

IRON MANUFACTURE AND USES

December 2013 update: New uses or new use descriptor

Manufacture

Table 1. Manufacture

Identifiers	Use descriptors
<p>M-1: Iron Powders (Iron Powder made by sponge iron process, atomization processes (gas and water) and electrolysis)</p>	<p>Environmental release category (ERC):</p> <p>ERC 1: Manufacture of substances</p> <p>Process category (PROC):</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 21: Low energy manipulation of substances bound in materials and/or articles</p> <p>PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting</p> <p>PROC 25: Other hot work operations with metals</p> <p>PROC 26: Handling of solid inorganic substances at ambient temperature</p> <p>PROC 7: Industrial spraying</p> <p>PROC 27a: Production of metal powders (hot processes)</p> <p>PROC 27b: Production of metal powders (wet processes)</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature</p>

EC number:
231-096-4

Iron

CAS number:
7439-89-6

Identifiers	Use descriptors
	<p>PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles</p> <p>PROC 1: Use in closed process, no likelihood of exposure</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p>
<p>M-2: Carbonyl Iron Powders (Iron Powder uncoated, made by thermal decomposition of Iron pentacarbonyl)</p>	<p>Environmental release category (ERC):</p> <p>ERC 1: Manufacture of substances</p> <p>Process category (PROC):</p> <p>PROC 1: Use in closed process, no likelihood of exposure</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 6: Calendering operations</p> <p>PROC 7: Industrial spraying</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC 10: Roller application or brushing</p> <p>PROC 12: Use of blowing agents in manufacture of foam</p> <p>PROC 13: Treatment of articles by dipping and pouring</p> <p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 15: Use as laboratory reagent</p> <p>PROC 16: Using material as fuel sources, limited exposure to unburned product to be expected</p> <p>PROC 17: Lubrication at high energy conditions and in partly open process</p> <p>PROC 18: Greasing at high energy conditions</p> <p>PROC 19: Hand-mixing with intimate contact and only PPE available.</p> <p>PROC 20: Heat and pressure transfer fluids in dispersive, professional use but closed systems</p> <p>PROC 21: Low energy manipulation of substances bound in materials and/or articles</p>

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Identifiers	Use descriptors
	PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles
M-3: Iron Furnace / Pig Iron	Environmental release category (ERC): ERC 1: Manufacture of substances Process category (PROC): PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles PROC 26: Handling of solid inorganic substances at ambient temperature PROC 27a: Production of metal powders (hot processes) PROC 27b: Production of metal powders (wet processes) PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature PROC 25: Other hot work operations with metals PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
M-4: Iron Furnace / DRI	Environmental release category (ERC): ERC 1: Manufacture of substances Process category (PROC): PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at

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Identifiers	Use descriptors
	<p>dedicated facilities</p> <p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 21: Low energy manipulation of substances bound in materials and/or articles</p> <p>PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting</p> <p>PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles</p> <p>PROC 26: Handling of solid inorganic substances at ambient temperature</p> <p>PROC 27a: Production of metal powders (hot processes)</p> <p>PROC 27b: Production of metal powders (wet processes)</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature</p> <p>PROC 25: Other hot work operations with metals</p>
M-5: Iron Furnace / HBI	<p>Environmental release category (ERC):</p> <p>ERC 1: Manufacture of substances</p> <p>Process category (PROC):</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 21: Low energy manipulation of substances bound in materials and/or articles</p> <p>PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting</p> <p>PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles</p> <p>PROC 26: Handling of solid inorganic substances at ambient temperature</p> <p>PROC 27a: Production of metal powders (hot processes)</p> <p>PROC 27b: Production of metal powders (wet processes)</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature</p> <p>PROC 25: Other hot work operations with metals</p>

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Identifiers	Use descriptors
M-6: Elemental Iron - Production and use of steel and alloys in massive form	Environmental release category (ERC): ERC 1: Manufacture of substances Process category (PROC): PROC 1: Use in closed process, no likelihood of exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles PROC 25: Other hot work operations with metals PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
M-8: Production of elemental iron in Hydrogen-Reduced Powder	Environmental release category (ERC): ERC 1: Manufacture of substances Process category (PROC): PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting
M-9: Manufacture of reduced iron catalysts	Environmental release category (ERC): ERC 1: Manufacture of substances Process category (PROC):

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Identifiers	Use descriptors
	<p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p>
M-7: Elemental Iron - Production of alloyed powder by atomisation	<p>Environmental release category (ERC):</p> <p>ERC 1: Manufacture of substances</p> <p>Process category (PROC):</p> <p>PROC 1: Use in closed process, no likelihood of exposure</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 21: Low energy manipulation of substances bound in materials and/or articles</p> <p>PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting</p> <p>PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature</p> <p>PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles</p> <p>PROC 25: Other hot work operations with metals</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p>

2.2. Identified uses

Table 2. Formulation

Identifiers	Use descriptors	Other information
<p>F-1: Iron Powders (Iron Powder made by sponge iron process, atomization processes (gas and water) and electrolysis)</p>	<p>Environmental release category (ERC): ERC 2: Formulation of preparations</p> <p>Process category (PROC): PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 25: Other hot work operations with metals PROC 26: Handling of solid inorganic substances at ambient temperature PROC 7: Industrial spraying PROC 27a: Production of metal powders (hot processes) PROC 27b: Production of metal powders (wet processes) PROC 3: Use in closed batch process (synthesis or formulation) PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles PROC 1: Use in closed process, no likelihood of exposure PROC 2: Use in closed, continuous process with occasional controlled exposure</p> <p>Product Category formulated: PC 7: Base metals and alloys PC 14: Metal surface treatment products, including galvanic and electroplating products PC 24: Lubricants, greases, release products</p>	<p>Substance supplied to that use: As such</p>

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Identifiers	Use descriptors	Other information
	<p>PC 25: Metal working fluids PC 37: Water treatment chemicals PC 38: Welding and soldering products (with flux coatings or flux cores.), flux products PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents</p>	
<p>F-2: Carbonyl Iron Powders (Iron Powder uncoated, made by thermal decomposition of Iron pentacarbonyl)</p>	<p>Environmental release category (ERC): ERC 2: Formulation of preparations ERC 3: Formulation in materials</p> <p>Process category (PROC): PROC 1: Use in closed process, no likelihood of exposure PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 6: Calendering operations PROC 7: Industrial spraying PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC 10: Roller application or brushing PROC 12: Use of blowing agents in manufacture of foam PROC 13: Treatment of articles by dipping and pouring PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC 15: Use as laboratory reagent PROC 16: Using material as fuel sources, limited exposure to unburned product to be expected PROC 17: Lubrication at high energy conditions and in partly open process PROC 18: Greasing at high energy conditions</p>	<p>Substance supplied to that use: As such</p>

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Identifiers	Use descriptors	Other information
	<p>PROC 19: Hand-mixing with intimate contact and only PPE available. PROC 20: Heat and pressure transfer fluids in dispersive, professional use but closed systems PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles</p> <p>Product Category formulated:</p> <p>PC 7: Base metals and alloys PC 8: Biocidal products (e.g. disinfectants, pest control) PC 9a: Coatings and paints, thinners, paint removes PC 9b: Fillers, putties, plasters, modelling clay PC 15: Non-metal-surface treatment products PC 17: Hydraulic fluids PC 18: Ink and toners PC 21: Laboratory chemicals PC 29: Pharmaceuticals PC 32: Polymer preparations and compounds PC 34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids PC 35: Washing and cleaning products (including solvent based products) PC 37: Water treatment chemicals PC 38: Welding and soldering products (with flux coatings or flux cores.), flux products</p>	
F-3: Iron Furnace / Pig Iron	<p>Environmental release category (ERC):</p> <p>ERC 3: Formulation in materials</p> <p>Process category (PROC):</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p>	Substance supplied to that use: As such

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Identifiers	Use descriptors	Other information
	<p>PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles PROC 26: Handling of solid inorganic substances at ambient temperature PROC 27a: Production of metal powders (hot processes) PROC 27b: Production of metal powders (wet processes) PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature PROC 25: Other hot work operations with metals PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>Product Category formulated:</p> <p>PC 7: Base metals and alloys PC 38: Welding and soldering products (with flux coatings or flux cores.), flux products</p>	
F-4: Iron Furnace / DRI	<p>Environmental release category (ERC):</p> <p>ERC 3: Formulation in materials</p> <p>Process category (PROC):</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles</p>	Substance supplied to that use: As such

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Identifiers	Use descriptors	Other information
	<p>PROC 26: Handling of solid inorganic substances at ambient temperature PROC 27a: Production of metal powders (hot processes) PROC 27b: Production of metal powders (wet processes) PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature PROC 25: Other hot work operations with metals</p> <p>Product Category formulated: PC 7: Base metals and alloys</p>	
F-5: Iron Furnace / HBI	<p>Environmental release category (ERC): ERC 3: Formulation in materials</p> <p>Process category (PROC): PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles PROC 26: Handling of solid inorganic substances at ambient temperature PROC 27a: Production of metal powders (hot processes) PROC 27b: Production of metal powders (wet processes) PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature PROC 25: Other hot work operations with metals</p>	Substance supplied to that use: As such

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Identifiers	Use descriptors	Other information
	<p>Product Category formulated: PC 7: Base metals and alloys</p>	
<p>F-6: Elemental Iron - Production and use of steel and alloys in massive form</p>	<p>Environmental release category (ERC): ERC 3: Formulation in materials ERC 2: Formulation of preparations</p> <p>Process category (PROC): PROC 1: Use in closed process, no likelihood of exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles PROC 25: Other hot work operations with metals PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>Product Category formulated: PC 7: Base metals and alloys PC 38: Welding and soldering products (with flux coatings or flux cores.), flux products</p>	<p>Substance supplied to that use: In a mixture</p>
<p>F-7: Elemental Iron - Production and</p>	<p>Environmental release category (ERC): ERC 3: Formulation in materials</p>	<p>Substance supplied to that use:</p>

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Identifiers	Use descriptors	Other information
use of steel and alloys in powder form	<p>ERC 2: Formulation of preparations</p> <p>Process category (PROC):</p> <p>PROC 1: Use in closed process, no likelihood of exposure</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 21: Low energy manipulation of substances bound in materials and/or articles</p> <p>PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting</p> <p>PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles</p> <p>PROC 25: Other hot work operations with metals</p> <p>PROC 27a: Production of metal powders (hot processes)</p> <p>PROC 27b: Production of metal powders (wet processes)</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC 26: Handling of solid inorganic substances at ambient temperature</p> <p>PROC 7: Industrial spraying</p> <p>PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature</p> <p>Product Category formulated:</p> <p>PC 7: Base metals and alloys</p> <p>PC 14: Metal surface treatment products, including galvanic and electroplating products</p> <p>PC 15: Non-metal-surface treatment products</p> <p>PC 38: Welding and soldering products (with flux coatings or flux cores.), flux products</p>	In a mixture
F-8: Blending of elemental iron in	<p>Environmental release category (ERC):</p> <p>ERC 2: Formulation of preparations</p>	Substance supplied to that use:

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Identifiers	Use descriptors	Other information
Hydrogen-Reduced Powder	<p>ERC 3: Formulation in materials</p> <p>Process category (PROC):</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>Product Category formulated:</p> <p>PC 7: Base metals and alloys</p>	In a mixture
F-9: Manufacture of reduced iron catalysts	<p>Environmental release category (ERC):</p> <p>ERC 2: Formulation of preparations</p> <p>Process category (PROC):</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>Product Category formulated:</p> <p>PC 19: Intermediate</p> <p>PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents</p>	Substance supplied to that use: In a mixture

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Table 3. Uses at industrial sites

Identifiers	Use descriptors	Other information
IW-1: Iron Powders (Iron Powder made by sponge iron process, atomization processes (gas and water) and electrolysis)	<p>Environmental release category (ERC):</p> <p>ERC 5: Industrial use resulting in inclusion into or onto a matrix ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC 6b: Industrial use of reactive processing aids</p> <p>Process category (PROC):</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 25: Other hot work operations with metals PROC 26: Handling of solid inorganic substances at ambient temperature PROC 7: Industrial spraying PROC 27a: Production of metal powders (hot processes) PROC 27b: Production of metal powders (wet processes) PROC 3: Use in closed batch process (synthesis or formulation) PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles PROC 1: Use in closed process, no likelihood of exposure PROC 2: Use in closed, continuous process with occasional controlled exposure</p> <p>Product Category used:</p> <p>PC 7: Base metals and alloys</p>	<p>Substance supplied to that use: As such</p> <p>Subsequent service life relevant for that use: yes</p> <p>Link to the subsequent service life:</p> <p>A-1: Iron Powders (Iron Powder made by sponge iron process, atomization processes (gas and water) and electrolysis)</p>

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Identifiers	Use descriptors	Other information
	<p>PC 14: Metal surface treatment products, including galvanic and electroplating products PC 24: Lubricants, greases, release products PC 25: Metal working fluids PC 37: Water treatment chemicals PC 38: Welding and soldering products (with flux coatings or flux cores.), flux products PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents</p> <p>Sector of end use:</p> <p>SU 14: Manufacture of basic metals, including alloys SU 15: Manufacture of fabricated metal products, except machinery and equipment SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys) SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) SU 9: Manufacture of fine chemicals</p>	
IW-2: Carbonyl Iron Powders (Iron Powder uncoated, made by thermal decomposition of Iron pentacarbonyl)	<p>Environmental release category (ERC):</p> <p>ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles ERC 5: Industrial use resulting in inclusion into or onto a matrix ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC 6b: Industrial use of reactive processing aids</p> <p>Process category (PROC):</p> <p>PROC 1: Use in closed process, no likelihood of exposure PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 6: Calendering operations PROC 7: Industrial spraying PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large</p>	<p>Substance supplied to that use: As such</p> <p>Subsequent service life relevant for that use: yes</p> <p>Link to the subsequent service life: A-2: Carbonyl Iron Powders (Iron Powder uncoated, made by thermal decomposition of Iron pentacarbonyl)</p>

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Identifiers	Use descriptors	Other information
	<p>containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC 10: Roller application or brushing PROC 12: Use of blowing agents in manufacture of foam PROC 13: Treatment of articles by dipping and pouring PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC 15: Use as laboratory reagent PROC 16: Using material as fuel sources, limited exposure to unburned product to be expected PROC 17: Lubrication at high energy conditions and in partly open process PROC 18: Greasing at high energy conditions PROC 19: Hand-mixing with intimate contact and only PPE available. PROC 20: Heat and pressure transfer fluids in dispersive, professional use but closed systems PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles</p> <p>Product Category used:</p> <p>PC 7: Base metals and alloys PC 8: Biocidal products (e.g. disinfectants, pest control) PC 9a: Coatings and paints, thinners, paint removes PC 9b: Fillers, putties, plasters, modelling clay PC 15: Non-metal-surface treatment products PC 17: Hydraulic fluids PC 18: Ink and toners PC 21: Laboratory chemicals PC 29: Pharmaceuticals</p>	

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Identifiers	Use descriptors	Other information
	<p>PC 32: Polymer preparations and compounds PC 34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids PC 35: Washing and cleaning products (including solvent based products) PC 37: Water treatment chemicals PC 38: Welding and soldering products (with flux coatings or flux cores.), flux products</p> <p>Sector of end use:</p> <p>SU 2a: Mining (without offshore industries) SU 4: Manufacture of food products SU 5: Manufacture of textiles, leather, fur SU 6a: Manufacture of wood and wood products SU 6b: Manufacture of pulp, paper and paper products SU 7: Printing and reproduction of recorded media SU 9: Manufacture of fine chemicals SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys) SU 11: Manufacture of rubber products SU 12: Manufacture of plastics products, including compounding and conversion SU 13: Manufacture of other non-metallic mineral products, e.g. plasters, cement SU 14: Manufacture of basic metals, including alloys SU 15: Manufacture of fabricated metal products, except machinery and equipment SU 16: Manufacture of computer, electronic and optical products, electrical equipment SU 17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment SU 19: Building and construction work SU 20: Health services</p>	
<p>IW-3: Iron Furnace / Pig Iron</p>	<p>Environmental release category (ERC):</p> <p>ERC 5: Industrial use resulting in inclusion into or onto a matrix</p> <p>Process category (PROC):</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p>	<p>Substance supplied to that use: As such</p> <p>Subsequent service life relevant for that use: yes</p>

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Identifiers	Use descriptors	Other information
	<p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 21: Low energy manipulation of substances bound in materials and/or articles</p> <p>PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting</p> <p>PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles</p> <p>PROC 26: Handling of solid inorganic substances at ambient temperature</p> <p>PROC 27a: Production of metal powders (hot processes)</p> <p>PROC 27b: Production of metal powders (wet processes)</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature</p> <p>PROC 25: Other hot work operations with metals</p> <p>PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>Product Category used:</p> <p>PC 7: Base metals and alloys</p> <p>PC 38: Welding and soldering products (with flux coatings or flux cores.), flux products</p> <p>Sector of end use:</p> <p>SU 14: Manufacture of basic metals, including alloys</p> <p>SU 9: Manufacture of fine chemicals</p>	<p>Link to the subsequent service life:</p> <p>A-3: Iron Furnace / Pig Iron</p>
IW-4: Iron Furnace / DRI	<p>Environmental release category (ERC):</p> <p>ERC 5: Industrial use resulting in inclusion into or onto a matrix</p> <p>Process category (PROC):</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p>	<p>Substance supplied to that use:</p> <p>As such</p> <p>Subsequent service life relevant for that use: yes</p>

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Identifiers	Use descriptors	Other information
	<p>PROC 3: Use in closed batch process (synthesis or formulation) PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles PROC 26: Handling of solid inorganic substances at ambient temperature PROC 27a: Production of metal powders (hot processes) PROC 27b: Production of metal powders (wet processes) PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature PROC 25: Other hot work operations with metals</p> <p>Product Category used: PC 7: Base metals and alloys</p> <p>Sector of end use: SU 14: Manufacture of basic metals, including alloys</p>	<p>Link to the subsequent service life: A-4: Iron Furnace / DRI</p>
<p>IW-5: Iron Furnace / HBI</p>	<p>Environmental release category (ERC): ERC 5: Industrial use resulting in inclusion into or onto a matrix</p> <p>Process category (PROC): PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p>	<p>Substance supplied to that use: As such</p> <p>Subsequent service life relevant for that use: yes</p> <p>Link to the subsequent service life:</p>

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Identifiers	Use descriptors	Other information
	<p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 21: Low energy manipulation of substances bound in materials and/or articles</p> <p>PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting</p> <p>PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles</p> <p>PROC 26: Handling of solid inorganic substances at ambient temperature</p> <p>PROC 27a: Production of metal powders (hot processes)</p> <p>PROC 27b: Production of metal powders (wet processes)</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature</p> <p>PROC 25: Other hot work operations with metals</p> <p>Product Category used:</p> <p>PC 7: Base metals and alloys</p> <p>Sector of end use:</p> <p>SU 14: Manufacture of basic metals, including alloys</p>	<p>A-5: Iron Furnace / HBI</p>
<p>IW-6: Elemental Iron - Production and use of steel and alloys in massive form</p>	<p>Environmental release category (ERC):</p> <p>ERC 5: Industrial use resulting in inclusion into or onto a matrix</p> <p>Process category (PROC):</p> <p>PROC 1: Use in closed process, no likelihood of exposure</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 21: Low energy manipulation of substances bound in materials and/or articles</p>	<p>Substance supplied to that use:</p> <p>In a mixture</p> <p>Subsequent service life relevant for that use: yes</p> <p>Link to the subsequent service life:</p> <p>A-6: Elemental Iron - Production and use of steel and alloys in massive form</p>

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Identifiers	Use descriptors	Other information
	<p>PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles PROC 25: Other hot work operations with metals PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>Product Category used: PC 7: Base metals and alloys PC 38: Welding and soldering products (with flux coatings or flux cores.), flux products</p> <p>Sector of end use: SU 14: Manufacture of basic metals, including alloys SU 15: Manufacture of fabricated metal products, except machinery and equipment SU 24: Scientific research and development SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)</p>	
<p>IW-7: Elemental Iron - Production and use of steel and alloys in powder form</p>	<p>Environmental release category (ERC): ERC 5: Industrial use resulting in inclusion into or onto a matrix</p> <p>Process category (PROC): PROC 1: Use in closed process, no likelihood of exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line,</p>	<p>Substance supplied to that use: In a mixture</p> <p>Subsequent service life relevant for that use: yes</p> <p>Link to the subsequent service life: A-7: Elemental Iron - Production and use of steel and alloys in powder form</p>

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Identifiers	Use descriptors	Other information
	<p>including weighing) PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles PROC 25: Other hot work operations with metals PROC 27a: Production of metal powders (hot processes) PROC 27b: Production of metal powders (wet processes) PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 26: Handling of solid inorganic substances at ambient temperature PROC 7: Industrial spraying PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature</p> <p>Product Category used: PC 7: Base metals and alloys PC 14: Metal surface treatment products, including galvanic and electroplating products PC 15: Non-metal-surface treatment products PC 38: Welding and soldering products (with flux coatings or flux cores.), flux products</p> <p>Sector of end use: SU 7: Printing and reproduction of recorded media SU 14: Manufacture of basic metals, including alloys SU 15: Manufacture of fabricated metal products, except machinery and equipment SU 24: Scientific research and development SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)</p>	
IW-8: Use of elemental iron in Hydrogen-Reduced	Environmental release category (ERC): ERC 5: Industrial use resulting in inclusion into or onto a matrix	Substance supplied to that use: In a mixture

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Identifiers	Use descriptors	Other information
Powder	<p>Process category (PROC):</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 21: Low energy manipulation of substances bound in materials and/or articles</p> <p>PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting</p> <p>PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles</p> <p>Product Category used:</p> <p>PC 7: Base metals and alloys</p> <p>Sector of end use:</p> <p>SU 2a: Mining (without offshore industries)</p> <p>SU 14: Manufacture of basic metals, including alloys</p> <p>SU 15: Manufacture of fabricated metal products, except machinery and equipment</p> <p>SU 19: Building and construction work</p>	<p>Subsequent service life relevant for that use: yes</p> <p>Link to the subsequent service life:</p> <p>A-8: Use of elemental iron in Hydrogen-Reduced Powder</p>
IW-9: Use of reduced iron catalysts	<p>Environmental release category (ERC):</p> <p>ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates)</p> <p>ERC 6b: Industrial use of reactive processing aids</p> <p>Process category (PROC):</p> <p>PROC 1: Use in closed process, no likelihood of exposure</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large</p>	<p>Substance supplied to that use:</p> <p>In a mixture</p>

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	<p>containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>Product Category used:</p> <p>PC 19: Intermediate</p> <p>PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents</p> <p>Sector of end use:</p> <p>SU 8: Manufacture of bulk, large scale chemicals (including petroleum products)</p> <p>SU 9: Manufacture of fine chemicals</p>	

Table 4. Article service life

Identifiers	Use descriptors	Other information
SL-1: Iron Powders (Iron Powder made by sponge iron process, atomization processes (gas and water) and electrolysis)	<p>Article category related to subsequent service life (AC):</p> <p>AC 7: Metal articles</p> <p>Process category (PROC):</p> <p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 21: Low energy manipulation of substances bound in materials and/or articles</p> <p>PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting</p> <p>PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature</p> <p>PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles</p> <p>PROC 25: Other hot work operations with metals</p>	Article used by: workers
SL-2: Carbonyl Iron Powders (Iron Powder uncoated,	<p>Article category related to subsequent service life (AC):</p> <p>AC 1: Vehicles</p> <p>AC 2: Machinery, mechanical appliances, electrical/electronic articles</p>	Article used by: workers

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Identifiers	Use descriptors	Other information
made by thermal decomposition of Iron pentacarbonyl)	<p>AC 3: Electrical batteries and accumulators AC 5: Fabrics, textiles and apparel AC 8: Paper articles AC 10: Rubber articles AC 7: Metal articles</p> <p>Environmental release category (ERC): ERC 10a: Wide dispersive outdoor use of long-life articles and materials with low release ERC 10b: Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing) ERC 11a: Wide dispersive indoor use of long-life articles and materials with low release</p> <p>Process category (PROC): PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles</p>	
SL-3: Iron Furnace / Pig Iron	<p>Article category related to subsequent service life (AC): AC 7: Metal articles</p> <p>Environmental release category (ERC): ERC 12a: Industrial processing of articles with abrasive techniques (low release) ERC 12b: Industrial processing of articles with abrasive techniques (high release)</p> <p>Process category (PROC): PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature</p>	Article used by: workers

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Identifiers	Use descriptors	Other information
	PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles PROC 25: Other hot work operations with metals	
SL-4: Iron Furnace / DRI	Article category related to subsequent service life (AC): AC 7: Metal articles Environmental release category (ERC): ERC 12a: Industrial processing of articles with abrasive techniques (low release) ERC 12b: Industrial processing of articles with abrasive techniques (high release) Process category (PROC): PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles PROC 25: Other hot work operations with metals	Article used by: workers
SL-5: Iron Furnace / HBI	Article category related to subsequent service life (AC): AC 7: Metal articles Environmental release category (ERC): ERC 12a: Industrial processing of articles with abrasive techniques (low release) ERC 12b: Industrial processing of articles with abrasive techniques (high release) Process category (PROC): PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature	Article used by: workers

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Identifiers	Use descriptors	Other information
	PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles PROC 25: Other hot work operations with metals	
SL-6: Elemental Iron - Production and use of steel and alloys in massive form	Article category related to subsequent service life (AC): AC 7: Metal articles AC 1: Vehicles AC 2: Machinery, mechanical appliances, electrical/electronic articles Environmental release category (ERC): ERC 12a: Industrial processing of articles with abrasive techniques (low release) ERC 12b: Industrial processing of articles with abrasive techniques (high release) Process category (PROC): PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles PROC 25: Other hot work operations with metals	Article used by: workers
SL-7: Elemental Iron - Production and use of steel and alloys in powder form	Article category related to subsequent service life (AC): AC 7: Metal articles AC 1: Vehicles AC 2: Machinery, mechanical appliances, electrical/electronic articles Environmental release category (ERC): ERC 12b: Industrial processing of articles with abrasive techniques (high release) Process category (PROC): PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature.	Article used by: workers

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Identifiers	Use descriptors	Other information
	Industrial setting PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles PROC 25: Other hot work operations with metals	
SL-8: Use of elemental iron in Hydrogen-Reduced Powder	Article category related to subsequent service life (AC): AC 7: Metal articles Exposure related description of article: Articles with foreseeable exposure to dust and fumes during maintenance and recycling processes, e.g. abrasive surface cleaning, dismantling and milling Environmental release category (ERC): ERC 12a: Industrial processing of articles with abrasive techniques (low release) ERC 12b: Industrial processing of articles with abrasive techniques (high release) Process category (PROC): PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles	Article used by: workers

Technical function of the substance:

- Intermediates
 - Food/feedstuff additives
 - Pharmaceutical substance
 - Plating agents and metal surface treating agents
 - Processing aid, not otherwise listed
 - Laboratory chemicals
 - Fillers
 - Colouring agents, pigments
 - Alloying element
- Iron Furnace is used as feedstock for crude steel production and ferrous casting. Iron is used as alloys, steels, metal castings, catalyst, powder metallurgy, extenders, nutritional supplements and pharmaceutical applications.