

# Mineral Industry Surveys

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## ZINC IN DECEMBER 2016

Domestic mine production (recoverable) of zinc in December 2016 was 52,600 metric tons (t) (table 2). Average daily mine production in December was 1,700 t, 6% less than that in November and 29% less than that in December 2015 (fig. 1).

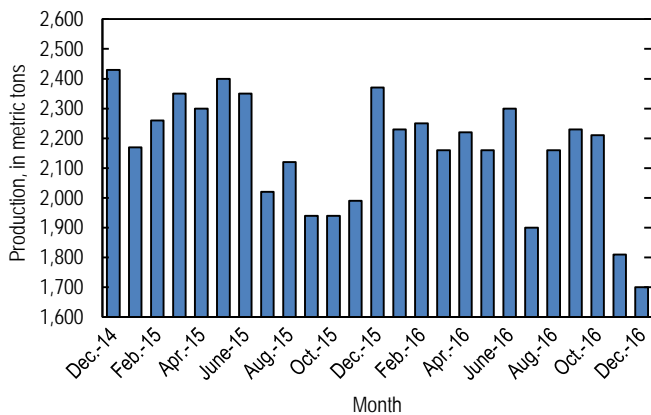


Figure 1. Average daily domestic zinc mine production (recoverable) from December 2014 through December 2016. Source: U.S. Geological Survey.

Global London Metal Exchange Ltd. (LME) stocks of Special High Grade (SHG) zinc decreased by 14,150 t to 427,850 t in December, 3% less than stocks at the end of November 2016 and 8% less than stocks at the end of December 2015 (fig. 2, table 7).

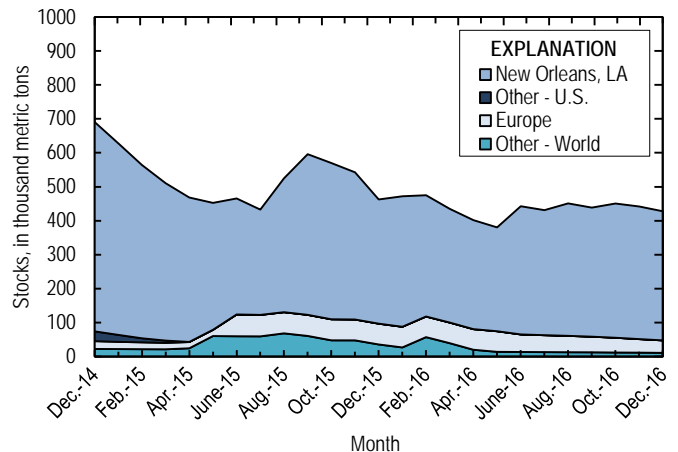


Figure 2. Global LME stocks of Special High Grade zinc, monthend, from December 2014 through December 2016. Source: London Metal Exchange Ltd.

The monthly average Platts Metals Week North American SHG zinc price in December 2016 was \$1.27 per pound, a 4% increase from that in November 2016 and 67% more than that in December 2015. The December average LME cash price for SHG zinc was \$2,671.34 per metric ton, a 4% increase from that in the previous month and 76% more than that in December 2015. The North American premium to the LME cash price in December averaged about 6.0 cents per pound, a 4% decrease from that in November, and despite the increase in prices, 16% below that in December 2015 (fig. 3, table 6). Monthly average SHG zinc prices increased significantly since the beginning of the year, with the December average North American SHG and LME cash prices increasing by about 69% and 77%, respectively, from those in January 2016. Among the LME-traded base metals, zinc has experienced the greatest increase in price coincident with increased investment interest and an increasing production-to-

consumption deficit in the zinc metal market resulted from several significant mine closures and production cutbacks. The International Lead and Zinc Study Group forecast that global zinc metal consumption would exceed production by 349,000 t in 2016 and that the market would remain in deficit in 2017 (International Lead and Zinc Study Group, 2016; Onstad, 2016).

International Lead and Zinc Study Group, 2016, ILZSG session/forecasts: Lisbon, Portugal, International Lead and Zinc Study Group press release, October 31, 5 p. (Accessed October 31, 2016, via <http://www.ilzsg.org/>.)  
 Onstad, Eric, 2016, Zinc, nickel to spin wheels next year after sizzling rallies: London, United Kingdom, Reuters, November 7. (Accessed November 7, 2016, at <http://www.reuters.com/article/us-metals-base-poll-idUSKBN1321RW?rpc=401&>.)

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**References Cited**

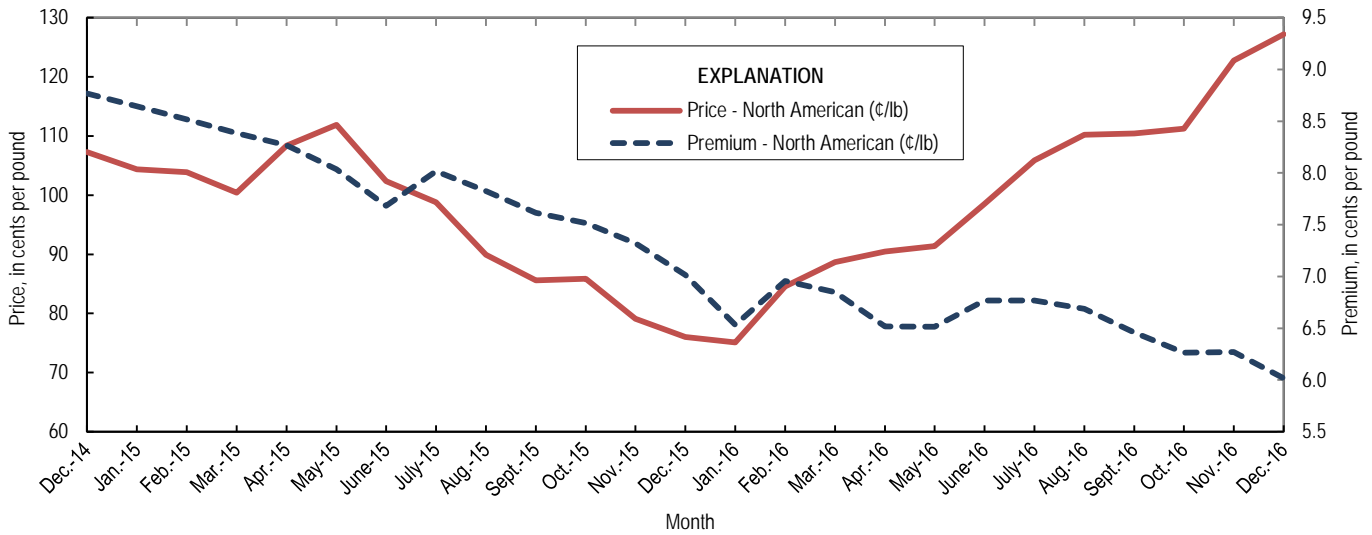


Figure 3. Average monthly North American price and premium for Special High Grade zinc from December 2014 through December 2016. Source: Platts Metals Week.

TABLE 1  
SALIENT ZINC STATISTICS<sup>1</sup>

(Metric tons, unless otherwise specified)

|  | 2015                              | 2016                |          |                                   |
|--|-----------------------------------|---------------------|----------|-----------------------------------|
|  | January–<br>December <sup>p</sup> | November            | December | January–<br>December <sup>2</sup> |
| <b>Production:</b>   |                                   |                     |          |                                   |
| Mine, zinc content of concentrate <sup>3</sup>                 | 825,000                           | 56,000              | 54,400   | 798,000                           |
| Mine, recoverable zinc <sup>3</sup>                            | 797,000                           | 54,200              | 52,600   | 772,000                           |
| Smelter, refined zinc <sup>e</sup>                             | 172,000                           | 11,300 <sup>r</sup> | 11,300   | 126,000                           |
| Consumption of refined zinc, apparent <sup>4</sup>             | 931,000                           | 73,500 <sup>r</sup> | 64,800   | 788,980                           |
| <b>Imports for consumption:</b>                                |                                   |                     |          |                                   |
| Ore and concentrate (zinc content)                             | 22                                | --                  | --       | 60                                |
| Refined zinc   | 771,000                           | 62,700              | 53,800   | 713,000                           |
| <b>Exports:</b>  |                                   |                     |          |                                   |
| Ore and concentrate (zinc content)                             | 709,000                           | 32,400              | 6,840    | 604,000                           |
| Refined zinc   | 12,700                            | 445                 | 172      | 49,800                            |
| <b>Price:<sup>5</sup></b>                                      |                                   |                     |          |                                   |
| London Metal Exchange cash, average,<br>dollars per metric ton | 1,932.14                          | 2,568.41            | 2,671.34 | 2,090.34                          |
| Platts Metals Week North American, average,<br>cents per pound | 95.54                             | 122.77              | 127.19   | 101.37                            |

<sup>e</sup>Estimated. <sup>p</sup>Preliminary. -- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits, except prices; may not add to totals shown.

<sup>2</sup>May include revisions to previously published data.

<sup>3</sup>Reported zinc content in both zinc and lead concentrates.

<sup>4</sup>Smelter production plus imports for consumption minus domestic exports.

<sup>5</sup>Special High Grade Zinc.

TABLE 2  
MINE AND SMELTER PRODUCTION OF ZINC  
IN THE UNITED STATES<sup>1</sup>

(Metric tons)

| Period           | Mine <sup>2</sup> |             | Smelter <sup>e</sup> |
|------------------|-------------------|-------------|----------------------|
|                  | Zinc content      | Recoverable |                      |
| <b>2015:</b>     |                   |             |                      |
| December         | 76,100            | 73,600      | 13,500               |
| January–December | 825,000           | 797,000     | 172,000              |
| <b>2016:</b>     |                   |             |                      |
| January          | 74,100            | 71,700      | 10,600               |
| February         | 67,300            | 65,200      | 10,600               |
| March            | 69,300            | 67,000      | 10,600               |
| April            | 68,800            | 66,600      | 10,600               |
| May              | 69,100            | 66,900      | 10,600               |
| June             | 71,000            | 68,600      | 10,600               |
| July             | 60,100            | 58,100      | 9,580                |
| August           | 68,500            | 66,200      | 9,580                |
| September        | 68,300            | 66,000      | 9,580                |
| October          | 71,000            | 68,600      | 11,300               |
| November         | 56,000            | 54,200      | 11,300               |
| December         | 54,400            | 52,600      | 11,300               |
| January–December | 798,000           | 772,000     | 126,000              |

<sup>e</sup>Estimated.

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

<sup>2</sup>Includes the zinc content in both lead and zinc concentrates.

TABLE 3  
U.S. IMPORTS FOR CONSUMPTION OF ZINC<sup>1</sup>

(Gross weight, unless otherwise specified)

| Material                           | 2015                      |                      | 2016                      |                      |                               |                      |
|------------------------------------|---------------------------|----------------------|---------------------------|----------------------|-------------------------------|----------------------|
|                                    | Quantity<br>(metric tons) | Value<br>(thousands) | December                  |                      | January–December <sup>2</sup> |                      |
|                                    |                           |                      | Quantity<br>(metric tons) | Value<br>(thousands) | Quantity<br>(metric tons)     | Value<br>(thousands) |
| Ore and concentrate (zinc content) | 22                        | \$48                 | --                        | --                   | 60                            | \$15                 |
| Unwrought:                         |                           |                      |                           |                      |                               |                      |
| Refined zinc                       | 771,000                   | 1,620,000            | 53,800                    | \$139,000            | 713,000                       | 1,490,000            |
| Zinc alloys                        | 8,070                     | 17,000               | 655                       | 1,640                | 7,590                         | 15,700               |
| Wrought:                           |                           |                      |                           |                      |                               |                      |
| Bars, rods, profiles, wire         | 3,020                     | 9,620                | 161                       | 551                  | 2,710                         | 8,330                |
| Plates, sheets, strip, foil        | 3,680                     | 14,600               | 79                        | 230                  | 3,650                         | 12,000               |
| Ash and residues:                  |                           |                      |                           |                      |                               |                      |
| Hard zinc spelter                  | --                        | --                   | 152                       | 256                  | 247                           | 392                  |
| Zinc dross and skimmings           | 4,570                     | 7,370                | 235                       | 435                  | 3,770                         | 5,620                |
| Other (zinc content)               | 1,550                     | 983                  | 264                       | 155                  | 1,200                         | 886                  |
| Other:                             |                           |                      |                           |                      |                               |                      |
| Powders, flakes, dust              | 29,100                    | 91,300               | 1,740                     | 5,430                | 27,800                        | 85,400               |
| Waste and scrap                    | 18,000                    | 20,100               | 983                       | 1,740                | 11,300                        | 12,800               |
| Chemicals:                         |                           |                      |                           |                      |                               |                      |
| Lithopone                          | 1,210                     | 1,630                | 7                         | 107                  | 2,660                         | 6,310                |
| Zinc oxide                         | 116,000                   | 250,000              | 8,080                     | 18,400               | 123,000                       | 239,000              |
| Zinc chloride                      | 154                       | 1,150                | 10                        | 97                   | 137                           | 1,290                |
| Zinc sulfate                       | 89,000                    | 68,100               | 6,930                     | 5,720                | 80,100                        | 60,500               |
| Zinc sulfide                       | 2,460                     | 8,050                | 94                        | 246                  | 572                           | 1,570                |

-- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits.

<sup>2</sup>May include revisions to previously published data.

Source: U.S. Census Bureau.

TABLE 4  
U.S. IMPORTS OF ZINC, BY TYPE OF MATERIAL AND COUNTRY<sup>1</sup>

(Metric tons, gross weight, unless otherwise specified)

| Material and country                       | General imports |          |                               | Imports for consumption |          |                               |
|--|-----------------|----------|-------------------------------|-------------------------|----------|-------------------------------|
|  | 2015            | 2016     |                               | 2015                    | 2016     |                               |
|  |                 | December | January–December <sup>2</sup> |                         | December | January–December <sup>2</sup> |
| <b>Ore and concentrate (zinc content):</b> |                 |          |                               |                         |          |                               |
| Canada                                     | 19              | --       | --                            | 19                      | --       | --                            |
| Germany                                    | 3               | --       | --                            | 3                       | --       | --                            |
| Japan                                      | --              | --       | 10                            | --                      | --       | 10                            |
| Korea, Republic of                         | --              | --       | 50                            | --                      | --       | 50                            |
| Total                                      | 22              | --       | 60                            | 22                      | --       | 60                            |
| <b>Refined zinc:</b>                       |                 |          |                               |                         |          |                               |
| Australia                                  | 45,100          | --       | 26,000                        | 82,400                  | --       | 29,200                        |
| Belgium                                    | 1,250           | --       | --                            | 19,600                  | --       | 2,190                         |
| Brazil                                     | --              | --       | --                            | 99                      | --       | --                            |
| Canada                                     | 479,000         | 38,000   | 506,000                       | 479,000                 | 38,000   | 506,000                       |
| China                                      | 64              | --       | 5                             | 1,800                   | --       | 405                           |
| France                                     | --              | --       | (3)                           | --                      | --       | (3)                           |
| Germany                                    | (3)             | --       | 4                             | (3)                     | --       | 4                             |
| India                                      | 2,500           | 2,430    | 3,020                         | 2,500                   | 2,430    | 3,020                         |
| Japan                                      | --              | --       | --                            | --                      | --       | 397                           |
| Korea, Republic of                         | 1,500           | --       | 6                             | 20,900                  | 477      | 9,310                         |
| Latvia                                     | --              | --       | (3)                           | --                      | --       | (3)                           |
| Mexico                                     | 99,000          | 8,490    | 88,800                        | 99,000                  | 8,490    | 88,800                        |
| Namibia                                    | --              | --       | --                            | --                      | --       | 123                           |
| Netherlands                                | --              | --       | --                            | 2,840                   | --       | 346                           |
| Peru                                       | 31,200          | 4,090    | 66,600                        | 31,200                  | 4,090    | 66,600                        |
| Poland                                     | --              | 294      | 294                           | --                      | 294      | 294                           |
| Spain                                      | 31              | --       | --                            | 32,000                  | --       | 6,190                         |
| Sweden                                     | (3)             | --       | (3)                           | (3)                     | --       | (3)                           |
| Switzerland                                | --              | --       | --                            | 28                      | --       | --                            |
| Taiwan                                     | 32              | --       | 31                            | 32                      | --       | 31                            |
| United Kingdom                             | --              | --       | --                            | 49                      | --       | --                            |
| Total                                      | 659,000         | 53,300   | 691,000                       | 771,000                 | 53,800   | 713,000                       |
| <b>Oxide:</b>                              |                 |          |                               |                         |          |                               |
| Australia                                  | 26              | --       | 97                            | 26                      | --       | 97                            |
| Belgium                                    | 155             | --       | 12                            | 155                     | --       | 12                            |
| Canada                                     | 71,200          | 4,470    | 69,100                        | 71,200                  | 4,470    | 69,100                        |
| China                                      | 585             | 20       | 428                           | 580                     | 20       | 427                           |
| France                                     | --              | 4        | 31                            | --                      | 4        | 31                            |
| Germany                                    | 2,380           | 161      | 2,490                         | 2,380                   | 161      | 2,490                         |
| India                                      | 202             | 16       | 101                           | 202                     | 16       | 101                           |
| Indonesia                                  | 1               | --       | 27                            | 1                       | --       | 27                            |
| Israel                                     | --              | --       | 34                            | --                      | --       | 34                            |
| Japan                                      | 485             | 28       | 352                           | 485                     | 28       | 352                           |
| Mexico                                     | 32,500          | 3,170    | 35,100                        | 32,500                  | 3,170    | 35,100                        |
| Netherlands                                | 5,790           | 142      | 5,390                         | 5,790                   | 142      | 5,390                         |
| Norway                                     | 5               | --       | 4                             | 5                       | --       | 4                             |
| Peru                                       | 1,510           | --       | 9,180                         | 1,510                   | --       | 9,180                         |
| Russia                                     | --              | --       | 11                            | --                      | --       | 11                            |
| Switzerland                                | 21              | --       | 8                             | 21                      | --       | 8                             |
| Thailand                                   | --              | --       | 14                            | --                      | --       | 14                            |
| Turkey                                     | 417             | --       | --                            | 417                     | --       | --                            |
| United Kingdom                             | 232             | 78       | 273                           | 232                     | 78       | 273                           |
| Other (4 countries)                        | (3)             | --       | 24                            | (3)                     | --       | 24                            |
| Total                                      | 116,000         | 8,080    | 123,000                       | 116,000                 | 8,080    | 123,000                       |

-- Zero.

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

<sup>2</sup>May include revisions to previously published data.

<sup>3</sup>Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 5  
U.S. EXPORTS OF ZINC<sup>1</sup>

(Gross weight, unless otherwise specified)

| Material                           | 2015                      |                      | 2016                      |                      |                               |                      |
|------------------------------------|---------------------------|----------------------|---------------------------|----------------------|-------------------------------|----------------------|
|                                    | Quantity<br>(metric tons) | Value<br>(thousands) | December                  |                      | January–December <sup>2</sup> |                      |
|                                    |                           |                      | Quantity<br>(metric tons) | Value<br>(thousands) | Quantity<br>(metric tons)     | Value<br>(thousands) |
| Ore and concentrate (zinc content) | 709,000                   | \$987,000            | 6,840                     | \$15,900             | 604,000                       | \$927,000            |
| Unwrought:                         |                           |                      |                           |                      |                               |                      |
| Refined zinc                       | 12,700                    | 28,700               | 172                       | 396                  | 49,800                        | 96,500               |
| Zinc alloys                        | 19,700                    | 50,700               | 975                       | 2,940                | 16,200                        | 40,900               |
| Wrought:                           |                           |                      |                           |                      |                               |                      |
| Bars, rods, profiles, wire         | 15,400                    | 25,000               | 674                       | 1,780                | 8,100                         | 20,200               |
| Plates, sheets, strip, foil        | 8,010                     | 28,000               | 635                       | 2,110                | 6,960                         | 23,900               |
| Ash and residues:                  |                           |                      |                           |                      |                               |                      |
| Hard zinc spelter                  | 9,580                     | 13,600               | 852                       | 1,490                | 12,100                        | 18,200               |
| Other (zinc content)               | 19,600                    | 24,000               | 1,620                     | 2,580                | 22,800                        | 29,900               |
| Other:                             |                           |                      |                           |                      |                               |                      |
| Powders, flakes, dust              | 12,300                    | 38,200               | 1,120                     | 3,690                | 12,700                        | 39,600               |
| Waste and scrap                    | 55,200                    | 68,600               | 3,050                     | 3,750                | 30,100                        | 37,800               |
| Chemicals:                         |                           |                      |                           |                      |                               |                      |
| Lithopone                          | 1,040                     | 7,200                | 123                       | 734                  | 1,260                         | 7,160                |
| Zinc oxide                         | 21,800                    | 28,900               | 4,510                     | 6,000                | 55,200                        | 56,300               |
| Zinc chloride                      | 419                       | 657                  | 47                        | 67                   | 853                           | 1,130                |
| Zinc sulfate                       | 726                       | 751                  | 79                        | 71                   | 588                           | 850                  |
| Zinc sulfide                       | 780                       | 14,100               | 150                       | 1,500                | 1,040                         | 14,600               |

<sup>1</sup>Data are rounded to no more than three significant digits.

<sup>2</sup>May include revisions to previously published data.

Source: U.S. Census Bureau.

TABLE 6  
AVERAGE PRICES FOR SPECIAL HIGH GRADE ZINC

| Period           | North                          | London Metal Exchange                |          |
|------------------|--------------------------------|--------------------------------------|----------|
|                  | American <sup>1</sup><br>¢/lb. | cash <sup>2</sup><br>¢/lb.      \$/t |          |
| 2015:            |                                |                                      |          |
| December         | 76.04                          | 69.02                                | 1,521.74 |
| January–December | 95.54                          | 87.64                                | 1,932.14 |
| 2016:            |                                |                                      |          |
| January          | 75.11                          | 68.58                                | 1,511.88 |
| February         | 84.54                          | 77.59                                | 1,710.46 |
| March            | 88.69                          | 81.84                                | 1,804.32 |
| April            | 90.48                          | 83.97                                | 1,851.12 |
| May              | 91.38                          | 84.86                                | 1,870.86 |
| June             | 98.51                          | 91.74                                | 2,022.59 |
| July             | 105.85                         | 99.08                                | 2,184.43 |
| August           | 110.22                         | 103.53                               | 2,282.40 |
| September        | 110.44                         | 103.98                               | 2,292.44 |
| October          | 111.22                         | 104.95                               | 2,313.83 |
| November         | 122.77                         | 116.50                               | 2,568.41 |
| December         | 127.19                         | 121.17                               | 2,671.34 |
| January–December | 101.37                         | 94.82                                | 2,090.34 |

<sup>1</sup>Platts Metals Week North American price. Based on the London Metal Exchange cash price plus premium.

<sup>2</sup>Average of the cash buyer price and the cash seller and settlement price.

Source: Platts Metals Week.

TABLE 7  
LONDON METAL EXCHANGE (LME) STOCKS OF SPECIAL HIGH GRADE ZINC, END OF PERIOD

(Metric tons)

| Period    | United States |                 |         | Europe | Other  | Total LME |
|-----------|---------------|-----------------|---------|--------|--------|-----------|
|           | Detroit, MI   | New Orleans, LA | Total   |        |        |           |
| 2015:     |               |                 |         |        |        |           |
| December  | 25            | 365,725         | 365,750 | 61,250 | 35,700 | 462,700   |
| 2016:     |               |                 |         |        |        |           |
| January   | 25            | 384,250         | 384,275 | 60,850 | 26,925 | 472,050   |
| February  | 25            | 357,075         | 357,100 | 60,725 | 57,275 | 475,100   |
| March     | 25            | 334,825         | 334,850 | 60,700 | 39,475 | 435,025   |
| April     | --            | 321,000         | 321,000 | 60,700 | 20,100 | 401,800   |
| May       | --            | 305,775         | 305,775 | 60,700 | 13,975 | 380,450   |
| June      | --            | 377,450         | 377,450 | 51,700 | 13,550 | 442,700   |
| July      | --            | 368,150         | 368,150 | 49,850 | 13,200 | 431,200   |
| August    | --            | 390,000         | 390,000 | 48,250 | 12,850 | 451,100   |
| September | --            | 380,025         | 380,025 | 46,050 | 12,600 | 438,675   |
| October   | --            | 395,225         | 395,225 | 43,550 | 11,950 | 450,725   |
| November  | --            | 390,475         | 390,475 | 39,875 | 11,650 | 442,000   |
| December  | --            | 380,125         | 380,125 | 36,750 | 10,975 | 427,850   |

-- Zero.

Source: London Metal Exchange, Ltd.