

RDF Site Summary 1.0 Module for Material Data Resources

Authors

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Version

Latest Version: <http://ilab.k.u-tokyo.ac.jp/~oka/RSS-material.html>

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Status

Proposal

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Description

Provides material resources f information to aggregators through RDF Site Summary (RSS) 1.0 technology.

class

Classifications based on material structures. The recommended practice is to select values from Substance, Metal, Ceramics (Non-Metal), Polymer (Organic Compound), Composite, Natural.

type

A type will be expressed as keywords of material classification, such as FerrousAlloy, Homopolymer, and ASTM Steel. Recommended words are shown in “Vocabulary” chapter.

name

Typically, a "name" will be a target material name, such as Mg-O, SUS304.

composition

A "composition" will be a target material composition, such as Mg, O, Fe, C.

property

A "property" includes material property names included in a target data resource. Recommended words are shown in “Vocabulary” chapter.

application

An "application" includes keywords of material's expected application.

Namespace Declarations

- `xmlns:ma="http://codata.jp/material/"`

Model

<channel> and <item> Elements:

- `<ma:class> (#PCDATA)`
- `<ma:type> (#PCDATA)`
- `<ma:name> (#PCDATA)`
- `<ma:composition> (#PCDATA)`
- `<ma:property> (#PCDATA)`
- `<ma:application> (#PCDATA)`

Example

```
<?xml version="1.0" encoding="utf-8"?>

<rdf:RDF
  xmlns="http://purl.org/rss/1.0/"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:ma="http://codata.jp/material/"
>

  <channel rdf:about="http://material-database.jp">
    <title>Material Database</title>
    <link>http://material-database.jp</link>
    <ma:class>Substance, Metal, Ceramics (Non-Metal), Polymer (Organic Compound),
Composite, Natural</ma:class>
    <ma:type></ma:type>
    <ma:name></ma:name>
    <ma:property></ma:property>
    <ma:composition></ma:composition>
    <ma:application></ma:application>

    <items>
      <rdf:Seq>
        <rdf:li resource="http://polymer-database.jp" />
      </rdf:Seq>
    </items>
  </channel>

  <item rdf:about="http://polymer-database.jp">
    <title>Polymer Database</title>
    <link>http://polymer-database.jp</link>
    <description>
```

Polymer Database PoLyInfo systematically provides various data required for polymeric material design.

```
</description>
<ma:class>Polymer</ma:class>
<ma:type>homopolymers, copolymers, polymer blend, composites,
compounds</ma:type>
<ma:name>Polymer</ma:name>
<ma:property>thermal, electrical, mechanical properties</ma:property>
<ma:composition></ma:composition>
<ma:application>polymeric material design</ma:application>
</item>

</rdf:RDF>
```

Vocabulary

- Recommended words of “*type*”

Recommended words of “ <i>type</i> ”	Related term		
Element	Substance		
Compound	Substance		
PeriodicTable	Substance	Elements	
AlkaliMetalsLi,Na,K,Rb,Cs,Fr	Substance	Elements	
AlkalineEarthMetalsBe,Mg,Ca,Sr,Ba,Ra	Substance	Elements	
TransitionMetalsSc,Ti,V,Cr,Mn,Fe,Co,Ni,Cu,Zn,Y,Zr,Nb,Mo,Tc,Ru,Rh,Pd,Ag,Hf, Ta,W,Re,Os,Ir,Pt,Au	Substance	Elements	
PoorMetalsAl,Ga,In,Tl,Sn,Pb,Bi	Substance	Elements	
MetalloidsB,Si,Ge,As,Sb,Te,Po	Substance	Elements	
Non-MetalsH,C,N,O,P,S,Se	Substance	Elements	
HalogensF,Cl,Br,I,At	Substance	Elements	
NobleGasesHe,Ne,Ar,Kr,Xe,Rn	Substance	Elements	
LanthanidesLa,Ce,Pr,Nd,Pm,Sm,Eu,Gd,Tb,Dy,Ho,Er,Tm,Yb,Lu	Substance	Elements	
ActinidesAc,Th,Pa,U,Np,Pu,Am,Cm,Bk,Cf,Es,Fm,Md,No,Lr	Substance	Elements	
BinaryPhase	Substance	Compound	
MultinaryPhase	Substance	Compound	
PureElement	Metal		
FerrousAlloy	Metal		
Non-FerrousAlloy	Metal		
InterMetallicCompound	Metal		
Metalloid	Metal		
SolidSolution	Metal		
Amorphous	Metal		
PeriodicTable	Metal	PureElement	
AlkaliMetalsLi,Na,K,Rb,Cs,Fr	Metal	PureElement	
AlkalineEarthMetalsBe,Mg,Ca,Sr,Ba,Ra	Metal	PureElement	
TransitionMetalsSc,Ti,V,Cr,Mn,Fe,Co,Ni,Cu,Zn,Y,Zr,Nb,Mo,Tc,Ru,Rh,Pd,Ag,Hf, Ta,W,Re,Os,Ir,Pt,Au	Metal	PureElement	
PoorMetalsAl,Ga,In,Tl,Sn,Pb,Bi	Metal	PureElement	
MetalloidsB,Si,Ge,As,Sb,Te,Po	Metal	PureElement	
Non-MetalsH,C,N,O,P,S,Se	Metal	PureElement	
HalogensF,Cl,Br,I,At	Metal	PureElement	
NobleGasesHe,Ne,Ar,Kr,Xe,Rn	Metal	PureElement	
LanthanidesLa,Ce,Pr,Nd,Pm,Sm,Eu,Gd,Tb,Dy,Ho,Er,Tm,Yb,Lu	Metal	PureElement	

ActinidesAc,Th,Pa,U,Np,Pu,Am,Cm,Bk,Cf,Es,Fm,Md,No,Lr	Metal	PureElement	
T 300 Series Stainless Steel	Metal	Ferrous Metal	Stainless Steel
T 400 Series Stainless Steel	Metal	Ferrous Metal	Stainless Steel
T 600 Series Stainless Steel	Metal	Ferrous Metal	Stainless Steel
T S10000 Series Stainless Steel	Metal	Ferrous Metal	Stainless Steel
T S20000 Series Stainless Steel	Metal	Ferrous Metal	Stainless Steel
T S30000 Series Stainless Steel	Metal	Ferrous Metal	Stainless Steel
T S40000 Series Stainless Steel	Metal	Ferrous Metal	Stainless Steel
Precipitation Hardening Stainless	Metal	Ferrous Metal	Stainless Steel
Maraging Steel	Metal	Ferrous Metal	
Low Alloy Steel	Metal	Ferrous Metal	
Carbon Steel	Metal	Ferrous Metal	
Low Carbon Steel	Metal	Ferrous Metal	Carbon Steel
Medium Carbon Steel	Metal	Ferrous Metal	Carbon Steel
High Carbon Steel	Metal	Ferrous Metal	Carbon Steel
Tool Steel	Metal	Ferrous Metal	
Cold Work Steel	Metal	Ferrous Metal	Tool Steel
Air-Hardening Steel	Metal	Ferrous Metal	Tool Steel
AISI 1000 Series Steel	Metal	Ferrous Metal	
AISI 4000 Series Steel	Metal	Ferrous Metal	
AISI 5000 Series Steel	Metal	Ferrous Metal	
AISI 6000 Series Steel	Metal	Ferrous Metal	
AISI 8000 Series Steel	Metal	Ferrous Metal	
AISI 9000 Series Steel	Metal	Ferrous Metal	
ASTM Steel	Metal	Ferrous Metal	
Electronic/Magnetic Alloy	Metal	Ferrous Metal	
Alloy Cast Iron	Metal	Ferrous Metal	
Ductile Iron	Metal	Ferrous Metal	
Gray Cast Iron	Metal	Ferrous Metal	
Malleable Iron	Metal	Ferrous Metal	
White Cast Iron	Metal	Ferrous Metal	

Superalloy	Metal	Ferrous Metal	
Cobalt Base	Metal	Ferrous Metal	Superalloy
Iron Base	Metal	Ferrous Metal	Superalloy
Nickel Base	Metal	Ferrous Metal	Superalloy
Aluminum Alloy	Nonferrous		
	Metal		
1000 Series Aluminum	Nonferrous	Aluminum	
	Metal	Alloy	
2000 Series Aluminum Alloy	Nonferrous	Aluminum	
	Metal	Alloy	
3000 Series Aluminum Alloy	Nonferrous	Aluminum	
	Metal	Alloy	
4000 Series Aluminum Alloy	Nonferrous	Aluminum	
	Metal	Alloy	
5000 Series Aluminum Alloy	Nonferrous	Aluminum	
	Metal	Alloy	
6000 Series Aluminum Alloy	Nonferrous	Aluminum	
	Metal	Alloy	
7000 Series Aluminum Alloy	Nonferrous	Aluminum	
	Metal	Alloy	
Other Wrought Al Alloy	Nonferrous	Aluminum	
	Metal	Alloy	
Aluminum Casting Alloy	Nonferrous	Aluminum	
	Metal	Alloy	
Beryllium Alloy	Nonferrous		
	Metal		
Copper Alloy	Nonferrous		
	Metal		
Brass	Nonferrous	Copper Alloy	
	Metal		
Bronze	Nonferrous	Copper Alloy	
	Metal		
Magnesium Alloy	Nonferrous		
	Metal		
Nickel Alloy	Nonferrous		
	Metal		
Solder Alloy	Nonferrous		
	Metal		

Titanium Alloy	Nonferrous Metal	
Unalloyed/Modified Titanium	Nonferrous Metal	Titanium Alloy
Alpha/Near Alpha Titanium Alloy	Nonferrous Metal	Titanium Alloy
Alpha/Beta Titanium Alloy	Nonferrous Metal	Titanium Alloy
Beta Titanium Alloy	Nonferrous Metal	Titanium Alloy
Tungsten Alloy	Nonferrous Metal	
Zinc Alloy	Nonferrous Metal	
Metal Matrix Composite	Nonferrous Metal	
Metalloid	Ceramics(Non-Metal)	
Non-MetalicCompound--O,C,N,S,P,---	Ceramics(Non-Metal)	
Mixture	Ceramics(Non-Metal)	
Glass(Amorphous)	Ceramics(Non-Metal)	
High Temp Ceramic Resin	Ceramics (Non-Metal)	
Potting/Casting Ceramic	Ceramics (Non-Metal)	
Machinable Ceramic	Ceramics (Non-Metal)	
Ceramic/Metallic Coating	Ceramics (Non-Metal)	
Monomer	Polymer	
Homopolymer	Polymer	
Copolymer	Polymer	
Polyolefines	Polymer	
Polystyrenes	Polymer	
Polyvinyls	Polymer	
Polyacrylics	Polymer	

Polyhalo_olefines	Polymer		
Polydienes	Polymer		
Polyethers	Polymer		
Polysulfides	Polymer		
Polyesters/Thioesters	Polymer		
Polyamides/Thioamides	Polymer		
Polyurethanes/Thiourethanes	Polymer		
Polyureas/Thioureas	Polymer		
Polyimides/Thioimides	Polymer		
Polyanhydrides/Thioanhydrides	Polymer		
Polycarbonates/Thiocarbonates	Polymer		
Polyimines(Polyamines)	Polymer		
Polysiloxanes(Polysilanes)	Polymer		
Polyketones/Thioketones	Polymer		
Polysulfones/Sulfoxides/Sulfonates/Suloamides	Polymer		
Polyphenylenes	Polymer		
Thermoplastic	Polymer		
ABS Polymer	Polymer	Thermoplastic	
Acetal	Polymer	Thermoplastic	
Acrylic	Polymer	Thermoplastic	
Additive/Filler	Polymer	Thermoplastic	
ASA Polymer	Polymer	Thermoplastic	
Cellulosic	Polymer	Thermoplastic	
Elastomer, TPE	Polymer	Thermoplastic	
Ethylene Acrylic Acid	Polymer	Thermoplastic	
Ethylene Methyl Acrylate	Polymer	Thermoplastic	
Ethylene Vinyl Acetate	Polymer	Thermoplastic	
Ethylene Vinyl Alcohol	Polymer	Thermoplastic	
Fluoropolymer	Polymer	Thermoplastic	
Ionomer	Polymer	Thermoplastic	
Liquid Crystal Polymer (LCP)	Polymer	Thermoplastic	
Nylon	Polymer	Thermoplastic	
Nylon 46	Polymer	Thermoplastic	Nylon
Nylon 6	Polymer	Thermoplastic	Nylon
Nylon 66	Polymer	Thermoplastic	Nylon
Nylon 6/66	Polymer	Thermoplastic	Nylon
Nylon 610	Polymer	Thermoplastic	Nylon
Nylon 612	Polymer	Thermoplastic	Nylon
Nylon 11	Polymer	Thermoplastic	Nylon

Nylon 12	Polymer	Thermoplastic	Nylon
Polyether Block Amide (PEBA)	Polymer	Thermoplastic	Nylon
Polyamide-imide	Polymer	Thermoplastic	
Polyarylamide	Polymer	Thermoplastic	
Polycarbonate	Polymer	Thermoplastic	
Polyester, TP	Polymer	Thermoplastic	
Polybutylene Terephthalate (PBT)	Polymer	Thermoplastic	Polyester, TP
Polyethylene Terephthalate (PET)	Polymer	Thermoplastic	Polyester, TP
Polytrimethylene Terephthalate (PTT)	Polymer	Thermoplastic	Polyester, TP
Polyetherimide	Polymer	Thermoplastic	
Polyethersulfone	Polymer	Thermoplastic	
Polyethylene	Polymer	Thermoplastic	
LLDPE	Polymer	Thermoplastic	Polyethylene
LDPE	Polymer	Thermoplastic	Polyethylene
MDPE	Polymer	Thermoplastic	Polyethylene
HDPE	Polymer	Thermoplastic	Polyethylene
Polyimide Polymer	Polymer	Thermoplastic	
Polyketone	Polymer	Thermoplastic	
Polyphenylene Ether/PPO	Polymer	Thermoplastic	
Polyphenylene Sulfide	Polymer	Thermoplastic	
Polyphthalamide	Polymer	Thermoplastic	
Polypropylene	Polymer	Thermoplastic	
Polystyrene	Polymer	Thermoplastic	
Polysulfone	Polymer	Thermoplastic	
Polyurethane, TP	Polymer	Thermoplastic	
Purging Compound	Polymer	Thermoplastic	
PVDC	Polymer	Thermoplastic	
SMA Polymer	Polymer	Thermoplastic	
SAN Polymer	Polymer	Thermoplastic	
Styrene-Butadiene	Polymer	Thermoplastic	
Vinyl	Polymer	Thermoplastic	
Thermoset	Polymer		
Adhesive Polymer	Polymer	Thermoset	
Carbon Fiber/Thermoset Composite	Polymer	Thermoset	
Cyanoacrylate	Polymer	Thermoset	
Diallyl Phthalate (DAP)	Polymer	Thermoset	
Elastomer, TS	Polymer	Thermoset	
Epoxy	Polymer	Thermoset	
Fluoropolymer, TS</option	Polymer	Thermoset	

Phenolic	Polymer	Thermoset
Polyester, TS	Polymer	Thermoset
Polyimide, TS	Polymer	Thermoset
Polyurethane, TS	Polymer	Thermoset
Silicone	Polymer	Thermoset
Composite	SMC	Polymer
Boride	Composite	
Carbide	Composite	
Halide	Composite	
Nitride	Composite	
Oxide	Composite	
Aluminum Oxide	Composite	
Magnesium Oxide	Composite	Oxide
Silicon Oxide	Composite	Oxide
Titanium Oxide	Composite	Oxide
Zirconium Oxide	Composite	Oxide
Phosphide/Pnictide	Composite	
Sulfide/Chalcogenide	Composite	
Semiconductor	Composite	
Composite Core Material	Composite	
Composite Fibers	Composite	
FRM	Composite	
FRP	Composite	
FibresComposits	Composite	
ParticulatesComposits	Composite	
Foams	Composite	
Concrete	Composite	
Rock	Natural	
Wood	Natural	
Bamboo	Natural	
Grass	Natural	
Biological	Natural	
Cork	Natural	
Rubber	Natural	
Shell	Natural	
Paper	Natural	
Clay		
Glaze		
Piezoelectric		

Slurry			
Aerogel			
Catalyst/Initiator			
Carbon			
Carbon Black	Carbon		
Carbon Fiber	Carbon		
Diamond	Carbon		
Graphite	Carbon		
Glass			
Optical	Glass		
Filter	Glass		
Glass Fiber	Glass		
Glass Ceramic	Glass		
Fluid			
Lubricant	Fluid		
Solvent	Fluid		

- Recommended words of “*property*”

Recommended words of “ <i>property</i> ”	Related term	
Mechanical Properties		
Tensile	Mechanical Properties	
Creep	Mechanical Properties	
Fatigue	Mechanical Properties	
Impact	Mechanical Properties	
Hardness	Mechanical Properties	
SSRT	Mechanical Properties	
KIsc	Mechanical Properties	
Toughness	Mechanical Properties	
Compression	Toughness	Mechanical Properties
Shear	Toughness	Mechanical Properties
Flexural	Mechanical Properties	
Elastic Moduli	Mechanical Properties	
Young's Modulus	Elastic Moduli	Mechanical Properties
Shear Modulus	Elastic Moduli	Mechanical Properties
Bulk Modulus	Elastic Moduli	Mechanical Properties
Compressibility	Elastic Moduli	Mechanical Properties
Elastic Coefficient	Elastic Moduli	Mechanical Properties
Elastic Compliance Coefficient	Elastic Moduli	Mechanical Properties
Poisson Ratio	Elastic Moduli	Mechanical Properties

Sound Velocity	Elastic Moduli	Mechanical Properties
Crystal Structure		
Phase Transition		
Equilibrium Diagram	Phase Transition	
CCT Diagram	Phase Transition	
Micro-Structure	Phase Transition	
Thermal Properties		
Thermal Expansion Coefficient	Thermal Properties	
Relative Volume Change	Thermal Properties	
Molar Enthalpy	Thermal Properties	
Molar Heat Capacity	Thermal Properties	
Debye Temperature	Thermal Properties	
Molar Entropy	Thermal Properties	
Thermoelectric Power	Thermal Properties	
Thermal Conductivity	Thermal Properties	
Specific Heat	Thermal Properties	
Electronic and Electrical Properties		
Electron Density of States at Fermi Level	Electronic and Electrical Properties	
Energy Gap	Electronic and Electrical Properties	
Activation Energy	Electronic and Electrical Properties	
Electrical Conductivity	Electronic and Electrical Properties	
Resistivity	Electronic and Electrical Properties	
Piezoresistivity	Electronic and Electrical Properties	
Hall Coefficient	Electronic and Electrical Properties	
Electron Concentration	Electronic and Electrical Properties	
Effective Charge	Electronic and Electrical Properties	
Permittivity	Electronic and Electrical Properties	
Optical Properties		
Optical Absorption Coefficient	Optical Properties	
Reflectivity	Optical Properties	
Optical Conductivity	Optical Properties	
Refractive Index	Optical Properties	
Permittivity	Optical Properties	
Optical Wavenumber	Optical Properties	
Plasma Edge	Optical Properties	
Work Function	Optical Properties	
Magnetic Properties		
Molar Magnetic Susceptibility	Magnetic Properties	
Effective Bohr Magnetron Number	Magnetic Properties	

Curie Temperature	Magnetic Properties	
Neel Temperature	Magnetic Properties	
Volume Magnetization	Magnetic Properties	
Magnetic Moment	Magnetic Properties	
Critical Field for Magnetic Transition	Magnetic Properties	
Magnetic Order	Magnetic Properties	
Direction of Magnetic Moments	Magnetic Properties	
Magnetic Anisotropy Field	Magnetic Properties	
Crystal Electric Field	Magnetic Properties	
Superconducting Properties		
Superconducting Transition Temperature	Superconducting Properties	
Lowest Temperature for Normal	Superconducting Properties	
Conductivity		
Initial Slope of $H_c(T)$ at T_c	Superconducting Properties	
Slope of $T_c(p)$ at 0 GPa	Superconducting Properties	
Energy Gap	Superconducting Properties	
Lower Critical Field	Superconducting Properties	
Upper Critical Field	Superconducting Properties	
Penetration Depth	Superconducting Properties	
Isotope Effect	Superconducting Properties	
Physicochemical Properties		
Diffusion	Physicochemical Properties	
Bulk	Diffusion	Physicochemical Properties
Chemical	Diffusion	Physicochemical Properties
Grain Boundary	Diffusion	Physicochemical Properties
Impurity	Diffusion	Physicochemical Properties
Impurity(Interface)	Diffusion	Physicochemical Properties
Interdiffusion	Diffusion	Physicochemical Properties
Interphase	Diffusion	Physicochemical Properties
Interstitial	Diffusion	Physicochemical Properties
Mutual(Chemical)	Diffusion	Physicochemical Properties
Pipe	Diffusion	Physicochemical Properties
Self	Diffusion	Physicochemical Properties
Self(Interface)	Diffusion	Physicochemical Properties
Subboundary	Diffusion	Physicochemical Properties
Surface	Diffusion	Physicochemical Properties
Tracer	Diffusion	Physicochemical Properties
Physical Properties		
Solution Properties		

Viscoelastic Properties		
Corrosion Properties		