



ecos Workflow xCHANGE

Documentation for data exchange

DuraScan 10, 20

DuraVision 20, 30, 40, 200, 300, 400

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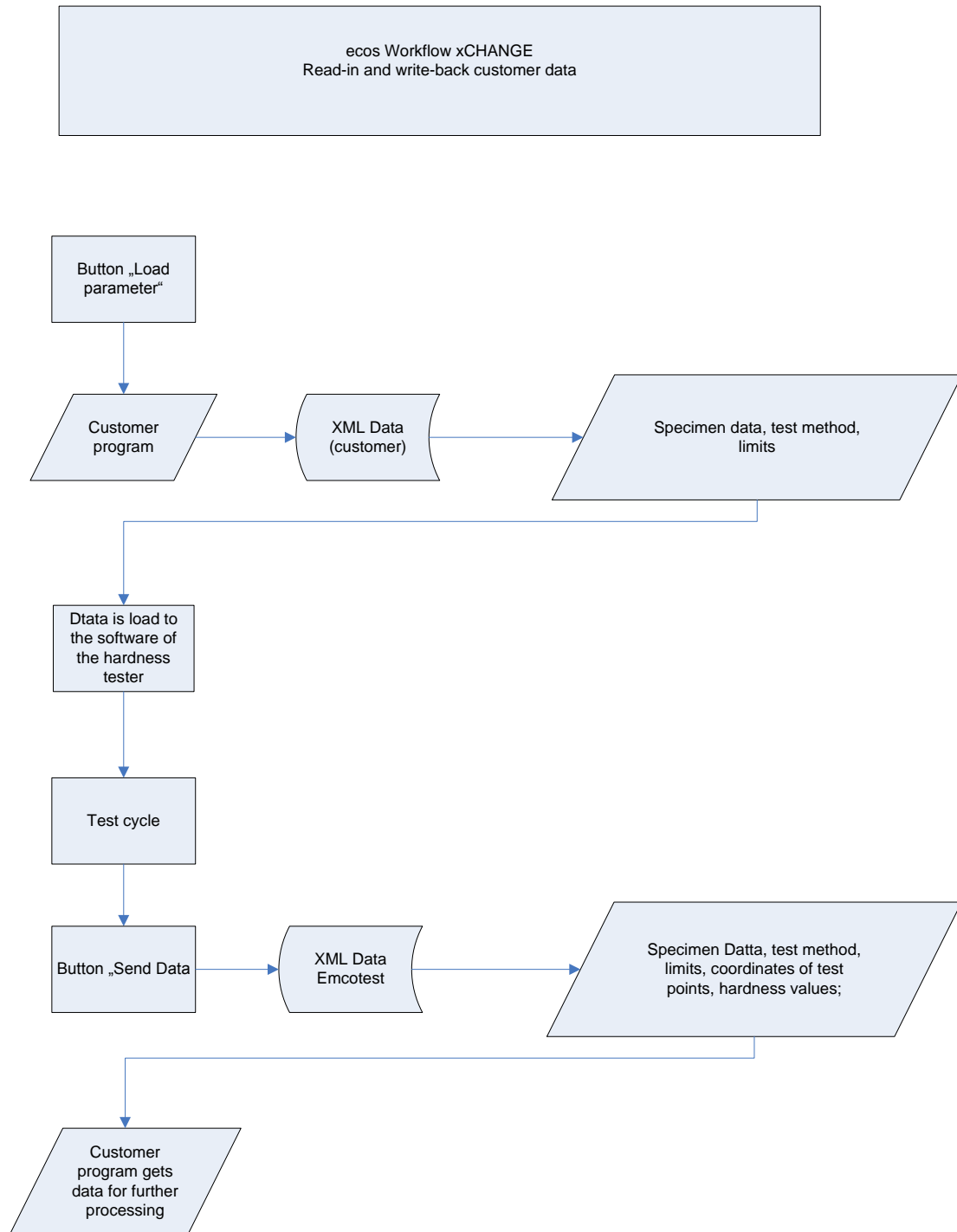
1. Description

The ecos Workflow xCHANGE software module is a module in the ecos Workflow harness testing software, which facilitates the exchange of data on an XML basis between the harness testing program and a customer-specific program. The aim of the module is to specify test point coordinates, test methods, hardness limits, etc. with host software and then to return the results once the hardness tester has carried out all the measurements.

The exchange makes use of readable XML-based files that are located in a directory. Before reading out the XML-based file, a batch file is called that may contain any number of executable files or commands. Normally, a .exe file is called that, for example, displays an input screen for batch numbers, test methods, etc., or a program that reads data from a database. The program provides the XML-based file in the correct format and, once it has finished, the hardness testing software automatically reads in the text file and creates the test structure.

After the test sequence has been started and all test points tested, the results can be returned to the host software. The test structure is stored in the specified format as an XML-based file. Then a batch file is called again to start the desired program for processing the data.

1.1. Sequence



2. Structure of the data exchange between the customer program and ecos Workflow xCHANGE

2.1. *Type of data exchange:*

Data is exchanged between the customer's programs and ecos Workflow in the form of XML-based files. Along with simple implementation, this offers the additional benefit of easy data checking in the event of a program malfunction.

2.2. *Data exchange times*

Prior to performing the test, the tester prepares the tests using a customer-specific program. An XML-based file is generated as a result, which represents the basis for the test sequence. After performing the test, the ecos Workflow test program generates an XML-based file that in turn can be further processed by a customer-specific program. The file extension of these files is **.xml*.

2.3. *Data exchange content*

The files contain all the data required for automatic test performance. This includes, among others:

Name of the dataset: This is automatically the specimen designation

Identification data of the measurement rows

Test type

Tolerance specification

Coordinates

Measured values (as result after the test sequence)

3. Modes

There are five different ways to transfer data for a test sequence.

3.1. *Single measurement*

This represents the simplest type of test sequence. One measurement point is always set, although there is no measurement row here and no coordinates are assigned. Further information about the single measurement test type can be found in the ecos Workflow user manual.

3.2. *Series measurement*

Series measurement is a collection of measurements. At least one row of measurement points is generated for each specimen. These measurement points contain coordinates that are moved to, set and evaluated sequentially. Further information about the series measurement test type can be found in the ecos Workflow user manual.

3.3. *CHD measurement*

CHD (case hardness depth) measurement is a special type of series measurement for surface-hardened parts. The purpose of CHD measurement is to determine the CHD value. The CHD value is the distance from the edge at which the hardness falls below the hardness limit (generally 550 HV). Further information about the CHD measurement test type can be found in the ecos Workflow user manual.

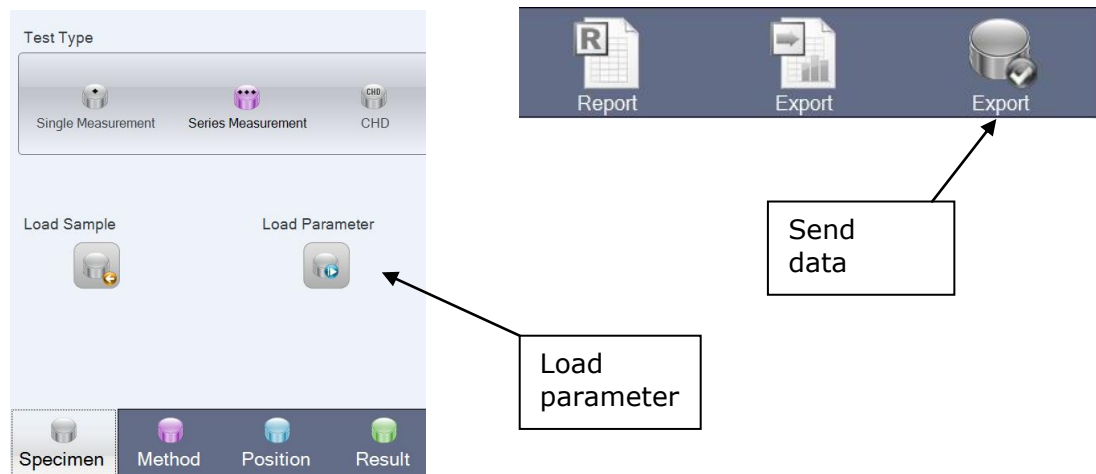
3.4. *Nht measurement*

Similar to CHD measurement, Nht (nitride layer hardness) measurement determines the value (Nht value) at which the hardness falls below the hardness limit. Unlike CHD measurement, in which the hardness limit is fixed in advance, in this test type the hardness limit is determined using the core hardness.
 Hardness limit = mean core hardness measurement + 50 HV.
 Further information about the Nht measurement test type can be found in the ecos Workflow user manual.

3.5. *RHT measurement*

RHT (edge layer hardness) measurement is likewise an offshoot of CHD measurement. The hardness limit is determined in this test type using the surface hardness of the component. The calculation is based on the following formula.
 Hardness limit = 80% of the surface hardness, whereby the percentage can be adjusted.
 Further information about the RHT measurement test type can be found in the ecos Workflow user manual.

4. Description of functions:



The "Load parameters" and "Send data" buttons can be displayed in the "Settings" menu on the "Extended" tab, above the "Use load parameters" check box.

4.1. *Load parameters:*

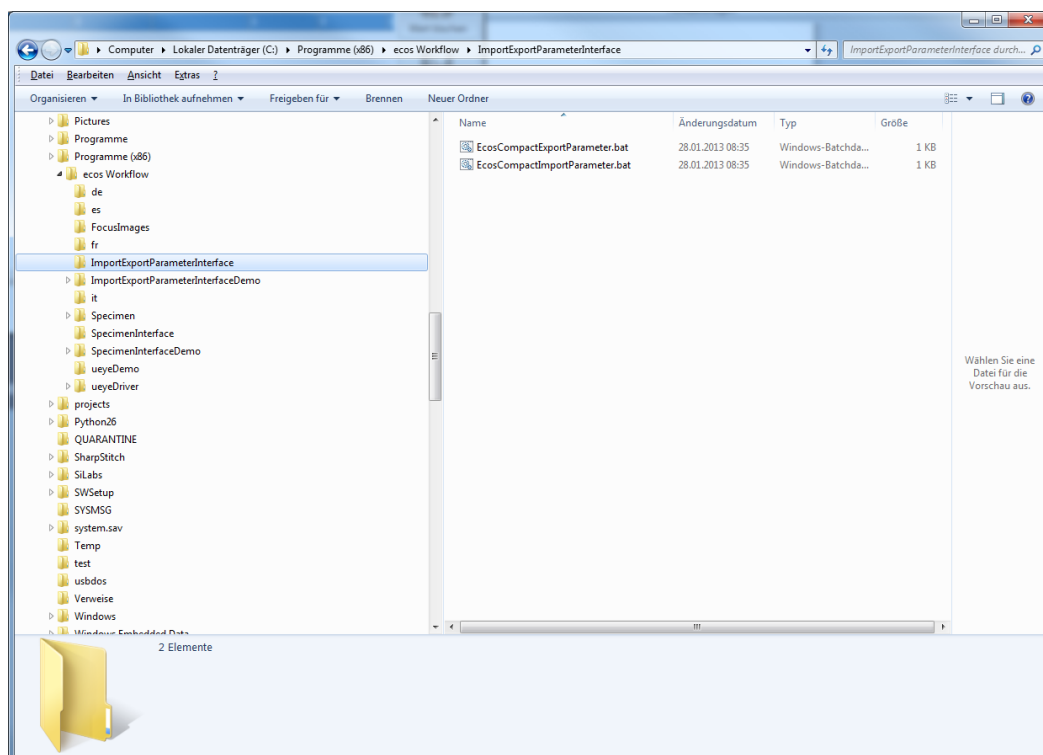
Execution of the "Load parameters" function calls file EcosCompactImportParameter.bat. This batch file opens the external program. The file created by the external program is then read in from the C:\Data\ImportExportParameterInterface\Import directory and used to create the test specifications.

4.2. **Send data:**

The marked files are moved to the C:\Data\ImportExportParameterInterface\Export directory and EcosCompactExportParameter.bat is called. This batch file opens the customer program again.

5. Starting the external application

In the directory
C:\Program Files\ecos Workflow\ImportExportParameterInterface
there are 2 batch files. These files are called by the load/send parameter function in the ecos Workflow program.



EcosCompactImportParameter.bat

This is where the software to generate the XML for the test structure is selected. Any DOS commands and simple batch commands can be entered here.

Example:

```
@echo off
tasklist | find "EcosSpecimenInterfaceDemo.exe"
if errorlevel 1 start /wait
..\ImportExportParameterInterfaceDemo\EcosCompactImportExportParameterInterfaceDemo
.exe -Import
```

Calls program EcosSpecimenInterfaceDemo.exe with the parameter Export.

EcosCompacExportParameter.bat

This is where the executable file is entered, which should be started after the test sequence to evaluate the saved result data.

Example:

```
@echo off
tasklist | find "EcosSpecimenInterfaceDemo.exe"
if errorlevel 1 start /wait
..\ImportExportParameterInterfaceDemo\EcosCompactImportExportParameterInterfaceDemo
.exe -Export
```

Calls program EcosSpecimenInterfaceDemo.exe with the parameter Export.

6. External program

The external program is created by the customer itself. This program is used to transfer all customer data and specifications into the ecos Workflow program.

7. Format specification for loading of information

The data exchange uses an XML-based file format so that datasets can easily be checked in the event of malfunctions and implementation in other programs is kept simple and flexible (regardless of the programming environment).

A data field can contain either a number, a floating-point number or a text.

A decimal point "." is always used as the decimal separator, regardless of the Windows version or country settings.

The structure of the files is as follows:

7.1. Structure for single measurement

Designation	Data type	Description
Version <?xml version="1.0"?>		XML version
ImportParameterSingleMeasurement xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">		Specification that this is a single measurement Encloses the dataset
Method	String	Test method
Objective	String	Lens (2.5x, 4x, 10x, 20x, 40x, 60x, 100x)
ZoomLevel	String	Zoom level 1-14
CircularLightUsed	String (true, false)	Specifies whether circular light is used
Conversion		Encloses the conversion dataset
UseConversion	String (true, false)	Specifies whether a conversion should be used
ConversionTable	String	Conversion table
ConversionMaterial	String	Conversion material
RootMethod	String	Conversion method 1
ConversionMethod	String	Conversion method 2
Userfields		Encloses the Userfields dataset
Userfields 1 - 10	String	User field specification
HoldTimePreLoad1	Int	Holding time for pre-load 1 in ms
HoldTimeMainLoad	Int	Holding time for main load in ms
HoldTimePreLoad2	Int	Holding time for pre-load 2 in ms
Unit	String	Unit (mm, inch)
AdditionalTestPointInfos		Encloses the AdditionalTestPointInfos dataset
AdditionalTestpointInfosUsed	String (true, false)	Specifies whether the test point information should be displayed before measurement
AdditionalTestpoint Value 1 - 3	String	Specification of 3 additional pieces of information
GeometryCorrection		Encloses the GeometryCorrection dataset
UseGeometryCorrection	String (true, false)	Specifies whether a geometry correction should be used
Shape	String	Shape of the component
Curvature	String	Curvature of the component
Angle	Int	Angle of indentation on the component
GeometryCorrectionDiameter	Float	Diameter of the component
LimitsActive	String (true, false)	Specifies whether the hardness limits should be used
HardnessMin	Float	Lower hardness limit
HardnessMax	Float	Upper hardness limit

Example:

```

<?xml version="1.0"?>
<ImportParameterSingleMeasurement
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <Method>HV 3</Method>
  <Objective> 10x</Objective>
  <ZoomLevel>2</ZoomLevel>
  <CircularLightUsed>>false</CircularLightUsed>
  <Conversion>
    <UseConversion>>false</UseConversion>
    <ConversionTable />
    <ConversionMaterial />
    <RootMethod />
    <ConversionMethod />
  </Conversion>
  <Userfields>
    <UserfieldText1 />
    <UserfieldText2 />
    <UserfieldText3 />
    <UserfieldText4 />
    <UserfieldText5 />
    <UserfieldText6 />
    <UserfieldText7 />
    <UserfieldText8 />
    <UserfieldText9 />
    <UserfieldText10 />
  </Userfields>
  <HoldTimePreLoad1 />
  <HoldTimeMainLoad>10000</HoldTimeMainLoad>
  <HoldTimePreLoad2 />
  <Unit>mm</Unit>
  <AdditionalTestPointInfos>
    <AdditionalTestpointInfosUsed>>false</AdditionalTestpointInfosUsed>
    <AdditionalTestpointValue1 />
    <AdditionalTestpointValue2 />
    <AdditionalTestpointValue3 />
  </AdditionalTestPointInfos>
  <GeometryCorrection>
    <UseGeometryCorrection>>false</UseGeometryCorrection>
    <Shape>Null</Shape>
    <Curvature>Null</Curvature>
    <Angle>Null</Angle>
    <GeometryCorrectionDiameter>0</GeometryCorrectionDiameter>
  </GeometryCorrection>
  <LimitsActive>>true</LimitsActive>
  <HardnessMin>1</HardnessMin>
  <HardnessMax>1000</HardnessMax>
</ImportParameterSingleMeasurement>

```

7.2. Structure for series measurement

Designation	Data type	Description
Version <?xml version="1.0"?>		XML version
<ImportParameterSeriesMeasurement xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">		Specification that this is a series measurement Encloses the dataset
Method	String	Test method
Objective	String	Lens (2.5x, 4x, 10x, 20x, 40x, 60x, 100x)
ZoomLevel	String	Zoom level 1-14
CircularLightUsed	String (true, false)	Specifies whether circular light is used
Conversion		Encloses the conversion dataset
UseConversion	String (true, false)	Specifies whether a conversion should be used
ConversionTable	String	Conversion table
ConversionMaterial	String	Conversion material
RootMethod	String	Conversion method 1
ConversionMethod	String	Conversion method 2
Userfields		Encloses the Userfields dataset
Userfields 1 - 10	String	User field specification
HoldTimePreLoad1	Int	Holding time for pre-load 1 in ms
HoldTimeMainLoad	Int	Holding time for main load in ms
HoldTimePreLoad2	Int	Holding time for pre-load 2 in ms
Unit	String	Unit (mm, inch)
AdditionalTestPointInfos		Encloses the AdditionalTestPointInfos dataset
AdditionalTestpointInfosUsed	String (true, false)	Specifies whether the test point information should be displayed before measurement
AdditionalTestpoint Value 1 - 3	String	Specification of 3 additional pieces of information
GeometryCorrection		Encloses the GeometryCorrection dataset
UseGeometryCorrection	String (true, false)	Specifies whether a geometry correction should be used
Shape	String	Shape of the component
Curvature	String	Curvature of the component
Angle	Int	Angle of indentation on the component
GeometryCorrectionDiameter	Float	Diameter of the component
LimitsActive	String (true, false)	Specifies whether the hardness limits should be used
HardnessMin	Float	Lower hardness limit
HardnessMax	Float	Upper hardness limit
EdgeDistance	Float	Distance from test edge
HorizontalDistance	Float	X distance between 2 test points
VerticalDistance	Float	Y distance between 2 test points

Example:

```

<?xml version="1.0"?>
<ImportParameterSeriesMeasurement
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <Method>HV 2,5</Method>
  <Objective> 20x</Objective>
  <ZoomLevel>2</ZoomLevel>
  <CircularLightUsed>>false</CircularLightUsed>
  <Conversion>
    <UseConversion>>false</UseConversion>
    <ConversionTable />
    <ConversionMaterial />
    <RootMethod />
    <ConversionMethod />
  </Conversion>
  <Userfields>
    <UserfieldText1>SeriesMeasurement</UserfieldText1>
    <UserfieldText2 />
    <UserfieldText3 />
    <UserfieldText10 />
  </Userfields>
  <HoldTimePreLoad1 />
  <HoldTimeMainLoad>2500</HoldTimeMainLoad>
  <HoldTimePreLoad2 />
  <Unit>mm</Unit>
  <GeometryCorrection>
    <UseGeometryCorrection>>true</UseGeometryCorrection>
    <Shape>Globe</Shape>
    <Curvature>Concave</Curvature>
    <Angle>Null</Angle>
    <GeometryCorrectionDiameter>8.8
      </GeometryCorrectionDiameter>
  </GeometryCorrection>
  <AdditionalTestPointInfos>
    <AdditionalTestpointInfosUsed>>false</AdditionalTestpointInfosUsed>
    <AdditionalTestpointValue1 />
    <AdditionalTestpointValue2 />
    <AdditionalTestpointValue3 />
  </AdditionalTestPointInfos>
  <LimitsActive>>true</LimitsActive>
  <HardnessMin>2.5</HardnessMin>
  <HardnessMax>53</HardnessMax>
  <EdgeDistance>8</EdgeDistance>
  <HorizontalDistance>4</HorizontalDistance>
  <VerticalDistance>2</VerticalDistance>
</ImportParameterSeriesMeasurement>

```

7.3. Structure for CHD measurement

Designation	Data type	Description
Version <?xml version="1.0"?>		XML version
<ImportParameterCHD xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema-instance">		Specification that this is a CHD measurement Encloses the dataset
Method	String	Test method
Objective	String	Lens (2.5x, 4x, 10x, 20x, 40x, 60x, 100x)
ZoomLevel	String	Zoom level 1-14
CircularLightUsed	String (true, false)	Specifies whether circular light is used
Conversion		Encloses the conversion dataset
UseConversion	String (true, false)	Specifies whether a conversion should be used
ConversionTable	String	Conversion table
ConversionMaterial	String	Conversion material
RootMethod	String	Conversion method 1
ConversionMethod	String	Conversion method 2
Userfields		Encloses the Userfields dataset
Userfields 1 - 10	String	User field specification
HoldTimePreLoad1	Int	Holding time for pre-load 1 in ms
HoldTimeMainLoad	Int	Holding time for main load in ms
HoldTimePreLoad2	Int	Holding time for pre-load 2 in ms
Unit	String	Unit (mm, inch)
AdditionalTestPointInfos		Encloses the AdditionalTestPointInfos dataset
AdditionalTestpointInfosUsed	String (true, false)	Specifies whether the test point information should be displayed before measurement
AdditionalTestpoint Value 1 - 3	String	Specification of 3 additional pieces of information
HardnessLimitDefault	Float	Hardness limit for calculating the CHD value
LimitsActive	String (true, false)	Specifies whether the hardness limits should be used
CaseHardnessDepthLimitMin	Float	Lower hardness limit
CaseHardnessDepthLimitMax	Float	Upper hardness limit
EdgeDistance	Float	Distance from test edge
HorizontalDistance	Float	X distance between 2 test points
VerticalDistance	Float	Y distance between 2 test points

Example:

```

<?xml version="1.0"?>
<ImportParameterCHD xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <Method>HV 3</Method>
  <Objective> 10x</Objective>
  <ZoomLevel>2</ZoomLevel>
  <CircularLightUsed>>false</CircularLightUsed>
  <Conversion>
    <UseConversion>>false</UseConversion>
    <ConversionTable />
    <ConversionMaterial />
    <RootMethod />
    <ConversionMethod />
  </Conversion>
  <Userfields>
    <UserfieldText1 />
    <UserfieldText2>Test</UserfieldText2>
    <UserfieldText3 />
    <UserfieldText4 />
    <UserfieldText5 />
    <UserfieldText6 />
    <UserfieldText7 />
    <UserfieldText8 />
    <UserfieldText9 />
    <UserfieldText10 />
  </Userfields>
  <HoldTimePreLoad1 />
  <HoldTimeMainLoad>10000</HoldTimeMainLoad>
  <HoldTimePreLoad2 />
  <Unit>mm</Unit>
  <AdditionalTestPointInfos>
    <AdditionalTestpointInfosUsed>>false</AdditionalTestpointInfosUsed>
    <AdditionalTestpointValue1 />
    <AdditionalTestpointValue2 />
    <AdditionalTestpointValue3 />
  </AdditionalTestPointInfos>
  <HardnessLimitDefault>550</HardnessLimitDefault>
  <LimitsActive>>true</LimitsActive>
  <CaseHardnessDepthLimitMin>0.1</CaseHardnessDepthLimitMin>
  <CaseHardnessDepthLimitMax>1</CaseHardnessDepthLimitMax>
  <EdgeDistance>1</EdgeDistance>
  <HorizontalDistance>1</HorizontalDistance>
  <VerticalDistance>0.5</VerticalDistance>
</ImportParameterCHD>

```

7.4. Structure for Rht measurement

Designation	Data type	Description
Version <?xml version="1.0"?>		XML version
<ImportParameterRht xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">		Specification that this is an Rht measurement Encloses the dataset
Method	String	Test method
Objective	String	Lens (2.5x, 4x, 10x, 20x, 40x, 60x, 100x)
ZoomLevel	String	Zoom level 1-14
CircularLightUsed	String (true, false)	Specifies whether circular light is used
Conversion		Encloses the conversion dataset
UseConversion	String (true, false)	Specifies whether a conversion should be used
ConversionTable	String	Conversion table
ConversionMaterial	String	Conversion material
RootMethod	String	Conversion method 1
ConversionMethod	String	Conversion method 2
Userfields		Encloses the Userfields dataset
Userfields 1 - 10	String	User field specification
HoldTimePreLoad1	Int	Holding time for pre-load 1 in ms
HoldTimeMainLoad	Int	Holding time for main load in ms
HoldTimePreLoad2	Int	Holding time for pre-load 2 in ms
Unit	String	Unit (mm, inch)
AdditionalTestPointInfos		Encloses the AdditionalTestPointInfos dataset
AdditionalTestpointInfosUsed	String (true, false)	Specifies whether the test point information should be displayed before measurement
AdditionalTestpoint Value 1 - 3	String	Specification of 3 additional pieces of information
SurfaceHardness	Float	Specification of the material surface hardness
HardnessLimitFactorPercentRht	Int	Specification of the hardness limit calculation factor in percent
LimitsActive	String (true, false)	Specifies whether the hardness limits should be used
RhtMin	Float	Lower hardness limit
RhtMax	Float	Upper hardness limit
EdgeDistance	Float	Distance from test edge
HorizontalDistance	Float	X distance between 2 test points
VerticalDistance	Float	Y distance between 2 test points

Example:

```

<?xml version="1.0"?>
<ImportParameterRht xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <Method>HV 3</Method>
  <Objective> 10x</Objective>
  <ZoomLevel>2</ZoomLevel>
  <CircularLightUsed>>false</CircularLightUsed>
  <Conversion>
    <UseConversion>>false</UseConversion>
    <ConversionTable />
    <ConversionMaterial />
    <RootMethod />
    <ConversionMethod />
  </Conversion>
  <Userfields>
    <UserfieldText1 />
    <UserfieldText2>UZIMN</UserfieldText2>
    <UserfieldText3 />
    <UserfieldText4 />
    <UserfieldText5 />
    <UserfieldText6 />
    <UserfieldText7 />
    <UserfieldText8 />
    <UserfieldText9 />
    <UserfieldText10 />
  </Userfields>
  <HoldTimePreLoad1 />
  <HoldTimeMainLoad>10000</HoldTimeMainLoad>
  <HoldTimePreLoad2 />
  <Unit>mm</Unit>
  AdditionalTestPointInfos>
    <AdditionalTestpointInfosUsed>>false</AdditionalTestpointInfosUsed>
    <AdditionalTestpointValue1 />
    <AdditionalTestpointValue2 />
    <AdditionalTestpointValue3 />
  </AdditionalTestPointInfos>
  <SurfaceHardness>700</SurfaceHardness>
  <HardnessLimitFactorPercentRht>80</HardnessLimitFactorPercentRht>
  <LimitsActive>>true</LimitsActive>
  <RhtMin>0.1</RhtMin>
  <RhtMax>1</RhtMax>
  <EdgeDistance>1</EdgeDistance>
  <HorizontalDistance>1</HorizontalDistance>
  <VerticalDistance>0.5</VerticalDistance>
</ImportParameterRht>

```


7.5. Structure for Nht measurement

Designation	Data type	Description
Version <?xml version="1.0"?>		XML version
<ImportParameterNht xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">		Specification that this is an Nht measurement Encloses the dataset
Method	String	Test method
Objective	String	Lens (2.5x, 4x, 10x, 20x, 40x, 60x, 100x)
ZoomLevel	String	Zoom level 1-14
CircularLightUsed	String (true, false)	Specifies whether circular light is used
Conversion		Encloses the conversion dataset
UseConversion	String (true, false)	Specifies whether a conversion should be used
ConversionTable	String	Conversion table
ConversionMaterial	String	Conversion material
RootMethod	String	Conversion method 1
ConversionMethod	String	Conversion method 2
Userfields		Encloses the Userfields dataset
Userfields 1 - 10	String	User field specification
HoldTimePreLoad1	Int	Holding time for pre-load 1 in ms
HoldTimeMainLoad	Int	Holding time for main load in ms
HoldTimePreLoad2	Int	Holding time for pre-load 2 in ms
Unit	String	Unit (mm, inch)
AdditionalTestPointInfos		Encloses the AdditionalTestPointInfos dataset
AdditionalTestpointInfosUsed	String (true, false)	Specifies whether the test point information should be displayed before measurement
AdditionalTestpoint Value 1 - 3	String	Specification of 3 additional pieces of information
NumberOfCoreHardness Points	Int	Specification of the number of test points for determining core hardness
Offset	Int	Specification of the addend used in calculating the hardness limit
LimitsActive	String (true, false)	Specifies whether the hardness limits should be used
NhtMin	String	Lower hardness limit
NhtMax	String	Upper hardness limit
EdgeDistance	String	Distance from test edge
HorizontalDistance	String	X distance between 2 test points
VerticalDistance	String	Y distance between 2 test points

Example:

```

?xml version="1.0"?>
<ImportParameterNht xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <Method>HV 3</Method>
  <Objective> 10x</Objective>
  <ZoomLevel>2</ZoomLevel>
  <CircularLightUsed>>false</CircularLightUsed>
  <Conversion>
    <UseConversion>>false</UseConversion>
    <ConversionTable />
    <ConversionMaterial />
    <RootMethod />
    <ConversionMethod />
  </Conversion>
  <Userfields>
    <UserfieldText1 />
    <UserfieldText2 />
    <UserfieldText3 />
    <UserfieldText4 />
    <UserfieldText5 />
    <UserfieldText6 />
    <UserfieldText7 />
    <UserfieldText8 />
    <UserfieldText9 />
    <UserfieldText10 />
  </Userfields>
  <HoldTimePreLoad1 />
  <HoldTimeMainLoad>10000</HoldTimeMainLoad>
  <HoldTimePreLoad2 />
  <Unit>mm</Unit>
  AdditionalTestPointInfos>
    <AdditionalTestpointInfosUsed>>false</AdditionalTestpointInfosUsed>
    <AdditionalTestpointValue1 />
    <AdditionalTestpointValue2 />
    <AdditionalTestpointValue3 />
  </AdditionalTestPointInfos>
  <NumberOfCoreHardnessPoints>3</NumberOfCoreHardnessPoints>
  <Offset>50</Offset>
  <LimitsActive>>true</LimitsActive>
  <NhtMin>0.1</NhtMin>
  <NhtMax>1</NhtMax>
  <EdgeDistance>1</EdgeDistance>
  <HorizontalDistance>1</HorizontalDistance>
  <VerticalDistance>0.5</VerticalDistance>
</ImportParameterNht>

```

8. Format specification for sending information

Once measurement is complete, the dataset can be transferred to the external application using the "Export" function.

A file (Export.xml) is generated in the

C:\Data\ImportExportParameterInterface\Export directory and batch file

EcosCompactExportParameter.bat is called.

Data is provided in the following specification

8.1. Format specification for single measurement

Designation	Data type	Description
Version <?xml version="1.0"?>		XML version
Testtype	String	Specification of the test type
Comment	String	Comments
Userfields		Encloses the Userfields dataset
Userfields 1 - 10	String	User field specification
Point PointID	Int	Specifies the test point number
User	String	Logged-on user
DateTime	Date/Time	Test time
ImagePathDefault	String	Specifies the path of the indentation image
ImagePathResult	String	Specifies the path of the evaluated indentation image
Status	String	Status of the test point
Classification	String	Classification of the indentation
KindOfMeasurement	String	Measurement type (Vickers, Brinell, Rockwell)
Method	String	Test method
Objective	String	Lens (2.5x, 4x, 10x, 20x, 40x, 60x, 100x)
UseConversion	String (true, false)	Specifies whether a conversion was used
ConversionTable	String	Conversion table
ConversionMaterial	String	Conversion material
ConversionMethod	String	Conversion method 2
ConversionValue	Float	Converted measured value
HardnessMin	Float	Lower hardness limit
HardnessMax	Float	Upper hardness limit
UseGeometryCorrection	String (true, false)	Specifies whether a geometry correction was used
Shape	String	Shape of the component
Curvature	String	Curvature of the component
GeometryCorrectionDiameter	Float	Diameter of the component
Angle	Int	Angle of indentation on the component
XAbs	Float	Absolute coordinates X position
YAbs	Float	Absolute coordinates Y position
Hardness	String	Hardness value of test indentation
Diag1	Float	Value of diagonal 1 in mm
Diag2	Float	Value of diagonal 2 in mm
Diag	Float	Average of both diagonals in mm
NPX	Int	North evaluation point X coordinate
NPY	Int	North evaluation point Y coordinate
EPX	Int	East evaluation point X coordinate
EPY	Int	East evaluation point Y coordinate
SPX	Int	South evaluation point X coordinate

SPY	Int	South evaluation point Y coordinate
WPX	Int	West evaluation point X coordinate
WPY	Int	West evaluation point Y coordinate
FocusPosition	Int	Focus position of indentation
ZoomLevel	Int	Camera zoom level
CircularLightUsed	String (Yes, No)	Specifies whether circular light is used
AdditionalTestpointValue1	String	Additional information about test point
AdditionalTestpointValue2	String	Additional information about test point
AdditionalTestpointValue3	String	Additional information about test point

Example:

```

<?xml version="1.0" encoding="utf-8"?>
<Specimen>
  <Testtype>Single Measurement</Testtype>
  <Comment>Enter comment (optional)</Comment>
  <Userfields>
    <Userfield UserfieldID="1">
      <Value>ERT</Value>
    </Userfield>
    <Userfield UserfieldID="2">
      <Value></Value>
    </Userfield>
    <Userfield UserfieldID="3">
      <Value></Value>
    </Userfield>
    <Userfield UserfieldID="4">
      <Value></Value>
    </Userfield>
    <Userfield UserfieldID="5">
      <Value></Value>
    </Userfield>
    <Userfield UserfieldID="6">
      <Value></Value>
    </Userfield>
    <Userfield UserfieldID="7">
      <Value></Value>
    </Userfield>
    <Userfield UserfieldID="8">
      <Value></Value>
    </Userfield>
    <Userfield UserfieldID="9">
      <Value></Value>
    </Userfield>
    <Userfield UserfieldID="10">
      <Value></Value>
    </Userfield>
  </Userfields>
  <Point PointID="1">
    <User>Cal</User>
    <DateTime>11/22/2012 12:55:18 PM</DateTime>
    <ImagePathDefault>C:\Data\Images\22_11_2012_12_55_16_HV
    1_40x.jpg</ImagePathDefault>
    <ImagePathResult>C:\Data\Images\22_11_2012_12_55_18_HV
    1_40x_Result.jpg</ImagePathResult>
  </Point>
</Specimen>

```

```

<Status>Measured</Status>
<Classification>WarningValueTooHigh</Classification>
<KindOfMeasurement>Vickers</KindOfMeasurement>
<Method>HV 1</Method>
<Objective> 40x</Objective>
<UseConversion>False</UseConversion>
<ConversionTable></ConversionTable>
<ConversionMaterial></ConversionMaterial>
<ConversionMethod></ConversionMethod>
<ConversionValue>0</ConversionValue>
<HardnessMax>1</HardnessMax>
<HardnessMin>0</HardnessMin>
<UseGeometryCorrection>False</UseGeometryCorrection>
<Shape>Null</Shape>
<Curvature>Concave</Curvature>
<GeomCorrDiameter>0</GeomCorrDiameter>
<Angle>Angle_45</Angle>
<XAbs>0</XAbs>
<YAbs>0</YAbs>
<Hardness>356</Hardness>
<Diag1>0.0719778331682586</Diag1>
<Diag2>0.0723675589904658</Diag2>
<Diag>0.0721726960793621</Diag>
<NPX>652</NPX>
<NPY>215</NPY>
<EPX>927</EPX>
<EPY>491</EPY>
<SPX>646</SPX>
<SPY>767</SPY>
<WPX>372</WPX>
<WPY>485</WPY>
<FocusPosition>0</FocusPosition>
<ZoomLevel>1</ZoomLevel>
<CircularLightUsed>False</CircularLightUsed>
<AdditionalTestpointValue1></AdditionalTestpointValue1>
<AdditionalTestpointValue2></AdditionalTestpointValue2>
<AdditionalTestpointValue3></AdditionalTestpointValue3>
</Point>
<Point PointID="2">
.
.
</Point>
<Point PointID="3">
.
.
</Point>
<Point PointID="4">
.
.
</Point>
</Specimen>

```

8.2. Format specification for series measurement

Designation	Data type	Description
Version <?xml version="1.0"?>		XML version
Testtype	String	Specification of the test type
Comment	String	Comments
Userfields		Encloses the Userfields dataset
Userfields 1 - 10	String	User field specification
Row RowName	String	Specification of the row name
Status	String	Current status of the measurement row
EdgeDistance	Float	Distance from edge of specimen
VerticalDistance	Float	Distance between two test points in X direction
HorizontalDistance	Float	Distance between two test points in Y direction
Point PointID	Int	Specifies the test point number
User	String	Logged-on user
DateTime	Date/Time	Test time
ImagePathDefault	String	Specifies the path of the indentation image
ImagePathResult	String	Specifies the path of the evaluated indentation image
Status	String	Status of the test point
Classification	String	Classification of the indentation
KindOfMeasurement	String	Measurement type (Vickers, Brinell, Rockwell)
Method	String	Test method
Objective	String	Lens (2.5x, 4x, 10x, 20x, 40x, 60x, 100x)
UseConversion	String (true, false)	Specifies whether a conversion was used
ConversionTable	String	Conversion table
ConversionMaterial	String	Conversion material
ConversionMethod	String	Conversion method
ConversionValue	Float	Converted measured value
HardnessMin	Float	Lower hardness limit
HardnessMax	Float	Upper hardness limit
UseGeometryCorrection	String (true, false)	Specifies whether a geometry correction was used.
Shape	String	Shape of the component
Curvature	String	Curvature of the component
GeometryCorrectionDiameter	Float	Diameter of the component
Angle	Int	Angle of indentation on the component
XAbs	Float	Absolute coordinates X position
YAbs	Float	Absolute coordinates Y position
Hardness	Float	Hardness value of test indentation
Diag1	Float	Value of diagonal 1 in mm
Diag2	Float	Value of diagonal 2 in mm
Diag	Float	Average of both diagonals in mm
NPX	Int	North evaluation point X coordinate
NPY	Int	North evaluation point Y coordinate
EPX	Int	East evaluation point X coordinate
EPY	Int	East evaluation point Y coordinate
SPX	Int	South evaluation point X coordinate
SPY	Int	South evaluation point Y coordinate
WPX	Int	West evaluation point X coordinate

WPY	Int	West evaluation point Y coordinate
FocusPosition	Int	Focus position of indentation
ZoomLevel	Int	Camera zoom level
CircularLightUsed	String (Yes, No)	Specifies whether circular light is used
AdditionalTestpointValue1	String	Additional information about test point
AdditionalTestpointValue2	String	Additional information about test point
AdditionalTestpointValue3	String	Additional information about test point

Example:

```

<?xml version="1.0"?>
<Specimen>
  <Testtype>Series Measurement</Testtype>
  <Comment>Enter comment (optional)</Comment>
  <Userfields>
    <Userfield UserfieldID="1">
      <Value></Value>
    </Userfield>
    .
    .
    <Userfield UserfieldID="10">
      <Value></Value>
    </Userfield>
  </Userfields>
  <Row RowName="1">
    <User>Cal</User>
    <Status>RowComplete</Status>
    <EdgeDistance>0.1</EdgeDistance>
    <VerticalDistance>0.1</VerticalDistance>
    <HorizontalDistance>0.1</HorizontalDistance>

    <Point PointID="1">
      <User>Cal</User>
      <DateTime>2/23/2013 12:28:17 PM</DateTime>
      <ImagePathDefault>C:\Data\Images\\
23_2_2013_12_28_15_HV 3_ 20x.jpg</ImagePathDefault>
      <ImagePathResult>C:\Data\Images\\
23_2_2013_12_28_17_HV
3_ 20x_Result.jpg</ImagePathResult>
      <Status>Measured</Status>
      <Classification>ErrorDiagonale,WarningValueToHigh
</Classification>
      <KindOfMeasurement>Vickers</KindOfMeasurement>
      <Method>HV 3</Method>
      <Objective> 20x</Objective>
      <UseConversion>False</UseConversion>
      <ConversionTable></ConversionTable>
      <ConversionMaterial></ConversionMaterial>
      <ConversionMethod></ConversionMethod>
      <ConversionValue>0</ConversionValue>
      <HardnessMax>1</HardnessMax>
      <HardnessMin>0</HardnessMin>
      <UseGeometryCorrection>False</UseGeometryCorrection>
      <Shape>Null</Shape>
      <Curvature>Concave</Curvature>
    </Point>
  </Row>
</Specimen>

```

```

        <GeomCorrDiameter>0</GeomCorrDiameter>
        <Angle>Angle_45</Angle>
        <XAbs>0.1</XAbs>
        <YAbs>0</YAbs>
        <Hardness>463</Hardness>
        <Diag1>0.106513292567955</Diag1>
        <Diag2>0.112715734049082</Diag2>
        <Diag>0.109614513308518</Diag>
        <NPX>637</NPX>
        <NPY>317</NPY>
        <EPX>835</EPX>
        <EPY>521</EPY>
        <SPX>635</SPX>
        <SPY>749</SPY>
        <WPX>427</WPX>
        <WPY>531</WPY>
        <FocusPosition>0</FocusPosition>
        <ZoomLevel>1</ZoomLevel>
        <CircularLightUsed>False</CircularLightUsed>
        <AdditionalTestpointValue1></AdditionalTestpointValue1>
        <AdditionalTestpointValue2></AdditionalTestpointValue2>
        <AdditionalTestpointValue3></AdditionalTestpointValue3>
    </Point>
    <Point PointID="2">
        .
        .
        .
    </Point>
    <Point PointID="3">
        .
        .
        .
    </Point>
</Row>
</Specimen>

```


8.3. Format specification for CHD measurement

Designation	Data type	Description
Version <?xml version="1.0"?>		XML version
Testtype	String	Specification of the test type
Comment	String	Comments
Userfields		Encloses the Userfields dataset
Userfields 1 - 10	String	User field specification
Row RowName	String	Specification of the row name
Status	String	Current status of the measurement row
EdgeDistance	Float	Distance from edge of specimen
VerticalDistance	Float	Distance between two test points in X direction
HorizontalDistance	Float	Distance between two test points in Y direction
CHDValue	Float	CHD measured value for the measurement row
HardnessLimitDefault	Int	Hardness limit
CaseHardnessDepthLimitMax	Float	Lower limit for the CHD value
CaseHardnessDepthLimitMin	Float	Upper limit for the CHD value
Point PointID	Int	Specifies the test point number
User	String	Logged-on user
DateTime	Date/Time	Test time
ImagePathDefault	String	Specifies the path of the indentation image
ImagePathResult	String	Specifies the path of the evaluated indentation image
Status	String	Status of the test point
Classification	String	Classification of the indentation
KindOfMeasurement	String	Measurement type (Vickers, Brinell, Rockwell)
Method	String	Test method
Objective	String	Lens (2.5x, 4x, 10x, 20x, 40x, 60x, 100x)
UseConversion	String (true, false)	Specifies whether a conversion was used
ConversionTable	String	Conversion table
ConversionMaterial	String	Conversion material
ConversionMethod	String	Conversion method
ConversionValue	Float	Converted measured value
HardnessMin	Float	Lower hardness limit
HardnessMax	Float	Upper hardness limit
UseGeometryCorrection	String (true, false)	Specifies whether a geometry correction was used.
Shape	String	Shape of the component
Curvature	String	Curvature of the component
GeometryCorrectionDiameter	Float	Diameter of the component
Angle	Int	Angle of indentation on the component
XAbs	Float	Absolute coordinates X position
YAbs	Float	Absolute coordinates Y position
Hardness	Float	Hardness value of test indentation
Diag1	Float	Value of diagonal 1 in mm
Diag2	Float	Value of diagonal 2 in mm
Diag	Float	Average of both diagonals in mm
NPX	Int	North evaluation point X coordinate
NPY	Int	North evaluation point Y coordinate
EPX	Int	East evaluation point X coordinate

EPY	Int	East evaluation point Y coordinate
SPX	Int	South evaluation point X coordinate
SPY	Int	South evaluation point Y coordinate
WPX	Int	West evaluation point X coordinate
WPY	Int	West evaluation point Y coordinate
FocusPosition	Int	Focus position of indentation
ZoomLevel	Int	Camera zoom level
CircularLightUsed	String (Yes, No)	Specifies whether circular light is used
AdditionalTestpointValue1	String	Additional information about test point
AdditionalTestpointValue2	String	Additional information about test point
AdditionalTestpointValue3	String	Additional information about test point

Example:

```

<?xml version="1.0"?>
<Specimen>
  <Testtype>CHD</Testtype>
  <Comment>Kommentar eingeben (optional)</Comment>
  <Userfields>
    <Userfield UserfieldID="1">
      <Value></Value>
    </Userfield>
    .
    .
    <Userfield UserfieldID="10">
      <Value></Value>
    </Userfield>
  </Userfields>

  <Row RowName="1">
    <User>Cal</User>
    <Status>RowComplete</Status>
    <EdgeDistance>0</EdgeDistance>
    <VerticalDistance>0</VerticalDistance>
    <HorizontalDistance>1</HorizontalDistance>
    <CHDValue>2.15492223210903</CHDValue>
    <HardnessLimitDefault>550</HardnessLimitDefault>
    <CaseHardnessDepthLimitMax>0.1</CaseHardnessDepthLimitMax>
    <CaseHardnessDepthLimitMin>0</CaseHardnessDepthLimitMin>
    <Point PointID="1">
      <User>Cal</User>
      <DateTime>2/8/2013 7:22:04 AM</DateTime>
      <ImagePathDefault>C:\Data\Images\\
      8_2_2013_7_22_3_HV 1_ 20x.jpg
      </ImagePathDefault>
      <ImagePathResult>C:\Data\Images\\
      8_2_2013_7_22_4_HV 1_ 20x_Result.jpg
      </ImagePathResult>
      <Status>Measured</Status>
      <Classification>ResultOk</Classification>
      <KindOfMeasurement>Vickers</KindOfMeasurement>
      <Method>HV 1</Method>
      <Objective> 20x</Objective>
    </Point>
  </Row>
</Specimen>

```

```

        <UseConversion>False</UseConversion>
        <ConversionTable></ConversionTable>
        <ConversionMaterial></ConversionMaterial>
        <ConversionMethod></ConversionMethod>
        <ConversionValue>0</ConversionValue>
        <HardnessMax>1</HardnessMax>
        <HardnessMin>0</HardnessMin>
        <UseGeometryCorrection>False</UseGeometryCorrection>
        <Shape>Null</Shape>
        <Curvature>Null</Curvature>
        <GeomCorrDiameter>0</GeomCorrDiameter>
        <Angle>Null</Angle>
        <XAbs>0.1</XAbs>
        <YAbs>0</YAbs>
        <Hardness>738</Hardness>
        <Diag1>0.0501226946883446</Diag1>
        <Diag2>0.0501308513399077</Diag2>
        <Diag>0.0501267730141261</Diag>
        <NPX>641</NPX>
        <NPY>434</NPY>
        <EPX>738</EPX>
        <EPY>528</EPY>
        <SPX>637</SPX>
        <SPY>625</SPY>
        <WPX>547</WPX>
        <WPY>526</WPY>
        <FocusPosition>0</FocusPosition>
        <ZoomLevel>1</ZoomLevel>
        <CircularLightUsed>False</CircularLightUsed>
        <AdditionalTestpointValue1>
            </AdditionalTestpointValue1>
        <AdditionalTestpointValue2>
            </AdditionalTestpointValue2>
        <AdditionalTestpointValue3>
            </AdditionalTestpointValue3>
    </Point>
    <Point PointID="2">

    </Point>

    <Point PointID="3">
    </Point>
</Row>
<Row RowName="2">
    <Point PointID="1">

    </Point>
    .
    .
</Row>
</Specimen>

```

8.4. Format specification for Rht measurement

Designation	Data type	Description
Version <?xml version="1.0"?>		XML version
Testtype	String	Specification of the test type
Comment	String	Comments
Userfields		Encloses the Userfields dataset
Userfields 1 - 10	String	User field specification
Row RowName	String	Specification of the row name
Status	String	Current status of the measurement row
EdgeDistance	Float	Distance from edge of specimen
VerticalDistance	Float	Distance between two test points in X direction
HorizontalDistance	Float	Distance between two test points in Y direction
RhtValue	Float	Rht measured value for the measurement row
SurfaceHardness	Float	Surface hardness of the material
CaseHardnessInPercent	Int	Specification of the hardness limit calculation factor in percent
CaseHardness	Int	Hardness limit
RhtLimitMax	Float	Lower limit for the Rht value
RhtLimitMin	Float	Upper limit for the Rht value
Point PointID	Int	Specifies the test point number
User	String	Logged-on user
DateTime	Date/Time	Test time
ImagePathDefault	String	Specifies the path of the indentation image
ImagePathResult	String	Specifies the path of the evaluated indentation image
Status	String	Status of the test point
Classification	String	Classification of the indentation
KindOfMeasurement	String	Measurement type (Vickers, Brinell, Rockwell)
Method	String	Test method
Objective	String	Lens (2.5x, 4x, 10x, 20x, 40x, 60x, 100x)
UseConversion	String (true, false)	Specifies whether a conversion was used
ConversionTable	String	Conversion table
ConversionMaterial	String	Conversion material
ConversionMethod	String	Conversion method
ConversionValue	Float	Converted measured value
HardnessMin	Float	Lower hardness limit
HardnessMax	Float	Upper hardness limit
UseGeometryCorrection	String (true, false)	Specifies whether a geometry correction was used
Shape	String	Shape of the component
Curvature	String	Curvature of the component
GeometryCorrectionDiameter	Float	Diameter of the component
Angle	Int	Angle of indentation on the component
XAbs	Float	Absolute coordinates X position
YAbs	Float	Absolute coordinates Y position
Hardness	Float	Hardness value of test indentation
Diag1	Float	Value of diagonal 1 in mm
Diag2	Float	Value of diagonal 2 in mm

Diag	Float	Average of both diagonals in mm
NPX	Int	North evaluation point X coordinate
NPY	Int	North evaluation point Y coordinate
EPX	Int	East evaluation point X coordinate
EPY	Int	East evaluation point Y coordinate
SPX	Int	South evaluation point X coordinate
SPY	Int	South evaluation point Y coordinate
WPX	Int	West evaluation point X coordinate
WPY	Int	West evaluation point Y coordinate
FocusPosition	Int	Focus position of indentation
ZoomLevel	Int	Camera zoom level
CircularLightUsed	String (Yes, No)	Specifies whether circular light is used
AdditionalTestpointValue1	String	Additional information about test point
AdditionalTestpointValue2	String	Additional information about test point
AdditionalTestpointValue3	String	Additional information about test point

Example:

```
?xml version="1.0"?>
<Specimen>
  <Testtype>Rht</Testtype>
  <Comment>Enter comment (optional)</Comment>
  <Userfields>
    <Userfield UserfieldID="1">
      <Value></Value>
    </Userfield>
    .
    <Userfield UserfieldID="10">
      <Value></Value>
    </Userfield>
  </Userfields>
  <Row RowName="1">
    <User>Cal</User>
    <Status>RowComplete</Status>
    <EdgeDistance>0.1</EdgeDistance>
    <VerticalDistance>0.1</VerticalDistance>
    <HorizontalDistance>0.1</HorizontalDistance>
    <RhtValue>0.210526319710832</RhtValue>
    <SurfaceHardness>680</SurfaceHardness>
    <CaseHardnessInPercent>80</CaseHardnessInPercent>
    <CaseHardness>544</CaseHardness>
    <RhtLimitMax>0.1</RhtLimitMax>
    <RhtLimitMin>0</RhtLimitMin>
    <Point PointID="1">
      <User>Cal</User>
      <DateTime>2/8/2013 7:22:04 AM</DateTime>
      <ImagePathDefault>C:\Data\Images\8_2_2013_7_22_3_HV 1_ 20x.jpg</ImagePathDefault>
      <ImagePathResult>C:\Data\Images\8_2_2013_7_22_4_HV 1_ 20x_Result.jpg</ImagePathResult>
      <Status>Measured</Status>
    </Point>
  </Row>
</Specimen>
```

```

    <Classification>ResultOk</Classification>
    <KindOfMeasurement>Vickers</KindOfMeasurement>
    <Method>HV 1</Method>
    <Objective> 20x</Objective>
    <UseConversion>False</UseConversion>
    <ConversionTable></ConversionTable>
    <ConversionMaterial></ConversionMaterial>
    <ConversionMethod></ConversionMethod>
    <ConversionValue>0</ConversionValue>
    <HardnessMax>1</HardnessMax>
    <HardnessMin>0</HardnessMin>
    <UseGeometryCorrection>False</UseGeometryCorrection>
    <Shape>Null</Shape>
    <Curvature>Null</Curvature>
    <GeomCorrDiameter>0</GeomCorrDiameter>
    <Angle>Null</Angle>
    <XAbs>0.1</XAbs>
    <YAbs>0</YAbs>
    <Hardness>738</Hardness>
    <Diag1>0.0501226946883446</Diag1>
    <Diag2>0.0501308513399077</Diag2>
    <Diag>0.0501267730141261</Diag>
    <NPX>641</NPX>
    <NPY>434</NPY>
    <EPX>738</EPX>
    <EPY>528</EPY>
    <SPX>637</SPX>
    <SPY>625</SPY>
    <WPX>547</WPX>
    <WPY>526</WPY>
    <FocusPosition>0</FocusPosition>
    <ZoomLevel>1</ZoomLevel>
    <CircularLightUsed>False</CircularLightUsed>
    <AdditionalTestpointValue1>
    </AdditionalTestpointValue1>
    <AdditionalTestpointValue2>
    </AdditionalTestpointValue2>
    <AdditionalTestpointValue3>
    </AdditionalTestpointValue3>
  </Point>
  <Point PointID="2">

  </Point>

  <Point PointID="3">
  </Point>
</Row>
<Row RowName="2">
  <Point PointID="1">

  </Point>
  .
  .
</Row>
</Specimen>

```

8.5. Format specification for Nht measurement

Designation	Data type	Description
Version <?xml version="1.0"?>		XML version
Testtype	String	Specification of the test type
Comment	String	Comments
Userfields		Encloses the Userfields dataset
Userfields 1 - 10	String	User field specification
Row RowName	String	Specification of the row name
Status	String	Current status of the measurement row
EdgeDistance	Float	Distance from edge of specimen
VerticalDistance	Float	Distance between two test points in X direction
HorizontalDistance	Float	Distance between two test points in Y direction
NhtValue	Float	Nht measured value for the measurement row
NumberCoreHardnessPoints	Int	Number of core hardness points
CoreHardness	Float	Core hardness
Offset	Int	Specification of the addend used in calculating the hardness limit
HardnessLimit	Int	Hardness limit
NhtLimitMax	Float	Lower limit for the Nht value
NhtLimitMin	Float	Upper limit for the Nht value
CoreHardnessPoint Point ID	Int	Specifies the core hardness test point number
Point PointID	Int	Specifies the test point number
User	String	Logged-on user
DateTime	Date/Time	Test time
ImagePathDefault	String	Specifies the path of the indentation image
ImagePathResult	String	Specifies the path of the evaluated indentation image
Status	String	Status of the test point
Classification	String	Classification of the indentation
KindOfMeasurement	String	Measurement type (Vickers, Brinell, Rockwell)
Method	String	Test method
Objective	String	Lens (2.5x, 4x, 10x, 20x, 40x, 60x, 100x)
UseConversion	String (true, false)	Specifies whether a conversion was used
ConversionTable	String	Conversion table
ConversionMaterial	String	Conversion material
ConversionMethod	String	Conversion method
ConversionValue	Float	Converted measured value
HardnessMin	Float	Lower hardness limit
HardnessMax	Float	Upper hardness limit
UseGeometryCorrection	String (true, false)	Specifies whether a geometry correction was used
Shape	String	Shape of the component
Curvature	String	Curvature of the component
GeometryCorrectionDiameter	Float	Diameter of the component
Angle	Int	Angle of indentation on the component
XAbs	Float	Absolute coordinates X position
YAbs	Float	Absolute coordinates Y position

Hardness	Float	Hardness value of test indentation
Diag1	Float	Value of diagonal 1 in mm
Diag2	Float	Value of diagonal 2 in mm
Diag	Float	Average of both diagonals in mm
NPX	Int	North evaluation point X coordinate
NPY	Int	North evaluation point Y coordinate
EPX	Int	East evaluation point X coordinate
EPY	Int	East evaluation point Y coordinate
SPX	Int	South evaluation point X coordinate
SPY	Int	South evaluation point Y coordinate
WPX	Int	West evaluation point X coordinate
WPY	Int	West evaluation point Y coordinate
FocusPosition	Int	Focus position of indentation
ZoomLevel	String	Camera zoom level
CircularLightUsed	String (Yes, No)	Specifies whether circular light is used
AdditionalTestpointValue1	String	Additional information about test point
AdditionalTestpointValue2	String	Additional information about test point
AdditionalTestpointValue3	String	Additional information about test point

```

<?xml version="1.0"?>
<Specimen>
  <Testtype>Nht</Testtype>
  <Comment>Enter comment (optional)</Comment>
  <Userfields>
    <Userfield UserfieldID="1">
      <Value></Value>
    </Userfield>
    .
    <Userfield UserfieldID="10">
      <Value></Value>
    </Userfield>
  </Userfields>
  <Row RowName="1">
    <User>Cal</User>
    <Status>RowComplete</Status>
    <EdgeDistance>0.1</EdgeDistance>
    <VerticalDistance>0.1</VerticalDistance>
    <HorizontalDistance>0.1</HorizontalDistance>
    <NhtValue>0.241176477249931</NhtValue>
    <NumberCoreHardnessPoints>3</NumberCoreHardnessPoints>
    <CoreHardness>336.333333333333</CoreHardness>
    <Offset>50</Offset>
    <HardnessLimit>390</HardnessLimit>
    <NhtLimitMin>0</NhtLimitMin>
    <NhtLimitMax>0.1</NhtLimitMax>
    <CoreHardnessPoint PointID="1">
      <User>Cal</User>
      <DateTime>2/23/2013 12:48:53 PM</DateTime>
      <ImagePathDefault>C:\Data\Images\23_2_2013_12_38_22_HV 3_ 20x.jpg</ImagePathDefault>
      <ImagePathResult>C:\Data\Images\

```



```

23_2_2013_12_38_22_HV 3_ 20x_Result.jpg
</ImagePathResult>
<Status>ReMeasured</Status>
<Classification>ErrorDiagonale</Classification>
<KindOfMeasurement>Vickers</KindOfMeasurement>
<Method>HV 3</Method>
<Objective>Auto 20x</Objective>
<UseConversion>False</UseConversion>
<ConversionTable></ConversionTable>
<ConversionMaterial></ConversionMaterial>
<ConversionMethod></ConversionMethod>
<ConversionValue>0</ConversionValue>
<HardnessMax>1</HardnessMax>
<HardnessMin>0</HardnessMin>
<UseGeometryCorrection>False</UseGeometryCorrection>
<Shape>Null</Shape>
<Curvature>Null</Curvature>
<GeomCorrDiameter>0</GeomCorrDiameter>
<Angle>Null</Angle>
<XAbs>0</XAbs>
<YAbs>0</YAbs>
<Hardness>245</Hardness>
<Diag1>0.158441558441559</Diag1>
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