



THE MATERIAL ADVANTAGE Over Hot-Rolled Black

As an economical general-purpose steel, hot-rolled black (HRB) is hard to beat. But it's also hard to clean, needing anything from a labor-intensive wipedown to shot blasting before it's painted or coated. Add those costs to the basic material price and HRB loses some of its appeal. When rust enters the picture, as it often does, HRB loses nearly all of its appeal.

Since SCS begins as HRB, it too is a versatile, general-purpose steel. But with SCS, rust doesn't enter the picture. In fact, SCS removes existing surface rust on HRB, leaving a rust-inhibitive surface that's so smooth and flat it feels like cold-rolled.

SCS also departs its HRB bloodlines when it comes to cleanliness. SCS is so clean, and its shape so consistent, that it simply makes fabrication easier *and faster*. Whether you weld it, laser it or form it into anything from rail cars to file cabinets, you'll do it in less time and with fewer rejects. **That's the SCS Material Advantage.**



Hot-rolled that is mechanically brushed.

MATERIAL DEFINITION

Hot-rolled with normal mill scale, but surface conditions vary widely based on mill source and storage.

Inhibits rusting without any coating or protection. SCS process removes existing surface rust from hot-rolled coils or sheets.

RUST RESISTANCE

Inherently susceptible to rusting. Stored exposed, significant rust will develop that is typically removed by shot blasting.

Typically 15 microinches better than HRB.

SMOOTHNESS

Highly variable - from quality acceptable for pre-painting to coarse, pitted & rusted.

Extremely clean – less than 10% gray scale.

CLEANLINESS

Covered by layer of mill scale at best. At worst, add dirt, grit and rust. Significant cleaning needed prior to painting.

Consistent, excellent shape. Coils are leveled with tension to remove bow, edge wave and coil breaks. Stretcher-leveling sheets removes all shape issues.

SHAPE

Poor to fair shape. Variation based on metallurgy, mill production conditions and leveling (if any).

Inherits coloration of base hot-rolled – shadowed, blued appearance and discoloration where rust is removed. Variations cannot be seen after painting.

COLOR

Shadowed, blued appearance and frequent 'mill stains' (see above photo).

THE REAL SCS ADVANTAGE COMES IN SHOP OPERATIONS

A clean, smooth, consistently flat steel makes a huge difference in manufacturing productivity, especially when it replaces steel with scale and dirt, rust, and shape problems. SCS advantages over HRB have been proven in laboratory tests and at top tier manufacturers. Most SCS benefits appear the moment you start using it. For a few, you'll want to optimize process settings to capture maximum SCS advantage. We provide guidelines for how to get the most from SCS – whether it's boosting laser speed or leaning out paint prep.

LASER CUTTING

Dirt and scale on HRB can cause beam diffraction, and rust can cause auto shut-off due to excessive surface variation.

The SCS surface is so smooth, clean and flat that laser and plasma cutting speed can be increased as much as 50%, while 'springback' is reduced or eliminated.

- **speed increases of 20 to 50%.**
- **laser through two sheets at a time with stretcher-leveled SCS sheets.**
- **superb quality in cut, pierce & mark.**



The 'SCS Lasering Guidelines' help you optimize laser setup for increased speed with SCS. See www.scsprocess.com or contact your SCS sales rep.

PREP & PAINTING

HRB needs extensive cleanup before painting, plus phosphating pretreatment to obtain acceptable adherence and corrosion resistance.

A lean 2-stage rinse is all that's needed to prep SCS for most applications. Smooth SCS yields a superior finish for high gloss paints and better corrosion resistance.

- **SCS process removes surface rust, yielding a highly paintable surface.**
- **big savings from 'leaner' paint prep with no phosphating stages.**



See 'SCS Paint Prep Guidelines' for SCS rinse regimen. Note that SCS surface 'shadows' – even from removed rust – do not show through the paint.



WELDING

Cleaner steel makes better welds, so with HRB you either clean (even grind!) the area to weld, or let weld integrity suffer.

Clean SCS welds better, giving a more uniform, stronger bead which improves weld integrity and cuts down on rejects and rework.

- **stretcher-leveled SCS is ultra-flat, so it simplifies fit up of welded sections.**
- **savings in filler wire may be realized from SCS' more uniform weld bead.**

'SCS Welding Guidelines' give you settings and suggested consumables to optimize SCS welding. See your SCS sales rep or www.scsprocess.com.



TUBE PRODUCTION

Tubes made from HRB require cleanup prior to coating or painting and rust is always a concern. It's often the most frequent reason for rejecting HRB tubes.

SCS tubes, structural or mechanical, can be ready to weld right off the mill, ready to paint right off the mill. The SCS shape, with no edge wave, and SCS cleanliness yields a better, more uniform seam weld.

- **in trials to date, SCS welds faster than P&O, so tube mills may run faster.**

BENDING & FORMING

SCS in rollforming and pressbrake work performs beautifully. There's no 'slip' in tooling and SCS' superb shape yields consistent final product shapes.

For bends of 30% or more, some breaking loose of surface scale on the inside radius is expected. Loose scale is easily wiped or rinsed away and paint adherence is not diminished. Scale on outer radii shouldn't break loose and there's no microcracking.



SHOP MAINTENANCE

HRB's scale and grit fouls tools, machines and work areas. It can make blanks more difficult to de-stack if suction cups quickly become dirty and don't stick to sheets.

With SCS, machines, uniforms and work areas all stay much cleaner. You'll buy fewer gloves, rags and cleaning supplies and won't need to deal with rust removal.

- **less time, money lost to cleaning.**
- **better shop environment.**



For more information on using SCS in these or other processes, please contact us to discuss your needs.



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OTHER PROCESSES

Stamping SCS lets lubricant contact the steel, rather than scale, so it works better. HRB scale can foul dies enough to reduce part quality, but SCS keeps dies cleaner.

Punching turret work is cleaner with SCS and, due to SCS' flatness, more consistent.

Grinding SCS eliminates the need to grind away rust, since it inhibits rusting. See our 'Guidelines for Grinding SCS'.