

Speaker Guide: Schedule, Manuscript Preparation, Forms & Responsibilities

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METAL POWDER INDUSTRIES FEDERATION
APMI INTERNATIONAL

General Information and Instructions for: TECHNICAL SESSIONS, SPECIAL INTEREST PROGRAMS, AND POSTER PROGRAM

Important Dates & Deadlines at a Glance	
PHOTO & BIO DEADLINE: March 30	<ul style="list-style-type: none"> • Deadline to submit your photo and bio
DRAFT MANUSCRIPT DATE: March 30-April 27	<p><i>When submitting a manuscript, email the following to your session chairman:</i></p> <ul style="list-style-type: none"> • Draft copy of your manuscript • Howard I. Sanderow Outstanding Technical Paper Award release form <p><i>Your session chairman will advise any comments within two weeks.</i></p>
ADVANCE REGISTRATION DEADLINE: May 4	<ul style="list-style-type: none"> • Advance registration deadline for <u>lowest</u> rates
FINAL MANUSCRIPT DEADLINE: May 18	<p><i>When submitting a manuscript:</i></p> <ul style="list-style-type: none"> • E-mail FINAL manuscript, with <u>paper number in the subject line</u>, to paper@mpif.org in a PDF format. The PDF document is necessary to ensure formatting changes do not disrupt the integrity of the technical paper. MPIF assumes no liability for error or omission. • Keywords Submission Form • Transfer of Copyright Agreement Form • Howard I. Sanderow Outstanding Technical Paper Award Form
POSTER Setup DATE: June 17	<ul style="list-style-type: none"> • Authors report with posters (exact area and time to be announced)
CONFERENCE PRESENTATION DATES: June 18-20	<ul style="list-style-type: none"> • Attend Speaker Prep on the morning of your designated session
POSTER PRESENTATION DATE: June 18 (5:00–6:30 p.m.)	<ul style="list-style-type: none"> • Poster authors at their display for designated discussion time
MANUSCRIPT REPLACEMENT DEADLINE: July 20	<ul style="list-style-type: none"> • Manuscript replacement deadline for corrections • MPIF assumes no liability for error or omission

MPIF Staff Contacts

Questions concerning your conference participation should be directed to the appropriate individual:

Debby Stab – dstab@mpif.org or 609-452-7700, ext. 111

- Technical Sessions/Special Interest Programs/Poster Program
- Submission of Biography & Photo for Conference Mobile App
- Manuscript Preparation, Pre-Prints, Publications

Stephanie Schember – sschember@mpif.org or 609-452-7700, ext. 114

- Registration/Hotel Accommodations
- Howard I. Sanderow Outstanding Technical Paper Award
- Letters of Invitation for U.S. Entrance Visas

All manuscript and forms should be sent to paper@mpif.org in PDF format with paper number in the subject line.

Conference Requirements

MPIF conferences have a long history of being recognized as premier conferences that archives technology transfer through its proceedings.

- A manuscript suitable for publishing is required for all technical sessions.
- Special Interest Programs are manuscript optional unless otherwise noted.
- Posters are manuscript optional.
- MPIF encourages manuscript submissions for all presentations to provide references for future research and development.

Speaker Photo & Biography

Submit your photo and bio to Debby Stab (dstab@mpif.org) by the deadline.

Photos must be:

- Color, portrait orientation at least 200x300 pixels, saved as a .jpg, png, gif, or tif.

Bios must be:

- 100 words or less.

SAMPLE



Rand German is Professor Emeritus, San Diego State University.

His PhD degree is from the University of California at Davis, MS from The Ohio State University, and BS from San Jose State University; he is distinguished alumnus from all three universities.

In his career he held three Chaired Professorships and directed major research efforts winning \$59 million in grants. He published 1023 articles, 20 books, 25 patents, and 19 edited books.

He has an honorary doctorate, Tesla Medal, and is a Fellow of three technical societies.

Manuscript Preparation Guidelines

Special Note:

Overt or blatant commercialism in manuscripts is forbidden and seriously damages the integrity of the presentation. Repeated use of corporate names, equipment or materials designations is an example of overt/blatant commercialism.

Conference Preprints

- All technical manuscripts received by the **Final Manuscript Deadline** will be included.

Conference Proceedings

- The proceedings will be published following the conference.
- Manuscripts are reproduced directly from the files you provide, but MPIF reserves the right to edit.
- Only manuscripts presented will be included in the proceedings.

Manuscript Length

- Manuscript should not exceed 20 pages.

Abstract

- Include an abstract on the title page.

Keyword Submission Form

- Submit the keywords for the index on the provided Keyword Submission Form.
- Do not type the keywords as part of the manuscript.

Format/Layout (refer to sample pages)


- 8.5" x 11" paper settings, PDF format.
- 1 inch (2.5 cm) margins on all sides, single column, single spaced, left justified, no page numbers.
- Use 11 point, Times New Roman font. Use only black type.

Units of Measurement

All units of measurement must be expressed in SI units and the Inch-Pound equivalent (density excepted) provided in parenthesis. For more information, please refer to the SI Units Conversion Table.

Figures and Tables

- All photos, illustrations, tables, etc. must be clear and legible.
- The word "Figure", the figure number, and the figure caption are typed Flush Left Below the figure.
- The word "Table", the table number, and the table title are typed Centered Above the table.
- Please reference all tables and figures in the text of the manuscript.
- Tables and figures should appear within the text as close as possible to where they are referenced, **do not place all tables and figures at the end of the manuscript.**
- Photo micrographs must include a magnification marker within the body of the photo.

Example: 20 μm
 

Comparisons

Comparisons of products or processes used in research work should be referenced generically in both the oral presentation and manuscript text.

Examples:

- "powder A versus powder B". or use the MPIF material designation such as "FN-0205 as-sintered versus FN-0205 heat treated."

References

Ethics, as well as copyright laws, require authors to identify sources. All references listed must be cited in the text.

Important: Failure to provide your session chairman with manuscript review copy within the mutually agreed upon time frame may result in cancellation of the presentation from the conference technical programming and eliminate it from the outstanding paper award process.

All manuscript and forms should be sent to paper@mpif.org in **PDF format** with paper number in the subject line.

Please Note: It is the author's responsibility to submit the manuscript—not the Session Chairman—to MPIF. MPIF must receive the FINAL manuscript and accompanying forms in order to publish your manuscript.

Technical Presentations

Oral presentations in all conference programs must be given in English.

Technical Sessions

- 25-minute presentation, including questions and answers.
- **ALL** Technical Session presentations **REQUIRE** manuscript submission for publication **prior to the conference**. **Omission of the manuscript may result in cancellation of the presentation.**

Provided Audio Visual Equipment

- Computer.
- PowerPoint should be XGA 1024 x 768 resolution.
- LCD projector for use with PowerPoint presentations.
- Lavalier/lapel microphone.
- Laser pointer.
- Standing lectern.
- It is recommended that you use your own computer if the presentation contains video animation. If using your own computer, please bring the proper electric cord, adapter for 110V–120V (Mac adapter if using a Mac computer).
- It is recommended to bring your presentation on a flash drive as an emergency back-up.



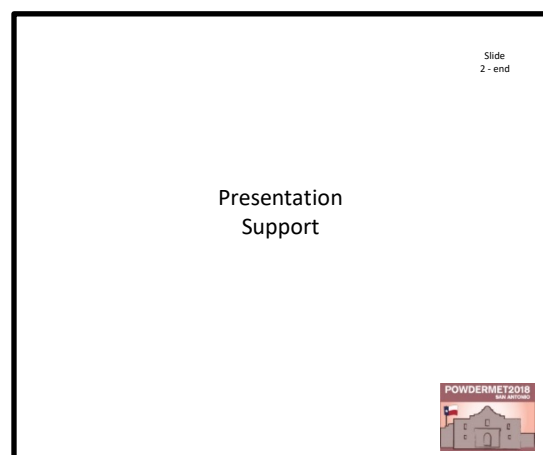
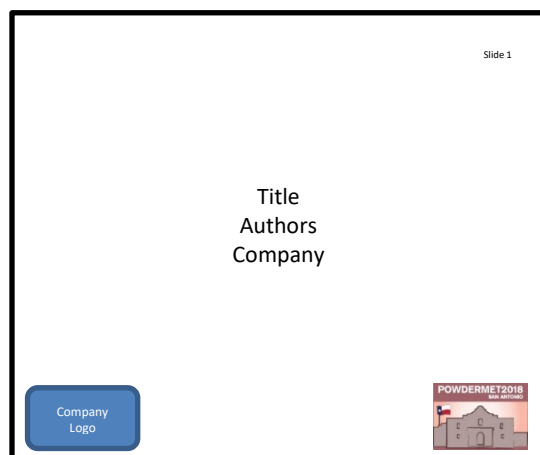
Speakers must download their presentations to the MPIF computer if not using their own, in the Speaker Ready Room (exact area and time to be announced).

PowerPoint Presentations

All visuals **MUST BE DEVOID OF CORPORATE NAMES/LOGOS (except for title slide) AND BRAND NAMES.**

Download POWDERMET logo [here](#)

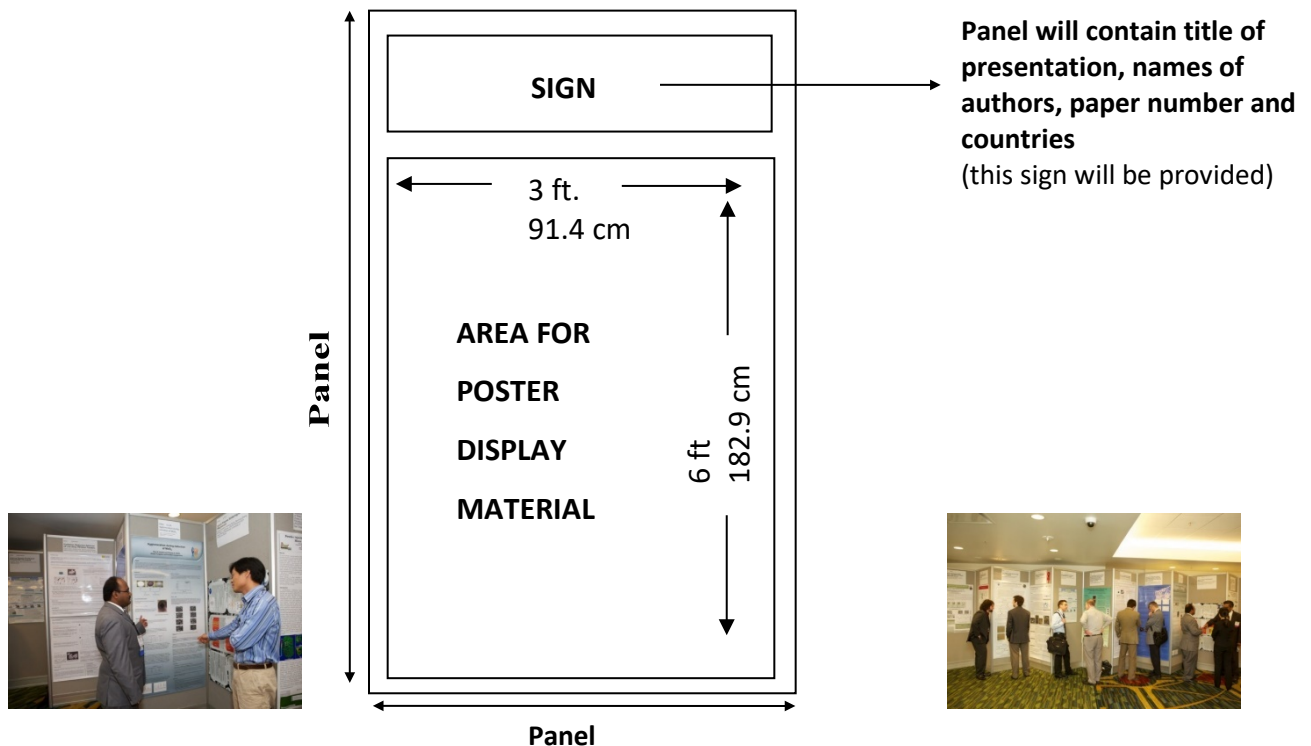
SAMPLE POWERPOINT PRESENTATION FORMAT



Posters

Preparation

- Posters must contain authors' names, title of presentation, an abstract and materials such as graphs, charts, tables and photographs that are necessary to convey the research, not copies from the manuscript. The poster should be easy to read from a distance.
- Each presenter will be provided a hard-standing panel with a 3' x 6' (91.4 cm x 182.9 cm) area in which the poster information will be affixed **to panels with Velcro provided by MPIF**.
- A sign for each panel will contain the title of the presentation as submitted, authors' names and countries, poster group name and paper number.
- **It is encouraged that poster be laminated as one sheet (author's responsibility).**
- Manuscripts are optional, but encouraged. See Manuscript Preparation Guidelines for information.



Poster Setup

- MPIF will hang all posters.

Presentation

- Poster authors shall be at their display during the designated discussion time.
- Posters will be on display Monday & Tuesday.

Removal

- Posters must remain on display until 3:00 p.m. Tuesday.
- Authors are responsible for removing posters on Tuesday from 3:00 p.m. to 4:30 p.m. Posters not removed by this time will be discarded.
- MPIF is not responsible for returning/shipping posters to authors.

Poster Awards

The designation of "Outstanding Poster" and "Poster of Merit" will be awarded by the Poster Program Awards Committee based on the following criteria:

- Technical, scientific, and professional integrity
- Presentation clarity and overall esthetic appearance
- Enhances practical or industrial value for the industry

Ribbons will be affixed to the poster(s) that best meet the above criteria. In order to be eligible for judging, posters must be setup and on display prior to the opening of the conference (exact area and time to be announced).

Howard I. Sanderow Outstanding Technical Paper Award

The "Howard I. Sanderow Outstanding Technical Paper Award" is presented to the author(s) of the manuscript judged to be the outstanding paper of the conference.

Any author(s) submitting a publishable manuscript is eligible for final review consideration provided that:

- A manuscript is prepared, reviewed, and evaluated by the respective Session Chairman within the specified time frame.
- The submission of a **final** manuscript and Transfer of Copyright agreement for publication is at MPIF on or prior to the established deadline. **There are NO exceptions to this rule.** The individual author, not the Session Chairman, is responsible for submitting the final manuscript.

The winning author(s) will be notified late summer. The recipient(s) will be recognized at the following year's POWDERMET conference. MPIF will announce the recipient(s) in numerous media outlets, receive special recognition in the published proceedings, and will be published in the Fall issue of the APMI's *International Journal of Powder Metallurgy*. Full rules and regulations are included with the Howard I. Sanderow Outstanding Technical Paper Form.

Other Important Information

Registration

- One speaker registration per presentation, co-authors must register at regular conference rates.
- Speakers are required to register at www.POWDERMET2018.org and will receive special registration fees and badges.

Conference Mobile App

A mobile app will be released prior to the conference. The mobile app will provide personalized schedules, meeting room locations, abstracts, exhibitor and exhibit hall information, attendee lists, etc.

Important Information for Speakers Traveling to the United States

Request for an Entry Visa

Some speakers entering the U.S. must obtain a visa and should apply for a visa as early as possible as wait times for a visa interview can be several weeks in many countries, especially during peak travel periods. The [Visa section](#) of the U.S. Department of State's website has the complete information about U.S. visas for foreign citizens to travel to the U.S. Special letters of invitation which can be used in applying for entrance visas will be provided upon written request.

You can apply for a letter by visiting www.POWDERMET2018.org.

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SAMPLE

Development of a Dual-Phase Precipitation-Hardening PM Stainless Steel

Chris Schade and Tom Murphy
Hoeganaes Corporation
Cinnaminson, NJ 08077

Alan Lawley and Roger Doherty
Drexel University
Philadelphia, PA 19104

ABSTRACT

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Stainless steels can now be fabricated by the pressing and sintering of water atomized powder. PM grades embrace: ferritic, austenitic, martensitic, duplex (ferritic + austenitic), dual-phase (ferritic + martensitic), and precipitation hardening (martensitic). Development of dual-phase PM stainless steels reflects the growing need for higher strength, coupled with ductility and toughness. In the present study, a new low-cost PM stainless steel has been developed which combines the advantages of a dual-phase (ferrite + martensite) microstructure with precipitation hardening. Unlike other precipitation hardening alloys, ductility and impact toughness increase significantly upon aging, notwithstanding attendant increases in hardness and strength. The mechanical properties of the new alloy are evaluated in terms of composition and microstructure.

INTRODUCTION

In the competition between wrought and PM stainless steels, PM materials are at an extreme disadvantage due to the deleterious effect of porosity on mechanical properties such as tensile strength, ductility and impact toughness. Furthermore, the use of increased alloy levels in PM stainless steels is both costly and counter-productive due to the negative effect on compressibility. The addition of graphite, which is used for increasing mechanical properties in ferrous PM, is detrimental to the corrosion resistance of PM stainless steels and reduces ductility. In order to achieve improved mechanical properties and enhance corrosion resistance in PM stainless steels, it is necessary to explore non-traditional strengthening mechanisms. It has been shown that utilizing a dual phase microstructure can lead to increased strength in a PM stainless steel.¹⁻³ The microstructure is a combination of ferrite and martensite (Figure 1). The ferrite allows for a higher sintered density, improving ductility and toughness, while the martensite imparts strength and hardness. The levels of martensite and ferrite can be balanced by adjusting the content of the austenite stabilizers (nickel and copper) and the ferrite stabilizers (chromium, silicon and molybdenum). One of the most common

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dual phase PM stainless steels, SS-409LNi (Table I), is commonly used for exhaust flanges. The ferritic microstructure of SS-409L is altered by admixing nickel which promotes the formation of high temperature austenite during sintering, and which transforms to martensite during cooling.

SAMPLE USE OF FIGURES

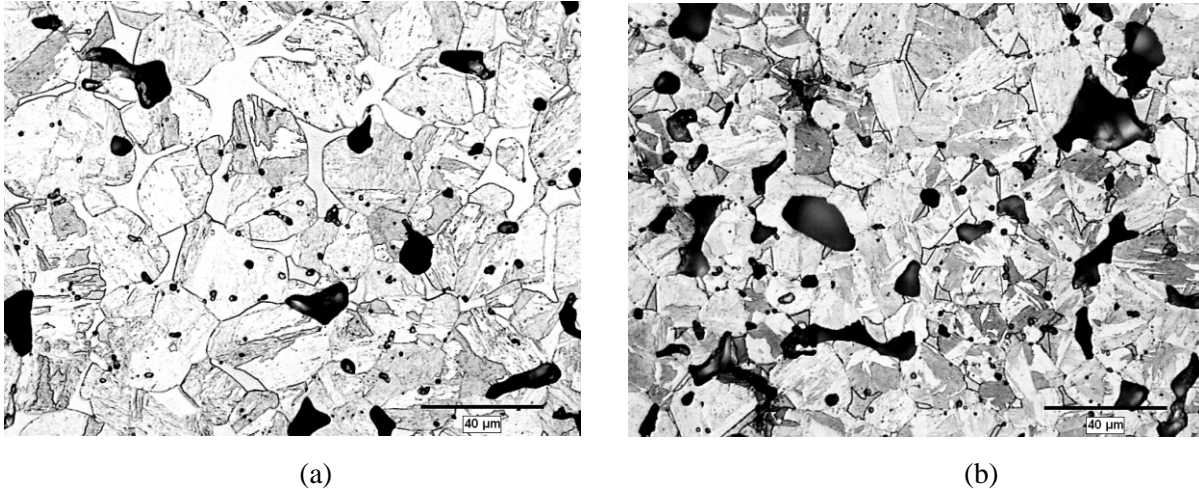


Figure 1. Representative microstructures: (a) press + sinter PM dual-phase stainless steel; sintered density 7.20 g/cm³ (b) press + sinter PM 17-4 PH; sintered density 6.70 g/cm³.

Precipitation hardening stainless steels are not defined by their microstructure, but rather by the strengthening mechanism. These grades can have austenitic, semiaustenitic or martensitic microstructures and can be hardened by aging at moderately elevated temperatures, 480°C to 620°C (900°F to 1,150°F). The strengthening effect is due to the formation of intermetallic precipitates from elements such as copper or aluminum. Aluminum's high affinity for nitrogen and oxygen in PM stainless steels necessitates strict atmosphere control during sintering and, for this reason, copper is the most commonly used element for precipitation hardening. These alloys generally have high strength and high apparent hardness while exhibiting superior corrosion resistance compared with martensitic stainless steels. This improved corrosion resistance is derived from the fact that the carbon levels are low and the martensite is formed from additions of nickel and copper. The low carbon martensite that is formed is weaker but more ductile than the martensite formed in alloys such as SS-410-90HT (carbon bearing), but the strength of these alloys is developed by aging.

SAMPLE USE OF A TABLE

Table I: Composition of Stainless Steel PM Alloys (w/o).

Alloy	C	P	Si	Cr	Ni	Cu	Mn	Mo	Cb
17-4PH	0.018	0.025	0.85	17.1	4.00	3.55	0.15	0.03	0.25
409LNi	0.013	0.01	1.00	11.3	1.30	0.04	0.12	0.05	0.56
DP2	0.015	0.014	0.84	11.6	1.03	0.29	0.10	0.22	---
SS-410-90HT	0.200	0.012	0.81	12.0	0.14	0.01	0.11	0.05	---

One of the most common precipitation hardening stainless steel grades in both the wrought and PM industries is 17-4 PH (Table I). This grade has a martensitic microstructure and its strength and hardness can be improved by aging treatments.⁴⁻⁷ The general corrosion response of this alloy is

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Sample Reference Formats

Journal

T. Le, R. Stefaniuk, H. Henein and J-Y. Huôt, "Measurement and Analysis of Melt Flowrate in Gas Atomization", *Int. J. Powder Metall.*, 1999, vol. 35, no. 1, pp. 51–60.

Book

R.M. German, *Powder Metallurgy Science*, Second Edition, 1994, Metal Powder Industries Federation, Princeton, NJ.

Article in Book/Conference Proceedings

S.H. Luk, F.Y. Chau and V. Kuzmicz, "Higher Green Strength and Improved Density by Conventional Compaction", *Advances in Powder Metallurgy & Particulate Materials*, compiled by J.J. Oakes and J.H. Reinshagen, Metal Powder Industries Federation, Princeton, NJ, 1998, vol. 3, part 11, pp. 81–99.

Patent

I.L. Kamel, A. Lawley and M-H. Kim, "Method of Molding Metal Particles", U.S. Patent No. 5,328,657, July 12, 1994.

Thesis

D.J. Schaeffler, "High-Strength Low-Carbon Powder Metallurgy Steels: Alloy Development with Transition Metal Additions", 1991, Ph.D. Thesis, Drexel University, Philadelphia, PA.

Technical Report

T.M. Cimino, A.H. Graham and T.F. Murphy, "The Effect of Microstructure and Pore Morphology on Mechanical and Dynamic Properties of Ferrous P/M Materials", 1998, Hoeganaes Technical Data, Hoeganaes Corporation, Cinnaminson, NJ.

Web Site Content

J.R. Dale, "Connecting Rod Evaluation", Metal Powder Industries Federation, <http://www.mpif.org/design/conrod.pdf>

Private Communication

P.W. Taubenblat, 1999, Promet Associates, Highland Park, NJ, private communication.

SI Units — Conversion Table

Quantities/Terms Used by MPIF

Quantity	Designation	Inch-Pound Units	Preferred Working Unit	Symbol	Approx. Conversion to SI Units*
Apparent Density	ρ_a	g/cm ³	gram per cubic centimetre	g/cm ³	—
Applied Magnetic Field	H	oersteds (Oe)	amperes-turns/metre	A/m	X 79.6
Atmosphere Flow	—	ft ³ /min	cubic centimetre per second	cm ³ /s	X 472.0
	—	CFH	cubic centimetre per second	cm ³ /s	X 7.867
Belt Speed	—	ipm	millimetre per minute	mm/min	X 25.40
Bulk Density	—	lbm/ft ³	gram per cubic centimetre	g/cm ³	X 0.016
	—	lbm/gal	gram per cubic centimetre	g/cm ³	X 0.120
Coefficient of Thermal Expansion	—	x10 ⁻⁶ /°F		x10 ⁻⁶ /°C	X 1.8
Coercive Field Strength	H _C	oersteds (Oe)	ampere-turns/metre	A/m	X 79.6
Compacting Pressure	—	tsi	megapascals	MPa	X 13.79
Crush Strength	K	10 ³ psi	megapascals	MPa	X 6.895
Fatigue Limit (Strength)	—	10 ³ psi	megapascals	MPa	X 6.895
Force	—	lbf	newton	N	X 4.448
Flow Time	—	s/50 g	second per 50 grams	s/50 g	—
Fracture Toughness	K _{IC}	10 ³ psi·inch ^{1/2}	megapascals root metre	MPa·m ^{1/2}	X 1.1
Green Density	ρ_g	g/cm ³	gram per cubic centimetre	g/cm ³	—
Green Strength	—	psi	megapascals	MPa	X 0.0069
Heating Rate	—	degree Fahrenheit per second	degree Celsius per second	°C/s	X 0.556
	—	(°F/sec)			
Impact Energy	—	ft·lbf	joule	J	X 1.356
Kinematic Viscosity	—	centistokes (cSt)	metres squared per second	m ² /s	X 1.0 x 10 ⁻⁶
Magnetic Induction	B	kilogauss (kG)	tesla	T	X 0.1
Particle Size	—	10 ⁻³ in.	micrometre	μ m	—
Powder Mass	—	pound (lbm)	kilogram	kg	X 0.454
	—	ton	megagram	Mg	X 0.907
	—	ton	metric ton	t	X 0.907
Sintered Density	ρ_s	g/cm ³	gram per cubic centimetre	g/cm ³	—
Specific Surface	—	m ² /g	square metre per gram	m ² /g	—
Surface Finish	—	microinches	micrometre	μ m	X 0.0254
Tap Density	ρ_t	g/cm ³	gram per cubic centimetre	g/cm ³	—
Temperature	—	degree Fahrenheit (°F)	degree Celsius	°C	5/9 (°F -32)
Tensile Strength	—	10 ³ psi	megapascals	MPa	X 6.895
Thermal Conductivity	—	Btu·ft/(h·ft ² ·°F)	watts per metre kelvin	W/(m·K)	X 1.731
Torque	—	lbf·ft	newton metres	N·m	X 1.356
Transverse Rupture Strength	—	10 ³ psi	megapascals	MPa	X 6.895
Yield Strength	—	10 ³ psi	megapascals	MPa	X 6.895
Young's Modulus	—	10 ⁶ psi	gigapascals	GPa	X 6.895

* **Example:** 1 psi = 0.0069 MPa
 If 100,000 psi, then MPa = 0.0069 X 100,000 = 690 MPa