous solid waste and hard to be treated. According to *Directory Catalogue on Readjustment of Industrial Structure (Version 2019)*, the process of reduction with ferrous powder shall be phased out. Though there is a grace period for its application to DSD acid preparation, this still indicates that there will be no additional capacity allowed before new reduction technologies are commercialized and the oligopoly will continue in the long term.

**Figure 9: Outlook for Global Consumption of DSD Acid (in thousand tonnes)**



Source: Frost & Sullivan, Company materials, Essence Int'l

**Figure 10: Global Market Share of DSD Acid (2016')**



Source: Frost & Sullivan, Company materials, Essence Int'l

### The shutdown of Lion Chemical leading to a significant increase in selling prices of DSD acid

Located in Lingang Chemical Industrial Park in Yanwei Port Town, Lianyungang, Lion Chemical is the world's second largest manufacturer of DSD acid with an annual capacity of approximately 7,000 tonnes. On April 18, 2018, a programme titled "when shall illegal pollution discharge be stopped" in *30 minutes in Business News* was broadcast on CCTV Economic Channel, covering the environmental pollution issues of Guanhekou Chemical Industrial Park. The second day, the local government of Guanyun County commenced rectifying Lingang Chemical Industrial Park and Lion Chemical was shut down. Following that, owing to the huge gap between market demand and supply, the prices of DSD acid started to soar, from the previous RMB15,000/tonne to around RMB34,000/tonne at the end of 2018.

On March 21, 2019, a deadly explosion occurred at the Tianjiayi chemical plant in Chenjiagang Chemical Park, Xiangshui County, Yancheng City, Jiangsu Province. The chemical park was then shut down. Chenjiagang Chemical Park is just 10km straight-line distance from Lingang Chemical Industrial Park. Impacted by this blast, the resumption of operation of Lion Chemical is pending. Consequently, the selling prices of DSD acid continued on a rising trend to RMB135,000/tonne (tax included) in June 2019.

**Figure 11: Location of Lion Chemical and Tianjiayi Chemical**





Source: Company materials, Essence Int'l

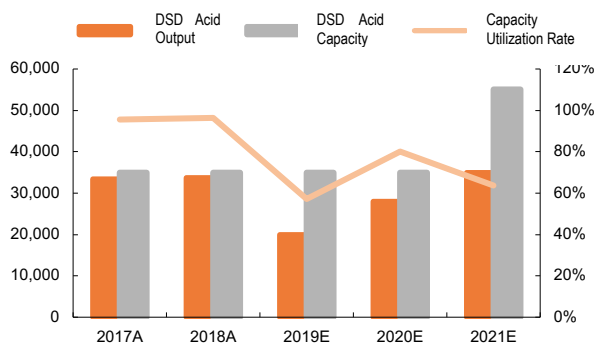
## Competitive edges and soaring DSD prices favoring Tsaker Chemical

As the world's largest manufacturer of DSD acid, the company boasts main clients including Archroma, Xinguang Chemical, BASF and Transfar, etc. The company boasts state-of-the-art production processes in the industry. Its sequential feeding techniques for sulfonation and condensation as well as conversion efficiency of reactions and raw material consumption control are also leading in the industry. The company also develops new reduction techniques to be applied to the production facilities under construction located in Dongying with an annual capacity of 20,000 tonnes. We expect this will be the only compliant capacity in the coming 2 to 3 years and this will enable the company to make up for the reduction in supply following the shutdown of Lion Chemical and further strengthen its leadership position in the industry.

In addition, the company also rolled its expansion strategy out upstream and downstream. In 2015 and 2016, the company entered the upstream market of mononitrotoluenes through leasing and acquiring the assets of Donggao Chemicals and started in-house production of PNT, a major raw material for DSD acid. Currently, the company has an annual capacity of 80,000 tonnes for mononitrotoluenes that can meet the majority demand of PNT internally, and the rest of ONT/OT is sold as agricultural chemical intermediates. In 2016, the company leased the assets of Xiajin Zhenhua and expanded downstream into the OBA industry. We believe expanding downstream and upstream into the industry chain of DSD acid will enable the company to be more competitive in the long run.

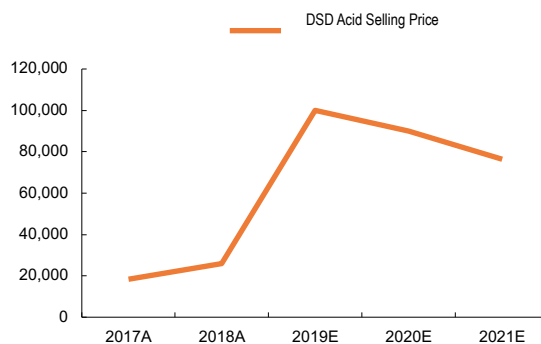
In 2018, the sales of DSD acid of the company reached 33,700 tonnes, a slight increase from the prior year, attributing to a YoY increase of 41% in its selling prices; revenues of dye intermediates were RMB938 million, a YoY increase of 42.2%, and gross profit was RMB378 million with gross margin increased by 10 pct. In 2019, the selling prices of DSD acid continued on a rising trend to RMB135,000/tonne (tax included) in June 2019. We project that over 2019-2020, the average selling prices (tax excluded) of DSD acid will reach RMB100,000/tonne and RMB90,000/tonne, respectively, and revenues of dye intermediate segment will reach RMB2.163 billion and 2.708 billion, respectively, with gross margin at 80.4% and 79.0%, respectively.

**Figure 12: Sales Forecast of Tsaker Chemical's DSD Acid (in tonnes)**



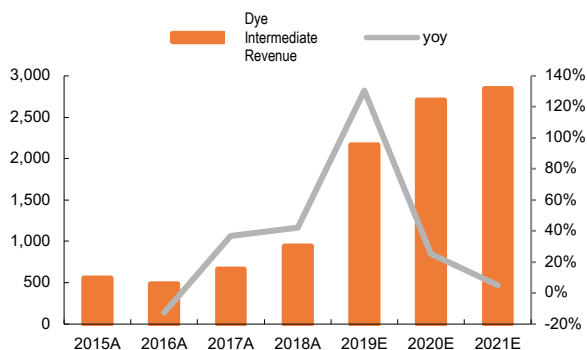
Source: Company materials, Essence Int'l

**Figure 13: Selling Price Forecast of Tsaker Chemical's DSD Acid (RMB/tonne)**



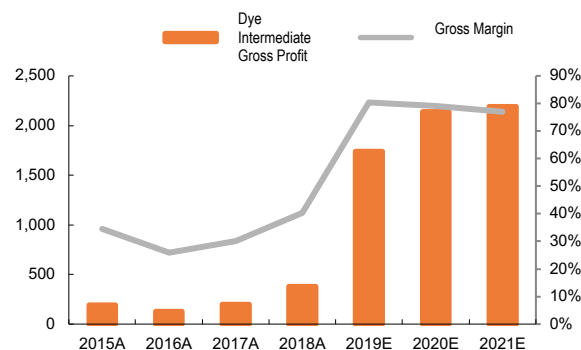
Source: Company materials, Essence Int'l

**Figure 14: Revenue Forecast of Tsaker Chemical's Dye Intermediate Segment (RMB mn)**



Source: Company materials, Essence Int'l

**Figure 15: Gross Profit Forecast of Tsaker Chemical's Dye Intermediate Segment (RMB mn)**



Source: Company materials, Essence Int'l

## Pigment intermediate: steady growth

The major products of the company's pigment intermediate segment comprise DMSS, DMAS and DATA that are used in the manufacture of automotive coatings, premium construction coatings and artificial food colouring, etc. According to the estimates of Frost & Sullivan, by 2020, the CARG of the global consumption of DMSS and DMAS will stand at 11.9% and 3.9%, respectively. Currently, the company has an annual capacity of 4,500 tonnes for DMSS, 4,500 for DMAS and 2,000 for DATA, which makes it the world's largest producer of DMSS and second largest producer of DMAS.

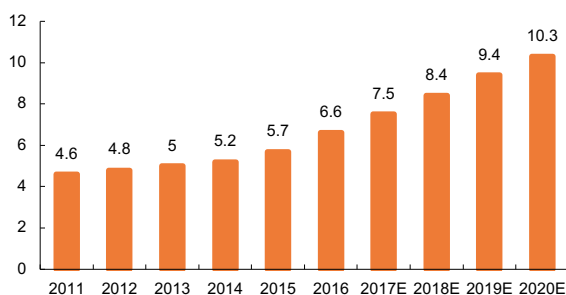
### Growing DMSS and DMAS market

The chemical name of DMSS is 1,4- cyclohexanedicarboxylic acid, 2,5-dioxo-, dimethyl ester; DMSS, white or pale yellow powder, is prepared via esterification, hydrogenation and condensation with methanol, DMS and sodium hydroxide as raw materials. DMSS is mainly used as intermediates for premium organic pigments such as quinacridone pigments that are applied to the production of automotive coatings and premium construction coatings. DMSS can further condense and oxidate with toluidine, aniline and sodium hydroxide to generate DATA, whose chemical name is 2,5-bis(phenylamino)-1,4-benzenedicarboxylic acid and is used as intermediates of quinacridone pigments.

The chemical name of DMAS is dimethyl acetyl succinate; DMAS, colorless transparent liquid or crystalline, is prepared via acylation and distillation with formaldehyde and DMM as raw materials and mainly used for the production of lemon yellow, a type of artificial food colouring. Thanks to the steadily growing demand from food, drug and cosmetics market, the demand for DMAS is expected to witness steady growth.

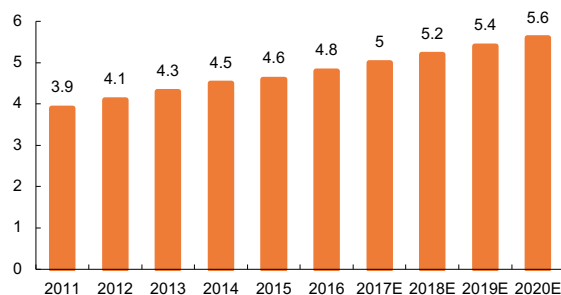
According to Frost & Sullivan, the global consumption of DMSS stood at 6,600 tonnes in 2016; by 2020, the global consumption of DMSS is expected to stand at 10,300 tonnes with CARG at 11.9% a year; the global consumption of DMAS stood at 4,800 tonnes in 2016; by 2020, the global consumption of DMSS is expected to reach 5,600 tonnes with CARG at 3.9% a year.

**Figure 16: Forecast of DMSS Global Consumption (in thousand tonnes)**



Source: Frost & Sullivan, Company materials, Essence Int'l

**Figure 17: Forecast of DMAS Global Consumption (in thousand tonnes)**



Source: Frost & Sullivan, Company materials, Essence Int'l

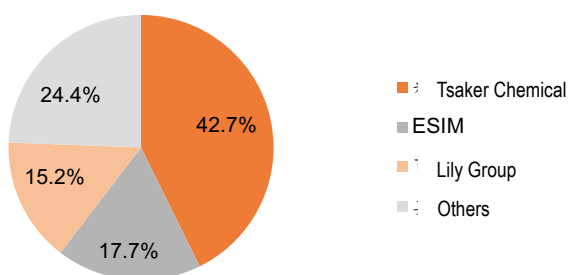
### Leading market share and steadily growing pigment intermediate segment

Currently, the company has an annual capacity of 4,500 tonnes for DMSS and also 4,500 for DMAS. In terms of its output in 2016, for DMSS, the company is the world's largest producer and accounted for 42.7% of the global market share, followed by ESIM and Lily Group whose market share is 17.7% and 15.2%, respectively; for DMAS, the company is the world's second largest producer and accounted for 19.8% of the global market share while ESIM topped the world with 55.1% market share.

Both revenues and gross profits of the company's pigment intermediate segment have continued on a rising trend since it went public. In 2018, revenues of the company's pigment intermediate segment were RMB262 million, a YoY increase of 11.1%, and gross profit was RMB89 million with gross margin increased by 0.2 pct. In 2018, the sales of the company's DMSS were 1,642 tonnes, a YoY decline of 0.2%; those of DMAS were 2,165 tonnes, a YoY increase of 0.5%; those of DATA were 1,720 tonnes, a YoY increase of 6.6%; and the average selling prices of DMSS were RMB36,000/tonne, a YoY increase of 1.7%; those of DMAS were RMB15,000/tonne, a YoY increase of 0.3%; those of DATA were RMB69,000/tonne, a YoY increase of 8.8%.

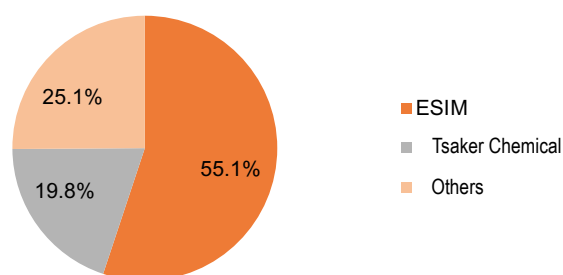
As the pigment intermediate market grows steadily, we expect the company's revenues of this segment will see steady growth. Meanwhile, as the share of DATA sales is increasing, the gross margin of this segment will see continuous increase since DATA's unit price and gross margin are both high.

Figure 18: Global Market Share of DMSS (2016')



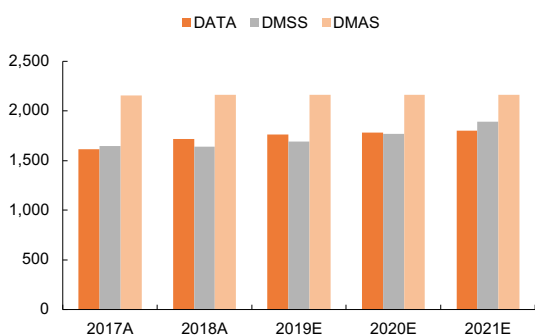
Source: Frost & Sullivan, Company materials, Essence Int'l

Figure 19: Global Market Share of DMAS (2016')



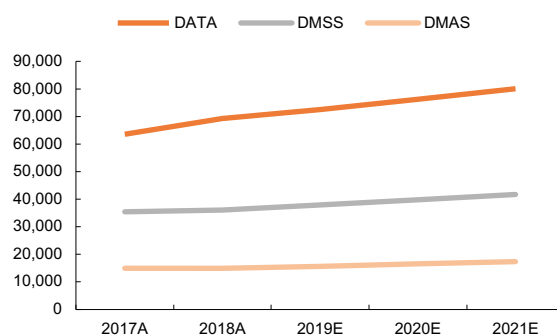
Source: Frost & Sullivan, Company materials, Essence Int'l

Figure 20: Sales Forecast of Tsaker Chemical's Pigment Intermediate (in tonnes)



Source: Frost & Sullivan, Company materials, Essence Int'l

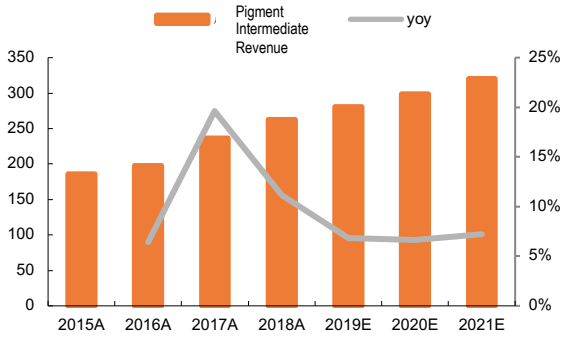
Figure 21: Selling Price Forecast of Tsaker Chemical's Pigment Intermediate (RMB/tonne)



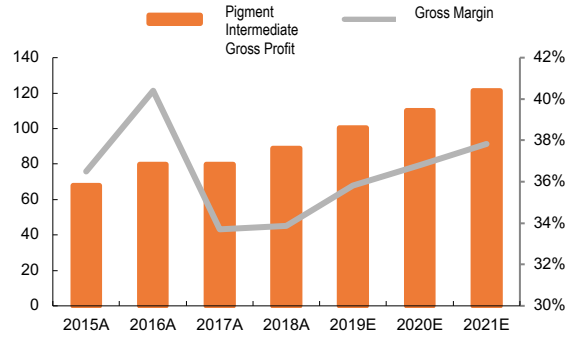
Source: Frost & Sullivan, Company materials, Essence Int'l

Figure 22: Revenue Forecast of Tsaker Chemical's Pigment Intermediate Segment (RMB mn)

Figure 23: Gross Profit Forecast of Tsaker Chemical's Pigment Intermediate Segment (RMB mn)



Source: Company materials, Essence Int'l



Source: Company materials, Essence Int'l

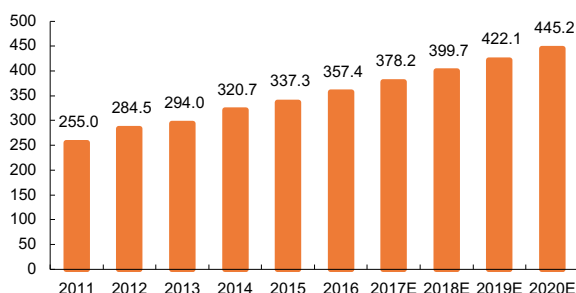
## Agricultural chemical intermediate: recovery from bottom

Mononitrotoluenes and relevant products are the major products of agricultural chemical intermediate segment of the company. According to different isomers formed, mononitrotoluenes can be classified into o-nitrotoluene (ONT), p-nitrotoluene (PNT) and m-nitrotoluene (MNT) which gives 60%:35%:5% in the nitration of toluene. PNT is mainly used for in-house production of DSD acid and p-Toluidine (PT); ONT for direct sale or production of o-Toluidine (OT); ONT and OT for production of pesticides (such as herbicides) and drug intermediates.

In 2016, the global output of mononitrotoluenes reached 357,400 tonnes and according to the forecasts by Frost & Sullivan, the output will grow 5.7% YoY and is estimated to reach 455,200 tonnes by 2020.

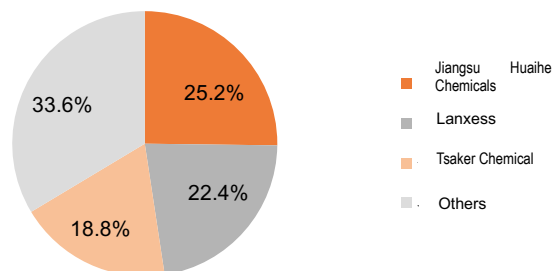
In 2015, the company embarked on the production of mononitrotoluenes by leasing the assets of Dongao Chemicals. In 2016, the company increased its capacity by acquiring those assets. Up till now, the company has an annual capacity of 80,000 for mononitrotoluenes. In terms of its output in 2016, the company is the world's third largest producer and accounted for 18.8% of global market share while Jiangsu Huaihe Chemicals topped the world with 25.2% market share, followed by Lanxess whose market share is 22.4%.

**Figure 24: Global Mononitrotoluene Output Forecast (in thousand tonnes)**



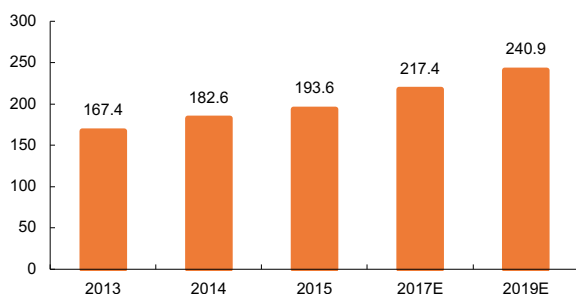
Source: Frost & Sullivan, Company materials, Essence Int'l

**Figure 25: Global Mononitrotoluene Market Share Forecast**



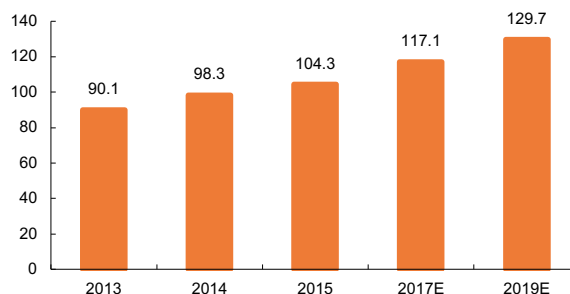
Source: Frost & Sullivan, Company materials, Essence Int'l

**Figure 26: Forecast of ONT Global Consumption (in thousand tonnes)**



Source: Ceresana, Frost & Sullivan, Company materials, Essence Int'l

**Figure 27: Forecast of OT Global Consumption (in thousand tonnes)**



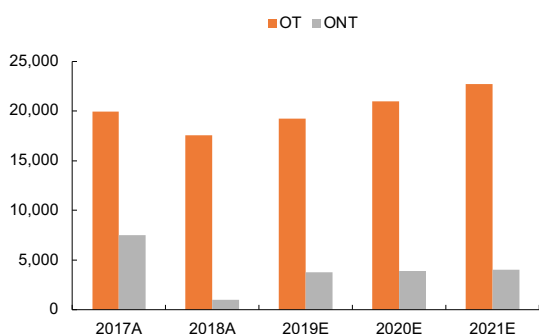
Source: Ceresana, Frost & Sullivan, Company materials, Essence Int'l

In 2018, sales of ONT of the company were 1,020 tonnes, a YoY decline of 86.4% while

those of OT were 17,569 tonnes, a YoY decline of 12.1%. This is mainly attributed to drastic demand slumps of ONT/OT, because authorities in China carried out more stringent environmental review and operation of downstream pesticide producers was restricted. As a result, in 2018, the revenues of agricultural chemical intermediate segment were RMB274 million, a YoY decrease of 21.7%, and gross profit was RMB51 million with gross margin decreased by 5.8%.

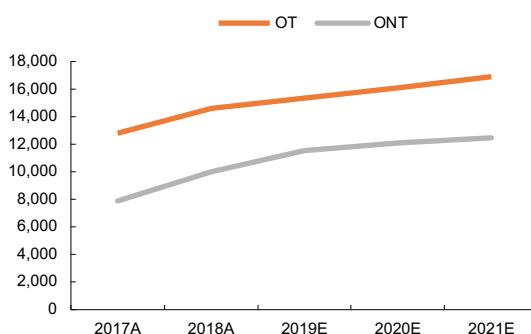
From 2019 on, the company has begun to sell ONT to Lanxess, one of its rivals, and the output and sales of ONT are expected to recover and along with reduced costs of operation, revenues and gross profit of agricultural chemical intermediate segment are expected to bounce back.

**Figure 28: Sales Forecast of Tsaker Chemical's Agricultural Chemical Intermediate (in tonnes)**



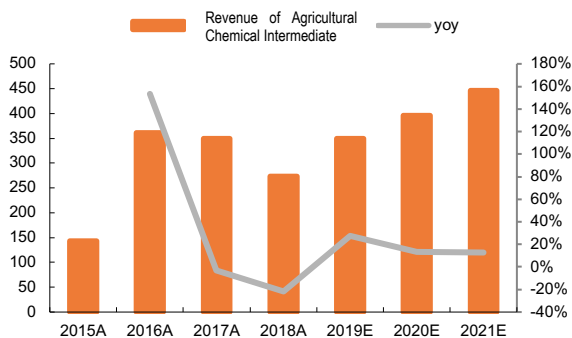
Source: Company materials, Essence Int'l

**Figure 29: Selling Price Forecast of Tsaker Chemical's Agricultural Chemical Intermediate (RMB/tonne)**



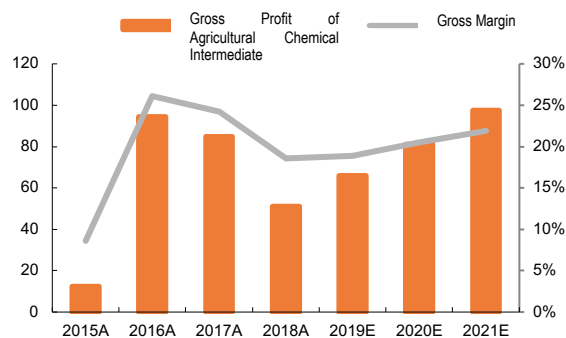
Source: Company materials, Essence Int'l

**Figure 30: Revenue Forecast of Tsaker Chemical's Agricultural Chemical Intermediate Segment (RMB mn)**



Source: Frost & Sullivan, Company materials, Essence Int'l

**Figure 31: Gross Profit Forecast of Tsaker Chemical's Agricultural Chemical Intermediate Segment (RMB mn)**

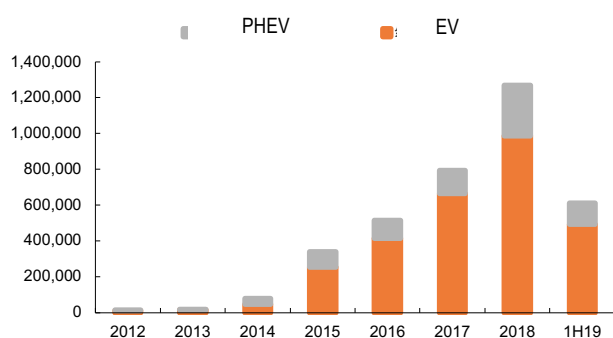


Source: Frost & Sullivan, Company materials, Essence Int'l

## Battery material: a promising new market

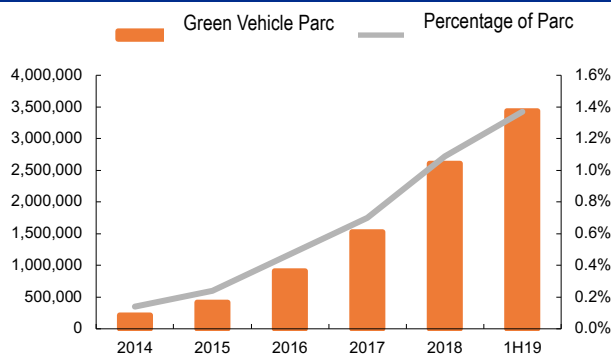
Strong government incentives drive the rapid development of the green vehicle industry in China. According to the China Association of Automobile Manufacturers statistics, in 2018, 1.27 million green vehicles were produced, a 60% YoY growth; 1H19, 614,000 green vehicles were produced, a 48.6% YoY growth, as a reflection of rapid growth. According to Ministry of Public Security data, by the end of June 2019, green vehicle parc in China has reached 3.44 million with its penetration rate at 1.37%. Boom in the green vehicle industry significantly boosts the demand for battery materials.

Figure 32: Green Vehicle Output in China (vehicles)



Source: Wind, Essence Int'l

Figure 33: Green Vehicle Parc in China (vehicles)



Source: Wind, Essence Int'l

In 2017, the company completed a production line in Cangzhou, Hebei Province for ferrous phosphate – precursor of lithium battery positive electrode material with a capacity of 15,000 tonnes and entered the battery material market. The company deployed four-step processes for pilot production at the beginning and upgraded it to one-step process this year featuring sequential production, zero emission and closed-loop water which is state-of-the-art in China. The major clients of the company's ferrous phosphate include BTR, PU Lead, Guoxuan High-Tech and CATL, etc. Until now, the company has completed its pilot production with all specifications and properties meeting the criteria and currently the company is conducting safety and stability tests with clients.

In 2018, the Chinese government altered its policies for green vehicle subsidies and imposed more on vehicles with long driving distance (see details in *Ministry of Finance Announcement [2018] No 18*), hence ternary materials with high energy density became more and more popular. The demand for lithium iron phosphate and ferrous phosphate in the market is seeing pressure and the prices of ferrous phosphate dropped from RMB20,000/tonne to RMB12,000/tonne in 2018. As green vehicle subsidies are being cut in recent years, we expect the industry to develop in a healthier way in the future and the demand for lithium iron phosphate powered vehicles is expected to recover and accordingly, the prices of ferrous phosphate will go up again.

Table 2: Changes in Subsidy Policies for Green Vehicles

Subsidy Policy	Range of EVs - R (ASM, in km)/subsidy (RMB ten thousand/vehicle)				
	100≤R<150	150≤R<200	200≤R<250	250≤R<300	300≤R<400
Ministry of Finance Announcement [2016] No 958	2		3.6		4.4
Ministry of Finance Announcement [2018] No 18	1.5	2.4	3.4	4.5	5
Ministry of Finance Announcement [2019] No 138	250≤R<400			R≥400	
	1.8			2.5	

Source: Ministry of Finance, Essence Int'l



In addition to ferrous phosphate, the company also makes every endeavour to develop other battery materials. The company further expanded its product portfolio by adding a production line for CNT as a conductive paste with a capacity of 2,000 tonnes at the end of 2017 to the previous NMP production line with a capacity of 10,000 tonnes. In addition, it has collaborated with Tsinghua University in the R&D of ternary precursor products since 2018. Lab-scale testings have been completed and pilot-scale testings will be implemented this year. We believe this will boost steady growth of the company's battery material segment in the future.

## Profit Forecast

We forecast that significant increase in DSD acid prices will dramatically boost revenues and gross profits of dye intermediate segment of the company for 2019E-2020E; revenues and gross profit of agricultural chemical intermediate segment are expected to bounce back; those of pigment intermediate segment will continue on a rising trend.

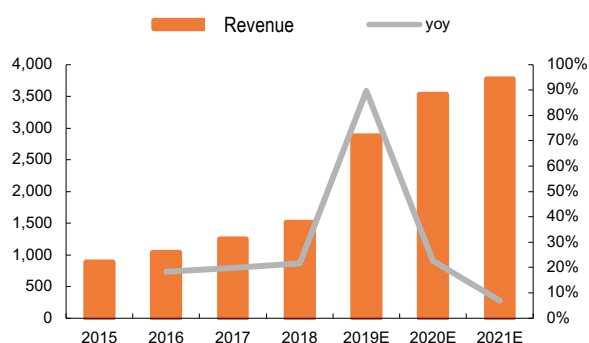
**Table 3: Hypothetical Profit Forecast Table of Tsaker Chemical**

RMB mn	2017A	2018A	2019E	2020E	2021E
<b><u>Dye Intermediate</u></b>					
Revenue	660.0	938.3	2,163.3	2,707.7	2,846.5
yoy	36.9%	42.2%	130.5%	25.2%	5.1%
Gross profit	198.7	378.1	1,738.7	2,139.1	2,190.3
Gross margin	30.1%	40.3%	80.4%	79.0%	76.9%
<b><u>Agricultural Chemical Intermediate</u></b>					
Revenue	349.9	273.8	349.1	396.2	446.2
yoy	-3.2%	-21.8%	27.5%	13.5%	12.6%
Gross profit	84.7	50.9	65.9	81.2	97.6
Gross margin	24.2%	18.6%	18.9%	20.5%	21.9%
<b><u>Pigment Intermediate</u></b>					
Revenue	236.2	262.5	280.4	298.9	320.5
yoy	19.6%	11.1%	6.8%	6.6%	7.2%
Gross profit	79.6	88.9	100.4	110.0	121.3
Gross margin	33.7%	33.9%	35.8%	36.8%	37.8%

Source: Company materials, Essence Int'l

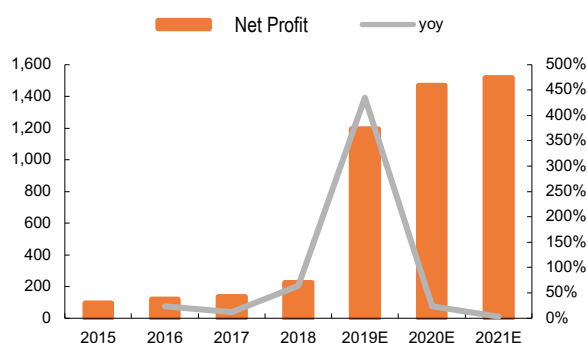
Attributed to this, we forecast revenues for 2019E, 2020E and 2021E of the company will be increase by 90%, 23% and 7%, respectively; net profit increased by 435%, 23% and 3%, respectively, to RMB1.19 billion, RMB1.47 billion and RMB1.52 billion, respectively. The average ROE in the coming 3 years will reach 50%.

**Figure 34: 2019E-2021E Revenue Forecast of Tsaker Chemical (RMB mn)**



Source: Company materials, Essence Int'l

**Figure 35: 2019E-2021E Net Profit Forecast of Tsaker Chemical (RMB mn)**



Source: Company materials, Essence Int'l

## Valuation

We selected HK listed companies of the chemical sector as comparable companies. The average EPS growth rates for 2019E and 2020E of those companies will be 0.8% and 3.2%, respectively, and their average P/E ratios will be 5.5x and 5.6x, respectively; in comparison, the average EPS growth rates for 2019E and 2020E of the company will be 435% and 23%, respectively, and its average P/E ratios will be 2.4x and 2.0x, respectively. In other words, we conclude that the company is considerably undervalued.

**Table 4: Valuation Comparison of Comparable Companies**

Share Name	Ticker	Market Cap US\$ mn	Latest Filings FY Ended, Y0	-- PER (x) --			-- EPS Growth (%) --			PB (x)		ROE%		EV/EBITDA	
				Y0	Y1f	Y2f	Y0	Y1f	Y2f	Y0	Y1f	Y0	Y1f	Y1f	Y2f
Kingboard Holdings	148	2,755	12/18	3.5	5.2	4.7	6.1	-32.5	9.9	0.5	n/a	13.0	n/a	n/a	n/a
China BlueChemical	3983	1,333	12/18	6.6	8.2	8.5	2,900	-19.3	-3.3	0.6	0.6	10.1	7.3	1.9	1.7
China Risun Group	1907	1,387	12/18	3.7	n/a	n/a	n/a	n/a	n/a	0.9	n/a	54.8	n/a	n/a	n/a
Dongyue Group	189	1,202	12/18	3.9	3.9	3.8	31.6	-	3.5	1.0	0.7	28.3	23.7	2.1	2.0
Fufeng Group	546	1,357	12/18	5.1	5.8	6.9	27.0	-13.0	-15.9	0.8	0.8	18.0	10.0	4.0	3.6
SINOFERT	297	827	12/18	12.3	9.2	10.0	n/a	34.1	-8.0	0.8	0.8	6.5	7.3	7.2	7.1
Lee & Man Chemical	746	433	12/18	3.9	n/a	n/a	24.2	n/a	n/a	1.0	n/a	26.6	n/a	n/a	n/a
China XLX Fertilizer	1866	346	12/18	3.8	3.2	2.7	57.1	18.1	17.5	0.6	0.7	17.1	n/a	5.1	4.6
China Sanjiang Fine Chemicals	2198	231	12/18	3.4	2.9	2.5	-42.2	18.3	18.5	0.4	0.3	11.3	12.3	3.6	3.3
<b>Average</b>		<b>1,097</b>		<b>5.1</b>	<b>5.5</b>	<b>5.6</b>	<b>429.1</b>	<b>0.8</b>	<b>3.2</b>	<b>0.7</b>	<b>0.7</b>	<b>20.6</b>	<b>12.1</b>	<b>4.0</b>	<b>3.7</b>
<b>Tsaker Chemical</b>	<b>1986</b>	<b>415</b>	<b>12/18</b>	<b>11.9</b>	<b>2.4</b>	<b>2.0</b>	<b>63.7</b>	<b>435.0</b>	<b>23.2</b>	<b>2.2</b>	<b>1.2</b>	<b>19.5</b>	<b>63.4</b>	<b>2.0</b>	<b>1.6</b>

Source: Bloomberg, Essence Int'l (Tsaker Chemical data is estimates of Essence Int'l and the rest is from Bloomberg data)

## Investment Recommendations

We believe the industry is smoothly run with no additional capacity and hence the prices of DSD acid will continue to increase and the financial performance of the company will be substantially improved in the short term. Meanwhile, the company keeps its payout ratio at 30% and for 2019, its dividend yield ratio will rise to 12.5%, very attractive. In addition, the battery material segment will become a new growing point for the company in the long run. We initiate coverage of the company with a Buy rating and price target at HK\$5.20, 67% to go compared with current price. The P/E ratios corresponding to our price targets for 2019E and 2020E will be 4.0x and 3.3x, respectively.

## Risk Factors

- 1) The prices of DSD acid may plunge;
- 2) The production may be restricted due to environmental concerns; and
- 3) The development of the battery material segment may be below expectation.

## Annex: Forecast of Financial Statements

(RMB mn)	2017A	2018A	2019E	2020E	2021E
<b>Income Statement</b>					
Revenue	1,247	1,516	2,875	3,528	3,773
Cost of Sales	(884)	(992)	(955)	(1,175)	(1,335)
Gross profit	363	524	1,920	2,353	2,438
Other income	8	10	20	25	26
Selling and distribution costs	(43)	(48)	(86)	(106)	(113)
Administrative expenses	(122)	(132)	(230)	(282)	(302)
Operating profit	201	348	1,612	1,975	2,034
Other expenses	(5)	(6)	(12)	(14)	(15)
Foreign exchange losses	(6)	(18)	-	-	-
Finance costs	(14)	(22)	(22)	(16)	(11)
Profit before tax	181	309	1,590	1,959	2,023
Income tax	(45)	(86)	(397)	(490)	(506)
MI	0	0	-	-	-
Net profit	136	223	1,192	1,469	1,517
Total shares	1,028	1,044	1,044	1,044	1,044
EPS	0.13	0.21	1.14	1.41	1.45
EBIT	201	348	1,612	1,975	2,034
EBITDA	259	409	1,695	2,081	2,161
<b>YoY Growth (%)</b>					
Revenue	19.8	21.5	89.7	22.7	6.9
Gross profit	23.6	44.4	266.3	22.6	3.6
Operating profit	18.2	73.0	362.9	22.5	3.0
Net profit	12.6	63.7	435.0	23.2	3.3
EBIT	18.2	73.0	362.9	22.5	3.0
EBITDA	15.5	57.6	314.6	22.8	3.9
<b>Statement of Cash Flow</b>					
Profit before tax	181	309	1,590	1,959	2,023
Depreciation & amortization	58	61	83	106	127
Change in working capital	(53)	(137)	(136)	(46)	36
Other	6	(16)	(364)	(459)	(479)
Cash flow from operating	192	217	1,173	1,559	1,707
Capital expenditure	(297)	(440)	(500)	(500)	(500)
Other	39	(23)	-	-	-
Cash flow from investing	(257)	(463)	(500)	(500)	(500)
Issuance of equity	57	(11)	-	-	-
Payment of dividends	(38)	(43)	(67)	(358)	(441)
Repayment of debt	100	69	(130)	(50)	(76)
Interest expenses	(19)	(27)	(34)	(30)	(26)
Other	(73)	22	-	-	-
Cash flow from financing	28	10	(230)	(438)	(544)
Net increase (decrease) in cash	(38)	(236)	443	621	663
Foreign exchange gains	1	1	-	-	-
Opening cash balance	397	360	124	567	1,188
Closing cash balance	360	124	567	1,188	1,852
FCFF	(105)	(223)	673	1,059	1,207
FCFE	(24)	(181)	510	979	1,104

(To be continued...)

## Annex: Forecast of Financial Statements (Continued)

(RMB mn)	2017A	2018A	2019E	2020E	2021E
<b>Balance Sheet</b>					
Cash	360	124	567	1,188	1,852
Accounts receivable	328	255	464	516	532
Inventory	115	210	108	283	162
Other current assets	175	286	286	286	286
<b>Total current assets</b>	<b>978</b>	<b>875</b>	<b>1,426</b>	<b>2,274</b>	<b>2,832</b>
PP & E	1,120	1,496	1,914	2,309	2,682
Intangibles	1	3	3	2	2
Long-term investments	1	9	9	9	9
Other long-term assets	157	126	126	126	126
<b>Total non-current assets</b>	<b>1,278</b>	<b>1,634</b>	<b>2,051</b>	<b>2,446</b>	<b>2,819</b>
<b>Total assets</b>	<b>2,256</b>	<b>2,509</b>	<b>3,478</b>	<b>4,720</b>	<b>5,650</b>
Accounts payable	370	346	318	498	429
Short-term loans	195	365	209	189	158
Other current liabilities	141	161	161	161	161
<b>Total current liabilities</b>	<b>705</b>	<b>871</b>	<b>688</b>	<b>848</b>	<b>748</b>
Long-term loans	387	286	313	283	237
Deferred tax & deferred income	22	31	31	31	31
<b>Total non-current liabilities</b>	<b>409</b>	<b>318</b>	<b>344</b>	<b>315</b>	<b>269</b>
<b>Total liabilities</b>	<b>1,114</b>	<b>1,189</b>	<b>1,032</b>	<b>1,163</b>	<b>1,017</b>
Share capital	67	67	67	67	67
Reserves	1,074	1,252	2,377	3,489	4,565
MI	1	1	1	1	1
<b>Shareholders' equity</b>	<b>1,142</b>	<b>1,320</b>	<b>2,445</b>	<b>3,557</b>	<b>4,633</b>
<b>Total liabilities and shareholders' Equity</b>	<b>2,256</b>	<b>2,509</b>	<b>3,478</b>	<b>4,720</b>	<b>5,650</b>
<b>Key Financial Ratio</b>					
P/E (x)	19.9	11.9	2.4	2.0	1.9
P/B (x)	2.5	2.2	1.2	0.8	0.6
Dividend yield (%)	1.4	1.5	2.3	12.5	15.4
EV/EBITDA (x)	13.0	8.3	2.0	1.6	1.6
EV/EBIT (x)	16.8	9.7	2.1	1.7	1.7
Gross margin (%)	29.1	34.6	66.8	66.7	64.6
EBITDA margin (%)	20.8	27.0	58.9	59.0	57.3
Pre-tax profit margin (%)	14.5	20.4	55.3	55.5	53.6
Net margin (%)	11.4	15.9	41.5	41.6	40.2
SG&A/sales (%)	0.4	0.4	0.4	0.4	0.4
Effective tax rate (%)	24.8	27.9	25.0	25.0	25.0
ROE (%)	13.5	19.5	63.4	49.0	37.1
ROA (%)	6.8	10.1	39.8	35.8	29.3
Current ratio (x)	1.4	1.0	2.1	2.7	3.8
Stock turnover days (s)	40.0	59.0	60.0	60.0	60.0
A/R turnover days (s)	87.9	69.2	45.0	50.0	50.0
A/P turnover days (s)	127.5	129.8	125.0	125.0	125.0
Interest coverage (x)	10.5	12.8	48.0	64.8	77.2
Net debt/ (cash) to equity (%)	19.5	39.9	-1.9	-20.1	-31.4
Total asset to equity ratio (x)	2.0	1.9	1.4	1.3	1.2
Dividend payout ratio (%)	13.6	29.6	27.8	30.0	30.0

Source: Company materials, Essence Int'l estimates

## Customer Service Hotline

Hong Kong: 2213 1888

China: 40086 95517

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Return Rating:

BUY	-Expecting return of over 15% in coming six months
ACCUMULATE	-Expecting return of 5% to 15% in coming six months
NEUTRAL	-Expecting return of -5% to 5% in coming six months
REDUCE	-Expecting return of -5% to 15% in coming six months
SELL	-Expecting return of less than -15% in coming six months

## Essence International Securities (Hong Kong) Limited

39/F One Exchange Square, Central, Hong Kong

Tel: +852-2213 1000

Fax: +852-2213 1010