

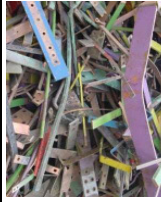








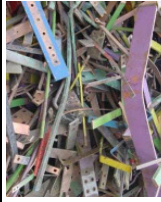


















Mechanical treatment of different categories of copper scrap with the appropriate equipment for the preliminary processing regarding recycling (Cu part 1)

Nomenclature	Post-consumer scrap (Old scrap)		
Nomenclature	Copper scrap in large pieces	Copper scrap in small pieces	Mixed copper scrap
Number of scrap category (ISRI scrap specification)	Candy	Dream	Dream
Description	Sheets, punch scraps, slide bar, wires, pipes	Sheets, rainwater gutters, water boilers, heaters	Sheets, pipes etc.
Cu content [%]	90 - 98	88 - 92	90 - 95
Common nomenclature	Cu Raff	Cu Raff	Cu Raff
Exaple of materials			
Preliminary processing	-	-	-
Main processing step	Cutting / Baling	Cutting / Baling	Cutting / Baling
Exemplary machines for the central processing step			
Machine for the central processing step	Baling press (cutting)	Baling press (cutting)	Baling press (cutting)
Subsequent treatment process	-	-	-
Representation of the (intermediate) product			
Intermediate product	Loose scrap / package	Package	Package



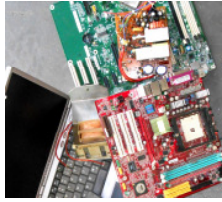





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Exaple of materials			
Preliminary processing	-	-	-
Main processing step	Cutting / Baling	Cutting / Baling	Cutting / Baling
Exemplary machines for the central processing step			
Machine for the central processing step	Baling press (cutting)	Baling press (cutting)	Baling press (cutting)
Subsequent treatment process	-	-	-
Representation of the (intermediate) product			
Intermediate product	Loose scrap / package	Package	Package










Mechanical treatment of different categories of copper scrap with the appropriate equipment for the preliminary processing regarding recycling (Cu part 1)

Nomenclature	Cable scrap				
Nomenclature	Dismantled cable	Isolated cable ( $\leq 75$ mm <sup>2</sup> )	Isolated cable ( $\geq 90$ mm <sup>2</sup> )	Copper-steel cable	Copper-lead cable
Number of scrap category (ISRI scrap specification)	Barely; Berry	Druid, Droid	Druid, Droid	-	-
Description	Dismantled clean copper cable (without any residue from burning, no fat, no paint, no tin and no cable clips)	Isolated cable (with complete cable coating); including enamelled wire	Isolated cable (with complete cable coating)	Copper cable with steel casing and/or steel core	Copper cable with lead casing
Cu content [%]	> 99	> 99			
Common nomenclature	Cu Millberry	Cu Millberry	Cu Raff	Cu Raff	Cu Raff
Exaple of materials	<p><u>Cu granules IA (very fine)</u>: Cu content 99.9 %, grain size max. 0.5 mm; <u>Cu granules IA (fine)</u>: Cu content 99.9 %, grain size max. 1.5 mm; <u>Cu granules IA (coarse)</u>: Cu content 99.9 %, grain size &gt; 1.5 mm; <u>Cu granules IB</u>: Cu content &gt; 99.0 %, grain size by appointment; <u>Cu granules II</u>: Cu content &gt; 98.5 %, other metals according to customer-specific agreement, with limited contents of plastics or grease, grain size by appointment; <u>Cu-Raff granules</u>: Cu content &gt; 90 %, other metals according to customer-specific agreement, with limited contents of plastics or grease, grain size by agreement; <u>Al-granular</u>: Al content &gt; 99.5 %, grain size by agreement; <u>Al hack wire</u>: Al content &gt; 95 %, Al wire not burned and not alloyed, other metals according to customer-specific agreement, with limited contents of plastics or grease, grain size by agreement; <u>Al-Cu granules</u>: Al/Cu content &gt; 95 %, custom specified composition (oriented on application)</p>				
Preliminary processing	-	Milling, grading, sorting	Milling, grading, sorting	Milling, grading, sorting	Milling, grading, sorting
Main processing step	Briquetting / Baling	Briquetting	Briquetting	Briquetting	Briquetting
Exemplary machines for the central processing step					
Machine for the central processing step	Briquetting press / Baling press	Briquetting press	Briquetting press	Briquetting press	Briquetting press
Subsequent treatment process	-	-	-	-	-
Representation of the (intermediate) product					
Intermediate product	Briquette / Package	Briquette	Briquette	Briquette	Briquette










Mechanical treatment of different categories of copper scrap with the appropriate equipment for the preliminary processing regarding recycling (Cu part 1)

Nomenclature	Cable scrap	Shredded scrap	WEEE ???
Nomenclature	Copper granules	Shredded scrap for further processing (shredder light fraction, etc.)	Waste electrical and electronic equipment ???
Number of scrap category (ISRI scrap specification)	Clove, Cocoa	EM3	EM3
Description	Crushed and dismantled cable	Scrap from shredders, ELV recycling, WEEE treatment	-
Cu content [%]	90 - 98	30 - 80	15 - 20
Common nomenclature	Cu Millberry	-	-
Exaple of materials			
Preliminary processing	-	Milling, grading, sorting	Milling, grading, sorting
Main processing step	Briquetting	Briquetting	Briquetting / Baling
Exemplary machines for the central processing step			
Machine for the central processing step	Briquetting press	Briquetting press	Briquetting press / Baling press
Subsequent treatment process	-	-	-
Representation of the (intermediate) product			
Intermediate product	Briquette	Briquette	Briquette / Package










Mechanical treatment of different categories of copper scrap with the appropriate equipment for the preliminary processing regarding recycling (Cu part 1)

Nomenclature	Copper chips	Iron containing copper scrap (lumpy or crushed)	Tin coated copper scrap	Copper sludge (mixed and pure)
Nomenclature	Chips	Copper from taps, stators and rotors	Cable clips, cable bars (continuous tin coated; without solder)	Origins from galvanization
Number of scrap category (ISRI scrap specification)	-	-	-	-
Description	Copper chips from machining	ELV recycling, WEEE	-	-
Cu content [%]	> 95	10 - 20	-	2 - 40
Common nomenclature	-	-	-	-
Exaple of materials				
Preliminary processing	Milling, grading, sorting	Milling, grading, sorting	-	-
Main processing step	Briquetting	Baling		Briquetting
Exemplary machines for the central processing step				
Machine for the central processing step	Briquetting press	Baling press (cutting)	Baling press (cutting)	Briquetting press
Subsequent treatment process	-	-	-	-
Representation of the (intermediate) product				
Intermediate product	Briquette	Package	Package	Briquette

Mechanical treatment of different categories of copper scrap with the appropriate equipment for the preliminary processing regarding recycling (Cu part 2)

	Brass (Cu-Zn alloys)		
	Brass scrap with 63 % Cu		Brass scrap with 58 % Cu
<b>Nomenclature</b>	Brass 63 wastes / Sheets	Brass 63 wastes tin coated	Brass 58 wastes / Sheets
<b>Number of scrap category (ISRI scrap specification)</b>	Honey, Ivory, Label, Noble	Honey, Ivory,	Honey, Ivory, Label, Noble
<b>Description</b>	Cold forming and thermoforming brasses		
<b>Cu content [%]</b>	63	63	58
<b>Exaple of materials</b>			
<b>Preliminary processing</b>	Milling, grading, sorting	Milling, grading, sorting	Milling, grading, sorting
<b>Main processing step</b>	Cutting / Baling	Cutting / Baling	Cutting / Baling
<b>Exemplary machines for the central processing step</b>			
<b>Machine for the central processing step</b>	Baling press (cutting)	Baling press (cutting)	Baling press (cutting)
<b>Subsequent treatment process</b>	-	-	-
<b>Representation of the (intermediate) product</b>			
<b>Intermediate product</b>	Package	Package	Package

Mechanical treatment of different categories of copper scrap with the appropriate equipment for the preliminary processing regarding recycling (Cu part 2)








	Brass (Cu-Zn alloys)				
	Brass chips		Tabs	Wires	Residues
<b>Nomenclature</b>	Brass 58 chips	Mixed brass chips / Special brass chips	Heavy brass scrap / Ms tabs	Brass hair wire	Brass -slags, -dross and -ashes
<b>Number of scrap category (ISRI scrap specification)</b>	Night, Nomad	Niece, Nomad	-	-	-
<b>Description</b>	Machining brass (Cu with 35-43 % Zn and Pb)		Preliminary processed for smelting	-	-
<b>Cu content [%]</b>	58	-	-	-	-
<b>Exaple of materials</b>					-
<b>Preliminary processing</b>	Milling, grading, sorting	Milling, grading, sorting	Milling, grading, sorting	Milling, grading, sorting	Milling, grading, sorting
<b>Main processing step</b>	Briquetting	Briquetting	Baling	Baling	Briquetting
<b>Exemplary machines for the central processing step</b>					
<b>Machine for the central processing step</b>	Briquetting press	Briquetting press	Baling press (cutting)	Baling press (cutting)	Briquetting press
<b>Subsequent treatment process</b>	-	-	-	-	-
<b>Representation of the (intermediate) product</b>					
<b>Intermediate product</b>	Briquette	Briquette	Package	Package	Briquette

Mechanical treatment of different categories of copper scrap with the appropriate equipment for the preliminary processing regarding recycling (Cu part 2)

	Red brass (Cu-Sn-Zn alloys)			
	Red brass scrap	Red brass chips		Residues
<b>Nomenclature</b>	Red brass-brass wastes	Red brass chips	Red brass-brass chips	Red brass -slags, -dross and -ashes
<b>Number of scrap category (ISRI scrap specification)</b>	Ebony, Grape	Enerv, Erin	Elias, Erin	-
<b>Description</b>	Mixed red brass scrap (alloys of Cu-Sn-Zn)	-	-	-
<b>Cu content [%]</b>	-	-	-	-
<b>Exaple of materials</b>				-
<b>Preliminary processing</b>	Milling, grading, sorting	Milling, grading, sorting	Milling, grading, sorting	Milling, grading, sorting
<b>Main processing step</b>	Baling	Briquetting	Briquetting	Briquetting
<b>Exemplary machines for the central processing step</b>				
<b>Machine for the central processing step</b>	Baling press (cutting)	Briquetting press	Briquetting press	Briquetting press
<b>Subsequent treatment process</b>	-	-	-	-
<b>Representation of the (intermediate) product</b>				
<b>Intermediate product</b>	Package	Briquette	Briquette	Briquette



Mechanical treatment of different categories of copper scrap with the appropriate equipment for the preliminary processing regarding recycling (Cu part 2)

	Rolling bronze		
	Rolling bronze scrap	Rolling bronze chips	Rolling bronze chips (tin coated)
<b>Nomenclature</b>	Wastes	Chips	Wastes (tin coated)
<b>Number of scrap category (ISRI scrap specification)</b>	Eland; Parch	Elias	Eland, Parch
<b>Description</b>	-	-	-
<b>Cu content [%]</b>	-	-	-
<b>Exaple of materials</b>	-		-
<b>Preliminary processing</b>	Milling, grading, sorting	Milling, grading, sorting	Milling, grading, sorting
<b>Main processing step</b>	Baling	Briquetting	Baling
<b>Exemplary machines for the central processing step</b>			
<b>Machine for the central processing step</b>	Baling press (cutting)	Briquetting press	Baling press (cutting)
<b>Subsequent treatment process</b>	-	-	-
<b>Representation of the (intermediate) product</b>			
<b>Intermediate product</b>	Package	Briquette	Package