

Material : Steel Scrap	Grade : All	SDI Part #	N/A
Industry Id : ISRI #'s: N/A	A.K.A. : N/A		

Scope : The following general quality specifications apply to all scrap grades purchased by Steel Dynamics, Inc. for the purposes of melting at the Pittsboro, Indiana mill.

Special Definitions :

“Downgrade” When a particular grade of scrap is found to not conform to its represented grade, it may, by agreement by SDI-PIT and supplier, be downgraded and accepted as an inferior grade of scrap. Refer to SOP TR-SOP-809 for downgrading procedures.

“Free of” When specified to be “free of”, the grade shall not contain any amount of prohibited material in any amount greater than that which is unavoidable in the customary preparation and handling of that particular grade.

“Free of alloys” Scrap is “free of alloys” if the residual content of the elements listed below, contained within the steel, do not occur at levels consistent with the purposeful creation of an Alloy Steel. Residual level of elements contained within the Scrap shall not exceed:

Chromium (Cr)	0.20%
Nickel (Ni)	0.30%
Manganese (Mn)	1.5%
Molybdenum (Mo)	0.10%

The combined residual level, exclusive of manganese, shall not exceed 0.60%.

“Grade” A classification of scrap type based upon Institute of Scrap Recycling Industries (ISRI) ferrous scrap classification or SDI-PIT / vendor description.

“Off-Grade” A load of scrap shall be considered **off grade** if it fails to meet:

1. Applicable size limitations
2. Applicable requirements of material “kind”
3. Applicable requirements of material quality

as specified in the material’s (grade’s) Raw Material Specification (RMS).

General Specifications :

Cast Iron Unless specifically purchased as a Cast Iron or Pig Iron grade, all scrap grades shall contain less than 1% (by weight) of cast irons unless otherwise noted in the spec. This includes, but is not limited to, Cast Iron, Pig Iron, composite brake shoes, engine blocks and castings.

Cleanliness All grades shall be free of excessive rust, corrosion, dirt, oil, or grease.

Fracking Scrap All grades are to be free of gas and oil well perforation tools/piping and all other hazardous materials (e.g. explosives) associated with fracking.

Hazardous Materials

All grades shall be free of hazardous materials, including, but not limited to, asbestos, electronic waste (to the extent practicable), explosives, flammable materials, hazardous waste, military-scrap (including ammunition casings), oil-filled devices (e.g. transformers or capacitors), radioactive materials, or refrigerants or refrigerant-containing materials (e.g., air conditioners or condensers),-

All grades must be depleted to the extent practicable of chlorinated plastics. Materials that may contain chlorinated plastics include, but are not limited to, consumer products (e.g., carpeting, clothing, foam, furniture, Styrofoam), containers (e.g. bags, bottles, food packaging, packaging materials), or plastic motor vehicle components (e.g. battery casings, bumpers, plastic parts).

All grades must be depleted to the extent practicable of lead and lead-containing materials. Materials that may contain lead include, but are not limited to batteries, lead-based paints, gasoline tanks, metal guttering and other terne material, mufflers and tail pipes, wheel balancing weights, babbitt, solder, radiators, and leaded joints in soil pipe.

Hazardous Materials - Continued

All grades must be depleted to the extent practicable of mercury and mercury-containing materials. Materials that may contain mercury include, but are not limited to: mercury-wetted or -containing relays, switch gear, rectifiers, gauges, manometer, barometers, thermometers, and fluorescent lighting fixtures.

All grades must be depleted to the extent practicable of organic liquids. Materials that may contain free organic liquids include, but are not limited to, oil filters engine blocks, oily turnings, oily machine shop borings, or storage drums or totes.

Inspection

All material is to be suitable and acceptable to Steel Dynamics, Inc. based upon inspection as per TR-SOP-809.

Loading/Unloading

All grades must be capable of being loaded and unloaded by electromagnet. Seller's indemnification includes indemnification for delivery under this Purchase Order by means of any frameless trailer. Seller agrees that it shall be solely liable for any and all damages, including any clean up and/or SDI down time resulting from Seller's utilization of any frameless trailers for delivery of the product covered by this Purchase Order. Seller shall be responsible for any costs, attorney fees or any consequential damages incurred by SDI for recovery of the Items due or owed by Seller under this paragraph.

Motor Vehicle Shred

Motor vehicle shred providers must participate in the National Motor Vehicle Switch Removal Program (NMVSRP) or another U.S. EPA-approved mercury switch removal program.

Non-Ferrous

Non-Ferrous: All grades are to be free of Non-Ferrous materials. Non-Ferrous materials include, but are not limited to, copper (electric motors, piping, compressors, wires, brass/bronze castings), aluminum, chromium (plated articles) or lead.

Non-Metallics

All grades are to be free of Non-Metallic Materials. Non-Metallic Materials include, but are not limited to, wood, paper, fiber, plastics, rubbers, foam, fluff, slag, concrete, dirt, or grease and oils.

Off-Grade

The grade shall be free of Off-Grade materials except where the vendor can demonstrate that inclusion of negligible amounts of Off-Grade materials are unavoidable in the customary preparation and handling of the grade involved.

Radioactivity

All grades shall not contain radioactive materials. Scrap loads found containing radioactive sources are to be immediately rejected and managed in accordance with TR-SOP-809. Under no circumstances shall any radioactive scrap be subject to acceptance through downgrade.

Potential radioactive items that might be found in the scrap supply include, but are not limited to, industrial gauges, industrial radiography devices, medical therapy devices, beta- or gamma- particle emitting devices, static eliminators, pipe or casing scale, contaminated metal, or welded pieces.

Sealed Containers

All grades shall not contain Closed, Enclosed or Sealed Containers. Such containers may be accepted providing they have been processed such that; one end has been removed, a minimum of two large holes broach the "sealed" portion of the container, or the container has been cut in half. Closed, Enclosed, or Sealed Containers include, but are not limited to:

- Hydraulic or gas cylinders
- Air, Freon, Acetylene, Oxygen, Propane tanks
- Automotive rear ends
- Gear cases
- Shock absorbers
- Closed ball valves
- Sealed units (e.g. refrigeration compressors)
- Any vessel which contains and retains gases, oils, or fluids

Stainless Steel

All grades shall be free of stainless steel.

Tin Plate


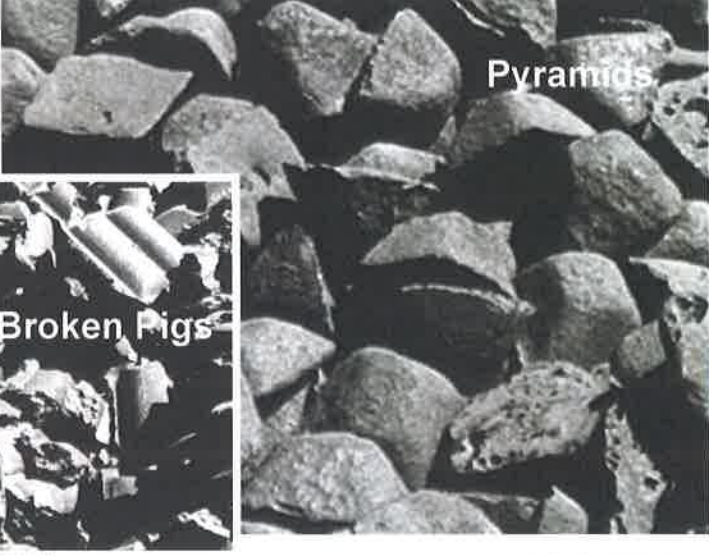

All grades shall be free of tin-plated materials.



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Engineered Bar Division



Material : Steel Scrap Substitute		Grade : Pig Iron		SDI Part # P0100820							
Industry Id :		A.K.A. : Basic Pig Iron									
Description : <ul style="list-style-type: none"> • Cast Iron or Blast Furnace Iron, cast into Individual “Pigs”, grouped “pigs” (broken into smaller pieces), or pyramids. • Pigs’ weighing-30 – 100 pounds each. 											
Typical Appearance											
											
Sizing	Thickness (minimum)		≤ 8 "		Typical Density	180 - 200 (lbs / ft ³)					
	Maximum		28" x 12"								
Chemistry	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn	
Minimum (wt%)	3.00										
Maximum (wt%)	5.00	1.20	.15	.05	1.20						
Prohibitions	In addition to commonly prohibited materials (PUR-SS-001), may not contain the following: <ul style="list-style-type: none"> • Beach Iron • Kish • Home Scrap • Broken Castings (other than broken Pigs) • Cast Iron Castings 										
Allowances											
Additional Notes											




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Engineered Bar Division

Material : Steel Scrap				Grade : # 1 Bundles				SDI Part # P0060110				
Industry Id : ISIS #'s: 208				A.K.A. : Dealer Bundles								
Description : <ul style="list-style-type: none"> Clean Steel scrap, bushelling, clippings, sheet, or skeleton scrap compressed into a bundle 												
Typical Appearance						Typical Constituents						
						<p>Hydraulically compressed bundles consisting of:</p> <ul style="list-style-type: none"> Bushelling Clippings Punchings Sheet steel 						
Sizing		Thickness (minimum)			na		Typical Density				75 - 90 (lbs / ft ³)	
		Maximum			48" x 36" x 36"							
Chemistry		C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn	
Maximum (wt%)			1.50	.05	.05	.50	.10	.10	.10	.03	.01	
Prohibitions		<p>In addition to commonly prohibited materials (PUR-SS-001), may not contain the following:</p> <ul style="list-style-type: none"> Auto body stock Auto fender stock De-tinned materials Metal coated, limed, or vitreous enameled steels 										
Allowances		<ul style="list-style-type: none"> Zinc or galvanized coated materials 										
Additional Notes												



Material : Steel Scrap				Grade : # 1 Heavy Melting Scrap				SDI Part # P0010510					
Industry Id : ISRI #'s: 200, 201, 202				A.K.A. : #1, #1 Steel, Heavy Melt, HMS, HMS #1									
Description : <ul style="list-style-type: none"> Clean steel scrap 1/4" thickness and over. 													
Typical Appearance						Typical Constituents							
						<ul style="list-style-type: none"> Structural Items Plates Truck Parts Large Machinery parts Automotive Parts excluding: <ul style="list-style-type: none"> Gears Transmission Parts Torque Converters 							
Sizing		Thickness (minimum)		≥ 1/4 "		Typical Density				45 - 60			
		Maximum		60" x 24"						(lbs / ft ³)			
Chemistry		C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn		
Maximum (wt%)				.05	.05		.35	.25	.25	.06	.025		
Prohibitions		In addition to commonly prohibited materials (PUR-SS-001), may not contain the following: <ul style="list-style-type: none"> Transmission parts Torque converters Gears Chains Cables Springs Stainless Steel Galvanized scrap Reinforcing bar Pipe with pinched ends 											
Allowances		<ul style="list-style-type: none"> Alloy steel content must not exceed 15% by weight Dies by SDI pre-approval Cast Iron allowed to 10% A few wheel rims Gas cylinders sheared into two or more pieces allowed to 10% A few springs 											
Additional Notes		<ul style="list-style-type: none"> Pipe over 8" diameter must be split 											



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Material : Steel Scrap		Grade : # 2 Bundles				SDI Part # P0070120						
Industry Id : ISRI #'s: 209, 218		A.K.A. : Bales, Bundles										
Description : <ul style="list-style-type: none"> • Old Black and galvanized sheet steel hydraulically compressed into rectangular cubes. • Unprepared #2 Heavy Melting Scrap hydraulically compressed into rectangular cubes for the purposes of increasing density 												
Typical Appearance 				Typical Constituents <ul style="list-style-type: none"> • "Post Consumer" goods • "White Goods" (appliance shells) • Used sheet goods (siding, canning stock, etc.) • Low density # 2 Heavy Melting Steel (compressed to increase density) 								
Sizing		Thickness (minimum)		N/a		Typical Density		60 - 70 (lbs / ft ³)				
		Maximum		24" x 36" x 48"								
Chemistry		C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn	
Maximum (wt%)		Maximum Chemistries are difficult to determine as content varies widely from bundle to bundle										
Prohibitions		In addition to commonly prohibited materials (PUR-SS-001), may not contain the following: <ul style="list-style-type: none"> • Municipal Scrap • Incinerator Scrap • Lead Coated Steel • Excessive fluff 										
Allowances		<ul style="list-style-type: none"> • Vitreous enameled materials up to 15% by weight, provided the "white goods" do not contain wiring harnesses, motors, compressors, or capacitors. • Any individual bundle may contain up to 15% reinforcing bar. 										
Additional Notes												




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Engineered Bar Division

Material : Steel Scrap		Grade : # 2 Heavy Melting Scrap				SDI Part # P0020520						
Industry Id : ISRI #'s: 203, 204, 205, 206		A.K.A. : #2, HMS #2, #2 Steel										
Description : <ul style="list-style-type: none"> • Steel Scrap, black or galvanized 1/8" thickness and over. • May include automotive scrap if properly prepared (rear ends, torque converters, and transmissions must be cut and drained). • Free of sheet iron and thin gage material 												
Typical Appearance 				Typical Constituents <ul style="list-style-type: none"> • Small Diameter Pipe • Automotive Wheel rims • Reinforcing bar • Prepared automotive parts • Post-consumer steel goods • Light-weight structural items • Small machinery parts 								
Sizing		Thickness (minimum)		≥ 1/8 "		Typical Density		40 - 55 (lbs / ft ³)				
		Maximum		36" x 24"								
Chemistry		C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn	
Maximum (wt%)				.03	.070		.55	.20	.20	.04	.04	
Prohibitions		In addition to commonly prohibited materials (PUR-SS-001), may not contain the following: <ul style="list-style-type: none"> • Municipal scrap • Turnings • Stainless steels • Tin Coated steel • Lead Coated Steel • Vitreous enameled materials • White Goods • Pipe with pinched ends 										
Allowances		<ul style="list-style-type: none"> • Alloy steel content must not exceed 25% by weight • Cast Iron content allowed to 25% by weight • May contain undersized <u>#1 Heavy Melting Steel</u> if prepared for compact charging • Gas cylinders sheared into two or more pieces allowed to 10% • Reinforcing bar must not exceed 25% by weight 										
Additional Notes		<ul style="list-style-type: none"> • Pipe over 8" diameter must be split. 										

Material : Steel Scrap		Grade : Plate and Structural Steel				SDI Part # P0110410						
Industry Id : ISRI #'s: 231, 232		A.K.A. : P&S										
Description :												
<ul style="list-style-type: none"> • Clean cut structural and plate scrap. • Clean cut structural shape crop ends, shearings, or broken steel wheels 												
Typical Appearance				Typical Constituents								
				<ul style="list-style-type: none"> • Structural Items • Plates • Large diameter pipe • Heavy walled pipe 								
Sizing		Thickness (minimum)		≥ 1/4 "		Typical Density		60 - 70 (lbs / ft ³)				
		Maximum		60" x 24"								
Chemistry		C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn	
Maximum (wt%)				.04	.04		.30	.15	.15	.03	.015	
Prohibitions		In addition to commonly prohibited materials (PUR-SS-801), may not contain the following: <ul style="list-style-type: none"> • Reinforcing bar must not be present • Mill rolls > 12" Diameter must not be present • Pipe with pinched ends 										
Allowances		<ul style="list-style-type: none"> • Heavy Walled Pipe must not exceed 20% by weight • This grade may be mixed with #1 Railway Scrap, provided that car sides do not exceed 20% by weight 										
Additional Notes		<ul style="list-style-type: none"> • Pipe over 8" diameter must be split 										



Material : Steel Scrap		Grade : # 2 Shredded Steel		SDI Part # P0040320								
Industry Id : ISRI #'s: 210, 211		A.K.A. : Auto Shredded, Fragmentized Scrap, Shredded										
Description : <ul style="list-style-type: none"> Homogeneous shredded steel scrap magnetically separated, originating from automobiles, unprepared # 1 Heavy Melting Steel and # 2 Heavy Melting Steel, and miscellaneous sheet steel. 												
Typical Appearance												
												
Sizing	Thickness (minimum)		N/a			Typical Density				55 - 70 (lbs / ft ³)		
	Maximum		10" x 10" x 10 "									
Chemistry		C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn	
Maximum (wt%)				.04	.015		.32	.15	.15	.03	.015	
Prohibitions		In addition to commonly prohibited materials (PUR-SS-001), may not contain the following: <ul style="list-style-type: none"> Municipal Scrap Incinerator Scrap Lead Coated Steel Vitreous enameled materials Tin cans Excessive fluff Copper clad or plated steel 										
Allowances		<ul style="list-style-type: none"> Cast iron content not to exceed 5% by weight. Cast iron pieces may exceed 10", but must not exceed 16" 										
Additional Notes		<ul style="list-style-type: none"> Due to the nature of processing, this grade of scrap steel will contain small quantities of copper wiring and motor windings. Total copper content must not exceed 0.32% 										



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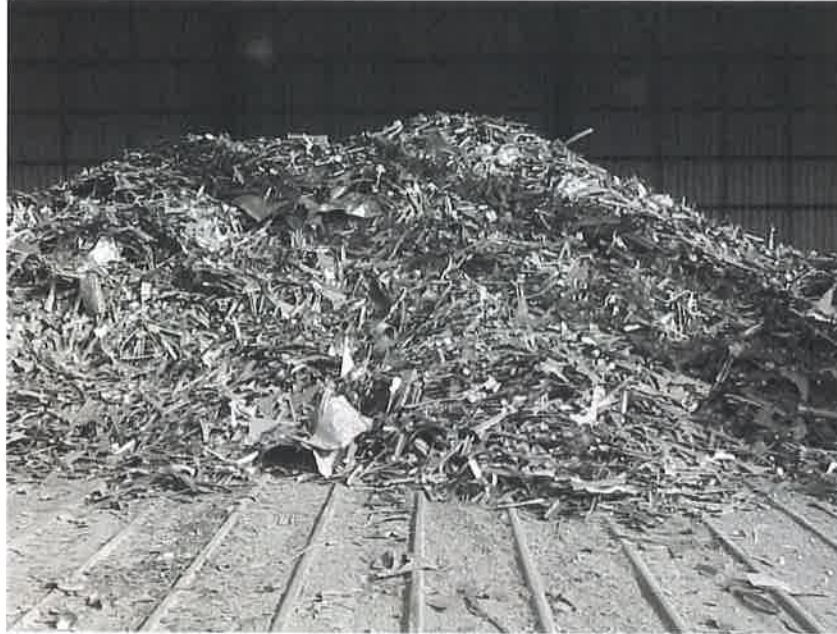
Engineered Bar Division

Material : Steel Scrap	Grade : Busheling	SDI Part # P0050210
Industry Id :	A.K.A. : #1 Busheling	

Description :

- Clean steel scrap, including new factory busheling (for example, sheet clippings, stampings, flashings, etc.).

Typical Appearance



Sizing	Thickness (minimum)			≤ ¼"		Typical Density				60 - 75 (lbs / ft ³)		
	Maximum			36" x 60"								
Chemistry	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn		
Minimum (wt%)												
Maximum (wt%)		0.60	0.02	0.02	0.30	0.10	0.08	0.08	0.02	0.02		

Prohibitions In addition to commonly prohibited materials (PUR-SS-001), may not contain the following:

- Old auto body or fender stock
- Tin or lead-coated materials
- Limed, vitreous enameled materials

Allowances

- Chemically detinned materials

Additional Notes



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Material : Steel Scrap	Grade : Cast Iron Borings	SDI Part # P0160620
Industry Id : ISRI #'s: 220, 222, 223	A.K.A. : Machine shop turnings, shoveling turnings	

Description :

- Clean steel turnings, wrought iron or cast iron borings, free of nonferrous metals, excessive oil, and scale.

Typical Appearance



Typical Constituents

- Machine shop turnings
- Cast iron borings
- Malleable iron borings





Sizing	Thickness (average)			< 1/8"		Typical Density					35 - 50 (lbs / ft ³)	
	Diameter (average)											
Chemistry	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn		
Maximum (wt%)			.03	.070		0.25	0.15	.20	.04	0.03		

Prohibitions In addition to commonly prohibited materials (PUR-SS-001), may not contain the following:

- Excessive oil
- Excessive rust
- Dirt or scale
- Nonferrous metals

Allowances

Additional Notes

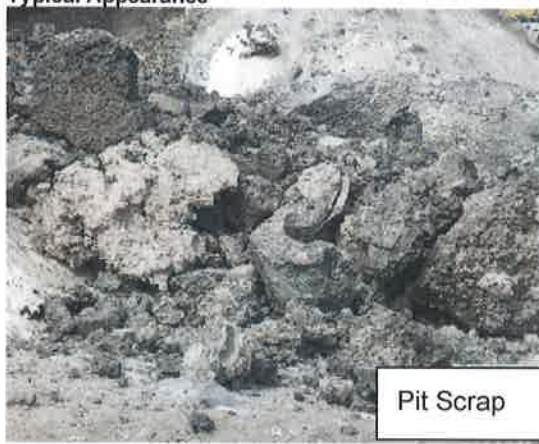
Material : Steel Scrap				Grade : Briquettes				SDI Part # P0150910					
Industry Id : ISRI #'s: 226, 227				A.K.A. : Briquetted Iron Borings, Briquetted Steel Turnings									
Description : <ul style="list-style-type: none"> Clean steel turnings, wrought iron borings, or cast iron borings, free of excessive oil, nonferrous metals, and scale. Compressed into a high-density briquette shape. 													
Typical Appearance						Typical Constituents							
						<ul style="list-style-type: none"> Steel turnings Cast iron borings 							
Sizing		Thickness (average)		3 - 4"		Typical Density				40 - 55			
		Diameter (average)		6 - 7"						(lbs / ft ³)			
Chemistry		C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn		
Maximum (wt%)				0.03	0.08		0.25	0.15	0.20	0.04	0.03		
Prohibitions		In addition to commonly prohibited materials (PUR-SS-001), may not contain the following: <ul style="list-style-type: none"> Excessive oil Excessive rust Dirt or scale 											
Allowances													
Additional Notes													

Material : Steel Scrap	Grade : Internal Re-melt Scrap	SDI Part #	N/A
Industry Id :	A.K.A. : Home Scrap, Tundish Skulls, Bar Crops, Pit Scrap		


Description :

- Bars or blooms of local origin cut into size appropriate for remelting. Tundish skulls and pit scrap broken down to usable dimensions. Material is color-coded to identify chemistry.

Typical Appearance




Pit Scrap



Home Scrap

Typical Constituents

- Caster head crops and tail crops
- Furnace and ladle slag
- Caster tundish skulls
- Scrapped blooms or bars
- Bar crops
- Etch lab and Met lab samples



Tundish Skull

Sizing	Thickness (average)		5'		Typical Density					80 - 100 (lbs / ft ³)	
	Length (maximum)										
Chemistry	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn	
Maximum (wt%)										0.04	

Prohibitions In addition to commonly prohibited materials (PUR-SS-001), may not contain the following:

Allowances



Additional Notes
Color Code System:
 Green: Plain Carbon Steel
 Yellow: Resulturized/Rephosphorized Steel/Rebar/Angle/High Copper
 Red: Chrome-Moly Alloy Steel
 Silver: High Chrome-Moly Alloy Steel
 Blue: Nickel-Chrome-Moly Alloy Steel






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Material : Steel Scrap		Grade : Gamma Shred			SDI Part # P0030310							
Industry Id : ISRI #'s: 210, 211, 212		A.K.A. : Auto Shredded, Fragmentized Scrap, Shredded										
Description : <ul style="list-style-type: none"> Homogeneous shredded steel scrap magnetically separated then subsequently analyzed by gamma excitation analysis and certified below 0.20 Cu, originating from automobiles, unprepared # 1 Heavy Melting Steel and # 2 Heavy Melting Steel, and miscellaneous sheet steel. 												
Typical Appearance												
												
Sizing	Thickness (minimum)		N/A			Typical Density				55 - 70 (lbs / ft ³)		
	Maximum		10" x 10" x 10"									
Chemistry	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn		
Maximum (wt%)			.04	.015		.20	.15	.15	.03	.015		
Prohibitions	In addition to commonly prohibited materials (PUR-SS-001), may not contain the following: <ul style="list-style-type: none"> Municipal Scrap Incinerator Scrap Lead Coated Steel Vitreous enameled materials Tin cans Excessive fluff Copper clad or plated steel 											
Allowances	<ul style="list-style-type: none"> Cast iron content not to exceed 5% by weight. Cast iron pieces may exceed 10", but must not exceed 16" 											
Additional Notes	<ul style="list-style-type: none"> Due to the nature of processing, this grade of scrap steel will contain small quantities of copper wiring and motor windings. Total copper content must not exceed 0.20% 											

Material : Steel Scrap Substitute		Grade : B-Scrap				SDI Part # P0190510						
Industry Id : N/A		A.K.A. : Ladle B-Scrap										
Description : The steel/slag mixture leftover after a ladle (EAF or LMF) tear out. Commonly found on the rim of a ladle. Material is crushed before being received.												
Typical Appearance				Typical Constituents								
				<ul style="list-style-type: none"> EAF or LMF ladle scrap 								
Sizing	Thickness (minimum)						Typical Density	200-300 lbs/ft3				
	Maximum			0.5" x 24"								
Chemistry	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn		
Maximum (wt%)		1.0	0.05	0.08		0.30		0.20				
Prohibitions	In addition to commonly prohibited materials (PUR-SS-001), may not contain the following: <ul style="list-style-type: none"> Dirt Fines Slag Debris Other material not identified as B Scrap 											
Allowances	Ladle skulls and/or lips not to exceed 20% by weight.											
Additional Notes												

Material : Iron / Steel Scrap		Grade : Beach Iron		SDI Part # P0151210			
Industry Id : N/A		A.K.A. : N/A					
Description: Blast Furnace Scrap / Pig Iron Scrap							
Typical Appearance 			Typical Constituents <ul style="list-style-type: none"> Broken up pieces of blast furnace iron 				
Sizing	Thickness (minimum)	1.0"		Typical Density	200-300 lbs/ft3		
	Maximum	24"					
No pieces larger than 1700 cu in (equivalent to 12" cube)							
Chemistry	Fe	C	Si	P	Cu	S	Slag/Sand/Dirt
Minimum	88	2.5					
Maximum		6	1.5	0.05	0.05	0.25	5%
Prohibitions	In addition to commonly prohibited materials (PUR-SS-001), may not contain the following:						
	<ul style="list-style-type: none"> Broken cast iron 						
Additional Notes							