

# 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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### 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 D3.2: CE5-2, C11-2, C12-1, C13-3, E2-1, T8-3.

## Classes

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

## Process<sup>c</sup>

**IRI** <http://w3id.org/CEON/ontology/processODP/Process>

## 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>](#)

## 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>

**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	<a href="http://w3id.org/CEON/ontology/product/Product">http://w3id.org/CEON/ontology/product/Product</a>
Is Defined By	ISO 59004:2024 -3.2.2 product
Description	<p>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).</p> <p>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.</p>
Sub Class Of	<a href="#">Solution<sup>c</sup></a>
In Domain Of	<a href="#">has_product_component<sup>op</sup></a>
In Range Of	<a href="#">associated_with_product_model<sup>op</sup></a> <a href="#">batch_of_products<sup>op</sup></a> <a href="#">has_product_component<sup>op</sup></a> <a href="#">modelled_by<sup>op</sup></a>
Restriction	<a href="#">hasComposition<sup>op</sup> some <a href="#">Product<sup>c</sup></a></a> <a href="#">hasComposition<sup>op</sup> some <a href="#">Product<sup>c</sup></a></a>

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

IRI	<a href="http://w3id.org/CEON/ontology/product/ProductComposition">http://w3id.org/CEON/ontology/product/ProductComposition</a>
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	<a href="#">resourceODP:Composition<sup>c</sup></a>
In Domain Of	<a href="#">associated_with_product_model<sup>op</sup></a>
Restriction	<a href="#">associated_with_product_model<sup>op</sup> exactly 1 <a href="#">Product composition<sup>c</sup></a></a>

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

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

## Solution<sup>c</sup>

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

**Is Defined By** ISO 59004:2024 - 3.2.1 solution

**Description** Product or service, or a combination thereof, that fulfils a need of an interested party.

**Super Class Of** [Product<sup>c</sup>](#)

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

**IRI** <http://w3id.org/CEON/ontology/resourceODP/BatchOfObjects>

**In Domain Of** [batch of products<sup>op</sup>](#)

**Restriction** [batch of products<sup>op</sup>](#) exactly 1 [resourceODP:BatchOfObjects<sup>c</sup>](#)

## Composition<sup>c</sup>

**IRI** <http://w3id.org/CEON/ontology/resourceODP/Composition>

**Sub Class Of** [actorODP:ResourceRelation<sup>c</sup>](#)

**In Domain Of** [compositionOf<sup>op</sup>](#)  
[Composition quantity<sup>dp</sup>](#)

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

**Super Class Of** [Matter composition<sup>c</sup>](#)  
[Product composition<sup>c</sup>](#)  
[ProductObjectComposition<sup>c</sup>](#)

## Matter<sup>c</sup>

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

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

## Physical Object<sup>c</sup>

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

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

## 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>Description</b>	associatedWithMatter intends to represent the matter to which a matter composition information regards to.
<b>Domain</b>	<a href="#">Matter composition<sup>c</sup></a>
<b>Range</b>	<a href="#">resourceODP:Matter<sup>c</sup></a>
associated with product model <sup>op</sup>	
<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/associatedWithProductModel">http://w3id.org/CEON/ontology/product/associatedWithProductModel</a>
<b>Description</b>	associatedWithProductModel intends to represent the product model to which a product composition information regards to.
<b>Domain</b>	<a href="#">Product composition<sup>c</sup></a>
<b>Range</b>	<a href="#">Product<sup>c</sup></a>
associated with product object <sup>op</sup>	
<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/associatedWithProductObject">http://w3id.org/CEON/ontology/product/associatedWithProductObject</a>
<b>Sub Property Of</b>	<a href="#">topObjectProperty<sup>op</sup></a>
<b>Domain</b>	<a href="#">ProductObjectComposition<sup>c</sup></a>
<b>Range</b>	<a href="#">Item<sup>c</sup></a>
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<sup>c</sup></a>
<b>Range</b>	<a href="#">Product<sup>c</sup></a>
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<sup>c</sup></a>

## 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<sup>c</sup></a>
<b>Range</b>	<a href="#">Item<sup>c</sup></a> or <a href="#">resourceODP:Matter<sup>c</sup></a> or <a href="#">Product<sup>c</sup></a>

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

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

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

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/hasProductComponent">http://w3id.org/CEON/ontology/product/hasProductComponent</a>
<b>Description</b>	hasProductComponent intends to represent that a product can have other product components.
<b>Domain</b>	<a href="#">Product<sup>c</sup></a>
<b>Range</b>	<a href="#">Product<sup>c</sup></a>

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

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

modelled by<sup>dp</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/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<sup>c</sup>](#) or [Item<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** [Item<sup>c</sup>](#) or [Product<sup>c</sup>](#)

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

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

**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>

**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>

<b>license</b> <sup>ap</sup>	
<b>IRI</b>	<a href="http://purl.org/dc/terms/license">http://purl.org/dc/terms/license</a>
<b>title</b> <sup>ap</sup>	
<b>IRI</b>	<a href="http://purl.org/dc/terms/title">http://purl.org/dc/terms/title</a>
<b>preferred namespace prefix</b> <sup>ap</sup>	
<b>IRI</b>	<a href="http://purl.org/vocab/vann/preferredNamespacePrefix">http://purl.org/vocab/vann/preferredNamespacePrefix</a>
<b>preferred namespace uri</b> <sup>ap</sup>	
<b>IRI</b>	<a href="http://purl.org/vocab/vann/preferredNamespaceUri">http://purl.org/vocab/vann/preferredNamespaceUri</a>
<b>covers requirements</b> <sup>ap</sup>	
<b>IRI</b>	<a href="http://www.ontologydesignpatterns.org/schemas/cpannotation-schema.owl#coversRequirements">http://www.ontologydesignpatterns.org/schemas/cpannotation-schema.owl#coversRequirements</a>

## Namespaces

:

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

**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	Datatype Properties
ap	Annotation Properties