

# Circular Economy Ontology Network (CEON) - Product Module

## Metadata

### IRI

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

### Title

Circular Economy Ontology Network  
(CEON) - Product Module

### Creator

Huanyu Li

### Contributor

Eva Blomqvist

Mikael Lindecrantz

Robin Keskisärkkä

### Date Created

2023-03-16

### License

<https://creativecommons.org/licenses/by/4.0/>

### Version Iri

<http://w3id.org/CEON/ontology/product/0.3/>

### Version Info

0.3

### 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-ResourceType-4, C11-2, C12-1, C13-3, E2-1, T8-3.

## Classes

### Actor<sup>C</sup>

---

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/actorODP/Actor">http://w3id.org/CEON/ontology/actorODP/Actor</a>
------------	---

### Resource Relation<sup>C</sup>

---

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/actorODP/ResourceRelation">http://w3id.org/CEON/ontology/actorODP/ResourceRelation</a>
------------	---

<b><u>Super Class Of</u></b>	<a href="#"><u>resourceODP:Composition</u></a>
------------------------------	--

### Process<sup>C</sup>

---

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/processODP/Process">http://w3id.org/CEON/ontology/processODP/Process</a>
------------	---

## Compliance<sup>c</sup>

**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>

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

**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](#)

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

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

## Product model<sup>c</sup>

---

### IRI

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

### Description

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

### 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>

### Restriction

[hasComposition](#)<sup>op</sup> some [Product model](#)<sup>c</sup>  
[hasComposition](#)<sup>op</sup> some [Product model](#)<sup>c</sup>

## Product composition<sup>c</sup>

---

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

**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 product.

**Sub Class Of**

[resourceODP:Composition](#)

**In Domain Of**

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

**Restriction**

[associated with product model<sup>op</sup>](#) *exactly* 1 [Product composition<sup>c</sup>](#)

## Product object<sup>c</sup>

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

### Description

A product object is a physical object put into a market for sale, i.e. corresponding to the notion of an item, which conforms to the abstract idea of a product model. The product can be a thing that grows naturally or produced through some chemical or manufacturing processes.

### Sub Class Of

[resourceODP:PhysicalObject](#)

### 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  
[Product object<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</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>

## Object Properties

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

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/associatedWithMatter">http://w3id.org/CEON/ontology/product/associatedWithMatter</a>
<b><u>Description</u></b>	associatedWithMatter intends to represent the matter to which a matter composition information regards to.
<b><u>Domain</u></b>	<a href="#">Matter composition<sup>c</sup></a>
<b><u>Range</u></b>	<a href="#">resourceODP:Matter</a>

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



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

---

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

**Description** batchOfProduct intends to represent what is the model product of a batch of objects.

**Domain** [resourceODP:BatchOfObjects](#)

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

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

---

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

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

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

---

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

**Domain** [resourceODP:Composition](#)

**Range** [Product model<sup>c</sup>](#) *or* [Product object<sup>c</sup>](#) *or* [resourceODP:Matter<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="#">Product model</a> <sup>c</sup> <i>or</i> <a href="#">actorODP:Actor</a> <sup>c</sup> <i>or</i> <a href="#">Product object</a> <sup>c</sup> <i>or</i> <a href="http://w3id.org/CEON/ontology/processODP/Process">http://w3id.org/CEON/ontology/processODP/Process</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="#">resourceODP:PhysicalObject</a> <sup>c</sup> <i>or</i> <a href="#">Product model</a> <sup>c</sup>
<b><u>Range</u></b>	<a href="#">resourceODP:Composition</a>

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

---

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

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

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

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

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

---

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

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

**Range** [Product object<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

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

### Range

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

## Datatype Properties

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

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

**Domain** [resourceODP:Composition](#)

**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/CEON/ontology/product/countryOfManufacture>

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

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

---

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

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

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

---

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

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

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

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

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

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

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

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

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

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

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

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

location of origin<sup>dp</sup>

---

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

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

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

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

## Annotation Properties

contributor<sup>ap</sup>

---

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

created<sup>ap</sup>

---

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

creator<sup>ap</sup>

---

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

description<sup>ap</sup>

---

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

license<sup>ap</sup>

---

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

title<sup>ap</sup>

---

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

preferred namespace prefix<sup>ap</sup>

---

**IRI** <http://purl.org/vocab/vann/preferredNamespacePrefix>

preferred namespace uri<sup>ap</sup>

---

**IRI** <http://purl.org/vocab/vann/preferredNamespaceUri>



covers requirements<sup>ap</sup>

<b>IRI</b>	<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/CEON/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