



571 Andrews Ave. • Youngstown, OH 44505

# HS Series™ Product Data

Youngstown Specialty Metals, Inc. has introduced a new family of high strength (**HS Series™**) steels. These are HSLA steels produced to a variety of standard, minimum yield strength levels, currently 125, 150, and 170 ksi. These guaranteed yield strengths are significantly higher than any HSLA products that are available today. YSM's **HS Series™** steels derive their unique combination of strength and formability from HSLA chemistries and microstructures, as well as single-strand rolling mills and continuous annealing technology.

These spring temper steels, designated as **HS125™**, **HS150™**, and **HS170™**, are intended for higher strength applications including fasteners, springs, and brackets. Like all high strength products, formability generally decreases as yield strength increases and must be taken into consideration in metalforming operations. **HS Series™** steels provide the normal benefits of HSLA chemistries. Plus, there are numerous advantages of these steels beyond other high strength materials, as detailed on the next page.

### TENSILE PROPERTIES:

<u>Product</u>	<u>Minimum YS</u>	<u>Typical YS</u>	<u>Typical UTS</u>	<u>Typical %E</u>	<u>Typical Hardness</u>
<b>HS125™</b>	125 ksi	125-135	125-135	5-8	25-28 Rc
<b>HS150™</b>	150 ksi	150-160	150-160	2-3	30-34 Rc
<b>HS170™</b>	170 ksi	170-180	170-180	2-3	37-39 Rc

### CHEMISTRY:

<u>Product</u>	<u>Carbon</u>	<u>Manganese</u>	<u>Other</u>
<b>HS125™ &amp; HS150™</b>	.15% max.	1.65% max.	V, Cb, Ti, N as required
<b>HS170™</b>	.15% max.	2.50% max.	V, Cb, Ti, Mo, N as required

### FORMING:

#### 90° Transverse (T) Bend

**HS125™** - 1 to 3 thk    **HS150™** - 2 to 4 thk.    **HS170™** - 3 to 5 thk.

For additional information on **HS Series™** steels, or any flat rolled steel products from *Youngstown Specialty Metals, Inc.*, please contact us at:

**800-283-1050**  
**Fax 330-259-1120**

The marketing of high strength products the **HS Series™** designation in standardized tempers is new for **YSM**, but the value which it brings to metal users is not. Now, even more customers can realize the benefits of our high strength steels:

- Higher strength levels permit thinner gauges of steel to be used to reduce component weight.
- Forming parts directly from high strength steel can often eliminate heat treatment, reducing costs and problems with distorted parts. Inventory reduction and elimination of excess freight and material handling are other potential benefits.
- HSLA chemistries permit easier welding due to low carbon equivalents.
- **HS125™**, **HS150™**, and **HS170™** are spring temper steels, and their formability is equivalent to that of other high strength products. **YSM** also provides custom temper, high formability HSLA products under the **UniForm 800™** designation.
- Rolling mills used by **YSM** provide CR Strip gauge tolerances - more parts/pound of steel purchased due to the close gauge control from single-stand reversing mills.
- Flatness on all the **HS Series™** steels will meet or exceed all applicable industry standards, improving the ability to maintain critical part dimensions.
- Close control of yield strength of all of the **HS Series™** steels combined with excellent gauge control, provides less variation in spring-back. Manufacturing and dimensional tolerances are improved as a result.
- **HS Series™** steels can withstand prolonged holding at elevated temperatures, well in excess of other steels. Preliminary test show no change in yield strength after 500 hours at 500° F.
- Burr formation is minimal, eliminating or reducing time of extra operations to remove burr.
- Minimum order quantities can be small, from SSC stock inventories, to direct mill shipments.
- **HS Series™** steels can be produced in a variety of conditions, including coated, oscillated coils, and/or edge conditioned. Smooth finish is standard, but matte finishes, or even differential finishes, such as one-side smooth/one-side matte are available upon inquiry.
- Coated **HS Series™** steels can potentially substitute for other materials. Examples include use of galvanized **HS Series™** steel in place of intermediate temper of T-300 stainless, and tin coated **HS Series™** steel to replace non-ferrous metals in electrical contact/spring applications.

For additional information on **HS Series™** steels, or any flat rolled steel products from **Youngstown Specialty Metals, Inc.**, please contact us at:

**800-283-1050**  
**Fax 330-259-1120**