

# Circular Economy Ontology Network (CEON) - Material Module

## Metadata

### IRI

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

### Title

Circular Economy Ontology Network  
(CEON) - Material Module

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### Version Iri

<http://w3id.org/CEON/ontology/material/0.1/>

### Version Info

0.1

### Preferred Namespace Prefix

material

### Preferred Namespace Uri

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

### Description

The Material 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, C3-3, E1-3, E2-4, E5-2, T1-1, T10-2.

## Classes

### Chemical entity<sup>C</sup>

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**IRI** <http://w3id.org/CEON/ontology/material/ChemicalEntity>

**Description**

A chemical entity is an abstraction of entities that can compose matter. For instance, a chemical entity can be a molecular entity or a chemical substance.

**Sub Class Of**

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

**In Range Of**

[has chemical entity<sup>op</sup>](#)

**Super Class Of**

[Chemical substance<sup>C</sup>](#)  
[Molecular entity<sup>C</sup>](#)

## Chemical substance<sup>C</sup>

**IRI** <http://w3id.org/CEON/ontology/material/ChemicalSubstance>

**Description** A chemical substance is made up of a collection of molecular entities.

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

## Material<sup>C</sup>

**IRI** <http://w3id.org/CEON/ontology/material/Material>

**Description** Material as a sub-concept of Matter, can be a substance or a collection of substance which a physical object is composed of.

**Sub Class Of** [resourceODP:Matter<sup>C</sup>](#)

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

**Restriction** [has chemical entity<sup>op</sup>](#)  
some [Material<sup>C</sup>](#)

## Material component<sup>c</sup>

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**IRI** <http://w3id.org/CEN/ontology/material/MaterialComponent>

**Description**

A material component is a part of a material.

**Sub Class Of**

[resourceODP:Constituent](#)

<sup>c</sup>

**In Range Of**

[has material component](#)  
op

## Molecular entity<sup>c</sup>

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**IRI** <http://w3id.org/CEN/ontology/material/MolecularEntity>

**Description**

A molecular entity means a singular/distinguishable entity. It can be for instance, atom, ion.

**Sub Class Of**

[Chemical entity](#)<sup>c</sup>

## Constituent<sup>c</sup>

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

**Super Class Of**

[Material component](#)<sup>c</sup>

## Matter<sup>c</sup>

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

**Super Class Of** [Chemical entity<sup>c</sup>](#)  
[Material<sup>c</sup>](#)

## Object Properties

### has chemical entity<sup>op</sup>

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**IRI** <http://w3id.org/CEN/ontology/material/hasChemicalEntity>

**Description** hasChemicalEntity intends to represent that a material can have a collection of chemical entities.

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

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

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

<b>IRI</b>	<a href="http://w3id.org/CEN/ontology/material/hasMaterialComponent">http://w3id.org/CEN/ontology/material/hasMaterialComponent</a>
<b><u>Description</u></b>	hasMaterialComponent intends to represent that a material can have a collection of components.
<b><u>Domain</u></b>	<a href="#">Material</a> <sup>c</sup>
<b><u>Range</u></b>	<a href="#">Material component</a> <sup>c</sup>

## Datatype Properties

### Anonymous Formula<sup>dp</sup>

<b>IRI</b>	<a href="http://w3id.org/CEN/ontology/material/AnonymousFormula">http://w3id.org/CEN/ontology/material/AnonymousFormula</a>
<b><u>Description</u></b>	AnonymousFormula represents that a molecular entity has the anonymous formula in a string.

## Descriptive Formula<sup>dp</sup>

**IRI** <http://w3id.org/CEON/ontology/material/DescriptiveFormula>

### Description

DescriptiveFormula represents that a molecular entity has the descriptive formula in a string.

## Hill Formula<sup>dp</sup>

**IRI** <http://w3id.org/CEON/ontology/material/HillFormula>

### Description

HillFormula represents that a composition has the hill formula in a string.

## Reduced Chemical Formula<sup>dp</sup>

**IRI** <http://w3id.org/CEON/ontology/material/ReducedChemicalFormula>

### Description

ReducedChemicalFormula represents that a molecular entity has the reduced chemical formula in a string.

## Annotation Properties

description <sup>ap</sup>	
IRI	<a href="http://purl.org/dc/elements/1.1/description">http://purl.org/dc/elements/1.1/description</a>

## Namespaces

:	<a href="http://w3id.org/CEON/ontology/material/">http://w3id.org/CEON/ontology/material/</a>
dc	<a href="http://purl.org/dc/elements/1.1/">http://purl.org/dc/elements/1.1/</a>
dcterms	<a href="http://purl.org/dc/terms/">http://purl.org/dc/terms/</a>
odp	<a href="http://www.ontologydesignpatterns.org/schemas/cpannotationschema.owl#">http://www.ontologydesignpatterns.org/schemas/cpannotationschema.owl#</a>
owl	<a href="http://www.w3.org/2002/07/owl#">http://www.w3.org/2002/07/owl#</a>
prov	<a href="http://www.w3.org/ns/prov#">http://www.w3.org/ns/prov#</a>
rdf	<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#">http://www.w3.org/1999/02/22-rdf-syntax-ns#</a>
rdfs	<a href="http://www.w3.org/2000/01/rdf-schema#">http://www.w3.org/2000/01/rdf-schema#</a>
resourceODP	<a href="http://w3id.org/CEON/ontology/resourceODP/">http://w3id.org/CEON/ontology/resourceODP/</a>
vann	<a href="http://purl.org/vocab/vann/">http://purl.org/vocab/vann/</a>



# Legend

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