### calcPr (Calculation Properties)

This element defines the collection of properties the application uses to record calculation status and details. Calculation is the process of computing formulas and then displaying the results as values in the cells that contain the formulas.

[Example:

<calcPr calcId="122211" calcMode="auto" refMode="R1C1" iterate="1"  
 fullPrecision="0"/>

end example]

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| --- |
| Parent Elements |
| [workbook](workbook.docx) (§) |

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| --- | --- |
| Attributes | Description |
| calcCompleted (Calc Completed) | Specifies a boolean value that determines whether [workbook](workbook.docx) data was recalculated before the [workbook](workbook.docx) was saved.  A value of on, 1, or true indicates recalculation was completed before save.  A value of off, 0, or false indicates that recalculation was not completed before save.  The default value for this attribute is true.  The possible values for this attribute are defined by the XML [Schema](Schema.docx) boolean datatype. |
| calcId (Calculation Id) | Specifies the version of the calculation engine used to calculate values in the workbook. When you open a [workbook](workbook.docx) created in the current version, the application recalculates only the formulas that depend on cells that have changed. When you use open a [workbook](workbook.docx) that was created in a earlier version of the application, all the formulas in the workbook— those that depend on cells that have changed and those that do not— are recalculated. This ensures that the [workbook](workbook.docx) is fully optimized for the current application version.  The value for calcID depends on the application. SpreadsheetML defaults form [version][build], where [version] refers to the version of the application, and [build] refers to the build of the application when the calculation engine changed.  [Example:  <calcPr calcId="122211"/>  end example]  The possible values for this attribute are defined by the XML [Schema](Schema.docx) unsignedInt datatype. |
| calcMode (Calculation Mode) | Specifies when the application should calculate formulas in the workbook.  The default value for this attribute is "auto."  The possible values for this attribute are defined by the [ST\_CalcMode](ST_CalcMode.docx) simple type (§). |
| calcOnSave (Calculate On Save) | Specifies a boolean value that indicates whether the application will recalculate values when the [workbook](workbook.docx) is saved.  A value of on, 1, or true indicates recalculation will be performed when the [workbook](workbook.docx) is saved.  A value of off, 0, or false indicates recalculation will not be performed when the [workbook](workbook.docx) is saved.  The default value for this attribute is true.  The possible values for this attribute are defined by the XML [Schema](Schema.docx) boolean datatype. |
| concurrentCalc (Concurrent Calculations) | Specifies a boolean value that indicates whether concurrent calculation processes are enabled for this workbook.  A value of on, 1, or true indicates concurrent calculations are enabled in this workbook.  A value of off, 0, or false indicates concurrent calculations are not enabled.  The default value for this attribute is true.  The possible values for this attribute are defined by the XML [Schema](Schema.docx) boolean datatype. |
| concurrentManualCount (Concurrent Thread Manual Count) | Specifies the count of concurrent calculation processes manually set by the user. If omitted, the count is set automatically by the application.  The possible values for this attribute are defined by the XML [Schema](Schema.docx) unsignedInt datatype. |
| forceFullCalc (Force Full Calculation) | Specifies a boolean value that indicates whether the application will perform a full recalculation when one was not indicated by other calculation properties. This attribute allows the application to expose mechanisms in the user interface that give [users](users.docx) the ability to trigger when full recalculations take place.  A value of on, 1, or true indicates the application will perform a full recalculation of workbook.  A value of off, 0, or false indicates the application will not perform a full recalculation when the workbook.  The possible values for this attribute are defined by the XML [Schema](Schema.docx) boolean datatype. |
| fullCalcOnLoad (Full Calculation On Load) | Specifies a boolean value that indicates whether the application shall perform a full recalculation when the [workbook](workbook.docx) is opened. After load and successful calculation, the application should set this value to false. The application should set this value to true when [cell](cell.docx) formulas or values are modified by another process while the application has the [workbook](workbook.docx) opened.  A value of on, 1, or true indicates the application will perform a full recalculation of [workbook](workbook.docx) values when the [workbook](workbook.docx) is opened.  A value of off, 0, or false indicates the application will not perform a full recalculation when the [workbook](workbook.docx) is opened.  Note: If manual calcMode is true, then a full recalculation will not be performed on load, even when this attribute is set.  The default value for this attribute is false.  The possible values for this attribute are defined by the XML [Schema](Schema.docx) boolean datatype. |
| fullPrecision (Full Precision Calculation) | Specifies a boolean that indicates the precision the application will use when performing calculations in the workbook. Full precision means that the application uses the entire value(s) stored in cells referenced by the [formula](formula.docx) to perform the calculation. For example, if two cells each contain the value 10.005 and the cells are formatted to display values in currency [format](format.docx), the value $10.01 is displayed in each cell. If you add the two cells together, the result is $20.01 because the application adds the stored values 10.005 and 10.005, not the displayed values. You can change the precision of calculations so that the application uses the displayed value instead of the stored value when it recalculates formulas.  For the above example, if fullPrecision is false, then the result shall be $20.02, because each [cell](cell.docx) shows $10.01, so those are the values to be added. Furthermore, when fullPrecision is false, the calculated value as displayed shall be saved to file.  A value of on, 1, or true indicates the application uses the stored values of the referenced cells when performing calculations.  A value of off, 0, or false indicates the application uses the display values of the referenced cells when performing calculations.  The possible values for this attribute are defined by the XML [Schema](Schema.docx) boolean datatype. |
| iterate (Calculation Iteration) | Specifies a boolean value that indicates whether the application should attempt to calculate formulas that contain circular references. A circular [reference](reference.docx) is a [formula](formula.docx) that refers to the cell— either directly or indirectly— that contains the formula. If a [formula](formula.docx) refers back to one of its own cells, you must determine how many times the [formula](formula.docx) should recalculate.  A value of on, 1, or true indicates the application should attempt to calculate circular references. The calculation engine will perform iterative iterateCount calculations to before stopping.  A value of off, 0, or false indicates that the application should not attempt to calculate formulas with circular references. The calculation engine will [stop](stop.docx) on the first iteration when it encounters a circular references.  The default value for this attribute is false.  The possible values for this attribute are defined by the XML [Schema](Schema.docx) boolean datatype. |
| iterateCount (Iteration Count) | Specifies the number of iterations the calculation engine will attempt when calculating a [workbook](workbook.docx) with circular [references](references.docx), when iterate is true.  The default value for this attribute is 100.  The possible values for this attribute are defined by the XML [Schema](Schema.docx) unsignedInt datatype. |
| iterateDelta (Iterative Calculation Delta) | Specifies a double that contains the maximum change for iterative calculations. The application stops calculating after iterateCount iterations or after all values in the circular [reference](reference.docx) change by less than iterateDelta between iterations, whichever comes first.  The default value for this attribute is "0.001"  The possible values for this attribute are defined by the XML [Schema](Schema.docx) double datatype. |
| refMode (Reference Mode) | Specifies the [reference](reference.docx) style for this workbook. Instead of using letters for columns and numbers for rows ("A1"), this options enables using numbers for both rows and columns. Cells are then referred to in this format: R1C1.  The default value for this attribute is "A1."  The possible values for this attribute are defined by the [ST\_RefMode](ST_RefMode.docx) simple type (§). |

The following XML [Schema](Schema.docx) fragment defines the contents of this element:

<complexType [name](name.docx)="CT\_CalcPr">

<attribute [name](name.docx)="calcId" type="xsd:unsignedInt"/>

<attribute name="calcMode" type="[ST\_CalcMode](ST_CalcMode.docx)" use="optional" default="auto"/>

<attribute name="fullCalcOnLoad" type="xsd:boolean" use="optional" default="false"/>

<attribute name="refMode" type="[ST\_RefMode](ST_RefMode.docx)" use="optional" default="A1"/>

<attribute name="iterate" type="xsd:boolean" use="optional" default="false"/>

<attribute name="iterateCount" type="xsd:unsignedInt" use="optional" default="100"/>

<attribute name="iterateDelta" type="xsd:double" use="optional" default="0.001"/>

<attribute name="fullPrecision" type="xsd:boolean" use="optional" default="true"/>

<attribute name="calcCompleted" type="xsd:boolean" use="optional" default="true"/>

<attribute name="calcOnSave" type="xsd:boolean" use="optional" default="true"/>

<attribute name="concurrentCalc" type="xsd:boolean" use="optional" default="true"/>

<attribute [name](name.docx)="concurrentManualCount" type="xsd:unsignedInt" use="optional"/>

<attribute [name](name.docx)="forceFullCalc" type="xsd:boolean" use="optional"/>

</complexType>