NUCOR

CORPORATE OFFICE

March 19, 2008

To: All Nucor Customers

Re: 2007 Recycled Content of Nucor Steel Products

Nucor Corporation is the nation's largest recycler, using over 20 million tons of scrap steel in 2007 to create new products. Nucor uses Electric Arc Furnace (EAF) technology at all of its steel recycling facilities. EAFs use post-consumer scrap steel material for the major feedstock, unlike blast furnace operations which use mined iron ore as the major feedstock. Nucor has prepared the following information to help calculate the recycled content for products being used in "Green Building" applications or for projects in the LEED® program. Percentages are approximate and based on the total weight of the products. Calculations are based on 2007 scrap steel delivered and finished materials produced and are defined in accordance with ISO 14021:1999. Values do not consider home scrap or scrap generated onsite. Specific product information may be available from facility representatives.

Recycled Content – LEED Version 2.2 Credit 4.1 and 4.2

2007 Recycled Steel Content of Nucor Products (% by Total Weight)	
Product Group	**Average Recycled Content**
Nucor Bar Products	>99.7%
Nucor Beam Products	74%
Nucor Plate Products	77%
Nucor Sheet Products	68%
Total Nucor Steel Combined	**87.3%**
Vulcraft Structural Products	>99.7%
Vulcraft Decking	68%
Nucor Building Systems Products	87%
NUCON Light Gauge Framing	68%
Nucor Fastener Products	>99.7%
Nucor Wire Products	>99.7%
Nucor Cold Finish	>99.7%

Regional Materials – LEED Version 2.2 Credit 5.1 and 5.2

Nucor tracks the origin of scrap shipments to our mills. Nucor can approximate the amount of scrap extracted from any project site region. Nucor owns steel and steel products manufacturing facilities throughout the US that are within 500 miles of almost any project site. Please refer to our LEED contact list, and contact the specific Nucor representative at the facility directly.

1915 REXFORD ROAD • CHARLOTTE, NC 28211 • PHONE 704-366-7000 • FAX 704-362-4208 • WWW.NUCOR.COM

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Bar Mill Group – Darlington, SC; Norfolk, NE; Jewett, TX; Plymouth, UT; Auburn, NY; Birmingham, AL; Kankakee, IL; Jackson, MS; Seattle, WA; Marion, OH

2007 Approximate Recycled Steel Content Of All Nucor Bar Mill Group Products(*)				
Facility	Total Scrap Steel Used	Total Alloys and Other Iron Units	Total Post-consumer Recycled Content	Total Pre-consumer Recycled Content
All	**>99.7%**	**<1%**	**87%**	**13%**

The Nucor Bar Mill Group produces rebar, angles, flats, rounds and other miscellaneous shapes. The bar mill group uses recycled scrap steel for over 99% of the feedstock.

Sheet Mill Group – Crawfordsville, IN; Hickman, AR; Huger, SC; Decatur, AL

2007 Approximate Recycled Steel Content Of Nucor Sheet Mill Group Products(*)				
Facility	Total Scrap Steel Used	Total Alloys and Other Iron Units	Total Post Consumer Recycled Content	Total Pre-consumer Recycled Content
Crawfordsville, IN	**84%**	**16%**	**73%**	**14%**
Hickman, AR	**63%**	**37%**	**55%**	**8%**
Berkeley, SC	**57%**	**43%**	**50%**	**7%**
Decatur, AL	**68%**	**32%**	**59%**	**9%**

The Nucor Sheet Mill Group produces hot band, cold rolled, pickled and galvanized products. Nucor Sheet mills use varying amounts of recycled materials depending on metallurgical product demands and market conditions. The combined sheet mill total recycled content is approximately 68%.

Beam Group – Blytheville, AR; Huger, SC

2007 Approximate Recycled Steel Content of Beam Mill Products(*)				
Facility	Total Scrap Steel Used	Total Alloys and Other Iron Units	Total Post Consumer Recycled Content	Total Pre-consumer Recycled Content
Nucor Yamato Steel, Blytheville, AR	**91%**	**9%**	**79%**	**12%**
Nucor Berkeley, Huger, SC	**57%**	**43%**	**50%**	**7%**

Nucor Beam mills produce narrow and wide flange structural beams. Nucor Yamato uses approximately 91% scrap steel for their feedstock. Nucor Steel Berkeley uses a higher percentage of non-scrap iron due to metallurgical product demands for sheet steel produced using the same EAF's. The combined beam mill recycled content is approximately 74%.

Plate Group - Hertford County, NC, Tuscaloosa, AL

2007 Approximate Recycled Steel Content of Plate Mill Products(*)				
Facility	Total Scrap Steel Used	Total Alloys and Other Iron Units	Total Post Consumer Recycled Content	Total Pre-consumer Recycled Content
Hertford County, NC	**91%**	**9%**	**79%**	**12%**
Tuscaloosa, AL	**64%**	**36%**	**56%**	**8%**

The Nucor Plate mills produce steel for heavy industry equipment. The combined plate mill recycled content by weight is approximately 78%.

(*)Studies show that the recycled steel used for Nucor products consists of approximately 87% post-consumer scrap. The remaining 13% typically consists of pre-consumer scrap generated by manufacturing processes for products made with steel.

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Vulcraft Group – Florence, SC; Norfolk, NE; Brigham City, UT; Grapeland, TX; St. Joe, IN; Fort Payne, AL; Chemung, NY; **Verco Decking, Inc.** – Phoenix, AZ; Fontana, CA; Antioch, CA

Joists - The bar steel for most Vulcraft joists is obtained from one of the nine Nucor bar mills that use over 99% scrap steel as their feedstock. A breakdown of the recycled content of Nucor bar mill products is detailed above. Vulcraft facilities may receive steel from sources outside of Nucor that may contain lower amounts of recycled steel. Specific product information is available from facility representatives.

Deck – Steel for decking produced by Vulcraft facilities are typically obtained from one of the four Nucor sheet mills. A breakdown of the recycled content of Nucor sheet mill products is detailed above. Vulcraft deck products contain approximately 68% recycled steel. Verco Decking, Inc. may obtain steel from sources outside of Nucor that may contain lower amounts of recycled content; specific product information is available from facility representatives.

Products Group -

- **Nucor Building Systems** – Swansea, SC; Waterloo, IN; Terrell, TX; **American Buildings Company**** – Eufaula, AL; La Crosse, VA; Carson City, NV; El Paso, IL; **Kirby Building Systems** ** – Portland, TN; **Gulf States Manufacturer**** – Starkville, MS; **CBC Steel** – Lathrop, CA;
- **NUCON Steel** – Denton, TX; Dallas, GA
- **Nucor Fastener** – St. Joe IN
- **Nucor Wire Products Pennsylvania**** - New Salem, PA; **Nucor Steel Connecticut** – Wallingford, CT; **LMP Steel**** – Maryville, MO;
- **Nucor Cold Finish** – Milwaukee, WI; Swansea, SC; Brigham City, UT; Norfolk, NE

Nucor Building Systems (Including American Buildings Company, Kirby Building Systems, Gulf States Manufacturer and CBC Steel) – Nucor Building Systems products may contain steel from all of the Nucor steel mills including sheet, plate, bar and beam. The average amount of recycled steel used in Nucor Building Systems products is approximately 87%. Nucor Building System facilities may obtain steel from sources outside of Nucor that may contain lower amounts of recycled content; specific product information is available from facility representatives.

NUCONSTEEL- NUCONSTEEL light gauge steel framing products are typically obtained from one of the four Nucor sheet mills. A breakdown of the recycled content of Nucor sheet mill products is detailed above. NUCON products contain approximately 68% recycled steel.

Nucor Fastener – Steel for fasteners is typically obtained from Nucor bar mills that use scrap steel as their feedstock. Some fasteners may contain high percentages of alloys that may reduce the total recycled content of the products, but Nucor Fastener products typically contain over 99% recycled materials.

Nucor Wire Products Pennsylvania, Nucor Connecticut, LMP Steel – Steel for wire is typically obtained from a Nucor bar mill that uses scrap as the feedstock. Nucor wire products contain over 99% recycled materials over 99% recycled steel.

Nucor Cold Finish – Steel processed at Nucor Cold Finish is typically obtained from Nucor bar mills. The Nucor Cold Finish is over 99% recycled steel. Nucor Cold Finish facilities may obtain steel from sources outside of Nucor that may contain lower amounts of recycled content. Specific product information is available from facility representatives.

Additional information is available online through the Steel Recycling Institute at http://www.recycle-steel.org.

(**) Facilities were acquired by Nucor Corporation in 2007. Information for this facility is only for the time period after the facility was acquired as a Nucor facility.

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SSAB

April 1, 2009

Recycled Content of SSAB North America

SSAB steel products manufactured at our North American facilities contain about 99% recycled steel, excluding recycled "home" scrap steel. The non-recycled content represents primarily alloying materials, and some new iron. SSAB North America's steel products are recycled steels manufactured in an Electric Arc Furnace (EAF) process. In this process, recovered scrap steel is melted in the EAF, (as described, for example, in the 2002 Steel Recycling Institute's fact sheet, "*The Inherent Recycled Content of Today's Steel*").

SSAB North America operates steel mills at two locations (Mobile, Alabama and Montpelier, Iowa), with a combined annual liquid steel-making capacity of approximately 3,000,000 tons.

Of the recycled steel content, approximately one-fifth to one-quarter is post-industrial recycled steel (steel from industries that has not been made into products before recycling), and the remainder is post-consumer recycled steel (steel from products used by individuals and businesses and then recycled). The 2008 post-industrial and post-consumer recycled steel content of SSAB's products for its two North American steelworks is as shown in the table below.

	2008 Recycled Steel Content (%)		
Location:	**Post-Industrial**	**Post-Consumer**	**Total**
Mobile, Alabama	19.6	79.5	99.2
Montpelier, Iowa	21.6	78.2	99.8
Approximate Average	20.4	79.0	99.4

We understand that this information is relevant to meet specifications under the "Leadership in Energy and Environmental Design" (LEED) rating system. We hope that this is helpful, and are pleased to assist in the furthering of recycling through the use of SSAB steels.

If there are any questions with respect to the above, please contact:

Joseph Wesselman
Environmental Director
Phone: (630) 810-4738
joseph.wesselman@ssab.com

SSAB

June 24, 2008

Recycled Content of SSAB North American Steel

SSAB steel products manufactured at our North American facilities contain about 97% recycled steel, excluding recycled "home" scrap steel. The non-recycled content represents primarily alloying materials, and some new iron. SSAB North American Division's steel products are recycled steels manufactured in an Electric Arc Furnace (EAF) process. In this process, recovered scrap steel is melted in the EAF, (as described, for example, in the 2002 Steel Recycling Institute's fact sheet, "*The Inherent Recycled Content of Today's Steel*").

SSAB North American Division operates steel mills at two locations (Mobile, Alabama and Montpelier, Iowa), with a combined annual liquid steel-making capacity of approximately 3,000,000 tons.

Of the recycled steel content, approximately one-fifth to one-quarter is post-industrial recycled steel (steel from industries that has not been made into products before recycling), and the remainder is post-consumer recycled steel (steel from products used by individuals and businesses and then recycled). The 2007 post-industrial and post-consumer recycled steel content of SSAB's products for its two North American steelworks is as shown in the table below.

	2007 Recycled Steel Content (%)		
Location:	Post-Industrial	Post-Consumer	Total
Mobile, Alabama	20.6	76.8	97.3
Montpelier, Iowa	19.9	78.3	98.2
Approximate Average	20.25	77.55	97.75

We understand that this information is relevant to meet specifications under the "Leadership in Energy and Environmental Design" (LEED) rating system. We hope that this is helpful, and are pleased to assist in the furthering of recycling through the use of SSAB steels.

If there are any questions with respect to the above, please contact:

Joseph Wesselman
Environmental Director
Phone: (630) 810-4738
joseph.wesselman@ssab.com

CMC Steel Alabama

April 22, 2008

To Whom It May Concern:

CMC Steel Alabama, in Birmingham, Alabama uses scrap steel as its primary raw material in melting steel. It is 100% domestic, recycled material.

Due to our methods of purchasing, receiving and moving of scrap into our melt shop, we have no way to know exactly what percentage of a particular heat is made up of post-consumer or post-industrial scrap.

However, based on our purchasing records we can say that we use approximately 50% post-consumer scrap and 50% post-industrial scrap over the course of a year. This varies with the availability of the various commodities available for purchase in our business region.

Respectfully,

John F. Powell

John F. Powell
Manager, Quality Assurance

P. O. Box 321188
Birmingham, AL 35232-1188

101 S. 50th Street
Birmingham, AL 35212

Phone 205.592.8981
Fax 205.599.7977

www.cmcsteel-al.com

Material melted at CMC Steel South Carolina is produced from a minimum of 95 percent re-cycled material and is melted and manufactured in the USA.

The re-cycled material consist of 59% Post- Public Consumer generated scrap and 41% Industrial Generated Scrap.

The CMC Steel South Carolina plant is located in Cayce, South Carolina.

At a minimum, 95 percent of the material used in our operation is collected within a 500 mile radius of our facility.

Richard S. Ray

Richard S. Ray
Quality Assurance Manager
March-30-2006

BULL MOOSE TUBE COMPANY
1819 Clarkson Road, Suite 100 • Chesterfield, Missouri 63017
(636) 537-2600 • www.bullmoosetube.com

Re: LEED Documentation for HSS

Bull Moose Tube Company utilizes steel produced from the basic oxygen furnace (BOF) process in the production of Hollow Structural Section tube in our Elkhart, Indiana facility and a combination of steel produced from the BOF process and Electric Arc Furnace (EAF) process in the production of Hollow Structural Section tube in our Trenton, Georgia facility.

A Steel Recycling Institute study, in conjunction with a study by Fordham University, calculated the recycled content of steel from BOF mills and EAF mills as follows:

BOF mills:

Total Recycled Content:		31.7%
- - Post-consumer recycled content	65%	
- - Post-industrial recycled content	35%	

EAF mills:

Total Recycled Content:		95.5%
- - Post-consumer recycled content	60%	
- - Post-industrial recycled content	40%	

Tubing provided by our Masury, OH plant is produced from 100% BOF steel coils.
Tubing provided by our Chicago, IL plant is produced from 50% BOF and 50% EAF steel coils.
Tubing provided by our Gerald, MO plant is produced from 80% BOF and 20% EAF steel coils.
Tubing provided by our Burlington, ON plant is produced from 65% EAF and 45% BOF steel coils.

The above total recycled content conforms to the general experience indicated by our steel suppliers.

I trust this information fulfills your request.

Randy Bishop
Business Development Manager

BULL MOOSE TUBE COMPANY
1819 Clarkson Road, Suite 100 • Chesterfield, Missouri 63017
(636) 537-2600 • www.bullmoosetube.com

February 4, 2008

Re: LEED Documentation for Bull Moose Tube

Bull Moose Tube Company utilizes steel produced from the basic oxygen furnace (BOF) process in the production of Hollow Structural Section tube in our Elkhart, Indiana facility and a combination of steel produced from the BOF process and Electric Arc Furnace (EAF) process in the production of Hollow Structural Section tube in our Trenton, Georgia facility.

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I trust this information fulfills your request.

Randy Bishop
Business Development Manager

BULL MOOSE TUBE COMPANY
1819 Clarkson Road, Suite 100 • Chesterfield, Missouri 63017
(636) 537-2600 • www.bullmoosetube.com

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Tubing provided by our Burlington, ON plant is produced from 65% EAF and 45% BOF steel coils.

The above total recycled content conforms to the general experience indicated by our steel suppliers.

I trust this information fulfills your request.

Randy Bishop
Business Development Manager

Atlas
TUBE INC.

Atlas Tube, Inc.
1855 E. 122nd Street
Chicago, IL 60633-2497
773-646-7876 · Fax 773-646-6128

September 24, 2007

Dear Sir or Madam:

I received your request regarding the recycled content of our tubing. As you may know, we purchase our steel from a variety of sources. Each of these sources has a different manufacturing process. Depending on the supplier, the process, the current price of scrap, and other factors, the recycled content of our tubing will vary. Scrap content is consistent for a given heat, so all tubing and orders from one heat will have the same recycled content.

Most integrated steel manufacturers use a Basic Oxygen Process to produce their steel. The BOP uses a combination of iron ore and scrap. Their scrap, or recycled, content generally ranges from 20 to 30 percent.

Most mini-mill steel manufacturers use an Electric Arc Furnace process to produce their steel. The EAF process uses electricity to make new steel out of scrap steel. Their scrap, or recycled, content is usually close to 100 percent.

If you have any questions, please do not hesitate to contact me.

Best Regards,

Glen McAdam
Quality Assurance

GERDAU AMERISTEEL™

Gerdau Ameristeel Steel Mills Scrap Origin

To Whom It May Concern:

Each Gerdau Ameristeel Steel Mill has hundreds of scrap suppliers. We do not routinely track which suppliers provided the scrap for any particular batch of steel. However, in general, at least 80% to 90% or more of the scrap we use comes from suppliers located within approximately 200 miles of our mills. All Gerdau Ameristeel merchant bar and rebar products are produced from 100% recycled scrap.

Sincerely,

Gerdau Ameristeel

Bhaskar Yalamanchili
Director of Corporate Quality

Steel Dynamics, Inc.

Roanoke Bar Division
P.O. Box 13948
Roanoke, Virginia 24038-3948
Office: 1-540-983-7226
Fax: 1-540-983-7234
www.steeldynamics.com

24 June 2008

To Whom It May Concern:

This letter is in response to your inquiry of the percentage of recycled raw materials used at SDI - Roanoke Bar Division. Our manufacturing facility is dedicated to producing the highest quality products at a competitive price. One of the most significant ways of doing that is by using high quality metal scrap as the major source of raw materials. The metal scrap is received at this facility and melted on-site into billets for use in our Rolling Mill or sold as a semi-finished product. At least ninety-eight percent of the composition of our steel is iron obtained from recycled scrap metal, with the remaining two percent being alloy additives (to meet customer grade requirements). Realizing that the total scrap composition changes on a daily basis, on average, 79% of the scrap used at this facility is post-consumer scrap while the remaining 19% is post -industrial. If I can be of any further assistance, please feel free to call and as always, thank you for your continued business with SDI - Roanoke Bar Division.

Sincerely,

Butch Charlton
Quality Control Supervisor
SDI – Roanoke Bar Division

Steel Dynamics, Inc.®
Structural and Rail Division • Columbia City, Indiana

Columbia City, Indiana 46725
(260) 625 - 8100 (260) 625 - 8950 FAX

June 16, 2008.

To Whom It May Concern:

Re: **Steel Dynamics, Inc. – Steel Products**
Method of Manufacture, Source Materials, and Recycled Content

Please be advised that Steel Dynamics, Inc; Structural and Rail Division operates a Steel "Mini-Mill" located near Columbia City, Indiana USA.

This mill utilizes electric arc furnaces to recycle ferrous (iron based) scrap metal. Various grades of ISRI (Institute of Scrap Recycling Industries) ferrous scrap is procured from domestic sources within a 500 mile radius of our plant site. Our three largest scrap metal suppliers are located in Ft Wayne, IN (15 miles from plant site), Sturgis, MI (50 miles from plant site), and Cleveland, OH (250 miles from plant site). 100% of our scrap supply is procured from within a 500 mile radius of our plant.

Our finished structural steel products are manufactured using a total Post-Consumer content of recycled ferrous scrap {as per *16 CFR 260.7 (e)*} between 75 and 84%; and a total pre-consumer (post-industry) content of recycled ferrous scrap {as per *16 CFR 260.7 (e)*} between 10 and 15%. Of the remaining iron requirements, Steel Dynamics, Inc's 'home' scrap {pre-consumer non-recycled materials; as per *16 CFR 260.7 (e)* } satisfies between 2- 4%. The outstanding 4 – 6% iron units requirement is met through the use of "alternate iron", or virgin materials (pig iron, broken blast furnace iron, hot briquetted iron, etc.) supplied by both domestic and foreign sources.

Using the Federal Trade Commission's "Guides for the Use of Environmental Marketing Claims" {*16 CFR 260* }, the total recycled content of Steel Dynamics, Inc, Structural and Rail Division's products is 90 - 94%. For the purposes of obtaining U.S. Green Building Council (USGBC) LEED–NC v 2.2, MR-Credits 4.1 and 4.2; Steel Dynamics, Inc, Structural and Rail Division's products contain between 82 - 89% recycled content {as per USGBG LEED v2.2 formula: recycled content = *(% post-consumer + ½ % pre-consumer)*}.

All feed stock resources are thoroughly screened and are free of radioactive materials. Mercury containing materials are not used in the manufacturing, handling, or marking and labeling of Steel Dynamics, Inc. Structural and Rail Division products.

Steel products supplied by Steel Dynamics, Inc. Structural and Rail Division are 100% melted and manufactured in the Unites States of America.

For further information please contact the undersigned.

Yours truly,

Douglas A. Rees-Evans
Manager – Technical Services
Steel Dynamics Sales North America, Inc.
Structural and Rail Division

To Our Customers:

In response to requests to provide information regarding the recycled content of the tubing manufactured by Southland Tube, Inc., we would like to confirm that all of our tubing incorporates recycled content steel materials.

All of Southland Tube's steel suppliers, whether integrated or mini-mill manufacturers, use one of two processes, both of which require the use of scrap or recycled steel. The basic oxygen furnace (BOF) process uses 25 to 35 percent old steel, and the electric arc furnace (EAF) process uses virtually 100 percent old steel. Our two main integrated mill suppliers certify that the recycled steel content of their products range from 53 to 71 percent.

If you need additional information or documentation concerning LEED certification for our tubing products, please contact Jim Henderson, VP of Materials, at (205) 251-1884.

Sincerely,

John R. Montgomery, Jr.
Vice President / General Manager

SOUTHLAND TUBE
INCORPORATED

P.O. BOX 2425 BIRMINGHAM, AL 35201 TEL: 205 251-1884 FAX: 205 251-1553 TOLL FREE: 800 543-9024 www.southlandtube.com

SSAB
TUNNPLÅT

DOMEX®
January 2000 GB 380

Environmental specification for hot rolled steel sheet

THE COMPANY

SSAB Tunnplåt AB is the largest Nordic steel sheet manufacturer and one of the European leaders in the development of high strength steels.

Environmental work

The Company:

- has an environmental policy
- is linked to the national Swedish recycling system
- has introduced sorting at source
- has regular environmental audits
- has examination of chemicals before use
- has regular checks of the indoor and outdoor environments
- has ISO 9002 and QS 9000 certification

THE PRODUCT

Hot rolled steel sheet is produced at SSAB Tunnplåt in Borlänge.

Hot rolled steel sheet is produced, for example, as mild steels for advanced pressing operations, cold-forming steels, high-carbon steels, boron steels and general structural steels. The steels are being continually developed towards higher strengthlevels, which can be put to use for reducing the weight and improving the performance of a product.

The material is delivered as coils, cut-to-length sheet or prefabricated parts, such as bent profiles.

PRODUCT CONTENT

The raw material consists of steel slabs that are supplied to the hot rolling mill in Borlänge from SSAB in Luleå and Oxelösund. Ore-based SSAB Tunnplåt steels contain around 20 percent of recycled steel. All steels in SSAB Tunnplåt hot rolled products can be recovered at the end of their service life.

Dimensions

Width ..... 1600 mm max.
Thickness ..... 1.5 - 16 mm

Composition of the steels

Density ..... 7.85 kg/dm³
E.g. 5 mm thick sheet ..... approx. 40 kg/m²
Normal content of the steel, percent by weight:

Iron	>97	Others	≤3*

*Other elements that may be contained in the steel:

Carbon	≤1.5	Molybdenum ..	≤1.5
Silicon	≤0.5	Vanadium	≤0.3
Manganese	≤2.5	Titanium	≤0.2
Phosphorus ...	≤0.05	Aluminium	≤0.2
Sulphur	≤0.05	Niobium	≤0.1
Chromium	≤1.5	Boron	≤0.01
Nickel	≤2.5	Nitrogen	≤0.02
Copper	≤0.5		

Packaging

Steel sheet is packaged using steel or plastic straps, fibreboard, wood, paper or protective plastic, depending on the destination and the customer's requirements. The quantity of packaging material is less than 1 - 20 grams per kg of finished product. The packaging is partially reusable. Other packaging should be sorted at source and recycled.

Transport and handling

Outward shipment of the finished product takes place mainly by rail or road. Material and energy can be saved if storage, transport and production are carried out so that damage and wastage are minimized at all stages.

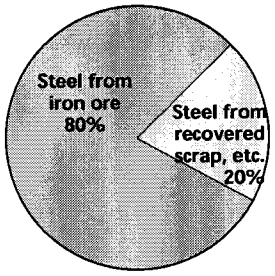
Material recovery

The products can be recovered and serve as an important raw material in the production of new steel.

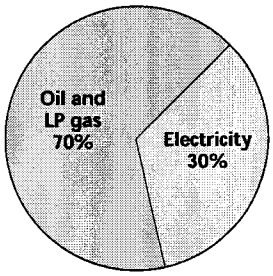
All waste material from engineering workshops and from building, repair and demolition work should be sorted and returned to the steel industry through the scrap trade. This will ensure that the steel will be recycled.

Undamaged steel sheet from demolition should be reused.

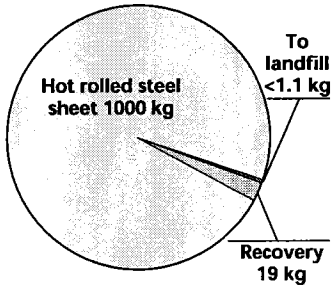
Proportion of recycled material in the production of hot rolled steel sheet



Energy consumption for hot rolling of steel sheet (average of 470 kWh/tonne)



Residual products from the hot rolling of 1000 kg of steel sheet



PRODUCTION

Sheet is produced by hot rolling of steel slabs at SSAB Tunnplåt in Borlänge. The first stage of production consists of heating the slabs to around 1250°C in two fuel-fired rolling mill furnaces. The hot slab is rolled in stages down to a thickness of 1.5 - 16 mm. The strip is then wound into coils. Fully automatic process control in heating and rolling results in a product with good performance and economical use of energy. The environment is given high priority in all process development work.

Atmospheric emissions

One of the slab furnaces in the rolling mill is fired with LP gas and the other with oil. The flue gases from the oil-fired furnace contain sulphur dioxide, nitrogen oxide, carbon dioxide and particulates, whereas the emissions from the LP gas fired furnace contain only nitrogen oxide and carbon dioxide. The quantity of nitrogen oxide is reduced by the burners employing low NO_x technique. Emissions are reduced by low-sulphur oil being fired, by combustion engineering measures, and by energy conservation.

Emissions to water recipients

The rolling mill has an advanced and comprehensive system for treating and reusing water. During rolling, the water flow is around 22 000 cubic metres per hour. The reuse of process water is very high. The recirculation is around 99 percent, and a very small proportion is discharged.

The cooling water from the rolling operation is polluted with substances such as millscale (iron oxide), and with oil and grease from lubrication and maintenance of the rolling mill machines.

Initial treatment to remove oil and millscale is carried out in two ponds at the rolling mill. Final treatment takes place in a special treatment plant with settling ponds and sand filter.

Noise

The noise level from the plant is low and does not intrude on the environment.

Energy consumption

The hot rolling mill uses oil and LP gas for heating the steel slabs. Electric power is used for driving the rolls, the treatment equipment, etc.

High energy efficiency is achieved by advanced control incorporating process computers. Both furnaces are provided with heat recovery equipment.

Residual energy is used for space heating in most of the premises on the industrial site and for several processes. The excess heat from the heat recovery process is supplied to the municipal district heating network in Borlänge. A total of around 15 percent of the energy used is recovered.

Residual products

Millscale (iron oxide) is formed on the surface of the steel during rolling. The millscale is released during rolling and is collected in the ponds of the water treatment system. Millscale with a low oil content is recovered for reuse outside the rolling mill. A minor amount of millscale is contaminated in such a manner that recovery is not possible at the present time. This millscale is dumped on our own disposal site. Oil from the treatment plant, etc. is delivered to outside companies for recycling.

Washing and grinding fluids from the roll dressing plant are cleaned in a special treatment plant on the industrial site.

During rolling, the edges of the strip are trimmed. The scrap then occurring is of high quality and is sold for remelting into new steel.

Other residual products are sorted at source before disposal.

ENVIRONMENTAL PROFILE

The environmental profile refers to the mean values of emissions to which hot rolling of steel sheet gives rise in Borlänge.

Process raw materials

Steel slabs	1 020 kg/tonne

Energy raw materials

Oil	215 kWh/tonne
LP gas	175 kWh/tonne
Electrical energy	80 kWh/tonne

Energy recovery

Steam	70 kWh/tonne

Atmospheric emissions

Carbon dioxide(CO_2)	100 kg/tonne
Sulphur dioxide(SO_2)	0.132 kg/tonne
Dust	0.008 kg/tonne
Nitrogen oxides (NO_x)	0.169 kg/tonne*

**) NO_x considered as NO_2*

Emissions to water recipients

Solid particles	0.004 g/tonne
Oil	0.0007 g/tonne

Residual products

Total	20.1 kg/tonne
Of which to recovery	19 kg/tonne
Of which to landfill	1,1 kg/tonne

ENVIRONMENTAL CONTROL

SSAB Tunnplåt has been pursuing active environmental work for many years. This covers emissions to atmosphere and water recipients, conservation of energy and raw materials, residual products, chemicals, risk analyses, etc. The processes and products are being developed with regard to the environment and from a life cycle perspective.

Well established procedures are in force for environmental control. Special departments deal with environmental scrutiny, monitoring, audits and advice in environmental matters.

The development of the environmental situation is documented at regular intervals in a large number of continual measurements. The results are published in special measurement reports, annual reports, etc.

The environmental conditions for the operations are scrutinized openly in an environmental court. Public hearings are a common approach in the scrutiny of applications for permission to pursue operations.

SSAB TUNNPLÅT

SSAB Tunnplåt AB
SE-781 84 Borlänge, Sweden
www.ssabtunnplat.com

Phone: +46 243-700 00
Fax +46 243-720 00
E-mail: office@ssabtunnplat.com