# 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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Onto-DESIDE

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Version Iri

http://w3id.org/CEON/ontology/product/0.5/

**Version Info** 

0.5

**Prior Version** 

0.4

**Preferred Namespace Prefix** 

ceon-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.

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

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

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

IRI

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

Location <sup>c</sup>

**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>

Assembly Location <sup>C</sup>

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

In Domain Of countryOfAssembly dp

In Range Of <u>hasAssemblyLocation op</u>

Restriction

http://w3id.org/CEON/ontology/location/hasCity<sup>dp</sup> max 1 AssemblyLocation<sup>c</sup>

http://w3id.org/CEON/ontology/location/hasPostalCode dp max 1

<u>AssemblyLocation<sup>c</sup></u>

http://w3id.org/CEON/ontology/location/hasStreetAddress<sup>dp</sup> max 1

<u>AssemblyLocation</u><sup>©</sup>

countryOfAssembly<sup>dp</sup> max 1 AssemblyLocation<sup>c</sup>

Compliance <sup>c</sup>

In Domain Of

complianceWith op hasCertificate dp

In Range Of hasCompliance op

**Super Class Of** 

ISOCompliance<sup>C</sup>
REACHCompliance<sup>C</sup>
RoHSCompliance<sup>C</sup>

Composition <sup>C</sup>

Sub Class Of actorODP:ResourceParticipation

In Domain Of

compositionOf<sup>op</sup> compositionQuantity<sup>dp</sup>

In Range Of hasComposition op

**Super Class Of** 

MatterComposition<sup>C</sup>
ProductComposition<sup>C</sup>
ProductObjectComposition<sup>C</sup>

Iso Compliance<sup>C</sup>

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

Item <sup>c</sup>

Sub Class Of resourceODP:PhysicalObject<sup>C</sup>

In Domain Of

 $\underline{hasProductObjectComponent}^{op}$ 

modelledBy<sup>op</sup>

In Range Of

 $\frac{associated With Product Object}{has Product Object Component}^{op}$ 

Restriction modelledBy<sup>op</sup> exactly 1 Item<sup>c</sup>

Manufacture Location <sup>c</sup>

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

In Domain Of countryOfManufacture dp

In Range Of hasManufacturerLocation op

Restriction

http://w3id.org/CEON/ontology/location/hasCity<sup>dp</sup> max 1 ManufactureLocation<sup>c</sup>

http://w3id.org/CEON/ontology/location/hasPostalCode<sup>dp</sup> max 1

ManufactureLocation <sup>C</sup>

http://w3id.org/CEON/ontology/location/hasStreetAddress<sup>dp</sup> max 1

ManufactureLocation <sup>C</sup>

countryOfManufacture<sup>dp</sup> max 1 ManufactureLocation<sup>c</sup>

Matter Composition <sup>C</sup>

IRI http://w3id.org/CEON/ontology/product/MatterComposition

**Sub Class Of** Composition<sup>C</sup>

In Domain Of associatedWithMatter op

Restriction associatedWithMatter op exactly 1 MatterComposition c

Origin Location <sup>C</sup>

IRI http://w3id.org/CEON/ontology/product/OriginLocation

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

In Domain Of countryOfOrigin dp

In Range Of hasOriginLocation op

Restriction

http://w3id.org/CEON/ontology/location/hasCitydp max 1 OriginLocationC

http://w3id.org/CEON/ontology/location/hasPostalCode dp max 1 OriginLocation

http://w3id.org/CEON/ontology/location/hasStreetAddress<sup>dp</sup> max 1

OriginLocation C

countryOfOrigin<sup>dp</sup> max 1 OriginLocation<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

**Sub Class Of** 

resourceODP:Resource

In Domain Of <u>hasProductComponent</u><sup>op</sup>

In Range Of

associatedWithProductModel<sup>op</sup>

batchOfProduct<sup>op</sup>

<u>hasProductComponent</u><sup>op</sup>

modelledBy op

Restriction

hasComposition op some Product c hasComposition op some Product c hasAssemblyLocation only Product only Product on the hasAssemblyLocation only Product on the hasAssemblyLocation on the hasAssemb hasManufacturerLocation op only Product<sup>c</sup>

hasOriginLocation op only Product<sup>c</sup>

Product Composition<sup>C</sup>

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

In Domain Of associatedWithProductModel op

Restriction associatedWithProductModel op exactly 1 ProductComposition c

Product Object Composition <sup>C</sup>

IRI http://w3id.org/CEON/ontology/product/ProductObjectComposi

tion

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

In Domain Of associatedWithProductObject<sup>op</sup>

Restriction associatedWithProductObject<sup>op</sup> exactly 1 ProductObjectComposition<sup>c</sup>

Production Location <sup>C</sup>

http://w3id.org/CEON/ontology/product/ProductionLocation

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

In Domain Of countryOfProduction dp

productionSite<sup>dp</sup>

Restriction

http://w3id.org/CEON/ontology/location/hasCitydp max 1 ProductionLocationC

http://w3id.org/CEON/ontology/location/hasPostalCode dp max 1

<u>ProductionLocation</u><sup>c</sup>

http://w3id.org/CEON/ontology/location/hasStreetAddress<sup>dp</sup> max 1

<u>ProductionLocation<sup>C</sup></u>

countryOfProduction dp max 1 ProductionLocation productionSite dp max 1 ProductionLocation productionSite dp max 1 ProductionLocation production p

Reach Compliance <sup>C</sup>

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

Equivalentclass complianceWith op value REACHC

Regulation <sup>C</sup>

**Named Individuals** 

REACH<sup>ni</sup>

RoHS<sup>ni</sup>

Ro Hs Compliance <sup>C</sup>

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

Equivalentclass complianceWith op value RoHSC

Solution <sup>C</sup>

http://w3id.org/CEON/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>

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

Batch Of Objects <sup>C</sup>

http://w3id.org/CEON/ontology/resourceODP/BatchOfObjects

In Domain Of <u>batchOfProduct</u>op

Restriction <u>batchOfProduct</u><sup>op</sup> exactly 1 <u>resourceODP:BatchOfObjects</u><sup>c</sup>

Matter <sup>c</sup>

IRI http://w3id.org/CEON/ontology/resourceODP/Matter

In Range Of <u>associatedWithMatter op</u>

Physical Object<sup>C</sup>

Super Class Of Item<sup>C</sup>

## **Object Properties**

## has location op

**Super Property Of** 

- hasAssemblyLocation op
- <u>hasManufacturerLocation</u><sup>op</sup>
- hasOriginLocation op

## associated with matter op

Domain MatterComposition<sup>c</sup>

Range resourceODP:Matter<sup>C</sup>

#### associated with product model op

http://w3id.org/CEON/ontology/product/associatedWithProduc

tModel

Domain ProductComposition<sup>C</sup>

Range Product<sup>c</sup>

# associated with product object op

t0bject

Sub Property Of topObjectProperty op

Domain ProductObjectComposition<sup>C</sup>

Range Item<sup>c</sup>

# batch of product op

Domain resourceODP:BatchOfObjects<sup>C</sup>

Range Product<sup>c</sup>

## compliance with op

Domain Compliance<sup>C</sup>

composition of op

Domain Composition<sup>C</sup>

Range resourceODP:Matter<sup>c</sup> or Product<sup>c</sup> or Item<sup>c</sup>

has assembly location op

Sub Property Of <a href="http://w3id.org/CEON/ontology/location/hasLocation">http://w3id.org/CEON/ontology/location/hasLocation</a> op

Domain <u>Item<sup>c</sup> or Product<sup>c</sup></u>

Range <u>AssemblyLocation</u><sup>C</sup>

has compliance op

<u>Domain</u> <u>http://w3id.org/CEON/ontology/processODP/Process<sup>c</sup> or Product<sup>c</sup> or</u>

actorODP:Actor<sup>c</sup> or Item<sup>c</sup>

Range <u>Compliance</u><sup>C</sup>

has composition op

IRI http://w3id.org/CEON/ontology/product/hasComposition

**Domain** resourceODP:PhysicalObject<sup>c</sup> or Product<sup>c</sup>

Range Composition<sup>C</sup>

has manufacturer location op

IRI http://w3id.org/CEON/ontology/product/hasManufacturerLocat

ion

Sub Property Of <a href="http://w3id.org/CEON/ontology/location/hasLocation">http://w3id.org/CEON/ontology/location/hasLocation</a> op

Domain Product<sup>c</sup> or Item<sup>c</sup>

Range <u>ManufactureLocation</u><sup>C</sup>

has origin location op

Sub Property Of <a href="http://w3id.org/CEON/ontology/location/hasLocation">http://w3id.org/CEON/ontology/location/hasLocation</a> op

Domain Product<sup>c</sup> or Item<sup>c</sup>

Range OriginLocation<sup>C</sup>

has product component op

**Domain** Product<sup>C</sup>

Range Product<sup>c</sup>

has product object component op

onent

Domain <u>Item</u><sup>C</sup>

Range <u>Item</u><sup>C</sup>

modelled by op

Domain <u>Item</u><sup>C</sup>

Range Product<sup>C</sup>

### **Datatype Properties**

has city dp

Sub Property Of topDataProperty dp

has country <sup>dp</sup>

IRI http://w3id.org/CEON/ontology/location/hasCountry

**Super Property Of** 

• countryOfAssembly<sup>dp</sup>

• countryOfManufacture dp

countryOfOrigin<sup>dp</sup>

• countryOfProduction<sup>dp</sup>

has postal code dp

IRI http://w3id.org/CEON/ontology/location/hasPostalCode

Sub Property Of topDataProperty dp

has street address dp

Sub Property Of topDataProperty dp

composition quantity dp

Domain Composition<sup>C</sup>

Range xsd:double

country of assembly dp

Sub Property Of <a href="http://w3id.org/CEON/ontology/location/hasCountry">http://w3id.org/CEON/ontology/location/hasCountry</a> dp

Domain AssemblyLocation<sup>c</sup>

Range xsd:string

country of manufacture dp

IRI http://w3id.org/CEON/ontology/product/countryOfManufacture

Sub Property Of <a href="http://w3id.org/CEON/ontology/location/hasCountry">http://w3id.org/CEON/ontology/location/hasCountry</a> dp

Domain <u>ManufactureLocation</u><sup>c</sup>

Range xsd:string

country of origin dp

Sub Property Of <a href="http://w3id.org/CEON/ontology/location/hasCountry">http://w3id.org/CEON/ontology/location/hasCountry</a> dp

Domain OriginLocation<sup>C</sup>

Range xsd:string

country of production dp

Sub Property Of <a href="http://w3id.org/CEON/ontology/location/hasCountry">http://w3id.org/CEON/ontology/location/hasCountry</a> dp

<u>ProductionLocation</u><sup>C</sup>

Range xsd:string

has brand <sup>dp</sup>

Range xsd:string

has certificate <sup>dp</sup>

Domain Compliance<sup>C</sup>

has global trade item number dp

mber

Range xsd:string

has product name <sup>dp</sup>

Range <u>xsd:string</u>

production site dp

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

