Fourth International Symposium on Refractories - 24-28 March 2003, Dalian

Best of both worlds: supply *and* demand

China's role as a source of refractory minerals for global markets

Mike O'Driscoll
Editor, Industrial Minerals

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China's role as a source of refractory minerals

Mike O'Driscoll, Editor, Industrial Minerals

Industrial Minerals

- **authoritative monthly magazine for global non-metallic minerals & their markets**
- **covering the refractory raw materials market since 1967**
- **publications, conferences**

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China's minerals: focus for world markets

Pudong Shangri-La Hotel, Shanghai, 12-14 October 2003

5th Chinese Industrial Minerals Conference - CIMC5

In the week preceeding UNITECR, Osaka 19-22 October 2003

Refractories session: CALL FOR PAPERS!!

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"It's no longer opportune to do business with China, and in China …it's necessary"

Constantine Krayannopulos, VP AMR Technologies Inc. 2002

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"The difference is, that while a few years ago single and isolated companies were going into China, now entire supply chains are moving there. All at the same time"

Constantine Krayannopulos, VP AMR Technologies Inc. 2002

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Focus

Minerals

1. bauxite
2. brown fused alumina
3. dead burned magnesite
4. refractory clays/calcines

Changing times

5. Refractories market
6. Trading minerals

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1. Bauxite - world supply

- 6-7m. tpa non-met.
- refractory grade 1.07m. tonnes 2002
- China, Brazil, Guyana

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1. Bauxite - Chinese supply

- 4m. tpa total all grades
- 900,000 tpa refractory grade
- 700,000 tpa exported, 200,000 tpa domestic market
- shaft, round, rotary calcination
- Shanxi, Guizhou

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1. Bauxite - trends

- 1980s China took market share from Guyana
- supplied 70% global refractory market
- privatisation, environmental controls = vastly reduced capacity perhaps by 900,000 tpa, esp. shaft kilns in Shanxi
- more rotary kilns built? poss. price rise?
- rail car shortages
- port processing ➔ end product manufacturers
- rejuvenation of Guyana bauxite by Cambior Inc.
- export licence fee RMB230($28)/tonne for 2003, no fixed quota
- rising coal prices, tight supply and freight ➔ price rise

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2. BFA - world supply

- 1m. tpa: market 900,000 tpa
- China, USA/Canada, Brazil, Venezuela, Germany Hungary, France, India.

2. BFA - Chinese supply

- **450-500,000 tpa**
- **60 producers, Guizhou, Henan: also Shanxi, Shandong, Sichuan**
- **300,000 tpa exports**

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2. BFA - trends

- consolidation in West: Imerys, WMC/Exolon
- exits: UCM, Showa Denko
- Chinese exports to USA increasing
- environment, cashflow, rising costs,
  = reduction in capacity, by 50%?
- EU a/d duty $182.6/tonne expired Oct. 2002
  = anticipation of rise in Chinese EU exports
- export licence fee for 2003, RMB80($80)/tonne

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3. DBM - world supply

- 5-6m. tpa
- Russia, Australia, Austria, China, Brazil, Greece, Ireland, India, Israel, Italy, Japan, Nertherlands, Mexico, Russia, Slovakia, Spain, Turkey, USA

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3. DBM - Chinese supply

- 1.8m. tpa - Liaoning, Shandong
- 1m. tpa exported
- 20 key producers 50-550,000 tpa

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3. DBM - trends

- consolidation in West: RHI
- exits: National Magnesia, Asahi Glass, Birla Periclase, Seamag, Britmag; H-W 2003
- new player: Jormag, 50,000 tpa 2003
- EU a/d duty to expire Feb 2005; under review
- Chinese exports decline
- 2003 exports: 1.3m. tonnes, min. licence RMB450/$54.3/t
- H103: 780,000 tonnes, 42 licence holders
- New CMEA formed 25.2.03
- $10-15/t price rises in response to rising production costs

4. Ref. clays - world supply

Clays

- **7m. tpa**
- **China, USA, France, Germany**

High alumina calcines

- **6-700,000 tpa**
- **USA; Germany, China, India**

4. Ref. clays - Chinese supply

Clays

- **3m. tpa**
- **Shanxi, Henan, Guizhou, Sichuan, Liaoning**

4. Ref. clays - trends

- consolidation in West: H-W/APG; National assets to AMP/Resco
- EU a/d duties expired in January 2001
- Chinese development of clay grades
- Chinese development of sintered mullite: Shanxi, Chongqing, Henan

5. Changing times - refractories

- 1990s consolidation: RHI, Cookson, LWB etc.
- 2000+ restructuring: closures & cutbacks
- specific consumption declining
- consolidation in market sectors to continue
- China: growth market for end products drawn by raw material & market proximity
- "Next wave" = Chinese refractory product exports

5. Changing times - refractories

Andreas Meier, COO, RHI AG, Austria 2002

"In terms of refractories supply, the Chinese market is the main focus currently, as it has the fastest growing steel industry"

"RHI will expand in the supply of speciality products. We plan to double the current capacity of our Chinese j-v, which has been highly profitable to date"

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5. Changing times - refractories

Andreas Meier, COO, RHI AG, Austria 2002

"There is a clear trend towards more finished refractories coming from China. While there is an export licence for many refractory raw materials, there is not for finished products. This has driven Chinese producers towards adding value, rather than supplying crude mineral products."

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6. Changing times - trading

- end of era for large, global trading houses
  ➔ leaner, fitter, flexible traders
- port processors ➔ end product producers
  = added value, "niche trading"
- export licence system: stability, control
- direct sourcing: for raw materials & end products
- traders will still have a role

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6. Changing times - trading

Andreas Meier, COO, RHI AG, Austria 2002

"By far the most significant change is the shift to China, giving access to cheaper raw materials, such as fused magnesite."

"We have a Chinese purchasing manager and are developing this. While traders still supply the majority, we intend to change this to the point where we will use them mostly in co-operation for freight."

"In ten year's time, the majority of our minerals supply will be direct sourced."

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Conclusions

- China leads in bauxite, BFA, DBM, and ref. clays
- China's role as major raw material source:
  - to continue
  - importance set to increase, owing to:
    - a. access to lower cost, quality raw materials
    - b. emergence as producer and exporter of finished refractory products
    - c. driven by rising domestic demand
- China's mineral industry to "ensure" this opportunity

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"Raw materials and an increasing portion of the markets are, more and more, in the same place"

Constantine Krayannopulos, VP AMR Technologies Inc. 2002

Thank you for your kind attention.

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