



STRENGTH MEETS STRATEGY

There's wisdom in the old warrior's saying, "If you find yourself in a fair fight, you didn't plan your mission properly." Essential to this strategic advantage is arming our protectors with the best materials.

As pioneers in pristine steel technologies through air-melt and vacuum refinement, our collective of researchers, engineers and sales experts are on standby to forge alliances, offering cost-efficient solutions of the highest quality. Mastery over material composition and processing allows us to engineer steel that excels in strength, resilience and flexibility critical for unforgiving theaters of operation.

Customers trust in the consistency of Metallus metals for applications where reliability isn't just expected but imperative. With a distinguished history of provisioning the U.S. Department of Defense alongside premier aircraft and ground vehicle producers, we stand as a testament to enduring excellence.

Our adept program management framework fosters deep collaboration, enabling the creation of bespoke grades tailored precisely for their intended applications. Moreover, our suite of elevated services facilitates products crafted to the pinnacle of perfection.

Because while iron sharpens iron, stronger steel can turn fair fights into victorious feats.

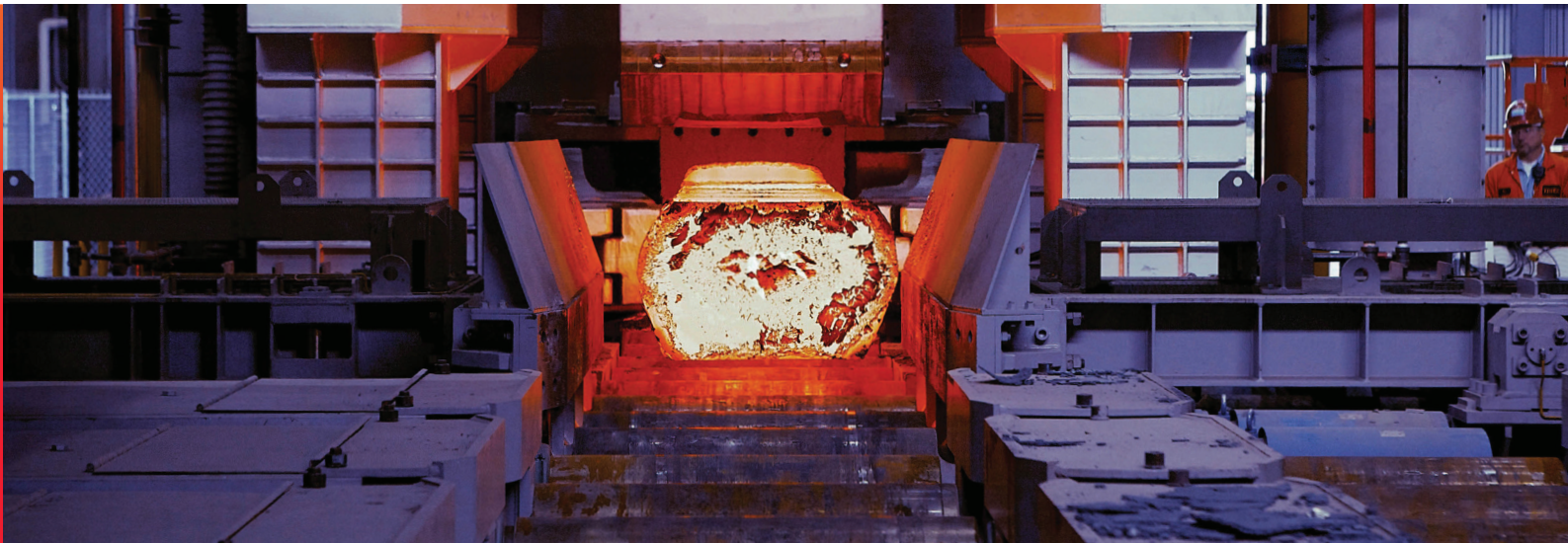
DEFENDING WITH DISTINCTION

For over a century, our steelmaking heritage has been cast alongside the evolving needs of the defense industry. Today, we are renowned for delivering solutions that offer not only cost efficiency, but also are precisely tailored to our clients' specific requirements.

- Our product range is as diverse as the missions you undertake, from compact bars to large tubes, ready to serve the varied needs of military hardware. Advanced metallurgical engineering and finishing techniques enhance the resilience of our steel, ensuring it conquers the toughest assignments.
- We adapt and innovate, transforming standard steel grades through sophisticated thermal treatments to meet strength and resilience demands on the battlefield. Our commitment extends beyond the creation of solutions vetted in conflict scenarios; we customize testing protocols, chemical compositions, reduction ratios and manufacturing workflows to align with defense project needs.
- At the heart of our production is our advanced air-melt technology, encapsulated in the proprietary **Ultrapremium™** clean steel process, which significantly reduces oxide inclusions, setting the highest bar for performance and longevity.
- Our agility in fulfilling both large-scale and precise orders demonstrates our commitment to supporting efficient inventory management and reliable, timely delivery for clientele.

Choosing Metallus means more than just selecting a steel provider; it's entrusting your project to a partner that is deeply invested in innovation, quality and the success of your operation.

LEAN ON TRUE SPECIALISTS. OUR *PRACTICAL DATA FOR METALLURGISTS* REFERENCE BOOK HAS BEEN THE INDUSTRY STANDARD FOR 70+ YEARS.





MUNITIONS

At the forefront of pioneering air-melted steels, Metallus champions the art of delivering cutting-edge materials. Our expertise is transforming specialty alloys into tailored shapes and forms, from solid bars to hollow tubes, catering to critical munitions needs. In collaboration with the U.S. Air Force Research Lab, we've marked milestones by producing the inaugural heats of AF9628, featuring our groundbreaking **Ultrapremium** technology.

This dedication parallels our meticulous program management, so clients can take swift delivery of precisely what they need. With state-of-the-art thermal treatment facilities, we offer a range of customizable options, from quench-and-temper to annealing processes. Every stage reflects our unflinching commitment to excellence, affirmed through rigorous ultrasonic testing and meticulous tube finishing, ensuring our products meet the highest standards.

ARTILLERY AND MORTAR BODIES

We excel as a worldwide provider of custom-engineered, long-length materials tailored to precise performance and testing requirements. Our expertise is showcased in key munitions programs, including the widely used 155mm artillery round.

Common Grades:

1340	HF1	1090
------	-----	------

BOMBS AND WARHEADS

Metallus steel is found in nose cones, bodies and fuse and structural components. We have participated in numerous programs, working closely with our customers to ensure consistent performance and workability.

Common Grades:

4130	4140	4340	AF9628
------	------	------	--------

THE DYNAMIC SIZE RANGE OF OUR SEAMLESS MECHANICAL TUBING (3" TO 13") MEANS THAT WE CAN DESIGN THE RIGHT PRODUCT FOR VIRTUALLY ANY PROJECT.

MISSILE AND ROCKET MOTORS

We provide material solutions for diverse missile applications, offering a wide array of long and tubular products. Our catalog includes carbon steels melted in-house and a variety of alloys for rocket motor casings, nozzles and tail components.

Common Grades:

D6AC	15-5PH	17-4PH	300M
C300	Titanium		

GUN BARRELS

Metallus provides gatling-style machine gun components for both ships and aircraft. We're also a top choice for high-quality barrel steels across various gun calibers due to our proven dependability and rigorous testing.

Common Grades:

CrMoV4	D6AC
--------	------

AIRCRAFT

Whether in the skies or on the tarmac, our steel plays a pivotal role in critical aircraft components such as landing gear and braking systems. Proudly serving the visionaries behind airborne innovation, we also supply high-strength alloy steel components vital for engines and power systems.

With a deep understanding of the factors influencing longevity and failure, we design steel products in strict adherence to aerospace standards. Moreover, we utilize Metallus-exclusive **Ultrapremium** technology in our manufacturing process to yield pristine steel, offering enhanced fatigue life and power density tailored to our customers' exact criteria.



FORGE TO FLIGHT

Collaborating with the U.S. Air Force highlights our commitment to enhancing military capabilities, as demonstrated by our efforts to optimize the performance of “penetrator” bombs. Through a Cooperative Research and Development Agreement (CRADA) with the U.S. Air Force Research Lab, Metallus pioneered both developmental and production heats of AF9628 (USAF Patent US2010369362A1), marking a significant milestone in steel innovation.

Through the provision of this premium-grade steel, we've enhanced the effectiveness of penetrator munitions, helping to ensure precision in target neutralization while minimizing unintended collateral impact.

In short, we thrive on challenges—the tougher, the better.





GROUND VEHICLES

From the crucible of combat to the relentless terrain of everyday travel, our steel powers the machines that move us both in war and in peace.

At Metallus, we engineer toughness into the DNA of ground vehicles. Whether it's bearing the brunt of conflict, ferrying troops and gear or bulldozing barriers, our materials form the sturdy foundation of safety and durability.

Trusted by the automotive industry for power transfer, our reputation extends seamlessly into the realm of heavy-duty military machinery where our steel transforms into the sinew of land-based operations.

SUSPENSION COMPONENTS

Our steel fortifies crucial suspension components, ensuring stability, shock absorption and tire-road contact to support the vehicle's weight effectively.

Common Grades:

1045	1345	8640
4145H	4340	4130

TURRET COMPONENTS

Metallus metals can be found in gun barrels, trunnions, housings and other key turret components.

Common Grades:

4340	4140	4150
------	------	------

POWERTRAIN COMPONENTS

Our steel powers both automobiles and the armed forces, driving movement and performance in engines, drivelines, transmissions and other critical components.

Common Grades:

5120	5130	4140	4150
4320	8620	9310	

EXPLORE OUR CUTTING-EDGE PIERCING METHODS TAILORED FOR MILITARY-GRADE ALLOYS, SUCH AS AERMET® 100, RENOWNED FOR ITS EXCEPTIONAL TOUGHNESS.

SPECIAL OPERATIONS

We can provide you with a Metallus solution or enhance the product you're looking for, including steels we don't manufacture ourselves.

MANUFACTURED COMPONENTS

Count on us for an optimal supply chain strategy that delivers semifinished and manufactured components at competitive per-unit prices.

TUBE PROCESSING

We pierce high-chrome, -nickel and -cobalt steel grades by displacing material over a mandrel during rotary rolling, producing a seamless tube with uniform properties from the surface through the wall and from one end to the other.

THERMAL TREATMENT

Advanced quench-and-temper, annealing and normalizing capabilities ensure that our steel products attain the essential properties, with options to meet special requirements irrespective of order size.

FINISHING LINE

Our intermediate finishing line can process 13.5 million feet (4,114,800m) of material annually, so you get faster turnaround.

ULTRASONIC TESTING

Our ultrasonic testing line allows for the inspection of the internal volume and the surface of bar products for defects, so that nothing escapes our attention.



WE SEE METAL DIFFERENTLY

SELECTION	500+ common grades	Metallus-exclusive steels	Cleanest air-melt steel
SIZE	SBQ bar 1" to 16" (25mm–406mm)	SBQ RCS squares 3.1" to 12.5" (79mm–318mm)	Seamless tubing 3" to 13"
STRENGTH	Centralized operation (Canton, Ohio)	1.2 M tons annual melt capacity across three plants	Premier heat-treat capabilities; largest vertical bloom caster in NA
SERVICE	End-to-end program and supply chain management	Technical support and testing	Application and conversion services
STEWARDSHIP	100% of products include recycled material	EAF process with fewer emissions than a blast furnace	44% drop in combined scopes 1 and 2 GHG emissions since 2018

DEFENDING THE WARFIGHTER IN ANY THEATER.

Visit [METALLUS.COM](https://www.metallus.com) or call us at 866.284.6536 (USA), or email quotes@metallus.com

METALLUS