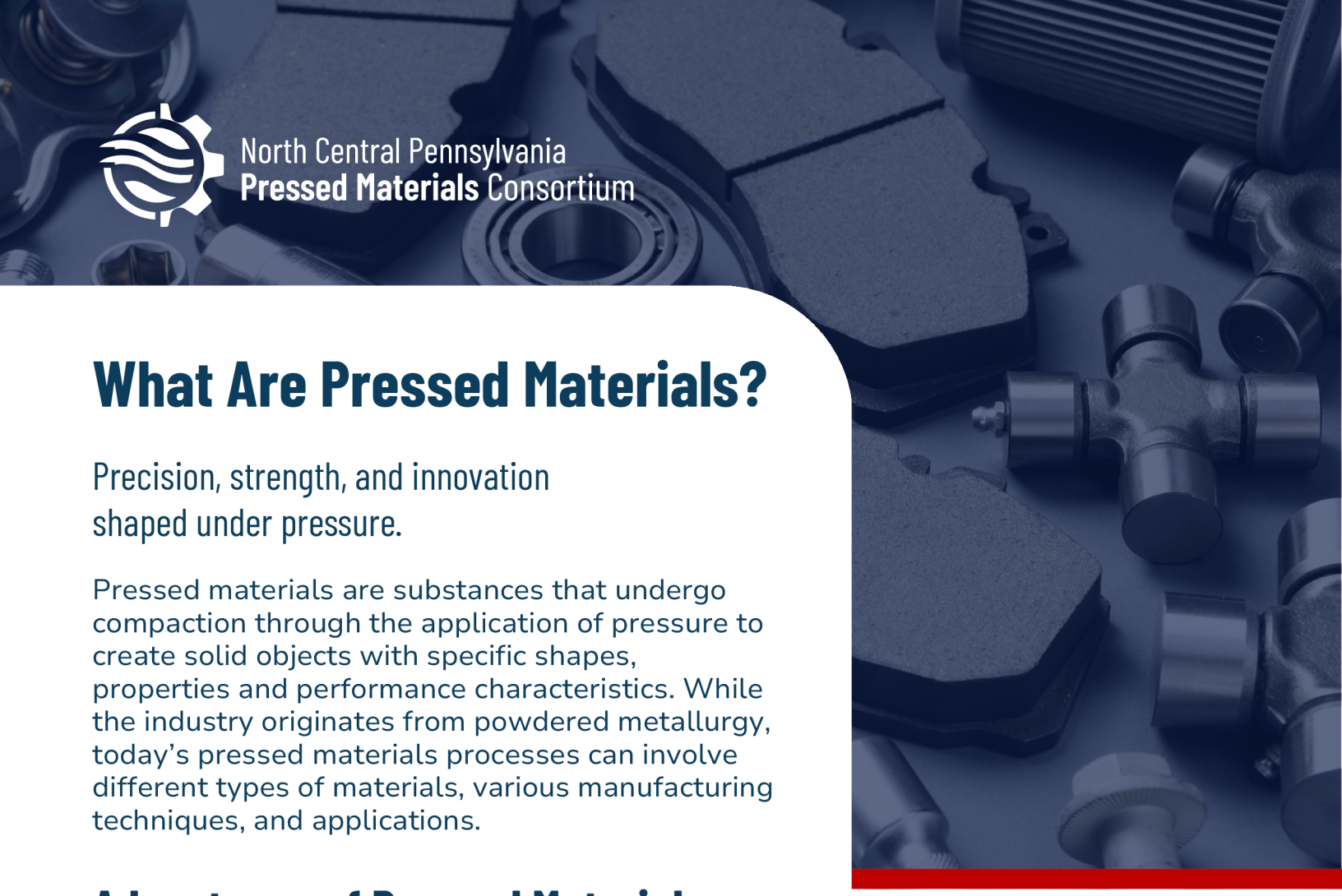
North Central Pennsylvania
Pressed Materials Consortium



What Are Pressed Materials?

Precision, strength, and innovation shaped under pressure.

Pressed materials are substances that undergo compaction through the application of pressure to create solid objects with specific shapes, properties and performance characteristics. While the industry originates from powdered metallurgy, today's pressed materials processes can involve different types of materials, various manufacturing techniques, and applications.

Advantages of Pressed Materials

Reduced Waste & Cost

Pressed materials compact source material into the desired shape, unlike subtractive methods, and can reuse waste feedstock to further reduce cost.

Controlled Porosity

Pressed materials can be tailored by density or porosity, making them ideal for filters, self-lubricating parts, and more.

Complex Geometries

Pressed materials processes create intricate shapes with superior accuracy and efficiency.

Strength

Pressed materials can offer comparable or superior strength to many traditionally manufactured components.

Processes and Applications of Pressed Materials

Examples of processes and applications include:

Press-and-Sinter

Powdered materials are compressed and heated below melting to form dense, intricate parts from materials difficult to process by conventional methods.

Common Applications

Automotive gears, appliance components, structural parts

Metal Injection Molding

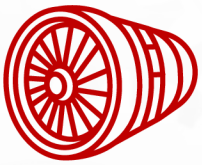
A process where powdered metal and binder are molded and heated to create dense, complex, or high-volume parts efficiently.

Medical devices, electronics housings, firearm components

Isostatic Pressing

A process that uniformly compacts powder into a solid under equal pressure, performed at ambient (cold) or elevated (hot) temperatures.

Auto parts, medical implants, energy components



Additive Manufacturing

An adjacent and complementary process to other methods, additive manufacturing builds objects by layering and fusing materials. It enables part consolidation, lightweighting, customization, rapid prototyping, and on-demand production.

Lightweight aerospace parts, custom surgical tools, EV components

All of these processes can be used in connection with other processes as a first step to increase manufacturing speed and standardization and reduce cost by minimizing waste.

Pressed materials are strategic to the U.S. economy—supporting national competitiveness, supply chain resilience, and high-quality job creation. In North Central Pennsylvania, the industry's global leadership is anchored by decades of expertise, specialized infrastructure, and a collaborative ecosystem ready to meet the demands of the future.

Want to know more? Visit **pressedmaterials.org** or contact our Regional Innovation Officer, John Williams at jcw5919@psu.edu