

IRON AND STEEL SLAG

(Data in thousand metric tons, unless otherwise noted)

Domestic Production and Use: In 1995, an estimated 21 million tons of iron and steel slags (byproducts of iron and steelmaking), valued at \$154 million, were sold or used. About 60% of this amount was iron slag with an f.o.b. value of about \$126 million, and the balance was steel slag with an f.o.b. value of \$29 million. There were 17 slag producing firms, with 5 processing only iron slag, 1 processing only steel slag, and the remainder processing both iron and steel slag. Iron-blast-furnace slags were processed at 27 facilities in 12 States; these slags consisted of air-cooled, expanded, and granulated types. Steel slags from open-hearth, basic oxygen, and electric arc furnaces were processed at 76 facilities in 28 States. Approximately 60% of the Nation's iron and steel slags were produced in Indiana, Ohio, Michigan, and Illinois. Iron and steel slags were used mainly as construction materials. Iron slag was typically used as road base, 45%; asphaltic concrete aggregate and other concrete products, 34%; fill, 8%; and other, 13%. Steel slags were typically used as road base, 40%; asphaltic concrete aggregate, 15%; fill, 17%; and other, 28%. Of all iron and steel slag products shipped, 85% traveled by truck, with an average marketing range of 30 miles; 4% traveled by waterway, with an average marketing range of 250 miles; and 4% traveled by rail, with an average marketing range of 175 miles. The remaining 7% was used at the plant site.

Salient Statistics—United States:	1991	1992	1993	1994	1995^e
Production, marketable	20,300	21,400	19,000	20,100	21,000
Imports for consumption	150	100	162	199	210
Exports	5	4	4	4	4
Consumption, reported	20,300	21,400	19,000	20,100	21,000
Price average value, dollars per ton, f.o.b. plant	6.60	6.25	6.65	6.77	7.33
Stocks, yearend	NA	NA	NA	NA	NA
Employment ^e	3,000	3,000	3,000	2,500	2,500
Net import reliance ¹ as a percent of reported consumption	1	1	1	1	1

Recycling: Prior to processing, some steel slag is recycled to blast furnaces, directly or as agglomerates, as a source of iron and flux materials. The exact amount recycled is not known; however, it may be as high as 80% of the steel slag generated each year. Ferrous scrap, recovered from slag during processing, is also recycled to blast and steel furnaces.

Import Sources (1991-94): Canada, 95%; Japan, 3%; and other, 2%.

Tariff:	Item	Number	Most favored nation (MFN) 12/31/95	Non-MFN² 12/31/95
	Granulated slag	2618.00.0000	Free	10% ad val.
	Basic slag	3103.20.0000	Free	Free.
	Slag, dross, scalings, from manufacture of iron and steel	2619.00.3000	23.6¢/t	73.8¢/t.

Depletion Allowance: Not applicable.

Government Stockpile: None.

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Events, Trends, and Issues: The amount of iron and steel slag consumed increased by a small amount. While iron slag consumption overall stayed about the same, the amount of iron slag that was expanded or granulated increased. This was due to slag being used in greater quantities as a replacement for portland cement.

The fact that portland cement was in short supply impacted the slag industry. Cement companies, for the first time, began to look into the possibility of purchasing granulated iron slag from slag processing companies and grinding it at the cement plant site. This was to expand the amount of cement available. Iron slag imports have also increased steadily since 1992.

Studies continued to be conducted to determine whether blast furnace slag was a good and effective replacement of portland cement for oil field use. The research produced conflicting results. Other research focused on the performance of cement blends containing slag.

The U.S. Environmental Protection Agency included slag in its comprehensive Guideline for Procurement for Products Containing Recycled Materials. Ground granulated blast furnace slag was included among the recycled products that could be used in cement and concrete for a variety of applications. The guideline designated items that could be made with recovered materials and recommended for procurement practices in order to foster markets for materials recovered from solid waste.

World Mine Production, Reserves, and Reserve Base: Not applicable.

World Resources: Not applicable.

Substitutes: Crushed stone and sand and gravel are the predominant aggregate substitutes in construction materials.

^eEstimated. NA Not available.

¹Defined as imports - exports + adjustments for Government and industry stock change.

²See Appendix B.