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Fuel Specifications: What They Are, Why We Have Them, and How They Are Used

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Salvatore J. Rand and Allen W. Verstuyft

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Foreword

THIS PUBLICATION, *Fuels Specifications: What They Are, Why We Have Them, and How They Are Used*, was sponsored by ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants. The co-editors are Salvatore J. Rand, consultant, North Fort Myers, Florida, and Allen W. Verstuyft, AI Verstuyft Consulting, LLC, Napa, California.

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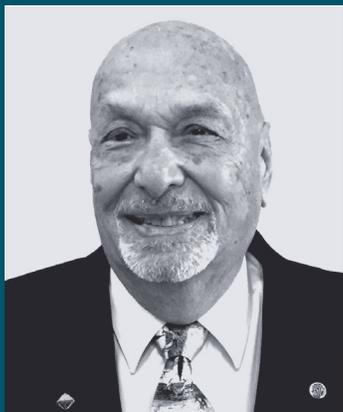
The publication of this manual was accomplished through the combined efforts of many individuals. First and foremost, we would like to convey our sincerest appreciation to all of them—particularly the thirteen authors, who are all experts in their particular fields and who bring a broad spectrum of interests, experience, and knowledge of fuels specifications to this manual. They have devoted considerable time, energy, and resources to support this endeavor. We also appreciate the assistance of the ASTM publication staff—particularly Kathy Dernoga, Monica Siperko, Sara Welliver, and Rebecca Edwards—who have given us much behind-the-scenes guidance and assistance from the outset of this venture. In addition, we are grateful to the 20 experts who have reviewed the various chapters and who, through their perusal of the chapters, made suggestions that permitted good manuscripts to be made better. Finally, we would like to extend our utmost appreciation to the industrial and governmental employers of all those involved in this publication. They, ultimately, make it possible for us to produce manuals such as this for the benefit of those who use petroleum standards worldwide.

To Agnes and Judy



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Dr. Salvatore J. Rand, an independent petroleum industry consultant, has been an ASTM International member for over thirty years. He was recently honored with ASTM's most prodigious award, the William T. Cavanaugh Memorial Award. He was recognized for his contributions to the promotion of, leadership in, and education about petroleum standards worldwide.

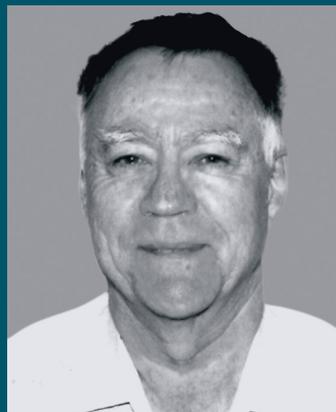
Rand serves on Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and several of its subcommittees. He is also a member at large of the executive subcommittee. During his tenure on D02 he has been vice chairman of the committee, the chair of Subcommittee D02.05 on Properties of Fuels, Petroleum Coke and Carbon Material, Secretary of Subcommittee D02.05.0C on Color and Reactivity, and has been particularly involved in developing standards in these areas. He has also been a member of ASTM's Committee on Technical Committee Operations (COTCO).

Rand has been recognized with the ASTM Award of Merit in 1999; a Service Award from the ASTM Committee on Technical Committee Operations in 2008; the Lowrie B. Sargent Jr Award in 2006; the George V. Dyroff Award of Honorary Committee D02 Membership in 2004; and the Committee D02 Sydney D. Andrews Scroll of Achievement in 2003. In 2010, Rand received the Charles B. Dudley Award for Manual 1, *Significance of Tests for Petroleum Products: 8th Edition*, which has become ASTM's best selling Manual.

For many years, Rand has been teaching two ASTM training courses that he developed: Gasoline: Specifications, Testing and Technology, and Fuels Technology. He has presented these courses in many cities throughout the world, and he has also made many varied presentations globally on ASTM fuels specifications and standardization procedures.

Professionally, prior to his retirement from industry and forming his consultancy, Rand directed the Fuels Test Laboratory which analyzed both liquid and gaseous fuels, at the Texaco Research and Development Center in Beacon, New York. He provided technical information and services to Texaco installations worldwide on fuel distribution, marketing and operations; as well as laboratory inspection, auditing, and personnel training both within Texaco and external to the company. He also served as an adjunct professor in the graduate school of chemistry at the University of St. Joseph.

Rand, who is the author of a number of research technical publications, is a 65-year member of the American Chemical Society, where he is a past chairman of its Mid-Hudson Section. He holds a PhD in Physical Chemistry and Physics from Rensselaer Polytechnic Institute, and a BS in Chemistry and Philosophy from Fordham University.



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Al has been or is currently a member of the American Petroleum Industry (API) Test Methods Task Force and Environmental Monitoring Task Force; Western State Petroleum Association (WSPA) Test Methods Task Force (Petroleum Fuels); American Chemical Society (ACS), Committee on Reagent Chemicals and the California Section ChemOlympiad Coordinator.

Professionally, prior to his retirement from industry and forming his consultancy, Al was the Global Laboratory Coordinator at the Chevron Energy Technology Company in Richmond, CA. He provided petroleum and environmental analysis and was a chemistry consultant with expertise in turning complex chemical analysis data into information for decisions. He is experienced in solving complex sampling, analysis and quality problems for petroleum and environmental laboratories and operations. He is recognized in petroleum and environmental laboratory business for improving technical soundness and defensibility of data and operations; as well as laboratory inspection, auditing, and personnel training both within Chevron and external to the company. He also was a Visiting Research Scientist at Burner Engineering Laboratory of Sandia-Livermore National Laboratory.

Al, who is the author of a number of research technical publications, is a 46-year member of the American Chemical Society, where he is a past chairman of its California Section. He holds a Ph.D. in Inorganic/Organometallic Chemistry from the University of Nevada at Reno, and a B.S. in Chemistry in Santa Clara University, and was Postdoctoral Associate in Physical Organic Chemistry at the University of Utah.

