

# Circular Economy Ontology Network (CEON) - Product Module

## Metadata

### IRI

<http://w3id.org/CEON/ontology/product/>

### Title

Circular Economy Ontology Network  
(CEON) - Product Module

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### License

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### Version Iri

<http://w3id.org/CEON/ontology/product/0.4/>

### Version Info

0.4

### Preferred Namespace Prefix

product

### Preferred Namespace Uri

<http://w3id.org/CEON/ontology/product/>

### Description

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

### Covers Requirements

In addition to requirements covered by imported ODPs, covers the following requirements from Onto-DESIDe D3.1: CVN-Resource-2, CVN-ResrouceType-4, C11-2, C12-1, C13-3, E2-1, T8-3.

In addition to requirements covered by imported ODPs, covers the following requirements from Onto-DESIDe D2.3: CE5-2, C11-2, C12-1, C13-3, E2-1, T8-3.

## Classes

### Actor<sup>c</sup>

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<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/actorODP/Actor">http://w3id.org/CEON/ontology/actorODP/Actor</a>
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### Resource Relation<sup>c</sup>

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<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/actorODP/ResourceRelation">http://w3id.org/CEON/ontology/actorODP/ResourceRelation</a>
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<b><u>Super Class Of</u></b>	<a href="#"><u>resourceODP:Composition<sup>c</sup></u></a>
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### Process<sup>c</sup>

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<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/processODP/Process">http://w3id.org/CEON/ontology/processODP/Process</a>
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## Compliance<sup>c</sup>

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**IRI** <http://w3id.org/CEON/ontology/product/Compliance>

**In Domain Of** [complianceWith](#)<sup>op</sup>  
[hasCertificate](#)<sup>dp</sup>

**In Range Of** [hasCompliance](#)<sup>op</sup>

## Item<sup>c</sup>

**IRI** <http://w3id.org/CEON/ontology/product/Item>

### Description

An item is a physical object put into a market for sale, i.e. corresponding to an individual of a product. The item can be a thing that grows naturally or produced through some chemical or manufacturing processes.

### Sub Class Of

[resourceODP:PhysicalObject<sup>c</sup>](#)

### In Domain Of

[hasProductObjectComponent<sup>op</sup>](#)  
[modelled by<sup>op</sup>](#)

### In Range Of

[associatedWithProductObject<sup>op</sup>](#)  
[hasProductObjectComponent<sup>op</sup>](#)

### Restriction

[modelled by<sup>op</sup>](#) *exactly* 1  
[Item<sup>c</sup>](#)

## Matter composition<sup>c</sup>

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**IRI** <http://w3id.org/CEON/ontology/product/MatterComposition>

**Description**

A product composition is the composed information of a product in terms of a specific component, in which such a component is also a matter.

**Sub Class Of**

[resourceODP:Composition<sup>c</sup>](#)

**In Domain Of**

[associated with matter<sup>op</sup>](#)

**Restriction**

[associated with matter<sup>op</sup>  
\*exactly\* 1 \[Matter composition<sup>c</sup>\]\(#\)](#)

## Product<sup>c</sup>

**IRI** <http://w3id.org/CEON/ontology/product/Product>

**Is Defined By** ISO 59004:2024 -3.2.2 product

**Description**

Physical-based object designed for or utilized with a purpose. A product can be, for example: goods of any type; hardware (e.g. engine mechanical part, spare parts, consumables); electrical or electronic hardware devices or components (e.g. computers, communication equipment and sensors); processed materials (e.g. lubricant, cement).

Represents the common sense notion of a product, i.e. the abstract notion of a product type, which is a model that is used for manufacturing items of that product.

**Sub Class Of** [Solution<sup>c</sup>](#)

**In Domain Of** [has product component<sup>op</sup>](#)

**In Range Of** [associated with product model<sup>op</sup>](#)  
[batch of products<sup>op</sup>](#)  
[has product component<sup>op</sup>](#)  
[modelled by<sup>op</sup>](#)

<u>Restriction</u>	<a href="#">hasComposition</a> <sup>op</sup> some <a href="#">Product</a> <sup>c</sup> <a href="#">hasComposition</a> <sup>op</sup> some <a href="#">Product</a> <sup>c</sup>
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Product composition <sup>c</sup>	
IRI	<a href="http://w3id.org/CEON/ontology/product/ProductComposition">http://w3id.org/CEON/ontology/product/ProductComposition</a>
<u>Description</u>	A product composition is the composed information of a product in terms of a specific component, in which such a component is also a product.
<u>Sub Class Of</u>	<a href="#">resourceODP:Composition</a> <sup>c</sup>
<u>In Domain Of</u>	<a href="#">associated with product model</a> <sup>op</sup>
<u>Restriction</u>	<a href="#">associated with product model</a> <sup>op</sup> <i>exactly</i> 1 <a href="#">Product composition</a> <sup>c</sup>

## Product Object Composition<sup>c</sup>

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/ProductObjectComposition">http://w3id.org/CEON/ontology/product/ProductObjectComposition</a>
<b><u>Sub Class Of</u></b>	<a href="#">resourceODP:Composition<sup>c</sup></a>
<b><u>In Domain Of</u></b>	<a href="#">associatedWithProductObject<sup>op</sup></a>
<b><u>Restriction</u></b>	<a href="#">associatedWithProductObject<sup>op</sup></a> <i>exactly</i> 1 <a href="#">ProductObjectComposition<sup>c</sup></a>

## Solution<sup>c</sup>

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/Solution">http://w3id.org/CEON/ontology/product/Solution</a>
<b><u>Is Defined By</u></b>	ISO 59004:2024 - 3.2.1 solution
<b><u>Description</u></b>	Product or service, or a combination thereof, that fulfils a need of an interested party.
<b><u>Super Class Of</u></b>	<a href="#">Product<sup>c</sup></a>



## Batch Of Objects<sup>c</sup>

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/resourceODP/BatchOf0bjects">http://w3id.org/CEON/ontology/resourceODP/BatchOf0bjects</a>
<b><u>In Domain Of</u></b>	<a href="#">batch of products</a> <sup>op</sup>
<b><u>Restriction</u></b>	<a href="#">batch of products</a> <sup>op</sup> <i>exactly</i> 1 <a href="#">resourceODP:BatchOf0bjects</a> <sup>c</sup>

## Composition<sup>c</sup>

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/resourceODP/Composition">http://w3id.org/CEON/ontology/resourceODP/Composition</a>
<b><u>Sub Class Of</u></b>	<a href="#">actorODP:ResourceRelation</a> <sup>c</sup>
<b><u>In Domain Of</u></b>	<a href="#">compositionOf</a> <sup>op</sup> <a href="#">Composition quantity</a> <sup>dp</sup>
<b><u>In Range Of</u></b>	<a href="#">hasComposition</a> <sup>op</sup>
<b><u>Super Class Of</u></b>	<a href="#">Matter composition</a> <sup>c</sup> <a href="#">Product composition</a> <sup>c</sup> <a href="#">ProductObjectComposition</a> <sup>c</sup>

## Matter<sup>C</sup>

**IRI** <http://w3id.org/CEN/ontology/resourceODP/Matter>

**In Range Of** [associated with matter<sup>op</sup>](#)

## Physical Object<sup>C</sup>

**IRI** <http://w3id.org/CEN/ontology/resourceODP/PhysicalObject>

**Super Class Of** [Item<sup>C</sup>](#)

## Object Properties

### associated with matter<sup>op</sup>

**IRI** <http://w3id.org/CEN/ontology/product/associatedWithMatter>

**Description** associatedWithMatter intends to represent the matter to which a matter composition information regards to.

**Domain** [Matter composition<sup>C</sup>](#)

**Range** [resourceODP:Matter<sup>C</sup>](#)

## associated with product model<sup>op</sup>

**IRI** <http://w3id.org/CEON/ontology/product/associatedWithProductModel>

**Description** associatedWithProductModel intends to represent the product model to which a product composition information regards to.

**Domain** [Product composition<sup>c</sup>](#)

**Range** [Product<sup>c</sup>](#)

## associated with product object<sup>op</sup>

**IRI** <http://w3id.org/CEON/ontology/product/associatedWithProductObject>

**Sub Property Of** [topObjectProperty<sup>op</sup>](#)

**Domain** [ProductObjectComposition<sup>c</sup>](#)

**Range** [Item<sup>c</sup>](#)

## batch of products<sup>op</sup>

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/batchOfProduct">http://w3id.org/CEON/ontology/product/batchOfProduct</a>
<b>Description</b>	batchOfProduct intends to represent what is the model product of a batch of objects.
<b>Domain</b>	<a href="#">resourceODP:BatchOfObjects</a> <sup>c</sup>
<b>Range</b>	<a href="#">Product</a> <sup>c</sup>

## compliance with<sup>op</sup>

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/complianceWith">http://w3id.org/CEON/ontology/product/complianceWith</a>
<b>Domain</b>	<a href="#">Compliance</a> <sup>c</sup>

## composition of<sup>op</sup>

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/compositionOf">http://w3id.org/CEON/ontology/product/compositionOf</a>
<b>Domain</b>	<a href="#">resourceODP:Composition</a> <sup>c</sup>
<b>Range</b>	<a href="#">resourceODP:Matter</a> <sup>c</sup> or <a href="#">Item</a> <sup>c</sup> or <a href="#">Product</a> <sup>c</sup>

## has compliance<sup>op</sup>

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/hasCompliance">http://w3id.org/CEON/ontology/product/hasCompliance</a>
<b><u>Domain</u></b>	<a href="http://w3id.org/CEON/ontology/processODP/Process">http://w3id.org/CEON/ontology/processODP/Process</a> <sup>c</sup> <i>or</i> <a href="#">actorODP:Actor</a> <sup>c</sup> <i>or</i> <a href="#">Product</a> <sup>c</sup> <i>or</i> <a href="#">Item</a> <sup>c</sup>
<b><u>Range</u></b>	<a href="#">Compliance</a> <sup>c</sup>

## has composition<sup>op</sup>

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/hasComposition">http://w3id.org/CEON/ontology/product/hasComposition</a>
<b><u>Description</u></b>	hasComposition intends to represent that a product model or physical object can have composition information.
<b><u>Domain</u></b>	<a href="#">Product</a> <sup>c</sup> <i>or</i> <a href="#">resourceODP:PhysicalObject</a> <sup>c</sup>
<b><u>Range</u></b>	<a href="#">resourceODP:Composition</a> <sup>c</sup>

## has product component<sup>op</sup>

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**IRI** <http://w3id.org/CEON/ontology/product/hasProductComponent>

**Description** hasProductComponent intends to represent that a product can have other product components.

**Domain** [Product<sup>c</sup>](#)

**Range** [Product<sup>c</sup>](#)

## has product object component<sup>op</sup>

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**IRI** <http://w3id.org/CEON/ontology/product/hasProductObjectComponent>

**Domain** [Item<sup>c</sup>](#)

**Range** [Item<sup>c</sup>](#)

## modelled by<sup>op</sup>

**IRI** <http://w3id.org/CEON/ontology/product/modelledBy>

### Description

modelledBy intends to represent that product objects follow particular product models.

### Domain

[Item](#)<sup>c</sup>

### Range

[Product](#)<sup>c</sup>

## Datatype Properties

## Composition quantity<sup>dp</sup>

**IRI** <http://w3id.org/CEON/ontology/product/compositionQuantity>

### Domain

[resourceODP:Composition](#)<sup>c</sup>

### Range

[xsd:double](#)

## country of assembly<sup>dp</sup>

**IRI** <http://w3id.org/CEON/ontology/product/countryOfAssembly>

### Sub Property Of

[locationOfAssembly](#)<sup>dp</sup>

## country of manufacture<sup>dp</sup>

**IRI** <http://w3id.org/CEN/ontology/product/countryOfManufacture>

**Sub Property Of** [locationOfManufacture](#)<sup>dp</sup>

## country of origin<sup>dp</sup>

**IRI** <http://w3id.org/CEN/ontology/product/countryOfOrigin>

**Sub Property Of** [locationOfOrigin](#)<sup>dp</sup>

## has certificate<sup>dp</sup>

**IRI** <http://w3id.org/CEN/ontology/product/hasCertificate>

**Domain** [Compliance](#)<sup>c</sup>

## location of assembly<sup>dp</sup>

**IRI** <http://w3id.org/CEN/ontology/product/locationOfAssembly>

**Super Property Of** [countryOfAssembly](#)<sup>dp</sup>

**Domain** [Product](#)<sup>c</sup> *or* [Item](#)<sup>c</sup>

**Range** [xsd:string](#)



## location of manufacture<sup>dp</sup>

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**IRI** <http://w3id.org/CEON/ontology/product/locationOfManufacture>

**Super Property Of** [countryOfManufacture<sup>dp</sup>](#)

**Domain** [Item<sup>c</sup>](#) *or* [Product<sup>c</sup>](#)

**Range** [xsd:string](#)

## location of origin<sup>dp</sup>

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**IRI** <http://w3id.org/CEON/ontology/product/locationOfOrigin>

**Super Property Of** [countryOfOrigin<sup>dp</sup>](#)

**Domain** [Product<sup>c</sup>](#) *or* [Item<sup>c</sup>](#)

**Range** [xsd:string](#)

## Annotation Properties

contributor<sup>ap</sup>

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**IRI** <http://purl.org/dc/terms/contributor>

created<sup>ap</sup>

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**IRI** <http://purl.org/dc/terms/created>

creator<sup>ap</sup>

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**IRI** <http://purl.org/dc/terms/creator>

description<sup>ap</sup>

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**IRI** <http://purl.org/dc/terms/description>

license<sup>ap</sup>

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**IRI** <http://purl.org/dc/terms/license>

title<sup>ap</sup>

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**IRI** <http://purl.org/dc/terms/title>

preferred namespace prefix <sup>ap</sup>	
IRI	<a href="http://purl.org/vocab/vann/preferredNamespacePrefix">http://purl.org/vocab/vann/preferredNamespacePrefix</a>
preferred namespace uri <sup>ap</sup>	
IRI	<a href="http://purl.org/vocab/vann/preferredNamespaceUri">http://purl.org/vocab/vann/preferredNamespaceUri</a>
covers requirements <sup>ap</sup>	
IRI	<a href="http://www.ontologydesignpatterns.org/schemas/cpannotationschema.owl#coversRequirements">http://www.ontologydesignpatterns.org/schemas/cpannotationschema.owl#coversRequirements</a>

## Namespaces

:

<http://w3id.org/CEON/ontology/product/>

**actorODP**

<http://w3id.org/CEON/ontology/actorODP/>

**dcterms**

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

**odp**

<http://www.ontologydesignpatterns.org/schemas/cpannotationschema.owl#>

**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#>

#### resourceODP

<http://w3id.org/CE0N/ontology/resourceODP/>

#### vann

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

#### xsd

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

## Legend

c	Classes
op	Object Properties
dp	Data type Properties
ap	Annotation Properties

