



MA32C -- REFRACTORIES

1994

(94)-1

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Contact person: Robert Miller (301) 457-4787

TABLE 1. VALUE OF SHIPMENTS OF REFRACTORIES:

1986 to 1994

(THOUSANDS OF DOLLARS)

Year	Total	Clay	Nonclay
1994.....	1,996,711	851,162	1,145,549
1993.....	1,930,233	772,986	1,157,247
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: 1994 AND 1993

(VALUE IN THOUSANDS OF DOLLARS)

Product code	Product description	1994				1993				
		Quantity shipped (unit of measure)		Value		Quantity shipped (unit of measure)		Value		
		No. of comp-nies	Short tons	M bricks (thousand Metric tons equivalent)	M bricks Value	No. of comp-nies	Short tons	M bricks (thousand Metric tons equivalent)	M bricks Value	
	Clay and nonclay refractories.....	(x)	(x)	(x)	(x)	1,996,711	(x)	(x)	(x)	1,930,233
3255- --	Clay refractories.....	(x)	(x)	(x)	(x)	851,162	(x)	(x)	(x)	772,986
	Brick and shapes.....	(x)	906,947	822,254	300,807	508,793	917,402	831,734	304,297	451,455
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 refractory shapes.....	32	446,777	405,056	145,033	195,237	427,183	387,292	r/156,254	170,747
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.....	34	413,579	374,958	117,730	266,334	r/ 439,330	r/ 398,305	r/112,680	238,526
32550 35	Insulating brick and shapes.....	15	46,591	42,240	38,044	47,222	50,889	46,137	35,363	42,182
	Unshaped clay refractories.....	(x)	732,455	664,057	(x)	317,049	671,135	608,464	(x)	282,647
32550 55	Refractory bonding mortars, wet and dry, including clay and high alumina.....	33	56,126	50,885	(x)	25,266	59,062	53,547	(x)	24,706
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/2.....	25	177,045	160,512	(x)	75,152	176,770	160,263	(x)	74,067
	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.....	39	326,972	296,439	(x)	166,220	290,786	263,632	(x)	141,716
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	172,312	156,221	(x)	50,411	144,517	131,022	(x)	42,158
	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)	218,134	197,765	(x)	18,626	241,291	218,759	(x)	19,574
32550 85	Clay and high alumina refractory raw materials/4.....	16	204,852	185,723	(x)	16,487	208,386	188,927	(x)	15,492
32550 95	Clay and high alumina refractory materials/5.....	10	13,282	12,042	(x)	2,139	32,905	29,832	(x)	4,082
32550 00	Clay refractories n.s.k./6.....	(x)	(x)	(x)	(x)	6,694	(x)	(x)	(x) r/	19,310
3297- --	Nonclay refractories.....	(x)	(x)	(x)	(x)	1,145,549	(x)	(x)	(x)	1,157,247
	Brick and shapes.....	(x)	468,193	424,472	110,073	638,414	482,303	437,264	107,724	644,671
32970 12	All silica bricks and shapes (excluding semi-silica).....	16	42,406	38,446	20,836	25,399	r/ 29,674	r/ 26,903	r/ 15,964	r/ 22,931
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	99,866	90,540	18,982	111,394	120,298	109,064	21,763	122,191
32970 15	Magnesite brick and shapes, burned and unburned.....	9	24,331	22,059	4,636	19,536	18,627	16,888	4,307	16,661
32970 19	Magnesite-chrome, chrome-magnesite, including high fires, burned and unburned brick, as well as chrome brick.....	8	57,684	52,297	9,692	54,172	r/ 60,140	r/ 54,524	9,990	r/ 54,281
32970 48	Silicon carbide brick and shapes made predominately of silicon carbide, including kiln furniture.....	11	7,863	7,129	906	47,663	9,240	8,377	1,157	45,702
32970 50	Extra high alumina brick and shapes containing 87 1/2% alumina and higher, and extra high alumina pouring pit refractories, including sleeves, nozzles, runners, tuyeres, ladle gate parts, and mullite brick and shapes.....	31	32,375	29,352	13,569	115,219	37,129	33,662	13,359	126,753
32970 55	Zircon and zirconia brick and shapes made predominately of either of these materials, including electrocast.....	19	6,089	5,520	1,719	36,590	6,571	5,957	2,049	38,103
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.....	24	197,579	179,129	39,733	228,441	200,624	181,889	39,135	218,049

Mortars.....	(x)	22,536	20,432	(x)	19,326	r/ 24,413	22,133	(x)	r/ 23,454
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.....	9	15,947	14,458	(x)	13,308	18,043	16,358	(x)	17,342
32970 63 Extra high alumina refractory mortars made predominately of fused or synthetic alumina and mullite.....	19	6,589	5,974	(x)	6,018	r/ 6,370	r/ 5,775	(x)	r/ 6,112
Plastic refractories and ramming mixes.....	(x)	130,891	118,668	(x)	102,145	138,302	125,387	(x)	r/ 109,059
32970 65 Basic castable mixes, including chrome, chrome-magnesia, magnesia-chrome, magnesia, and dolomite.....	10	35,334	32,034	(x)	24,037	48,496	43,967	(x)	r/ 32,853
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.....	23	64,275	58,273	(x)	64,763	r/ 60,793	r/ 55,116	(x)	r/ 62,888
32970 69 Other nonclay plastic refractories and ramming mixes.....	16	31,282	28,361	(x)	13,345	29,013	26,304	(x)	13,318
32970 68 Other nonclay refractory castables and plastics.....	15	14,416	13,070	(x)	17,082	r/ 11,747	r/ 10,650	(x)	r/ 13,630
Gunning mixes									
32970 72 Basic nonclay gunning mixes (including chrome, chrome-magnesia, magnesia-chrome, magnesia, and dolomite) and other nonclay gunning mixes.....	15	215,332	195,224	(x)	88,730	266,260	241,396	(x)	116,839
32970 75 Ceramic refractory fibers, 1500 degrees F and higher.....	11	48,427	43,905	(x)	141,526	41,184	37,338	(x)	117,061
Other nonclay refractory materials in lump or ground form including ground silica.....									
(x)	338,840	307,199	(x)	110,948	r/ 286,758	r/ 259,980	(x)	115,618	
32970 94 Domestic shipments for direct use by customers as a finished refractory and all exported material/5.....	19	(D)	(D)	(x)	68,234	(D)	(D)	(x)	73,157
32970 96 All other domestic shipments of nonclay refractory materials sold in lump or ground form as refractory raw material/4.....	9	(D)	(D)	(x)	42,714	(D)	(D)	(x)	42,461
32970 00 Nonclay refractories n.s.k./6.....	(x)	(x)	(x)	(x)	27,378	(x)	(x)	(x)	r/ 16,915
Dead-burned magnesia or magnesite/5,8.....	(x)	108,628	98,484	(x)	31,689	r/ 148,615	r/ 134,737	(x)	r/ 40,841
32950 23 Domestic shipments for direct use as finished refractory products and all exported material.....	5	(D)	(D)	(x)	(D)	113,342	102,758	(x)	30,541
32950 25 All other domestic shipments predominately for use as a refractory raw material.....	6	(D)	(D)	(x)	(D)	r/ 35,273	r/ 31,979	(x)	r/ 10,300
32740 71 Dead-burned dolomite.....	4	307,606	278,881	(x)	21,360	r/ 338,133	r/ 306,558	(x)	22,309

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

(D) Data withheld to avoid disclosing figures for individual companies.

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 of 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: 1994 AND 1993
(VALUE IN THOUSANDS OF DOLLARS)

Product code/1	Product Description	Unit of measure	Exports of		Percent exports			Imports for		Apparent consumption/5			
			Manufacturers' shipments		domestic	to manufacturers' shipments		consumption/1,3		consumption/5			
			Quantity	Value	Value at port/2	Quantity	Value	Quantity	Value/4	Quantity	Value		
1994													
	Clay and nonclay refractories/6.....	(X)	(X)	1,833,065	(X)	305,379	(X)	17.0	(X)	197,389	(X)	1,725,075	
	Clay refractories.....	(X)	(X)	825,842	(X)	58,330	(X)	7.0	(X)	24,817	(X)	792,329	
				Thousand standard									
32550 11, 14,35	Brick and shapes.....	brick equivalent.....		300,807	508,793	(NA)	50,006	(NA)	10.0	(NA)	24,419	(NA)	483,206
32550 55 61,65,70	Unshaped clay refractories and gunning mixes.....	Metric tons.....		664,057	317,049	11,343	8,324	2.0	3.0	723	398	653,437	309,123
	Nonclay refractories.....	(X)	(X)	1,007,223	(X)	247,049	(X)	25.0	(X)	172,572	(X)	932,746	
32970 13, 15,19	Nonclay magnesite and magnesite-chrome brick and shapes.....	Thousand standard brick equivalent.....		33,310	185,102	(NA)	63,001	(NA)	34.0	(NA)	68,907	(NA)	191,008
32970 12, 48,50,55, 58	All other brick and shapes.....	do.....		76,763	453,312	(NA)	82,188	(NA)	18.0	(NA)	82,133	(NA)	453,257
32970 61, 63,65,67, 68,69,72, 75	Unshaped nonclay refractories and gunning mixes.....	Metric tons.....		391,299	368,809	141,038	101,860	36.0	28.0	32,640	21,532	282,901	288,481
1993													
	Clay and nonclay refractories/6.....	(X)	(X)	1,758,816	(X)	298,011	(X)	17.0	(X)	189,539	(X)	1,650,344	
	Clay refractories.....	(X)	(X)	734,102	(X)	66,820	(X)	9.0	(X)	26,410	(X)	693,692	
				Thousand standard									
32550 11, 14,35	Brick and shapes.....	brick equivalent.....		304,297	451,455	(NA)	57,286	(NA)	13.0	(NA)	25,673	(NA)	419,842
32550 55 61,65,70	Unshaped clay refractories and gunning mixes.....	Metric tons.....		608,464	282,647	12,276	9,534	2.0	3.0	348	737	596,536	273,850

	Nonclay refractories.....(X).....	(X)	1,024,714	(X)	231,191	(X)	23.0	(X)	163,129	(X)	956,652	
32970 13, 15,19	Nonclay magnesite and magnesite-chrome brick and shapes and chrome brick.....		Thousand standard brick equivalent 36,060	193,133	(NA)	63,581	(NA)	33.0	(NA)	58,596	(NA)	188,148
32970 12, 48,50,55, 58	All other brick and shapes.....do.....		71,664	451,538	(NA)	73,116	(NA)	16.0	(NA)	83,344	(NA)	461,766
32970 61, 63,65,67, 68,69,72, 75	Unshaped nonclay refractories and gunning mixes.....		Metric tons..... 436,904	380,043	121,912	94,494	28.0	25.0	29,197	21,189	344,189	306,738

- 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: 1995

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 mixes		
32550 61		3816.00.0010	3816.00.0010
32550 65			
32550 70			
32550 85	Other clay refractory materials	2508.30.0000	2508.30.0000
32550 95		2508.40.0010	2508.40.0010
		2508.40.0050	2508.40.0050
		2508.50.0000	2508.50.0000
		2508.60.0000	2508.60.0000
32970 13	Nonclay magnesite and magnesite-chrome brick and shapes, and chrome brick	6902.10.1000	6902.10.1000
32970 15		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			

32970 94	Other nonclay refractory materials	2519.10.0000	2519.10.0000
32970 96		2519.90.1000	2519.90.1000
		2519.90.2000	2519.90.2000
		2519.90.5000	2519.90.5000

1/Source: 1995 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 (1995).

1,024,71