



# Tech Bulletin

This electronic Tech Bulletin is produced by

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Tech Bulletins are technical newsletters from Metal Powder Products Company, and are published and e-mailed approximately 4-5 times per year. In each issue, we address specific technical issues, answer technical questions, and communicate useful information about processes, services, new equipment, and the ever-expanding capabilities of Metal Powder Products Company. This Tech Bulletin is devoted to an overview of MPP's expertise in the production of structural PM aluminum parts.

## Amazing Aluminum!



CLICK HERE to order a free copy of "Amazing Aluminum".

Structural PM aluminum components continue to gain acceptance as viable alternatives to steel products because of their inherent weight saving and acceptable mechanical properties for a wide range of applications. Nowhere is this truer than at Metal Powder Products Company, where PM aluminum has been a continuing success story. Since MPP began producing PM aluminum parts at its Washington Street Division in 1993, we have produced more than 60 million parts, some of which are pictured on this page. MPP is the world's premier producer of structural PM aluminum parts.



Since 1993, MPP has produced more than 55 million PM aluminum camshaft caps.

The use of PM aluminum has increased significantly over the past several years and it shows no signs of stopping – not just at MPP, but also industry-wide. While the main driver of this growth has been the automotive industry, other markets are contributing to the rapid growth of this versatile and extraordinary material.

According to Bill Heath, MPP Vice President of Marketing, "We are seeing growth in almost every market area where PM aluminum's unique combination of properties is important. Aluminum's light weight, corrosion resistance, ductility, electrical and thermal conductivity, surface appearance, machinability, and other attributes are highly prized by product design engineers." He adds that PM aluminum "is now being used in markets such as lawn & garden (for small engine applications), computers and business machines, small and major appliances, power tools, and electrical and electronic equipment."



This hub guard for a circular saw was chosen over magnesium because aluminum, unlike magnesium, does not cause a galvanic reaction.



CLICK HERE for the latest MPP Newsletter and to visit the MPP web site.

## Automotive Applications Help Drive the Market

In the automotive industry, the use of PM aluminum alloys has steadily increased over the last decade as a means to reduce weight and increase fuel economy, and it is expected to continue to increase over the next decade. The demand for lighter weight, more fuel-efficient vehicles has highlighted the desirability of PM aluminum for engine, body/chassis, and other applications.

MPP's success with PM aluminum in the automotive market is evidenced by its receipt of the Grand Prize Award for its PM aluminum camshaft bearing cap in the automotive engine category of the 2006 MPiF PM Design Excellence Competition. This unique PM aluminum part is made at MPP's Washington Street Division in St. Marys, Pennsylvania for General Motors Powertrain. Two of the caps are used in GM's high-feature V6 engine, which is the first dual overhead cam engine using a single cam cap across both camshafts. The engine is used in several GM cars, including the Saturn Outlook, Cadillac CTS, SRX and CTX, Buick LaCrosse and Rendezvous, and also in the Saab 9-3.

MPP has been producing aluminum cam caps for GM since 1993, and during that time has shipped more than 55 million cam caps, all without a single test-engine or field failure. This outstanding record has resulted in the achievement of several Saturn Corporation Quality Achievement Awards and a GM Preferred Supplier Award.



CLICK HERE to order a free copy of the MPP capabilities brochure.



These parts act as heat sinks on electronic circuit board assemblies.

## MPP Continues to Lead the Way

MPP has been in the forefront of industry efforts to develop PM aluminum and expand its application. At the MPP Technology Center in Westfield, Indiana, development work on PM aluminum is spearheaded by Dr. Shuhai Huo, MPP Director of Aluminum Research & Development. Dr. Chaman Lal, MPP's Vice President of Technology, also devotes much of his efforts to aluminum R&D.

At MPP, the future continues to look bright for PM aluminum. If you would like to learn more about this amazing material, including its processing and mechanical properties, call us for a copy of the brochure "Amazing Aluminum". (Call Melinda Hightower at 317.571.3712.)

This Mechanical Properties chart is one example of the useful information you will find in our brochure "Amazing Aluminum".

MECHANICAL PROPERTIES OF MPP ALUMINUM PM ALLOYS							
Alloy	Temper	Hardness	Yield Strength		Tensile Strength		Elongation
			ksi	MPa	ksi	MPa	
MPP 501	T1	17	14	94	21	143	4.3
	T4		17	117	25	176	6.0
	T6		33	229	34	236	2.8
MPP 507	T1	43	22	151	26	180	2.0
	T4		30	207	34	234	3.6
	T6		38	262	43	296	1.4
MPP 510	T1	47	24	165	28	193	2.0
	T4		34	234	41	283	2.5
	T6		43	296	48	335	0.7
MPP 905	T1	64	26	179	32	220	2.0
	T4		35	241	38	262	3.5
	T6		36	246	45	309	1.2
MPP 1404	T1	76	22	150	26	180	2.4
	T4		31	214	34	240	1.5
	T6		37	255	42	290	0.5

T-1 - As sintered;  
T-4 - Heat treated, cold water quenched and aged (minimum of four days at room temperature)  
T-6 - Heat treated, cold water quenched and artificially aged

To learn more about MPP and to read other Tech Bulletins and technical articles, please visit our web site at [www.metalpowderproducts.com](http://www.metalpowderproducts.com).

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