



BLAIR

STRIP STEEL COMPANY

1209 Butler Avenue
 New Castle, PA 16101
 Phone: 724.658.2611
 Fax: 724.658.6548
 Email: sales@blairstripsteel.com

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GLOSSARY

A

Aircraft Quality Alloy Steel - usually 4130 alloy strip produced to AMS specifications

Alloy - metallic or non-metallic elements added to base metals to modify its properties

Alloy Strip Steel - steel with one or more additional elements for customizing specific properties

Aluminum-Killed - steel with aluminum added to deoxidize and refine grain size

Annealing - heating and cooling cycles to soften strip steel for rerolling or forming into parts

ACRSSP - the Association of Cold Rolled Strip Steel Producers, a trade association

B

Batch Annealing - annealing performed in strip steel coils using bell furnaces

Belleville Disc Springs - alloy steel formed into a conical disc that can be engineered to compress at a specific load. Belleville springs can be used alone or stacked in multiples for specifically-designed applications. **BelleFlex Technologies**, a subsidiary of Blair, produces Belleville springs in Freeport, Pennsylvania.

Blast Furnace - where iron ore, coke and limestone are super-heated to create liquid iron

BOF - Basic Oxygen Furnace - a huge vessel where iron and scrap is converted into molten steel

Burr - the sharp, extended edge of a steel strip created by slitting or blanking operations

Butt Welding - the joining of two strip edges end-to-end, usually with electric resistance

C

Cold Rolling - reduction of flatrolled steel by passing hot rolled coils between one or more sets of rolls

Cold Working - any type of strain hardening that increases hardness, ductility, strength and temper

Continuous Casting - a production unit that transforms molten steel into a continuous slab

Crown - flatrolled strip with a greater thickness along the centerline than at the edges

Cut Lengths - flatrolled steel sheared from coils to a specified length and stacked on skids

D

Dead Soft Temper - flatrolled steel that has been annealed last to provide the lowest hardness

Deburring - an edging operation that has removed the burr from a slit strip edge

Deoxidation - process to remove or tie up oxygen molecules in molten steel production

Drawing Quality - flatrolled steel processed to enhance the ability to stretch and form

Ductility - elongation property of steel that resists fracturing during deformation

E

EAF - Electric Arc Furnace - a huge vessel where steel scrap is recycled into new molten steel

Edges - the strip edge, naturally rounded, often slit, sometimes deburred, rolled or skived

Electromagnetic Iron - specially processed, ultra-low carbon strip used in relay and switch applications

Elongation - the amount a sample of steel will stretch before breaking, reported as a percentage

F

Face - the total width of an oscillate-wound coil

Fineblank - a highly-engineered, near net-shape method of metal stamping typically using heavy gauge strip

Fineblanking Steel - strip steel produced with enhanced extrusion characteristics and uniformity

Finish - the surface topography of flatrolled strip: light matte, matte, regular bright, etc.

Flattening - leveling operation of steel strip through a unit housing a series of small diameter rolls

Full Hard Temper - flatrolled steel that is rolled hard last for parts that require high hardness, stiffness

G

Gauge - a numerical designation or decimal measure of thickness in flatrolled steels

Gauge-Corrected - flatrolled steel with a light rolling to improve thickness tolerances

Grain Size - the relative size of individual, microscopic crystals of steel

H

Half Hard Temper - flatrolled steel of intermediate hardness, between hard and soft tempers

Hardness - the measure of steel's resistance to permanent deformation by a penetrator

Heat - the volume of molten steel in one production lot of a BOF or an EAF vessel

Heat Treatment - thermal process to increase hardness, usually to high carbon or alloy finished parts

Heavy Gauge Strip Steel - typically thicker than .250", with precision tolerances or custom properties

High Carbon Steel - grades with .25% carbon or more, usually for parts to be heat treated

High Strength Low Alloy - low carbon steel with microalloying elements for minimum strength values

Hot Rolled Strip - slabs heated and rolled into hot coiled bands of flatrolled steel

Hydroforming - a strip steel metalforming technique using fluid pressure and dies

I

ID Core - a steel or fiber board liner on the inside diameter of an oscillated coil

Inclusions - non-metallic, often undesirable impurities retained in steel during solidification

K

Killed Steel - steel deoxidized with aluminum or silicon to reduce gas content and refine grain size

L

Ladle or Heat Analysis - chemical analysis taken for each BOF or EAF heat or production lot

Low Carbon Steel - grades with less than .25% carbon, usually for formed parts

M

Macro Etch - acid-etching a steel sample to enhance viewing its macrostructure

Matte Finish - a specified roughened or textured surface on flatrolled steel

Metallography - the study of various steel microstructures as seen through a microscope

Metallurgy - the study of metals and alloys, their production, properties and applications

Microcleanliness - describes the extent and morphology of non-metallic inclusions

Microstructure - the crystalline constituents of steel observed through a microscope

Mill Edge - the naturally rounded edge of a flatrolled strip produced by rolling on a mill

N

Normalized Structure - a high temperature heat treatment to return steel crystals to their normal state

O

One Pass Steel - typically hot rolled steel with a minimal cold reduction pass on a rolling mill

Oscillate-Winding - coiling narrow widths in a traverse fashion, much like a fishing reel

P

Pawl Steel - ultra-heavy alloy strip steel used to make auto transmission parking pawls

Pickling - passing steel through an acid bath to remove hot mill scale and oxide from the surface

Profilometer - a tool used in the measurement of relative surface roughness, peak to valley

Q

Quarter Hard Temper - soft flatrolled steel lightly rolled to moderately increase hardness

QS9000 - a worldwide automotive quality systems standard incorporating ISO9000

R

Residual Elements - non-essential, incidental elements found in trace amounts in steel

Reversing Cold Mill - a single-stand mill that performs multiple pass reductions, back and forth

Rockwell - a standard method and numerical scale used to measure hardness in metals

Roll Forming - continuous metal forming method using a series of engineered rolls

S

Shear - a steel cutting operation performed by a fixed edge and a moving blade

Sheet Coil - a term for wide flatrolled steel produced to generic characteristics

Skin Pass - a light rolling of flatrolled steel to stiffen, brighten or gauge-correct flatrolled steel

Slab - the primary, continuously cast shape to be hot rolled into flatrolled coils

Slitting - a continuous rotary shearing operation to split wide coils into narrower coils

Slit Edge - the sheared strip edge created by slitting wide coils into narrow widths

Spheroidized Annealing - a heating process to create globular carbides in the strip

Spring Steel - a term typically used for high carbon steel to make parts that will be heat treated

Stainless Steel - strip steel with chromium and often nickel to deter atmospheric corrosion

Stamping - metalworking operation that shears and forms parts using tools and dies

Steel - iron with carefully specified additions of carbon, manganese and phosphorus

Stretcher Leveling - a steel flattening process that pulls the strip slightly beyond the yield point

Strip Mills - narrow cold mills, more precise than sheet mills, capable of high carbon, alloy grades

Strip Steel - narrow flatrolled steel produced to custom and/or precision characteristics

Strip Tolerances - thickness variation typically half or less of sheet mill industry tolerances

T

Tandem Cold Mill - a series of two or more mill stands that cold reduce the thickness of steel coils

Temper - the specified hardness range or degree of stiffness typical of low carbon strip steel

Temper Mill - a cold mill used to make a light final reduction for temper, finish and thickness accuracy

Tensile Strength - the maximum stress a steel specimen exhibits when pulled to failure

Tolerance - the permissible variation above and below a specified characteristic, such as thickness

Traverse-Wound Coil - another name for an oscillate-wound coil

U

Ultra Heavy Gauge Strip - steel typically heavier than .375", with precision or custom characteristics

Y

Yield Strength - the stress at which a steel specimen exhibits permanent deformation