

# Circular Economy Ontology Network (CEON) - Product Module

## Metadata

IRI	<a href="http://w3id.org/CEON/ontology/product/">http://w3id.org/CEON/ontology/product/</a>
Title	Circular Economy Ontology Network (CEON) - Product Module
Publisher	Onto-DESIDE
Creator	Huanyu Li
Contributor	Eva Blomqvist
Date Created	2025-03-19
Date Issued	2025-06-30
License	<a href="https://creativecommons.org/licenses/by/4.0/">https://creativecommons.org/licenses/by/4.0/</a>
Version Iri	<a href="http://w3id.org/CEON/ontology/product/0.5/">http://w3id.org/CEON/ontology/product/0.5/</a>
Version Info	0.5
Prior Version	0.4
Preferred Namespace Prefix	ceon-product
Preferred Namespace Uri	<a href="http://w3id.org/CEON/ontology/product/">http://w3id.org/CEON/ontology/product/</a>

**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

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

## Location<sup>c</sup>

**IRI** <http://w3id.org/CEON/ontology/location/Location>

**Super Class Of**

[AssemblyLocation<sup>c</sup>](#)  
[ManufactureLocation<sup>c</sup>](#)  
[OriginLocation<sup>c</sup>](#)  
[ProductionLocation<sup>c</sup>](#)  
[SupplierLocation<sup>c</sup>](#)

## Process<sup>c</sup>

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

## Assembly Location<sup>c</sup>

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

**Sub Class Of** [<sup>c</sup>](http://w3id.org/CEON/ontology/location/Location)

**In Domain Of** [countryOfAssembly<sup>dp</sup>](#)

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

**Restriction**  
[<sup>dp</sup> max 1](http://w3id.org/CEON/ontology/location/hasCity) [AssemblyLocation<sup>c</sup>](#)  
[<sup>dp</sup> max 1](http://w3id.org/CEON/ontology/location/hasPostalCode)  
[AssemblyLocation<sup>c</sup>](#)  
[<sup>dp</sup> max 1](http://w3id.org/CEON/ontology/location/hasStreetAddress)  
[AssemblyLocation<sup>c</sup>](#)  
[countryOfAssembly<sup>dp</sup> max 1](#) [AssemblyLocation<sup>c</sup>](#)

## 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>](#)

**Super Class Of**  
[ISOCompliance<sup>c</sup>](#)  
[REACHCompliance<sup>c</sup>](#)  
[RoHSCompliance<sup>c</sup>](#)

## Composition<sup>C</sup>

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/Composition">http://w3id.org/CEON/ontology/product/Composition</a>
<b>Sub Class Of</b>	<a href="#">actorODP:ResourceParticipation</a>
<b>In Domain Of</b>	<a href="#">compositionOf</a> <sup>op</sup> <a href="#">compositionQuantity</a> <sup>dp</sup>
<b>In Range Of</b>	<a href="#">hasComposition</a> <sup>op</sup>
<b>Super Class Of</b>	<a href="#">MatterComposition</a> <sup>C</sup> <a href="#">ProductComposition</a> <sup>C</sup> <a href="#">ProductObjectComposition</a> <sup>C</sup>

## Iso Compliance<sup>C</sup>

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/ISOCompliance">http://w3id.org/CEON/ontology/product/ISOCompliance</a>
<b>Sub Class Of</b>	<a href="#">Compliance</a> <sup>C</sup>

## Item<sup>C</sup>

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/Item">http://w3id.org/CEON/ontology/product/Item</a>
<b>Sub Class Of</b>	<a href="#">resourceODP:PhysicalObject</a> <sup>C</sup>
<b>In Domain Of</b>	<a href="#">hasProductObjectComponent</a> <sup>op</sup> <a href="#">modelledBy</a> <sup>op</sup>
<b>In Range Of</b>	<a href="#">associatedWithProductObject</a> <sup>op</sup> <a href="#">hasProductObjectComponent</a> <sup>op</sup>
<b>Restriction</b>	<a href="#">modelledBy</a> <sup>op</sup> <i>exactly</i> 1 <a href="#">Item</a> <sup>C</sup>

## Manufacture Location<sup>C</sup>

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/ManufactureLocation">http://w3id.org/CEON/ontology/product/ManufactureLocation</a>
<b>Sub Class Of</b>	<a href="http://w3id.org/CEON/ontology/location/Location">http://w3id.org/CEON/ontology/location/Location</a> <sup>C</sup>
<b>In Domain Of</b>	<a href="#">countryOfManufacture</a> <sup>dp</sup>
<b>In Range Of</b>	<a href="#">hasManufacturerLocation</a> <sup>op</sup>
<b>Restriction</b>	<a href="http://w3id.org/CEON/ontology/location/hasCity">http://w3id.org/CEON/ontology/location/hasCity</a> <sup>dp</sup> <i>max</i> 1 <a href="#">ManufactureLocation</a> <sup>C</sup> <a href="http://w3id.org/CEON/ontology/location/hasPostalCode">http://w3id.org/CEON/ontology/location/hasPostalCode</a> <sup>dp</sup> <i>max</i> 1 <a href="#">ManufactureLocation</a> <sup>C</sup> <a href="http://w3id.org/CEON/ontology/location/hasStreetAddress">http://w3id.org/CEON/ontology/location/hasStreetAddress</a> <sup>dp</sup> <i>max</i> 1 <a href="#">ManufactureLocation</a> <sup>C</sup> <a href="#">countryOfManufacture</a> <sup>dp</sup> <i>max</i> 1 <a href="#">ManufactureLocation</a> <sup>C</sup>

Matter Composition<sup>C</sup>

IRI	<a href="http://w3id.org/CEON/ontology/product/MatterComposition">http://w3id.org/CEON/ontology/product/MatterComposition</a>
Sub Class Of	<a href="#">Composition<sup>C</sup></a>
In Domain Of	<a href="#">associatedWithMatter<sup>op</sup></a>
Restriction	<a href="#">associatedWithMatter<sup>op</sup></a> <i>exactly</i> 1 <a href="#">MatterComposition<sup>C</sup></a>

Origin Location<sup>C</sup>

IRI	<a href="http://w3id.org/CEON/ontology/product/OriginLocation">http://w3id.org/CEON/ontology/product/OriginLocation</a>
Sub Class Of	<a href="http://w3id.org/CEON/ontology/location/Location">http://w3id.org/CEON/ontology/location/Location<sup>C</sup></a>
In Domain Of	<a href="#">countryOfOrigin<sup>dp</sup></a>
In Range Of	<a href="#">hasOriginLocation<sup>op</sup></a>
Restriction	<a href="http://w3id.org/CEON/ontology/location/hasCity">http://w3id.org/CEON/ontology/location/hasCity<sup>dp</sup></a> <i>max</i> 1 <a href="#">OriginLocation<sup>C</sup></a> <a href="http://w3id.org/CEON/ontology/location/hasPostalCode">http://w3id.org/CEON/ontology/location/hasPostalCode<sup>dp</sup></a> <i>max</i> 1 <a href="#">OriginLocation<sup>C</sup></a> <a href="http://w3id.org/CEON/ontology/location/hasStreetAddress">http://w3id.org/CEON/ontology/location/hasStreetAddress<sup>dp</sup></a> <i>max</i> 1 <a href="#">OriginLocation<sup>C</sup></a> <a href="#">countryOfOrigin<sup>dp</sup></a> <i>max</i> 1 <a href="#">OriginLocation<sup>C</sup></a>

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
Sub Class Of	<a href="#">Solution<sup>C</sup></a> <a href="#">resourceODP:Resource</a>
In Domain Of	<a href="#">hasProductComponent<sup>op</sup></a>
In Range Of	<a href="#">associatedWithProductModel<sup>op</sup></a> <a href="#">batchOfProduct<sup>op</sup></a> <a href="#">hasProductComponent<sup>op</sup></a> <a href="#">modelledBy<sup>op</sup></a>
Restriction	<a href="#">hasComposition<sup>op</sup></a> some <a href="#">Product<sup>C</sup></a> <a href="#">hasComposition<sup>op</sup></a> some <a href="#">Product<sup>C</sup></a> <a href="#">hasAssemblyLocation<sup>op</sup></a> only <a href="#">Product<sup>C</sup></a> <a href="#">hasManufacturerLocation<sup>op</sup></a> only <a href="#">Product<sup>C</sup></a> <a href="#">hasOriginLocation<sup>op</sup></a> only <a href="#">Product<sup>C</sup></a>

## Product Composition<sup>C</sup>

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

## Production Location<sup>C</sup>

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/ProductionLocation">http://w3id.org/CEON/ontology/product/ProductionLocation</a>
<b>Sub Class Of</b>	<a href="http://w3id.org/CEON/ontology/location/Location">http://w3id.org/CEON/ontology/location/Location</a> <sup>C</sup>
<b>In Domain Of</b>	<a href="#">countryOfProduction</a> <sup>dp</sup> <a href="#">productionSite</a> <sup>dp</sup>
<b>Restriction</b>	<a href="http://w3id.org/CEON/ontology/location/hasCity">http://w3id.org/CEON/ontology/location/hasCity</a> <sup>dp</sup> <i>max</i> 1 <a href="#">ProductionLocation</a> <sup>C</sup> <a href="http://w3id.org/CEON/ontology/location/hasPostalCode">http://w3id.org/CEON/ontology/location/hasPostalCode</a> <sup>dp</sup> <i>max</i> 1 <a href="#">ProductionLocation</a> <sup>C</sup> <a href="http://w3id.org/CEON/ontology/location/hasStreetAddress">http://w3id.org/CEON/ontology/location/hasStreetAddress</a> <sup>dp</sup> <i>max</i> 1 <a href="#">ProductionLocation</a> <sup>C</sup> <a href="#">countryOfProduction</a> <sup>dp</sup> <i>max</i> 1 <a href="#">ProductionLocation</a> <sup>C</sup> <a href="#">productionSite</a> <sup>dp</sup> <i>max</i> 1 <a href="#">ProductionLocation</a> <sup>C</sup>

## Reach Compliance<sup>C</sup>

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/REACHCompliance">http://w3id.org/CEON/ontology/product/REACHCompliance</a>
<b>Sub Class Of</b>	<a href="#">Compliance</a> <sup>C</sup>
<b>Equivalentclass</b>	<a href="#">complianceWith</a> <sup>op</sup> value <a href="#">REACH</a> <sup>C</sup>

## Regulation<sup>C</sup>

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/Regulation">http://w3id.org/CEON/ontology/product/Regulation</a>
<b>Named Individuals</b>	<a href="#">REACH</a> <sup>ni</sup> <a href="#">RoHS</a> <sup>ni</sup>

## Ro Hs Compliance<sup>C</sup>

**IRI** <http://w3id.org/CE0N/ontology/product/RoHSCompliance>

**Sub Class Of** [Compliance<sup>C</sup>](#)

**Equivalentclass** [complianceWith<sup>op</sup>](#) value [RoHS<sup>C</sup>](#)

## Solution<sup>C</sup>

**IRI** <http://w3id.org/CE0N/ontology/product/Solution>

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

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

## Supplier Location<sup>C</sup>

**IRI** <http://w3id.org/CE0N/ontology/product/SupplierLocation>

**Sub Class Of** [http://w3id.org/CE0N/ontology/location/Location<sup>C</sup>](http://w3id.org/CE0N/ontology/location/Location)

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

**IRI** <http://w3id.org/CE0N/ontology/resource0DP/BatchOf0bjects>

**In Domain Of** [batchOfProduct<sup>op</sup>](#)

**Restriction** [batchOfProduct<sup>op</sup>](#) *exactly* 1 [resource0DP:BatchOfObjects<sup>C</sup>](#)

## Matter<sup>C</sup>

**IRI** <http://w3id.org/CE0N/ontology/resource0DP/Matter>

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

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

**IRI** <http://w3id.org/CE0N/ontology/resource0DP/PhysicalObject>

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

## Object Properties

has location<sup>op</sup>

**IRI** <http://w3id.org/CE0N/ontology/location/hasLocation>

**Super Property Of**

- [hasAssemblyLocation](#)<sup>op</sup>
- [hasManufacturerLocation](#)<sup>op</sup>
- [hasOriginLocation](#)<sup>op</sup>

associated with matter<sup>op</sup>

**IRI** <http://w3id.org/CE0N/ontology/product/associatedWithMatter>

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

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

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

**IRI** <http://w3id.org/CE0N/ontology/product/associatedWithProductModel>

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

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

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

**IRI** <http://w3id.org/CE0N/ontology/product/associatedWithProductObject>

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

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

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

batch of product<sup>op</sup>

**IRI** <http://w3id.org/CE0N/ontology/product/batchOfProduct>

**Domain** [resourceODP:BatchOfObjects](#)<sup>c</sup>

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

compliance with<sup>op</sup>

**IRI** <http://w3id.org/CE0N/ontology/product/complianceWith>

**Domain** [Compliance](#)<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="#">Composition</a> <sup>c</sup>
<b>Range</b>	<a href="#">Product</a> <sup>c</sup> or <a href="#">Item</a> <sup>c</sup> or <a href="#">resourceODP:Matter</a> <sup>c</sup>

## has assembly location<sup>op</sup>

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/hasAssemblyLocation">http://w3id.org/CEON/ontology/product/hasAssemblyLocation</a>
<b>Sub Property Of</b>	<a href="http://w3id.org/CEON/ontology/location/hasLocation">http://w3id.org/CEON/ontology/location/hasLocation</a> <sup>op</sup>
<b>Domain</b>	<a href="#">Item</a> <sup>c</sup> or <a href="#">Product</a> <sup>c</sup>
<b>Range</b>	<a href="#">AssemblyLocation</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>Domain</b>	<a href="http://w3id.org/CEON/ontology/processODP/Process">http://w3id.org/CEON/ontology/processODP/Process</a> <sup>c</sup> or <a href="#">Item</a> <sup>c</sup> or <a href="#">actorODP:Actor</a> <sup>c</sup> or <a href="#">Product</a> <sup>c</sup>
<b>Range</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>Domain</b>	<a href="#">resourceODP:PhysicalObject</a> <sup>c</sup> or <a href="#">Product</a> <sup>c</sup>
<b>Range</b>	<a href="#">Composition</a> <sup>c</sup>

## has manufacturer location<sup>op</sup>

<b>IRI</b>	<a href="http://w3id.org/CEON/ontology/product/hasManufacturerLocation">http://w3id.org/CEON/ontology/product/hasManufacturerLocation</a>
<b>Sub Property Of</b>	<a href="http://w3id.org/CEON/ontology/location/hasLocation">http://w3id.org/CEON/ontology/location/hasLocation</a> <sup>op</sup>
<b>Domain</b>	<a href="#">Item</a> <sup>c</sup> or <a href="#">Product</a> <sup>c</sup>
<b>Range</b>	<a href="#">ManufactureLocation</a> <sup>c</sup>



has origin location<sup>op</sup>

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

**Sub Property Of** <http://w3id.org/CEON/ontology/location/hasLocation><sup>op</sup>

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

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

has product component<sup>op</sup>

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

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

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

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

**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>

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

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

## Datatype Properties

has city<sup>dp</sup>

**IRI** <http://w3id.org/CEON/ontology/location/hasCity>

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

has country<sup>dp</sup>

**IRI** <http://w3id.org/CEON/ontology/location/hasCountry>

**Super Property Of**

- [countryOfAssembly](#)<sup>dp</sup>
- [countryOfManufacture](#)<sup>dp</sup>
- [countryOfOrigin](#)<sup>dp</sup>
- [countryOfProduction](#)<sup>dp</sup>

has postal code<sup>dp</sup>

**IRI** <http://w3id.org/CEON/ontology/location/hasPostalCode>

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

has street address<sup>dp</sup>

**IRI** <http://w3id.org/CEON/ontology/location/hasStreetAddress>

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

composition quantity<sup>dp</sup>

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

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

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

country of assembly<sup>dp</sup>

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

**Sub Property Of** <http://w3id.org/CEON/ontology/location/hasCountry><sup>dp</sup>

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

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

country of manufacture<sup>dp</sup>

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

**Sub Property Of** <http://w3id.org/CEON/ontology/location/hasCountry><sup>dp</sup>

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

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

country of origin<sup>dp</sup>

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

**Sub Property Of** <http://w3id.org/CEON/ontology/location/hasCountry><sup>dp</sup>

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

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

country of production<sup>dp</sup>

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

**Sub Property Of** <http://w3id.org/CEON/ontology/location/hasCountry><sup>dp</sup>

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

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

has brand<sup>dp</sup>

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

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

has certificate<sup>dp</sup>

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

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

has global trade item number<sup>dp</sup>

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

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

has product name<sup>dp</sup>

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

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

production site<sup>dp</sup>

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

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

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

## 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	Datatype Properties