



## **ecos Workflow xCHANGE**

## **Documentation for data exchange**

**DuraScan 50, 70, 80**

**DuraVision 250, 350, 450**

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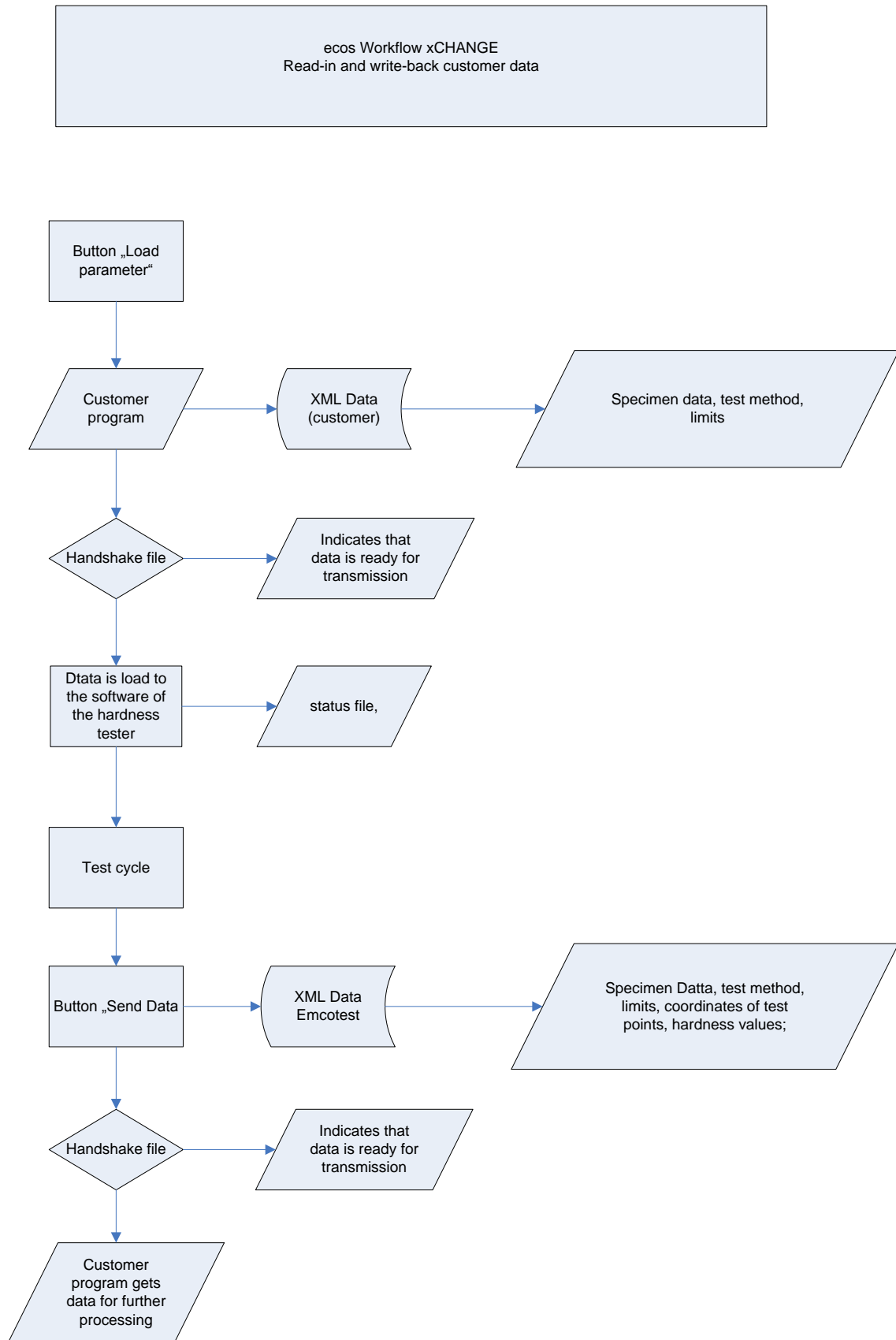
## 1. Description

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. Data exchange sequence



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

### 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 \*.spe.

### 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  
*Specification of the number of rows*  
*Identification data of the measurement rows*  
*Test type*  
*Tolerance specification*  
*Coordinates* (relative, absolute)  
*Measured values* (as result after the test sequence)

## 3. Modes

There are six 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.

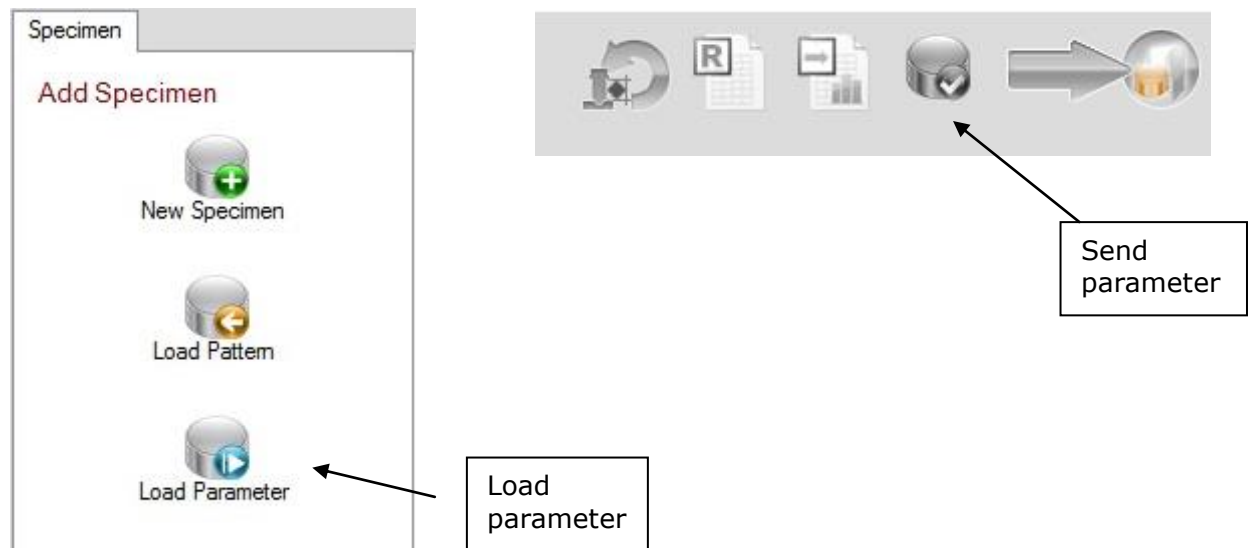
Further information about the RHT measurement test type can be found in the ecos Workflow user manual.

### **3.6. *Jominy measurement (end quench test)***

Special specimens are measured in the Jominy test.

Further information about the Jominy measurement test type can be found in the ecos Workflow user manual.

#### 4. Description of functions:



The buttons "Load parameters" and "Send parameters" can be configured under "Settings" – "General settings" on the "xCHANGE" tab.

##### 4.1. **Load parameters:**

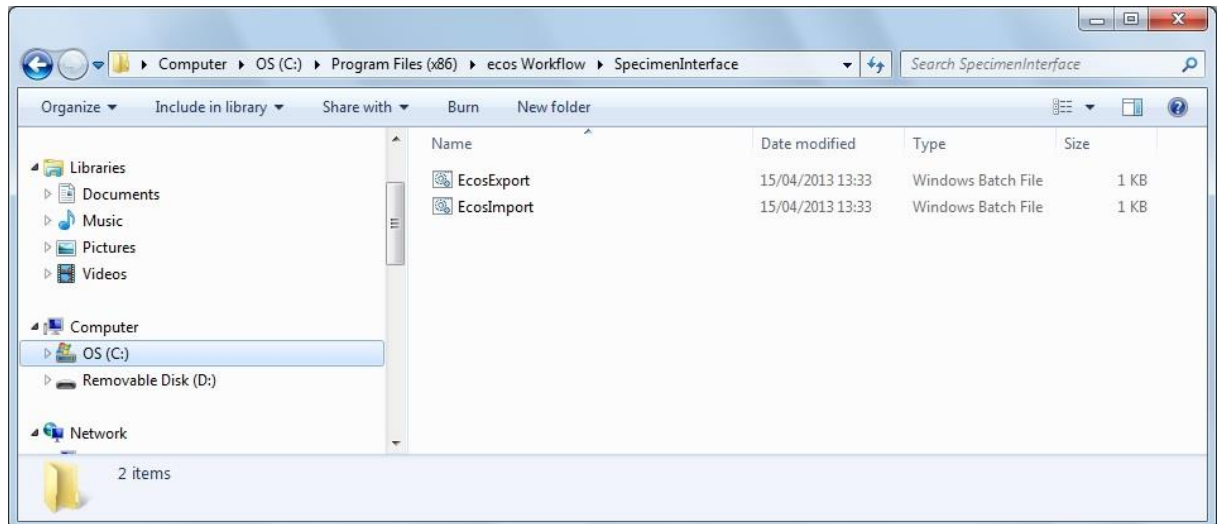
File EcosImport.bat is called, then any files generated in the C:\Data\ImportExportParameterInterface\Import directory are read in and used to create the test specifications.

##### 4.2. **Send parameters:**

The marked files are moved to the C:\Data\ImportExportParameterInterface\Export directory, file Handshake.ini is created and EcosExport.bat is called.

## 5. Starting the external application

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



### **EcosImport.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 ..\SpecimenInterfaceDemo\EcosSpecimenInterfaceDemo.exe -
Import
```

---

Calls program EcosSpecimenInterfaceDemo.exe with the parameter Export.

### **EcosExport.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 ..\SpecimenInterfaceDemo\EcosSpecimenInterfaceDemo.exe -
Export
```

---

Calls program EcosSpecimenInterfaceDemo.exe with the parameter Export.

## 6. External program

The external program is created by the customer itself. This program allows all customer data and specifications to be read into the ecos Workflow program. This program can also be used to define which actions should take place after importing the specimen(s).



### 6.1. **Creating the parameter settings file and the handshake file**

In addition to the specimen definition files, there is a settings file and a handshake file. Both files are also in XML format. The file extension is *\*.xml*.

- **Settings file "SpecimenInterfaceSettings.xml"**

The SpecimenInterfaceSettings.xml file is located in the C:\Data\SpecimenInterface directory and specifies what should be done with the loaded specimens after the import. This file can be changed by the customer program.

Options are

- Move all loaded specimens to Method tab page
- Move all loaded specimens to Position tab page
- Start measurement automatically
- Export data automatically after every measurement
- Move the specimens to history
- Delete specimens after exporting them

Designation	Data type	Description
MoveToMethod	Bool true/false	Specifies whether the loaded specimens should be moved onto the Method tab.
MoveToPosition	Bool true/false	Specifies whether the loaded specimens should be moved onto the Position tab.
MeasurementStartAutomatically	Bool true/false	Specifies whether the measurement should be started automatically. MoveToMethod and MoveToPosition must also be set to true in order to use this function.
AutoExportAfterEachMeasurement	Bool true/false	Specifies whether the specimens should be exported automatically after measurement.
DeleteSpecimenAfterExport	Bool true/false	Specifies whether the specimens should be deleted after measurement. A backup is created in the Archive folder.

**Example:**

```
<?xml version="1.0"?>
```

```
<SpecimenInterfaceSettings xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
```

```
    <MoveToMethod>true</MoveToMethod>
```

```
    <MoveToPosition>false</MoveToPosition>
```

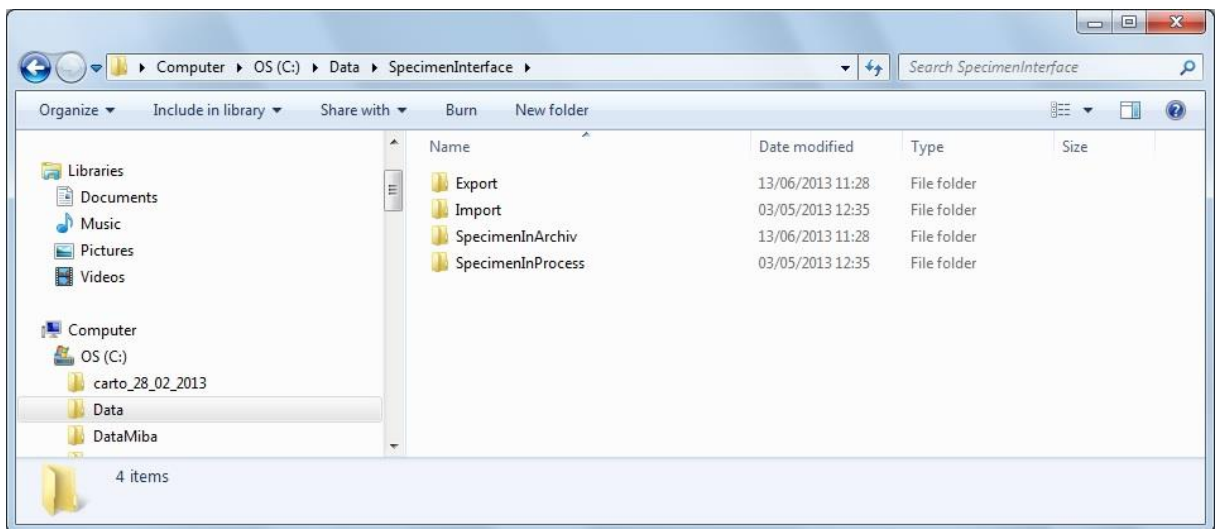
```
    <MeasurementStartAutomatically>false</MeasurementStartAutomatically>
```

```
    <AutoExportAfterEachMeasurement>false</AutoExportAfterEachMeasurement>
```

```
    <DeleteSpecimenAfterExport>false</DeleteSpecimenAfterExport>
```

```
</SpecimenInterfaceSettings
```

Path of file SpecimenInterfaceSettings.xml



- **Handshake file "HandShake.xml"**

The customer program must create the handshake file HandShake.xml in the C:\Data\SpecimenInterface\Import directory.

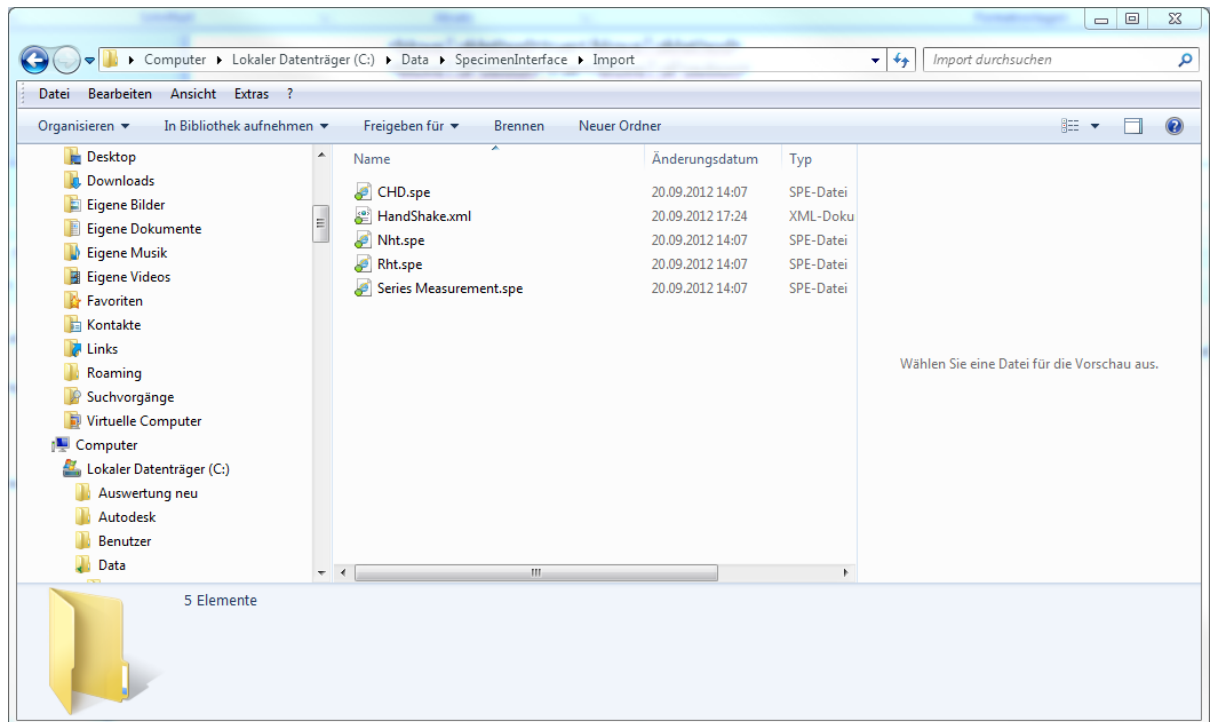
It specifies which files are located in the Import folder and when the files are completed.

The ecos Workflow program then moves them into the C:\Data\SpecimenInterface\SpecimenInProgress directory.

```
<?xml version="1.0"?>
<SpecimenInterfaceHandshake xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <DateTime>2012-09-20T17:18:31.3331075+02:00</DateTime>
  <ImportState>Finished</ImportState>
  <ImportFiles>
    <ListOfImportFiles>CHD.spe</ListOfImportFiles>
    <ListOfImportFiles>Nht.spe</ListOfImportFiles>
    <ListOfImportFiles>Rht.spe</ListOfImportFiles>
    <ListOfImportFiles>Series Measurement.spe</ListOfImportFiles>
  </ImportFiles>
  <ExportState>Unknown</ExportState>
  <ExportFiles />
  <Warnings />
  <Errors />
</SpecimenInterfaceHandshake>
```

Designation	Data type	Description
DateTime	Date/Time	Specification of the date and time yyyy'-MM'-'dd'T'HH':mm':ss.ffffffK
ImportState	String	Unknown Finished This entry must be set during creation so that the test program imports the data.
ImportFiles (ListOfImportFiles)	string	Specification of the imported files
ExportFiles (ListOfExportFiles)	string	
ExportState	String	Unknown Finished This entry is set to Finished by the test program once the data has been exported.
Warnings	String	Information to the user when a warning occurs
Errors	String	Information to the user when an error occurs

### Path of file HandShake.xml



## 7. Format specification:

The data exchange uses an XML-based file format so that datasets can easily be checked in the event of malfunctions.

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:

The dataset is divided in principle into 3 main sections:  
specimen, row and point

Structure of the specimen file

<Specimen>

<Row RowName="Reihe 1"> (Nur bei Reihen, CHD-, Nht, und RHT-Messung)

<Point PointID="1">

</Point>

</Row>

</Specimen>

### 7.1. Structure of the specimen file according to the "Specimen" tab for single measurements

Designation	Data type	Description
Version <?xml version="1.0"?>		XML version
Specimen	---	Encloses the dataset
Testtype	String	The test type is specified here. Possible selections: Single Measurement
OCImagePath	String	Specification of the overview image path. This is entered by ecos Workflow
Comment	String	Input of an optional comment
Userfields		Encloses the Userfields dataset
<Userfield UserfieldID="XXX">	String	Name of the user field Any number of user fields can be specified.
Value	String	Value of the user field

This represents the smallest possible dataset. Here, only the test type and customer-specific fields and a comment are specified.

- Example**

```

<?xml version="1.0"?>
  <Specimen>
    <Testtype>Single Measurement</Testtype>
    <OCImagePath></OCImagePath>
    <Comment>Commend</Comment>
    <Userfields>
      <Userfield UserfieldID="Userfield 1">
        <Value>abc</Value>
      </Userfield>
      <Userfield UserfieldID="Userfield 2">
        <Value>abc</Value>
      </Userfield>
      <Userfield UserfieldID="Userfield 3">
        <Value>abc</Value>
      </Userfield>
      <Userfield UserfieldID="Userfield n">
        <Value>abc</Value>
      </Userfield>
    </Userfields>
  </Specimen>

```

## 7.2. Structure of the specimen file according to the "Specimen" tab for series, CHD, Rht, and Nht measurements

Designation	Data type	Description
Version <?xml version="1.0"?>		XML version
Specimen	---	Encloses the dataset
Testtype	String	The test type is specified here. Possible selections: Series Measurement CHD, Nht, Rht, Jominy
OCImagePath	String	Specification of the overview image path. This is entered by ecos Workflow
Comment	String	Input of an optional comment
Userfields		Encloses the Userfields dataset
<Userfield UserfieldID="XXX">	String	Name of the user field Any number of user fields can be specified.
Value	String	Value of the user field
Specimen Start Point		Starting point of the specimen (encloses the dataset)
XAbs	Int	Specimen reference point X position in $\mu\text{m}$
YAbs	Int	Specimen reference point Y position in $\mu\text{m}$
SpecimenAngle	Float	Orientation of the specimen reference point

- Example**

```

<?xml version="1.0"?>
  <Specimen>
    <Testtype>Series Measurement</Testtype>
    <OCImagePath></OCImagePath>
    <Comment>Commend</Comment>
    <Userfields>
      <Userfield UserfieldID="Userfield 1">
        <Value>abc</Value>
      </Userfield>

      <Userfield UserfieldID="Userfield n">
        <Value>abc</Value>
      </Userfield>
    </Userfields>
    <SpecimenStartPoint>
      <XAbs>-1</XAbs>
      <YAbs>-1</YAbs>
    </SpecimenStartPoint>
    <SpecimenAngle>0</SpecimenAngle>
  </Specimen>

```

**7.3. Structure of the specimen file according to the "Method" tab**

In addition to the information in the specimen, the following information is entered.

- **Single measurement:**

Designation	Data type	Description
KindOfMeasurement	String	Measurement type (Vickers, Brinell, Rockwell, H)
Method	String	Test method
Objective	String	Lens (2.5x, 4x, 10x, 20x, 40x, 60x, 100x)
UseConversion	String (Yes, No)	Specifies whether a conversion should be used
ConversionTable	String	Conversion table
ConversionMaterial	String	Conversion material
ConversionMethod	String	Conversion method
UseGeometryCorrection	String (Yes, No)	Use geometry correction
Shape	String	Shape of the component
Curvature	String	Curvature of the component
GeomCorrDiameter	Float	Diameter of the component
Angle	Float	Angle of indentation on the component
HardnessMin	Float	Minimum hardness limit
HardnessMax	Float	Maximum hardness limit
ZoomLevel	Int	Camera zoom level
CircularLightUsed	String (Yes, No)	Use circular light

**Example:**

```
<?xml version="1.0"?>
<Specimen>
  <Testtype>Single Measurement</Testtype>
  <OCImagePath></OCImagePath>
  <Comment>Kommentar eingeben (optional)</Comment>
  <Userfields>
    <Userfield UserfieldID="Userfield 1">
      <Value></Value>
    </Userfield>
    <Userfield UserfieldID="Userfield n">
      <Value></Value>
    </Userfield>
  </Userfields>
  <KindOfMeasurement>Vickers</KindOfMeasurement>
  <Method>HV 1</Method>
  <Objective>20x</Objective>
  <UseConversion>No</UseConversion>
  <ConversionTable></ConversionTable>
  <ConversionMaterial></ConversionMaterial>
  <ConversionMethod></ConversionMethod>
  <UseGeometryCorrection>No</UseGeometryCorrection>
  <Shape></Shape>
  <Curvature></Curvature>
  <GeomCorrDiameter></GeomCorrDiameter>
  <Angle></Angle>
  <HardnessMin>0</HardnessMin>
  <HardnessMax>0</HardnessMax>
  <ZoomLevel>1</ZoomLevel>
  <CircularLightUsed>No</CircularLightUsed>
</Specimen>
```



- **Series measurement:**

Designation	Data type	Description
Row RowName="xx "	String	Row name
KindOfMeasurement	String	Measurement type (Vickers, Brinell, Rockwell, H)
RowAngle	Float	Angle of measurement row
Status	String	Status of measurement row
DateTime	String	Measurement date
Method	String	Test method
Objective	String	Lens (2.5x, 4x, 10x, 20x, 40x, 60x, 100x)
UseConversion	String (Yes, No)	Specifies whether a conversion should be used
ConversionTable	String	Conversion table
ConversionMaterial	String	Conversion material
ConversionMethod	String	Conversion method
UseGeometryCorrection	String (Yes, No)	Use geometry correction
Shape	String	Shape of the component
Curvature	String	Curvature of the component
GeomCorrDiameter	String	Diameter of the component
Angle	String	Angle of indentation on the component
HardnessMin	String	Minimum hardness limit
HardnessMax	String	Maximum hardness limit
UseAutomaticIndentSpacing	String (Yes, No)	Use automatic test point distance
DistanceFromEdge	String	Distance from specimen edge
DistanceFactorAutomIndent Spacing	String	Factor for how far the indentations must be from one another
NumberOfIndents	String	Number of indentations
ZoomLevel	String	Camera zoom level
CircularLightUsed	String (Yes, No)	Use circular light
StartPoint	---	Encloses the dataset
XAbs	Int	Row starting point X position in $\mu\text{m}$
YAbs	Int	Row starting point Y position in $\mu\text{m}$

**Example:**

```

<?xml version="1.0"?>
<Specimen>
  <Testtype>Series Measurement</Testtype>
  <OCImagePath></OCImagePath>
  <Comment>Kommentar eingeben (optional)</Comment>
  <Userfields>
    <Userfield UserfieldID="Userfield 1">
      <Value>abc</Value>
    </Userfield>
    <Userfield UserfieldID="Userfield 2">
      <Value> abc </Value>
    </Userfield>
    <Userfield UserfieldID="Userfield n">
      <Value> abc </Value>
    </Userfield>
  </Userfields>

  <SpecimenStartPoint>
    <XAbs>-1</XAbs>
    <YAbs>-1</YAbs>
  </SpecimenStartPoint>
  <SpecimenAngle>0</SpecimenAngle>

  <Row RowName="Reihe 1">
    <KindOfMeasurement>Vickers</KindOfMeasurement>
    <RowAngle>0</RowAngle>
    <Status></Status>
    <DateTime>7/17/2012 12:13:37 PM</DateTime>
    <Method>HV 3</Method>
    <Objective>4x</Objective>
    <UseConversion>No</UseConversion>
    <ConversionTable></ConversionTable>
    <ConversionMaterial></ConversionMaterial>
    <ConversionMethod></ConversionMethod>
    <UseGeometryCorrection>No</UseGeometryCorrection>
    <Shape></Shape>
    <Curvature></Curvature>
    <GeomCorrDiameter></GeomCorrDiameter>
    <Angle></Angle>
    <HardnessMin>0</HardnessMin>
    <HardnessMax>0</HardnessMax>
    <UseAutomaticIndentSpacing>No</UseAutomaticIndentSpacing>
    <DistanceFromEdge></DistanceFromEdge>
    <DistanceFactorAutomIndentSpacing>
      </DistanceFactorAutomIndentSpacing>
    <NumberOfIndents></NumberOfIndents>
    <ZoomLevel>1</ZoomLevel>
    <CircularLightUsed>No</CircularLightUsed>
    <StartPoint>
      <XAbs>-1</XAbs>
      <YAbs>-1</YAbs>
    </StartPoint>
  </Row>
</Specimen>

```

- **CHD measurement:**

<i>Designation</i>	Data type	Description
Row RowName="xx "	String	Row name
KindOfMeasurement	String	Measurement type (Vickers, Brinell, Rockwell, H)
RowAngle		
Status		
CHDValue	Int	CHD value
DateTime		
Method	String	Test method
Objective	String	Lens (2.5x, 4x, 10x, 20x, 40x, 60x, 100x)
UseConversion	String (Yes, No)	Specifies whether a conversion should be used
ConversionTable	String	Conversion table
ConversionMaterial	String	Conversion material
ConversionMethod	String	Conversion method
NumberOfIndentsAfterReachingHardnessLimit	String (ALLE)	Specification of how many measurements still need to be made after a CHD value is reached
HardnessLimitDefault	Int	Specification of the CHD hardness limit
CaseHardnessDepthLimitMin	Int	Specification of the lower CHD limit
CaseHardnessDepthLimitMax	Int	Specification of the upper CHD limit
UseAutomaticIndentSpacing	String (Yes, No)	Use automatic test point distance
DistanceFromEdge	String	Distance from specimen edge
DistanceFactorAutomIndEntSpacing	String	Factor for how far the indentations must be from one another
NumberOfIndents	String	Number of indentations
ZoomLevel	String	Camera zoom level
CircularLightUsed	String (Yes, No)	Use circular light
StartPoint	---	Encloses the dataset
XAbs	Int	Row starting point X position in $\mu\text{m}$
YAbs	Int	Row starting point Y position in $\mu\text{m}$

**Example:**

```

<?xml version="1.0"?>
<Specimen>
  <Testtype>CHD</Testtype>
  <OCImagePath></OCImagePath>
  <Comment>Kommentar eingeben (optional)</Comment>
  <Userfields>
    <Userfield UserfieldID="Userfield 1">
      <Value>abc</Value>
    </Userfield>
    <Userfield UserfieldID="Userfield 2">
      <Value> abc </Value>
    </Userfield>
    <Userfield UserfieldID="Userfield 3">
      <Value> abc </Value>
    </Userfield>
  </Userfields>

  <SpecimenStartPoint>
    <XAbs>-1</XAbs>
    <YAbs>-1</YAbs>
  </SpecimenStartPoint>
  <SpecimenAngle>0</SpecimenAngle>

  <Row RowName="Reihe 1">
    <KindOfMeasurement>Vickers</KindOfMeasurement>
    <RowAngle>0</RowAngle>
    <Status></Status>
    <CHDValue>0</CHDValue>
    <DateTime>7/17/2012 12:27:04 PM</DateTime>
    <Method>HV 3</Method>
    <Objective>4x</Objective>
    <UseConversion>No</UseConversion>
    <ConversionTable></ConversionTable>
    <ConversionMaterial></ConversionMaterial>
    <ConversionMethod></ConversionMethod>
    <NumberOfIndentsAfterReachingHardnessLimit>Alle
      </NumberOfIndentsAfterReachingHardnessLimit>
    <HardnessLimitDefault>550</HardnessLimitDefault>
    <CaseHardnessDepthLimitMin>0.1</CaseHardnessDepthLimitMin>
    <CaseHardnessDepthLimitMax>0.9</CaseHardnessDepthLimitMax>
    <UseAutomaticIndentSpacing>No</UseAutomaticIndentSpacing>
    <DistanceFromEdge></DistanceFromEdge>
    <DistanceFactorAutomIndentSpacing>
      </DistanceFactorAutomIndentSpacing>
    <NumberOfIndents></NumberOfIndents>
    <ZoomLevel>1</ZoomLevel>
    <CircularLightUsed>No</CircularLightUsed>
    <StartPoint>
      <XAbs>-1</XAbs>
      <YAbs>-1</YAbs>
    </StartPoint>
  </Row>
</Specimen>

```

- **Nht measurement:**

Designation	Data type	Description
Row RowName="xx "	String	Row name
KindOfMeasurement	String	Measurement type (Vickers, Brinell, Rockwell, H)
RowAngle		
Status		
NhtValue	Int	Nht value
DateTime		
Method	String	Test method
Objective	String	Lens (2.5x, 4x, 10x, 20x, 40x, 60x, 100x)
UseConversion	String (Yes, No)	Specifies whether a conversion should be used
ConversionTable	String	Conversion table
ConversionMaterial	String	Conversion material
ConversionMethod	String	Conversion method
NumberOfIndentsAfterReachingHardnessLimit	String (ALLE)	Specification of how many measurements still need to be made after a CHD value is reached
NhtMin	Int	Specification of the lower Nht limit
NhtMax	Int	Specification of the upper Nht limit
NumberOfCoreHardnessPoints	Int	Number of core hardness points
CaseHardnessSummand	Int	Value used to calculate the hardness limit
CaseHardness	Int	Hardness limit
ZoomLevel	String	Camera zoom level
CircularLightUsed	String (Yes, No)	Use circular light
StartPoint	---	Encloses the dataset
XAbs	Int	Row starting point X position in $\mu\text{m}$
YAbs	Int	Row starting point Y position in $\mu\text{m}$

**Example:**

```

<?xml version="1.0"?>
<Specimen>
  <Testtype>CHD</Testtype>
  <OCImagePath></OCImagePath>
  <Comment>Kommentar eingeben (optional)</Comment>
  <Userfields>
    <Userfield UserfieldID="Userfield 1">
      <Value>abc</Value>
    </Userfield>
    <Userfield UserfieldID="Userfield 2">
      <Value> abc </Value>
    </Userfield>
    <Userfield UserfieldID="Userfield 3">
      <Value> abc </Value>
    </Userfield>
  </Userfields>

  <SpecimenStartPoint>
    <XAbs>-1</XAbs>
    <YAbs>-1</YAbs>
  </SpecimenStartPoint>
  <SpecimenAngle>0</SpecimenAngle>

  <Row RowName="Reihe 1">
    <KindOfMeasurement>Vickers</KindOfMeasurement>
    <RowAngle>0</RowAngle>
    <Status></Status>
    <NhtValue>0</NhtValue>
    <DateTime>2/28/2013 4:03:26 PM</DateTime>
    <Method>HV 1</Method>
    <Objective>20x</Objective>
    <UseConversion>No</UseConversion>
    <ConversionTable></ConversionTable>
    <ConversionMaterial></ConversionMaterial>
    <ConversionMethod></ConversionMethod>
    <NumberOfIndentsAfterReachingHardnessLimit>Alle</NumberOfIndentsAfterReachingHardnessLimit>
    <NhtMin>0</NhtMin>
    <NhtMax>0</NhtMax>
    <NumberOfCoreHardnessPoints></NumberOfCoreHardnessPoints>
    <CaseHardnessSummand>50</CaseHardnessSummand>
    <CaseHardness>0</CaseHardness>
    <ZoomLevel>1</ZoomLevel>
    <CircularLightUsed>No</CircularLightUsed>
    <UseCasehardnessFirstRowForAllRowsAtNht>No</UseCasehardnessFirstRowForAllRowsAtNht>
    <StartPoint>
      <XAbs>-1</XAbs>
      <YAbs>-1</YAbs>
    </StartPoint>
  </Row>
</Specimen>

```

- **Rht measurement:**

Designation	Data type	Description
Row RowName="xx "	String	Row name
KindOfMeasurement	String	Measurement type (Vickers, Brinell, Rockwell, H)
RowAngle		
Status		
RHTValue	Int	RHT value
DateTime		
Method	String	Test method
Objective	String	Lens (2.5x, 4x, 10x, 20x, 40x, 60x, 100x)
UseConversion	String (Yes, No)	Specifies whether a conversion should be used
ConversionTable	String	Conversion table
ConversionMaterial	String	Conversion material
ConversionMethod	String	Conversion method
NumberOfIndentsAfterReachingHardnessLimit	String (ALLE)	Specification of how many measurements still need to be made after a CHD value is reached
HardnessLimitDefault	Int	Specification of the CHD hardness limit
CaseHardnessDepthLimitMin	Int	Specification of the lower CHD limit
CaseHardnessDepthLimitMax	Int	Specification of the upper CHD limit
UseAutomaticIndentSpacing	String (Yes, No)	Use automatic test point distance
DistanceFromEdge	String	Distance from specimen edge
DistanceFactorAutomInd entSpacing	String	Factor for how far the indentations must be from one another
NumberOfIndents	String	Number of indentations
ZoomLevel	String	Camera zoom level
CircularLightUsed	String (Yes, No)	Use circular light
StartPoint	---	Encloses the dataset
XAbs	Int	Row starting point X position in $\mu\text{m}$
YAbs	Int	Row starting point Y position in $\mu\text{m}$

**Example:**

```

<?xml version="1.0"?>
<Specimen>
  <Testtype>CHD</Testtype>
  <OCImagePath></OCImagePath>
  <Comment>Kommentar eingeben (optional)</Comment>
  <Userfields>
    <Userfield UserfieldID="Userfield 1">
      <Value>abc</Value>
    </Userfield>
    <Userfield UserfieldID="Userfield 2">
      <Value> abc </Value>
    </Userfield>
    <Userfield UserfieldID="Userfield 3">
      <Value> abc </Value>
    </Userfield>
  </Userfields>

  <SpecimenStartPoint>
    <XAbs>-1</XAbs>
    <YAbs>-1</YAbs>
  </SpecimenStartPoint>
  <SpecimenAngle>0</SpecimenAngle>

  <Row RowName="Reihe 1">
    <KindOfMeasurement>Vickers</KindOfMeasurement>
    <RowAngle>0</RowAngle>
    <Status></Status>
    <RhtValue>0</RhtValue>
    <DateTime>3/4/2013 8:28:43 AM</DateTime>
    <Method>HV 1</Method>
    <Objective>20x</Objective>
    <UseConversion>No</UseConversion>
    <ConversionTable></ConversionTable>
    <ConversionMaterial></ConversionMaterial>
    <ConversionMethod></ConversionMethod>
    <NumberOfIndentsAfterReachingHardnessLimit>Alle</NumberOfIndentsAfterReachingHardnessLimit>
    <RhtMin>0</RhtMin>
    <RhtMax>0</RhtMax>
    <SurfaceHardness>0</SurfaceHardness>
    <CaseHardnessInPercent>80</CaseHardnessInPercent>
    <CaseHardness>0</CaseHardness>
    <UseAutomaticIndentSpacing>No</UseAutomaticIndentSpacing>
    <DistanceFromEdge></DistanceFromEdge>
    <DistanceFactorAutomIndentSpacing></DistanceFactorAutomIndentSpacing>
    <NumberOfIndents></NumberOfIndents>
    <ZoomLevel>1</ZoomLevel>
    <CircularLightUsed>No</CircularLightUsed>
    <StartPoint>
      <XAbs>-1</XAbs>
      <YAbs>-1</YAbs>
    </StartPoint>
  </Row>
</Specimen>

```



### **7.1. *Structure of the specimen file according to the "Position" tab***

In addition to the method information, the following information is entered.

- **Single measurement: (Single Measurement)**

No additional entries are created or required here, since the individual test points are only created during a measurement. The user can now perform the manual measurements.

• **Series measurement, CHD measurement, Nht measurement, Rht measurement:**

Designation	Data type	Description
Point PointID="1"	Int	Test point number
Hardness	Int	Hardness value (still blank)
ImagePath	String	Storage path of result image
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
Focus Position	Int	Focus position of indentation
Diag1	Float	Value of diagonal 1 in mm
Diag2	Float	Value of diagonal 2 in mm
Diag	Float	Average of both diagonals in $\mu\text{m}$
Classification	String	
Status	String	Status.
XAbs	Int	Absolute coordinate X position in $\mu\text{m}$
YAbs	Int	Absolute coordinate Y position in $\mu\text{m}$
XRel	Float	Relative coordinate X in mm (distance from starting point X in measurement row)
YRel	Float	Relative coordinate Y (distance from starting point Y in measurement row)
DateTime	String	Measurement time and date
KindOfMeasurement	String	Measurement type (Vickers, Brinell, Rockwell, H)
Method	String	Test method
Objective	String	Lens (2.5x, 4x, 10x, 20x, 40x, 60x, 100x)
UseConversion	String (Yes, No)	Specifies whether a conversion should be used
ConversionTable	String	Conversion table
ConversionMaterial	String	Conversion material
ConversionMethod	String	Conversion method
UseGeometryCorrection	String (Yes, No)	Use geometry correction
Shape	String	Shape of the component
Curvature	String	Curvature of the component
GeomCorrDiameter	String	Diameter of the component
Angle	String	Angle of indentation on the component
User	String	User name
ZoomLevel	String	Camera zoom level
CircularLightUsed	String (Yes, No)	Use circular light
AdditionalTestpointValue1	String	Additional information about test point
AdditionalTestpointValue2	String	Additional information about test point
AdditionalTestpointValue3	String	Additional information about test point

**Example:**

Series measurement file with relative coordinates only. Here, the absolute test and starting points are not yet defined. The starting point of the row still needs to be set by the user by means of the software.

```
<?xml version="1.0"?>
<Specimen>
  <Testtype>Series Measurement</Testtype>
  <OCImagePath></OCImagePath>
  <Comment>Kommentar eingeben (optional)</Comment>
  <Userfields>
    <Userfield UserfieldID="Userfield 1">
      <Value>abc</Value>
    </Userfield>
    <Userfield UserfieldID="Userfield 2">
      <Value> abc </Value>
    </Userfield>
    <Userfield UserfieldID="Userfield n">
      <Value> abc </Value>
    </Userfield>
  </Userfields>

  <SpecimenStartPoint>
    <XAbs>-1</XAbs>
    <YAbs>-1</YAbs>
  </SpecimenStartPoint>
  <SpecimenAngle>0</SpecimenAngle>

  <Row RowName="Reihe 1">
    <KindOfMeasurement>Vickers</KindOfMeasurement>
    <RowAngle>0</RowAngle>
    <Status></Status>
    <DateTime>7/17/2012 12:13:37 PM</DateTime>
    <Method>HV 3</Method>
    <Objective>4x</Objective>
    <UseConversion>No</UseConversion>
    <ConversionTable></ConversionTable>
    <ConversionMaterial></ConversionMaterial>
    <ConversionMethod></ConversionMethod>
    <UseGeometryCorrection>No</UseGeometryCorrection>
    <Shape></Shape>
    <Curvature></Curvature>
    <GeomCorrDiameter></GeomCorrDiameter>
    <Angle></Angle>
    <HardnessMin>0</HardnessMin>
    <HardnessMax>0</HardnessMax>
    <UseAutomaticIndentSpacing>No</UseAutomaticIndentSpacing>
    <DistanceFromEdge></DistanceFromEdge>
    <DistanceFactorAutomIndentSpacing>
</DistanceFactorAutomIndentSpacing>
    <NumberOfIndents></NumberOfIndents>
    <ZoomLevel>1</ZoomLevel>
    <CircularLightUsed>No</CircularLightUsed>
    <StartPoint>
      <XAbs>-1</XAbs>
      <YAbs>-1</YAbs>
    </StartPoint>
  </Row>
</Specimen>
```

```

    <Point PointID="1">
      <Hardness></Hardness>
      <ImagePath></ImagePath>
      <NPX></NPX>
      <NPY></NPY>
      <EPX></EPX>
      <EPY></EPY>
      <SPX></SPX>
      <SPY></SPY>
      <WPX></WPX>
      <WPY></WPY>
      <FocusPosition></FocusPosition>
      <Diag></Diag>
      <Diag1></Diag1>
      <Diag2></Diag2>
      <Classification></Classification>
      <Status></Status>
      <XAbs>-1</XAbs>
      <YAbs>-1</YAbs>
      <XRel>0.2</XRel>
      <YRel>0</YRel>
      <DateTime></DateTime>
      <KindOfMeasurement>Vickers</KindOfMeasurement>
      <Method>HV 1</Method>
      <Objective>40x</Objective>
      <UseConversion>No</UseConversion>
      <ConversionTable></ConversionTable>
      <ConversionMaterial></ConversionMaterial>
      <ConversionMethod></ConversionMethod>
      <ConversionValue></ConversionValue>
      <UseGeometryCorrection>No</UseGeometryCorrection>
      <Shape></Shape>
      <Curvature></Curvature>
      <GeomCorrDiameter></GeomCorrDiameter>
      <Angle></Angle>
      <User>Cal</User>
      <ZoomLevel>1</ZoomLevel>
      <CircularLightUsed>No</CircularLightUsed>
      <AdditionalTestpointValue1></AdditionalTestpointValue1>
      <AdditionalTestpointValue2></AdditionalTestpointValue2>
      <AdditionalTestpointValue3></AdditionalTestpointValue3>
    </Point>

    <Point PointID="n">
      .
      .
      <XRel>0.4</XRel>
      <YRel>0</YRel>
      .
      .
    </Point>
  </Row>
</Specimen>

```

- **Example file for series measurement with relative and absolute coordinates. This allows the measurement row to be measured without the user having to change a setting.**

```
<?xml version="1.0"?>
<Specimen>
  <Testtype>Series Measurement</Testtype>
  <OCImagePath></OCImagePath>
  <Comment>Kommentar eingeben (optional)</Comment>
  <Userfields>
    <Userfield UserfieldID="Userfield 1">
      <Value>abc</Value>
    </Userfield>
    <Userfield UserfieldID="Userfield 2">
      <Value> abc </Value>
    </Userfield>
    <Userfield UserfieldID="Userfield n">
      <Value> abc </Value>
    </Userfield>
  </Userfields>

  <SpecimenStartPoint>
    <XAbs>-1</XAbs>
    <YAbs>-1</YAbs>
  </SpecimenStartPoint>
  <SpecimenAngle>0</SpecimenAngle>

  <Row RowName="Reihe 1">
    <KindOfMeasurement>Vickers</KindOfMeasurement>
    <RowAngle>0</RowAngle>
    <Status></Status>
    <DateTime>7/17/2012 12:13:37 PM</DateTime>
    <Method>HV 3</Method>
    <Objective>4x</Objective>
    <UseConversion>No</UseConversion>
    <ConversionTable></ConversionTable>
    <ConversionMaterial></ConversionMaterial>
    <ConversionMethod></ConversionMethod>
    <UseGeometryCorrection>No</UseGeometryCorrection>
    <Shape></Shape>
    <Curvature></Curvature>
    <GeomCorrDiameter></GeomCorrDiameter>
    <Angle></Angle>
    <HardnessMin>0</HardnessMin>
    <HardnessMax>0</HardnessMax>
    <UseAutomaticIndentSpacing>No</UseAutomaticIndentSpacing>
    <DistanceFromEdge></DistanceFromEdge>
    <DistanceFactorAutomIndentSpacing>
</DistanceFactorAutomIndentSpacing>
    <NumberOfIndents></NumberOfIndents>
    <ZoomLevel>1</ZoomLevel>
    <CircularLightUsed>No</CircularLightUsed>
    <StartPoint>
<StartPoint>
      <XAbs>163272</XAbs>      Absolute X coordinate of row starting
point in µm
      <YAbs>39889</YAbs>      Absolute Y coordinate of row starting
point in µm
    </StartPoint>

    <Point PointID="1">
      <Hardness></Hardness>
```

```

<ImagePath></ImagePath>
<NPX></NPX>
<NPY></NPY>
<EPX></EPX>
<EPY></EPY>
<SPX></SPX>
<SPY></SPY>
<WPX></WPX>
<WPY></WPY>
<FocusPosition></FocusPosition>
<Diag></Diag>
<Diag1></Diag1>
<Diag2></Diag2>
<Classification></Classification>
<Status></Status>
<XAbs>163472</XAbs>      Absolute X coordinate in µm
<YAbs>39889</YAbs>      Absolute Y coordinate in µm
<XRel>0.2</XRel>        Relative X coordinate to row starting
point (mm)
<YRel>0</YRel>          Relative Y coordinate to row starting point (mm)
<DateTime></DateTime>
<KindOfMeasurement>Vickers</KindOfMeasurement>
<Method>HV 1</Method>
<Objective>40x</Objective>
<UseConversion>No</UseConversion>
<ConversionTable></ConversionTable>
<ConversionMaterial></ConversionMaterial>
<ConversionMethod></ConversionMethod>
<ConversionValue></ConversionValue>
<UseGeometryCorrection>No</UseGeometryCorrection>
<Shape></Shape>
<Curvature></Curvature>
<GeomCorrDiameter></GeomCorrDiameter>
<Angle></Angle>
<User>Cal</User>
<ZoomLevel>1</ZoomLevel>
<CircularLightUsed>No</CircularLightUsed>
<AdditionalTestpointValue1></AdditionalTestpointValue1>
<AdditionalTestpointValue2></AdditionalTestpointValue2>
<AdditionalTestpointValue3></AdditionalTestpointValue3>
</Point>

<Point PointID="n">
.
  <XAbs>163672</XAbs>      Absolute X coordinate in µm
  <YAbs>39889</YAbs>      Absolute Y coordinate in µm
  <XRel>0.4</XRel>        Relative X coordinate to row starting
point (mm)
  <YRel>0</YRel>          Relative Y coordinate to row starting point
(mm)
.
</Point>
</Row>
</Specimen>

```

## 7.2. Structure of the specimen file according to the "Result" tab

After testing the specimen file, the entries for the measurement results are filled in under Row and Point. The specimen file can now be sent using the "Send parameters" function.

### Example of single measurement with 2 test points:

```
?xml version="1.0"?>
<Specimen>
  <Testtype>Single Measurement</Testtype>
  <OCImagePath></OCImagePath>
  <Comment>Kommentar eingeben (optional)</Comment>
  <Userfields>
    <Userfield UserfieldID="Userfield 1">
      <Value></Value>
    </Userfield>
  </Userfields>
  <KindOfMeasurement>Vickers</KindOfMeasurement>
  <Method>HV 5</Method>
  <Objective>20x</Objective>
  <UseConversion>No</UseConversion>
  <ConversionTable></ConversionTable>
  <ConversionMaterial></ConversionMaterial>
  <ConversionMethod></ConversionMethod>
  <UseGeometryCorrection>No</UseGeometryCorrection>
  <Shape></Shape>
  <Curvature></Curvature>
  <GeomCorrDiameter></GeomCorrDiameter>
  <Angle></Angle>
  <HardnessMin>0</HardnessMin>
  <HardnessMax>0</HardnessMax>
  <ZoomLevel>1</ZoomLevel>
  <CircularLightUsed>No</CircularLightUsed>

  <Point PointID="1">
    <Hardness>548</Hardness>
    <ImagePath>C:\Data\Images\1\4_3_2013_11_32_47_HV
    5_20x_Result.jpg</ImagePath>
    <NPX>656</NPX>
    <NPY>254</NPY>
    <EPX>913</EPX>
    <EPY>502</EPY>
    <SPX>655</SPX>
    <SPY>748</SPY>
    <WPX>411</WPX>
    <WPY>464</WPY>
    <FocusPosition>26711398</FocusPosition>
    <Diag1>0.128849129077308</Diag1>
    <Diag2>0.131300161942318</Diag2>
    <Diag>0.130074645509813</Diag>
    <Classification></Classification>
    <Status>Measured</Status>
    <XAbs>132850</XAbs>
    <YAbs>61750</YAbs>
    <DateTime>3/4/2013 11:32:48 AM</DateTime>
    <KindOfMeasurement>Vickers</KindOfMeasurement>
    <Method>HV 5</Method>
    <Objective>20x</Objective>
    <UseConversion>No</UseConversion>
    <ConversionTable></ConversionTable>
    <ConversionMaterial></ConversionMaterial>
    <ConversionMethod></ConversionMethod>
    <ConversionValue></ConversionValue>
```

```

    <UseGeometryCorrection>No</UseGeometryCorrection>
    <Shape></Shape>
    <Curvature></Curvature>
    <GeomCorrDiameter></GeomCorrDiameter>
    <Angle></Angle>
    <User>ELE</User>
    <ZoomLevel>1</ZoomLevel>
    <CircularLightUsed>No</CircularLightUsed>
    <AdditionalTestpointValue1></AdditionalTestpointValue1>
    <AdditionalTestpointValue2></AdditionalTestpointValue2>
    <AdditionalTestpointValue3></AdditionalTestpointValue3>
  </Point>

  <Point PointID="2">
    <Hardness>561</Hardness>
    <ImagePath>C:\Data\Images\1\4_3_2013_11_33_29_HV
    5_20x_Result.jpg</ImagePath>
    <NPX>655</NPX>
    <NPY>252</NPY>
    <EPX>905</EPX>
    <EPY>501</EPY>
    <SPX>654</SPX>
    <SPY>746</SPY>
    <WPX>413</WPX>
    <WPY>500</WPY>
    <FocusPosition>26711803</FocusPosition>
    <Diag1>0.128298994634817</Diag1>
    <Diag2>0.128818421625756</Diag2>
    <Diag>0.128558708130286</Diag>
    <Classification></Classification>
    <Status>Measured</Status>
    <XAbs>132886</XAbs>
    <YAbs>62127</YAbs>
    <DateTime>3/4/2013 11:33:30 AM</DateTime>
    <KindOfMeasurement>Vickers</KindOfMeasurement>
    <Method>HV 5</Method>
    <Objective>20x</Objective>
    <UseConversion>No</UseConversion>
    <ConversionTable></ConversionTable>
    <ConversionMaterial></ConversionMaterial>
    <ConversionMethod></ConversionMethod>
    <ConversionValue></ConversionValue>
    <UseGeometryCorrection>No</UseGeometryCorrection>
    <Shape></Shape>
    <Curvature></Curvature>
    <GeomCorrDiameter></GeomCorrDiameter>
    <Angle></Angle>
    <User>ELE</User>
    <ZoomLevel>1</ZoomLevel>
    <CircularLightUsed>No</CircularLightUsed>
    <AdditionalTestpointValue1></AdditionalTestpointValue1>
    <AdditionalTestpointValue2></AdditionalTestpointValue2>
    <AdditionalTestpointValue3></AdditionalTestpointValue3>
  </Point>
</Specimen>

```



**Example of series measurement with 2 test points:**

```

<?xml version="1.0"?>
<Specimen>
  <Testtype>Series Measurement</Testtype>
  <OCImagePath></OCImagePath>
  <Comment>Kommentar eingeben (optional)</Comment>
  <Userfields>
    <Userfield UserfieldID="Userfield 1">
      <Value>abc</Value>
    </Userfield>
    <Userfield UserfieldID="Userfield n">
      <Value> abc </Value>
    </Userfield>
  </Userfields>

  <SpecimenStartPoint>
    <XAbs>-1</XAbs>
    <YAbs>-1</YAbs>
  </SpecimenStartPoint>
  <SpecimenAngle>0</SpecimenAngle>

  <Row RowName="Reihe 1">
    <KindOfMeasurement>Vickers</KindOfMeasurement>
    <RowAngle>0</RowAngle>
    <Status></Status>
    <DateTime>7/17/2012 12:13:37 PM</DateTime>
    <Method>HV 3</Method>
    <Objective>4x</Objective>
    <UseConversion>No</UseConversion>
    <ConversionTable></ConversionTable>
    <ConversionMaterial></ConversionMaterial>
    <ConversionMethod></ConversionMethod>
    <UseGeometryCorrection>No</UseGeometryCorrection>
    <Shape></Shape>
    <Curvature></Curvature>
    <GeomCorrDiameter></GeomCorrDiameter>
    <Angle></Angle>
    <HardnessMin>0</HardnessMin>
    <HardnessMax>0</HardnessMax>
    <UseAutomaticIndentSpacing>No</UseAutomaticIndentSpacing>
    <DistanceFromEdge></DistanceFromEdge>
    <DistanceFactorAutomIndentSpacing>
    </DistanceFactorAutomIndentSpacing>
    <NumberOfIndents></NumberOfIndents>
    <ZoomLevel>1</ZoomLevel>
    <CircularLightUsed>No</CircularLightUsed>
    <StartPoint>
    <StartPoint>
      <XAbs>163272</XAbs>
      <YAbs>39889</YAbs>
    </StartPoint>
  </Row>

```

```
<Point PointID="1">
  <Hardness>565</Hardness>
  <ImagePath></ImagePath>
  <NPX>655</NPX>
  <NPY>252</NPY>
  <EPX>905</EPX>
  <EPY>501</EPY>
  <SPX>654</SPX>
  <SPY>746</SPY>
  <WPX>413</WPX>
  <WPY>500</WPY>
  <FocusPosition>26711803</FocusPosition>
  <Diag1>0.128298994634817</Diag1>
  <Diag2>0.128818421625756</Diag2>
  <Diag>0.128558708130286</Diag>
  <Classification></Classification>
  <Status>Measured</Status>
  <XAbs>163472</XAbs>
  <YAbs>39889</YAbs>
  <XRel>0.2</XRel>
  <YRel>0</YRel>
  <DateTime></DateTime>
  <KindOfMeasurement>Vickers</KindOfMeasurement>
  <Method>HV 1</Method>
  <Objective>40x</Objective>
  <UseConversion>No</UseConversion>
  <ConversionTable></ConversionTable>
  <ConversionMaterial></ConversionMaterial>
  <ConversionMethod></ConversionMethod>
  <ConversionValue></ConversionValue>
  <UseGeometryCorrection>No</UseGeometryCorrection>
  <Shape></Shape>
  <Curvature></Curvature>
  <GeomCorrDiameter></GeomCorrDiameter>
  <Angle></Angle>
  <User>Cal</User>
  <ZoomLevel>1</ZoomLevel>
  <CircularLightUsed>No</CircularLightUsed>
  <AdditionalTestpointValue1></AdditionalTestpointValue1>
  <AdditionalTestpointValue2></AdditionalTestpointValue2>
  <AdditionalTestpointValue3></AdditionalTestpointValue3>
</Point>
<Point PointID="2">
  <Hardness>554</Hardness>
  <ImagePath></ImagePath>
  <NPX>655</NPX>
  <NPY>252</NPY>
  <EPX>905</EPX>
  <EPY>501</EPY>
  <SPX>654</SPX>
  <SPY>746</SPY>
  <WPX>413</WPX>
  <WPY>500</WPY>
  <FocusPosition>26711803</FocusPosition>
  <Diag1>0.128298994634817</Diag1>
  <Diag2>0.128818421625756</Diag2>
  <Diag>0.128558708130286</Diag>
  <Classification></Classification>
  <Status>Measured</Status>
  <XAbs>163672</XAbs>
  <YAbs>39889</YAbs>
  <XRel>0.4</XRel>
  <YRel>0</YRel>
```

```

        <DateTime></DateTime>
        <KindOfMeasurement>Vickers</KindOfMeasurement>
        <Method>HV 1</Method>
        <Objective>40x</Objective>
        <UseConversion>No</UseConversion>
        <ConversionTable></ConversionTable>
        <ConversionMaterial></ConversionMaterial>
        <ConversionMethod></ConversionMethod>
        <ConversionValue></ConversionValue>
        <UseGeometryCorrection>No</UseGeometryCorrection>
        <Shape></Shape>
        <Curvature></Curvature>
        <GeomCorrDiameter></GeomCorrDiameter>
        <Angle></Angle>
        <User>Cal</User>
        <ZoomLevel>1</ZoomLevel>
        <CircularLightUsed>No</CircularLightUsed>
        <AdditionalTestpointValue1></AdditionalTestpointValue1>
        <AdditionalTestpointValue2></AdditionalTestpointValue2>
        <AdditionalTestpointValue3></AdditionalTestpointValue3>
    </Point>
</Row>
</Specimen>

```

### Example of CHD measurement with 2 test points:

```

<?xml version="1.0"?>
<Specimen>
    <Testtype>CHD</Testtype>
    <OCImagePath></OCImagePath>
    <SpecimenStartPoint>
        <XAbs>127389</XAbs>
        <YAbs>59991</YAbs>
    </SpecimenStartPoint>
    <SpecimenAngle>0</SpecimenAngle>
    <Comment>Kommentar eingeben (optional)</Comment>
    <Userfields>
        <Userfield UserfieldID="Userfield 1">
            <Value></Value>
        </Userfield>
    </Userfields>

    <Row RowName="Reihe 1">
        <KindOfMeasurement>Vickers</KindOfMeasurement>
        <RowAngle>0</RowAngle>
        <Status></Status>
        <CHDValue>0.347706415511053</CHDValue>
        <DateTime>3/4/2013 12:29:27 PM</DateTime>
        <Method>HV 5</Method>
        <Objective>20x</Objective>
        <UseConversion>No</UseConversion>
        <ConversionTable></ConversionTable>
        <ConversionMaterial></ConversionMaterial>
        <ConversionMethod></ConversionMethod>
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      <YAbs>48413</YAbs>
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    <Diag2>0.116883116883117</Diag2>
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    <YAbs>48413</YAbs>
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