CHROMIUM
(Data in thousand metric tons of chromium content unless otherwise noted)

Domestic Production and Use: In 2020, the United States was expected to consume 4% of world chromite ore production in various forms of imported materials, such as chromite ore, chromium chemicals, chromium ferroalloys, chromium metal, and stainless steel. Imported chromite ore was consumed by one chemical firm to produce chromium chemicals. Stainless-steel and heat-resisting-steel producers were the leading consumers of ferrochromium. Stainless steels and superalloys require the addition of chromium via ferrochromium or chromium-containing scrap. The value of chromium material consumption was expected to be about $600 million in 2020, as measured by the value of net imports, excluding stainless steel, and was an increase from $304 million in 2019.

Salient Statistics—United States:

<table>
<thead>
<tr>
<th>Production:</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mine</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>130</td>
</tr>
<tr>
<td>Recycling¹</td>
<td>156</td>
<td>156</td>
<td>143</td>
<td>142</td>
<td>130</td>
</tr>
<tr>
<td>Imports for consumption</td>
<td>548</td>
<td>634</td>
<td>651</td>
<td>530</td>
<td>490</td>
</tr>
<tr>
<td>Exports</td>
<td>253</td>
<td>255</td>
<td>211</td>
<td>157</td>
<td>110</td>
</tr>
<tr>
<td>Shipments from Government stockpile</td>
<td>5</td>
<td>8</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Consumption (includes recycling):

| Reported | 462 | 523 | 465 | 489 | 440 |
| Apparent² | 455 | 545 | 587 | 519 | 510 |

Price, average annual value of imports, dollars per ton:

| Chromium ore (gross weight) | 198 | 259 | 279 | 248 | 180 |
| Ferrochromium (chromium content)³ | 1,750 | 2,547 | 2,549 | 2,094 | 1,800 |
| Chromium metal (gross weight) | 9,939 | 9,675 | 11,344 | 10,393 | 7,900 |

Stocks, consumer, yearend | 9 | 6 | 5 | 5 | 5 |

Net import reliance⁴ as a percentage of apparent consumption | 66 | 71 | 76 | 73 | 75 |

Recycling: In 2020, recycled chromium (contained in reported stainless steel scrap receipts) accounted for 25% of apparent consumption.

Import Sources (2016–19): Chromite (mineral): South Africa, 99%; and Canada, 1%. Chromium-containing scrap:⁵ Canada, 50%; Mexico, 42%; and other, 8%. Chromium (primary metal):⁶ South Africa, 36%; Kazakhstan, 10%; Russia, 7%; and other, 47%. Total imports: South Africa, 39%; Kazakhstan, 8%; Mexico, 6%; Russia, 6%; and other, 41%.

Tariff:⁷ Item

<table>
<thead>
<tr>
<th>Number</th>
<th>Normal Trade Relations 12–31–20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium ores and concentrates:</td>
<td></td>
</tr>
<tr>
<td>Cr₂O₃ not more than 40%</td>
<td>2610.00.0020</td>
</tr>
<tr>
<td>Cr₂O₃ more than 40% and less than 46%</td>
<td>2610.00.0040</td>
</tr>
<tr>
<td>Cr₂O₃ more than or equal to 46%</td>
<td>2610.00.0060</td>
</tr>
<tr>
<td>Chromium oxides and hydroxides:</td>
<td></td>
</tr>
<tr>
<td>Chromium trioxide</td>
<td>2819.10.0000</td>
</tr>
<tr>
<td>Other</td>
<td>2819.90.0000</td>
</tr>
<tr>
<td>Sodium dichromate</td>
<td>2841.30.0000</td>
</tr>
<tr>
<td>Potassium dichromate</td>
<td>2841.50.1000</td>
</tr>
<tr>
<td>Other chromates and dichromates</td>
<td>2841.50.9100</td>
</tr>
<tr>
<td>Carbidess of chromium</td>
<td>2849.90.2000</td>
</tr>
<tr>
<td>Ferrochromium:</td>
<td></td>
</tr>
<tr>
<td>Carbon more than 4%</td>
<td>7202.41.0000</td>
</tr>
<tr>
<td>Carbon more than 3%</td>
<td>7202.49.1000</td>
</tr>
<tr>
<td>Carbon more than 0.5%</td>
<td>7202.49.5010</td>
</tr>
<tr>
<td>Other</td>
<td>7202.49.5090</td>
</tr>
<tr>
<td>Ferrosilicon chromium</td>
<td>7202.50.0000</td>
</tr>
<tr>
<td>Chromium metal:</td>
<td></td>
</tr>
<tr>
<td>Unwrought, powder</td>
<td>8112.21.0000</td>
</tr>
<tr>
<td>Waste and scrap</td>
<td>8112.22.0000</td>
</tr>
<tr>
<td>Other</td>
<td>8112.29.0000</td>
</tr>
</tbody>
</table>

Depletion Allowance: 22% (domestic), 14% (foreign).

Prepared by Ruth F. Schulte [(703) 648–4963, rschulte@usgs.gov]
Government Stockpile: CHROMIUM

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferrochromium:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-carbon</td>
<td>33.9</td>
<td>21.3</td>
<td>30.2</td>
<td>21.8</td>
<td></td>
</tr>
<tr>
<td>Low-carbon</td>
<td>26.8</td>
<td>21.3</td>
<td>30.2</td>
<td>21.8</td>
<td></td>
</tr>
<tr>
<td>Chromium metal</td>
<td>3.83</td>
<td>0.181</td>
<td></td>
<td>0.454</td>
<td></td>
</tr>
</tbody>
</table>

Events, Trends, and Issues: Chromium is consumed in the form of ferrochromium to produce stainless steel. South Africa was the leading chromite ore producer. Increased labor costs, increased costs for electricity, an unreliable supply of electricity, temporary mine closures related to the COVID-19 pandemic, and challenges related to deep level mining could affect production in South Africa in 2020.

China was the leading chromium-consuming country. China was also the leading stainless-steel- and ferrochromium-producing country. South Africa was the second-leading country in ferrochromium production. Ferrochromium production is energy-intensive, so constrained electrical power supply and rising costs for electricity in South Africa, as well as temporary closures related to the COVID-19 pandemic, could also affect ferrochromium production.

From September 2019 to September 2020, the monthly average high-carbon ferrochromium price increased by 12%. Prices of chromium metal decreased by 18% in September 2020 compared with the monthly average price in September 2019 and were below the prior low in February 2007.

World Mine Production and Reserves:

<table>
<thead>
<tr>
<th>Mine production</th>
<th>Reserves (shipping grade)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mine production</td>
<td>Reserves (shipping grade)</td>
</tr>
<tr>
<td>2019</td>
<td>2020</td>
</tr>
<tr>
<td>United States</td>
<td>620</td>
</tr>
<tr>
<td>Finland</td>
<td>2,415</td>
</tr>
<tr>
<td>India</td>
<td>4,139</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>6,700</td>
</tr>
<tr>
<td>South Africa</td>
<td>16,395</td>
</tr>
<tr>
<td>Turkey</td>
<td>10,000</td>
</tr>
<tr>
<td>Other countries</td>
<td>5,110</td>
</tr>
<tr>
<td>World total (rounded)</td>
<td>44,800</td>
</tr>
</tbody>
</table>

World Resources: World resources are greater than 12 billion tons of shipping-grade chromite, sufficient to meet conceivable demand for centuries. World chromium resources are heavily geographically concentrated (95%) in Kazakhstan and southern Africa; United States chromium resources are mostly in the Stillwater Complex in Montana.

Substitutes: Chromium has no substitute in stainless steel, the leading end use, or in superalloys, the major strategic end use. Chromium-containing scrap can substitute for ferrochromium in some metallurgical uses.

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1Estimated. NA Not available. — Zero.
2Recycling production is based on reported receipts of all types of stainless steel scrap.
3Defined as production (from mines and recycling) + imports – exports + adjustments for Government and industry stock changes.
4Excludes ferrochromium silicon.
5Defined as imports – exports + adjustments for Government and industry stock changes.
6Includes chrome metal scrap and stainless steel scrap.
7Includes chrome metal, ferrochrome, and stainless steel.
8Includes chrome metal, ferrochrome, and stainless steel.
9Includes chrome metal, ferrochrome, and stainless steel.
10In addition to the tariff items listed, certain imported chromium materials (see 26 U.S.C. sec. 4661, 4662, and 4672) are subject to excise tax.
11See Appendix B for definitions.
12Units are thousand tons of material by gross weight.
13High-carbon and low-carbon ferrochromium, combined.
14Mine production units are thousand tons, gross weight, of marketable chromite ore.
15See Appendix C for resource and reserve definitions and information concerning data sources.
16Includes chromium metal scrap and stainless steel scrap.
17Reserves units are thousand tons of shipping-grade chromite ore, which is deposit quantity and grade normalized to 45% Cr2O3, except for the United States where grade is normalized to 7% Cr2O3 and Finland where grade is normalized to 26% Cr2O3.

U.S. Geological Survey, Mineral Commodity Summaries, January 2021