

	COMPANY STANDARD	ZN-CMCP-Z-1/2024
	PROCESSED STEEL SCRAP	Replaces: ZN-CMCP-Z-1/2021

The provisions of this standard refer to processed unalloyed steel scrap used as the furnace charge material in the Melt Shop of CMC Poland sp. z o.o.

This standard **ZN-CMCP-Z-1/2024** was elaborated by the standardization committee and replaces the standard **ZN-CMCP-Z-1/2021**.

(Valid from 01.06.2024)

Established by the
Standardization
Committee
of CMC Poland sp. z o.o. :

Committee Chairman:

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Dariusz Mendak

Confirmed:

**The President of
the Board of
CMC Poland sp. z o.o.**

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Wojciech Więclawik

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1. Introduction.

1.1. Subject of this standard

This standard specifies the technical requirements for individual, defined categories and classes of the processed unalloyed steel scrap and cast-iron scrap.

1.2. Scope of application.

This standard shall be used for ordering, purchasing, deliveries and quality acceptance of processed unalloyed steel scrap and cast-iron scrap intended for use as charge material in the Melt Shop of CMC Poland sp. z o.o.

1.3. Terms and definitions.

1.3.1. Steel scrap – post-production steel materials generated during the process of manufacturing metal products and end-of-life steel products in types and characteristics defined in the technical specifications of relevant scrap metal classes indicated in the Company Standards (CS).

1.3.2. Processed steel scrap – steel scrap prepared in such a manner that its form, dimensions and bulk density allow for its use as charge material in the steelmaking process, provided that:

- The maximum dimensions of a single piece shall not exceed 1,5 m x 0,5 m x 0,5 m,
- The maximum dimensions of a package shall not exceed 08 m x 0,5 m x 0,5 m,
- The maximum weight of a single piece of steel scrap shall not exceed 300kg, except where different parameters are specified for individual scrap metal classes.

1.3.3. Processed unalloyed steel scrap – scrap that does not contain any alloying additives or contains additives in amounts below the following limit values:

V – 0,10%	Co – 0,30%	Mo – 0,10%
Ni – 0,30%	Cu – 0,40%	Cr – 0,30%
W – 0,30%	Mn – 1,65%	Si – 0,60%

1.3.4. Cast iron scrap – post-production and end-of-life cast iron waste generated mainly from grey cast iron, both plain (uncoated) and enamel-coated, typically in the form of non-load-bearing castings such as radiators, bathtubs, washbasins, furnace parts (grates, doors), as well as machine components and automotive parts, including ingot molds, engine cylinders and pistons, and also ductile (nodular) cast iron in the form of automotive components (camshafts, crankshafts, steering system components), gears, machine tool spindles, as well as sanitary fittings and components of building installations (sanitary, sewage and water supply systems), furnace parts, radiators, sewer pipes and household items; the chemical composition of individual items shall fall within the specified limit values:

C 2,7-3,6%	Si 1-3%	Mn 0,5-1,5%	P 0,20-1,2%	S 0,04-0,15
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2. Classification and designation.

2.1. Scrap metal categories.

The classification into scrap categories is based on the criteria of origin, scrap processing technologies applied and technological assumptions resulting from the steel production process.

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2.2. Scrap metal classes.

Scrap metal classes are defined based on physical form, bulk density, allowable impurities and required content of the accompanying elements.

2.3. The categories and classes of processed unalloyed steel scrap and cast-iron scrap are presented in Table 1 and Table 2.

3. Requirements.

3.1. All scrap metal classes must be free from hazardous materials.

3.1.1. Hazardous materials shall be understood as any substances or articles that may pose a risk to health, safety, property, or the environment, including hazardous materials referred to in the Regulation of the Ministry of Entrepreneurship and on occupational health and safety in elimination of hazardous items, including explosives, from scrap metal. Such materials, due to their properties (chemical, physical, or biological) may have the following characteristics or take the form of:

- flammable or explosive materials, ammunition and bullets (in whole or in parts, or solely ammunition waste),
- pressurised, closed or insufficiently open containers of any origin; during the winter season, also tanks and containers filled with water or ice that may cause explosions,
- radioactive materials in sealed containers, even where no significant external radioactivity is detected due to protective sheath or placement in the delivered scrap metal batch,
- materials emitting hazardous radiation, in particular materials, whose radioactivity exceeds the natural background radiation level for CMC Poland sp. z o.o.,
- materials containing or emitting substances hazardous to natural environment or steel production technologies,
- materials that may have irritant, corrosive, toxic or carcinogenic effects.

3.1.2 Opening of containers shall be considered insufficient if they are not equipped with at least two openings with minimum dimensions of 40 x 40 mm or a diameter of 40 mm located in a manner allowing for an unequivocal determination that the container is open and free of any undesirable contents. Gas cylinders or containers previously used for liquids, hydraulic cylinders or central heating boilers must be cut into at least two parts.

3.2. Additionally, all scrap metal classes must be free from:

- Waste in the form of complete or incomplete used electric and electronic equipment and components coming from waste equipment (scrap metal generated after the dismantling of used electric and electronic equipment and transferred for further recycling or recovery by authorized entities shall be allowed);
- All types of hazardous waste as defined under the provisions of Waste Act, such as:
 - ✓ waste in the form of packaging formerly containing hazardous substances bearing hazard markings (pictograms), including barrels, containers, tins or packaging without pictograms but indicating potential contact with hazardous materials/substances,
 - ✓ oil filters,
 - ✓ batteries,
 - ✓ capacitors,
 - ✓ accumulators.

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- Food and drinks packaging i.e. cans, open-work containers and other tin-plated materials (excluding class HZ-E46);
- Uniform elements made of steel or cast iron, exclusive of elements approved for mechanical or manual processing as specified in the individual classes of unprocessed scrap metal;
- Entangled elements in the form of rods, wires, including barbed wire, wrapping wire, welding rods, fencing mesh;
- Ropes and cables.

3.3. Contamination.

3.3.1 Scrap metal of each class must be free from non-metallic materials such as soil, insulation materials or iron oxides in any form except for a limited amount of surface rust resulting from outdoor storage or preparation in normal atmospheric conditions.

3.3.2. Scrap metal of each class must be free from flammable non-metallic materials and non-conductive materials such as rubber, concrete and concrete-containing elements, ceramics, plastics, textiles, wood, oils, greases, sulfur, and chemical and organic substances, etc.

3.3.3. Scrap metal of each class must be free from waste or by-products generated in steelmaking processes, heating, grinding, sawing, blowpipe welding, and oxy-fuel cutting, such as mill scale, slag, filter dust, grinding dust etc.

3.4. Content of metallic elements.

3.4.1. Copper.

Scrap metal of each class must be free from metallic copper, electric motors, windings, wires and cables, copper-clad sheets and components, bearing sleeves and radiators. Scrap metal of each class must also be free from materials with increased copper content, including, among others, reinforcement bars and ordinary quality steel rods, which should be grouped into classes with a higher content of accompanying elements.

3.4.2. Tin.

Scrap metal of each class must be free from tin in any form, in particular items such as cans, tin-coated materials, bronze components, rings, bearing shells, etc.

3.4.3. Lead.

Scrap metal of each class must be free from lead in any form, in particular, it must not contain batteries, balancing weights, lead sheets, cable terminals, bearing shells, etc.

3.4.4. Chrome, Nickel, Molybdenum,

Scrap metal of each class must be free from items made of alloy steel and stainless steel, as well as from mechanical components (which may contain such elements), such as engines, gearboxes, axles, gears, tools, dies, etc.

3.5. Chemical composition.

3.5.1. Table 1 and 2 specify the required content of accompanying elements for individual classes of processed unalloyed steel scrap and cast-iron scrap.

3.5.2. If, in scrap metal deliveries, the content of accompanying elements falls outside the chemical composition limits specified in Tables no. 1 and 2 for the respective classes, such deliveries may be accepted subject to a prior agreement between the Supplier and CMC Poland sp. z o.o.

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3.5.3. For deliveries of post-production metal scrap with a low content of accompanying elements, a current written confirmation of chemical composition is required.

4. Acceptance conditions.

4.1. Detailed terms and conditions for acceptance of processed steel scrap deliveries are regulated by commercial contracts and order terms and conditions based on the Company Standard.

4.2. The identification in a delivery of materials referred to in point 3 shall constitute the basis for refusal to accept all or any part of the delivery not meeting the requirements of this Standard, or for re-dispatching the delivery in whole or in part, and for the imposition of contractual penalties and recovery of associated costs.

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COMPANY STANDARD_PROCESSED STEEL SCRAP
TABLE 1_CLASS LIST_ END-OF-LIFE SCRAP:

Scrap Class	Characteristics	Dimensions max. [m]	Thickness [mm]	Min. bulk density [t/m³]	Maximum content of accompanying elements [%]			Comments/ Remarks
					Cu	Sn	Cr+Ni+Mo	
HZ-E3	Steel scrap, piece-type, structural and railway scrap in the form of rails, switches, axles, wheels, and accessories; prepared in a manner enabling direct charging; it may contain pipes and closed profiles; It is not permitted to accept: scrap in the form of waste generated from dismantling of end-of-life vehicles whether whole or in parts, as well as scrap generated from dismantling of waste electrical and electronic equipment, transferred for further recycling or recovery processes to authorized entities; The scrap must be free from reinforcing steel, bars and machine parts.	1,0x0,5x0,5	≥6	0,7	0,25	0,01	0,25	Single piece weight <300kg

COMPANY STANDARD_PROCESSED STEEL SCRAP TABLE 1_CLASS LIST_ POST-PRODUCTION SCRAP (WITH A LOW CONTENT OF ACCOMPANYING ELEMENTS):

Scrap Class	Characteristics	Dimensions max. [m]	Thickness [mm]	Min. Bulk density [t/m³]	Maximum content of accompanying elements [%]			Comments/ Remarks
					Cu	Sn	Sr+Ni+Mo	
HZ-E8	Post-production steel scrap, homogeneous, prepared in a manner enabling direct charging; It is not permitted to accept: - loose straps to avoid unloading problems;	1,5x0,5x0,5	<3	0,5	0,3			Cu max. 0,15%

Scrap Class	Characteristics	Dimensions max. [m]	Thickness [mm]	Min. Bulk density [t/m³]	Maximum content of accompanying elements [%] Cu Sn Sr+Ni+Mo	Comments/Remarks
	- paint coatings; - end-of-life and post-production steel packaging waste; It is permitted to accept: protective coatings - provided that their chemical composition does not affect the content of accompanying elements permitted hereunder.					
HZ-E6	Post-production steel scrap, homogeneous, corresponding in the form to class HZ-E8, compacted into bales, prepared in a manner enabling direct charging. It is not permitted to accept: - paint coatings; - end-of-life and post-production steel packaging waste; It is permitted to accept: Protective coatings - provided that their chemical composition does not have affect the content of accompanying elements permitted hereunder.	0,8x0,5x0,5		0,7	0,3	Cu max. 0,15%
HZ-E2	Assorted, post-production steel scrap, prepared in a manner enabling direct charging. It is not permitted to accept: - paint coatings; - end-of-life and post-production steel packaging waste - bars and wires. It is permitted to accept: waste in the form of sheet metal, open-work items; protective coatings, provided that their chemical composition does not affect the content of accompanying elements permitted hereunder;	1,5x0,5x0,5	≥3	0,6	0,3	Cu max. 0,15%.

Scrap Class	Characteristics	Dimensions max. [m]	Thickness [mm]	Min. Bulk density [t/m³]	Maximum content of accompanying elements [%] Cu Sn Sr+Ni+Mo	Comments/ Remarks

COMPANY STANDARD_PROCESSED STEEL SCRAP TABLE 1_CLASS LIST_SHREDDED SCRAP:

Scrap Class	Characteristics	Dimensions max. [m]	Thickness [mm]	Min. Bulk density [t/m³]	Maximum content of accompanying elements [%] Cu Sn Cr+Ni+Mo			Comments/ Remarks
HZ-E42	Shredded steel scrap, fragmented into pieces not exceeding 200 mm in size, prepared in a manner enabling direct charging. It is not permitted to accept: - excessive moisture, - steel /iron cast scrap from furnace ashes, - food packaging (in particular tinplate cans), - loose pieces of cast iron - metallic copper.	0,2 m	n/a	0,7	0,4	0,02	n/a	

COMPANY STANDARD_PROCESSED STEEL SCRAP TABLE 1_CLASS LIST_STEEL SHAVINGS:

Scrap Class	Characteristics	Dimensions max. [m]	Thickness [mm]	Min. Bulk density [t/m³]	Maximum content of accompanying elements [%] Cu Sn Cr+Ni+Mo			Comments/ Remarks
HZ-E5H	Scrap consisting of carbon steel shavings, free from free-cutting steel shavings, prepared in a manner enabling direct charging;	n/a	n/a	0,5	0,4	0,03	1,0	Maximum content of:

Scrap Class	Characteristics	Dimensions max. [m]	Thickness [mm]	Min. Bulk density [t/m³]	Maximum content of accompanying elements [%]			Comments/ Remarks
					Cu	Sn	Cr+Ni+Mo	
	It is not permitted to accept contaminants such as: - non-ferrous metals, - mill scale, - grinding dust, - strongly oxidized shavings and chemical substances.							S ≤ 0,1% C ≤ 2%
HZ-E5M	Scrap consisting of free-cutting steel shavings, prepared in a manner enabling direct charging; It is not permitted to accept contaminants such as: - non-ferrous metals, - mill scale, - grinding dust, - strongly oxidized shavings and chemical substances	n/a	n/a	0,5	0,4	0,03	1,0	Maximum content of: S ≤ 0,4%

COMPANY STANDARD_PROCESSED STEEL SCRAP TABLE 1_CLASS LIST_SCRAP WITH A HIGH LEVEL OF ACCOMPANYING ELEMENTS:

Scrap Class	Characteristics	Dimensions max. [m]	Thickness [mm]	Min. Bulk density [t/m³]	Maximum content of accompanying elements [%]			Comments/ Remarks
					Cu	Sn	Cr+Ni+Mo	
HZ-EHRM	Steel scrap, end-of-life and post-production elements, machine parts, reinforcement rods and rods of ordinary quality; It is permitted to accept:	1,5x0,5x0,5	≥ 3	0,6	0,4	0,03	1,0	Single piece weight <300kg

Scrap Class	Characteristics	Dimensions max. [m]	Thickness [mm]	Min. Bulk density [t/m³]	Maximum content of accompanying elements [%]			Comments/ Remarks
					Cu	Sn	Cr+Ni+Mo	
	pieces of steel castings and housings of mechanical components; pipes and closed profiles as well as suspension components and rims from vehicles. It must be free from concrete, other construction materials. It is not permitted to accept: - scrap in the form of waste generated from the dismantling of end-of-life vehicles in whole, - scrap generated from the dismantling of waste electrical and electronic equipment, transferred for further recycling or recovery processes to authorized entities, - complete railway wheels and complete truck axles.							
HZ-EP	Compacted end-of-life scrap metal; It is permitted to accept: baled wires, steel straps, wire ropes and cables, wire coils prepared in a manner enabling direct charging and secured against uncoiling and entanglement. It is not permitted to accept: - scrap in the form of waste generated from the dismantling of end-of-life vehicles, in whole or in part - scrap generated from the dismantling of waste electrical and electronic equipment, transferred for further recycling or recovery processes to authorized entities, - Scrap in the form of end-of-life and post-production steel packaging waste	0,8x0,5x0,5	-	0,5	0,4	0,03	1,0	
HZ-E46	Shredded steel scrap constituting waste generated from mechanical scrap processing, waste sorting or burning. The scrap shall be subject to magnetic separation and shredded into pieces not exceeding 200 mm in size.	max 0,2 m	n/a	0,6	0,5	0,07	n/a	Subject to recycling process or recovery and delivered

Scrap Class	Characteristics	Dimensions max. [m]	Thickness [mm]	Min. Bulk density [t/m³]	Maximum content of accompanying elements [%]			Comments/ Remarks
					Cu	Sn	Cr+Ni+Mo	
	It is permitted to accept: shredded waste generated from food and drink packaging. It is not permitted to accept: excessive moisture, rust and other non-metallic contaminants.							directly by authorized entities.

COMPANY STANDARD_CHARGED SCRAP TABLE 1_CLASS LIST_IRON CAST SCRAP:

Scrap Class	Characteristics	Dimensions max. [m]	Thickness [mm]	Min. Bulk density [t/m³]	Maximum content of accompanying elements [%]			Comments/ Remarks
					Cu	Sn	Sr+Ni+Mo	
HZ-E3Ž	Iron cast scrap prepared in a manner enabling direct charging. It is permitted to accept: machine components.	1,0x0,5x0,5m	n/a	0,65				Maximum content of P - 1% Single piece weight <200 kg
HZ-E5HŽ	Scrap consisting of iron cast shavings prepared in a manner enabling direct charging. It is not permitted to accept: - free-cutting steel shavings, - grinded shavings, - any contaminants, such as:	n/a	n/a	0,5				Maximum content of S - 0,1% Maximum content of P – 1%

	- non-ferrous metals, - mill scale, - grinding dust, - strongly oxidized shavings, - chemicals.							
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COMPANY STANDRAD_PROCESSED STEEL SCRAP TABLE 1_CLASS LIST_STEEL SCRAP:

Scrap Class	Characteristics	Dimensions max. [m]	Thickness [mm]	Min. Bulk density [t/m³]	Maximum content of accompanying elements [%]			Comments/Remarks
					Cu	Sn	Cr+Ni+Mo	
HZ-EN	Steel scrap generated from the reclassification of processed scrap that does not meet the Company Standard in terms of dimensions.	n/a	n/a	n/a				

COMPANY STANDARD_PROCESSED STEEL SCRAP TABLE 2_CLASS LIST_STEEL SCRAP_MESH IMPORT:

Scrap class	Characteristics	Maximum Dimensions [m]	Thickness [mm]	Stowage factor [m³/t]	Max. content of accompanying elements [%]			Comments/Remarks
					Cu	Sn	Cr+Ni+Mo	
HMS1	Mixed end-of-life and post-production scrap metal, prepared in a manner allowing for direct loading onto the means of transport and enabling its direct use as furnace charge scrap metal in a mill furnace. Scrap metal may be cut using saws or shears, or compacted, excluding scrap metal in bales. It is permitted to accept: pipes, closed profiles, reinforcement bars and bars of standard quality, sheet metals, open-work items, flat bars and other steel construction elements, machine parts, cases of mechanical elements, pieces of steel castings. Not permitted: steel cast and iron cast shavings, tangled wires and rods, whole counterweights or in parts; steel, post-production or end-of-life- packaging waste.	1,5x0,5x0,5	≥6	1,75	0,4	0,03	1,0	Iron cast elements in the form of engine blocks, rotors, suspension elements or machine parts cannot constitute more than 1% of whole mass of delivered scrap. The maximum size of piece of cast iron scrap cannot exceed 200kg.

Scrap class	Characteristics	Maximum Dimensions [m]	Thickness [mm]	Stowage factor [m³/t]	Max. content of accompanying elements [%]			Comments/Remarks
					Cu	Sn	Cr+Ni+Mo	
HMS2	Light end-of-life and mixed post-production scrap metal, prepared in a manner allowing for its direct loading onto the means of transport and enabling its direct use as furnace charge scrap in a mill furnace. Scrap may be cut using saws or shears, or compacted. Not permitted: scrap in the form of packages or bales, steel and cast-iron shavings, tangled wires and rods, whole counterweights or in parts, steel end-of-life and post-production packaging waste. It is permitted to accept: scrap metal in the form of waste generated from dismantling end-of-life vehicles and waste generated from the dismantling of electrical and electronic equipment free from non-metallic elements, transferred for further recycling or recovery processes to authorized entities.	1,5x0,5x0,5	≥3	1,75	0,4	0,03	1,0	Iron cast elements in the form of engine blocks or their parts, rotors, suspension elements or machine parts cannot constitute more than 1% of whole mass of delivered scrap metal; Up to 10% of the scrap metal mass may consist of pieces with a thickness below the nominal value specified for this class, including non-metallic contaminants, in particular the elements described in point 3 of the Company Standard. The maximum weight of a single piece of cast iron scrap shall not exceed 200 kg.