Prime Scrap Is "King"

The Rise of "Prime Scrap"

Prime scrap will only become more and more scarce with all the new flat-rolled electric arc furnace (EAF) capacity coming on-line in the market over the next four years. In 2021, U.S. prime scrap averaged about US$590/gross ton, with a recent peak of about US$650/ton compared to the peak in 2008 of US$860/gross ton (see Fig. 1 on the next page). Traditionally, the spread between shredded scrap and prime scrap averaged about US$30 to US$35/gross ton. However, in 2021, the average spread was between US$100 and US$110/ton. The current price in February 2022 for prime scrap is US$570/gross ton while shredded scrap is now about US$470/ton.

WSD is boosting its estimate for the prime steel scrap price delivered to the U.S. steel plant over the steel cycle. Reasons include:

- The supply of prime steel scrap is price inelastic. Its supply is just above 200 million metric tons/year (mmtpy) — i.e., about 11.5% of the steel products delivered to steel users (that at present is about 1.8 billion metric tons per year assuming a 90% steel product to steel production ratio). The generation of new steel scrap in the U.S. is about 11.5 mmtpy.
- Demand for prime steel scrap will rise significantly in the next decade due to: (a) the rising number of EAF-based mini-sheet mills that depend on prime scrap or its alternatives (direct reduced iron and purchased pig iron) for at least 40–50% of their metallics charge; and (b) new EAF steelmaking units to be installed in integrated steel plants that are part of new process routes to lessen CO_2 emissions.
- Nucor and United States Steel Corporation have each announced new 3-million-tons-per-year, EAF-based hot-rolled-band-producing plants — Nucor's facility will serve the industrial Midwest from West Virginia, while the U. S. Steel plant will be located in Arkansas.
- A transformative U.S. steel industry development is the Cleveland-Cliffs acquisition of the Midwest's Ferrous Processing Co. (FPT) for US$775 million. FPT has an estimated 15% share of the U.S.'s prime steel scrap market. It has about 22 scrap processing locations and processes about 3 million metric tons of steel scrap per year.
- The Nucor and U. S. Steel capacity additions come on top of roughly 12 million tons of capacity already just completed and/or in the completion process. The list includes Big River Steel in Osceola, Ark., at 1.5 mmtpy, which will boost its output to 3.0 mmtpy; Nucor at 2.0 mmtpy at several plants including Gallatin, Ky.; AM/NS Calvert LLC with 1.5 mmtpy of new EAF steelmaking capacity in Calvert, Ala.; JSW Steel USA with 1.3 mmtpy at Mingo Junction, Ohio; North Star BlueScope in Delta, Ohio, at 1.5 mmtpy; Steel Dynamics Inc. in Sinton, Texas, at 3.0 mmtpy; and, U. S. Steel at 1.5 mmtpy at its Fairfield, Ala., plant.
- Steel scrap is an international commodity. Global steel scrap trade is about 100 mmtpy.

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WSD's steel experience, steel database and availability of steel statistics are the principles for performing steel forecasts, studies and analysis for international clients. WSD seeks to understand how the "pricing power" of steel companies the world over will be impacted by changes in the steel industry's structure. The views and opinions expressed in this article are solely those of World Steel Dynamics and not necessarily those of AIST.

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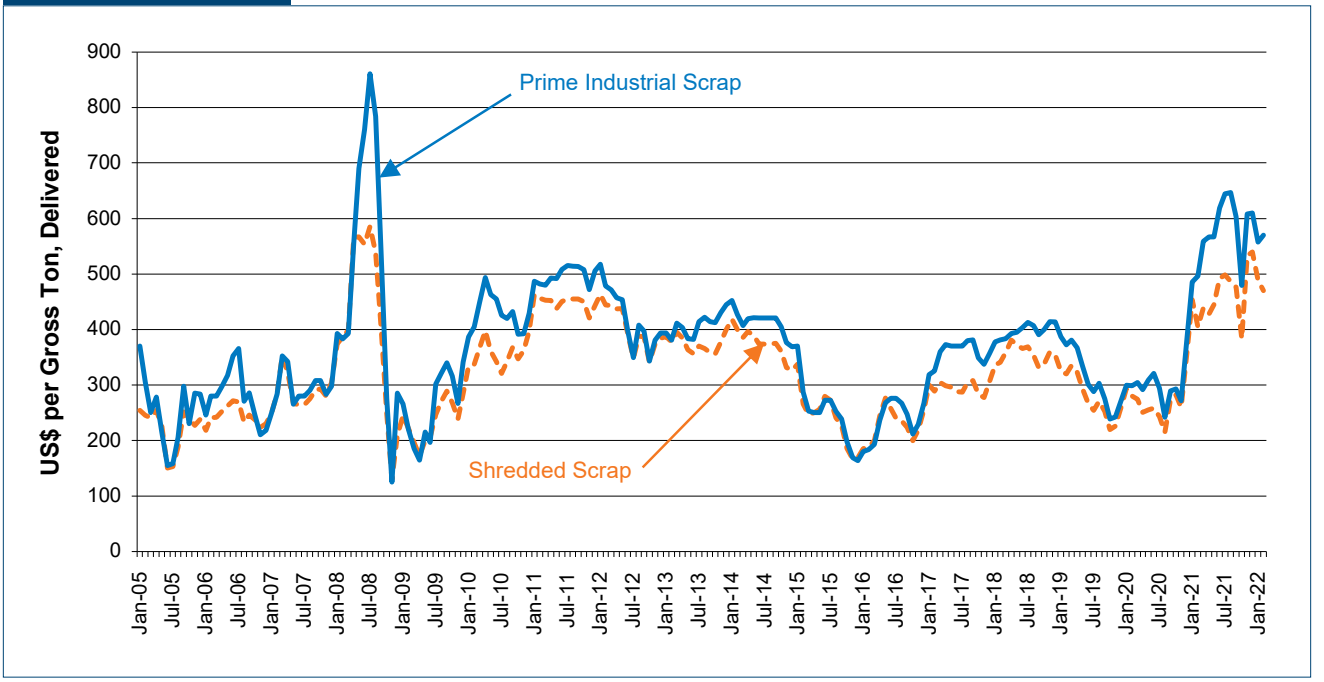
Figure 1



U.S. shredded scrap prices vs. U.S. prime industrial scrap. Source: WSD estimates, AMM, SteelBenchmarker™.

- Steel scrap consumption by the global steel and foundry industries in 2021 is estimated as follows:
  - Home scrap for the steel industry amounts to about 11.5% of crude production = about 230 mmtpy.
  - Prime scrap amounts to about 11.5% of the steel finished products and semis delivered to steel users = 11.5% × 1.8 billion metric tons per year = 207 mmtpy.
  - Obsolete scrap is a function of the size of the obsolete steel scrap reservoir that's 10–40 years old. It's currently about 15 billion metric tons/31 years = about 483 million metric tons in 2020. Given the prodigious rise that will be assuring in this reservoir by 2045, there will be a huge excess supply of obsolete scrap in China:
    - » In 2020, the obsolete steel scrap reservoir 10–40 years old was 4.3 billion metric tons in China and 10.6 billion metric tons in the rest of the world.
    - » In 2045, the figures will be about 18 billion metric tons for China and 15 billion metric tons for the rest of the world. Hence, the reservoir 10–40 years old in China's case rises by from 4 billion metric tons in 2020 to 18 billion metric tons in 2045 — which, if we divide by the holdings in the reservoir over 31 means, indicated that Chinese steel scrap recovery rises to 580 million metric tons in 2045 from 140 million metric tons in 2020, for a gain of 440 million metric tons.
  - Global scrap consumption for the steel and steel foundry industries in 2020 was about 928 mmtpy.