PRODUCTS & PRICES

CLIFFS

CLEVELAND-CLIFFS INC.

All orders are subject to Cleveland-Cliffs Steel Terms and Conditions of Sale and the Light Flat Roll Steel Claims Policy, available at:
www.clevelandcliffs.com/doing-business/for-customers

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General Information

Trademarks / Copyrights

The Cleveland-Cliffs Logo and the other marks shown below carrying the ® designation are all registered trademarks of Cleveland-Cliffs Inc. and its affiliates ("Cleveland-Cliffs") or Cleveland-Cliffs licensors and registered with the U.S. Patent and Trademark Office. The other trademarks listed below are also owned by Cleveland-Cliffs. None of the Cleveland-Cliffs trademarks may be used without Cleveland-Cliffs' prior written permission.

CLEVELAND-CLIFFS®
CLIFFS®
CLIFFS H™
EXTRASMOOTH™
GALVALUME®
NEXMET®
PAINTGRIP®
ULTRALUME®
ULTRASMOOTH®
UNIVIT®
VIT-PLUS®

CLIFFS H™ is steel produced with carbon-friendly hot-briquetted iron (HBI) content. All of Cleveland-Cliffs' steelmaking operations have the capability to produce all our prime steel products as CLIFFS H™ steel and therefore all are subject to the sustainability surcharge, as we are committed to producing lower-emissions steel for our customers.

Currently, the CLIFFS H™ sustainability surcharge is $40 per ton of steel.

For more information and additional details regarding this initiative, please see the Sustainability section of Cleveland-Cliffs' corporate website, including our Sustainability Report at www.clevelandcliffs.com/sustainability

Steel Quality Definitions

Hot-Rolled, Cold-Rolled, Electrogalvanized and Enameling Steel

Bake Hardenable

Steel of this quality is specified when a customer requires a steel that increases in strength from blank to finished part, through a combination of work hardening during part forming and strain aging during subsequent thermal processing.

Commercial Steel (CS Type A, B, or C)

This quality is defined in ASTM Standards A1008 for Cold-Rolled, A1011 and A1018 for Hot-Rolled and is equivalent to the former Commercial Quality. Sheets of this quality are suitable for applications where bending, moderate forming or drawing may be involved. Chemistry limits for CS Type B preclude the application of ultralow carbon material of this quality.

CS Type B is not recommended where a high degree of uniformity in mechanical properties is required.

To prevent the occurrence of fluting or stretcher strain in forming or drawing, Cold-Rolled Sheets are temper rolled, however, the effect of temper rolling is only temporary due to the phenomenon commonly known as aging. Effective roller levelling immediately prior to fabrication will minimize the tendency to flute or strain. Stocking of material for an extended period of time should be avoided. To eliminate the possibility of aging, killed steel can be supplied but must be specified.

Dent Resistant

Steels of this quality are conventionally low carbon or ultralow carbon that are alloyed and processed to allow increase of their strength level during the formation of the part through work hardening.

Drawing Steel Type B (DS Type B)

This quality is defined in ASTM A1008 for Cold-Rolled and A1011 and A1018 for Hot-Rolled and is equivalent to the former DQSK. This quality has improved mechanical properties compared to CS and should be specified for fabrication of parts having stringent drawing requirements. Chemistry limits forbid application of ultralow carbon material to this quality. In addition to the improved formability, DS Type B is non-aging after it has been properly temper rolled.

Dual Phase (DP)

These products provide high strengths with improved ductility through a combination of chemistry and precise processing parameters to produce a microstructure with a matrix of soft phase (ferrite) and hard phase (martensite). The term “Dual Phase” represents the ferrite and martensite phases present. This type of steel comes in a variety of strength levels. The material also exhibits a bake hardening effect.

Enamel Steel	Defined in ASTM A424, Type I, Type II, Type III and Type IV are available.
Extra Deep Drawing Steel (EDDS)	Steel of this quality is defined in ASTM Standard A1008. Sheets of this quality should be specified when DS Type B will not provide a sufficient degree of ductility and drawability for the fabrication of parts having stringent drawing requirements. This quality is furnished as a vacuum degassed, interstitial free, stabilized steel. It is non-aging and will not exhibit stretcher strain or fluting.
Extra Deep Drawing Steel Plus (EDDS+)	Sheets of this quality should be specified for the most difficult parts having the most stringent drawing requirements. This quality is furnished as a vacuum degassed, interstitial free, stabilized steel. It is non-aging and will not exhibit stretcher strain or fluting.
Full Hard Steel	Material ordered as Full Hard will be produced using a variety of chemical specifications, which must be specifically outlined at the time of purchase, and with a minimum Rockwell of B84 unless otherwise requested. Full Hard for conversion to specific finished products is also available upon request. Review end use and specifications with your Cleveland-Cliffs Representative.
High Strength Low Alloy (HSLA) High Strength Low Alloy Steel With Improved Formability (HSLA-F)	Steel of this quality is defined in ASTM Standards A1011 and A1018 for Hot-Rolled and ASTM A1008 for Cold-Rolled and is equivalent to the former High Strength Low Alloy Steel. These products are produced to specified mechanical properties by additions of microalloying agents.
Martensite	Martensite steel grades consist of fully martensitic microstructures in the as-received condition. These steels offer much higher strength-to-weight ratios than conventional steels grades. The physical properties are uniform in both the longitudinal and transverse directions. Martensitic steels have limited formability and are often used in roll-forming applications. Martensite is available as both bare Cold-Rolled and Electrogalvanized.
Multi-Phase (MP)	Multi-phase steels represent an improvement over the ductility offered by Dual Phase steels. Multi-Phase steels will have a unique chemistry and require unique mill processing that is different from the processing involved in producing Dual Phase steels. As compared to Dual Phase steels, Multi-Phase steels have a higher yield strength, higher hole expansion ratio and superior bendability. Multi-Phase steels consist of ferrite, bainite and martensite phases.

Ordered Specifications

Cleveland-Cliffs will consider specifications customers wish to reference when ordering steel. As needed, we can recommend products and grades to fit your needs, including suggesting an appropriate specification to reference, however final specification determination to be made by customer. To document our available products in this document, we are describing many steel grades families using terminology also used by ASTM.

Press Hardenable Steel (PHS)

Steel of this quality is commonly referenced as 22MnB5 or 15B22 and is available as Hot-Rolled, Cold-Rolled Full Hard, Cold-Rolled Annealed and Tempered. It is also available as a coated product. Press Hardenable Steels are hot stamped, a process that avoids part springback issues and allows for very complex shapes to be easily formed. The product is heated, formed, and rapidly cooled in the press. The microstructure consists of ferrite and pearlite prior to hot stamping and will be pure martensite after proper hot stamping.

Specified Hardness

Specified Hardness ranges (15 point min) only valid for CR product. Limited ASTM/SAE chemistries with hardness ranges are available – inquiry required for capability. For HR product, hardness ranges are not accepted, inquiry required for Min only or Max only capability.

Specified Mechanical Properties

Applications that require specific mechanical properties that are not covered by Industry/Society standards, or customer specification, agreed upon mechanical properties will be met.

Structural Steel (SS)

Steel of this quality is defined in ASTM Standards A1011 and A1018 for Hot-Rolled and ASTM A1008 for Cold-Rolled and is equivalent to the former Structural Quality. These products are produced to specified mechanical properties. The properties are obtained through control of carbon and manganese.

3rd Generation AHSS

NEXMET® AHSS grades represent the next generation of cold stamping steels, with microstructures consisting of ferrite, bainite, martensite and retained austenite. The retained austenite results in exceptional total elongations, superior to all other cold stamped grades at the same minimum tensile strength. Bendability is also excellent and superior to Multi-Phase steels. NEXMET® AHSS grades are cold stamped and can successfully meet forming requirements involving parts where other cold stamped products fail.

Steel Quality Definitions

Galvanized, Galvannealed, and Aluminized Steel

Bake Hardenable	Steel of this quality is specified when a customer requires a steel that increases in strength from blank to finished part, through a combination of work hardening during part forming and strain aging during subsequent thermal processing.
Commercial Steel (CS Type A, B, or C)	Sheets of this quality are equivalent to the former Commercial Quality and are suitable for the same types of applications. Galvanized, Galvannealed, and Aluminized are subject to strain and fluting unless supplied as an extra smooth or temper rolled product; however, Commercial Steel may also exhibit the phenomenon of aging. There are three types of Commercial Steels defined in the ASTM standard, each one having specific chemistry and typical mechanical property ranges. See individual Cleveland-Cliffs products for available types.
Deep Drawing Steel (DDS)	Sheets of this quality are equivalent to the former Drawing Quality Special Killed. This grade may be produced from either low carbon aluminum killed steel or interstitial free stabilized steel at the producer's option. Objections to the use of stabilized steel must be included in customer order requirements.
Dent Resistant	Steel of this quality are conventionally low carbon or ultralow carbon that are alloyed and processed to allow increase of their strength level during the formation of the part through work hardening.
Dual Phase (DP)	These products provide high strengths with improved ductility through a combination of chemistry and precise processing parameters to produce a microstructure with a matrix of soft phase (ferrite) and hard phase (martensite). The term "Dual Phase" represents the ferrite and martensite phases present. This type of steel comes in a variety of strength levels. The material also exhibits a bake hardening effect.
Extra Deep Drawing Steel (EDDS)	Sheets of this quality provide a degree of ductility and drawability for the fabrication of parts having stringent drawing requirements. This quality is furnished as a vacuum degassed, interstitial free, stabilized steel. It is non-aging.
Extra Deep Drawing Steel Plus (EDDS+)	Sheets of this quality should be specified for the most difficult parts having stringent drawing requirements. This quality is furnished as a vacuum degassed, interstitial free, stabilized steel. It is non-aging.

Forming Steel (Type A and B)

Sheets of this quality are intended for applications where moderate forming is desired which may not be achieved by typical Commercial Steel. There are two types, A and B, defined in ASTM standards with a specific chemistry and non-mandatory mechanical properties.

High Strength Low Alloy (HSLA) High Strength Low Alloy Steel with Improved Formability (HSLA-F)

The products are produced to specified mechanical property ranges in the ASTM standard through the additions of microalloying elements.

Multi-Phase (MP) and Complex Phase (CP)

Multi-phase and Complex Phase steels both represent improvements over the ductility offered by Dual Phase steels. These steels will generally utilize different chemistries and require unique mill processing that is different from processing required for Dual Phase steels. As compared to Dual Phase steels, Complex Phase steels have a much higher yield strength, a much higher hole expansion ratio and superior bendability. At a given tensile strength level, Multi-Phase steels have physical properties in-between Dual Phase and Complex Phase steels. Both Multi-Phase and Complex Phase steels consist of ferrite, bainite and martensite phases.

Ordered Specifications

Cleveland-Cliffs will consider specifications customers wish to reference when ordering steel. As needed, we can recommend products and grades to fit your needs, including suggesting an appropriate specification to reference, however final specification determination to be made by customer. To document our available products in this document, we are describing many steel grades families using terminology also used by ASTM.

Press Hardenable Steel (PHS) and Press Quenched Steel (PQS)

ULTRALUME® Press Hardenable steels offer the same advantages of bare PHS, with the added benefit of an aluminum-silicon coating that survives the hot stamping process. This negates the need for removing scale created during hot stamping, simplifying manufacturing. The ULTRALUME® 500 microstructure consists of ferrite and martensite both before and after hot stamping, thus it is considered as a press quenched steel. For ULTRALUME® 1000, the microstructure changes from ferrite and martensite to martensite after hot stamping. ULTRALUME® 1500 and ULTRALUME® 2000 microstructures consist of ferrite and pearlite prior to hot stamping and will be pure martensite after proper hot stamping. Hot stamping avoids issues with part springback and very robustly forms complex shapes. A single complex hot stamped part cannot only be formed successfully in a hot stamping process, but it can also replace multiple cold stamped parts, reducing manufacturing complexity.

Specified Mechanical Properties	Applications that require specific mechanical properties that are not covered by Industry/Society standards, or customer specification, agreed upon mechanical properties will be met.
Specified Hardness	For some applications, customers choose to specify a minimum, maximum or a range of Rockwell hardness (minimum of 15 pt. range). When ordering this quality, chemistry cannot be specified. Specified Hardness only available for GI product. Inquiry required for capability.
Structural Steel (SS)	These products are produced to specified mechanical property ranges as designated in the ASTM standard. The properties are obtained through control of carbon and manganese and other elements.
3rd Generation AHSS	NEXMET® AHSS grades represent the next generation of cold stamping steels, with microstructures consisting of ferrite, bainite, martensite and retained austenite. The retained austenite results in exceptional total elongations, superior to those of Dual Phase, Multi-Phase and Complex Phase grades. Bendability is also excellent and on par with the bendability of Complex Phase steels. NEXMET® AHSS grades are cold stamped and can successfully meet forming requirements involving parts where other cold stamped products fail.

General Information

Specifications and Standards Directory

Specification	Description	Grade/Quality	Applicable Cliffs Steel Product
ASTM A568	General requirements for Hot-Rolled and Cold-Rolled Steel Sheet	General requirements steel sheet	Cold-Rolled, Electrogalvanized, Hot-Rolled, UNIVIT®, VIT-PLUS®, I-F Enameling, UNIVIT® APX Type IV
ASTM A635	General requirements for Hot-Rolled Heavy-Thickness Steel Sheet and Strip	General requirements steel sheet and strip, thickness 0.230" and greater	Hot-Rolled
ASTM A1011	Standard specification for Hot-Rolled Steel Sheet and Strip	CSTA, CSTB, CSTC, DSTA, DSTB, SFS, Structural, HSLAS, HSLAS-F, UHSS	Hot-Rolled
ASTM A1018	Standard specification for Hot-Rolled Heavy-Thickness Steel Sheet and Strip	CSTA, CSTB, CSTC, DSTA, DSTB, Structural, HSLAS, HSLAS-F, UHSS	Hot-Rolled
ASTM A659	Standard specification for Hot-Rolled Commercial Steel Sheet and Strip (Carbon 0.16% max to 0.25% max)	1015, 1016, 1017, 1018, 1020, 1021, 1023	Hot-Rolled
ASTM A1008	Standard specification for Cold-Rolled Steel Sheet	CSTA, CSTB, CSTC, DSTA, DSTB, DDS, EDDS, Structural, HSLAS, HSLAS-F, SHS, BHS, RHS, FHS	Cold-Rolled
ASTM A794	Standard specification for Cold-Rolled Commercial Steel Sheet (Carbon 0.16% max to 0.25% max)	1015, 1016, 1017, 1018, 1020, 1021, 1023	Cold-Rolled, Electrogalvanized
ASTM A424	Standard specification for Enameling Steel Sheet	Type I (CS, DS), Type II (CS, DS), Type III, Type IV	UNIVIT®, VIT-PLUS®, I-F Enameling, UNIVIT® APX Type IV
ASTM A879	Standard specification for Electrogalvanized Steel Sheet	CSTA, CSTB, CSTC, DSTA, DSTB, DDS, EDDS, Structural, HSLAS, HSLAS-F, SHS, BHS	Electrogalvanized
ASTM A924	General requirements for Hot-Dip Coated Steel Sheet	General requirements steel sheet	Aluminized Type 1, GALVALUME®, Galvanized, Galvannealed, Aluminized Type 2 Culvert Sheets, Galvanized Culvert Sheets
ASTM A463	Standard specification for Aluminum-Coated Steel Sheet	CSTA, CSTB, CSTC, FS, DDS, EDDS, Structural, HSLAS	Aluminized Type 1
ASTM A653	Standard specification for Galvanized and Galvannealed Steel Sheet	CSTA, CSTB, CSTC, FSTA, FSTB, DDS Type A, EDDS, Structural, HSLAS, HSLAS-F, SHS, BHS, RHS	Galvanized, Galvannealed
ASTM A792	Standard specification for 55% Aluminum-Zinc Alloy-Coated Steel Sheet	CSTA, CSTB, CSTC, FS, Structural, HSLAS	GALVALUME®
ASTM A929 / AASHTO M-274	Standard specification for Aluminized Type 2 Steel Sheet for Corrugated Steel Pipe	CSP Grade	Aluminized Type 2 Culvert Sheets
ASTM A929 / AASHTO M-218	Standard specification for Galvanized Steel Sheet for Corrugated Steel Pipe	CSP Grade	Galvanized Culvert Sheets
ASTM A742 / AASHTO M-246	Standard specification for Galvanized Steel Sheet with Polymer Coating for Corrugated Steel Pipe	CSP Grade	Galvanized Culvert Sheets
SAE J403	Chemical Compositions of SAE Carbon Steels	1002-1055, 1515-1524	Aluminized Type 1, Cold-Rolled, Electrogalvanized, Galvanized, Galvannealed, Hot-Rolled
SAE J1392	High Strength, Hot Rolled Sheet and Strip, Cold Rolled Sheet, and Coated Sheet	035, 040, 045, 050, 060, 070, 080 - suffix XLK, XLF, YLK, YLF	Cold-Rolled, Electrogalvanized, Galvanized, Galvannealed, Hot-Rolled
SAE J2340	Categorization and Properties of Dent Resistant, High Strength, and Ultra High Strength Automotive Sheet Steel	Dent Resistant (suffix A) 180, 210; Bake Hard (suffix B) 180, 210, 250, 280; HSLAS (suffix X, Y, XF, YF) 300, 340, 380, 420, 490, 550	Cold-Rolled, Electrogalvanized, Galvanized, Galvannealed, Hot-Rolled
SAE J2329	Categorization and Properties of Low-Carbon Automotive Sheet Steels	CR1, CR2, CR3, CR4, CR5, HR1, HR2, HR3	Cold-Rolled, Electrogalvanized, Galvanized, Galvannealed, Hot-Rolled
SAE J2947	Categorization and Properties of Steel Sheet for Automotive Cold Forming Applications	CR1-CR5, HR0-HR3, CR(180, 210, 240)BH, CR(180, 240)IF, CR(210, 240, 270, 300, 340, 380, 420)LA/F, HR(300, 340, 380, 420, 500, 550)LA/F, CR(330Y590T, 440Y780T, 550Y980T)DP	Aluminized Type 1, Cold-Rolled, Electrogalvanized, Galvanized, Galvannealed, Hot-Rolled
SAE J1562	SAE Zinc and Zinc-Alloy Coating Designations	Coating designations	Electrogalvanized, Galvanized, Galvannealed

For any standards or specifications not referenced here, contact your Cleveland-Cliffs Representative.

General Information

Metric Conversion Factors

The following list contains the common metric and other conversions that may be applicable for purposes of ordering carbon steel sheet products.

	Convert From	Convert To	Multiply By
Length	inch (in.)	millimeters (mm)	25.4
	foot (ft.)	meter (m)	0.3048
	inch (in.)	mil	1000
	millimeters (mm)	inch (in.)	0.03937008
	microinches	micrometer or micron	0.0254
	micrometers or microns	microinch	39.37008
Weight	ounce (oz.)	grams (g)	28.34952
	pound (lb.)	grams (g)	453.5924
	pound (lb.)	kilograms (kg)	0.4535924
	ton	metric ton	0.9071847
	metric ton	kilogram (kg)	1000
	metric ton	pounds (lb.)	2205
	kilogram (kg)	pounds (lb.)	2.204623
Coating Weight	ounce/square foot (oz./ft.^{2})	grams/square meter (g/m^2)	305.1517
	grams/square meter (g/m^2)	ounces/square foot (oz./ft.^{2})	0.00327705
Density	pound/cubic inch (lb./in.^{3})	grams/cubic centimeter (gm/cm^3)	27.68
	grams/cubic centimeter (gm/cm^3)	pounds/cubic inch (lb./in.^{3})	0.0361273
Strength	pounds/square inch (psi.)	ksi (1000 psi.)	0.001
	ksi.	megapascal (MPa)	6.895
	pounds/square inch (psi.)	megapascal (MPa)	0.006894757
	newton/square millimeter (N/mm^2)	megapascal (MPa)	1
	pounds/square inch (psi.)	newton/square millimeter (N/mm^2)	0.006895
	ksi.	newton/square millimeter (N/mm^2)	6.895
	ksi.	kilograms/square millimeter (kg/mm^2)	0.704
	kilograms/square millimeter (kg/mm^2)	pounds/square inch (lb./in.^{2})	1422.334
	megapascal (MPa)	pounds/square inch (lb./in.^{2})	145.0377
	kilograms/square millimeter (kg/mm^2)	megapascal (MPa)	9.80665
Price	$/100 lb.	$/100 kg	2.204623
	$/100 kg	$/100 lb.	0.4535924

COIL WEIGHT

A full weight coil, with or without welds, is any coil weighing more than 75% of the specified or required maximum coil weight which is negotiated between buyer and seller on the basis of mill normal coil weight production practice. Orders will not be accepted for a minimum coil weight or exact weight coils.

Light weight coils accruing from production will be shipped on items up to 100 tons. For items greater than or equal to 100 tons, lightweight coils accruing from production will be shipped up to 20% of the ordered weight. A lightweight coil is any coil between 50% and 75% of the specified or required maximum coil weight.

PERMISSIBLE VARIATION FROM ORDERED QUANTITY

All order quantities must be submitted in multiples of the max coil weight.

200,000 lbs. and over	5% over or 5% under Order is complete when the open balance is less than 30,000 lbs.
Under 200,000 lbs. to 25,000 lbs.	Order quantity / Max coil weight = Number of coils Order is complete when number of coils are supplied and fall within coil weight variance.

Pricing Information

General Pricing Notes

1. All prices are in US Dollars per 100 pounds ($/cwt), FOB producing mill or processor, with no freight equalization.
2. All prices are in effect at time of acknowledgement.
3. All published prices are subject to change without notice.
4. Ordered max (PIW's) must match ordered quantities & mode of transportation.
5. Inquire all initial orders to determine mill acceptance.
   a. Not all thickness/width/grade combinations are available at each production facility.
   b. Not all processing is available at every facility.
   c. Non-standard chemistries must be inquired and may result in additional charges and minimum quantities.
   d. Certain grades will be subject to heat or tundish lot quantities which vary by facility.
   e. The minimum order quantity on all standard grades is 40 tons per item (unless an exception is stated elsewhere in these notes). An item is considered one size, grade, destination and delivery date.
   f. Extras include test report where required by specification designation.
   g. Coil weight extras and non-standard packaging extras will apply.
6. Items stated as "Inquire" will require your Cleveland-Cliffs Representative to provide capability and applicable price extra.
7. Any High Carbon or Alloy product is subject to inquiry for minimum volumes.
8. Mills work to latest agreed to specification revisions.
9. Orders referencing plate specification for coil products will be supplied as sheet steel for conversion to the plate specification. Certification to plate specifications is the responsibility of the customer.
10. Tandem products offered on 24 inch ID, standard coil ID is 30 inches for Hot-Roll, and GALVALUME® is available on a 20 inch or 24 inch ID.
11. The customer's end use and exposure should be included on all purchase orders. If no end use or exposure are given, the mill will default to "miscellaneous" end use and unexposed application.
12. Thickness and width tolerances that are tighter than standard based on the following specifications are dependent on mill capabilities and subject to price extras.

    ASTM A568 – Light gauge Hot Roll, Cold Roll, Electrogalvanized
    ASTM A635 – Heavy gauge Hot Roll (>.229)
    ASTM A924 – Galvanized, Galvanneal, Aluminized, Galvalume
13. Orders to an OEM Auto Specification or Grade will be charged a $40/t price extra. The Automotive Spec Extra is not applicable for SAE, JIS, or ASTM grades (with no reference to OEM Automotive Spec or Grade).

Pricing Information

Packaging Extras

Packaging

The order item weight determines the extra if the buyer does not specify a package weight less than the ordered item weight. In the latter case, the specified smaller package weight will determine the extra.

Standard packaging:

Coils or Cut Lengths 15,000 lbs. and over	None
Coils or Cut Lengths under 15,000 lbs	10.00/unit

Non-Standard Packaging

Packaging Type	Coils	Cut Lengths
	Dollars/Unit	Dollars/Unit
Paper – Additional Layer	8.00	8.00
Bands – Each Extra Band	5.00	5.00
Skeleton Platforms	25.00	25.00
Skids – Each	10.00	10.00
Plastic Inside Diameter Ring	20.00	
Steel Inside Diameter Ring	20.00	
Metal Protective Sheets or Waster Sheets	15.00	
Fiberboard		
– Inside Diameter Ring	9.00	
– Outside Diameter Ring	18.00	
– Outside Wrap	20.00	
– Donut	6.00	
– Protective Sheets (shock paper)	20.00	
Fiber Core Inserts	10.00	
Special Protective Devices – Bumper Blocks, etc.	10.00	10.00

Pricing Information

Outside Processing

Services	Cleveland-Cliffs can provide the following services through selected quality processors: Edge Trimming, Shearing, Levelling, Painting, Welding, Slitting, Blanking, Pickling, and Tension Levelling. Please talk to your Cleveland-Cliffs Representative to learn about all processing options.
Processing	Customers' administration costs are kept to a minimum because the customer only makes one phone call and gets only one invoice for the steel that is needed. Timely and accurate data of order status can be electronically transmitted to you, our customer.
Quality Systems	We value you, our customer, and your expectation of a quality product. To maintain our high standards and your quality expectations, we align all processors to our quality systems and continuously monitor to ensure ultimate satisfaction.
Pricing	Due to a wide variety in all products and processing requirements, please inquire on all services on the following pages. Extras are based on products, sizes, and additional options.

Pricing Information

Outside Processing

Hot-Rolled Sheet

Processing is an extra applied to the Hot-Rolled Processed Sheet base price.

Slitting (Mill Edge or Cut Edge): Inquire

For inquiries on thickness and width limits, please contact your Cleveland-Cliffs Representative.

Pickled (Oiled or Dry): Inquire

Dry Lube and Mill Bond: (Excluding pickling charge) Inquire

Cut-to-Length: Extras to be added to the price of coils—24 inches and wider.

For inquiries on length limits, please contact your Cleveland-Cliffs Representative.

Cold-Rolled Sheet
Coated Carbon Sheet

Processing is an extra applied to the Cold-Rolled Sheet base price. Slit coil processing extras, expressed as thickness and width extras may be inquired. If a product needs stencil, please call your Cleveland-Cliffs Representative to get cost of additional charge.

Cut-to-Length: (Excludes Developed Blanks, Parallelograms, Trapezoids) Extras to be added to the price of coils—24 inches and wider.

Developed Laser Blanking: Cleveland-Cliffs must have specific drawing and specifications for pricing.

For inquiries on thickness and length limits, please contact your Cleveland-Cliffs Representative.

Prepainted Sheet

Cleveland-Cliffs Prepainted Sheet products are priced on an individual inquiry basis because of the wide variety of substrate and paint coating combinations. Pricing is based on actual weight and includes the substrate base price, appropriate extras, freight costs to toll coater, and coater painting costs. Prepaint is sold F.O.B. coil coater.

Developed Blanks

Due to the unique requirements of special blanks and non-uniform cut-to-length sizes, all inquiries for these shapes must be individually quoted. Cleveland-Cliffs must have specific drawings and specifications including tolerances, in order to build up the blank weights and pricing for these items.

If you need additional information, please contact your Cleveland-Cliffs Representative.

Hot-Rolled Sheet and Floor Plate Coil

CLIFFS

Burns Harbor, Cleveland, Indiana Harbor, Middletown						
THICKNESS (inches)		$/cwt				
		Widths				
Minimum	Nominal	30 - < 36	36 - < 42	42 - < 48	48 - 72	> 72
.6260 - .7490	.6370 - .7610	6.00	5.00	3.50	3.50	3.50
.5010 - .6259	.5110 - .6369	5.50	4.50	2.50	2.50	2.50
.1810 - .5009	.1890 - .5109	4.00	2.00	1.00	Base	0.50
.1010 - .1809	.1080 - .1889	4.50	3.00	1.50	Base	0.50
.0830 - .1009	.0900 - .1079	5.00	4.00	2.00	0.50	0.50
.0701 - .0829	.0761 - .0899	6.00	5.00	2.50	1.50	N/A
≤ .0700 Inquire	≤ .0760 Inquire	7.00	6.00	3.50	3.00	N/A

Some thickness/width combinations are not available and are subject to inquiry

GRADE	$/cwt
Commercial Steel Type A or B	Base
Drawing Steel Type A or B (DSA or DSB)	0.60
Drawing Steel with Boron Specified	1.10
Boron Specified (Carbon > .20%)	1.00
Copper Addition	1.25
Carbon (SAE J403)	
C1004 - C1009	Base
C1010 - C1025	0.50
C1026 - C1035	1.50
10B38	2.50
C1036 - C1055	2.00
C1060 - C1085	Inquire
C1095	Inquire
Carbon/manganese for grades ≤ 1535: (C <0.35%, Mn > 0.90%)	Inquire
Alloy (SAE J404)	
4130	10.00
4140	11.50
6150	Inquire

GRADE - continued	$/cwt
High Strength Low Alloy (ASTM, SAE)	
HSLA 40 ksi min. yield (XK)	0.75
HSLA 45 ksi min. yield (XK)	2.00
HSLA 50 ksi min. yield (XK)	2.50
HSLA 55 ksi min. yield (XK)	3.00
HSLA 60 ksi min. yield (XK)	3.75
HSLA 65 ksi min. yield (XK)	4.25
HSLA 45-65 ksi min. yield (-F or XF)	+0.50 to XK
HSLA 50-65 vanadium bearing addition to above extras	1.00
HSLA 70 ksi min. yield (-F or XF only)	5.00
HSLA 80 ksi min. yield (-F or XF only)	6.00
HSLA 90 ksi min. yield (-F or XF only)	7.00
HSLA 100 ksi min. yield (-F or XF only)	Inquire
Conversion to A414 GR A-G/SA-455 PVQ (no tensile test included)	1.50
A606 Type 4 (Weathering Steel)	10.50
Conversion to ASTM 871-65 (Weathering Steel)	11.50

Hot-Rolled Sheet and Floor Plate Coil

GRADE - continued	$/cwt
Structural Steel (ASTM A1011 / ASTM A1018)	
SS30 / SS33 / SS36	0.50
Conversion to A36	0.50
SS40 / SS45 / SS50 / SS55	0.75
High Strength (JIS G3113)	
SAPH 370	2.50
SAPH 400	3.50
SAPH 440	3.80
AHSS (JIS G3134)	
SPFH 540	Inquire
SPFH 540SF/FB	Inquire
SPFH 590	Inquire
SPFH 590Y, DP590T/300Y	Inquire
SF = Stretch flange FB = Ferrite bainite	
Line Pipe (API)	
X42	2.50
X52	3.00
X60	4.25
X65	5.00
X70	Inquire
X80	Inquire
All Other API and HIC Grades	Inquire

PROCESSING (all gauges listed below are min)	$/cwt
Pickling with mill edge < .071"	4.00
Pickling with mill edge .071" - .200"	3.00
Pickling with mill edge > .200" - .375"	4.00
Pickling with mill edge > .375"	Inquire
Pickled with temper pass, mill edge – size limited	+1.00 to P&O
Pickled with tension level, mill edge – size limited	+1.50 to P&O
Temper pass black band with mill edge – size limited	1.75
Tension leveling black band with mill edge - size limited	2.25
Cut edge for pickled or tempered/tension level	+0.50 to ME
HR black cut edge (slit last)	1.50

TESTING	$/cwt
Certified Chemistry (Heat Analysis)	Base
Tensile Testing (YTE)	0.50
Charpy Impacts	0.50
Additional Testing	Inquire

GENERAL	$/cwt
CLIFFS H™ Surcharge	2.00
PIW < 800 - if available	1.25
Guaranteed restrictive thickness tolerance (if available)	1.50
Order Quantity < 40T per item†	1.25
Exposed	2.00
Restricted Mechanical Properties (if available)	1.50
Restricted / Modified Chemistry (if available)	1.50
Inclusion Shape Control / Calcium Treat	1.20
Floor Plate	2.00
Locked Production: Items identified by customer as locked to a specific facility, including PPAP parts, will be assessed a $15/ton "locked extra". All other items will be assigned to a production facility at the sole discretion of Cleveland-Cliffs.	0.75

†An item is considered one size, grade, destination and delivery date

Cold-Rolled Steel

Burns Harbor, Cleveland*, Dearborn*, Indiana Harbor, Middletown, Rockport, New Carlisle						
THICKNESS (inches)		$/cwt				
		Widths				
Minimum	Nominal	30 - < 36	36 - < 42	42 - < 60	60 -72	> 72 - 76
≥ .1000	≥ .1030	Inquire	3.00	2.00	2.00	3.00
.0800 - .0999	.0820 - .1029	Inquire	2.00	1.00	1.00	2.00
.0280 - .0799	.0300 - .0819	Inquire	1.50	Base	Base	0.50
.0220 - .0279	.0240 - .0299	Inquire	4.00	2.50	1.00	1.00
.0190 - .0219	.0210 - .0239	Inquire	5.00	4.00	3.00	N/A
.0170 - .0189	.0190 - .0209	Inquire	6.00	4.50	4.00	N/A
.0160 - .0169	.0180 - .0189	Inquire	7.00	6.00	5.50	N/A
.0140 - .0159	.0160 - .0179	Inquire	8.50	7.00	6.00	N/A

* CRFH only

GRADE	$/cwt
ASTM A1008	
Commercial Steel Type A, B or C	Base
Drawing Steel Type A or B (DSA or DSB)	0.60
Deep Drawing Steel (DDS)	1.50
Extra Deep Drawing Steel (EDDS)	2.75
Extra Deep Drawing Steel+ (EDDS+)	3.00
SAE J403	
C1004 - C1009	Base
C1010 - C1022	0.75
Structural Steel	
Structural Steel < 50 ksi min. yield	0.75
High Strength Low Alloy (ASTM, SAE)	
HSLA 35, 40, or 45 ksi min. yield (XK or XLK)	2.00
HSLA 50 ksi (340 MPa) min. yield (XK or XLK)	2.75
HSLA 55 ksi min. yield (XK or XLK)	3.25
HSLA 60 ksi (420 MPa) min. yield (XK or XLK)	5.00
HSLA 35-60 ksi min. yield (-F or XF)	+1.25 to XK

GRADE - continued	$/cwt
High Strength JIS G3135 *(Inquire for availability)	
SPFC 340	5.10
SPFC 340H	5.10
SPFC 370*	5.40
SPFC 390*	5.75
SPFC 440	6.50

Other	
Specified Hardness (Rb 15 pt. range up to and including 1/4 hard (60 - 75 Rb))	0.50
Specified Hardness 70 - 85 Rb (1/2 hard)	1.50
Full Hard (Rb 84 min.)	Inquire
Enameling ASTM A424 type I	See Enameling section
Enameling ASTM A424 type II	See Enameling section
Enameling ASTM A424 type III	See Enameling section
Enameling ASTM A424 Type IV	See Enameling section

Bake Hardenable (Inquire for availability)	
BH 180	2.50
BH 210	3.00
BH 240 & 250	3.65
BH 280	4.35
BH 300	4.90

Cold-Rolled Steel

GRADE - continued		$/cwt
AHSS / UHSS (Inquire for availability)		
SPFC 590	Base + grade	Inquire
SPFC 590Y, DP590T/340Y	Base + grade	Inquire
DP690T/550Y	Base + grade	Inquire
SPFC 780Y, DP780T/420Y	Base + grade	Inquire
SPFC 980Y, DP980T/550Y	Base + grade	Inquire
980T/700Y MP LCE	Base + grade	Inquire
DP980T/600Y LCE	Base + grade	Inquire
1180T/875Y MP	Base + grade	Inquire
MP1180HY	Base + grade	Inquire
DP1470T/1230Y		
AHSS / UHSS Developmental		
(Availability subject to specific item inquiry and approval)		
NEXMET® 1200 (HF1180)		Inquire
Other Bake Hardenable, Dent Resistant, Dual Phase and AHSS Grades		Inquire

MARTENSITIC PRODUCT		$/cwt
All Martensitic product must be inquired for thickness and width extras, quantity extras, etc.		
M900 (M130)	Base + grade	Inquire
M1100 (M160)	Base + grade	Inquire
M1300 (M190)	Base + grade	Inquire
M1500 (M220)	Base + grade	Inquire
M1700	Base + grade	Inquire

SURFACE TREATMENT/FINISH	$/cwt
Embossed/Texturized (101 & 303 pattern)	1.50
Oil	Base
Dry*	Inquire
Prelube	0.60
Matte Finish (typical 25 - 60 Ra)	Base
Light Matte (typical 20 - 40 Ra)	Inquire
Rough Matte (typical 60 - 90 Ra)	Inquire
Exposed	2.00
Critical Exposed (Automotive)	10.00
Other finishes	Inquire

* Refer to claims policy

TESTING	$/cwt
Certified Chemistry (Heat Analysis)	Base
Hardness	0.25
Tensile Testing (YTE)	0.50
Tensile with N Value	0.50
Tensile with R & N	0.75
Additional Testing	Inquire

THERMAL TREATMENT	$/cwt
Continuous Anneal (specified or required)	Inquire
New Carlisle lock	0.75

PROCESSING	$/cwt
No Weld	Inquire
Recoiled (removal of coil ends on CRFH)	1.50
Other processing i.e. tension leveling, slitting, etc.	Inquire

GENERAL	$/cwt
CLIFFS H™ Surcharge	2.00
Order Quantity < 40T per Item†	1.25
Restricted Thickness Tolerance	2.25
Restricted Width Tolerance	Inquire
Restricted Chemistry	Inquire
Restricted Mechanical Properties	Inquire
Inclusion Shape Control / Calcium Treat	Inquire
20 Inch ID	1.75
PIW 200 – 399	1.75
PIW < 200	2.00
Locked Production: Items identified by customer as locked to a specific facility, including PPAP parts, will be assessed a $15/ton "locked extra". All other items will be assigned to a production facility at the sole discretion of Cleveland-Cliffs.	0.75

†An item is considered one size, grade, destination and delivery date

Enameling Steel

Middletown & Rockport THICKNESS AND WIDTH (inches)		$/cwt		
		Widths		
Minimum	Nominal	24 - < 46	46 - < 64	64 - 76
≥ .0610	≥ .0630	3.50	Base	1.25
.0280 - .0609	.0290 - .0629	3.50	Base	1.25
.0240 - .0279	.0250 - .0289	4.00	4.00	3.00
.0200 - .0239	.0210 - .0249	6.50	6.50	5.00
< .0200	< .0210	Inquire	Inquire	Inquire

PRODUCT	GRADE - ASTM A424	$/cwt
UNIVIT®	TYPE I - CS	Base
	TYPE I - DS	0.60
VIT-PLUS®	TYPE II - CS	Base
	TYPE II - DS	0.60
I-F Enameling	TYPE III	3.00
UNIVIT® APX Type IV	TYPE IV	Inquire

PRODUCT	Finish	$/cwt
UNIVIT®	Rough Matte (typical 60-90 Ra)	Base
	Matte Finish (typical 25-60 Ra)	Inquire
VIT-PLUS®	Matte Finish (typical 25-60 Ra)	Base
	Rough Matte (typical 60-90 Ra)	Inquire
I-F Enameling	Rough Matte (typical 60-90 Ra)	Base
	Coarse Matte (typical 80-120 Ra) – Standard for end use: Plumbing/Bathtub	Base
UNIVIT® APX Type IV	Rough Matte (typical 60-90 Ra)	Base

GENERAL	$/cwt
CLIFFS H™ Surcharge	2.00

All other applicable Cold-Rolled extras apply

Cold-Rolled Motor Lamination

Indiana Harbor THICKNESS AND WIDTH (inches)	$/cwt Widths			
Minimum	30 - < 36	36 - < 42	42 - < 48	48 - 72
.0290 - .0619	Inquire	1.50	Base	Base
.0230 - .0289	Inquire	4.00	2.50	1.00
.0200 - .0229	Inquire	6.00	4.50	3.00
.0180 - .0199	Inquire	6.00	4.50	3.00

GRADE		$/cwt
Type 2	CS Rephos	2.00
Type 3	ML 63 ELC	2.50
Type 4	2.5/2000 ULC	2.65
Type 4.5	2.37/2000 ELC	2.95
	2.37/2000 ULC	Inquire
Type 5	2.25/2000 ULC	3.85

GENERAL	$/cwt
CLIFFS H™ Surcharge	2.00

All other applicable Cold-Rolled extras apply

Hot-Dip Galvanized and Galvannealed Steel

COATING WEIGHT		$/cwt										
Price range of ABOVE $1.30 up to and INCLUDING $1.50 per pound LME average settlement price												
THICKNESS (inches)		Coating Extras										
Oz./Sq. Ft. Min.		G01	G30	G40	G60	G90	G115	G140	G165	G185	G210	G235
Min. TST (Total Both Sides)		No Min.	0.30	0.40	0.60	0.90	1.15	1.40	1.65	1.85	2.10	2.35
Minimum	Nominal											
≥ .130	≥ .134	1.00	1.00	1.00	1.35	1.95	2.55	3.55	4.10	4.70	5.25	5.75
< .130 - .085	< .134 - .087	1.60	1.60	1.60	2.20	3.10	3.80	5.35	6.30	7.30	8.00	9.00
< .085 - .060	< .087 - .062	1.95	1.95	1.95	3.05	4.25	5.45	7.60	9.00	10.05	11.20	12.65
< .060 - .044	< .062 - .046	2.75	2.75	2.75	3.95	5.80	7.35	10.35	12.15	13.75	15.35	17.30
< .044 - .036	< .046 - .037	3.40	3.40	3.40	4.95	7.25	9.10	12.65	14.85	16.10	18.85	N/A
< .036 - .032	< .037 - .033	3.75	3.75	3.75	5.50	7.95	10.15	14.15	17.65	19.00	21.20	N/A
< .032 - .028	< .033 - .029	4.30	4.30	4.30	6.35	9.10	11.65	16.25	19.50	21.75	N/A	N/A
< .028 - .025	< .029 - .026	4.95	4.95	4.95	7.00	10.25	13.00	18.10	N/A	N/A	N/A	N/A
< .025 - .022	< .026 - .023	5.50	5.50	5.50	7.95	11.55	14.80	19.65	N/A	N/A	N/A	N/A
< .022 - .020	< .023 - .021	6.15	6.15	6.15	8.75	12.75	16.25	22.70	N/A	N/A	N/A	N/A
< .020 - .018	< .021 - .019	N/A	6.70	6.70	9.80	14.20	N/A	N/A	N/A	N/A	N/A	N/A
< .018 - .017	< .019 - .018	N/A	7.85	7.85	10.95	16.00	N/A	N/A	N/A	N/A	N/A	N/A

* Coating weight extras subject to change based on LME. Refer to your Cleveland-Cliffs Representative for verification of current zinc extras.

Hot-Dip Galvanized and Galvannealed Steel

COATING WEIGHT		$/cwt						
Price range of ABOVE $1.30 up to and INCLUDING $1.50 per pound LME average settlement price								
THICKNESS (inches)		Coating Extras						
G/Sq. M								
Min. SST per Side (Single Spot Test)		20G/	40G/	50G/	60G/	70G/	90G/	98G/
Minimum	Nominal	20G	40G	50G	60G	70G	90G	98G
≥ .130	≥ .134	2.55	2.55	2.55	2.65	2.90	3.25	3.40
< .130 - .085	< .134 - .087	2.75	2.75	2.75	3.10	3.40	3.75	3.80
< .085 - .060	< .087 - .062	3.40	3.40	3.40	3.60	4.10	4.70	4.80
< .060 - .044	< .062 - .046	3.95	3.95	3.95	4.30	4.95	5.80	6.00
< .044 - .036	< .046 - .037	4.45	4.45	4.45	5.05	5.80	6.70	7.25
< .036 - .032	< .037 - .033	4.95	4.95	4.95	5.65	6.50	7.60	8.05
< .032 - .028	< .033 - .029	5.50	5.50	5.50	6.25	7.05	8.40	8.90
< .028 - .025	< .029 - .026	5.90	5.90	5.90	6.70	7.85	9.25	9.80
< .025 - .022	< .026 - .023	6.50	6.50	6.50	7.40	8.55	10.35	10.95
< .022 - .020	< .023 - .021	7.00	7.00	7.00	8.05	9.45	11.20	11.90
< .020 - .018	< .021 - .019	N/A	N/A	N/A	N/A	N/A	12.20	13.00
< .018 - .017	< .019 - .018	N/A	N/A	N/A	N/A	N/A	13.35	14.45

* Coating weight extras subject to change based on LME. Refer to your Cleveland-Cliffs Representative for verification of current zinc extras.

Burns Harbor, Cleveland, Columbus, Dearborn, Double G, Indiana Harbor, Middletown, Rockport, Spartan						
Hot-Dip Galvanized						
THICKNESS AND WIDTH (inches)		$/cwt				
		Widths				
Minimum	Nominal	30 - < 36	36 - < 42	42 - < 60	60 - 72	> 72 - 76
≥ .1000	≥ .1030	Inquire	3.00	2.00	2.00	3.00
.0800 - .0999	.0820 - .1029	Inquire	2.00	1.00	1.00	2.00
.0280 - .0799	.0300 - .0819	Inquire	1.50	Base	Base	0.50
.0220 - .0279	.0240 - .0299	Inquire	4.00	2.50	1.00	1.00
.0190 - .0219	.0210 - .0239	Inquire	5.00	4.00	3.00	N/A
.0170 - .0189	.0190 - .0209	Inquire	6.00	4.50	4.00	N/A
.0160 - .0169	.0180 - .0189	Inquire	7.00	6.00	5.50	N/A
.0140 - .0159	.0160 - .0179	Inquire	8.50	7.00	6.00	N/A

Hot-Dip Galvanized and Galvannealed Steel

COATING WEIGHT		$/cwt			
Price range of ABOVE $1.30 up to and INCLUDING $1.50 per pound LME average settlement price					
THICKNESS (inches)		Coating Extras			
Oz./Sq. Ft. Min.		A01	A25	A40	A60
Min. TST (Total Both Sides)		No Min.	0.25	0.40	0.60
Minimum	Nominal				
≥ .130	≥ .134	1.00	1.00	1.00	N/A
< .130 - .085	< .134 - .087	1.60	1.60	1.60	2.32**
< .085 - .060	< .087 - .062	1.95	1.95	1.95	2.83
< .060 - .044	< .062 - .046	2.75	2.75	2.75	3.99
< .044 - .036	< .046 - .037	3.40	3.40	3.40	4.93**
< .036 - .032	< .037 - .033	3.75	3.75	3.75	N/A
< .032 - .028	< .033 - .029	4.30	4.30	4.30	N/A
< .028 - .025	< .029 - .026	4.95	4.95	4.95	N/A
< .025 - .022	< .026 - .023	5.50	5.50	5.50	N/A
< .022 - .020	< .023 - .021	6.15	6.15	6.15	N/A
< .020 - .018	< .021 - .019	N/A	6.70	6.70	N/A
< .018 - .017	< .019 - .018	N/A	7.85	7.85	N/A

* Coating weight extras subject to change based on LME.
Refer to your Cleveland-Cliffs Representative for verification of current zinc extras.

** A60 only available as .040min-.085min

Hot-Dip Galvanized and Galvannealed Steel

COATING WEIGHT		$/cwt			
Price range of ABOVE $1.30 up to and INCLUDING $1.50 per pound LME average settlement price					
THICKNESS (inches)		Coating Extras			
G/Sq. M		20A/	40A/	45A/	60A/
Min. SST per Side (Single Spot Test)		20A	40A	45A	60A
Minimum	Nominal				
≥ .130	≥ .134	2.55	2.55	2.55	2.65
< .130 - .085	< .134 - .087	2.75	2.75	2.75	3.10
< .085 - .060	< .087 - .062	3.40	3.40	3.40	3.60
< .060 - .044	< .062 - .046	3.95	3.95	3.95	4.30
< .044 - .036	< .046 - .037	4.45	4.45	4.45	5.05
< .036 - .032	< .037 - .033	4.95	4.95	4.95	5.65
< .032 - .028	< .033 - .029	5.50	5.50	5.50	6.25
< .028 - .025	< .029 - .026	5.90	5.90	5.90	6.70
< .025 - .022	< .026 - .023	6.50	6.50	6.50	7.40
< .022 - .020	< .023 - .021	7.00	7.00	7.00	8.05
< .020 - .018	< .021 - .019	7.60	7.60	7.60	8.75
< .018 - .017	< .019 - .018	8.30	8.30	8.30	9.65

* Coating weight extras subject to change based on LME. Refer to your Cleveland-Cliffs Representative for verification of current zinc extras.

Cleveland, Columbus, Dearborn, New Carlisle, Rockport, Spartan						
Galvannealed						
THICKNESS AND WIDTH (inches)		$/cwt				
		Widths				
Minimum	Nominal	30 - < 36	36 - < 42	42 - < 60	60 - 72	> 72 - 76
> .0820	> .0840	7.00	6.00	5.00	5.00	N/A
.0800 - .0820	.0820 - .0840	Inquire	2.00	1.00	1.00	2.00
.0280 - .0799	.0300 - .0819	Inquire	1.50	Base	Base	0.50
.0220 - .0279	.0240 - .0299	Inquire	4.00	2.50	1.00	1.00
.0190 - .0219	.0210 - .0239	Inquire	5.00	4.00	3.00	N/A
.0170 - .0189	.0190 - .0209	Inquire	6.00	4.50	4.00	N/A
.0160 - .0169	.0180 - .0189	Inquire	7.00	6.00	5.50	N/A
.0140 - .0159	.0160 - .0179	Inquire	8.50	7.00	6.00	N/A

Hot-Dip Galvanized and Galvannealed Steel

COATING TYPE	$/cwt
Galvanized	Base
Galvannealed	0.50

GRADE	
ASTM A653	
Commercial Steel Type A, B or C	Base
Forming Steel Type A or B	0.60
Deep Drawing Steel (DDS)	2.25
Extra Deep Drawing Steel (EDDS)	4.25
Extra Deep Drawing Steel+ (EDDS+)	4.50
SAE J403	
C1004 - C1009	Base
C1010 - C1022	0.75
Structural Steels	
Structural Steel Grade 30, 33	0.75
Structural Steel Grade 37	0.85
Structural Steel Grade 40	1.15
Structural Steel Grade 50	1.35
Structural Steel Grade 80 - Order Quantity ≥ 500T	1.00
Structural Steel Grade 80 - Order Quantity < 500T	1.50
DR 180	3.75
DR 210	4.00
SGC 440 / JAC 440W	6.75
High Strength Low Alloy (ASTM, SAE)	
HSLA 35 ksi min yield (XK or XLK)	3.50
HSLA 40 ksi min yield (XK or XLK)	3.95
HSLA 45 ksi min yield (XK or XLK)	4.05
HSLA 50 ksi min yield (XK or XLK)	4.10
HSLA 55 ksi min yield (XK or XLK)	4.25
HSLA 60 ksi min yield (XK or XLK)	4.40
HSLA 35 - 60 ksi min yield (-F or XF)	+1.00 to XK
HSLA 80 ksi min yield (HR substrate only)	Inquire
Other	
Specified Hardness (Rb 15 pt. range up to and including (1/4 hard (60 - 75 Rb)) (GI only)*	0.75
Bake Hardenable (Inquire for availability)	
BH 180	2.75
BH 210	3.25
BH 240	3.75
BH 250	3.90
BH 280	4.60

* Specified hardness will be produced as an AIM only.

GRADE - continued	$/cwt
AHSS (Inquire for availability)	
JAC 590R	Inquire
JAC 590Y, DP590T/340Y	Inquire
JAC 780Y, DP780T/420Y	Inquire
TRIP 590T/380Y	Inquire
TRIP 690T/400Y	Inquire
TRIP 780T/420Y	Inquire
980T/700Y MP LCE	Inquire
CP980T/800Y	Inquire
DP980T/600Y LCE	Inquire
DP1180T/800Y	Inquire
Other Bake Hardenable, Dent Resistant, Dual Phase and AHSS Grades	Inquire
AHSS / UHSS Developmental (Availability subject to specific item inquiry and approval)	
NEXMET® 1200 (HF1180)	Inquire
120 ksi min yield	9.25

SURFACE TREATMENT/FINISH	$/cwt
Min. Spangle	Base
Temper Roll and/or EXTRASMOOTH™/ Exposed NON-Automotive	1.50
Embossed <= 0.030" min / 0.032 nom (must be ordered as Extrasmooth™)	5.00
Embossed <= 0.030" min / 0.032 nom (must be ordered as Extrasmooth™)	1.50
Tension Level and/or Shiny	1.50
Tension Level ordered as Bright and Shiny	1.50
Outside Tension Level	Inquire
Exposed / Surface Critical - Automotive (ULTRASMOOTH®)	Inquire
Oil	Base
Chemical Treated (Hexavalent - Galvanized)	Base
Chemical Treated (RoHS Compliant)	0.50
Chemical Treated (Galvannealed)	Inquire
Non Chem Treat Dry*	Inquire
Prelube	0.60
Phosphate Coated (Galvannealed) · Typically associated with increasing lubricity in a die · Not to be confused with a pre-paint type phosphate coating	1.00
Acrylic	0.50
PAINTGRIP®	3.00

Hot-Dip Galvanized and Galvannealed Steel

TESTING	$/cwt
UL Certification	0.50
Certified Chemistry (Heat Analysis)	Base
Tensile Testing (YTE)	0.50
Additional Testing	0.15

GENERAL	$/cwt
CLIFFS H™ Surcharge	2.00
Order Quantity < 40T per Item†	1.25
Edge trim/slit last	Inquire
Stenciling	Inquire
Restricted Thickness Tolerance	2.25
Restricted Width Tolerance	2.25
Restricted Chemistry	Inquire
Restricted Mechanical Properties	Inquire
Restricted Flatness (Tension Level)	Inquire
Inclusion Shape Control / Calcium Treat	Inquire
20" ID	1.75
PIW 200 - 399	2.00
PIW < 200	3.00
Locked Production: Items identified by customer as locked to a specific facility, including PPAP parts, will be assessed a $15/ton "locked extra". All other items will be assigned to a production facility at the sole discretion of Cleveland-Cliffs.	0.75

†An item is considered one size, grade, destination and delivery date
* Refer to claims policy

Galvanized Culvert Sheets

COATING WEIGHT		Price range per pound LME average settlement price						
THICKNESS (inches)		Coating Extras ($/cwt)						
		Oz./Ft²						
		2.00						
Minimum	Nominal	.70/.90 ZZ	.90/1.10 ZZ	1.10/1.30 ZZ	1.30/1.50 ZZ	1.50/1.70 ZZ	1.70/1.90 ZZ	1.90/2.10 ZZ
0.129	0.137	3.00	3.25	3.90	4.25	4.85	5.45	6.05
0.101	0.109	3.70	4.60	5.50	6.40	7.30	8.20	9.10
0.072	0.079	5.20	6.45	7.70	8.95	10.20	11.45	12.70
0.057	0.064	6.50	8.10	9.70	11.25	12.85	14.45	16.00
0.046	0.052	8.90	11.05	13.25	15.40	17.55	19.70	21.85

Middletown			
Galvanized Culvert Sheets			
THICKNESS AND WIDTH (inches)		$/cwt	
		Widths	
Minimum	Nominal	24 - < 46	46 - 60
.0610 - .1290	.0640 - .1290	3.50	0.00
.0440 - <.0610	.0460 - <.0640	3.50	0.00

GENERAL	$/cwt
CLIFFS H™ Surcharge	2.00

Electrogalvanized Steel

COATING WEIGHT		$/cwt						
Price range of ABOVE $1.10 up to and INCLUDING $1.30 per pound LME average settlement price								
THICKNESS (inches)		Coating Extras						
		Apply to Each Side Separately						
G/Sq. M		20G	30G	40G	50G	60G	70G	90G**
Minimum	Nominal	Min.	Min.	Min.	Min.	Min.	Min.	Min.
> .078	> .079	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire
.060 - .078	.061 - .079	1.50	1.50	1.50	1.50	1.75	2.05	2.35
.044 - .0599	.045 - .0609	1.75	1.75	1.75	1.75	2.05	2.35	3.10
.036 - .0439	.037 - .0449	2.05	2.05	2.05	2.05	2.35	2.80	3.55
.032 - .0359	.033 - .0369	2.35	2.35	2.35	2.35	2.80	3.10	3.85
.028 - .0319	.029 - .0329	2.80	2.80	2.80	2.80	3.10	3.55	4.15
.025 - .0279	.026 - .0289	3.10	3.10	3.10	3.10	3.55	3.85	4.55
.023 - .0249	.024 - .0259	3.55	3.55	3.55	3.55	3.85	4.15	4.85
.0176 -.0229	.0196 - .0239	3.70	3.70	3.70	3.70	4.05	4.35	5.05

* Coating weight extras subject to change based on LME. Refer to your Cleveland-Cliffs Representative for verification of current zinc extras.
** 90G - inquire for availability

COATING WEIGHT		$/cwt						
Price range of ABOVE $1.30 up to and INCLUDING $1.50 per pound LME average settlement price								
THICKNESS (inches)		Coating Extras						
		Apply to Each Side Separately						
G/Sq. M		20G	30G	40G	50G	60G	70G	90G**
Minimum	Nominal	Min.	Min.	Min.	Min.	Min.	Min.	Min.
> .078	> .079	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire
.060 - .078	.061 - .079	1.75	1.75	1.75	1.75	2.00	2.25	2.60
.044 - .0599	.045 - .0609	2.05	2.05	2.05	2.05	2.40	2.75	3.60
.036 - .0439	.037 - .0449	2.40	2.40	2.40	2.40	2.75	3.25	4.10
.032 - .0359	.033 - .0369	2.75	2.75	2.75	2.75	3.25	3.60	4.45
.028 - .0319	.029 - .0329	3.25	3.25	3.25	3.25	3.60	4.10	4.80
.025 - .0279	.026 - .0289	3.60	3.60	3.60	3.60	4.10	4.45	5.30
.023 - .0249	.024 - .0259	4.10	4.10	4.10	4.10	4.45	4.80	5.65
.0176 -.0229	.0196 - .0239	4.30	4.30	4.30	4.30	4.70	5.05	5.90

* Coating weight extras subject to change based on LME. Refer to your Cleveland-Cliffs Representative for verification of current zinc extras.
** 90G - inquire for availability

Electrogalvanized Steel

Middletown THICKNESS AND WIDTH (inches)		$/cwt Widths				
Minimum	Nominal	24 - < 36	36 - < 48	48 - < 64	64 - 72	> 72
> .0780	> .0790	Inquire	Inquire	Inquire	Inquire	Inquire
.0280 - .0780	.0290 - .0790	Inquire	2.50	Base	Base	Inquire
.0240 - .0279	.0250 - .0289	Inquire	5.50	4.00	3.00	Inquire
.0200 - .0239	.0210 - .0249	Inquire	6.50	6.00	5.00	Inquire
.0176 - .0199	.0178 - .0209	Inquire	Inquire	Inquire	Inquire	Inquire

GRADE	$/cwt
ASTM A879	
Commercial Steel Type B	Base
Drawing Steel Type B (DSB)	0.60
Deep Drawing Steel (DDS)	1.50
Extra Deep Drawing Steel (EDDS)	2.75
Extra Deep Drawing Steel+ (EDDS+)	4.25
C1004 - C1009	Base
C1010 - C1022	0.75
Specified Hardness (15 pt. range)	0.75
HSLA Grades 40 - 80	Inquire
BH 180	2.50
BH 210	3.00
BH 240 & 250	3.65
BH 280	4.35
BH 300	4.90
DR 180	3.75
DR 210	4.00

GRADE - continued	$/cwt
AHSS / UHSS (Inquire for availability)	
DP590T/340Y	Inquire
DP690T/550Y	Inquire
DP780T/420Y	Inquire
DP980T/550Y	Inquire
DP980T/700Y MP LCE	Inquire
980T/700Y MP LCE	Inquire
DP980T/600Y LCE	Inquire
1180T/875Y MP	Inquire
MP1180HY	Inquire
Other Bake Hardenable, Dent Resistant, Dual Phase & AHSS Grades	Inquire
AHSS / UHSS Developmental (Availability subject to specific item inquiry and approval)	
M1700	Inquire

Electrogalvanized Steel

MARTENSITIC PRODUCT	$/cwt
All Martensitic product must be inquired for thickness and width extras, quantity extras, etc.	
M900 (M130)	Inquire
M1100 (M160)	Inquire
M1300 (M190)	Inquire
M1500M (M220)	Inquire

SURFACE TREATMENT/FINISH	$/cwt
Oil	Base
Prelube	0.60
Exposed	3.00
Critical Exposed	10.00

TESTING	$/cwt
Certified Chemistry (Heat Analysis)	Base
Hardness	0.25
Tensile Testing (YTE)	0.50
Tensile with N Value	0.50
Tensile with R & N	0.75
Additional Testing	Inquire

GENERAL	$/cwt
CLIFFS H™ Surcharge	2.00
Order Quantity < 40T per item†	1.25
Restricted Thickness Tolerance	2.25
Restricted Width Tolerance	2.25
Restricted Chemistry	1.25
Restricted Mechanical Properties	1.25
Restricted Flatness	Inquire
Inclusion Shape Control / Calcium Treat	Inquire
PIW 200 - 399	1.75
PIW < 200	2.00
20 Inch ID	1.75
Slit Last	2.00
Locked Production: Items identified by customer as locked to a specific facility, including PPAP parts, will be assessed a $15/ton “locked extra”. All other items will be assigned to a production facility at the sole discretion of Cleveland-Cliffs.	0.75

†An item is considered one size, grade, destination and delivery date

GALVALUME® Steel

COATING WEIGHT		$/cwt	
		Coating Extras*	
Minimum	Nominal	AZ50	AZ55
>.0300	>.0320	6.20	6.85
.028 - .0300	.029 - .0320	7.05	7.75
.025 - .0279	.026 - .0289	8.00	8.80
.022 - .0249	.023 - .0259	9.00	9.90
.020 - .0219	.021 - .0229	10.05	11.05
.018 - .0199	.019 - .0209	11.15	12.25
.016 - .0179	.017 - .0189	12.45	13.70
.015 - .0159	.016 - .0169	13.65	15.00
.0142 - .0149	.0152 - .0159	14.50	15.95
< .0142	< .0152	15.75	17.20

* Other coating weights available - inquire

Double G THICKNESS AND WIDTH (inches)		$/cwt	
		Widths	
Minimum	Nominal	29 - <40	40 - 49
> .0300	> .0320	1.50	Inquire
.0280 - .0300	.0290 - .0320	1.75	Base
.0220 - .0279	.0230 - .0289	2.00	1.50
.0190 - .0219	.0200 - .0229	2.25	2.00
.0170 - .0189	.0180 - .0199	3.00	2.75
.0150 - .0169	.0160 - .0179	3.75	3.50
.0142 - .0149	.0150 - .0159	4.25	4.00

GRADE	$/cwt
A792 Commercial Steel Type A, B or C	Base
A792 Forming Steel Type A or B	0.60
High Strength	
A792 Structural Steel Grade 33-37-40 & 50 (Class 2 & 4)	0.75
A792 Structural Steel Grade 50 (Class 1)	Inquire
A792 Structural Steel Grade 80 (Class 1)	0.50
A792 Structural Steel Grade 80 (Class 2)	Inquire

SURFACE TREATMENT/FINISH	$/cwt
Extra Smooth (Temper Rolled)	0.50
Oil	Base
Chemical Treated (Hexavalent)	Base

TESTING	$/cwt
UL Certification	0.40
Tensile Testing (YTE)	0.50
Additional Testing	Inquire

GENERAL	$/cwt
CLIFFS H™ Surcharge	2.00
Order Quantity < 40T per item†	1.25
PIW 200 - 399	1.00
PIW < 200	2.00

†An item is considered one size, grade, destination and delivery date

* For more information about our limited warranties for Galvalume products, please reference the document in the "Warranties" section of our Product Compliance page at: www.clevelandcliffs.com/doing-business/product-compliance

Aluminized Steel Type 1

COATING WEIGHT TABLE A – Aluminum P1020 Midwest US Transaction Price, as published by Platts, up to 185						
THICKNESS (inches)		Coating Extras* (total both sides) $/cwt				
Minimum	Nominal	T1 13	T1 25	T1 40	ULTRALUME® T1 60G/60G	T1 60
.1160 - 0.1299	.1200 - .1339	1.05	1.50	1.90	2.23	2.35
.1010 - 0.1159	.1050 - .1199	1.05	1.50	1.95	2.29	2.40
.0850 - 0.1009	.0870 - .1049	1.15	1.60	2.05	2.41	2.50
.0750 - 0.0849	.0770 - .0869	1.45	2.05	2.70	3.17	3.40
.0600 - 0.0749	.0620 - .0769	1.50	2.10	2.80	3.29	3.45
.0520 - 0.0599	.0540 - .0619	1.60	2.20	2.95	3.47	3.70
.0440 - 0.0519	.0460 - .0539	1.90	2.65	3.60	4.23	4.60
.0360 - 0.0439	.0370 - .0459	2.40	3.30	4.50	5.29	5.70
.0320 - 0.0359	.0330 - .0369	2.70	3.75	5.10	5.99	6.45
.0280 - 0.0319	.0290 - .0329	3.10	4.30	5.85	6.87	7.45
.0250 - 0.0279	.0260 - .0289	3.55	4.90	6.55	7.70	8.20
.0220 - 0.0249	.0230 - .0259	4.00	5.55	7.45	8.75	Inquire
.0200 - 0.0219	.0210 - .0229	4.55	6.15	8.35	Inquire	Inquire
.0190 - 0.0199	.0200 - .0209	4.90	6.75	9.15	Inquire	Inquire
.0180 - 0.0189	.0190 - .0199	4.95	6.85	9.30	Inquire	Inquire
.0170 - 0.0179	.0180 - .0189	Inquire	Inquire	Inquire	Inquire	Inquire

* Other coating weights available – inquire. ** No max limits on all above coating weights

COATING WEIGHT TABLE B - Aluminum P1020 Midwest US Transaction Price, as published by Platts, > 185						
THICKNESS (inches)		Coating Extras* (total both sides) $/cwt				
Minimum	Nominal	T1 13	T1 25	T1 40	ULTRALUME® T1 60G/60G	T1 60
.1160 - 0.1299	.1200 - .1339	1.30	1.75	2.15	2.48	2.60
.1010 - 0.1159	.1050 - .1199	1.30	1.75	2.20	2.54	2.65
.0850 - 0.1009	.0870 - .1049	1.40	1.85	2.30	2.66	2.75
.0750 - 0.0849	.0770 - .0869	1.70	2.30	2.95	3.42	3.65
.0600 - 0.0749	.0620 - .0769	1.75	2.35	3.05	3.54	3.70
.0520 - 0.0599	.0540 - .0619	1.85	2.45	3.20	3.72	3.95
.0440 - 0.0519	.0460 - .0539	2.15	2.90	3.85	4.48	4.85
.0360 - 0.0439	.0370 - .0459	2.65	3.55	4.75	5.54	5.95
.0320 - 0.0359	.0330 - .0369	2.95	4.00	5.35	6.24	6.70
.0280 - 0.0319	.0290 - .0329	3.35	4.55	6.10	7.12	7.70
.0250 - 0.0279	.0260 - .0289	3.80	5.15	6.80	7.95	8.45
.0220 - 0.0249	.0230 - .0259	4.25	5.80	7.70	9.00	Inquire
.0200 - 0.0219	.0210 - .0229	4.80	6.40	8.60	Inquire	Inquire
.0190 - 0.0199	.0200 - .0209	5.15	7.00	9.40	Inquire	Inquire
.0180 - 0.0189	.0190 - .0199	5.20	7.10	9.55	Inquire	Inquire
.0170 - 0.0179	.0180 - .0189	Inquire	Inquire	Inquire	Inquire	Inquire

* Other coating weights available – inquire. ** No max limits on all above coating weights

Aluminized Steel Type 1

COATING WEIGHT TABLE C – Aluminum P1020 Midwest US Transaction Price, as published by Platts, > 205						
THICKNESS (inches)		Coating Extras* (total both sides) $/cwt				
Minimum	Nominal	T1 13	T1 25	T1 40	ULTRALUME® T1 60G/60G	T1 60
.1160 - 0.1299	.1200 - .1339	1.45	1.90	2.30	2.63	2.75
.1010 - 0.1159	.1050 - .1199	1.45	1.90	2.35	2.69	2.80
.0850 - 0.1009	.0870 - .1049	1.55	2.00	2.45	2.81	2.90
.0750 - 0.0849	.0770 - .0869	1.85	2.45	3.10	3.57	3.80
.0600 - 0.0749	.0620 - .0769	1.90	2.50	3.20	3.69	3.85
.0520 - 0.0599	.0540 - .0619	2.00	2.60	3.35	3.87	4.10
.0440 - 0.0519	.0460 - .0539	2.30	3.05	4.00	4.63	5.00
.0360 - 0.0439	.0370 - .0459	2.80	3.70	4.90	5.69	6.10
.0320 - 0.0359	.0330 - .0369	3.10	4.15	5.50	6.39	6.85
.0280 - 0.0319	.0290 - .0329	3.50	4.70	6.25	7.27	7.85
.0250 - 0.0279	.0260 - .0289	3.95	5.30	6.95	8.10	8.60
.0220 - 0.0249	.0230 - .0259	4.40	5.95	7.85	9.15	Inquire
.0200 - 0.0219	.0210 - .0229	4.95	6.55	8.75	Inquire	Inquire
.0190 - 0.0199	.0200 - .0209	5.30	7.15	9.55	Inquire	Inquire
.0180 - 0.0189	.0190 - .0199	5.35	7.25	9.70	Inquire	Inquire
.0170 - 0.0179	.0180 - .0189	Inquire	Inquire	Inquire	Inquire	Inquire

* Other coating weights available - inquire. ** No max limits on all above coating weights

Middletown & Spartan					
THICKNESS AND WIDTH (inches)		$/cwt			
		Widths			
Minimum	Nominal	24 - < 30	30 - < 45	45 - < 60	60 - < 61.6*
.0620 - .1300	.0625 - .1340	3.00	2.50	Base	Base
.0280 - .0619	.0290 - .0624	3.50	2.50	Base	Base
.0220 - .0279	.0230 - .0289	4.00	3.00	2.50	Inquire
.0190 - .0219	.0200 - .0229	6.50	5.50	5.00	Inquire
.0170 - .0189	.0180 - .0199	8.00	7.00	6.50	Inquire

* Spartan coating only for > 60 inches wide

Aluminized Steel Type 1

GRADE	$/cwt
Commercial Steel Type A or C	Inquire
Commercial Steel Type B	Base
SAE C1010	0.50
Forming Steel	0.60
Deep Drawing Steel (DDS)	2.25
Extra Deep Drawing Steel (EDDS)	2.50
Extra Deep Drawing Steel Plus+ (EDDS+)	2.75
Drawing Quality High Temperature (DQHT)	Inquire
High Strength	
Structural Steel Grade 33	Inquire
Structural Steel Grade 37	Inquire
Structural Steel Grade 40	Inquire
HSLA Grades	Inquire
Specified Mechanicals	Inquire
Press Hardened / Press Quenched Steel	
ULTRALUME® 1500	Inquire
AHSS / UHSS / PHS / PQS Developmental (Availability subject to specific item inquiry and approval)	
ULTRALUME® 500	Inquire
ULTRALUME® 1000	Inquire
ULTRALUME® 2000	Inquire

SURFACE TREATMENT/FINISH	$/cwt
Extrasmooth*/Exposed	1.50
Oil	Base
RoHS Chemical Treatment**	Base
Tension Leveling	Inquire

* Inquire for extrasmooth orders that require dry surface
** Not available for DQHT, DDS (IF OBJ)
** Extrasmooth with chem treat – Inquiry required

TESTING	$/cwt
Certified Chemistry (Heat Analysis)	Base
Hardness	Base
Tensile Testing (YTE)	0.50
Additional Testing	Inquire

GENERAL	$/cwt
CLIFFS H™ Surcharge	2.00
Order Quantity < 40T per item†	1.25
Restricted Thickness Tolerance	Inquire
Restricted Width Tolerance	Inquire
Restricted Chemistry	Inquire
Restricted Flatness	Inquire
PIW 200 - 399	2.00
PIW < 200	3.00
Locked Production: Items identified by customer as locked to a specific facility, including PPAP parts, will be assessed a $15/ton “locked extra”. All other items will be assigned to a production facility at the sole discretion of Cleveland-Cliffs.	0.75

†An item is considered one size, grade, destination and delivery date

Aluminized Steel Type 2 Culvert Sheets

COATING WEIGHT (total both sides)		$/cwt
THICKNESS (inches)		Coating Extras*
Minimum	Nominal	T2 100
0.129	0.138	2.55
0.101	0.109	3.25
0.072	0.079	5.05
0.057	0.064	6.30
0.046	0.052	8.40

* Commercially pure aluminum coating
** No max limits on all above coating weights

Middletown				
THICKNESS AND WIDTH (inches)		$/cwt		
		Widths		
Minimum	Nominal	24 - < 30	30 - < 45	45 - < 60
.0600 - .1300	.0625 - .1340	3.00	2.50	Base
.0440 - .0599	.0460 - .0624	3.50	2.50	Base

GENERAL	$/cwt
CLIFFS H™ Surcharge	2.00

Glossary

Aging Changes in mechanical properties that occur over time in low carbon steel causing the material to become stronger, less ductile and prone to strain.

Annealing A process involving high-temperature heating and cooling of the as-rolled cold-rolled steel substrate to make it softer and more formable.

Camber The deviation of a side edge from a straight line, the measurement being taken on the concave side with a straight edge.

Carbon Steel Steel which owes its properties chiefly to carbon without substantial amounts of other alloying elements; also known as straight carbon steel or plain carbon steel. The maximum content for the following elements does not exceed the percentages noted: manganese 1.65, silicon 0.60, copper 0.60.

Cast Analysis (heat analysis) Chemical analysis representative of a specific heat of steel. (Ladle analysis is a depreciated term that is replaced by cast analysis.)

Chemical Treatment A passivating treatment applied to metallic coated products to retard formation of corrosion products (storage stain/rust). RoHS or standard chem treat must be specified at order entry.

Coil Breaks Creases or ridges in sheet that appear as parallel lines across the direction of rolling, and that generally extend the full width of the sheet or strip.

Cold-Rolled Sheet This is manufactured from hot-rolled descaled coils by cold reducing to the desired thickness, generally followed by annealing to recrystallize the grain structure. Cold-rolled sheet is manufactured from hot-rolled coils over 24 inches in width.

Cold-Rolled Strip This product is furnished in widths of 24 inches and narrower with specific temper, specific edge or specific finish to closer tolerances than cold-rolled carbon steel sheet.

Continuous Casting A casting technique in which a slab is continuously withdrawn through the bottom of the mold as it solidifies.

Corrosion Gradual chemical or electrochemical attack on a metal by atmospheric moisture or other agents.

Crown The thickness increases from an edge measurement to the center of a sheet.

Cut Edge Remove the hot mill edge. Coil ends will be cropped back to gauge when cut edge is ordered.

Cut To Length Ordered when specific or discrete lengths are desired.

Deep Drawing An extreme condition of drawing. The term “deep drawing” is commonly used to describe metal stamping operations which are a combination of drawing and severe stretching.

Drawing The shaping of a flat blank into a desired contour by causing the metal to flow over a draw ring and around a punch.

Ductility The ability to be deformed plastically without fracture. In flat rolled steel, ductility is measured by mechanical properties in a tensile test.

Elongation The percent increase of a given distance (usually 2 inches) prior to fracture during tensile testing.

Embossed Sheet A sheet having a prominent, impressed texture or pattern on its surface(s). This includes Texturized 101/303.

Glossary

Extra Smooth Sheet Product produced to sheet by temper rolling after zinc or aluminum coating to smooth the surface and impart resistance to stretcher strain.

Flatness A measure of maximum deviation from a flat horizontal surface.

Hardness Resistance of metal to penetration of the surface.

Inclusions Non-metallic materials (such as oxides, sulfides or silicates) in steel as cast.

Inclusion Shape Control The use of Rare Earth Metals or Calcium alloys to control the morphology of inclusions, in order to provide improved properties and formability for select applications.

Killed Steel Steel deoxidized by silicon or aluminum to reduce the oxygen content in the molten steel to a minimum prior to solidification of the metal.

Levelling Flattening of rolled sheet by reducing or eliminating distortions.

Lüders Lines (stretcher strain) Irregular surface markings or depressions caused by localized plastic deformation resulting from yield point elongation.

Matte Finish The surface roughness produced on sheet by temper rolling with textured work, generally defined as 25 - 60 Ra.

Mechanical Properties The properties of a material that reveal its elastic and plastic behavior when force is applied, for example yield strength, tensile strength, elongation, etc.

Mil A term used to indicate a thickness of 0.001 inch.

Minimized Spangle The crystal structure produced on galvanized sheet by either treating the coating sheet during solidification of the zinc or by control of coating bath chemistry.

Oiling Application of a suitable rust preventive oil to flat rolled steel to retard rusting during shipment and storage. Although the oil is intended as a corrosion inhibitor only, in some instances it may also serve as a lubricant for subsequent fabricating operations.

Pickling Removing surface oxides from metals by a chemical reaction.

Phosphatized Chemical treatment in a phosphate solution of metallic coated sheet to prepare the surface for painting.

Prelube A lubricant applied to the sheet at the mill to enhance formability.

Product Analysis The chemical analysis of the finished steel.

Roll Forming The fabrication process of deforming the metal sheet by passing it through a consecutive series of rolls.

Salt Spray Test A moisture and corrosion resistance test employing a controlled exposure of a sheet to a fog or mist of a salt solution for a specified period of time.

Slitting The cutting of sheet stock coils to produce narrower widths.

T-Bend 0-, 1-, 2-, etc. A mechanical operation wherein a sheet sample is bent back upon itself with the inside bend radius specified in terms of the sheet thicknesses. Thus a 2- T Bend is a bend with an inside radius two times the sheet thickness of the metal sheet being tested.

Glossary

Temper Rolling A light cold reduction of the sheet steel. This operation is performed to improve flatness, eliminate fluting and stretch strain, and impart the desired surface finish.

Tensile Strength In tensile testing, the ratio of maximum load to original cross sectional area. Also called Ultimate Strength.

Tension Leveling An operation in which sheet steel in coil form is stretched beyond its yield point to provide a sheet with superior flatness characteristics.

Tolerance Allowed limits of deviation from a specification.

White Rust The corrosion product (zinc hydroxide, etc.) that forms when galvanized sheet gets wet and is unable to dry.

Yield Point The load per unit of original cross-section area at which a marked increase in the deformation of the specimen occurs without increase of load.

Yield Point Elongation (also called Discontinuous Yielding) The non-uniform plastic flow of a metal exhibiting a yield point in which plastic deformation is not homogeneously distributed.

Yield Strength The stress required to give the initial plastic (permanent) deformation, at which a material exhibits a specified deviation from proportionality of stress and strain. An offset of 0.2% is used for many metals.