



MA32C -- REFRACTORIES

1993

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TABLE 1. VALUE OF SHIPMENTS OF REFRACTORIES:
1986 to 1993
(THOUSANDS OF DOLLARS)

Year	Total	Clay	Nonclay
1993.....	1,911,435	748,832	1,162,603
1992.....	1,956,083	786,078	1,170,005
1991.....	1,946,842	784,331	1,162,511
1990.....	2,002,833	771,315	1,231,518
1989.....	2,010,947	823,266	1,187,681
1988.....	1,950,032	813,739	1,136,293
1987.....	1,682,338	739,770	942,568
1986.....	1,521,323	670,002	851,321

TABLE 2. QUANTITY AND VALUE OF SHIPMENTS OF
REFRACTORIES, BY TYPE: 1993 AND 1992
(VALUE IN THOUSANDS OF DOLLARS)

Product code	Product description	1993				1992				
		Quantity shipped (unit of measure)				Quantity shipped (unit of measure)				
		Number of comp- anies	Short tons	Metric tons	M bricks Value (thousand 9-inch equivalent) shipments	Number of Short tons	Metric tons	M bricks Value (thousand 9-inch equivalent) shipments	of	
	Clay and nonclay refractories.....	(x)	(x)	(x)	(x)	1,911,435	(x)	(x)	(x)	1,956,083
3255- --	Clay refractories.....	(x)	(x)	(x)	(x)	748,832	(x)	(x)	(x)	786,078
	Brick and shapes.....	(x)	931,448	844,468	297,024	437,061	r/863,457	782,826	r/286,088	r/432,127
32550 11	Fireclay (including semi-silica), bloating and superduty fireclay brick and shapes, fireclay and high alumina pouring pit refractories, clay kiln furniture, radiant heater elements, and other miscellaneous clay refrac- tory shapes.....	32	411,803	373,348	144,060	164,427	391,962	355,360	141,698	161,345
32550 14	High alumina brick and shapes containing 50% alumina and over, including glass house pots, tank blocks, feeder parts, and upper structure shapes, made predominately of calcined bauxite, kyanite, andalusite, and similar raw materials. Include high alumina pouring pit refractories (containing 50% alumina and over), sleeves, nozzles, runners, and ladle gate parts/1.....		38	468,543	424,790	118,272	230,475	r/419,667	r/380,478	r/108,858 r/226,393
32550 35	Insulating brick and shapes.....		17	51,102	46,330	34,692	42,159	51,828	46,988	35,532 44,389

	Unshaped clay refractories.....	(x)	671,766	609,036	(x)	282,803	686,555	622,444	(x)	r/306,157
32550 55	Refractory bonding mortars, wet and dry, including clay and high alumina.....	36	59,267	53,733	(x)	24,817	62,291	56,474	(x)	25,368
32550 61	Plastic refractories and ramming mixes less than 50% alumina, high alumina plastic refractories and ramming mixes 50% alumina and over and high alumina phosphate bonded plastic and ramming mixes 50% alumina and over	27	176,972	160,446	(x)	74,072	200,921	182,159	(x)	r/95,976
	Castable refractories (hydraulic setting)									
32550 65	Castable refractories less than 50% alumina, high alumina castables 50% and over, and insulating castables (hydraulic setting) density up to 105 lbs/cubic foot/3..	41	291,010	263,835	(x)	141,756	r/304,089	r/275,693	(x)	r/149,681
32550 70	Fireclay gunning mixes (including hydraulic setting gunning mixes) less than 50% alumina, high alumina gunning mixes, 50% alumina and over and insulating gunning mixes (hydraulic setting).....	28	144,517	131,022	(x)	42,158	119,254	108,118	(x)	35,132
	Other refractory raw materials and refractory materials sold in lump or ground form either for direct use by customer as a finished refractory product or as exported material.....	(x)	242,204	219,587	(x)	19,588	321,521	291,497	(x)	37,285
32550 85	Clay and high alumina refractory raw materials/4.....	16	208,386	188,927	(x)	15,492	291,900	264,642	(x)	34,780
32550 95	Clay and high alumina refractory materials/5.....	11	33,818	30,660	(x)	4,096	29,621	26,855	(x)	2,505
32550 00	Clay refractories n.s.k./6.....	(x)	(x)	(x)	(x)	9,380	(x)	(x)	(x)	r/10,509
3297- --	Nonclay refractories.....	(x)	(x)	(x)	(x)	1,162,603	(x)	(x)	(x)	1,170,005
	Brick and shapes.....	(x)	473,090	428,912	(x)	113,532	660,323	485,788	440,424	120,285 682,988
32970 12	All silica bricks and shapes (excluding semi-silica)	17	25,198	22,845	(x)	21,383	32,209	37,099	33,635	29,128 43,668
32970 13	Magnesite-carbon brick and shapes, both less than 7% carbon, 7% carbon and over, predominately pitch and resin bonded, and carbon magnesite brick.....	8	120,298	109,064	(x)	21,763	122,191	110,801	100,454	19,755 128,557
32970 15	Magnesite brick and shapes, burned and unburned.....	9	18,627	16,888	(x)	4,341	16,661	r/19,342	r/17,536	r/4,119 r/16,598
32970 19	Magnesite-chrome, chrome-magnesite, including high fires, burned and unburned brick, as well as chrome brick.....	8	56,026	50,794	(x)	9,989	51,549	76,253	69,132	13,823 65,681
32970 48	Silicon carbide brick and shapes made predominately of silicon carbide, including kiln furniture.....	14	9,248	8,384	(x)	1,156	45,732	8,905	8,073	1,266 43,311
32970 50	Extra high alumina brick and shapes containing 87 1/2% and higher, and extra high alumina pouring pit refractories, including sleeves, nozzles, runners, tuyeres, ladle gate parts, and mullite brick and shapes.....	34	36,638	33,217	(x)	13,361	126,771	33,635	30,494	8,241 112,615
32970 55	Zircon and zirconia brick and shapes made predominately of either of these materials, including electrocast	22	6,551	5,939	(x)	2,048	38,050	5,160	4,678	1,668 36,693
32970 58	All other brick and shapes, including dolomite, dolomite magnesite, forsterite, pyrophyllite-zircon, carbon and graphite crucibles, retorts, stopper heads, natural graphite, refractories, and molten cast.....	23	200,504	181,781	(x)	39,491	227,160	194,593	176,422	42,285 235,865
	Mortars.....	(x)	26,124	23,684	(x)	25,051	26,937	24,422	(x)	25,242
32970 61	Unshaped nonclay refractories basic bonding mortars made									

	predominately of magnesite or chrome ore, dolomite and other nonclay mortars, made predominately of forsterite, zircon, and silica.....	10	18,043	16,358	(x)	17,342	19,783	17,936	(x)	18,107
32970 63	Extra high alumina refractory mortars made predominately of fused or synthetic alumina and mullite	21	8,081	7,326	(x)	7,709	7,154	6,486	(x)	7,135
	Plastic refractories and ramming mixes.....	(x)	143,172	129,803	(x)	114,978	133,237	120,796	(x)	106,209
32970 65	Basic castable mixes, including chrome, chrome-magnesia, magnesia-chrome, magnesia, and dolomite.....	14	49,638	45,003	(x)	35,089	48,729	44,179	(x)	30,015
32970 67	Extra high alumina plastic refractories and ramming mixes, 87 1/2% alumina and higher (made predominately of fused or synthetic aluminas and mullites), and extra high alumina phosphate bonded plastics and ramming mixes	24	64,714	58,671	(x)	66,771	56,009	50,779	(x)	62,090
32970 69	Other nonclay plastic refractories and ramming mixes	15	28,820	26,129	(x)	13,118	28,499	25,838	(x)	14,104
32970 68	Other nonclay refractory castables and plastics.....	15	9,014	8,172	(x)	10,506	8,290	7,516	(x)	8,368
	Gunning mixes									
32970 72	Basic nonclay gunning mixes (including chrome, chrome-magnesia, magnesia-chrome, magnesia, and dolomite) and other nonclay gunning mixes.....	17	262,763	238,226	(x)	115,449	303,346	275,019	(x)	120,026
32970 75	Ceramic refractory fibers, 1500 degrees F and higher.....	13	41,581	37,698	(x)	119,467	41,449	37,578	(x)	106,231
	Other nonclay refractory materials in lump or ground form including ground silica.....									
32970 94	Domestic shipments for direct use by customers as a finished refractory and all exported material/5	19	(D)	(D)	(x)	70,743	(D)	(D)	(x)	71,879
32970 96	All other domestic shipments of nonclay refractory materials sold in lump or ground form as refractory raw material/4.....	11	(D)	(D)	(x)	42,461	(D)	(D)	(x)	41,700
32970 00	Nonclay refractories n.s.k./6.....	(x)	(x)	(x)	(x)	3,625	(x)	(x)	(x)	r/7,362
	Dead-burned magnesia or magnesite/5,8.....									
32950 23	Domestic shipments for direct use as finished refractory products and all exported material.....	5	113,342	102,758	(x)	30,541	r/103,295	r/93,649	(x)	r/27,323
32950 25	All other domestic shipments predominately for use as a refractory raw material.....	7	121,488	110,143	(x)	38,122	154,139	139,745	(x)	43,671
32740 71	Dead-burned dolomite.....	5	320,537	290,605	(x)	21,232	321,999	291,930	(x)	21,506

(X) Not applicable. n.s.k. Not specified by kind.

r/Revised by 5 percent or more over previously published figures.

1/Excludes data for mullite and extra-high alumina refractories. These products are included in the nonclay refractories section.

2/Includes products referred to as plastic firebrick and the less plastic materials intended for ramming into place after the addition of water (when shipped in dry form).

3/Includes hydraulic setting castables designed for low thermal conductivity and having bulk densities as defined in ASTM classification C-401, not greater than 105 pounds/cubic foot.

4/Includes shipments to refractory producers for reprocessing the manufacture of brick and other refractories.

5/Includes shipments for direct use as finished refractory products by establishments classified in manufacturing industries and excludes shipments to refractory producers for reprocessing in the manufacture brick and other refractories. Includes all exports.

6/Not specified by kind (n.s.k.) represents the value of shipments for establishments which did not report detailed information and establishments, typically with less than five employees which were not included on the MA32C mailing panel.

7/"Fused" as applied to bauxite and alumina means complete melting, as in an electric furnace; after cooling, the product is crushed and graded for use in the refractory.

8/Total does not include shipments of dead-burned magnesia or magnesite for direct use as finished refractory products, which is not classified as refractories under the Standard Industrial Classification system.

TABLE 3. SHIPMENTS, EXPORTS, IMPORTS AND APPARENT CONSUMPTION OF REFRACTORIES, BY TYPE: 1993 AND 1992
(VALUE IN THOUSANDS OF DOLLARS)

Product code/1	Product Description	Unit of measure	Exports of domestic merchandise/1,2		Percent exports to manufacturers' shipments		Imports for consumption/1,3		Percent imports to apparent consumption/5		Apparent consumption			
			Quantity	Value	Quantity	Value	Quantity	Value/4	Quantity	Value	Quantity	Value		
1993														
	Clay and nonclay refractories/6.....(X).....	(X)	1,765,638	(X)	298,011	(X)	17.0	(X)	189,539	(X)	1,657,166	(X)	11.0	
	Clay refractories.....(X).....	(X)	719,864	(X)	66,820	(X)	9.0	(X)	26,410	(X)	679,454	(X)	4.0	
Thousand standard														
32550 11, 14,35	Brick and shapes.....brick equivalent.		297,024	437,061	(NA)	57,286	(NA)	13.0	(NA)	25,673	(NA)	405,448	(NA)	6.0
32550 55 61,65,70	Unshaped clay refractories and gunning mixes.....Metric tons...		609,036	282,803	12,276	9,534	2.0	3.0	348	737	597,108	274,006	-	-
	Nonclay refractories.....(X).....	(X)	1,045,774	(X)	231,191	(X)	22.0	(X)	163,129	(X)	977,712	(X)	17.0	
Thousand standard														
32970 13, 15,19	Nonclay magnesite and magnesite-chrome brick and shapes and chrome brick.....brick equivalent.		36,093	190,401	(NA)	63,581	(NA)	33.0	(NA)	58,596	(NA)	185,416	(NA)	32.0
32970 12, 48,50,55, 58	All other brick and shapes.....do.....		77,439	469,922	(NA)	73,116	(NA)	16.0	(NA)	83,344	(NA)	480,150	(NA)	17.0
32970 61, 63,65,67, 68,69,72, 75	Unshaped nonclay refractories and gunning mixes.....Metric tons...		437,583	385,451	121,912	94,494	28.0	25.0	29,197	21,189	344,868	312,146	8.0	7.0
1992														
	Clay and nonclay refractories/6.....(X).....	(X)	1,787,348	(X)	294,011	(X)	16.0	(X)	241,651	(X)	1,734,988	(X)	14.0	
	Clay refractories.....(X).....	(X)	738,284	(X)	62,123	(X)	8.0	(X)	26,167	(X)	702,328	(X)	4.0	
Thousand standard														
32550 11, 14,35	Brick and shapes.....brick equivalent.		286,088	432,127	(NA)	55,583	(NA)	13.0	(NA)	25,890	(NA)	402,434	(NA)	6.0
32550 55 61,65,70	Unshaped clay refractories and gunning mixes.....Metric tons...		622,444	306,157	8,176	6,540	1.0	2.0	334	277	614,602	299,894	-	-

	Nonclay refractories.....(X).....	(X)	1,049,064	(X)	231,888	(X)	22.0	(X)	215,484	(X)	1,032,660	(X)	21.0	
32970 13, 15,19	Nonclay magnesite and magnesite-chrome brick and shapes and chrome brick.....	Thousand standard brick equivalent	37,697	210,836	(NA)	57,697	(NA)	27.0	(NA)	52,886	(NA)	206,025	(NA)	26.0
32970 12, 48,50,55, 58	All other brick and shapes.....do.....		82,588	472,152	(NA)	86,568	(NA)	18.0	(NA)	75,206	(NA)	460,790	(NA)	16.0
32970 61, 63,65,67, 68,69,72, 75	Unshaped nonclay refractories and gunning mixes.....Metric tons...		465,331	366,076	102,947	87,623	22.0	24.0	30,185	20,732	392,569	299,185	8.0	7.0

- Represents zero. (NA) Not available. (X) Not applicable.

1/For comparison of SIC-based codes with Schedule B export numbers and HTSUSA import numbers, see table 4.

2/Source: Bureau of the Census report EM 545, U.S. Exports.

3/Source: Bureau of the Census report IM 146, U.S. Imports for Consumption and General Imports.

4/Value at port includes both import value and duty value.

5/Apparent consumption is derived by subtracting exports from the total of shipments plus imports (including duty).

6/The clay and nonclay refractories total shown here exclude product codes 32550 00, 32550 85, 32550 95, 32970 00, 32970 94, 32970 96; therefore, they differ from the totals shown in tables 1 and 2.

TABLE 4. COMPARISON OF STANDARD INDUSTRIAL CLASSIFICATION-BASED PRODUCT CODES WITH SCHEDULE B EXPORT NUMBERS, AND HTSUSA IMPORT NUMBERS: 1993

Product code	Product description	Export number/1	Import number/2
32550 11	Clay brick and shapes	6902.20.1010	6902.20.1010
32550 14		6902.20.5010	6902.20.5010
32550 35		6902.90.1010	6902.90.1010
		6902.90.5010	6902.90.5010
		6903.90.0010	6903.90.0010
32550 55	Unshaped clay refractories and gunning		
32550 61	mixes	3816.00.0010	3816.00.0010
32550 65			
32550 70			
32970 13	Nonclay magnesite and magnesite-chrome	6902.10.1000	6902.10.1000
32970 15	brick and shapes, and chrome brick	6902.10.5000	6902.10.5000
32970 19			
32970 12	All other nonclay brick and shapes	6902.20.1020	6902.20.1020
32970 48		6902.20.5020	6902.20.5020
32970 50		6902.90.1020	6902.90.1020
32970 55		6902.90.5020	6902.90.5020
32970 58		6903.90.0050	6903.90.0050

32970 61	Unshaped nonclay refractories and		
32970 63	gunning mixes	3816.00.0050	3816.00.0050
32970 65			
32970 67			
32970 68			
32970 69			
32970 72			
32970 75			

1/Source: 1993 edition, Harmonized System-Based Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States.

2/Source: Harmonized Tariff Schedule of the United States, Annotated (1993).
1,787,348