



AEROSPACE



AUTOMOTIVE



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AGRICULTURAL

# Excellent Mechanical Properties

## PROPRIETARY, PRECISION PROCESS

At DP Cast, we specialize in providing a wide range of *aerospace quality*, fully traceable parts of various geometries. Through a disciplined application of our unique proprietary fill-control system, known as **Functional Counter Gravity™ (“FCG”)**, we offer complex, precision components with enhanced physical properties to suit your custom specifications.

## POTENTIAL OF SIGNIFICANTLY IMPROVED TENSILE PROPERTIES VS. THE MINIMUM INDUSTRY STANDARD

ALLOY*	ULTIMATE STRENGTH	ULTIMATE YIELD	ELONGATION	REDUCTION OF AREA
Aluminum 356	1.33x higher	1.50x higher	3x greater	n/a
Aluminum 357	1.26x higher	1.40x higher	2.7x greater	n/a
Stainless Steel 410	1.56x higher	1.73x higher	2.38x greater	2.99x improvement
Stainless Steel 17-4 Condition H1150	1.19x higher	1.28x higher	1.81x greater	2.13x improvement
Stainless Steel 17-4 Condition H925	1.11x higher	1.22x higher	1.83x greater	2.15x improvement

## THE OPPORTUNITY

Working closely with leading clients in aerospace and defence – industries requiring high-integrity components – we’ve determined a zero-failure method to:

- » Eliminate the sources of mechanical property variations that can lead to replace with premature failure in safety-critical parts
- » Reduce substantial material waste from machining
- » Avoid the expensive overhead and machinery typically required to achieve the same results

## THE RESULTS

A consistent, repeatable alternative for any casting – building in excellent physical properties:

- » Maximized ductility, higher strength-to-weight ratios, enhanced resistance, extended fatigue life and endurance limit
- » Leaner, more efficient manufacturing methods; reduced labour hours resulting in a cost savings for the end customer
- » New design possibilities for complex, thin-walled components



### An Industry First – Functional Counter-Gravity™ Technology

Applications: All geometric configurations and alloy types; controlled mold filling and solidification; significant reduction of latent defects caused by oxide entrapment



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# Exceptional value, quality, reliability and durability

ALLOY	MINIMUM INDUSTRY STANDARD	DP CAST FUNCTIONAL COUNTER GRAVITY*	INDUSTRY HIGH STRENGTH TEST	COMPETITORS
<b>ALUMINUM 356</b>	<b>AMS 4260</b>	<b>FCG</b>	<b>ASTM B686</b>	<b>SOPHIA®</b>
Ultimate Tensile Strength ("UTS") (psi)	33,000	<b>43,800</b>	38,000	42,900
Yield (psi)	22,000	<b>32,900</b>	28,000	28,600
Elongation	3%	<b>9.00%</b>	3%	5%
<b>ALUMINUM 357</b>	<b>AMS 4289</b>			
Ultimate Tensile Strength ("UTS") (psi)	41,000	<b>51,578</b>	n/a	45,000
Yield (psi)	32,000	<b>44,751</b>	n/a	40,000
Elongation	3%	<b>8.05%</b>	n/a	3%
<b>STAINLESS STEEL 410</b>	<b>AMS 5350</b>			
Ultimate Tensile Strength ("UTS") (psi)	95,000	<b>147,800</b>		
Yield (psi)	75,000	<b>130,100</b>		
Elongation	8.00%	<b>19.00%</b>		
Reduction of Area	20.00%	<b>59.80%</b>		
<b>STAINLESS STEEL 17-4</b>	<b>AMS 5355</b>			
Condition	H1150			
Ultimate Tensile Strength ("UTS") (psi)	125,000	<b>149,107</b>		
Yield (psi)	110,000	<b>141,048</b>		
Elongation	12.00%	<b>21.72%</b>		
Reduction of Area	25.00%	<b>53.15%</b>		
<b>STAINLESS STEEL 17-4</b>	<b>AMS 5343</b>			
Condition	H925			
Ultimate Tensile Strength ("UTS") (psi)	180,000	<b>200,400</b>		
Yield (psi)	150,000	<b>182,900</b>		
Elongation	6.00%	<b>11.00%</b>		
Reduction of Area	15.00%	<b>32.20%</b>		



**"Through DP Cast's innovative FCG proprietary fill control technology, we are able to achieve excellent mechanical properties in ferrous and nonferrous alloys - well beyond specification minimums. This provides our customers more design freedom without resorting to more costly super alloy technologies."**

**Doug Arstad, Engineering Manager, DP Cast**

\*DP Cast FCG Results are based on Test Bars. Tolerances may vary depending on process, design complexity and material specifications. DP Cast Functional Counter Gravity results represent internal destructive testing conducted by our in-house licensed inspectors using equipment certified to ASTM E8/ASTM 8557. DP Cast is lab control at source and Non-Destructive Testing control at source. A representative sampling of DP Cast FCG results have been validated by a third-party, NADCAP-licensed laboratory.