

Figure 5.4: Basic Samples - overview. This UML class diagram illustrates the relationships between various sample-related classes, organized into several layers. The diagram is annotated with 'From ISO 15926 Observations, measurements and samples - Conceptual observation scheme', 'From ISO 15926 Observations, measurements and samples - Conceptual sample scheme', and 'From ISO 15926 Observations, measurements and samples - Abstract sample scheme'.

**Top Layer (Conceptual Observation Scheme):**

- Observation** (class): Attributes include `phenomenonTime_TM_Object`, `resultTime_TM_Object`, and `validTime_TM_Period[0..1]`. It has a `hasObserved` association with **Procedure**.
- Procedure** (class): Associated with **Observation**.
- Any** (class): A generic type representing `language Any type`. It has a `hasSampledValue` association with **Sample**.

**Second Layer (Conceptual Sample Scheme):**

- SamplingProcedure** (class): Generalized by **Sampling** and **SamplingProcedure**.
- Sampling** (class): Generalized by **SamplingProcedure**.
- Sample** (class): Central class with attributes `time_TM_Object[0..1]` and `validTime_TM_Period[0..1]`. It has a `hasSampledValue` association with **Any**.
- PreparationProcedure** (class): Generalized by **Preparation** and **PreparationProcedure**.
- Preparation** (class): Generalized by **PreparationProcedure**.

**Third Layer (Abstract Sample Scheme):**

- AbstractSamplingProcedure** (class): Generalized by **SamplingProcedure**.
- AbstractSampling** (class): Generalized by **Sampling**.
- AbstractSample** (class): Generalized by **Sample**. Attributes include `sampleType: AbstractSampleType[0..1]` and `parameter: NormalizedValue[0..*]`.
- AbstractSampleType** (class): Generalized by **SampleType**.
- SampleType** (class): Generalized by **Sample**. Attributes include `sampleType: AbstractSampleType[0..1]` and `parameter: NormalizedValue[0..*]`.

**Fourth Layer (Sample Specialization):**

- Sample** (class): Generalized by **SpatialSample**, **StatisticalSample**, and **MaterialSample**.
- SpatialSample** (class): Attributes include `shape: Geometry[0..1]`, `horizontalFootprintAccuracy: Any[0..1]`, and `verticalFootprintAccuracy: Any[0..1]`.
- StatisticalSample** (class): Attribute includes `classification: StatisticalClassification[0..1]`.
- MaterialSample** (class): Attributes include `use: PhysicalDimension[0..1]`, `disposition: NormalizedValue[0..1]`, and `classification: Geometry[0..1]`.

**Fifth Layer (Sample Specialization):**

- NormalizedSample** (class): Generalized by **MaterialSample**. Attributes include `name: GenericName[0..1]`, `representativeValue: Geometry[0..1]`, and `address: Any[0..1]`.
- PhysicalDimension** (class): Generalized by **MaterialSample**. Attributes include `dimension: URI` and `value: Measure`.
- StatisticalClassification** (class): Generalized by **MaterialSample**. Attributes include `concept: URI` and `classification: URI`.

**Other Classes and Relationships:**

- SamplingProcedure** (class): Generalized by **SamplingProcedure**.
- Sampling** (class): Generalized by **SamplingProcedure**.
- Sample** (class): Generalized by **Sample**.
- PreparationProcedure** (class): Generalized by **PreparationProcedure**.
- Preparation** (class): Generalized by **PreparationProcedure**.
- SampleType** (class): Generalized by **SampleType**.
- SampleType** (class): Generalized by **SampleType**.
- SampleCollection** (class): Generalized by **SampleCollection**.