

Classes

AccreditationDocument

AccreditationDocument \sqsubseteq Document

Acoustical

Acoustical \sqsubseteq MaterialProperty

Activity

Address

Address \sqsubseteq ValueObject

Agent

AgingInterval

AgingInterval \sqsubseteq AgingTime

AgingProcess

AgingProcess \sqsubseteq Process

AgingTemperature

AgingTemperature \sqsubseteq Temperature

AgingTime

AgingTime \sqsubseteq Time

Algorithm

Algorithm \sqsubseteq Method

AmorphousStructure

AmorphousStructure \sqsubseteq MaterialStructure

AnalysingProcess

AnalysingProcess \sqsubseteq Process

Area

Area \sqsubseteq ValueObject

AssemblingProcess

AssemblingProcess \sqsubseteq Process

BaseFraction

BaseFraction \sqsubseteq Fraction

BaseMaterial

BaseMaterial \sqsubseteq EngineeredMaterial

Biological

Biological \sqsubseteq MaterialProperty

Blank

Blank \sqsubseteq EngineeredMaterial

BondingType

BondingType \sqsubseteq MaterialRelated

CHEBI_24431

CalibrationDocument

CalibrationDocument \sqsubseteq Document

CalibrationRange

CalibrationRange \sqsubseteq ValueObject

Caliper

Caliper \sqsubseteq MeasuringDevice

Chemical

Chemical \sqsubseteq MaterialProperty

ChemicalComposition

ChemicalComposition $\equiv \exists \text{ isPartOf } \text{ChemicalObject}$

ChemicalComposition \sqsubseteq ValueObject

ChemicalObject

ChemicalObject \equiv ValueObject $\sqcap \exists$ relatesTo CHEBI_24431

ChemicalObject \sqsubseteq ValueObject

Circular

Circular \sqsubseteq Shape

ClampingPressure

ClampingPressure \sqsubseteq Stress

ClassificationDocument

ClassificationDocument \sqsubseteq Document

CoatingDesignation

CoatingDesignation \sqsubseteq MaterialRelated

CollectionInterfaceHint

CollectionInterfaceHint \sqsubseteq NodeInfo

CommissionTime

CommissionTime \sqsubseteq Time

Component

Component \sqsubseteq Object

ComputingNode

ComputingNode \sqsubseteq ProcessingNode

ConditioningProcess

ConditioningProcess \sqsubseteq Process

Coordinates

Coordinates \sqsubseteq ValueObject

CovalentBond

CovalentBond \sqsubseteq BondingType

CreepStress

CreepStress \sqsubseteq Stress

CrossSectionArea

CrossSectionArea \sqsubseteq Area

CrossSectionDetermination

CrossSectionDetermination \sqsubseteq Method

CrystallineStructure

CrystallineStructure \sqsubseteq MaterialStructure

DPixelCoordinates

DPixelCoordinates $\equiv \exists$ relatesTo Pixel

DPixelCoordinates \sqsubseteq Coordinates

DataAcquisitionRate

DataAcquisitionRate \sqsubseteq ValueObject

DataCiteMetadata

DataCiteMetadata \sqsubseteq ValueObject

DataScope

DataScope \sqsubseteq Entity

Dataset

Dataset \sqsubseteq DigitalEntity

Date

Date \sqsubseteq Time

DemountingProcess

DemountingProcess \sqsubseteq AssemblingProcess

Department

Department \equiv Organization $\sqcap \exists$ RO_0000087 DepartmentRole

Department \sqsubseteq Organization

DepartmentRole

DepartmentRole \sqsubseteq Role

DepartmentRole $\sqsubseteq \exists$ RO_0000087 Organization

Description

Description \sqsubseteq ValueObject

Diameter

Diameter \sqsubseteq ValueObject

DigitalEntity

DigitalEntity \sqsubseteq Entity

DigitalMaterialIdentifier

DigitalMaterialIdentifier

DigitalMaterialIdentifier \equiv Identifier $\sqcap \exists$ resource DigitalMaterialIdentifier

DigitalMaterialIdentifier \sqsubseteq Identifier

DimensionMeasuringDevice

DimensionMeasuringDevice \sqsubseteq MeasuringDevice

Distance

Distance \sqsubseteq ValueObject

Document

Document \sqsubseteq ValueObject

Duration

Duration \sqsubseteq Time

Electrical

Electrical \sqsubseteq MaterialProperty

ElectronMicroscope

ElectronMicroscope \sqsubseteq Microscope

ElectronMicroscopy

ElectronMicroscopy \sqsubseteq MicroscopyProcess

Elliptical

Elliptical \sqsubseteq Shape

EndTime

EndTime \sqsubseteq Time

EngineeredMaterial

EngineeredMaterial \sqsubseteq Object

Entity**EnvironmentalTemperature**

EnvironmentalTemperature \sqsubseteq Temperature

ErrorReportDocument

ErrorReportDocument \sqsubseteq Document

Extension

Extension \sqsubseteq ValueObject

Extensometer

Extensometer \sqsubseteq MeasuringDevice

FeretDiameter

FeretDiameter \sqsubseteq Diameter

Filter

Filter \sqsubseteq Algorithm

Force

Force \sqsubseteq ValueObject

Fraction

Fraction \sqsubseteq ValueObject

FragmentSelector

Furnace

Furnace \sqsubseteq ProcessingNode

FurnaceCharacteristic

FurnaceCharacteristic $\equiv \exists$ characteristicOf Furnace

FurnaceCharacteristic \sqsubseteq ValueObject

GeometryChangingProcess

GeometryChangingProcess \sqsubseteq Process

Grips

Grips \sqsubseteq Component

GripsAlignment

GripsAlignment \sqsubseteq AssemblingProcess

HeatCapacity

HeatCapacity \sqsubseteq FurnaceCharacteristic

HeatTreatmentProcess

HeatTreatmentProcess \sqsubseteq ConditioningProcess

HydrogenBond

HydrogenBond \sqsubseteq BondingType

IAO_0000078

IAO_0000078 $\equiv \{IAO_0000002\} \sqcup \{IAO_0000120\} \sqcup \{IAO_0000121\} \sqcup \{IAO_0000122\} \sqcup \{IAO_0000123\} \sqcup \{IAO_0000124\} \sqcup \dots$

Identifier

Identifier \equiv DataCiteMetadata \sqcap ValueObject $\sqcap \exists$ hasIdentifier⁻ (Project \sqcup ValueObject)

Identifier

Identifier \sqsubseteq ValueObject

Image

Image \sqsubseteq DigitalEntity

Index

Index \sqsubseteq ValueObject

Initiator

Initiator \equiv Person $\sqcap \exists$ RO_0000087 InitiatorRole

InitiatorRole

InitiatorRole \sqsubseteq Role

InsertSurface

InsertSurface \sqsubseteq QualifyingNodeAnnotation

InspectionDocument

InspectionDocument \sqsubseteq Document

IonicBond

IonicBond \sqsubseteq BondingType

Laboratory

Laboratory \equiv Organization $\sqcap \exists$ RO_0000087 LaboratoryRole

Laboratory \sqsubseteq Organization

LaboratoryRole

LaboratoryRole \sqsubseteq Role

LaboratoryRole $\sqsubseteq \exists$ RO_0000087 Organization

Length

Length \sqsubseteq ValueObject

LengthChangingProcess

LengthChangingProcess \sqsubseteq GeometryChangingProcess

LoadCell

LoadCell \sqsubseteq ProcessingNode

LoadCellCapacity

LoadCellCapacity \sqsubseteq ValueObject

LoadCellCapacity $\sqsubseteq \exists$ characteristicOf LoadCell

Location

Location \sqsubseteq ValueObject

Magnetic

Magnetic \sqsubseteq MaterialProperty

MajorAxisDiameter

MajorAxisDiameter \sqsubseteq Diameter

Manufacturer

Manufacturer \equiv Organization $\sqcap \exists$ RO_0000087 ManufacturerRole

ManufacturerRole

ManufacturerRole \sqsubseteq Role

ManufacturingNode

ManufacturingNode \sqsubseteq ProcessingNode

ManufacturingProcess

ManufacturingProcess \sqsubseteq Process

MassFraction

MassFraction \sqsubseteq Fraction

MaterialDesignation

MaterialDesignation \sqsubseteq MaterialRelated

MaterialProperty

MaterialProperty \sqsubseteq MaterialRelated

MaterialQuality

MaterialQuality \sqsubseteq MaterialRelated

MaterialRelated

MaterialRelated \sqsubseteq ValueObject

MaterialStructure

MaterialStructure \sqsubseteq MaterialRelated

Measurement

Measurement \sqsubseteq ValueScope

MeasuringDevice

MeasuringDevice \sqsubseteq ProcessingNode

MeasuringProcess

MeasuringProcess \sqsubseteq AnalysingProcess

Mechanical

Mechanical \sqsubseteq MaterialProperty

MechanicalTestingProcess

MechanicalTestingProcess \sqsubseteq AnalysingProcess

MediaMovement

MediaMovement \sqsubseteq FurnaceCharacteristic

Medium

Medium \sqsubseteq Object

Metadata

Metadata \sqsubseteq ValueObject

Metadata \sqsubseteq DataScope

Metadata $\sqsubseteq \neg$ PrimaryData

Metadata $\sqsubseteq \neg$ SecondaryData

MetallicBond

MetallicBond \sqsubseteq BondingType

Method

Method \sqsubseteq ValueObject

Method $\sqsubseteq \neg$ Process

MicrometerGauge

MicrometerGauge \sqsubseteq MeasuringDevice

Micropscope

Micropscope \sqsubseteq ProcessingNode

MicroscopyProcess

MicroscopyProcess \sqsubseteq AnalysingProcess

MinorAxisDiameter

MinorAxisDiameter \sqsubseteq Diameter

ModulusOfElasticity

ModulusOfElasticity \sqsubseteq ValueObject

MountingProcess

MountingProcess \sqsubseteq AssemblingProcess

MountingProcess $\sqsubseteq \neg$ TemperatureChangingProcess

NodeInfo

NodeInfo \sqsubseteq ValueObject

NodeModel

NodeModel \sqsubseteq NodeInfo

NodeName

NodeName \sqsubseteq NodeInfo

NodeName \sqsubseteq ProvidedIdentifier

NodeSerialNumber

NodeSerialNumber \sqsubseteq ProvidedIdentifier

NodeSerialNumber \sqsubseteq NodeInfo

NodeSeries

NodeSeries \sqsubseteq NodeInfo

NodeVersion

NodeVersion \sqsubseteq NodeInfo

NonTransformativeAnalysisProcess

NonTransformativeAnalysisProcess \sqsubseteq AnalysingProcess

NonTransformativeAnalysisProcess $\sqsubseteq \neg$ TransformativeAnalysisProcess

Norm

Norm \sqsubseteq Method

NotDetected

NotDetected \sqsubseteq Fraction

Note

Note \sqsubseteq ValueObject

Object

Object \sqsubseteq Entity

Operator

Operator \equiv Person $\sqcap \exists$ RO_0000087 OperatorRole

OperatorRole

OperatorRole \sqsubseteq Role

Optical

Optical \sqsubseteq MaterialProperty

OpticalMicroscopy

OpticalMicroscopy \sqsubseteq MicroscopyProcess

Organization

ParticleNumber

ParticleNumber \sqsubseteq Index

PercentageExtension

PercentageExtension \sqsubseteq Extension

Perimeter

Perimeter \sqsubseteq ValueObject

Person

Pixel

Pixel \sqsubseteq DigitalEntity

PixelDensity

PixelDensity \sqsubseteq ValueObject

Precision

Precision \sqsubseteq ValueObject

PrimaryData

PrimaryData \sqsubseteq DataScope

PrimaryData $\sqsubseteq \neg$ Metadata

PrimaryData $\sqsubseteq \neg$ SecondaryData

Process

Process \sqsubseteq Activity

Process $\sqsubseteq \neg$ Method

ProcessDescription

ProcessDescription \equiv Description $\sqcap \exists$ characteristicOf Process

ProcessDescription \sqsubseteq Description

ProcessDuration

ProcessDuration \sqsubseteq ValueObject

ProcessIdentifier

ProcessIdentifier \equiv Identifier $\sqcap \exists$ characteristicOf Process

ProcessIdentifier \sqsubseteq Identifier

ProcessingNode

ProcessingNode \sqsubseteq Agent

Project

Project \sqsubseteq Activity

ProjectIdentifier

ProjectIdentifier \equiv Identifier \sqcap \exists characteristicOf Project
ProjectIdentifier \sqsubseteq Identifier

ProvidedIdentifier

ProvidedIdentifier \sqsubseteq Identifier

QualifyingNodeAnnotation

QualifyingNodeAnnotation \sqsubseteq NodeInfo

Radiological

Radiological \sqsubseteq MaterialProperty

Radius

Radius \sqsubseteq ValueObject

Rectangular

Rectangular \sqsubseteq Shape

RegionOfInterest

RegionOfInterest \equiv \exists hasSelector FragmentSelector \sqcap \exists hasSource Image
RegionOfInterest \sqsubseteq DigitalEntity

Regression

Regression \sqsubseteq Algorithm

RelatedProjectIdentifier

RelatedProjectIdentifier \sqsubseteq Identifier

RetortType

RetortType \sqsubseteq FurnaceCharacteristic

Role

Roughness

Roughness \sqsubseteq ValueObject

Sample

Sample \sqsubseteq EngineeredMaterial

SecondaryData

SecondaryData \sqsubseteq DataScope

SecondaryData $\sqsubseteq \neg$ Metadata

SecondaryData $\sqsubseteq \neg$ PrimaryData

SemiCrystallineStructure

SemiCrystallineStructure \sqsubseteq MaterialStructure

SequenceNumber

SequenceNumber \sqsubseteq Identifier

SetPoint

SetPoint \sqsubseteq ValueScope

Shape

Shape \sqsubseteq ValueObject

SimulationNode

SimulationNode \sqsubseteq ComputingNode

SimulationProcess

SimulationProcess \sqsubseteq Process

Slide

Slide \sqsubseteq Component

Specimen

Specimen \sqsubseteq Sample

Specimen $\sqsubseteq \neg$ TestPiece

SpecimenName

SpecimenName \equiv Identifier $\sqcap \exists$ characteristicOf Specimen

SpecimenName \sqsubseteq Identifier

Squared

Squared \sqsubseteq Shape

StartTime

StartTime \sqsubseteq Time

Stiffness

Stiffness \sqsubseteq ValueObject

Stress

Stress $\equiv \exists$ relatesTo Area $\sqcap \exists$ relatesTo Force

Stress \sqsubseteq ValueObject

Temperature

Temperature \sqsubseteq ValueObject

TemperatureChangeDevice

TemperatureChangeDevice \sqsubseteq TemperatureMeasuringDevice

TemperatureChangingProcess

TemperatureChangingProcess \sqsubseteq ConditioningProcess

TemperatureChangingProcess $\sqsubseteq \neg$ MountingProcess

TemperatureMeasuringDevice

TemperatureMeasuringDevice \sqsubseteq MeasuringDevice

TestPiece

TestPiece \sqsubseteq Sample

TestPiece $\sqsubseteq \neg$ Specimen

TestPieceClassification

TestPieceClassification \sqsubseteq TestPieceInfo

TestPieceInfo

TestPieceInfo \sqsubseteq ValueObject

TestPieceName

TestPieceName \equiv Identifier $\sqcap \exists$ characteristicOf TestPiece

TestPieceName \sqsubseteq Identifier

TestingMachine

TestingMachine \sqsubseteq ProcessingNode

TestingRate

TestingRate \sqsubseteq ValueObject

Thermal

Thermal \sqsubseteq MaterialProperty

ThermalInsulation

ThermalInsulation \sqsubseteq FurnaceCharacteristic

Thermocouple

Thermocouple \sqsubseteq MeasuringDevice

Thickness

Thickness \sqsubseteq ValueObject

Time

Time \sqsubseteq ValueObject

TransformativeAnalysisProcess

TransformativeAnalysisProcess \sqsubseteq AnalysingProcess

TransformativeAnalysisProcess $\sqsubseteq \neg$ NonTransformativeAnalysisProcess

Unit

ValueObject

ValueObject \equiv Metadata \sqcup Measurement \sqcup SetPoint \sqcap PrimaryData \sqcup SecondaryData

ValueObject \sqsubseteq Entity

ValueScope

ValueScope \sqsubseteq Entity

VanderwaalsBond

VanderwaalsBond \sqsubseteq BondingType

VolumeFraction

VolumeFraction \sqsubseteq Fraction

Voxel

Voxel \sqsubseteq DigitalEntity

Weight

Weight \sqsubseteq ValueObject

WeightedXCoordinate

WeightedXCoordinate \sqsubseteq XCoordinate

WeightedYCoordinate

WeightedYCoordinate \sqsubseteq YCoordinate

Width

Width \sqsubseteq ValueObject

WorkingRange

WorkingRange $\equiv \exists$ fromValue Datatype<http://www.w3.org/2000/01/rdf-schema#Literal>

WorkingRange $\equiv \exists$ toValue Datatype<http://www.w3.org/2000/01/rdf-schema#Literal>

WorkingRange \sqsubseteq ValueObject

XCoordinate

XCoordinate \sqsubseteq DPixelCoordinates

YCoordinate

YCoordinate \sqsubseteq DPixelCoordinates

Object properties

RO_0000087

\exists RO_0000087 Thing \sqsubseteq Agent

\top $\sqsubseteq \forall$ RO_0000087 Role

belongsToProject

\sqsubseteq wasInformedBy
belongsToProject \equiv process⁻
 \exists belongsToProject Thing \sqsubseteq Process
 $\top \sqsubseteq \forall$ belongsToProject Project

characteristic

\sqsubseteq topObjectProperty
characteristic \equiv characteristicOf⁻
 \exists characteristic Thing \sqsubseteq DigitalEntity \sqcup Object \sqcup Process \sqcup ProcessingNode \sqcup Project \sqcup ValueObject
 $\top \sqsubseteq \forall$ characteristic ValueObject

characteristicOf

\sqsubseteq topObjectProperty
characteristic \equiv characteristicOf⁻

component

\exists component Thing \sqsubseteq ProcessingNode
 $\top \sqsubseteq \forall$ component (Component \sqcup ProcessingNode)

composedOf

composedOf \equiv composes⁻

composes

composedOf \equiv composes⁻
 \exists composes Thing \sqsubseteq Object
 $\top \sqsubseteq \forall$ composes Object

executedBy

\sqsubseteq wasAssociatedWith
executedBy \equiv executes⁻
 \exists executedBy Thing \sqsubseteq Process
 $\top \sqsubseteq \forall$ executedBy ProcessingNode

executes

executedBy \equiv executes⁻
 \exists executes Thing \sqsubseteq ProcessingNode
 $\top \sqsubseteq \forall$ executes Process

generated

hasFunction

hasIdentifier

$\top \sqsubseteq \forall \text{ hasIdentifier Identifier}$

hasSelector

$\sqsubseteq \text{ topObjectProperty}$

hasSource

$\sqsubseteq \text{ topObjectProperty}$

input

$\sqsubseteq \text{ participant}$

$\sqsubseteq \text{ used}$

$\text{input} \equiv \text{inputOf}^-$

inputOf

$\sqsubseteq \text{ wasUsedBy}$

$\sqsubseteq \text{ participantOf}$

$\text{input} \equiv \text{inputOf}^-$

isPartOf

$\sqsubseteq \text{ topObjectProperty}$

isResourceOf

$\text{isResourceOf} \equiv \text{resource}^-$

nextProcess

$\sqsubseteq \text{ wasInformedBy}$

$\text{nextProcess} \equiv \text{previousProcess}^-$

$\exists \text{ nextProcess Thing} \sqsubseteq \text{ Process}$

$\top \sqsubseteq \forall \text{ nextProcess Process}$

output

$\sqsubseteq \text{ participant}$

$\sqsubseteq \text{ generated}$

$\text{output} \equiv \text{outputOf}^-$

outputOf

\sqsubseteq participantOf
output \equiv outputOf⁻

participant

participant \equiv participantOf⁻
 \exists participant Thing \sqsubseteq Process
 $\top \sqsubseteq \forall$ participant (DigitalEntity \sqcup Object \sqcup ValueObject)

participantOf

\sqsubseteq topObjectProperty
participant \equiv participantOf⁻

previousProcess

nextProcess \equiv previousProcess⁻
 \exists previousProcess Thing \sqsubseteq Process
 $\top \sqsubseteq \forall$ previousProcess Process

process

belongsToProject \equiv process⁻
 \exists process Thing \sqsubseteq Project
 $\top \sqsubseteq \forall$ process Process

relatesTo

\exists relatesTo Thing \sqsubseteq ValueObject

relatesToElement

\sqsubseteq relatesTo
 \exists relatesToElement Thing \sqsubseteq ChemicalObject
 $\top \sqsubseteq \forall$ relatesToElement CHEBI.24431

resource

isResourceOf \equiv resource⁻
 $\top \sqsubseteq \leq 1$ resource Thing
 \exists resource Thing \sqsubseteq ValueObject

state

\exists state Thing \sqsubseteq Specimen \sqcup TestPiece

subordinateProcess

subordinateProcess \equiv superordinateProcess⁻
 \exists subordinateProcess Thing \sqsubseteq Process
 $\top \sqsubseteq \forall$ subordinateProcess Process

superordinateProcess

\sqsubseteq topObjectProperty
subordinateProcess \equiv superordinateProcess⁻

topObjectProperty

unit

\exists unit Thing \sqsubseteq ValueObject

used

wasAssociatedWith

wasDerivedFrom

wasInformedBy

wasUsedBy

Data properties

fragmentPath

\sqsubseteq topDataProperty

fromValue

\sqsubseteq value

jsonPath

\sqsubseteq fragmentPath

maxValue

\sqsubseteq value

minValue

\sqsubseteq value

toValue

\sqsubseteq value

topDataProperty

value

\sqsubseteq topDataProperty

\exists value Datatypehttp://www.w3.org/2000/01/rdf-schemaLiteral \sqsubseteq ValueObject

$\top \sqsubseteq \forall$ value Datatypehttp://www.w3.org/2000/01/rdf-schemaLiteral

xPath

\sqsubseteq fragmentPath

Individuals

IAO_0000002

IAO_0000002 : IAO_0000078

IAO_0000120

IAO_0000120 : IAO_0000078

{IAO_0000120} \neq {IAO_0000121} \neq {IAO_0000122} \neq {IAO_0000123} \neq {IAO_0000124} \neq {IAO_0000125} \neq {IAO_0000423}

IAO_0000121

IAO_0000121 : IAO_0000078

{IAO_0000120} \neq {IAO_0000121} \neq {IAO_0000122} \neq {IAO_0000123} \neq {IAO_0000124} \neq {IAO_0000125} \neq {IAO_0000423}

IAO_0000122

IAO_0000122 : IAO_0000078

{IAO_0000120} \neq {IAO_0000121} \neq {IAO_0000122} \neq {IAO_0000123} \neq {IAO_0000124} \neq {IAO_0000125} \neq {IAO_0000423}

IAO_0000123

IAO_0000123 : IAO_0000078

{IAO_0000120} \neq {IAO_0000121} \neq {IAO_0000122} \neq {IAO_0000123} \neq {IAO_0000124} \neq {IAO_0000125} \neq {IAO_0000423}

IAO_0000124

IAO_0000124 : IAO_0000078

{IAO_0000120} \neq {IAO_0000121} \neq {IAO_0000122} \neq {IAO_0000123} \neq {IAO_0000124} \neq {IAO_0000125} \neq {IAO_0000423}

IAO_0000125

IAO_0000125 : IAO_0000078

{IAO_0000120} ≠ {IAO_0000121} ≠ {IAO_0000122} ≠ {IAO_0000123} ≠ {IAO_0000124} ≠ {IAO_0000125} ≠ {IAO_0000423}

IAO_0000423

IAO_0000423 : IAO_0000078

{IAO_0000120} ≠ {IAO_0000121} ≠ {IAO_0000122} ≠ {IAO_0000123} ≠ {IAO_0000124} ≠ {IAO_0000125} ≠ {IAO_0000423}

IAO_0000428

IAO_0000428 : IAO_0000078

{IAO_0000120} ≠ {IAO_0000121} ≠ {IAO_0000122} ≠ {IAO_0000123} ≠ {IAO_0000124} ≠ {IAO_0000125} ≠ {IAO_0000423}

KiloN

PixelPerNanometerUnit

PixelPerNanometerUnit : Unit

PixelUnit

PixelUnit : Unit

Datatypes

Literal

PlainLiteral

boolean

string