# Circular Economy Ontology Network (CEON) - Electronics Module

#### Metadata

IRI

http://w3id.org/CEON/ontology/electronics/

**Title** 

Circular Economy Ontology Network (CEON) - Electronics Module

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**Version Iri** 

http://w3id.org/CEON/ontology/electronics/0.1/

**Version Info** 

0.1

**Preferred Namespace Uri** 

http://w3id.org/CEON/ontology/electronics/

Description

The Electronics module of CEON (Circular Economy Ontology Network).

#### Classes

Derived Unit <sup>C</sup>	
IRI	http://qudt.org/schema/qudt/DerivedUnit
Is Defined By	http://qudt.org/2.1/schema/qudt
Description	A DerivedUnit is a type specification for units that are derived from other units.
Sub Class Of	http://qudt.org/schema/qudt/Unit
Named Individuals	pascal second <sup>ni</sup>

Issuing Resource<sup>C</sup>

IRI http://w3id.org/CEON/ontology/actor/IssuingResource

Named Individuals ds issue 1<sup>ni</sup>

Process Participation <sup>C</sup>

IRI http://w3id.org/CEON/ontology/actor/ProcessParticipation

Named Individuals s63<sup>ni</sup>

Producing Resource<sup>C</sup>

IRI http://w3id.org/CEON/ontology/actor/ProducingResource

Named Individuals

ss\_1<sup>ni</sup> ss\_2<sup>ni</sup>

Supplying Resource<sup>C</sup>

IRI http://w3id.org/CEON/ontology/actor/SupplyingResource

Named Individuals S7<sup>ni</sup>

Actor <sup>C</sup>

IRI http://w3id.org/CEON/ontology/actorODP/Actor

Named Individuals

<u>M</u>ni

company a<sup>ni</sup> company b<sup>ni</sup> company x<sup>ni</sup>

company\_yni

dismantling\_company\_bni

Resource Relation<sup>C</sup>

IRI http://w3id.org/CEON/ontology/actorODP/ResourceRelation

Named Individuals composition ani

Actinoids Metal<sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/ActinoidsMetal

Sub Class Of MetalMaterial<sup>C</sup>

Adhesive Material<sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/AdhesiveMaterial

Sub Class Of <a href="http://w3id.org/CEON/ontology/material/Material">http://w3id.org/CEON/ontology/material/Material</a>

Alkali Metal<sup>c</sup>

IRI http://w3id.org/CEON/ontology/electronics/AlkaliMetal

Sub Class Of MetalMaterial<sup>C</sup>

Alkaline Earth Metal <sup>c</sup>

IRI http://w3id.org/CEON/ontology/electronics/AlkalineEarthMetal

Sub Class Of MetalMaterial<sup>C</sup>

Aluminum Dome Tweeter<sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/AluminumDomeTweeter

Sub Class Of ElectronicsProduct<sup>C</sup>

Bromide Material <sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/BromideMaterial

Sub Class Of <a href="http://w3id.org/CEON/ontology/material/Material">http://w3id.org/CEON/ontology/material/Material</a>

Catalyst Material <sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/CatalystMaterial

Sub Class Of <a href="http://w3id.org/CEON/ontology/material/Material">http://w3id.org/CEON/ontology/material/Material</a>

Core Material<sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/CoreMaterial

Sub Class Of <a href="http://w3id.org/CEON/ontology/material/Material">http://w3id.org/CEON/ontology/material/Material</a>

Coupling Cone<sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/CouplingCone

Sub Class Of ElectronicsProduct<sup>C</sup>

Damper <sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/Damper

Sub Class Of ElectronicsProduct<sup>C</sup>

Named Individuals damper xni

Double Magnet<sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/DoubleMagnet

Sub Class Of ElectronicsProduct<sup>C</sup>

Electronics Product<sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/ElectronicsProduct

Sub Class Of <a href="http://w3id.org/CEON/ontology/product/Product">http://w3id.org/CEON/ontology/product/Product</a>

**Super Class Of** 

<u>AluminumDomeTweeter</u><sup>c</sup>

CouplingCone<sup>c</sup>
Damper<sup>c</sup>
DoubleMagnet<sup>c</sup>

Frame<sup>c</sup>

<u>NeodymiumMagnet</u><sup>c</sup>

Speaker<sup>c</sup>

Electronics Product Sourcing Component Relation<sup>c</sup>

IRI http://w3id.org/CEON/ontology/electronics/ElectronicsProductSourcingComponent

Relation

Sub Class Of <a href="http://w3id.org/CEON/ontology/provenance/Statement">http://w3id.org/CEON/ontology/provenance/Statement</a>

Fibre M Aterial <sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/FibreMAterial

Sub Class Of <a href="http://w3id.org/CEON/ontology/material/Material">http://w3id.org/CEON/ontology/material/Material</a>

Flame Retardant Material<sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/FlameRetardantMaterial

Sub Class Of <a href="http://w3id.org/CEON/ontology/material/Material">http://w3id.org/CEON/ontology/material/Material</a>

Frame <sup>c</sup>

IRI http://w3id.org/CEON/ontology/electronics/Frame

Sub Class Of ElectronicsProduct<sup>C</sup>

Hardener Material<sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/HardenerMaterial

Sub Class Of <a href="http://w3id.org/CEON/ontology/material/Material">http://w3id.org/CEON/ontology/material/Material</a>

Lca Unit<sup>c</sup>

IRI http://w3id.org/CEON/ontology/electronics/LCAUnit

Description
Units for LCA (Life Cycle Assessment) environmental impact indexes

Sub Class Of <a href="http://qudt.org/schema/qudt/Unit">http://qudt.org/schema/qudt/Unit</a>

Laminate Material<sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/LaminateMaterial

Sub Class Of <a href="http://w3id.org/CEON/ontology/material/Material">http://w3id.org/CEON/ontology/material/Material</a>

Matrix Additive M Aterial C

IRI http://w3id.org/CEON/ontology/electronics/MatrixAdditiveMAterial

Sub Class Of <a href="http://w3id.org/CEON/ontology/material/Material">http://w3id.org/CEON/ontology/material/Material</a>

Metal Material<sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/MetalMaterial

Sub Class Of <a href="http://w3id.org/CEON/ontology/material/Material">http://w3id.org/CEON/ontology/material/Material</a>

**Super Class Of** 

ActinoidsMetal<sup>c</sup>
AlkaliMetal<sup>c</sup>

<u>AlkalineEarthMetal</u><sup>c</sup>

<u>TransitionalMetal</u><sup>c</sup>

Neodymium Magnet<sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/NeodymiumMagnet

Sub Class Of ElectronicsProduct<sup>C</sup>

Named Individuals neodymium\_magnet\_x<sup>ni</sup>

Non Metal Material <sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/NonMetalMaterial

Sub Class Of <a href="http://w3id.org/CEON/ontology/material/Material">http://w3id.org/CEON/ontology/material/Material</a>

**Named Individuals** 

carbon\_material\_a<sup>ni</sup> nitrogen\_material\_a<sup>ni</sup>

### Post Customer Recycled Content<sup>c</sup>

IRI http://w3id.org/CEON/ontology/electronics/PostCustomerRecycledContent

Sub Class Of <a href="http://qudt.org/schema/qudt/Quantity">http://qudt.org/schema/qudt/Quantity</a>

Named Individuals content 1<sup>ni</sup>

#### Pre Customer Recycled Content <sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/PreCustomerRecycledContent

Description

The recycled content during the process of manufacturing or delivering products

before delivering to a customer.

Sub Class Of <a href="http://qudt.org/schema/qudt/Quantity">http://qudt.org/schema/qudt/Quantity</a>

#### Prepreg Material<sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/PrepregMaterial

Sub Class Of <a href="http://w3id.org/CEON/ontology/material/Material">http://w3id.org/CEON/ontology/material/Material</a>

#### Rare Earth Material C

IRI http://w3id.org/CEON/ontology/electronics/RareEarthMaterial

Sub Class Of <a href="http://w3id.org/CEON/ontology/material/Material">http://w3id.org/CEON/ontology/material/Material</a>

#### Renewable Content<sup>c</sup>

IRI http://w3id.org/CEON/ontology/electronics/RenewableContent

**Description**The content of product/material that can be renewed.

Sub Class Of <a href="http://qudt.org/schema/qudt/Quantity">http://qudt.org/schema/qudt/Quantity</a>

#### Resin Material <sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/ResinMaterial

Sub Class Of <a href="http://w3id.org/CEON/ontology/material/Material">http://w3id.org/CEON/ontology/material/Material</a>

Speaker<sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/Speaker

Sub Class Of <u>ElectronicsProduct</u><sup>c</sup>

Named Individuals speaker xni

Surface Finish Material<sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/SurfaceFinishMaterial

Sub Class Of <a href="http://w3id.org/CEON/ontology/material/Material">http://w3id.org/CEON/ontology/material/Material</a>

Transitional Metal<sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/TransitionalMetal

Sub Class Of MetalMaterial<sup>C</sup>

Virgin Fossil Content<sup>C</sup>

IRI http://w3id.org/CEON/ontology/electronics/VirginFossilContent

Sub Class Of <a href="http://qudt.org/schema/qudt/Quantity">http://qudt.org/schema/qudt/Quantity</a>

Process <sup>C</sup>

IRI http://w3id.org/CEON/ontology/processODP/Process

Named Individuals dismantling process 1<sup>ni</sup>

# **Object Properties**

defined unit of system op

IRI http://qudt.org/schema/qudt/definedUnitOfSystem

derived coherent unit of system op

IRI http://qudt.org/schema/qudt/derivedCoherentUnitOfSystem

exact match <sup>op</sup>		
IRI	http://qudt.org/schema/qudt/exactMatch	
has dimension vector <sup>op</sup>		
IRI	http://qudt.org/schema/qudt/hasDimensionVector	
has unit <sup>op</sup>		
IRI	http://qudt.org/schema/qudt/hasUnit	
participant role <sup>op</sup>		
IRI	http://w3id.org/CEON/ontology/actorODP/participantRole	
participating actor <sup>op</sup>		
IRI	http://w3id.org/CEON/ontology/actorODP/participatingActor	
participating resource <sup>op</sup>		
IRI	http://w3id.org/CEON/ontology/actorODP/participatingResource	
participation in <sup>op</sup>		
IRI	http://w3id.org/CEON/ontology/actorODP/participationIn	

# **Datatype Properties**

conversion multiplier dp	
IRI	http://qudt.org/schema/qudt/conversionMultiplier
iec61360code <sup>dp</sup>	
IRI	http://qudt.org/schema/qudt/iec61360Code

numerical value dp

IRI http://qudt.org/schema/qudt/numericalValue

si units expression dp

IRI http://qudt.org/schema/qudt/siUnitsExpression

participation time point dp

IRI http://w3id.org/CEON/ontology/actorODP/participationTimePoint

Lca-Acidification dp

IRI http://w3id.org/CEON/ontology/electronics/LCA-Acidification

Range xsd:double

Lca-Climate Change dp

IRI http://w3id.org/CEON/ontology/electronics/LCA-ClimateChange

Range xsd:double

Lca-Climate Change Biogenic dp

IRI http://w3id.org/CEON/ontology/electronics/LCA-ClimateChangeBiogenic

Range <u>xsd:double</u>

Lca-Climate Change Fossil<sup>dp</sup>

IRI http://w3id.org/CEON/ontology/electronics/LCA-ClimateChangeFossil

Range <u>xsd:double</u>

Lca-Ecotoxicity Freshwater dp

IRI http://w3id.org/CEON/ontology/electronics/LCA-EcotoxicityFreshwater

Lca-Eutrophication Freshwater dp

IRI http://w3id.org/CEON/ontology/electronics/LCA-EutrophicationFreshwater

Range <u>xsd:double</u>

Lca-Eutrophication Marine dp

IRI http://w3id.org/CEON/ontology/electronics/LCA-EutrophicationMarine

Range <u>xsd:double</u>

Lca-Human Toxicity Cancer dp

IRI http://w3id.org/CEON/ontology/electronics/LCA-HumanToxicityCancer

Range <u>xsd:double</u>

Lca-Lonising Radition Human Health dp

IRI http://w3id.org/CEON/ontology/electronics/LCA-LonisingRaditionHumanHealth

Range xsd:double

Lca-Mineral Use dp

IRI http://w3id.org/CEON/ontology/electronics/LCA-MineralUse

Range xsd:double

Lca-Water Use dp

IRI http://w3id.org/CEON/ontology/electronics/LCA-WaterUse

Batch number dp

IRI http://w3id.org/CEON/ontology/electronics/batchNumber

**Description** batchNumber represents the identical information of a batch of objects.

**Domain** <a href="http://w3id.org/CEON/ontology/resourceODP/BatchOfObjects">http://w3id.org/CEON/ontology/resourceODP/BatchOfObjects</a>

Range xsd:integer

component diameter dp

IRI http://w3id.org/CEON/ontology/electronics/componentDiameter

Range <u>xsd:double</u>

component length dp

IRI http://w3id.org/CEON/ontology/electronics/componentLength

Range xsd:double

Date of decomissioning dp

IRI http://w3id.org/CEON/ontology/electronics/dateOfDecomissioning

Description dateOfDecomissioning represents the date of decomissioning of a batch of

products.

Range <u>xsd:dateTime</u>

Date of installation dp

IRI http://w3id.org/CEON/ontology/electronics/dateOfInstallation

Description dateOfInstallation represents the date of installation of a batch of products.

Range <u>xsd:dateTime</u>

Date of production dp

IRI http://w3id.org/CEON/ontology/electronics/dateOfProduction

Description dateOfProduction represents the date of production of a batch of products.

**Domain** <a href="http://w3id.org/CEON/ontology/resourceODP/BatchOfObjects">http://w3id.org/CEON/ontology/resourceODP/BatchOfObjects</a>

Range <u>xsd:dateTime</u>

decommission reason dp

IRI http://w3id.org/CEON/ontology/electronics/decommissionReason

**Description**The reason for a decommission operation.

Range xsd:string

density at 25 dp

IRI http://w3id.org/CEON/ontology/electronics/densityAt25

Range <u>xsd:double</u>

electrical conductivity dp

IRI http://w3id.org/CEON/ontology/electronics/electricalConductivity

Range <u>xsd:double</u>

electrical resistivity dp

IRI http://w3id.org/CEON/ontology/electronics/electricalResistivity

Range <u>xsd:double</u>

fatigue resistance dp

IRI http://w3id.org/CEON/ontology/electronics/fatigueResistance

fiber elongation at break dp

IRI http://w3id.org/CEON/ontology/electronics/fiberElongationAtBreak

Range <u>xsd:double</u>

fibre volume content dp

IRI http://w3id.org/CEON/ontology/electronics/fibreVolumeContent

Range <u>xsd:double</u>

flame retardancy dp

IRI http://w3id.org/CEON/ontology/electronics/flameRetardancy

Description
Flame Retardancy property is used to represent whether a product or content

resist or delay the ignition and spread of fire. This property has 'True' of 'False'

values.

Range xsd:boolean

hazardous materials percentage dp

IRI http://w3id.org/CEON/ontology/electronics/hazardousMaterialsPercentage

**Description**The percentage of hazardous materials.

Range <u>xsd:double</u>

high uv resistance dp

IRI http://w3id.org/CEON/ontology/electronics/highUVResistance

Description

High UV Resistance property is used to represent whether a product or content

withstand the damaging effects of ultraviolet (UV) radiation. It has values 'True' or

'False'.

Range <u>xsd:boolean</u>

instruction of repair dp

IRI http://w3id.org/CEON/ontology/electronics/instructionOfRepair

Range <u>xsd:string</u>

instruction of use and assembly dp

IRI http://w3id.org/CEON/ontology/electronics/instructionOfUseAndAssembly

Range xsd:string

instructionof maintenance dp

IRI http://w3id.org/CEON/ontology/electronics/instructionofMaintenance

Range <u>xsd:string</u>

lay up sequence dp

IRI http://w3id.org/CEON/ontology/electronics/layUpSequence

Range xsd:string

Location of batch component. The property may be replaced by a location module in the future.locationOfBatchComponent represents the location information of a component object within a batch. dp

IRI http://w3id.org/CEON/ontology/electronics/locationOfBatchComponent

Range <u>xsd:string</u>

maintenance report dp

IRI http://w3id.org/CEON/ontology/electronics/maintenanceReport

Range xsd:string

manufacturing sequence dp

IRI http://w3id.org/CEON/ontology/electronics/manufacturingSequence

Range <u>xsd:string</u>

number of recycling cycles dp

IRI http://w3id.org/CEON/ontology/electronics/numberOfRecyclingCycles

product diameter dp

IRI http://w3id.org/CEON/ontology/electronics/productDiameter

Range <u>xsd:double</u>

recycling pressure dp

IRI http://w3id.org/CEON/ontology/electronics/recyclingPressure

**Description**To represent the pressure condition in a recycling process.

Range <u>xsd:double</u>

recycling process duration dp

IRI http://w3id.org/CEON/ontology/electronics/recyclingProcessDuration

Range xsd:double

recycling process name dp

IRI http://w3id.org/CEON/ontology/electronics/recyclingProcessName

Range <u>xsd:string</u>

recycling temperature dp

IRI http://w3id.org/CEON/ontology/electronics/recyclingTemperature

**Description**To represent the temperature condition in a recycling process.

refractive index at25 dp

IRI http://w3id.org/CEON/ontology/electronics/refractiveIndexAt25

Range <u>xsd:double</u>

reported damage dp

IRI http://w3id.org/CEON/ontology/electronics/reportedDamage

**Description** reportedDamage is used to represent damage information.

Range xsd:string

reported repairs dp

IRI http://w3id.org/CEON/ontology/electronics/reportedRepairs

**Description** reportedRepairs is used to represent repairing information.

Range <u>xsd:string</u>

sample length dp

IRI http://w3id.org/CEON/ontology/electronics/sampleLength

Range xsd:double

shear strength dp

IRI http://w3id.org/CEON/ontology/electronics/shearStrength

Range <u>xsd:double</u>

site address  $^{\mbox{dp}}$ 

IRI http://w3id.org/CEON/ontology/electronics/siteAddress

Description

The address of the site. This property may be replaced by a location module in the

future.

Range xsd:string

site city dp

IRI http://w3id.org/CEON/ontology/electronics/siteCity

Description

The city of the site. This property may be replaced by a location module in the

future.

Range xsd:string

site country dp

IRI http://w3id.org/CEON/ontology/electronics/siteCountry

Description

The country of the site. This property may be replaced by a location module in the

future.

Range xsd:string

site name dp

IRI http://w3id.org/CEON/ontology/electronics/siteName

Description

The name of the site where the batch of products is located. This property may be

replaced by a location module in the future.

Range xsd:string

site zip  $code^{dp}$ 

IRI http://w3id.org/CEON/ontology/electronics/siteZipCode

Description

The Zip Code of the site. This property may be replaced by a location module in

the future.

Range <u>xsd:string</u>

size level dp

IRI http://w3id.org/CEON/ontology/electronics/sizeLevel

stiffness dp

IRI http://w3id.org/CEON/ontology/electronics/stiffness

Range <u>xsd:double</u>

tensile modulus dp

IRI http://w3id.org/CEON/ontology/electronics/tensileModulus

Range <u>xsd:double</u>

tensile strength dp

IRI http://w3id.org/CEON/ontology/electronics/tensileStrength

Description

Tensile Strength is a used to represent the ability of a product or some content to

resist breaking when it is pulled apart. It is the maximum stress that a product can

withstand before breaking.

Range <u>xsd:double</u>

transition temperature dp

IRI http://w3id.org/CEON/ontology/electronics/transitionTemperature

**Description** Tg

Range <u>xsd:double</u>

viscosity at25 dp

IRI http://w3id.org/CEON/ontology/electronics/viscosityAt25

# **Annotation Properties**

expression ap

IRI http://qudt.org/schema/qudt/expression

participating object ap

IRI http://w3id.org/CEON/ontology/actorODP/participatingObject

participating subject ap

IRI http://w3id.org/CEON/ontology/actorODP/participatingSubject

statement about ap

IRI http://w3id.org/CEON/ontology/provenance/statementAbout

## Namespaces

:

http://w3id.org/CEON/ontology/electronics/

dcterms

http://purl.org/dc/terms/

owl

http://www.w3.org/2002/07/owl#

prov

http://www.w3.org/ns/prov#

rdf

http://www.w3.org/1999/02/22-rdf-syntax-ns#

rdfs

http://www.w3.org/2000/01/rdf-schema#

vann

http://purl.org/vocab/vann/

xsd

dp

http://www.w3.org/2001/XMLSchema#

# Legend

Classes

op Object Properties

Datatype Properties