Recent Literature

François Cardarelli Authors Scientific Unit Conversion Handbook

Scientific Unit Conversion, written by François Cardarelli and published by Springer-Verlang, contains more than 10,000 scientific units. The manual includes units related to pure and applied science, technology, medicine, and economics and groups them and their conversions into imperial and U.S. units, conventional metric units, older or out-of-date units, ancient units, and SI units. The first chapters contain a brief history of the metric system, including the organization and a complete description of SI units, as well as a detailed description of a considerable number of other systems of measurement, including some still in widespread use, older national or regional systems, and some from antiquity. An exhaustive set of conversion tables arranged in alphabetical order is provided. Each unit is listed with name, symbol(s), physical quantity, dimension, conversion factor to nine decimal places, notes, and definitions. A unit can also be identified from its area of application; units are organized into groups in 35 conversion tables, ranging from mass to nuclear quantities. Also included are tables of fundamental mathematics and physical constants. Appendices contain a list of national and international bodies in the area of standardization, rules of nomenclature for large numbers, notation for times and dates, a brief French-English glossary of names of units and associated physical quantities, and a detailed bibliography. The thoroughness of its listings makes the manual suitable for researchers, scientists, engineers and technologists, economists, doctors, pharmacists, patent lawyers, teachers, and students. The handbook does not provide rules and advice for writing the names, nor the recommended symbols for physical quantities used in science and technology. For more information, visit Springer-Verlang at www.springer.de.

Aluminum Association Publishes North American Aluminum Industry Plant Directory

The Aluminum association has released a plant directory for the North American aluminum industry. The first edition contains 350 companies with 530 plant locations in the United States, Canada, and Mexico. The directory includes association members and non-members that produce ingot, master alloys, and semifabricated mill products. Plants are listed by company and product. For more information, contact the Aluminum Association at (301) 645-0756 or visit the web at www.aluminum.org.

AFS Releases Cupola Handbook

Published by the American Foundrymen's Society(AFS), the Cupola Handbook updates the previous edition, which was released more than 15 years ago, and is intended to provide foundries with an up-to-date and authoritative publication on cupola operations. The 28 chapters in this broad-reference volume cover all aspects of cupola operation, from construction to emission control, computer-assisted operations, and worldwide technology development. Subjects include material handling, charge make-up, metallics for cupola melting, alloying materials selection used in the cupola, operating records and charge calculations, blast conditioning, cupola safety, melting, tapping, and slagging. For more information, contact the AFS at (800) 537-4237.

SPI Provides 1999 Data on the U.S. Plastics Industry

Using data collected by the Committee on Resin Statistics and other sources, *Facts and Figures of the U.S. Plastics Industry*, by the Society of the Plastics Industry (SPI), provides a statistical manual on major thermoset and thermoplastic resins. The 124 page report covers general economic statistics, such as data on value of shipments, financial and operating ratios of plastics processing companies, and a financial comparison of the plastics industry with other manufacturing industries. This 1999 edition contains detailed tables on resin production, sales, and captive use; capacity and utilization rate data from 1989 to 1998; and U.S. consumption by end-use and distribution by major market from 1994 to 1998. The report also includes information on major markets, shipments of fabrication plastics products, plastics additives and processes, a glossary of plastic terms, and a list of additional sources of plastics information. For more information, contact the SPI at (800) 541-0736 or visit www.plasticsindustry.com.

Coalition Offers Refractory Ceramic Fiber Information Kit

The Refractory Ceramic Fibers Coalition is offering a refractory ceramic fiber (RCF) information kit containing documents that summarize key data about RCF products. The kit includes information covering common questions about RCFs, a summary of a University of Cincinnati study on workers manufacturing RCFs, a product stewardship program, general handling practices for RCFs for hearth products and applications, a risk assessment for RCFs as well as exposure guidelines, epidemiology and toxicology studies, and multidose animal inhalation studies. The kit also includes proper work practices and a guide for respiratory protection. For more information, contact the coalition at (202) 775-2388.

APC Provides Plastic Film Recovery Guide

A new publication to help businesses, recyclers, and local governments capture and recycle used plastic film, the *Plastic Film Recovery Guide*, is available from the American Plastics Council (APC). The guide covers the fundamentals of plastic-film recovery from understanding market requirements to best practices for diversion and recovery. The publication is geared to businesses that generate one tonne or more of plastic film waste per month, but may have applications to smaller operations. For more information, contact the APC at (800) 243-5790 or visit www.plastics.org.

NACE Lists Products Guide to Reference Materials

The Corrosion Society has released its 2000 Products Guide, a compilation of materials-degradation reference materials. The publication contain more than 1,000 books, technical standards, software, and related products for corrosion control and prevention efforts in a range of industries. The new edition also features about 50 new corrosion reference books, technical standards, and software programs. For more information, contact NACE at (281) 228-6223 or e-mail msd@mail.nace.org.

In the supersonic gas nozzles used in atomization, gas exit velocities increase substantially when the stagnation temperature in the atomization die increases. The increased gas velocity translates into higher kinetic energy that can disrupt the melt stream into a finer distribution of droplets and decrease powder median sizes. Alternatively, the same amount of kinetic energy can be imparted to a lower flow rate of relatively expensive inert gas, commonly used in gas atomization, if process economies are required.

In addition to the generation of high-temperature/pressure gas, the atomization nozzles that mix high-velocity gas with the melt stream must safely withstand the rapid and cyclic temperature increases experienced during batch atomization and must be dimensionally stable throughout an atomization cycle. The greater heat loads induced in the atomization plant must be dissipated by means of cooling powders on-line.

Structural Materials

Virginia Tech Engineers Install Smart Road

A team from Virginia Tech's civil engineering department is installing a smart road built from the ground up. The road, embedded with sensors and monitoring equipment, is a full-scale research facility to evaluate intelligent transportation systems concepts, technologies, and products.

The road test bed is divided into 12 different flexible pavement designs about 100 m long. Seven are located on a fill area; the rest are in a cut through the existing terrain. Each section is designed differently to obtain a desired experimental surface and structural capacity. Special sections include a newly developed geocomposite to prevent cracking and moisture penetration. One surface design has an open graded friction course that improves traction and prevents vehicles from splashing.

The road is equipped to generate or simulate different weather conditions, such as rain and snow. In addition, an underground conduit network enables the installation of a power and fiber-optic data network without creating a safety hazard to vehicles that may leave the normal roadway.

Each layer of the road can be tested for structural capacity during construction and periodically after the entire pavement system is completed by using a falling-weight deflectometer. A copper plate is buried between each two layers of pavement to measure the dielectric properties of the materials and to accurately measure the thickness of the pavement layers when using ground-penetration radar.

As the team evaluates the different pavement materials and designs, as well as the response of the various materials to different weight loads and the environment, information such as tire pressure, axle loads, speed, and mismatch of dual tire pressures on vehicles traveling on the test section will be recorded. A control center to remotely monitor and control the smart road instruments is currently under construction.