



The structure of the talc supply market

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The world talc industry is dominated by a few major players. The last twelve months have already witnessed major changes amidst the corporate structure of the talc supply industry. This is expected to continue in the near future. This paper reviews the structure of the primary talc supply market, and highlights recent changes in the sector, with a brief comment on market trends.



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The talc industry is one of those industrial minerals sectors indicative of the ongoing trend of consolidation on a global scale since the 1980s. Originally represented across the world by a large number of small to medium scale producers, the talc supply sector has shrunk to a select group of just five companies. Add to this the combined output of China's leading producers and the two Indian producers, and there you have the main players dominating world trade in talc. Of these players, Rio Tinto Minerals, the industrial minerals division of UK headquartered Rio Tinto, through a series of acquisitions, has emerged as the leading player, accounting for 25% of world talc demand. RTM is followed by Mondo Minerals, Finland, and Specialty Minerals, part of Mineral Technologies Inc., USA.

It is perhaps no surprise that the mineral portfolios of these groups feature other high grade mineral functional fillers and pigments, which complement each other in talcs main consuming markets of paper, paint, and plastics (and ceramics).

World supply review

Reviewing the latest data provided by the British Geological Survey (BGS) and US Geological Survey (USGS; 2006 and 2007 data, respectively), total world talc production ranges between 8.0-8.1m. tonnes. It should be noted that these figures include production of pyrophyllite and also production estimates.

China, followed by the USA are far and away the leading talc producers in the 0.8-2.5m. tpa bracket. Next comes the 400-600,000 tpa production bracket including in descending order India, Finland, France, and Brazil.

At 100-170,000 tpa are Austria, Australia, Russia, Italy, Iran, and Spain. Canada, Mexico, and South Korea produce 50-100,000 tpa talc, while the rest produce 50,000 tpa or less.

The corporate supply landscape

Chinese producers dominate the world market (some 50%) with regard to volume production. However, by single company it is Rio Tinto Minerals (RTM) that takes the largest share (25%), followed by Mondo Minerals, Specialty Minerals Inc., RT Vanderbilt (RTV), and IMI Fabi – these producers dominate world trade in talc grades. Most other producing companies, with the exception of Indian and Chinese producers, supply mainly domestic markets.

However, this will change, at least in corporate identity by 2009. Mondo Minerals has retained its name but was acquired in 2007 by private equity group Hg Capital, UK, from Swiss GCC giant Omya AG. Meanwhile, RTV is to cease talc production at the end of 2008, and RTM is planning to sell its entire talc business (see later).

Talc produced in the USA is chiefly worked by RTM's subsidiaries, RT Vanderbilt Co., and American Talc Co. (formerly Wold Talc Inc.), and also IMI Fabi's two operations.

During 2007, the USA operated 12 talc mines across seven states. Although a major producer of talc, the USA imported 210,000 tonnes in 2007 (significantly down from the previous year's 314,000 tonnes), of which China accounted for 48%, and Canada, 35%.

Zemex Corp. exited the US talc market and divested its talc assets to IMI Fabi SpA in 2001 and to American Talc Co. in late 2006.

In Europe, RTM is present with mines in France, Spain, Italy, and Austria; Mondo Minerals in Finland and Norway; and IMI Fabi in Italy.

In the Asia Pacific region, RTM is present in Japan and Australia; the IMI Fabi-Unimin j-v in Australia; while India is dominated by Golcha Group and Golcha Associated.

In Brazil, magnesite, talc, and refractories group Magnesita SA, has become Magnesita Refratários SA following its acquisition in 2007 by Latin American private equity group, GP Investments Ltd (47%) and Gávea (12.5%). Magnesita produces 48,000 tpa at Contagem, Minas Gerais.

RTM – restructure & divestment

Rio Tinto Minerals (RTM) with mines and processing plants worldwide supplies about 25% of the world's talc demand (*see table*). During 2007, the group underwent a major restructuring of its talc division which saw several assets sold, but more significantly, kick-started the process of a complete divestment of the talc business from Rio Tinto Plc's portfolio.

This was initiated as part of an overall asset review prompted by Rio Tinto's acquisition of Alcan Inc. in 2007, and resulted in the group's industrial minerals businesses of talc and borates (and potash interests) put up for sale in November 2007 – this process is ongoing, and a short list of interested parties to buy the businesses was expected in Q3 2008.

RTM produced 1.281m. tonnes of talc in 2007, down 8% from 2006, and produced 679,000 tonnes in H2 2008, even with H2 2007.

Markets served are paper, polymers, and paints and coatings. RTM does not generally supply the ceramics sector, although it is paying attention to the electroceramics market, especially growing in Asia.

RTM conducted a programme of "improvement projects" through 2007 which included streamlining staffing levels and systems, product and business optimisation, supply chain reconfiguration, plant efficiency, mine planning, and energy use.

This led to the closure of the of the Three Springs processing plant in Australia in Q1 2007; the sale of the Lassing and Ennsdorf processing plants in Austria in July 2007; and the closure of the Widnes, UK storage and processing plant in Q4 2007 (RTM having failed to find a buyer).

In addition to the improvement objectives, the sold and closed assets were considered too small scale for Rio Tinto's overall strategy.

RTM can supply Asia with talc grades via the west coast of the USA. However, the Three Springs mine will continue exporting crude talc to Europe, Japan, and some to North America.

In Austria, RTM has invested in its mining activities in Styria, central Austria. RTM, through subsidiary Naintsch Mineralwerke GmbH, owns two talc mines – an open cast talc mine at Rabenwold, and a new underground mine in Kleinfelstritz, 100km north-west of the capital, Graz. Total production is 200,000 tpa of talc products.

The ore is processed into ultra-fine products for various industrial applications including paper, paints, plastics, ceramics, personal care products, agriculture and pharmaceuticals.

The investments concern an extension at Rabenwold, and the opening of the south pit mine in Kleinfelstritz.

Ennsdorf is located in upper Austria on the Danube River and its talc production of 18,000 tpa will be shifted to RTM's Weisskirchen processing plant, which also receives the Kleinfelstritz output.

RTM's plans involve the closure of the existing 19,000 tpa underground mine at Kleinfelstritz, and the inauguration of a new adjacent mine. The leucophyllite deposit at the existing mine which is now exhausted, was processed at RTM's Weisskirchen facility, 12km away. The facility will still be used for the new mine which is projected to last for the next 20 years.

The product is sold under the name Plastorit[®] and primarily used as a paint additive, globally marketed as a high value product.

The Rabenwold mine, the largest talc deposit in mid-Europe, will shift mining activities to the adjacent southern pit. It has been in operation since 1989 when underground mining ceased, and currently produces ~100,000 tpa talc.

The present mining area in the northern pit is now exhausted, the extension involves the development of the adjacent southern mining pit. For the development of this south pit and to get access to the ore, over 3,340,000 tonnes of overburden has to be removed; extraction is underway.

Mondo Minerals

In 2007, Mondo Minerals celebrated its 40th anniversary, founded in 1967 as Suomen Talkki OY). The same year also saw Mondo Minerals' owner, Swiss GCC giant Omya AG, divest its talc arm to private equity company Hg Capital Trust Plc, London.

Mondo Minerals' talc plants are located in Sotkamo, Kaavi, Vuono, Finland; Amsterdam and Katwijk, the Netherlands; and Knarrevik, Norway.

In 2006, the company undertook its largest investment project (some €40m.(\$53.7m.), increasing fine grinding capacity at Sotkamo plant to 330,000 tpa, making it the largest single talc production facility in the world.

The Amsterdam plant was also equipped with new jet-mills, bringing plant capacity up to 100,000 tpa. Total talc production capacity at Mondo Minerals is now 760,000 tpa, with a turnover of €130m. (\$175m.).



The company is known to import crude talc from China and Australia, which is processed at Knarrevik and Amsterdam, respectively.

Mondo Minerals' main markets are European paper, paints, and plastics. Specialities for polyester putties and technical ceramics are sold worldwide.

SMI

Specialty Minerals Inc. (SMI) is the filler minerals arm of Minerals Technologies Inc., New York. SMI has been producing finely ground talc at its Barretts operation Montana since 1964, and coarser ground talcs for paint and paper since the early 1950s. This plant is located in the south-west corner of Montana which accepts talc ore from two nearby SMI mines.

SMI also processes purchased talc, mainly from China, at its plants at Mt Vernon, Indiana, and Wellsville, Ohio. The talc operations come under the Performance Minerals division of SMI.

In response to market demand, SMI completed a range of capacity expansions in 2006:

Barretts, Montana

- additional talc beneficiation capacity started
- additional fine grind capacity (2 to 5 micron APS)
- additional ultrafine grind capacity (0.5 to 2 micron APS)
- additional USP talc capabilities and capacity

Mt Vernon, Indiana

- additional ultrafine grind capacity (0.5 to 2 micron APS)
- additional talc densification capabilities and capacity

The production capacity of the Barretts plant is around 30,000 tpa, although it should be noted that the upgrade in USP (US Pharmacopeia grades) facilities concerned post grinding capabilities, such as heat treatment. The capacity of Mt Vernon was not disclosed, but serves the polymer market.

Perhaps surprisingly, given SMI's portfolio of GCC and PCC grades for paper, the paper market is not one which is served by SMI's talc. This is mainly owing to the nature of the papermaking industry in North America, where talc is not as widely used as in Europe.

SMI's talc is sold in North America for paint and coatings and polymer applications, and exported worldwide for ceramic applications. Owing to the exceptional chemical purity of the Barretts ore, this talc finds use in automotive catalytic converter ceramic substrates.

A significant stage in SMI's talc evolution was the acquisition of mineral importer and processor Polar Minerals Inc. in 2002. Prior to the acquisition the polymers (ie. plastics) market ranked no.3 with SMI, post acquisition this became the company's no.1 market, followed by paints and coatings, and then ceramics.

The Polar Minerals buy also introduced Chinese talc imports to SMI for the first time – SMI imports about one third of its talc, the remainder served by its Montana mines. Although the company has imported some talc from northern China (Liaoning province), SMI sources most of its Chinese talc from southern Chinese sources, such as in Guangxi province, which is exported through the port of Fangcheng.

Overall, SMI's talc grades from Montana supply the ceramics markets, the imported Chinese talc grades for polymers, and paints and coatings are served by both. Recently, SMI has also made "significant gains" in the USP/cosmetic market, primarily in the dusting powder sector, described as the low end of the USP/cosmetics market.

In its Q2 results, MTI recorded that talc sales declined 2% to \$9.5m. from \$9.7m. in the prior year. The Processed Minerals product line, in which talc is included, was affected by weakness in the residential and commercial construction markets, as well as the automotive market. US housing starts are at their lowest levels in 17 years, and the automotive sector remains on a downward trend.

RT Vanderbilt



R.T. Vanderbilt Co. (RTV) has four mining operations and two chemical manufacturing facilities, all wholly owned subsidiaries. Gouverneur Talc Co. is RTV's largest mining and minerals processing and produces talc (and wollastonite) from the Gouverneur district in northeastern New York state.

Two milling operations (dry-grinding, air-milling and air-classification) and several mining operations (open pit and underground) are located on over 2,300 acres of land. The material is sold under the trade names NYTAL[®] and CERAMITALC[®], used in the paint and ceramics industries.

However, mid-2007 was to mark the beginning of the end for RTV's talc business. In June 2007, RTV decided it would no longer sell its industrial grade talcs to EU countries. This decision was prompted by anticipated difficulties with some EU countries over asbestos definitions.

Then, in January 2008, RTV announced that it was to exit from the talc business altogether, and is expected to cease mining/selling talc before the start of 2009. This significant move was taken in response to RTV witnessing a declining market for its ceramic talc grades (<80,000 tpa), although the possibility of future lengthy and expensive asbestos litigation issues was also a factor. The company continues to be active in the bentonite, kaolin, and pyrophyllite businesses.

American Talc Co.

The Texas talc industry consolidated in 2007 with Wold Talc Co.'s acquisition of the Van Horn, Texas talc operations of Zemex Corp.'s subsidiary Suzorite Mineral Products Inc. (SMPI). The sale marked Zemex's exit from the talc business and a rebranding of Wold's talc business as American Talc Co. (ATC).

SMPI operated a 35,000 tpa talc plant producing talc grades for ceramics, plastics, and coatings. The SMPI acquisition joined AMC's existing talc operations in the Van Horn, Texas area, including a large open pit talc mine in Hudspeth county.

In late 2007, ATC picked up the talc plant of Milwhite Inc., in Van Horn, Texas. An aggressive exploration programme has resulted in the company owning or having under lease approximately 25m. tonnes of talc and pyrophyllite.

ATC produces high quality talc primarily to the ceramics industry, the company's Allamore plant produces >45,000 tpa, and Wild Horse plant, 25,000 tpa.

ATC is part of privately owned independent exploration and production company Wold Oil Properties Inc., headquartered in Casper, Wyoming.

IMI Fabi

Milan-based IMI Fabi SpA has three underground talc mines in Valmalenco, north of Sondrio, Italy and the talc ore is processed at Fabi's Torre Sta. Mario plant in the Valmalenco valley. Mine output at Valmalenco is estimated to be some 100,000 tpa. The company also imports high brightness and high purity talc from China and Australia for processing at its Postalesio plant in the Valrellina valley.

IMI Fabi is part of a joint venture, with Unimin Australia Ltd subsidiary Unimin Talc Pty Ltd, in the Mount Seabrook talc mine in Western Australia. High purity white talc is produced at Mount Seabrook.

IMI Fabi also has a manufacturing presence in the USA, with talc processing facilities at Benwood, West Virginia, operated by IMI Fabi LLC, and at the Diana plant in northern New York state, operated by IMI Fabi (Diana) LLC. The plants process imported lump talc to 40-10µm topsize and about 12-2µm medium particle size.

China

The three main centres of China's talc supply and export industry are Liaoning, Shandong, and Guangxi, all with large talc reserves and outputs. The "basic reserves of talc resources" in Liaoning, Shandong, and Guangxi are 25.262m. tonnes, 25.574m. tonnes, and 10.945m. tonnes, respectively.

Total Chinese talc production is was estimated to be about 2m. tonnes talc lump, and 600,000 tonnes talc powder. It has been estimated that the three provinces of Liaoning, Shandong and Guangxi produce some 500,000 tpa of white talc (high grade).

China's primary talc producing centre is the area concentrated around Haicheng, Liaoning province, which has an output about 1m. tpa of all products. Talc production in Shandong is mainly concentrated in Pingdu, Laizhou, and Qixia which have a combined output of 500,000-600,000 tpa talc. Production in Guangxi is mainly concentrated in Longsheng, Shanglin, and Huanjiang, with an annual output about 400,000-500,000 tpa.

More than 70% of total Chinese talc output belongs to medium to low quality standard, while the output of high quality talc powder and lump is considered insufficient to meet the needs of either Chinese domestic market or export.

Of the high quality Chinese talc, about 80% output is serving the export market, exporting some 643,000 tonnes in 2004, which included 396,000 tonnes lump talc and 247,000 tonnes talc powder. The export share from the main producing provinces were approximately Guangxi, 44.5%, Liaoning, 44.0%, and Shandong, 11.5%.

The main destinations for Chinese talc are Asia, North America, and Europe, with the USA and Japan consuming the majority of China's lump talc exports, 39% and 34%, respectively.

The Chinese talc industry has been facing a number of challenges which have created insufficient supply of high-grade talc. The main reasons for this are:

- after many years of exploitation, some small and medium-sized mines have entered or will enter a period of exhaustion
- demand for high-grade talc has increased sharply to meet rapid development of papermaking, plastics, pharmaceutical, and cosmetics in the eastern coastal areas
- Europe, the USA and other countries have strengthened their efforts in purchasing talc from China, with export volumes increasing (although this may wane with recent government export controls)
- Japanese consumers have purchased high volumes of high grade talc from China at low prices in recent years

With the current problems of rising freight rates and limited vessel availability, as well as the threat of export taxes implemented by the government (this in addition to export licence fee and abolition of export tax rebates in 2005), high grade talc exports from China are facing an uncertain future.

India

Talc deposits are found throughout India, but most of its commercial talc production takes place in Rajasthan. The country's two leading talc producers – Golcha Group (300,000 tpa) and Golcha Associated (160,000 tpa) – are based in Jaipur in the northeastern part of the state and they dominate supply of high quality material and speciality grades for such markets as cosmetics and polymers.

In mid-2008, Golcha Group announced plans to significantly increase talc production in India (by over 100,000 tpa) and Thailand (a new 60,000 tpa plant), and establish a new production base in Europe.

India's third largest producer, the Jai Group, also plans to increase talc production capacity from 100,000 tpa to 200,000 tpa in the next three years.

India possesses a large number of other talc producers, but most of these operate on a small scale and usually produce standard or lower quality grades.

Market trends & outlook

The four key markets of paper, ceramics, plastics, and paints account for about 80% of world talc demand (*see pie charts*). Certainly the wide range of applications encourages large talc players to have a diverse talc grade portfolio and thus protects them somewhat against isolated market downturns. That said, construction performance can impact right across ceramics, paint, and plastics to some extent.

However, the key market drivers for talc at present are the automotive sector (for talc use in autoplastics); housing starts (for talc in ceramics/roofing/paint); and advertising (talc consumption in the paper market). The overriding trend has been the growth of Asian markets in these sectors which have been emulating formulation trends in Europe and the USA.

In the USA during 2006, talc was consumed in ceramics, 32%, paint, 20%, paper, 16%, roofing, 8%, plastics, 5%, rubber, 3%, cosmetics, 1%, and other, 15%. This pattern of consumption has been mirrored since 2004. However, over the last five years US talc use in paint and paper has changed the most: paint showing a decline from 32% in 2003; and paper from 20% in 2002 and earlier.

Ceramics use has increased in recent years. Texas talc's main market has been ceramic tile manufacture, with low cost gas attractive for a tile industry located in south-west USA and Monterrey, Mexico. However, changes in tile making technology have led to a decline in talc consumption (and production) owing to talc being utilised more as an additive than main tile body component.

Key to much of the North American market is the performance of the construction market, and if this slows, as it has done in the USA, then non-paper talc businesses which are usually tied to this market sector also cool.

Elsewhere, talc suppliers are eyeing the automotive, paper and pulp, and paint markets of eastern Europe, which are all exhibiting growth.

Other markets of interest include use of talc in the plasterboard market in Europe and Asia, which assists in smooth wall formulating.

Growth markets for talc are also being environmentally driven, such as water-based industrial coatings and packaging materials.