

SBQ LARGE BARS

PROVEN CLEANNES, ENHANCED SOUND CENTERS (ASTM CLASS B OR BETTER)

SUPERIOR STRENGTH AND CLEANNES AT A REDUCTION RATIO LESS THAN INDUSTRY TRADITION.

With Metallus' technological advancements in heating, forging and inspection, we can achieve the soundness and ultrasonic testing (UT) requirements you need for your critical components in demanding applications. Our forged-rolled process creates a stronger, more uniform bar with a sound center at geometric reduction ratios lower than historically possible in rolled-only product.

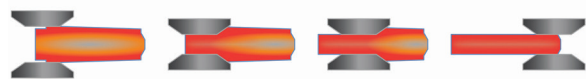
That means improved dependability, superior performance and better value for you.

COMBINING THE BEST OF BOTH WORLDS: METALLUS' FORGED-ROLLED PROCESS

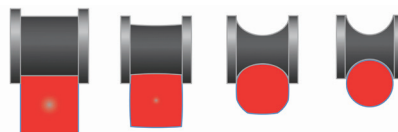
When it comes to bulk deformation and breakdown of as-cast steel ingots and blooms, there are two methods: forging and rolling. Metallus combines both processes to capture the benefits of each—the center consolidation of forging plus the dimensional control of rolling.

Our forging sequences use the initial, heavy breakdown passes of bar-forging, leaving off the abundance of small reduction cosmetic passes required in a completely forged bar. Then, we achieve final size and shape uniformity with our two rolling mills, which are better suited to special bar quality (SBQ) dimensional control than an open-die forge press.

FORGED-ROLLED: ACHIEVING BETTER RESULTS THAN OTHER PROCESSES



Forged: Generating 3,000 tons of uniform, applied pressure on the as-cast ingot or bloom, our in-line forge press significantly improves large bar center soundness and strength.



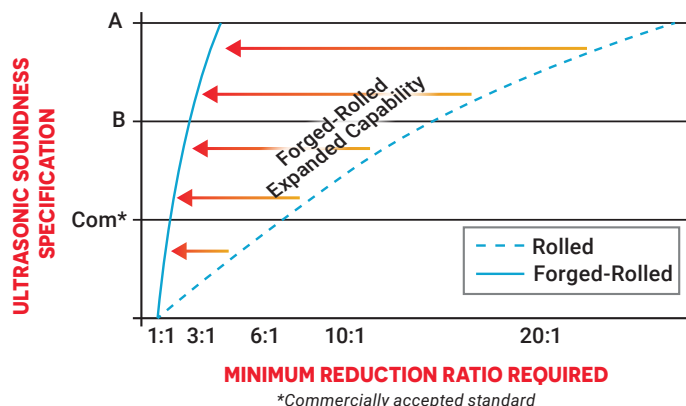
Rolled: The rolling process improves shape and size control to deliver consistent foot-weight and size tolerance.

A SUPERIOR DEFORMATION PROCESS: OPTIMIZING SOUNDNESS

We design our forge press sequences to deliver heavy, compressive deformation to where it is needed most—at the center of your bar.

Historically, customers have used reduction ratio (the ratio between as-cast and final cross-sectional areas) as a proxy for center soundness, despite the fact that reduction ratio only accounts for geometric shape change, not centerline condition.

Using advanced modeling tools, Metallus focuses on optimizing center soundness without the traditional constraints of reduction ratio. These process modeling tools are validated against actual UT results and used to optimize the forged-rolled process path.



That translates to better value for you over competitor material, with:

- Improved surface quality
- Lower cost of quality compared to forged bar
- Reduced processing costs
- Industry-leading cleanness for enhanced performance

METALLUS CLASS B SOUNDNESS

We can achieve Class B soundness or better for most grades through 16-inch round, even though the reduction ratio is less than 3:1.

REAL-WORLD APPLICATIONS

- Crankshafts
- Drill collars
- Large gears and shafts
- Raised-bore drill rods
- Rolled rings
- Swivel joints
- Tricone bits
- Work tool attachments
- Weaponry

ULTRASONIC TESTING

Specifications	AMS - STD - 2154 ASTM - E2375
Rejection Criteria	Class A - 5/64" (2mm) flat-bottom hole Class B - 1/8" (3.2mm) flat-bottom hole

WE SEE METAL DIFFERENTLY

SELECTION

500+ common grades

Metallus-exclusive steels

Cleanest air-melt steel

SIZE

SBQ bar 1" to 16" (25mm-406mm)

SBQ rounded-corner squares 3.1" to 12.5" (79mm-318mm)

Seamless tubing 3" to 13" (76mm-330mm)

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

Visit METALLUS.COM, call us at 866.284.6536 (USA) or email quotes@metallus.com.

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