



ArcelorMittal

ArcelorMittal Dofasco

Scrap Specifications

December 2010



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Scrap Specifications - Rejections

Scrap composition conformance is critical to ensuring that ArcelorMittal Dofasco maintains its reputation as a superior supplier of high quality flat rolled steels. Material that does not meet our design criteria will be rejected . Rejections may also occur as the result of identified processing deficiencies related to scrap. (i.e.: Mixed loads) Processing deficiencies may only become apparent after an intermediate component is further processed or the finished product is in use.

These requirements are detailed in our scrap specifications.

Scrap rejections can occur when the design criteria of each individual scrap type are not met. Scrap rejections could also occur at any time that the product is on ArcelorMittal Dofasco property. ArcelorMittal Dofasco personnel (scrap inspectors) react to a stringent set of guidelines, specifically designed to reinforce the acceptance of a quality product. Any product that does not meet this criteria, will be rejected and a non conformance report issued. Specific follow up on the non conformance coupled with the severity of the non conformance could result in the levy of a reloading/handling charge (\$400.00 fixed charge) and further action could be determined to be suspension or termination of said supplier to ArcelorMittal Dofasco.



Shredded Scrap

Specification

Magnetically separated fragmentized “clean, alloy free mild steel” scrap produced from unprepared #1 heavy melt and demolition steel scrap, car hulks, miscellaneous baling and sheet material. Consistent with past practices, shredder feedstock to contain only a minimal amount of white goods.

Shredded product must be free of mercury, **mercury switches**, closed containers of any sort including hydraulic cylinders, shock absorbers, closed pipes, electrical transformers and/or other components that are suspect of having contained PCB's and CFC's.

Shredded product to be free of:

1. Non ferrous metals
2. Non-metallic contamination (i.e. dirt, scale, wood, rubber, plastic, oil, etc.)
3. Electrical motors, armatures
4. Turnings, borings and municipal waste
5. Tin bearing scrap
6. Oil filters

- All suppliers of shredded material must register and participate in “Switch Out” . Switch Out is a national program dedicated to removing, collecting and managing automotive mercury switches found in convenience lighting and ABS sensors.

For more information please visit the following website: Switch Out: www.switchout.ca



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Shredded Scrap

Alloy	Spec
Cu	0.20 Max
Cr	0.20 Max
Ni	0.20 Max
Mo	0.05 Max
Sn	0.02 Max
P	0.04 Max
Mn	1.65 Max
Pb	0.02 Max
S	0.06 Max
C	1.1 Max
Si	0.35 Max

Sizing Spec	
Sizing	6" Max
Density	75 Lb/ft ³ min

Shredded Scrap



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Gamma Shred



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Specification

Description

same as regular shred except Cu content is guaranteed at .17%

Gamma Shred



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High Copper Shredded Scrap

Specification

Magnetically separated fragmentized “clean, alloy free mild steel” scrap produced from unprepared #1 heavy melt and demolition steel scrap, car hulks, miscellaneous baling and sheet material. Consistent with past practices, shredder feedstock to contain only a minimal amount of white goods.

Shredded product must be free of mercury, mercury switches, closed containers of any sort including hydraulic cylinders, shock absorbers, closed pipes, electrical transformers and/or other components that are suspect of having contained PCB's and CFC's.

Shredded product to be free of excessive non-ferrous metals

Shredded product to be free of:

1. Non-metallic contamination (i.e. dirt, scale, wood, rubber, plastic, oil, etc.)
2. Electrical motors, armatures, copper wire
3. Turnings, borings and municipal waste
4. Tin bearing scrap
5. Oil filters



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High Copper Shredded Scrap

Alloy	Spec
Cu	0.35 Max
Cr	0.20 Max
Ni	0.20 Max
Mo	0.05 Max
Sn	0.02 Max
P	0.04 Max
Mn	1.65 Max
Pb	0.02 Max
S	0.06 Max
C	1.1 Max
Si	0.35 Max

Sizing Spec	
Sizing	6" Max
Density	75 Lb/ft ³ min



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High Copper Shredded Scrap





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Baled Post Consumer Tin Cans

Specification

Description

Clean, hydraulically compacted, 100% post consumer steel tin cans (beverage and food)
Compressed bundles must retain their integrity when handled with a magnet or grapple

Material Composition

May contain empty aerosol cans void of product. May contain paint cans with their lids removed and no liquid paint present. May include spiral wound paper containers with steel bottoms. Minimum metallic content of 85%.

Must not contain:

1. Non - metallics (i.e. plastics, wood glass, municipal waste and other debris) and non-ferrous material.



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Baled Post Consumer Tin Cans

Alloy	Spec
Cu	0.1 Max
Cr	0.1 Max
Ni	0.1 Max
Mo	0.02 Max
Sn	0.3 Max
P	0.03 Max
S	0.05 Max

Sizing Spec	
Sizing	48"X36"x36" Max
Density	75 Lb/ft ³ min



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Baled Post Consumer Tin Cans





Tin Plate Bushelling

Specification

Description

Tin coated sheet steel scrap/clips generated from the manufacturing sector

Must not contain:

1. Paint cans or aerosol cans
2. Obsolete scrap of any kind i.e. rebar, automotive parts,
3. Steriles (i.e.. Dirt, wood, slag)
4. Excessive oils
5. Closed containers
6. Non-ferrous metals



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Tin Plate Bushelling

Alloy	Spec
Cu	0.1 Max
Cr	0.1 Max
Ni	0.1 Max
Mo	0.02 Max
Sn	0.3 Max
P	0.03 Max
S	0.05 Max

Sizing Spec	
Sizing	48"X24" Max
Density	50 Lb/ft ³ min

Tin Plate Bushelling



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Plate and Structural

Specification

Alloy free cut plate and structural shapes, obsolete and new. Material lies flat in load. May contain some heavy walled pipe – **any pipe with greater than 8" O.D. must be split.**

Material to be free of attachments.

Must not contain;

1. Closed containers
2. Non - ferrous metals
3. Steriles (i.e. dirt, snow, wood concrete etc)
4. Rebar
5. Vehicle body parts such as gears, gas tanks, axles, cam shafts, bearings, torque converters, cables, springs, transmissions, electrical panels, motors and motor blocks



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Plate and Structural

Alloy	Spec
Cu	0.20 Max
Cr	0.1 Max
Ni	0.1 Max
Mo	0.06 Max
P	0.04 Max
S	0.05 Max
Si	0.35 Max

	Sizing Spec
Sizing	48"X24" ¼ min – 4" thick max
Density	50 Lb/ft ³ min

Plate and Structural



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Heavy Melt

Specification

Clean, mild carbon steel scrap, obsolete and new.

Material Composition

May contain sheared or crimped auto/truck rims, Must have balancing lead weights removed

May contain heavy walled pipe – pipe with 8” O.D. and up must be split

Must not contain

1. Rebar
2. Vehicle body parts such as gears, gas tanks, axles, cam shafts, bearings, torque converters, cables, springs, transmissions, electrical panels, motors and motor blocks
3. Domestic appliances
4. Sealed containers
5. Free of steriles (i.e. dirt, snow, wood concrete etc)
6. Grease
7. Non-ferrous metals
8. Cast iron

Material to be free of attachments.



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Heavy Melt

Alloy	Spec
Cu	0.25 Max
Cr	0.15 Max
Ni	0.15 Max
Mo	0.06 Max
P	0.05 Max
S	0.05 Max
Si	0.20 max

	Sizing Spec
Sizing	48"X24" ¼ min – 4" thick max
Density	45 Lb/ft3 min

Heavy Melt



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Briquetted Turnings

Specification

Description

Hydraulically cold pressed. Blended product of clean steel turnings and borings. Strength of briquette should be sufficient such that the briquettes do not break during dumping or normal handling by magnet.

Must not contain:

1. Mill scale
2. Corroded stock, binders and oils
3. Non-ferrous

Metallic Yield is at a minimum of 88%.



Briquetted Turnings

Alloy	New
C	1.6 aim
Mn	0.42 aim
P	0.02 aim
S	0.03 aim
Si	0.78 aim
Cu	0.21 aim
Ni	0.03 aim
V	0.01 aim
Mo	0.12 aim
Co	<0.01 aim
Ti	<0.01 aim

	Sizing Spec
Sizing	Briquetted to 6" Max
Density	180 Lb/ft ³ min

Briquetted Turnings



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Dealer Bundles (#1)

Specification

Description

New and old steel sheet scrap, clippings or skeleton plate hydraulically compressed into a bundle. Galvanize steel scrap, tube and pipe is acceptable

May include hydraulically compressed mandrel wound bales

Must not contain

1. Painted material
2. Obsolete scrap i.e. rebar, automotive parts, fencing
3. Municipal scrap
4. No compressed containers i.e. drums
5. Steriles i.e.. Dirt, wood
6. Non-ferrous metals
7. No copper coated material
8. No tin bearing scrap



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Dealer Bundles (#1)

Alloy	Spec
Cu	0.1Max
Cr	0.1max
Ni	0.1 Max
Mo	0.06 max
P	0.03 Max
S	0.05 Max
Sn	0.01Max
Mn	1.5 max
Si	.5 Max

	Spec
Sizing	48"X36"X36" max
Density	100 Lb/ft3 min



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Dealer Bundles (#1)





1 1/2 Bundles

Specification

Description

New and old steel sheet scrap, clippings , steel racking , skeleton plate hydraulically compressed into a bundle.

Galvanize steel scrap, tube and pipe is acceptable

May include hydraulically compressed mandrel wound bales. painted material , minimal re-bar.

Must not contain

1. Obsolete scrap i.e., automotive parts, fencing, municipal scrap
2. No compressed containers (i.e. drums)
3. Steriles (i.e.. Dirt, wood)
4. Non-ferrous metals
5. No copper coated material
6. No tin bearing scrap



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1 1/2 Bundles

Alloy	Spec
Cu	0.25 Max
Cr	0.15 Max
Ni	0.15 Max
Mo	0.06 Max
P	0.05 Max
S	0.05 Max
Si	0.20 Max

	Spec
Sizing	48"X36"X36" max
Density	100 Lb/ft3 min



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1 1/2 Bundles





Industrial Bundles

Specification

Description

New production, low carbon steel sheet scrap, clippings, skeleton scrap or tube hydraulically compressed into a bundle

Must not contain

1. Painted material
2. Obsolete scrap i.e. rebar, automotive parts, fencing
3. Municipal scrap
4. No compressed containers i.e. drums
5. Steriles i.e.. Dirt, wood
6. Non-ferrous metals
7. No copper coated material
8. No tin bearing scrap



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Industrial Bundles

Alloy	Spec
Cu	0.1 Max
Cr	0.1 Max
Mn	1.5 Max
S	0.05 Max
Si	0.5 Max
Ni	0.1 Max
P	0.03 Max
Mo	0.03 Max
Sn	0.01 Max

	Spec
Sizing	3'X2'X2' max
Density	100 Lbs/ft3 min

Industrial Bundles



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Purchased Cold Iron

Specification

Cold Iron generated from identifiable source which is processed to the aimed physical requirements. May contain negligible amount of slag and fines that represents the normal generation from processing.

Quality control program to monitor and ensure compliance with accepted chemistries.

Must not contain excessive slag, fines.

Purchased Cold Iron



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Alloy	Spec
S	0.04 Max
P	0.05 Max
C	4.5 max
Si	1.0 Max
Iron (Fe)	90 Min
Other	Trace

	Spec
Sizing	18"X18"X6" max
Density	Not specified

Purchased Cold Iron



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Cast Iron Drums and Rotors (Auto Cast)



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Specification

Description

To exclusively include cast iron brake rotors and drums

Must not contain:

1. Oil and grease
2. Non-ferrous and non-metallic parts
3. Any electrical components
4. Torque converters, exhaust manifolds
5. Machine castings and engine blocks

Cast Iron Drums and Rotors (Auto Cast)



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Drums

Alloy	Spec
Cu	0.22 Aim
Cr	0.17 Aim
Mn	0.68 Aim
S	0.15 Aim
Si	2.23 Aim
Ni	0.01 Aim
P	0.035 Aim
Mo	0.02 Aim
C	3.38 Aim

	Spec
Sizing	Not to exceed 2' in any direction
Density	Not specified

Brake Rotors

Alloy	Spec
Cu	0.02 Aim
Cr	0.02 Aim
Mn	0.57 Aim
S	0.11 Aim
Si	2.0 Aim
Ni	0.01 Aim
P	.034 Aim
Mo	0.02 Aim
C	3.39 Aim

Cast Iron Drums and Rotors (Auto Cast)



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Pit Scrap

Specification

Description

Pit Scrap generated from identifiable source which is processed to the aimed physical requirements. May contain negligible amount of slag and fines that represents the normal generation from processing. Irregular shaped pieces of crushed and magnetized steel that has been separated from steelmaking slag.

Quality control program in place to determine metallic iron content by water displacement tests.

This program must also have a monthly test submission in place

Must not contain

1. Excessive slag
2. Fines

Pit Scrap



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Alloy	Spec
S	0.04 Max
P	0.05 max
Silica	1.0
Iron (Fe)	85 min
Other	Trace

	Spec
Sizing	18"X18"X6" Max
Density	Not specified

Pit Scrap



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Bushelling

Specification

Description

Clean, prompt “alloy free” industrial sheet steel scrap and clips, punchings. May include galvanize steel scrap.

Must not contain

1. Painted material
2. Obsolete scrap of any kind i.e. rebar, automotive parts, fencing
3. Steriles i.e.. Dirt, wood, slag
4. Excessive oils
5. Closed containers
6. Non-ferrous metals
7. No copper coated material
8. No tin bearing scrap
9. Screw stock, bolts and nuts
10. Flashings
11. Tubing

Bushelling



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Alloy	Spec
Cu	0.10 Max
Cr	0.1 Max
Ni	0.1Max
Mo	0.02 Max
Sn	0.01 max
P	0.03 Max
S	0.05 Max

	Spec
Sizing	60"X24" Max
Density	60 Lb/ft3 min

Bushelling



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Customer Scrap

Specification

Description

Clean, prompt “alloy free” production steel scrap sheet, mandrel coils, slitter coils and tube scrap generated from the manufacturing sector

100% Prompt scrap Material looks similar to ArcelorMittal Dofasco internally generated mill scrap

Slitter coils and mandrel wounds to be secured with a minimum of three iron bands

Must not contain

1. Painted material
2. Obsolete scrap of any kind i.e. rebar, automotive parts, fencing
3. Steriles i.e.. Dirt, wood, slag
4. Excessive oils
5. Closed containers
6. Non-ferrous metals
7. No copper coated material
8. No tin bearing scrap
9. Screw stock, bolts and nuts
10. Flashings

A limited number of mandrel coils (5%) mixed in loads will be accepted at Arcelormittal Dofasco, subject to scrap handling approval



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Customer Scrap

Alloy	Spec
Cu	0.10 Max
Cr	0.1 Max
Ni	0.1 Max
Mo	0.02 Max
Sn	0.01 Max
P	0.03 Max
S	0.05 Max

	Spec
Sizing	60"X24" Max in any dimension Tube scrap 4' max length
Density	50 Lb/ft ³ min



HBB (Hot Briquetted Borings)

Specification

Description

The hot briquetting process uses 95% cast iron borings and 5% steel turnings as feedstock and heats and bonds the iron particles with no binders and melts out the oils and moisture



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HBB (Hot Briquetted Borings)

Alloy	Spec
Fe	91% Aim
C	3.05 Aim
Mn	0.22 Aim
S	0.08 Aim
Si	1.9 Aim
Ni	0.05 Aim
Cr	0.1 Aim
Cu	0.25 Aim

	Spec
Sizing	Pillow briquettes Uniform Sizing 5.25"X2.5"X1.8" Weighing 3 lb each
Density	375 Lbs/ft ³ min



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HBB (Hot Briquetted Borings)





Tire Wire Bundles

Specification

Description

Tire wire with less than 3% rubber residue formed into a bale.
Mechanical process used to extract the wire from the car and truck tire



Tire Wire Bundles

Alloy	Spec
Cu	0.162
Cr	0.023
Mn	0.51
S	0.012
Si	0.203
Ni	0.014
P	0.008
Mo	0.003
C	0.96

	Spec
Sizing	Typical Bale size 8"X8"X12"
Density	80 Lbs/Ft3 min



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Tire Wire Bundles





Loose Turnings

Specification

Description

Clean loose steel turnings free of lumps, tangled or matted material from a known source.

Must not contain:

1. Contaminants such as non-ferrous metals
2. Scale, grinding dust
3. Oil
4. Heavily oxidized turnings
5. Borings



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Loose Turnings

Alloy	Spec
Cu	0.2
Cr	0.25
Sn	0.015
S	0.08
Ni	0.25
P	0.03
Mo	0.1

	Spec
Sizing	Stock
Density	30 Lbs/ft ³ min

Loose Turnings



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Municipal Scrap (Muni)

Specification

Description

Scrap derived from incinerator of a municipal waste stream, magnetically separated.

Muni must pass through Eddy current system to remove all non ferrous material

Screened or trommeled muni is not permitted

Must not contain:

1. Ash material
2. Medical wastes (i.e. syringes, etc)
3. Must not originate from a hazardous waste incinerator
4. Must not be screened or trommeled muni



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Municipal Scrap (Muni)

Alloy	Spec
Cu	.5
Cr	.20
Sn	.03
S	.04
Ni	.20
P	.04
Mo	.02

	Spec
Sizing	12" X 24"
Density	45 Lbs/ft ³ min

Municipal Scrap (Muni)



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Rebar



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Alloy	Spec
Cu	0.2
Cr	0.1
Sn	0.05
S	0.05
Ni	0.15
P	0.02
Mo	0.02

	Spec
Sizing	Loose Cut in 3' Lengths
	Bundled Cut in 3' Lengths



Specification

Description

All rebar scrap must be prepared in a fashion that insures efficient magnet handling and compact furnace charging. Shipments must not contain badly tangled material, or material that would tend to become badly tangled, during loading, in amounts that would appreciably increase material handling or furnace charging times (by comparison to average shipments of the same grade.) If the maximum piece size and minimum bulk density requirements given in Arcelormittal Dofasco's grade-by-grade Specifications are met, the scrap should be acceptable. However, the principles of efficient magnet handling and compact furnace charging override the specific size and density requirements given in the grade-by-grade specs.

Off-Spec rebar will not remain on ArcelorMittal property. ArcelorMittal Dofasco does not have the ability or the resources available to reload tangled rebar. Shipper will be responsible (at their costs) to reload material using their own equipment and resources.

Rebar



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Comments

- Any questions or comments regarding the content in this document are to be directed to:

ArcelorMittal Dofasco

Raw Materials

Sourcing Leader

Scrap

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