Green Steel Gets The Lead Out

University of Pittsburgh

Two professors at the University of Pittsburgh discovered a better alternative to the millions of tons of lead-containing steel produced worldwide every year. They found that tin can perform the same function as lead. Just as lead has been removed from gasoline and paint for environmental reasons, the tin steel offers another attractive way to keep lead products out of the environment. For this reason, the tin steel has been named “Green Steel.”

Anthony DeArdo and C. Isaac Garcia, professors of materials science and engineering, examined the new tin steel on an atomic level to determine how it affected machinability. Machinable steel has a smoother surface finish and causes less wear on the tools used to shape it.

> *They found that their tin steel can be machined at speeds about 30% faster than leaded steel which can result in a significant increase in profitability by companies that make machined parts.*

In addition, the expenses that go toward protecting factory workers from lead fumes can be eliminated.

The work leading up to the invention started in 1995 under funding from a consortium of companies that manufacture and machine steel. The University of Pittsburgh Office of Technology Management worked with these companies to form the Non-Leaded Free Machining Steel Consortium LLC. The Web site of Curtis Screw Co. LLC, one of the consortium members, says 2,000 of its 12,000 tons of cut cold drawn steel will be green steel this year. The consortium was dissolved in 2002 to pursue licensing as a better way to advance the technology.

The university has granted an exclusive license to a major steel company that serves all of North America, a non-exclusive license to a major steel manufacturer in Europe, and is fielding inquiries for possible licenses from companies in the Far East and South America.

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