



Reference Material Producers

Categories of Reference Material

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Reference Materials Providers - Categories of Reference Material

Accreditation in the Reference Material Producers ((RMP) program is described by categories and subcategories of material. The categories shown in this section are a first order description of a facility's accreditation. Most scopes of accreditation are described in more detail particularly for producers of Certified Reference Materials (CRMs). Refer to clause 5.15 of the RMP Standard Application Document for expression of scopes of accreditation for producers of CRMs.

The scope of accreditation serves two functions. Firstly, it defines exactly which materials the facility is accredited for. NATA endorsed certificates can only be issued for the accredited materials. Secondly, it provides potential clients with information about available materials from the accredited facilities.

The following is a listing of the categories and subcategories of reference materials available in the Reference Material Producers accreditation program.

The system of classification

The principal headings or categories under which reference materials are listed are as follows:

Category A: Chemical composition

Reference materials, being either pure chemical compounds or representative sample matrices, either natural or with added analytes (e.g. animal fats spiked with pesticides for residues analysis), characterised for one or more chemical or physicochemical property values.

Category B: Biological and clinical properties

Materials similar to Category A, but characterised for one or more biochemical or clinical property values.

Category C: Physical properties

Materials characterised for one or more physical property values (e.g. melting point, viscosity, density).

Category D: Engineering properties

Materials characterised for one or more engineering property values (e.g. hardness, tensile strength, surface characteristics, etc).

Category E: Miscellaneous

These principal categories are subdivided into sub-categories as indicated in the following list. It should be noted that these sub-categories are indicative only. Other sub-categories can be added at any time to address the needs of applicants seeking recognition of competence in producing types of reference materials not currently listed.

Category A: Chemical composition

A1 Metals

A1.1 Ferrous

- Steels
 - carbon steels
 - low alloy steels
 - high alloy steels
 - cast steels
 - specialty steels
- Irons
 - white cast irons
 - ductile irons
- Gases in metals

A1.2 Nonferrous

- Aluminium alloys
- Copper base alloys
- Lead base alloys
- Tin base alloys
- Brasses
- Bearing alloys
- Titanium base alloys
- Zirconium base alloys
- Gases in metals

A1.3 Special alloys

A1.4 Refractory metals and alloys

A1.5 Rare earth metals

A1.6 High purity metals

- Solid forms
- Spectrochemical materials
- Spectrochemical solutions

A2 Inorganic reference materials

A2.1 Ores and minerals

A2.2 Cements, clays and related products

A2.3 Ceramics, glasses and refractory oxides

- Carbides
- Glasses

A2.4 Agricultural chemicals and fertilisers

A2.5 Solid fuels

Coal and coke
mineral content
major elements
trace elements

A2.6 Pure chemicals

Stoichiometry standards
primary standards
working standards
secondary standards
Chromatography standards
Pharmaceutical materials
Cosmetic materials

A2.7 Stable isotope materials

A3 Organic reference materials

A3.1 Pure organic compounds

Compounds for elemental analysis
Compounds for molecular weight
Chromatography standards
Illicit drugs and their metabolites – (See also A8 Forensic Reference Materials)
Illicit drugs
delta-9-THC and other cannabinoids
amphetamine
methamphetamine
3,4-methylenedioxyamphetamine
3,4-methylenedioxy-methylamphetamine
3,4-methylenedioxyethylamphetamine
diacetylmorphine
morphine
cocaine
lysergic acid diethylamide and isomers
Therapeutic drugs
Veterinary drugs
Steroids
Pesticides, herbicides, acaricides, etc
Metabolites of any of the above
Priority pollutants
PCBs, PAHs, etc
Fine chemicals
Pharmaceutical materials
Cosmetic materials
Isotopically labelled compounds

A3.2 Agricultural materials, fertilisers

A3.3 Foodstuffs

- Proximate analysis
- Nutritional properties
- Vitamins
- Other food additives
 - antioxidants
 - emulsifiers
- Toxins
 - animal origin
 - plant origin
 - other biological origin
- Trace elements
- Trace organics
- pesticide residues
- other organic contaminants

A3.4 Plastics and rubbers

- Hardness
- Natural rubber content
- Identity
 - copolymers
 - plasticisers
 - vulcanising agents
 - blowing agents
 - antioxidants
 - fillers

A3.5 Petroleum products

- Fuels and lubricants
 - lead
 - vanadium
 - nickel
- Transformer oils
- moisture
- PCBs
- Heat exchange fluids
- moisture
- PCBs

A3.6 Vegetable oils and fats

- Fatty acid profile
- Triglyceride composition

A4 Environmental reference materials

A4.1 Soils and sludges

Trace elements
Mineral content
Trace organics
TCLP leachate

A4.2 Ashes

Fly ash from coal and coke
Incinerator ash

A4.3 Waters

Potable water
routine analytes
trace elements
organic pollutants
other analytes
Fresh water
major elements
trace elements
other analytes
Sea water
major elements
trace elements
other analytes
Industrial waste water
routine analytes
trace elements
organic pollutants
other analytes
Treated sewage
routine analytes

A4.4 Plant material

Trace elements
Mineral content

A4.5 Marine

Fish) trace elements
Molluscs) mineral content
Plankton) organics

A4.6 BOD reference compounds

A4.7 Miscellaneous biological materials

(eg. Human hair)

A5 Health and industrial hygiene

A5.1 Clinical laboratory materials

A5.2 Ethanol solutions

A5.3 Toxic substances in urine

Toxic metals

Fluoride

Mercury

A5.4 Drugs of abuse in urine

A5.5 Drugs of abuse in hair

A5.6 Materials on filter media

A5.7 Trace elements in blank filters

A5.8 Lead in paint (powder and sheet forms)

A5.9 Respirable silica

A6 Engine wear materials

A6.1 Metallo-organic compounds

A6.2 Wear metals in oil

A7 Reference gases

A7.1 Reference gas mixtures

A7.3 Trace volatile organic compounds

A8 Forensic reference materials

A8.1 Ethanol reference standards

Ethanol

Ethanol, aqueous solutions containing 0.050, 0.150, 0.250 g/100mL

A8.2 Drugs (individually named) and metabolites*

In whole human blood and urine

(*metabolites to include glucuronides).

See also A3.1 Pure Organic Compounds.

A8.3 Glasses

bottle
window
automotive
spectacle

A8.4 Paints

Automotive
Architectural

A8.5 Accelerants

Flammable liquids and residues thereof

A8.6 Explosives and primers

A8.7 Gunshot residues

A8.8 Noxious substances

Crowd control agents
capsaicin
o-chlorobenzalmalononitrile (CS)
chloroacetophenone (CN)

A8.9 Document examination

A9 Ion activity

A9.1 pH standards

A9.2 Ion selective electrode calibrants

A9.3 Conductivity standards

A9.4 Buffer systems

Category B: Biological and clinical properties

B1 General medicine

B1.1 Human serum materials
(powder and solution forms)

B2 Clinical chemistry

B2.1 Proteins

B2.2 Apolipoproteins

B2.3 Enzymes

B2.4 Hormones

B2.5 Trace elements

lead and cadmium

B3 Tissue pathology

B4 Haematology and cytology

B4.1 Blood serum

B5 Immunohaematology

B6 Immunology

B7 Parasitology

B8 Bacteriology and mycology

B8.1 Reference cultures

B8.2 Antibiotics

B9 Virology

B10 Other biological and clinical reference materials

B11 Forensic reference materials

Purified DNA of known and continuing genetic composition
Human, primate and animal blood
Animal hairs

Fibres (see also C7.1 to C7.3)

Category C: Physical properties

C1 Reference materials with optical properties

C1.1 Optical rotation

C1.2 Refractive index

C1.3 Spectral absorbance

visible

ultraviolet

infrared

C1.4 Specular reflectance

C1.5 Colour

white reference material (opal glass)

ceramic tiles

C2 Reference materials with electrical and magnetic properties

C2.1 Dielectric strength

C2.2 Resistivity

C2.3 Magnetic susceptibility

C3 Reference materials for frequency measurements

C4 Reference materials for radioactivity

C4.1 Radiation dosimetry

C4.2 Radiopharmaceuticals

C4.3 Labelled compounds

C4.4 Natural matrix materials

C4.5 Carbon-14 dating

C5 Reference materials for thermodynamic properties

C5.1 Calorimetry

C5.2 Thermal conductivity

metals

pyrex glass

resin-bonded fibre board

- C5.3 Vapour pressure
- C5.4 Thermal expansion
- C5.5 Thermal resistance
- C5.6 ITS-90 temperature fixed point
- C5.7 Curie point
- C5.8 Boiling point
- C5.9 Melting point
- C5.10 Thermal analysis standards
- C6 Reference materials for physicochemical properties
 - C6.1 Density
 - C6.2 Viscosity
 - C6.3 Surface tension
 - C6.4 Molecular weight
- C7 Reference materials for fibre identification
 - C7.1 Natural fibres
 - animal hairs
 - plant fibres
 - C7.2 Synthetic fibres
 - organic polymers
 - inorganic
 - C7.3 Asbestos fibres
 - crude fibres
 - mounted specimens for fibre counting
- C8 Reference materials for other properties
 - C8.1 Shear testing of powders
 - C8.2 Minerals for x-ray diffraction

Category D: Engineering properties

D1 Surface finish

D1.1 Surface roughness

D1.2 Corrosion

D1.3 Microhardness

D1.4 Abrasive wear

D1.5 Properties of films and surfaces

Nominal thickness

- x-ray fluorescence

- B particle backscattering

- ion beam sputtering

D2 Sizing

D2.1 Particle size

Particulate materials

Latex sphere suspensions

D2.2 Surface area

D3 Non-destructive testing

D3.1 Dye penetrant test blocks

D3.2 Artificial flaw for eddy current

D3.3 Magnetic particle inspection

D4 Hardness

D4.1 Rockwell hardness

D4.2 Izod hardness

D5 Impact toughness

D5.1 Charpy V-notch test blocks

D6 Tensile strength

D7 Elasticity

D8 Creep

D9 Fire research

D9.1 Surface flammability

D9.2 Smoke density

Category E: Miscellaneous

Sub-categories to be developed as required.