

ATC 700 E Series NPO Porcelain High RF Power Multilayer Capacitors

- Case E Size (.380" x .380")
- High Q
- Low ESR/ESL
- High RF Power
- Extended WVDC up to 7200 VDC
- Capacitance Range 1 pF to 2200 pF
- Ultra-Stable NPO Performance
- High RF Current/Voltage
- High Reliability
- Available with Encapsulation Option*

ATC, the industry leader, offers new improved ESR/ESL performance for the 700 E Series RF Capacitors. This high Q multilayer capacitor is ultra-stable under high RF current and voltage applications with NPO performance. High density porcelain construction provides a rugged, hermetic package.

ATC offers an encapsulation option for applications requiring extended protection against arc-over and corona.

Typical functional applications: Bypass, Coupling, Tuning, Impedance Matching and DC Blocking.

Typical circuit applications: HF/RF Power Amplifiers, Transmitters, Antenna Tuning, Plasma Chambers and Medical (MRI coils).

*For leaded styles only

ENVIRONMENTAL TESTS

ATC 700 E Series Capacitors are designed and manufactured to meet and exceed the requirements of EIA-198, MIL-PRF-55681 and MIL-PRF-123.

THERMAL SHOCK:

MIL-STD-202, Method 107, Condition A.

MOISTURE RESISTANCE:

MIL-STD-202, Method 106.

LOW VOLTAGE HUMIDITY:

MIL-STD-202, Method 103, Condition A, with 1.5 Volts DC applied while subjected to an environment of 85°C with 85% relative humidity for 240 hours min.

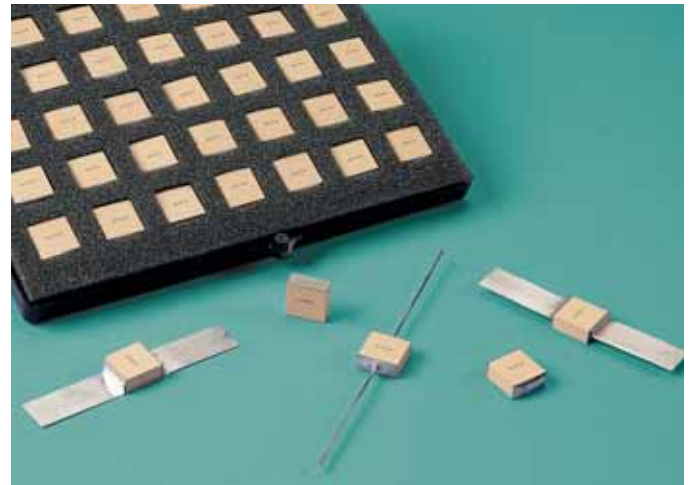
LIFE TEST:

MIL-STD-202, Method 108, for 2000 hours, at 125°C.

Voltage applied.

1 pF to 680 pF: at WVDC

820 pF to 2200 pF: 120% of WVDC



ELECTRICAL AND MECHANICAL SPECIFICATIONS

QUALITY FACTOR (Q):

Greater than 10,000 (1 pF to 1000 pF) @ 1 MHz.

Greater than 10,000 (1100 pF to 2200 pF) @ 1 KHz.

TEMPERATURE COEFFICIENT OF CAPACITANCE (TCC):

0 ±30 PPM/°C (-55°C to +125°C)

INSULATION RESISTANCE (IR):

1 pF to 2200 pF:

10⁵ Megohms min. @ +25°C at 500 VDC.

10⁴ Megohms min. @ +125°C at 500 VDC.

WORKING VOLTAGE (WVDC):

See Capacitance Values Table, page 2.

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

* See page 2.

RETRACE: Less than ±(0.02% or 0.02 pF), whichever is greater.

AGING EFFECTS: None

PIEZOELECTRIC EFFECTS: None

(No capacitance variation with voltage or pressure).

CAPACITANCE DRIFT: ±(0.02% or 0.02 pF), whichever is greater.

OPERATING TEMPERATURE RANGE:

From -55°C to +125°C (No derating of working voltage).

TERMINATION STYLES:

Available in various surface mount and leaded styles.

See Mechanical Configurations, page 3.

TERMINAL STRENGTH: Terminations for chips and pellets

withstand a pull of 10 lbs. min., 25 lbs. typical, for 5 seconds in

direction perpendicular to the termination surface of the capacitor.

Test per MIL-STD-202, method 211.



AMERICAN TECHNICAL CERAMICS

ATC North America
+1-631-622-4700
sales@atceramics.com

ATC Europe
+46 8 6800410
sales@atceramics-europe.com

ATC Asia
+86-755-2386-8759
sales@atceramics-asia.com

THE
ENGINEERS'
CHOICE®
ISO 9001 REGISTERED

www.atceramics.com

ATC # 001-943 Rev. H 2/09

ATC 700 E Capacitance Values

CAP. CODE	CAP. (pF)	TOL.	RATED WVDC		CAP. CODE	CAP. (pF)	TOL.	RATED WVDC		CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	
			STD.	EXT.				STD.	EXT.				STD.	EXT.
1R0	1.0	C, D	3600	7200	150	15	G, J, K, M	3600	7200	221	220	G, J, K, M	3600	NA
1R2	1.2				180	18				271	270			
1R5	1.5				220	22				331	330			
1R8	1.8				270	27				391	390			
2R2	2.2				330	33				471	470			
2R7	2.7				390	39				561	560			
3R3	3.3				470	47				681	680			
3R9	3.9				560	56				821	820			
4R7	4.7				680	68				102	1000			
5R6	5.6				820	82				122	1200			
6R8	6.8	101	100	152	1500									
8R2	8.2	121	120	182	1800									
100	10	G, J, K, M			151	150		EXT. 5000 VOLT.	222	2200				
120	12				181	180								

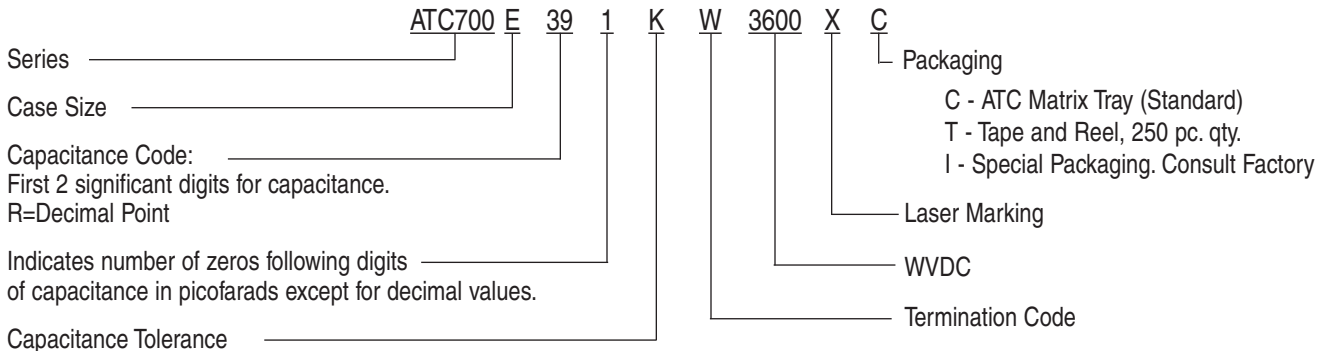
$VRMS = 0.707 \times WVDC$

- SPECIAL VALUES, TOLERANCES, MATCHING, AND CAPACITOR ASSEMBLIES ARE AVAILABLE.
- ATC'S CUSTOM POWER CAPACITOR ASSEMBLY CATALOG, ATC # 001-900 LISTS ASSEMBLY OPTIONS.
- EXTENDED WORKING VOLTAGES ARE AVAILABLE FOR COMMERCIAL ORDERS ONLY.
- ENCAPSULATION OPTION AVAILABLE. PLEASE CONSULT FACTORY.

* DWV: 1 pF to 680 pF: 120% of rated WVDC for 5 secs.
820 pF to 2200 pF: 150% of rated WVDC for 5 secs.

CAPACITANCE TOLERANCE						
Code	C	D	G	J	K	M
Tol.	±0.25 pF	±0.5 pF	±2%	±5%	±10%	±20%

ATC PART NUMBER CODE



The above part number refers to a 700 E Series (case size E) 390 pF capacitor, K tolerance (±10%), 3600 WVDC, with W termination (Tin/Lead, Solder Plated over Nickel Barrier), laser marking and Waffle-packaging.

ATC accepts orders for our parts using designations **with** or **without** the "ATC" prefix. Both methods of defining the part number are equivalent, i.e., part numbers referenced with the "ATC" prefix are interchangeable to parts referenced without the "ATC" prefix. Customers are free to use either in specifying or procuring parts from American Technical Ceramics.

For additional information and catalogs contact your ATC representative or call direct at (+1-631) 622-4700.

Consult factory for additional performance data.

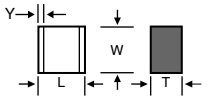
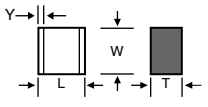
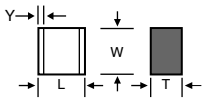
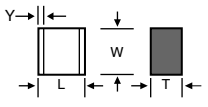
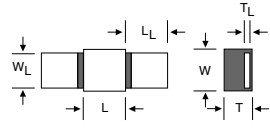
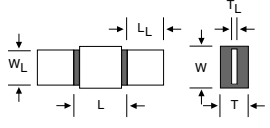
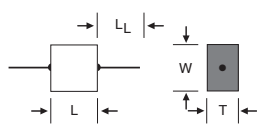
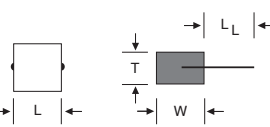
A M E R I C A N T E C H N I C A L C E R A M I C S

ATC North America
+1-631-622-4700 • sales@atceramics.com

ATC Europe
+46 8 6800410 • sales@atceramics-europe.com

ATC Asia
+86-755-2396-8759 • sales@atceramics-asia.com

ATC 700 E Capacitors: Mechanical Configurations

ATC SERIES & CASE SIZE	ATC TERM. CODE	CASE SIZE & TYPECASE SIZE & TYPE	OUTLINES W/T IS A TERMINATION SURFACE	BODY DIMENSIONS INCHES (mm)			LEAD AND TERMINATION DIMENSIONS AND MATERIALS		
				LENGTH (L)	WIDTH (W)	THICKNESS (T)	OVERLAP (Y)	MATERIALS	
700E	W	E Solder Plate		.380 +.015 -.010 (9.65 +0.38 -0.25)			.040 (1.02) max.	Tin/Lead, Solder Plated over Nickel Barrier Termination	
700E	P	E Pellet						.380 +.040 -.010 (9.65 +1.02 -0.25)	Heavy Tin/Lead Coated, over Nickel Barrier Termination
700E	T	E Solderable Nickel Barrier						.380 +.015 -.010 (9.65 +0.38 -0.25)	RoHS Compliant Tin Plated over Nickel Barrier Termination
700E	CA	E Gold Chip						.380 +.015 -.010 (9.65 +0.38 -0.25)	RoHS Compliant Gold Plated over Nickel Barrier Termination
700E	MS	E Microstrip		.380 +.035 -.010 (9.65 +0.89 -0.25)			N/A	High Purity Silver Leads $L_L = .750$ (19.05) min. $W_L = .350 \pm .010$ (8.89 ± 0.25) $T_L = .010 \pm .005$ (0.25 ± 0.13) Leads are Attached with High Temperature Solder.	
700E	AR	E Axial Ribbon						Silver-plated Copper Leads Dia. = $.032 \pm .002$ (.813 ± .051) $L_L = 2.25$ (57.2) min.	
700E	AW	E Axial Wire						Silver-plated Copper Leads Dia. = $.032 \pm .002$ (.813 ± .051) $L_L = 1.0$ (25.4) min.	
700E	RW	E Radial Wire							

A M E R I C A N T E C H N I C A L C E R A M I C S

ATC North America
+1-631-622-4700 • sales@atceramics.com

ATC Europe
+46 8 6800410 • sales@atceramics-europe.com

ATC Asia
+86-755-2396-8759 • sales@atceramics-asia.com

ATC 700 E Capacitors: Non-Magnetic Mechanical Configurations

ATC SERIES & CASE SIZE	ATC TERM. CODE	CASE SIZE & TYPE	OUTLINES W/T IS A TERMINATION SURFACE	BODY DIMENSIONS INCHES (mm)			LEAD AND TERMINATION DIMENSIONS AND MATERIALS		
				LENGTH (L)	WIDTH (W)	THICKNESS (T)	OVERLAP (Y)	MATERIALS	
700E	WN	E Non-Mag Solder Plate		.380 +0.015 -.010 (9.65 +0.38 -0.25)			.040 (1.02) max.	Tin/Lead, Solder Plated over Non-Magnetic Barrier Termination	
700E	PN	E Non-Mag Pellet		.380 +0.040 -.010 (9.65 +1.02 -0.25)				Heavy Tin/Lead Coated, over Non-Magnetic Barrier Termination	
700E	TN	E Non-Mag Solderable Barrier		.380 +0.015 -.010 (9.65 +0.38 -0.25)				RoHS Compliant Tin Plated over Non-Magnetic Barrier Termination	
700E	MN	E Non-Mag Microstrip		.380 +0.015 -.010 (9.65 +0.38 -0.25)		.170 (4.32) max.	N/A	High Purity Silver Leads $L_L = .750$ (19.05) min. $W_L = .350 \pm .010$ (8.89 \pm 0.25) $T_L = .010 \pm .005$ (0.25 \pm 0.13) Leads are Attached with High Temperature Solder.	
700E	AN	E Non-Mag Axial Ribbon						.380 +0.035 -.010 (9.65 +0.89 -0.25)	Silver-plated Copper Leads Dia. = .032 \pm .002 (.813 \pm .051) $L_L = 2.25$ (57.2) min.
700E	BN	E Non-Mag Axial Wire							Silver-plated Copper Leads Dia. = .032 \pm .002 (.813 \pm .051) $L_L = 1.0$ (25.4) min
700E	RN	E Non-Mag Radial Wire							

Custom lead styles and lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are RoHS compliant.

Suggested Mounting Pad Dimensions

Horizontal Electrode Orientation

Vertical Electrode Orientation

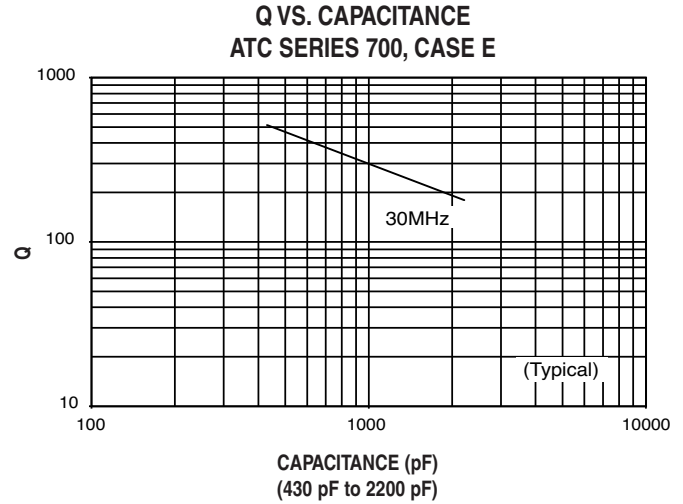
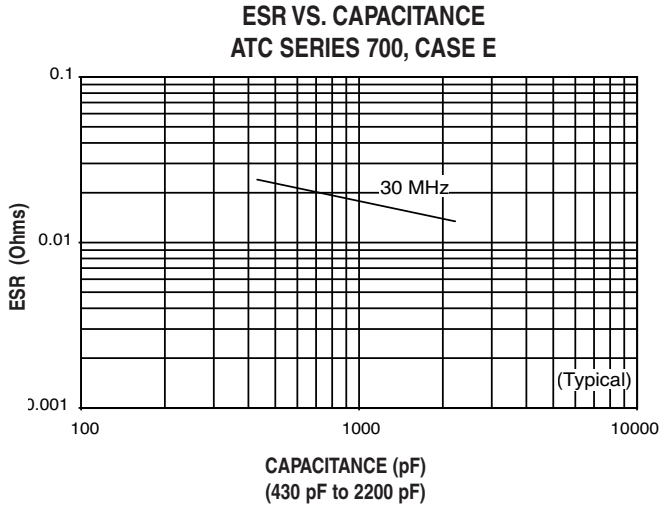
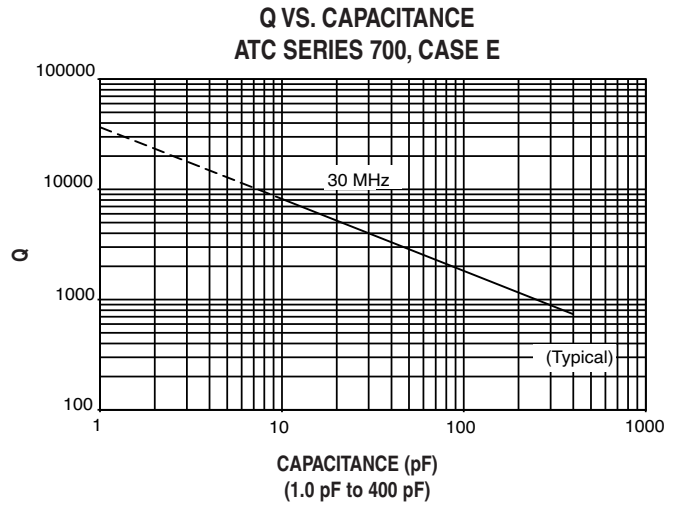
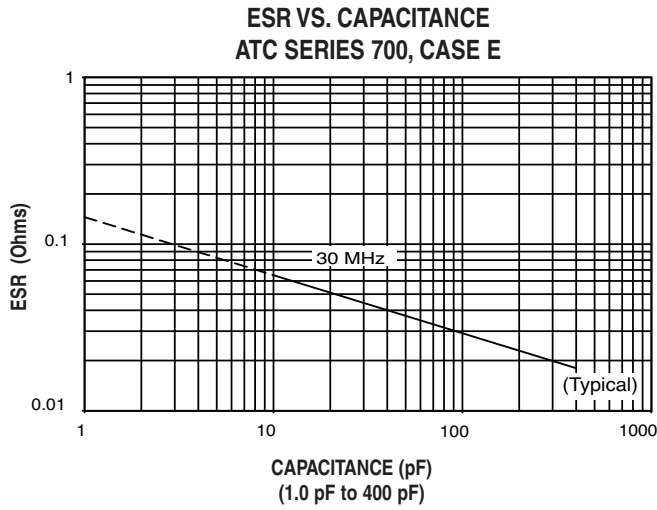
Case E

	Pad Size	A Min.	B Min.	C Min.	D Min.
Vertical Mount	Normal	.185	.050	.325	.425
	High Density	.165	.030	.325	.385
Horizontal Mount	Normal	.405	.050	.325	.425
	High Density	.385	.030	.325	.385

A M E R I C A N T E C H N I C A L C E R A M I C S

ATC North America ATC Europe ATC Asia
 +1-631-622-4700 • sales@atceramics.com +46 8 6800410 • sales@atceramics-europe.com +86-755-2396-8759 • sales@atceramics-asia.com

ATC 700 E Performance Data



A M E R I C A N T E C H N I C A L C E R A M I C S

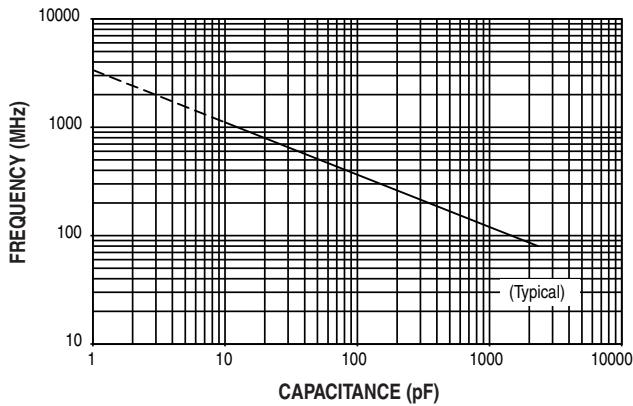
ATC North America
+1-631-622-4700 • sales@atceramics.com

ATC Europe
+46 8 6800410 • sales@atceramics-europe.com

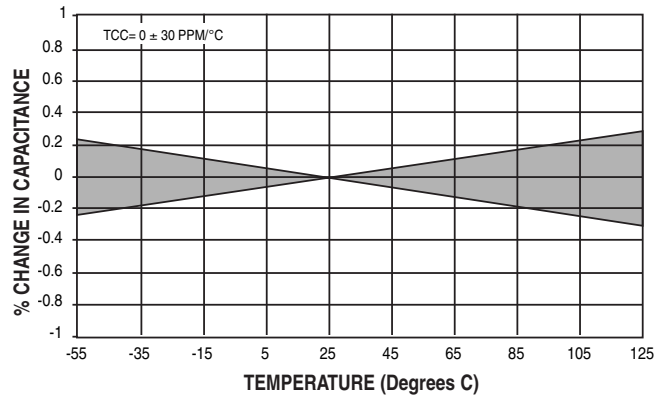
ATC Asia
+86-755-2396-8759 • sales@atceramics-asia.com

ATC 700 E Performance Data

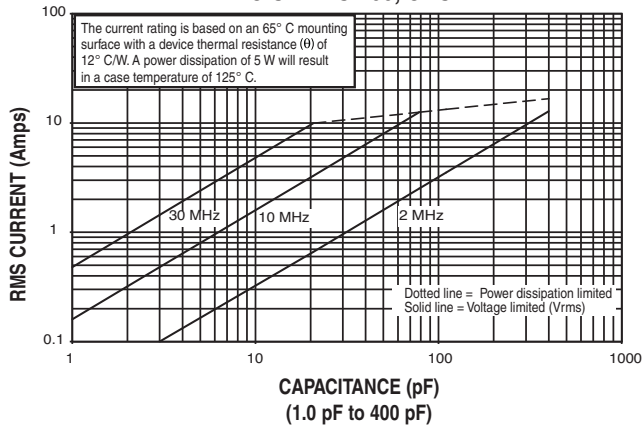
SERIES RESONANCE VS. CAPACITANCE
ATC SERIES 700, CASE E



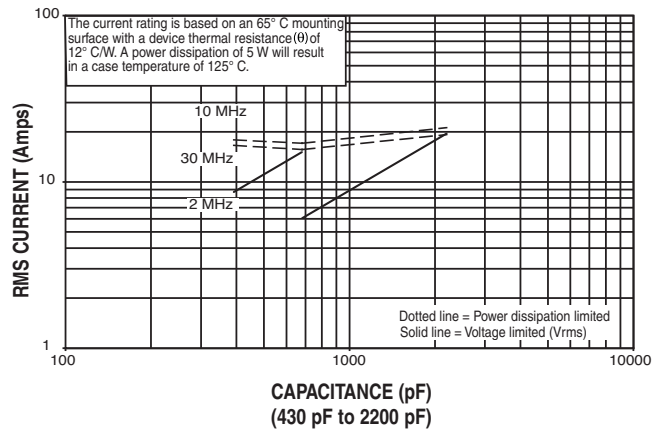
CAPACITANCE CHANGE VS. TEMPERATURE
ATC SERIES 700, CASE E



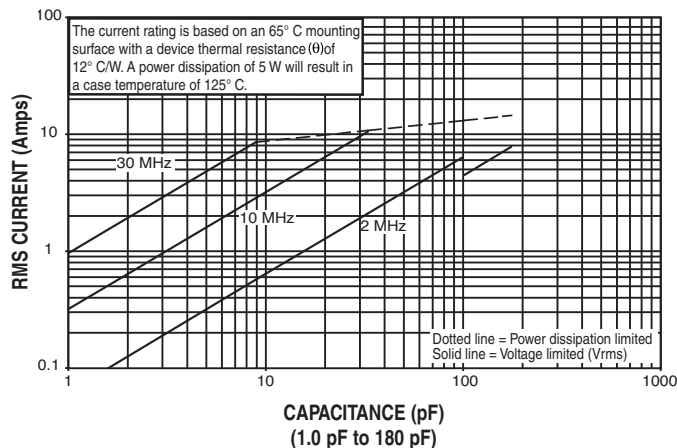
CURRENT RATING VS. CAPACITANCE
ATC SERIES 700, CASE E



CURRENT RATING VS. CAPACITANCE
ATC SERIES 700, CASE E



CURRENT RATING VS. CAPACITANCE
ATC SERIES 700, CASE E, EXTENDED VOLTAGE



Sales of ATC products are subject to the terms and conditions contained in American Technical Ceramics Corp. Terms and Conditions of Sale (ATC document #001-992 Rev. B; 12/05). Copies of these terms and conditions will be provided upon request. They may also be viewed on ATC's website at www.atceramics.com/productfinder/default.asp. Click on the link for Terms and Conditions of Sale.

ATC has made every effort to have this information as accurate as possible. However, no responsibility is assumed by ATC for its use, nor for any infringements of rights of third parties which may result from its use. ATC reserves the right to revise the content or modify its product without prior notice.

© 1996 American Technical Ceramics Corp. All Rights Reserved.

ATC # 001-943 Rev. H 2/09



AMERICAN TECHNICAL CERAMICS

ATC North America
+1-631-622-4700
sales@atceramics.com

ATC Europe
+46 8 6800410
sales@atceramics-europe.com

ATC Asia
+86-755-2386-8759
sales@atceramics-asia.com



www.atceramics.com