

IRON AND STEEL SLAG END-USE STATISTICS¹
U.S. GEOLOGICAL SURVEY
[Metric tons rounded to three significant digits]
Last modification: September 15, 2005

Year	Iron blast furnace slag										Steel slag						Net trade	Apparent consumption
	Air-cooled slag							Granulated and expanded slag			Asphaltic concrete aggregate	Road bases and road surfaces	Fill	Railroad ballast	Other ²	Subtotal		
	Asphaltic concrete aggregate	Clinker manufacture, ready-mix and other concrete	Fill	Railroad ballast	Road base	Other ²	Subtotal	Cementitious additive	Other ²	Subtotal								
1975	3,080,000	1,780,000	³	3,660,000	10,000,000	1,640,000	20,200,000	2,770,000	28,000	2,800,000	254,000	3,820,000	1,770,000	556,000	224,000	6,620,000	no data	29,600,000
1976	3,680,000	2,020,000	³	3,440,000	9,690,000	1,940,000	20,800,000	2,790,000	28,200	2,820,000	320,000	3,710,000	1,280,000	422,000	244,000	5,980,000	no data	29,600,000
1977	3,650,000	3,120,000	2,810,000	3,080,000	6,610,000	1,370,000	20,600,000	2,660,000	26,900	2,690,000	359,000	2,660,000	2,110,000	321,000	598,000	6,050,000	no data	29,400,000
1978	3,550,000	2,820,000	2,430,000	2,190,000	8,050,000	3,750,000	22,800,000	2,950,000	29,800	2,980,000	551,000	4,350,000	1,620,000	498,000	656,000	7,670,000	no data	33,400,000
1979	3,100,000	2,530,000	3,500,000	2,270,000	7,670,000	3,610,000	22,700,000	2,250,000	22,700	2,270,000	746,000	3,840,000	1,710,000	481,000	709,000	7,490,000	no data	32,400,000
1980	2,660,000	1,730,000	2,140,000	1,950,000	5,340,000	1,710,000	15,500,000	1,730,000	17,500	1,750,000	601,000	2,930,000	1,130,000	584,000	337,000	5,590,000	no data	22,900,000
1981	1,940,000	1,540,000	1,690,000	2,060,000	4,760,000	1,130,000	13,100,000	1,130,000	11,400	1,140,000	589,000	1,950,000	1,470,000	615,000	613,000	5,230,000	no data	19,500,000
1982	1,480,000	1,240,000	1,440,000	1,290,000	5,690,000	1,230,000	12,400,000	1,020,000	10,300	1,030,000	494,000	1,380,000	1,590,000	366,000	493,000	4,320,000	no data	17,700,000
1983	1,080,000	1,580,000	1,790,000	787,000	4,700,000	1,300,000	11,200,000	1,060,000	10,700	1,070,000	417,000	1,910,000	1,030,000	483,000	551,000	4,380,000	no data	16,700,000
1984	1,150,000	1,760,000	1,370,000	1,030,000	7,280,000	1,310,000	13,900,000	1,300,000	13,200	1,320,000	500,000	2,350,000	941,000	W	1,000,000	4,800,000	no data	20,000,000
1985	1,360,000	1,910,000	1,180,000	929,000	5,290,000	1,450,000	12,100,000	1,560,000	15,800	1,580,000	378,000	2,790,000	1,300,000	331,000	611,000	5,420,000	-400,000	18,700,000
1986	886,000	2,060,000	707,000	794,000	6,760,000	1,050,000	12,200,000	1,690,000	17,000	1,700,000	573,000	2,300,000	1,200,000	W	1,080,000	5,160,000	no data	19,100,000
1987	1,110,000	1,850,000	1,310,000	633,000	7,000,000	1,200,000	13,100,000	1,590,000	16,100	1,610,000	654,000	2,110,000	992,000	149,000	791,000	4,550,000	-200,000	19,100,000
1988	945,000	1,940,000	1,280,000	W	7,340,000	1,420,000	12,900,000	1,490,000	15,000	1,500,000	593,000	2,390,000	1,320,000	W	889,000	5,180,000	200,000	19,800,000
1989	1,520,000	1,640,000	1,450,000	225,000	6,600,000	1,020,000	12,500,000	1,530,000	15,500	1,550,000	879,000	2,850,000	1,250,000	193,000	1,520,000	6,690,000	100,000	20,800,000
1990	1,940,000	2,050,000	1,410,000	360,000	6,960,000	1,030,000	13,700,000	1,300,000	13,200	1,320,000	967,000	2,890,000	912,000	206,000	1,880,000	6,850,000	200,000	22,100,000
1991	1,630,000	1,690,000	855,000	221,000	5,340,000	1,150,000	10,900,000	2,380,000	24,000	2,400,000	1,090,000	3,240,000	828,000	186,000	1,620,000	6,960,000	100,000	20,400,000
1992	2,260,000	1,790,000	1,500,000	178,000	5,500,000	1,490,000	12,700,000	1,720,000	17,400	1,740,000	903,000	2,400,000	1,150,000	224,000	2,260,000	6,940,000	100,000	21,500,000
1993	2,050,000	1,440,000	1,460,000	157,000	4,380,000	989,000	10,500,000	1,840,000	18,600	1,860,000	1,090,000	2,660,000	905,000	116,000	1,900,000	6,670,000	200,000	19,200,000
1994	1,940,000	1,680,000	870,000	188,000	4,850,000	1,170,000	10,700,000	1,580,000	16,000	1,600,000	1,140,000	3,170,000	1,320,000	160,000	2,000,000	7,790,000	200,000	20,300,000
1995	1,920,000	1,470,000	1,340,000	108,000	5,470,000	1,710,000	12,000,000	1,790,000	18,100	1,810,000	1,040,000	2,820,000	1,380,000	168,000	1,760,000	7,160,000	300,000	21,300,000
1996	2,180,000	1,730,000	1,730,000	123,000	4,820,000	1,590,000	12,200,000	1,660,000	16,800	1,680,000	1,000,000	2,430,000	1,330,000	182,000	1,700,000	6,640,000	300,000	20,800,000
1997	2,380,000	1,470,000	1,220,000	134,000	3,400,000	1,510,000	10,100,000	1,740,000	17,600	1,760,000	1,870,000	1,640,000	1,940,000	182,000	1,400,000	7,040,000	700,000	19,600,000
1998	1,800,000	1,500,000	1,500,000		4,100,000	1,300,000	10,300,000	1,880,000	19,000	1,900,000	1,110,000	2,450,000	1,390,000	171,000	1,060,000	6,180,000	600,000	19,000,000
1999	1,700,000	1,500,000	1,100,000	200,000	3,000,000	1,500,000	8,900,000	1,880,000	19,000	1,900,000	1,000,000	1,800,000	1,000,000	1,200,000	1,200,000	6,200,000	900,000	17,900,000
2000	1,700,000	1,400,000	800,000		3,300,000	1,800,000	8,900,000	2,280,000	23,000	2,300,000	1,100,000	1,700,000	1,000,000	400,000	1,000,000	5,200,000	1,200,000	17,600,000
2001	1,380,000	1,430,000	208,000	W	2,330,000	1,350,000	6,700,000	3,660,000	37,000	3,700,000	1,400,000	2,400,000	1,400,000	400,000	900,000	6,500,000	2,600,000	19,500,000
2002	1,520,000	1,580,000	229,000	W	2,570,000	1,500,000	7,400,000	3,660,000	37,000	3,700,000	1,360,000	3,710,000	888,000	W	2,040,000	8,000,000	1,000,000	20,100,000
2003	1,500,000	1,560,000	226,000	W	2,530,000	1,480,000	7,300,000	3,560,000	36,000	3,600,000	1,500,000	4,080,000	977,000	W	2,240,000	8,800,000	1,000,000	20,700,000

W Withheld to avoid disclosing company proprietary data; included with "Other" for the specific slag type.

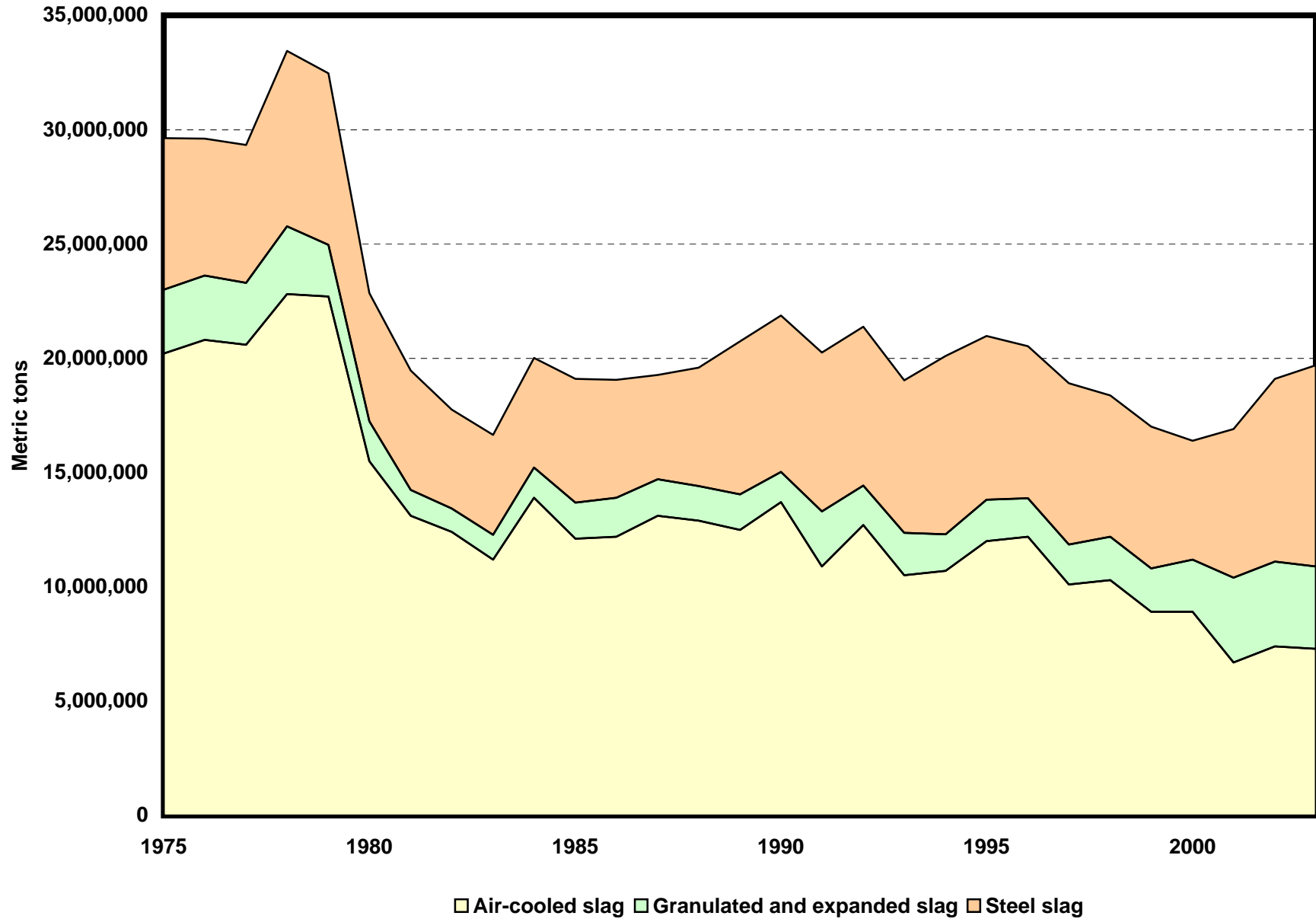
Blank cells represent less than one-half of the reporting unit as originally published, i.e., less than 500 tons.

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²Please see notes for details on the "Other" end-use categories.

³Included with the road base category.

Types of Iron and Steel Slag Used



Iron and Steel Slag End-Use Worksheet Notes

Data Source

The source of data for the iron and steel slag end-use worksheet is the Minerals Yearbook, an annual collection, compilation, and analysis of mineral industry data, published by the U.S. Bureau of Mines and the U.S. Geological Survey.

End Use

End use is defined as the use of the mineral commodity in a particular industrial sector or product. Iron and steel slag sold or used by producers comprises four types of slag: air-cooled iron blast furnace, granulated and expanded iron blast-furnace slag (combined; but data are for granulated only for 2002–03), and steel slag.

For air-cooled slag, end-use categories are asphaltic concrete aggregate; clinker manufacture, ready-mix, and other concrete; fill; railroad ballast; road base; and other miscellaneous uses. The category clinker manufacture, ready-mix, and other concrete includes aggregates for portland cement concrete, and raw material for cement manufacture.

The other miscellaneous uses category includes mineral wool (for the 1975–2003 period an average of about 60 percent of "Other" uses); roofing, buildup and shingles (average about 15 percent); glass manufacture (average about 5 percent); sewage treatment, soil conditioning, other miscellaneous uses (average about 2 percent each); and withheld data indicated with W.

For granulated and expanded slag, end-use categories are cementitious additive, and other miscellaneous uses. For most years listed as expanded slag but in fact consisted almost entirely as granulated slag. For years 2002–03, expanded slag has been omitted (withheld). The other miscellaneous uses category includes lightweight concrete aggregate, soil conditioning, and miscellaneous and unspecified.

For steel slag, end-use categories are asphaltic concrete aggregate, road bases and road surfaces, fill railroad ballast, and other miscellaneous uses which include soil conditioning, fire protection, clinker raw material and other uses.

There are no usage data available for 2002. The end-use distribution for the year 2002 was assumed to be the same as for 2003.

The drop in the consumption for iron and steel slag may reflect a combination of actual diminished sales, as in the air-cooled slag road base, and less detailed reporting by the respondent companies.

Apparent consumption is calculated as sales plus imports minus exports. The net trade (imports minus exports) category is the difference between apparent consumption and iron and steel slag used. The increasing difference is likely due to changes in slag stockpiles, which are included in the reported data and not in the apparent consumption.

Blank cells represent less than one-half of the reporting unit as originally published, i.e., less than 500 tons. W indicates information withheld to avoid disclosing company proprietary data; withheld data included with the "Other" category for the specific slag type. Data are rounded to no more than three significant digits; although data are likely to be accurate to no more than two significant digits. Data may not add to totals shown.

References

U.S. Bureau of Mines, 1977–96, Minerals Yearbook, v. I, 1975–94.

U.S. Geological Survey, 1997–2005, Minerals Yearbook, v. I, 1995–2003.

Recommended Citation Format:

(1) If taken from CD version:

U.S. Geological Survey, [year of last update, e.g., 2005], [Mineral commodity, e.g., Gold] statistics, *in* Kelly, T.D., and Matos, G.R., comps., Historical statistics for mineral and material commodities in the United States: U.S. Geological Survey Data Series 140, one CD-ROM. (Also available online at <http://pubs.usgs.gov/ds/2005/140/>.)

(2) If taken from online version:

U.S. Geological Survey, [year of last update, e.g., 2005], [Mineral commodity, e.g., Gold] statistics, *in* Kelly, T.D., and Matos, G.R., comps., Historical statistics for mineral and material commodities in the United States: U.S. Geological Survey Data Series 140, available online at <http://pubs.usgs.gov/ds/2005/140/>. (Accessed [date].)

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