

Mineral Industry Surveys

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SULFUR IN DECEMBER 2008

During the month, production of recovered elemental sulfur was 818,000 metric tons (t), according to the U.S. Geological Survey. Production was 10% higher than production in November 2008 and December 2007. Shipments were 830,000 t, 14% higher than those of November 2008. Producers' ending stocks for December 2008 were 196,000 t.

Imports of recovered sulfur for December 2008 were estimated to be 172,000 t; exports were 173,000 t. Imports of sulfuric acid for December 2008 were 265,000 t; exports were 22,000 t.

U.S. sulfur consumption, calculated as shipments minus exports plus imports, was 829,000 t in December 2008. This was 5% higher than that of November 2008 and 3% lower than that of December 2007. Consumption remained relatively low compared with levels reached earlier in the year because phosphate fertilizer producers curtailed production at most operations as a result of decreased demand for fertilizer

products. Consumption may not increase significantly until the beginning of the spring planting season. The decline in consumption was mostly reflected in reduced imports of elemental sulfur, which fell sharply in the fourth quarter of 2008. Exports were also higher than normal during that period.

Significant adjustments have been made to the sulfur import data. Reports from the U.S. Census Bureau appear to underreport sulfur imports, especially material from Canada. The revised figures are based on Census information and data from personal communications with industry experts.

Global sulfur prices continued to decline. The average unit value of imported sulfur was \$113 per ton in December. Although the average value remained four times the average value in 2007, industry analysts expected the downward trend to continue, perhaps to historically low prices after experiencing record highs just a few months ago.

TABLE 1
SALIENT SULFUR STATISTICS¹

(Thousand metric tons)

| Period | Production | | | Shipments, all sources | Ending stocks ³ |
|-----------------------|------------------------|-----------------|------------------|---------------------------|-------------------------------|
| | Petroleum ² | Natural gas | Total | | |
| 2007: | | | | | |
| January-December | 7,000 | 1,280 | 8,280 | 8,320 | XX |
| December | 629 | 114 | 744 | 727 | 187 |
| 2008: | | | | | |
| January | 624 | 86 | 711 | 712 | 202 |
| February | 526 | 93 | 618 | 622 | 180 |
| March | 609 | 89 | 697 | 711 | 174 |
| April | 602 | 94 | 697 | 687 | 179 |
| May | 645 | 95 | 740 | 743 | 176 |
| June | 604 | 96 ^r | 701 | 682 | 182 |
| July | 654 | 101 | 755 | 773 | 174 |
| August | 638 | 105 | 739 | 729 ^r | 182 |
| September | 502 | 94 | 598 ^r | 576 ^r | 200 |
| October | 665 | 106 | 771 | 777 | 198 |
| November | 642 ^r | 100 | 743 ^r | 728 ^r | 212 |
| December ^p | 718 | 101 | 818 | 830 | 196 |
| Total | 7,430 | 1,160 | 8,590 | 8,570 | XX |

^pPreliminary. ^rRevised. XX Not applicable.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes a small quantity from coking operations.

³Subject to inventory adjustments.

TABLE 2
U.S. IMPORTS OF SULFUR¹

(Thousand metric tons and thousand dollars)

| Period | Canada | | Mexico | | Venezuela | | Total, all countries ² | |
|------------------|-----------------------|--------------------|----------|--------------------|-----------------------|--------------------|-----------------------------------|--------------------|
| | Quantity ^e | Value ³ | Quantity | Value ³ | Quantity ^e | Value ³ | Quantity ^e | Value ³ |
| 2007: | | | | | | | | |
| January-December | 2,090 | 43,200 | 424 | 16,100 | 406 | 17,200 | 2,930 | 79,400 |
| December | 180 | 7,610 | 15 | 1,140 | 53 | 3,930 | 248 | 12,800 |
| 2008: | | | | | | | | |
| January | 205 | 11,600 | 43 | 3,070 | 63 | 4,480 | 311 | 19,300 |
| February | 210 | 16,100 | 29 | 6,820 | 35 | 8,260 | 274 | 31,400 |
| March | 205 | 36,000 | 22 | 8,000 | 19 | 4,110 | 272 | 60,300 |
| April | 190 | 25,200 | 22 | 12,900 | 11 | 6,720 | 223 | 45,000 |
| May | 195 | 40,800 | 43 | 16,800 | 16 | 6,330 | 254 | 64,200 |
| June | 190 | 36,800 | 29 | 9,840 | 23 | 8,230 | 253 | 64,700 |
| July | 200 | 62,900 | 14 | 5,940 | 20 | 8,230 | 261 | 102,000 |
| August | 200 | 55,900 | 29 | 11,600 | 60 | 39,100 | 309 | 119,000 |
| September | 195 | 52,000 | 29 | 13,800 | 49 | 22,800 | 273 | 88,700 |
| October | 130 | 55,200 | 49 | 25,400 | 40 | 15,100 | 232 | 99,500 |
| November | 125 | 17,600 | 29 | 16,300 | 9 | 5,250 | 164 | 39,500 |
| December | 130 | 4,900 | 27 | 9,210 | 15 | 5,260 | 172 | 19,500 |
| Total | 2,180 | 415,000 | 365 | 140,000 | 360 | 134,000 | 3,000 | 753,000 |

^eEstimated.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²May include other countries not listed.

³Declared customs valuation.

Sources: U.S. Census Bureau data as adjusted by U.S. Geological Survey and PentaSul North America Sulphur Service.

TABLE 3
U.S. IMPORTS OF SULFURIC ACID¹

(Thousand metric tons and thousand dollars)

| Period | Canada | | | Mexico | | | Total, all countries ² | | |
|------------------|----------|----------------|--------------------|----------|----------------|--------------------|-----------------------------------|----------------|--------------------|
| | Quantity | Sulfur content | Value ³ | Quantity | Sulfur content | Value ³ | Quantity | Sulfur content | Value ³ |
| 2007: | | | | | | | | | |
| January-December | 2,310 | 688 | 101,000 | 239 | 79 | 6,760 | 2,600 | 833 | 112,000 |
| December | 192 | 62 | 9,060 | 11 | 4 | 493 | 202 | 66 | 9,610 |
| 2008: | | | | | | | | | |
| January | 193 | 63 | 11,500 | 12 | 4 | 711 | 205 | 67 | 12,300 |
| February | 198 | 65 | 13,400 | 16 | 5 | 1,330 | 242 | 79 | 17,300 |
| March | 239 | 74 | 17,700 | 45 | 15 | 6,380 | 326 | 107 | 30,300 |
| April | 213 | 70 | 19,000 | 18 | 6 | 2,050 | 323 | 106 | 36,400 |
| May | 237 | 77 | 23,800 | 15 | 5 | 1,530 | 305 | 100 | 36,700 |
| June | 192 | 63 | 18,100 | 12 | 4 | 1,370 | 357 | 117 | 33,300 |
| July | 196 | 64 | 21,000 | 21 | 7 | 2,970 | 241 | 79 | 29,000 |
| August | 237 | 77 | 28,400 | 41 | 13 | 13,500 | 324 | 106 | 57,100 |
| September | 186 | 61 | 21,400 | 24 | 8 | 5,360 | 319 | 104 | 61,600 |
| October | 164 | 54 | 21,900 | 34 | 11 | 7,480 | 278 | 91 | 55,200 |
| November | 151 | 49 | 18,600 | 25 | 8 | 5,320 | 257 | 84 | 45,200 |
| December | 146 | 48 | 18,000 | 33 | 11 | 7,690 | 265 | 87 | 44,400 |
| Total | 2,350 | 765 | 233,000 | 296 | 97 | 55,700 | 3,440 | 1,130 | 459,000 |

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²May include other countries not listed.

³Declared customs valuation.

Source: U.S. Census Bureau.

TABLE 4
U.S. EXPORTS OF SULFUR AND SULFURIC ACID¹

(Thousand metric tons and thousand dollars)

| Period | Sulfur | | Sulfuric acid | | |
|------------------|----------|--------------------|---------------|----------------|--------------------|
| | Quantity | Value ² | Quantity | Sulfur content | Value ² |
| 2007: | | | | | |
| January-December | 922 | 84,800 | 334 | 106 | 34,300 |
| December | 84 | 10,600 | 14 | 5 | 2,370 |
| 2008: | | | | | |
| January | 31 | 4,910 | 22 | 7 | 3,230 |
| February | 92 | 32,900 | 18 | 6 | 1,780 |
| March | 53 | 17,000 | 33 | 11 | 5,410 |
| April | 56 | 21,200 | 15 | 5 | 2,590 |
| May | 39 | 9,210 | 23 | 8 | 5,450 |
| June | 74 | 24,800 | 18 | 6 | 2,130 |
| July | 69 | 16,700 | 15 | 5 | 1,900 |
| August | 104 | 53,900 | 20 | 7 | 2,670 |
| September | 37 | 18,700 | 24 | 8 | 3,430 |
| October | 125 | 36,800 | 37 | 10 | 8,490 |
| November | 101 | 14,800 | 14 | 5 | 1,350 |
| December | 173 | 20,400 | 22 | 7 | 4,240 |
| Total | 954 | 272,000 | 261 | 85 | 42,700 |

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Declared f.a.s. (free alongside ship) valuation.

Source: U.S. Census Bureau.

TABLE 5
U.S. CONSUMPTION OF SULFUR¹

(Thousand metric tons)

| Period | Domestic sources ² | Imports ^e | Consumption |
|------------------|-------------------------------|----------------------|---------------------|
| 2007: | | | |
| January-December | 7,390 | 2,930 | 10,200 ^r |
| December | 643 | 248 | 858 |
| 2008: | | | |
| January | 681 | 311 | 992 |
| February | 530 ^r | 274 | 804 ^r |
| March | 658 | 272 | 930 |
| April | 631 | 223 | 854 |
| May | 704 | 254 | 958 |
| June | 608 | 253 | 861 |
| July | 704 | 261 | 965 |
| August | 625 ^r | 309 | 934 ^r |
| September | 539 ^r | 273 | 812 ^r |
| October | 652 | 232 | 884 |
| November | 627 ^r | 164 | 791 ^r |
| December | 657 | 172 | 829 |
| Total | 7,620 | 3,000 | 10,600 |

^eEstimated. ^rRevised.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Calculated as shipments minus exports.

TABLE 6
RECOVERED SULFUR PRODUCED AND SHIPPED IN THE UNITED STATES,
BY PAD (PETROLEUM ADMINISTRATION FOR DEFENSE) DISTRICT¹

(Thousand metric tons)

| District and source | January-December 2007 ² | | November 2008 | | December 2008 ^p | | January-December 2008 ² | |
|---------------------------|------------------------------------|-----------|------------------|------------------|----------------------------|-----------|------------------------------------|-----------|
| | Production | Shipments | Production | Shipments | Production | Shipments | Production | Shipments |
| PAD 1: | | | | | | | | |
| Petroleum and coke | 270 | 273 | 16 ^r | 15 ^r | 16 | 17 | 279 | 276 |
| Natural gas | 13 | 12 | 1 | 1 | 1 | 1 | 13 | 13 |
| Total | 283 | 285 | 18 ^r | 17 ^r | 17 | 18 | 293 | 289 |
| PAD 2: | | | | | | | | |
| Petroleum and coke | 944 | 948 | 73 | 71 | 85 | 86 | 969 | 970 |
| Natural gas | 40 | 40 | 3 | 2 | 3 | 3 | 30 | 30 |
| Total | 984 | 988 | 75 | 73 | 88 | 89 | 999 | 1,000 |
| PAD 3: ³ | | | | | | | | |
| Petroleum and coke | 4,620 | 4,650 | 441 ^r | 439 ^r | 507 | 509 | 4,790 | 4,800 |
| Natural gas | 509 | 516 | 41 | 39 ^r | 45 | 46 | 520 | 518 |
| Total | 5,130 | 5,170 | 483 ^r | 478 ^r | 552 | 556 | 5,310 | 5,320 |
| PAD 4 and 5: ⁴ | | | | | | | | |
| Petroleum and coke | 1,170 | 1,150 | 112 ^r | 111 | 109 | 111 | 1,390 | 1,370 |
| Natural gas | 716 | 720 | 56 | 50 | 52 | 57 | 595 | 590 |
| California | 946 | 916 | 94 | 94 | 92 | 95 | 1,140 | 1,110 |
| Total | 1,890 | 1,870 | 167 | 161 | 161 | 167 | 1,980 | 1,960 |
| Grand total | 8,280 | 8,320 | 743 ^r | 728 ^r | 818 | 830 | 8,590 | 8,570 |

^pPreliminary. ^rRevised.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²May include revisions.

³Includes the U.S. Virgin Islands.

⁴Quantities produced and shipped in California included in petroleum and coke. California total shown for information purpose only.

TABLE 7
COMPARATIVE SULFUR AND SULFURIC ACID STATISTICS¹

(Million metric tons per year [annualized basis] and dollars per metric ton for period shown)

| | 2007 | 2008 | | Total |
|--|--------------------|-------------------|-------------------|-------|
| | total | November | December | |
| Production | 8.28 | 9.06 ^r | 9.66 ^p | 8.59 |
| Shipments | 8.32 | 8.88 ^r | 9.80 ^p | 8.57 |
| Exports of sulfur | 0.92 | 1.23 | 2.04 | 0.95 |
| Imports of sulfur: | | | | |
| Canada ^c | 2.09 | 1.52 | 1.53 | 2.18 |
| Mexico | 0.42 | 0.35 | 0.32 | 0.36 |
| Venezuela ^e | 0.41 | 0.11 | 0.18 | 0.36 |
| Total ^{e,2} | 2.93 | 2.00 | 2.03 | 3.00 |
| Exports of H ₂ SO ₄ | 0.33 | 0.17 | 0.26 | 0.26 |
| Imports of H ₂ SO ₄ : | | | | |
| Canada | 2.31 | 1.84 | 1.72 | 2.35 |
| Mexico | 0.24 | 0.31 | 0.39 | 0.30 |
| Total ² | 2.60 | 3.14 | 3.13 | 3.44 |
| Consumption: | | | | |
| Domestic sources | 7.39 | 7.65 ^r | 7.76 | 7.62 |
| Imports ^c | 2.90 | 2.00 | 2.03 | 3.00 |
| Total | 10.20 ^r | 9.65 ^r | 9.79 | 10.60 |
| Sulfur export values ³ | 92 | 147 | 118 | 285 |
| Sulfur import values: ³ | | | | |
| Canada | 21 | 141 | 38 | 191 |
| Mexico | 38 | 563 | 341 | 383 |
| Venezuela | 42 | 583 | 350 | 372 |
| Average ² | 27 | 241 | 113 | 251 |
| H ₂ SO ₄ export values ³ | 103 | 96 | 193 | 164 |
| H ₂ SO ₄ import values: ³ | | | | |
| Canada | 44 | 123 | 123 | 99 |
| Mexico | 28 | 213 | 233 | 188 |
| Average ² | 43 | 176 | 167 | 133 |

^cEstimated. ^pPreliminary. ^rRevised.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes other countries not listed.

³Average value per ton.