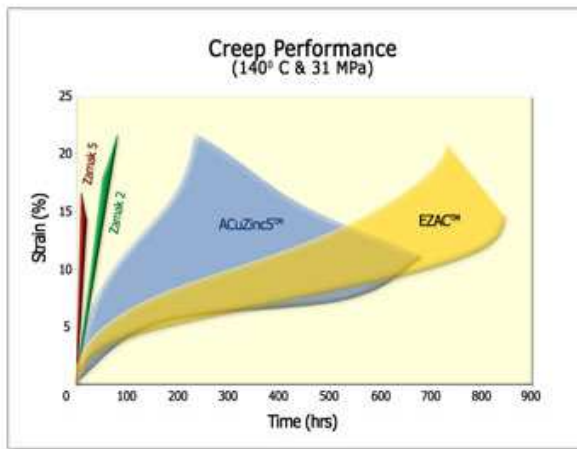


EZAC™ - Reference Guide

Creep Resistance:

EZAC™ is Eastern Alloys' answer to a high strength, creep resistant, **hot chamber** zinc based die casting alloy.

Creep occurs when components deform with time, being subject to elevated temperatures and stresses. Most Zinc alloys are known to have lower creep resistance and are often overlooked for many applications with higher operating temperatures



Continued development of the ZCA-9 alloy has produced a Zinc based alloy with superior mechanical properties including **creep performance** than other commercially available zinc alloys.

High Temperature Tensile Properties:

Tensile tests were also performed at 212° F (100° C) to help determine the tensile properties at elevated temperatures. As shown on the right, the results show that EZAC™ also has improved tensile over other the hot chamber zinc alloys.

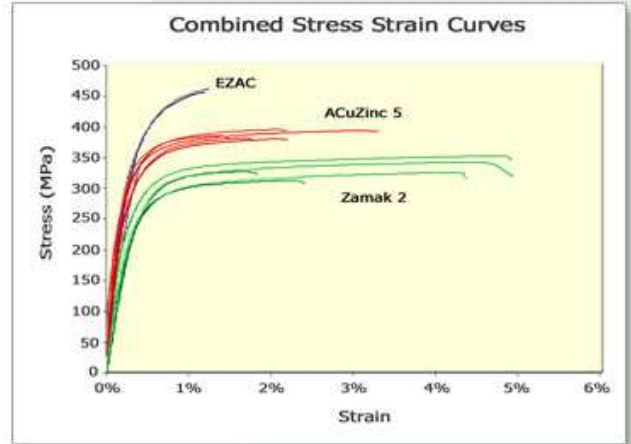
As expected, elongation improves with elevated temperature, and was highest in the standard Zamak 5 hot chamber zinc die casting alloy.



Creep Resistant, High Strength, Hot Chamber Zinc Alloy.....

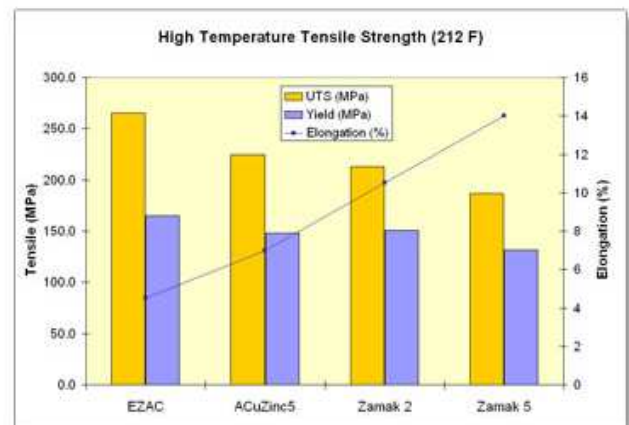
Tensile Properties

In addition to creep resistance, EZAC™ has also been found to have **exceptional Tensile strength**.



Alloy	UTS (MPa)	Yield (MPa)	Strain (%)
EZAC	416.2 +/- 70.5	396 +/- 21.6	0.93 +/- 0.5
ACuZinc5	387.3 +/- 7.0	330.4 +/- 15.3	6.6 +/- 3.8
Zamak 2	332.0 +/- 15.3	278.8 +/- 9.5	4.0 +/- 1.6

With an average yield strength of 396 MPa, EZAC™ is stronger than any other Hot Chamber Zinc die casting alloy, and is **comparable in strength to ZA-27**, the strongest Cold Chamber Zinc die casting alloy.



Alloy	UTS (MPa)	Yield (MPa)	Strain (%)
EZAC	265.4	165.1	4.5
ACuZinc5	224.4	148.2	7
Zamak 2	212.7	150.7	10.5
Zamak 5	186.8	131.3	14

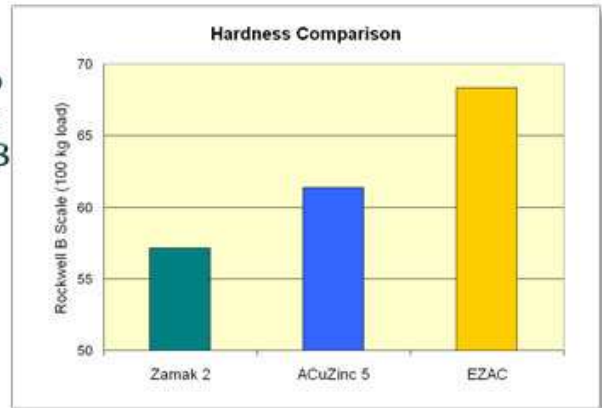
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Other Properties:

Hardness: Hardness tests comparing EZAC to ACuZinc5 and Zamak 2 show over a 12% improvement compared to ACuZinc5 and over 19% improvement over Zamak 2.

Impact Strength: Notched Charpy impact samples were tested with no major differences in results. Zamak 5 had the best performance with 2.8 ft-lbs, followed by EZAC™ with 2.2 ft-lbs and ACuZinc5 with 2.1 ft-lbs.

Dimensional Stability: No measurable differences between the alloys tested.



Castability:

EZAC™ is a **hot chamber** zinc die casting alloy. With a composition near the ternary eutectic point, the resulting castability of EZAC™ is similar to Zamak alloys and ZA-8. The melting range of EZAC™ is approximately 712 F (Solidus) to 775 F (Liquidus), and the recommended casting temperature at the die casting machine is 815 F - 850 F. In comparison, the published melting temperature for ACuZinc 5 is 860-900F, due to the higher liquidus temperature of approximately 875 F - a 100 degree difference!

Casting trials have shown **no differences** in component wear in EZAC™ when compared to Zamak alloys and ZA-8, translating to lower manufacturing costs compared to ACuZinc5. However, stirring is recommended to ensure that the alloy is blended adequately, due to the higher copper and aluminum contents.

Additional Information:

Further testing will be carried out to continue our understanding of the benefits of EZAC™. Property data such as wear resistance, electrical conductivity, thermal conductivity, fatigue strength, etc. will be collected and published in future articles.

Please contact us to learn more about EZAC™, and begin casting trials today!

For more specific information on specific creep or mechanical properties, please contact Ryan Winter via email at rwinter@eazall.com

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