

China's Refractories Seminar 2001- Technology & Markets, 25-27 April, Beijing



Refractory Raw Materials

Trends & developments in supply & demand

Mike O'Driscoll
Editor, Industrial Minerals

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Providing the refractories market
with premium raw material
information since 1967

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Selection of six refractory minerals

1. Commercial importance to world refractories market
2. Significant to China's IM export value
3. China is world's no.1 producer of these minerals

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Focus on six refractory minerals:

1. Bauxite
2. Brown fused alumina
3. Graphite
4. Dead burned magnesia
5. Refractory clays
6. Silicon carbide

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Focus on six refractory minerals:

1. Principal sources of world supply
2. China's main sources of supply
3. Trends & developments influencing supply
4. Conclude with outlook for demand

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Bauxite: world sources

1. China
2. Guyana
3. Brazil

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Bauxite: China sources

1. Estimates 0.7-3m. tpa; export 1-1.2m. tpa
2. Shanxi
3. Guizhou
4. Kiln types: rotary (70%), shaft, round

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Bauxite: trends - "Chinese still in demand"

1. China gained 70% market share
2. Enter Brazil early 1990s
3. Guyana on 3rd plan to upgrade/privatise
4. Mid-90s - foreign Co./j-v processors

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Bauxite: trends - "Supply tightens?"

5. 2000/01 Chinese supply shortages
 - environmental
 - freight
6. Rotary vs. pressurised shaft kilns?
7. Guizhou demand decline - for specific end users
8. 2001 licence fee: RMB230(US\$28)/t no fixed quota
9. Bauxite brick demand down, monolithics promising

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BFA: world sources

1. 40-45% of 1m. tpa for refractories
2. China, N. America, Germany
3. Brazil, Venezuela, Hungary, France, India

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BFA: China sources

1. 450-500,000 tpa
2. 60 producers; Guizhou, Henan, Shanxi
3. 300,000 tpa exports

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BFA: trends - "tighter, more competitive"

1. Consolidation in West

- Imerys (Treibacher, C-E Minerals)
- WMC/Exolon-ESK

2. Exits: UCM, Showa Denko

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BFA: trends - "Chinese in demand"

3. Demand for Chinese BFA up, esp. USA
4. EU anti-dumping duty €204(\$182.6)/t
5. Chinese BFA enters EU via "3rd" countries
6. Maintaining demand - Japan consumption up

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Graphite: world sources

1. 480,000 tpa

2. 80% - China, India, Brazil, Mexico, Czech Rep.

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Graphite: China sources

1. 220,000 tpa; exports 80,000 tpa
2. Heilongjiang, Henan, Shandong
3. Liumao Graphite Mine, 36,000 tpa

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Graphite: trends - "overcapacity"

1. Exits: Africa, Australia, China
2. Foreign interest in China
3. Lac Knife, Canada; Mazarin - 2004 50,000 tpa
4. ZGC upgrading in Ukraine

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Graphite: trends - "demand consistent"

5. Minsource Liumao Graphite jv

- 2001 expansion 60,000 tpa

6. Demand consistent in MgO-C bricks, EAF electrodes

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DBM: world sources

1. 60 producers of natural & synthetic DBM
2. 7.2m. tpa prod. cap.
 - 3m. "west"
 - 2.4m. Russia, captive
 - 1.8-2m. China

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DBM: China sources

1. 500 mines, 12m. tpa crude magnesite
2. Liaoning, Shandong
3. 20 key producers of 60-550,000 tpa cap.
4. Exports 1.6m. tpa

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DBM: trends - "consolidation & exits"

1. Consolidation: RHI (H-W); Grecian Magnesite (Magna)
2. Exits: National Magnesia, Asahi Glass, Birla Periclase, Seamag
3. Reductions: Ube, Premier Periclase, Britmag
4. Sardamag new shaft kiln 2001
5. DBM exports from N. Korea - 1996 failed, 2001?

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DBM: trends - "China exports under new Union"

7. EU anti-dumping renewed Feb. 2000 - €120(\$107)/t
8. 2 export syndicates formed 2000, \$10-15/t rise
9. 35,000t illegal export Sept. 2000
10. 1st bidding: 1.6m. tonnes @ RMB350(\$42)/t
11. Feb. 2001 new single "union" to replace 2 groups
12. Steel upturn in 2000; but long term not as rosy

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Ref. clays: world sources

1. >38% Al_2O_3 ; 42-47% Al_2O_3 , calcined

2. 7.3m. tpa

- China 4.5m.
- USA 2m. tpa
- France 0.5m.
- Germany 0.3m.

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Ref. clays: China sources

1. "flint clay" >45% Al_2O_3
2. 4.5m. tpa crude; 3m. tpa calcined
3. Shandong, Shanxi, Henan, Guizhou, Liaoning

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Ref. clays: trends - "few major suppliers"

1. C-E Minerals' Mulcoa accepted as standard
2. US consolidation: H-W/A.P. Green to RHI
3. France: SOKA gain 47.5% AGS from Imerys

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Ref. clays: trends - "few major suppliers"

4. EC anti-dumping duty of '96 expired 19.1.01
5. China plans upgrading ref. clay output
6. New China sources: "bauxite chamotte",
sintered mullite
7. Demand consistent, up in USA, Japan

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SiC: world sources

1. 1.1m. tpa cap.; 750-850,000 tpa
2. China 40% production
3. N. America, Japan, Netherlands, Norway, Mexico, Venezuela

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SiC: China sources

1. 500,000 tpa all grades, 126 fusion plants
2. 70-80% metallurgical grade
3. Green SiC in Guizhou, Shandong

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SiC: trends - "consolidation"

1. Consolidation: Saint-Gobain (Norton, Casil);
WMC/Exolon-ESK
2. ESK-SiC still for sale (60,000 tpa Delfzijl)
3. Late 90s foreign interest in China - Norton,
Treibacher, Nissho-Iwai & other Japanese

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SiC: trends - "consolidation"

4. Rising power costs in China impacted supply
5. EU anti-dumping duty renewed in 2000, 52.6%
6. Demand buoyant, Japanese consumption up

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Summary & conclusions

1. Six important refractory raw materials
2. China remains world no.1 producer
3. Significant % of China's IM export revenue
4. China needs to maintain role of no.1 supplier
 - *monitor global competition*
 - *upgrade production tech.*
 - *manage export prices/volumes*

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Summary & conclusions

5. Main factor: refractory market demand

- specific consumption down overall
- steelmaking tech. changes
- bricks to monolithics trend continues
- refractory producer consolidation
 - RHI (VRD/H-W/APG)
 - Cookson (Vesuvius/KSR/Premier/VGT-Dyko)
 - Lhoist-Wulfrath/Baker; Harima/Krosaki; Minteq/MM

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Summary & conclusions

- LRM and RHI Malaysia plants for sale
- Vesuvius shifts bricks from UK to Poland
- Chinese ref. exports likely to rise
- Steel outlook
 - US steel problems - LTV
 - European consolidation - Corus, Usinor et al
 - 2001 growth 2.3%, downturn mid-2001

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Metals, Minerals & Chemicals
Importers & Exporters

China in Change

The 4th Chinese Industrial Minerals Conference

10 - 12 October 2001, Shangri-La Hotel, Qingdao, China

China's Refractories Seminar 2001- Technology & Markets, 25-27 April, Beijing



Refractory Raw Materials - supply & demand

Mike O'Driscoll, Editor, Industrial Minerals

Summary & conclusions

- Steel producers seeking cheaper alternatives and blend materials
- Reduced demand overall, but demand nevertheless

青岛:   China Chamber of Commerce of Metals, Minerals & Chemicals Importers & Exporters

变化中的中国
第四届中国工业矿产大会

中国青岛香格里拉饭店2001年10月10-12日

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