
	<b>FACTORY STANDARD</b>	<b>ZN-CMCP-Z-1/2021</b>	Strona
	<b>PROCESSED STEEL SCRAP</b>	Replaces: ZN-HZ-Z-3/2003	

**The provisions of this standard refer to processed non-alloy steel scrap used as the furnace charge material in CMC Poland sp. Z o.o. Melt Shop**

This standard **ZN-CMCP-Z-1/2021** was elaborated by standardization committee and it replaces the standard **ZN-HZ-Z-3/2003** and has been in force since 01.01.2021

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## 1. Introduction.

### 1.1. The subject of the norm

The subject of hereby norm is technical requirements for particular, defined categories and classes of the non-alloy processed steel scrap and cast-iron scrap.

### 1.2. Scope of application.

This norm is to be used for ordering and purchasing and deliveries and quality acceptance of non-alloy processed scrap and cast iron scrap used as a charge material in CMC Poland Sp. z o.o Melt Shop.

### 1.3. Terms and definitions.

1.3.1. Steel scrap – steel waste, post-production and post-amortization waste, subjected to technical treatment process involving separation from the whole waste only this part which fulfills the requirements determined in technical specifications of the relevant scrap classes in a reference to the desired content of accompanying elements.

Technical processing should be understood as the waste processing by manual or automatic sorting, shredding, separating, cutting, condensing (packaging, baling) allowing to achieve appropriate straw mass and size of a single piece.

1.3.2. Steel processed scrap – steel scrap prepared in such way that its shape, dimension, bulk density allow for its use as a charge material in steelmaking process, however:


- maximum dimensions of a single piece cannot exceed 1,5mx0,5mx0,5m,
- maximum dimensions of a package cannot exceed 08mx0,5mx0,5m,
- maximum weight of a single piece of steel scrap cannot exceed 300kg, if the specification of particular classes does not allow different parameters.

1.3.3. Non-alloy processed steel scrap – scrap which does not contain any alloy additions or containing it in the quantities lower than below:

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 post-amortization cast iron waste, originating mostly from gray iron, not covered or covered with enamel, usually in the form of castings that do not transfer loads, such as radiators, bathtubs, washbasins, furnace parts (grates, doors), as well as machine parts, car parts – casting mould, automotive cylinders, presses, as well as ductile cast iron in the form of automotive parts (camshafts, crankshafts, steering system elements), gears, machine tool spindles, as well as parts of fittings and parts of construction installations: sanitary, sewage and water supply, parts of furnaces, heaters, sewer pipes and households items. The chemical composition of individual elements should be within the limits of the given 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. Division and denotation.

### 2.1. Scrap metal categories.

The division into scrap metal was made in accordance to the origin and used technologies in processing of scrap metal.

### 2.2. Scrap metal's classes.

Scrap metal's classes was defined due to physical form, bulk density, admissible pollution and desired content of accompanying elements.

2.3. Categories and classes of the steel non-alloy processed scrap and cast iron scrap was placed in the table 1 and table 2.

## 3. Requirements.

### 3.1. All scrap metal classes must be free of hazardous materials.

3.1.1. Hazardous materials include all substances and articles which can pose a risk to health, safety, property and environment, including hazardous materials mentioned in regulation of the Ministry of Entrepreneurship and Technology on occupational health and safety at eliminating hazardous subjects, including explosives from scrap metal. These materials, due to their properties (chemical, physical or biological) may have features or form:

- a) flammable and explosive materials, ammunition and bullets (whole or in parts or ammunition waste)
- b) tanks under pressure, closed or not enough opened whatsoever origin; during winter period, tanks and vessels filled with water or ice, which can cause an explosion,
- c) radioactive materials in sealed containers, even then, when there is no considerable external radioactive activity due to protective sheath or placing of the delivered consignment of the scrap metal,
- d) emitting dangerous radiation, especially materials, which radioactivity exceeds the CMC Poland sp. z o.o. natural radiation background.
- e) materials containing or emitting substances which may threaten natural environment or steel production technologies,
- f) Materials which may have irritating, caustic, poisonous or carcinogenic effect.


3.1.2. Tanks opening will be threaten as insufficient if they do not have two holes of minimal dimensions 40x40mm or diameter 40mm, in places where it is indisputable that the tank is open and free from undesirable contents. In the case of gas and liquids cylinders, actuators, coal-burning furnaces it is necessary to process them at least in two pieces.

### 3.2. Additionally, all scrap classes must be free of:

- Waste in the form of complete or incomplete electric and electronic equipment and parts originating from used equipment (scrap originated from dismantling electric and electronic equipment, passed on to further recycling process or waste recycling by authorized entities is allowed);

- Any kind of hazardous waste, defined according to Waste Act, such as:

- ✓ waste in the form of packets after hazardous substances having indications (pictograms), including: barrels, containers, tins or not having pictograms however, indicating that they can have contact with hazardous material/substances,
- ✓ oil filters,

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- ✓ batteries,
- ✓ condensers,
- ✓ batteries;

- Steel, post-amortization and post-production packets waste (not refers to HZ-ENOP class);
- Food and drinks packages, such as tins, open works and other tinplated materials;
- Consistent elements from steel and cast iron, exclusive of elements which are allowed to mechanical or manual processing, as a result of including them in the specification of particular class of unprocessed scrap;
- Overly tangled elements in the form of rods, wires, including barbed wire, wrapping wire, welding rods, ropes and cables, fence wire netting.

### 3.3. Pollution.

3.3.1. Scrap metal of each class cannot contain metals which do not contain iron, cast iron, non-metallic materials, earth, isolating materials, iron oxide in every form apart from limited amount of surface rust originating from storing outdoors or preparing in normal weather conditions.

3.3.2. The scrap metal, of every class, must be deprived of Sulphur, flammable non-metallic materials like rubber, synthetic substances, fabrics, wood, oil, grease, chemical and organic substances.

3.3.3. The scrap metal, of every class, must be free of wastes or by-products created during steel melting process, during heating up, grinding, cutting, blowpipe welding and cutting, like scale, slag, filter-dust, grinding dust etc.

### 3.4. Content of metallic elements.

#### 3.4.1. Copper.

The scrap metal of every class must be free of metallic copper, electric motor, winding, wires and cords, sheet metals, elements covered by copper, bearing sleeves and radiators. The scrap metal of every class must be free of materials which have increased amount of copper, including reinforcement bars and steel rods of normal quality should be grouped in the classes of the higher content of accompanying elements.

#### 3.4.2. Tin.

The scrap metal of every class must be free of tin in any form, particularly such as cans, materials covered by tin, things made of bronze, rings, brass-bearing, etc.

#### 3.4.3. Lead.


The scrap metal of every class must be free of lead in any form, particularly, cannot contain batteries, weights, lead sheet metals, endings of the wires, matrix, etc.

#### 3.4.4. Chrome, Nickel, Molybdenum,

The scrap metal of every class must be free of objects made of alloys and rustles steel, as of mechanical parts (which can contain these elements), like motors, gearboxes, axles, gear wheels, tools, matrix, etc.

### 3.5. Chemical composition.

3.5.1. Table 1 and 2 include the desired amounts of accompanying elements content for particular class of non-alloy batch scrap metal and iron scrap.

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3.5.2. If the content of accompanying elements in scrap deliveries does not stay within the range stipulated in Table 1 concerning values of chemical composition for particular classes, the deliveries shall be acceptable upon prior appropriate agreement between the supplier and, CMC Poland sp. Z o.o.

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

4. Terms and conditions of receipt.

4.1. Detailed terms of receipt for unprocessed steel scrap are regulated by trade contracts and order conditions.

4.2. Material or waste revealed in delivery, which are mentioned in point 3, constitute the basis for refusal to accept all or part of a delivery that does not meet the requirements of this standard or re-shipment in whole or in part and to calculate liquidated damages and charging with costs.

**FACTORY STABDARD\_PROCESSED STEEL SCRAP TABLE 1\_CLASSES LIST\_POST\_AMORTIZATION SCRAP METAL:**

Scrap Class	Characteristics	Dimensions max. [m]	Thicknes s [mm]	Min. Bulk density [t/m <sup>3</sup> ]	Maximum level of admissible contamination related to scrap [%]	Maximum content of accompanying elements [%]			Comments/ Remarks
						Cu	Sn	Cr+Ni+Mo	
<b>HZ-E3</b>	<p>Steel, piece, construction, rail scrap in the form of rails, railroad switches, axles, wheel, accessories; prepared in a way which enable its direct loading, can contain pipes and closed section;</p> <p>It is not allowed to accept scrap in the form of waste, whole or in prats, originated from dismantling end-of life vehicles and scrap originated from used electric and electronic equipment, transferred for further recycling processing by authorized entities ;</p> <p>It must be free of:</p> <ul style="list-style-type: none"> <li>- concrete reinforcement steel, bars, machine parts;</li> <li>- steel post-amortization and post-production packaging waste</li> </ul>	1,0x0,5x0,5	≥6	0,7	0,5	0,25	0,01	0,25	

**FACTORY STANDARD\_PROCESSED STEEL SCRAP TABLE 1\_CLASS LIST\_POST\_PRODUTION SCRAP (WITH LOW LEVEL OF CONCURRENT ELEMENTS):**

Scrap Class	Characteristics	Dimension s max. [m]	Thickness [mm]	Min. Bulk density [t/m <sup>3</sup> ]	Maximum level of admissible contamination related to scrap [%]	Maximum content of accompanying elements [%] Cu Sn Sr+Ni+Mo	Comments/ Remarks
HZ-E8	<p>Homogeneous, post-production steel scrap, prepared in a way which enables direct loading;</p> <p>The following is not allowed:</p> <ul style="list-style-type: none"> <li>- loose straps to avoid unloading problems;</li> <li>- lacquer layers;</li> <li>- steel post-amortization and post-production packaging waste;</li> </ul> <p>Protective layers are allowed, providing that their chemical composition do not have influence on level of accompanying elements allowed hereunder;</p>	1,5x0,5x0,5	<3	0,5	<0,3	0,3	Cu max. 0,15%
HZ-E6	<p>Homogeneous, post-production steel scrap, same in form to HZ-E8 class, processed by baler , prepared in a way which enables direct loading;</p> <p>It is not allowed to accept:</p> <ul style="list-style-type: none"> <li>- lacquer layers;</li> <li>- post-amortization and post-production steel packaging waste;</li> </ul> <p>Protective layers are allowed, providing that their chemical composition do not have influence on level of accompanying elements allowed hereunder</p>	0,8x0,5x0,5		0,7	<0,3	0,3	Cu max. 0,15%

Scrap Class	Characteristics	Dimensions max. [m]	Thickness [mm]	Min. Bulk density [t/m <sup>3</sup> ]	Maximum level of admissible contamination related to scrap [%]	Maximum content of accompanying elements [%] Cu Sn Sr+Ni+Mo			Comments/Remarks
HZ-E2	<p>Assorted, post-production steel scrap, prepared in a way which enables direct loading.</p> <p>Waste in the form of sheet metal, open works is allowed; protective layers are allowed, providing that their chemical composition do not have influence on level of concurrent elements allowed by the Standard;</p> <p>It is not allowed to accept:</p> <ul style="list-style-type: none"> <li>- lacquer layers;</li> <li>- post-amortization and post-production steel packaging waste</li> <li>- bars and wires.</li> </ul>	1,5x0,5x0,5	≥3	0,6	<0,3	0,3			Cu max. 0,15%.

FACTORY STANDARD\_CHARGE SCRAP TABLE 1\_CLASS LIST\_SHREDDED SCRAP:

Scrap Class	Characteristics	Dimensions max. [m]	Thickness [mm]	Min. Bulk density [t/m <sup>3</sup> ]	Maximum level of pollution [%]	Maximum content of accompanying elements [%]			Comments/Remarks
						Cu	Sn	Cr+Ni+Mo	
HZ-E42	<p>Shredded steel scrap, fragmented into pieces, which should not have been bigger than 200 mm, prepared in a way which enables direct loading.</p> <p>It is not allowed to accept:</p> <ul style="list-style-type: none"> <li>- moisture surplus,</li> <li>- steel scrap/iron cast scrap removed from ashes</li> <li>- food and drink packages,</li> <li>- loose pieces of cast iron</li> <li>- metallic copper.</li> </ul>	0,2 m	nd	0,7	0,4	0,4	0,02	nd	



**FACTORY STANDARD\_CHARGE SCRAP TABLE 1\_CLASS LIST\_STEEL SHAVINGS:**

Scrap Class	Characteristics	Dimensions max. [m]	Thickness [mm]	Min. Bulk density [t/m <sup>3</sup> ]	Maximum level of admissible contamination related to scrap [%]	Maximum content of accompanying elements [%]			Comments/Remarks
						Cu	Sn	Cr+Ni+Mo	
<b>HZ-E5H</b>	<p><b>Scrap consisting of carbon steel shavings, free from cutting steel shavings, prepared in a way providing direct loading;</b></p> <p><b>Pollutions, mentioned below, are not allowed:</b></p> <ul style="list-style-type: none"> <li>- non-ferrous metals,</li> <li>- mill scale,</li> <li>- grinding dust,</li> <li>- strongly oxidized shavings and chemical substances.</li> </ul>	nd	nd	0,5		0,4	0,03	1,0	Maximum content of: S ≤ 0,1% C ≤ 2%
<b>HZ-E5M</b>	<p><b>Scrap consisting of cutting steel shavings, prepared in a way which enables direct loading;</b></p> <p><b>Pollutions, mentioned below, are not allowed:</b></p> <ul style="list-style-type: none"> <li>- non-ferrous metals,</li> <li>- mill scale,</li> <li>- grinding dust,</li> <li>- strongly oxidized shavings and chemical substances</li> </ul>	nd	nd	0,5		0,4	0,03	1,0	Maximum content of: S ≤ 0,4%

**FACTORY STANDARD\_PROCESSED STEEL SCRAP TABLE 1\_CLASS LIST\_SCRAP WITH HIGH LEVEL OF CONCURRENT ELEMENTS:**

Scrap Class	Characteristics	Dimensions max. [m]	Thickness [mm]	Min. Bulk density [t/m <sup>3</sup> ]	Maximum level of admissible contamination related to scrap [%]	Maximum content of accompanying elements [%]			Comments/Remarks
						Cu	Sn	Cr+Ni+Mo	
<b>HZ-EHRM</b>	<p><b>Steel scrap, post-amortization and post-production elements, machine parts, reinforcement rods and rods of ordinary quality;</b></p> <p>Pieces of cast steel and castings of mechanical elements; pipes and closed section; vehicle's suspensions and rims are allowed.</p> <p><b>It must be free of</b> concrete, other building materials</p> <p><b>It is not allowed to accept:</b></p> <ul style="list-style-type: none"> <li>- scrap in the form of waste originated from dismantling end-of life vehicles,</li> <li>- scrap originated from dismantling of used electric and electronic equipment passed for further recycling processing by authorized entities,</li> <li>- Scrap in the form of post-amortization and post-production packets waste.</li> </ul>	1,5x0,5x0,5	≥ 3	0,6	0,5	0,4	0,03	1,0	
<b>HZ-EP</b>	<p>Condensed post-amortization scrap;</p> <p>It is allowed to accept: Prepacked wires, steel tapes, ropes, rollmops prepared in a way providing direct loading and secured against unrolling and tangling.</p> <p><b>It is not allowed:</b></p> <ul style="list-style-type: none"> <li>- scrap in the form of waste originated from dismantling end-of life vehicles,</li> <li>- scrap originated from dismantling of used electric and electronic equipment passed for further recycling processing by authorized entities,</li> </ul>	0,8x0,5x0,5	-	0,5	0,7	0,4	0,03	1,0	

Scrap Class	Characteristics	Dimensions max. [m]	Thickness [mm]	Min. Bulk density [t/m <sup>3</sup> ]	Maximum level of admissible contamination related to scrap [%]	Maximum content of accompanying elements [%]			Comments/Remarks
						Cu	Sn	Cr+Ni+Mo	
	- Scrap in the form of post-amortization and post-production packets waste								
<b>HZ-E46</b>	<p>Fragmented steel scrap constituting a waste from mechanical scrap processing, waste separation or burning, scrap should be a subject to magnetic separation and fragmenting it into pieces, which should not be bigger than 200 mm.</p> <p>Fragmented waste originated from food and drink packages is allowed.</p> <p>Moisture surplus and rust and other non-metallic pollution are not allowed.</p>	max 0,2 m	nd	0,6	3	0,5	0,07	nd	Subject to recycling process or waste recycling and delivered directly by authorized entities.

**FACTORY STANDARD\_CHARGED SCRAP TABLE 1\_CLASS LIST\_IRON CAST SCRAP:**

Scrap Class	Characteristics	Dimensions max. [m]	Thickness [mm]	Min. Bulk density [t/m <sup>3</sup> ]	Maximum level of admissible contamination related to scrap [%]	Maximum content of accompanying elements [%]			Comments/Remarks
						Cu	Sn	Sr+Ni+Mo	
HZ-E3Ž	Iron cast scrap, prepared in a way which enables direct loading. Machines parts are allowed.	1,0x0,5x0,5m	nd	0,65	1,0				Maximum content of P- 1% Weight of one piece <200 kg
HZ-E5HŽ	Scrap consisting of iron cast shavings, prepared in a way which provide its direct loading. <b>It is not allowed:</b> <ul style="list-style-type: none"> <li>- Free-cutting steel shavings,</li> <li>- grinded shavings,</li> <li>- Any pollutions, such as:                             <ul style="list-style-type: none"> <li>- non-ferrous metals,</li> <li>- mill scale,</li> <li>- shaving dusts,</li> <li>- strongly oxidized shavings,</li> <li>- chemicals.</li> </ul> </li> </ul>	nd	nd	0,5				Maximum content of S - 0,1% Maximum content of P – 1%	

**FACTORY STANDRAD\_PROCESSED SCRAP TABLE 1\_CLASS LIST\_STEEL SCRAP:**

Scrap Class	Characteristics	Dimensions max. [m]	Thickness [mm]	Min. Bulk density [t/m <sup>3</sup> ]	Maximum level of admissible contamination related to scrap [%]	Maximum content of accompanying elements [%]			Comments/Remarks
						Cu	Sn	Cr+Ni+Mo	
<b>HZ-EN</b>	Steel scrap, originated from re-classifying processed scrap which do not fulfill the Factory Standard in respect of dimensions.	nd	nd	nd	0,7				

**FACTORY STANDRAD\_PROCESSED SCRAP TABLE 2\_CLASS LIST\_STEEL SCRAP\_MESH IMPORT:**

Scrap class	Characteristics	Maximum Dimensions [m]	Thickness [mm]	Stowage factor [m <sup>3</sup> /t]	Maximum level of admissible contamination related to scrap [%]	Maximum content of accompanying elements [%]			Comments/Remarks
						Cu	Sn	Cr+Ni+Mo	
<b>HMS1</b>	<p>Mixed post-production and post-amortization scrap, prepared in a way which enables its direct transport loading and providing direct use as a batch scrap in mill furnace. Scrap can be cut on saws, snips, condensed with the exception of scrap in bales.</p> <p>Pipes, closed profiles, reinforcement bars and bars of standard quality, sheet metals, open works, flat bars and other steel construction elements, machine parts, cases of mechanical elements, pieces of steel castings are allowed.</p> <p>Steel cast and iron cast shavings, tangled wires and rods, whole counterweights or in parts; steel, post-production or post-amortization packages waste, are not allowed.</p>	1,5x0,5x0,5	≥6	1,75	0,7	0,4	0,03	1,0	<p><b>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.</b></p> <p><b>The maximum size of piece of iron scrap cannot exceed 200kg.</b></p>
<b>HMS2</b>	<p>Light post-amortization and mixed post-production scrap, prepared in a way which enables direct transportation loading and providing direct use as a batch scrap in mill furnace. Scrap can be cut on saws, snips and condensed.</p> <p>Scrap in the form of packages or bales, steel and iron shavings, tangled wires and rods, whole</p>	1,5x0,5x0,5	≥3	1,75	0,7	0,4	0,03	1,0	<p><b>Iron cast elements in the form of engine blocks, or its parts, rotors, suspension elements or machine parts cannot constitute more than 1% of whole mass of delivered scrap; it is allowed 10% of scrap mass, of a thickness of a single piece below the nominal value for</b></p>

Scrap class	Characteristics	Maximum Dimensions [m]	Thickness [mm]	Stowage factor [m <sup>3</sup> /t]	Maximum level of admissible contamination related to scrap [%]	Maximum content of accompanying elements [%] Cu Sn Cr+Ni+Mo			Comments/Remarks
	<p>counterweights or in parts, steel , post-amortization and post-production packages waste are not allowed.</p> <p>Not allowed scrap in the form of waste originated from dismantling end-of life vehicles and waste originated from dismantling electric and electronic equipment, with removed non-metallic elements, passed to further recycling or waste recycling processing by authorized entities.</p>								<p>that class; scrap cannot contain non-metallic pollutions, especially elements described in point 3 of Factory Standard.</p> <p>Maximum size of a single piece of scrap cannot exceed 200kg</p>