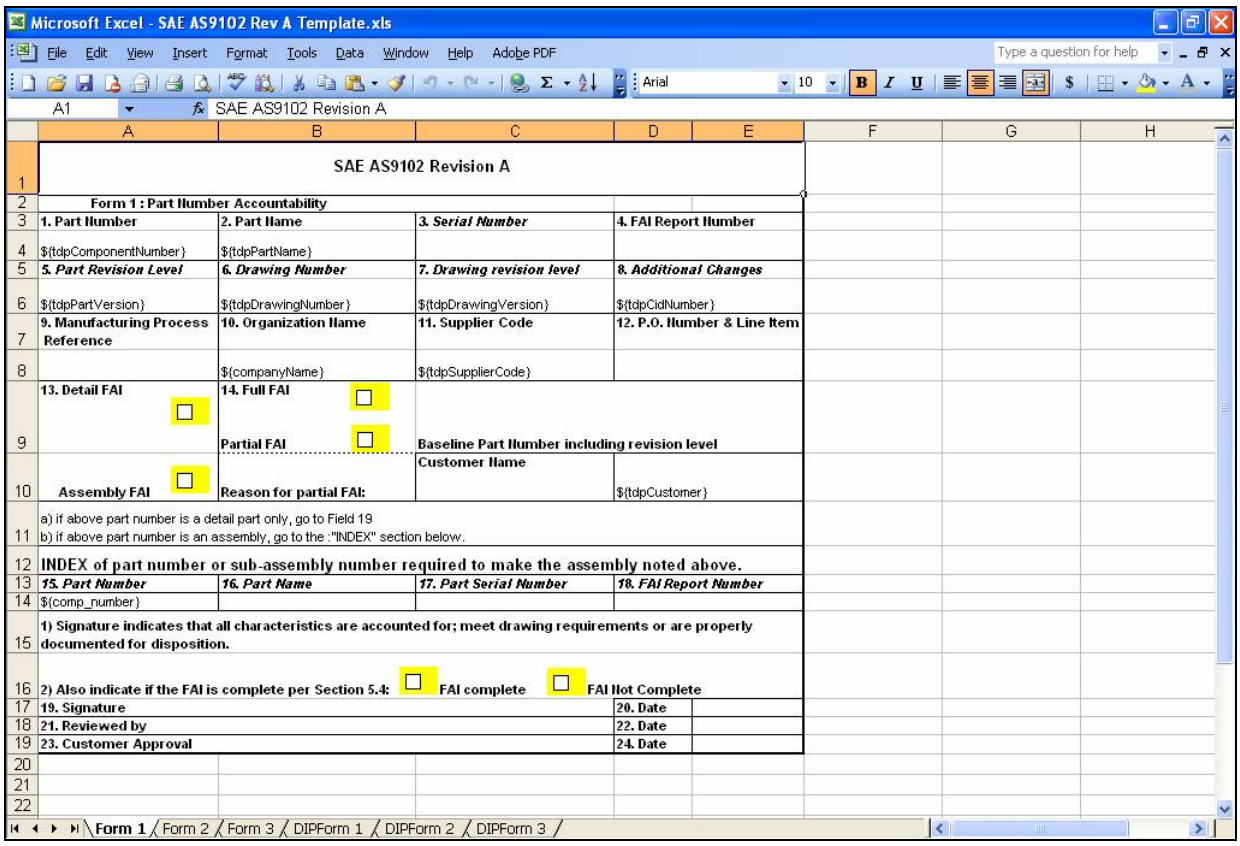
Custom Excel Exports with DISCUS vers. 1.32

About Custom Excel Formats

The Excel export capability is in the hands of the user! DISCUS now allows the export of characteristic data into user-defined custom Excel templates. Not only does this capability support the set up of AS9102 inspection forms, but can be used for more general inspection sheets as well. Multiple customers and varying formats can easily be satisfied using a single methodology with DISCUS.

In order to perform the custom export to Excel a template will need to be created. The template will contain tokens which are like variables that will inform DISCUS of ***what*** type of data is to be exported as well as ***where*** and ***how*** it is to be imported into the Excel spreadsheet. Multiple sheets (tabs) can exist within a template file. The following picture illustrates what an Excel template with tokens *might* look like.



Creating Custom Templates

Creating a template requires properly formatting the tokens that you want to include in the export into the appropriate cells within the appropriate sheet(s) of your Excel file. There are many different tokens available and they can be strung together in various combinations as well as mixed among general text within the cells of the spreadsheet. The following will explain what some of the tokens represent as well as provide examples of some of the ways that they can be used. Each example will consist of a screen capture of the template file followed by a screen capture of the output from DISCUS. The tokens will be introduced according to the various forms that they relate to per AS9102 (i.e. Form 1, Form 2 and Form 3) but they can be

used to export data from DISCUS into a variety of Excel formats such as general inspection sheets. In addition to this it is possible to export data in raw tabular format for use in populating the tables of a database (i.e. Microsoft Access) or even to interact with Excel macros. Feel free to be creative and invent new ways of stringing together tokens to output data from DISCUS into your own custom formats!

4 Things to Remember Regarding DISCUS Exports to Custom Excel Formats:

1. Save any templates you create. They are reusable with DISCUS.

2. Tokens are case sensitive and must be typed as they are shown using the dollar sign ($), curly brackets ({ }) and the underscore sign (_).

3. Data must be entered inside DISCUS and a properly formatted token representing the data must exist in a cell within the Excel template to successfully export that data.

4. General text can be used with tokens and combinations of tokens can be strung together. When tokens are applied only nonempty values from DISCUS will appear. Tokens with empty values (no data) will be ignored and skipped over during the import process.

Form 1 of AS9102

The following table shows some of the common tokens that can be applied to Form 1 of a First Article Inspection sheet during an export from DISCUS to Excel. These tokens are general however and can be applied to any sheet of an Excel file (i.e. a general inspection format, not necessarily specific to Aerospace Standard AS9102). Each of these types of data is optional and some may already exist in your template (i.e. your company name as well as the customer name may already be present in your template file and would not need to be exported out of DISCUS).

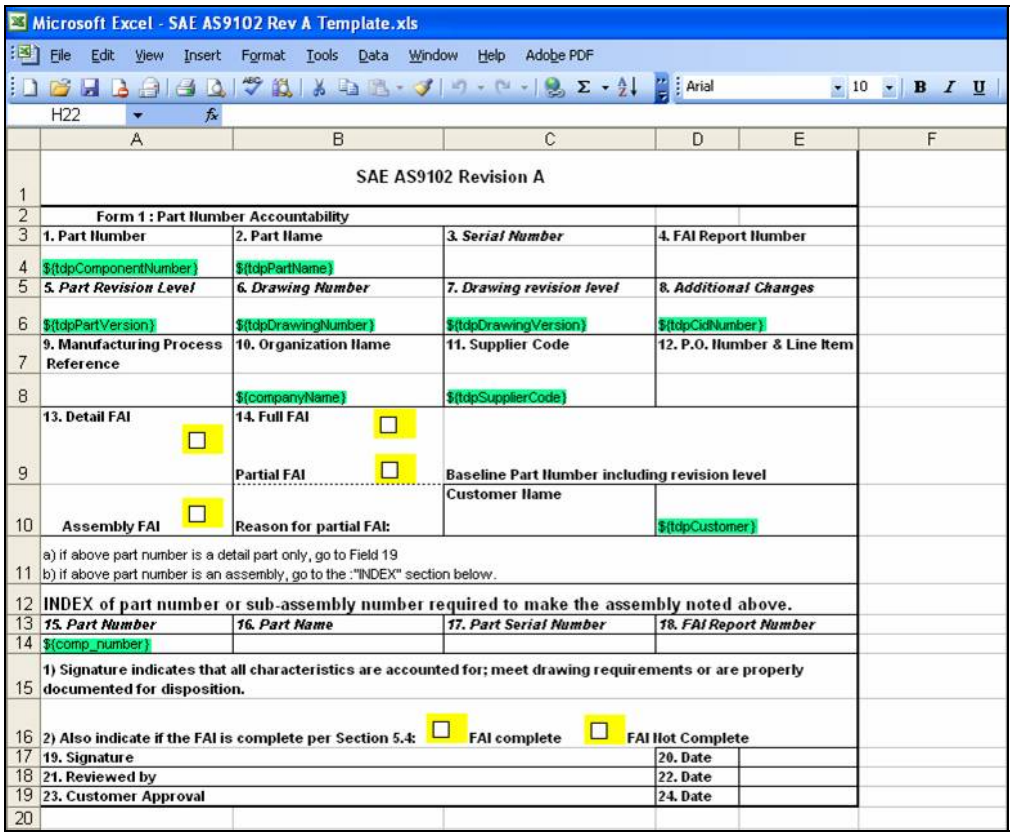
Token Name	What it Represents…	Example(s)
${tdpComponentNumber}	The part number entered in the Part Number field of the Basics tab in the TDP Properties dialog box	3110526191
${tdpPartName}	The part name entered in the Part Name field of the Basics tab in the TDP Properties dialog box	Bracket
${tdpPartVersion}	The part revision level entered in the Part Revision field of the Basics tab in the TDP Properties dialog box	A
${tdpDrawingNumber}	The drawing number entered in the Drawing Number field of the Basics tab in the TDP Properties dialog box	10070-710-02
${tdpDrawingVersion}	The drawing revision level entered in the Drawing Revision field of the Basics tab in the TDP Properties dialog box	ORG

Token Name	What it Represents…	Example(s)
${tdpCidNumber}	A listing of any changes in design entered in the Additional Changes field of the Basics tab in the TDP Properties dialog box	CID3082481, 50921-1
${companyName}	The company name of the manufacturing organization entered in the Company Name field of the Company Info dialog box	Acme
${tdpSupplierCode}	The supplier code entered in the Supplier Code field of the Advanced tab in the TDP Properties dialog box	009841715
${tdpCustomer}	The customer name entered in the Customer field of the Advanced tab in the TDP Properties dialog box	Scomo Aerospace Co.
${comp_number}	The component part numbers listed in the Components tab of the TDP Properties dialog box for an assembly (the Part Type must be Assembly, set in the Basic tab)*	3110526191 Part 02 Part 03

* Assemblies specified within the TDP Properties dialog box of DISCUS that have component parts listed in the Components tab will have these respective parts listed when the ${comp_number} token is applied. Simply enter this token in a cell within your Excel template and the export process will list the part numbers in place of the token, creating a new row for each part (see the example below).

Example 1 - Exporting AS9102 Form 1 Data to an Excel Template

The following example illustrates a possible application of some of the general TDP Property tokens within an Excel template and the corresponding output after the export from DISCUS. Each token applied in the template had data associated with it within the DISCUS TDP file. The tokens and resulting exported data are highlighted green for clarity.

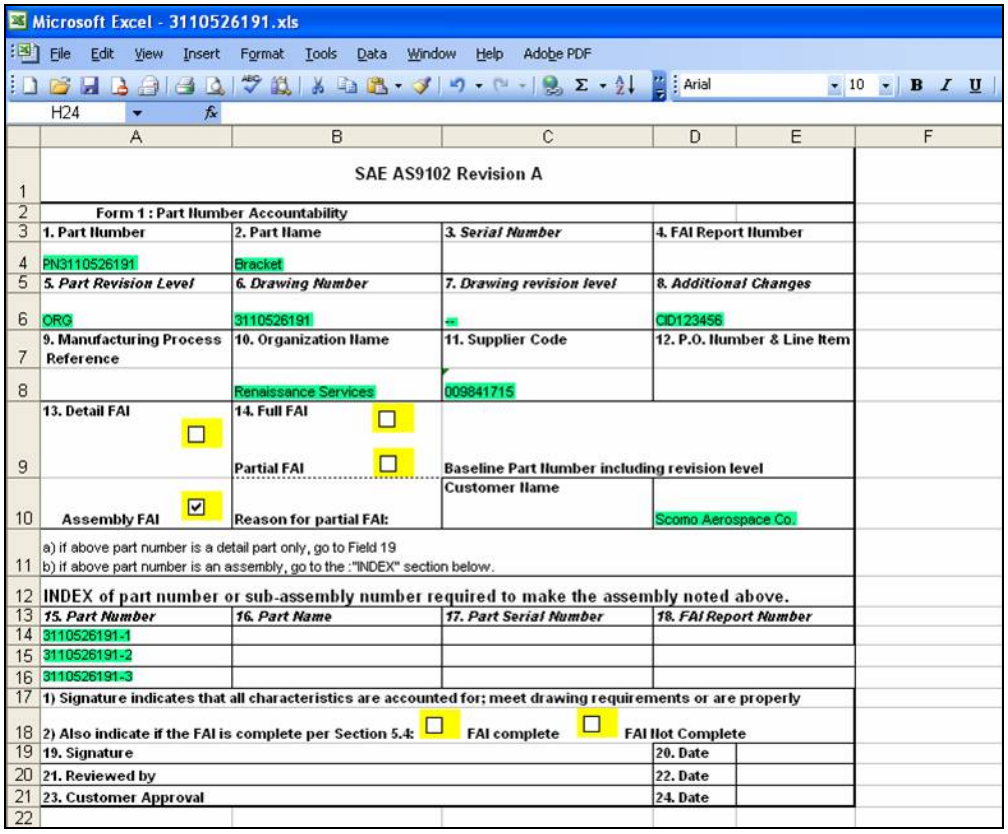


Microsoft Excel - SAE AS9102 Rev A Template.xls

File Edit View Insert Format Tools Data Window Help Adobe PDF

H22

	A	B	C	D	E	F
1	SAE AS9102 Revision A					
2	Form 1 : Part Number Accountability					
3	1. Part Number	2. Part Name	3. Serial Number	4. FAI Report Number		
4	${tdpComponentNumber}	${tdpPartName}				
5	5. Part Revision Level	6. Drawing Number	7. Drawing revision level	8. Additional Changes		
6	${tdpPartVersion}	${tdpDrawingNumber}	${tdpDrawingVersion}	${tdpCidNumber}		
7	9. Manufacturing Process Reference	10. Organization Name	11. Supplier Code	12. P.O. Number & Line Item		
8		${companyName}	${tdpSupplierCode}			
9	13. Detail FAI ☐	14. Full FAI ☐	Partial FAI ☐	Baseline Part Number including revision level		
10	Assembly FAI ☐	Reason for partial FAI:	Customer Name	${tdpCustomer}		
11	a) if above part number is a detail part only, go to Field 19 b) if above part number is an assembly, go to the :"INDEX" section below.					
12	INDEX of part number or sub-assembly number required to make the assembly noted above.					
13	15. Part Number	16. Part Name	17. Part Serial Number	18. FAI Report Number		
14	${comp_number}					
15	1) Signature indicates that all characteristics are accounted for; meet drawing requirements or are properly documented for disposition.					
16	2) Also indicate if the FAI is complete per Section 5.4: ☐ FAI complete ☐ FAI Not Complete					
17	19. Signature			20. Date		
18	21. Reviewed by			22. Date		
19	23. Customer Approval			24. Date		
20						



Microsoft Excel - 3110526191.xls

File Edit View Insert Format Tools Data Window Help Adobe PDF

H24

	A	B	C	D	E	F
1	SAE AS9102 Revision A					
2	Form 1 : Part Number Accountability					
3	1. Part Number	2. Part Name	3. Serial Number	4. FAI Report Number		
4	PN3110526191	Bracket				
5	5. Part Revision Level	6. Drawing Number	7. Drawing revision level	8. Additional Changes		
6	ORG	3110526191	-	CID123456		
7	9. Manufacturing Process Reference	10. Organization Name	11. Supplier Code	12. P.O. Number & Line Item		
8		Renaissance Services	009841715			
9	13. Detail FAI ☐	14. Full FAI ☐	Partial FAI ☐	Baseline Part Number including revision level		
10	Assembly FAI ☑	Reason for partial FAI:	Customer Name	Scomo Aerospace Co.		
11	a) if above part number is a detail part only, go to Field 19 b) if above part number is an assembly, go to the :"INDEX" section below.					
12	INDEX of part number or sub-assembly number required to make the assembly noted above.					
13	15. Part Number	16. Part Name	17. Part Serial Number	18. FAI Report Number		
14	3110526191-1					
15	3110526191-2					
16	3110526191-3					
17	1) Signature indicates that all characteristics are accounted for; meet drawing requirements or are properly					
18	2) Also indicate if the FAI is complete per Section 5.4: ☐ FAI complete ☐ FAI Not Complete					
19	19. Signature			20. Date		
20	21. Reviewed by			22. Date		
21	23. Customer Approval			24. Date		
22						

Form 2 of AS9102

The following table shows some of the common tokens that can be applied to Form 2 of a First Article Inspection sheet during an export from DISCUS to Excel. Again, these tokens are general however and can be applied to any sheet of an Excel file (i.e. a general inspection format, not necessarily specific to Aerospace Standard AS9102). Each of these types of data is optional but again a successful export and import requires that the data must be entered in DISCUS and a properly formatted token representing the data exist in a cell within the Excel template spreadsheet.

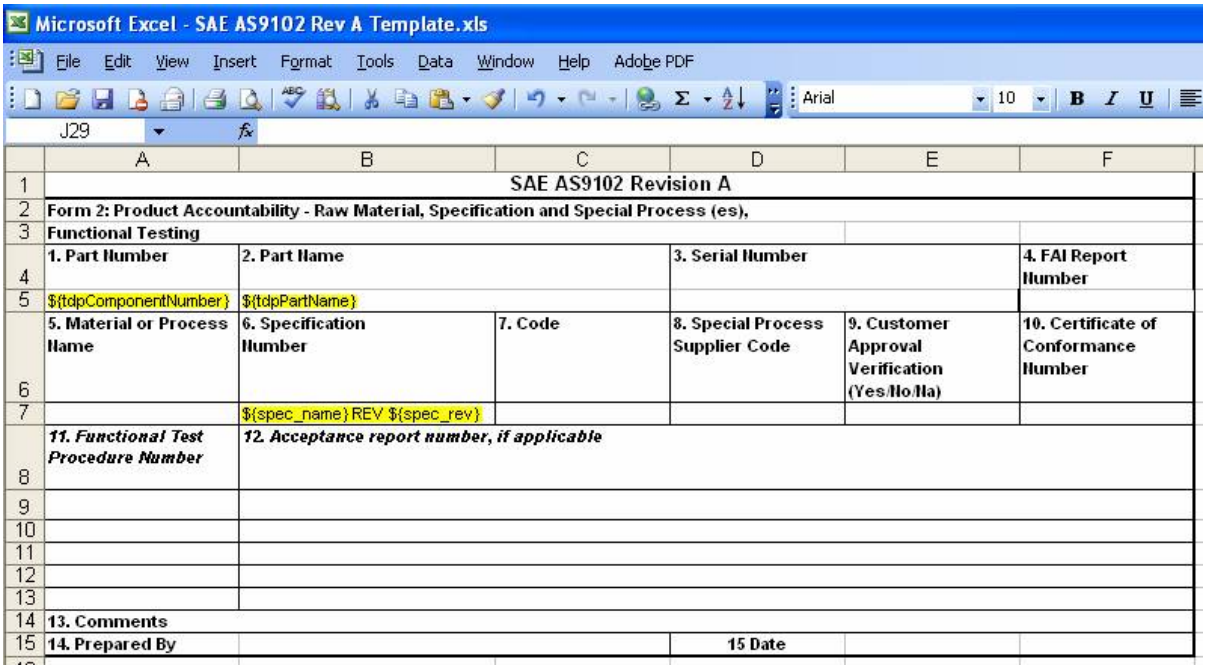
Token Name	What it Represents…	Example(s)
${tdpComponentNumber}	The part number entered in the Part Number field of the Basics tab in the TDP Properties dialog box**	3110526191
${tdpPartName}	The part name entered in the Part Name field of the Basics tab in the TDP Properties dialog box**	Bracket
${spec_name}	The name of a document entered into the Name field of the Add Specification dialog box (must check "Include in AS9102 Form 2" in order to export data into this token)***	PS1230B.pdf PS1230B PS1230
${spec_rev}	The revision of a document entered into the Revision field of the Add Specification dialog box (must check "Include in AS9102 Form 2" in order to export data into this token)***	B

** Some tokens may already be applied in another cell, possibly in another sheet (i.e. Form 1). Keep in mind that these values can be referenced and reused within Excel utilizing formulas (i.e. *='Sheet 1'!A4*). As a result it may not be necessary to duplicate tokens throughout a template file.

*** Documents identified as specifications inside DISCUS that have "Include in AS9102 Form 2" checked on the Add Specification dialog box will have the respective documents listed when the ${spec_name} token is applied. Simply enter this token in a cell within your Excel template and the export process will list the documents in place of the token, creating a new row for each document. Likewise this applies to revisions of specifications. These two types of tokens, in addition to being applied to different columns, can be applied within the same cell. The following example illustrates this scenario.

Example 2 - Exporting AS9102 Form 2 Data to an Excel Template

The following example illustrates a possible application of tokens pertinent to Form 2 within an Excel template and the corresponding output after the export from DISCUS. The tokens and resulting exported data are highlighted yellow for clarity.



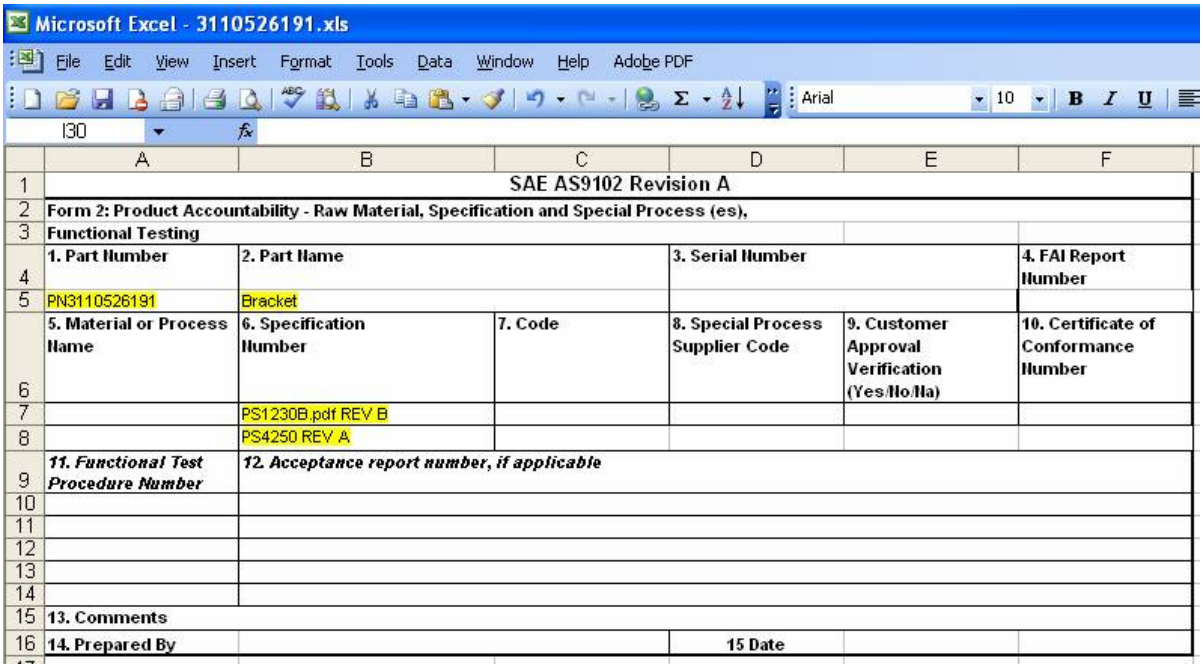
Microsoft Excel - SAE AS9102 Rev A Template.xls

File Edit View Insert Format Tools Data Window Help Adobe PDF

J29

	A	B	C	D	E	F
1	SAE AS9102 Revision A					
2	Form 2: Product Accountability - Raw Material, Specification and Special Process (es),					
3	Functional Testing					
4	1. Part Number	2. Part Name		3. Serial Number		4. FAI Report Number
5	${tdpComponentNumber}	${tdpPartName}				
6	5. Material or Process Name	6. Specification Number	7. Code	8. Special Process Supplier Code	9. Customer Approval Verification (Yes/No/Na)	10. Certificate of Conformance Number
7		${spec_name} REV ${spec_rev}				
8	*11. Functional Test Procedure Number*	*12. Acceptance report number, if applicable*				
9						
10						
11						
12						
13						
14	13. Comments					
15	14. Prepared By			15 Date		

This example illustrates the use of general text within a combination of tokens. Specifically the spec_name token *${spec_name}* is combined with the spec_rev token *${spec_rev}* and the word "REV" is inserted between the tokens. The resulting output from DISCUS is shown in the next screen capture. Keep in mind that general text can be combined with token data to customize your output from DISCUS.



Microsoft Excel - 3110526191.xls

File Edit View Insert Format Tools Data Window Help Adobe PDF

I30

	A	B	C	D	E	F
1	SAE AS9102 Revision A					
2	Form 2: Product Accountability - Raw Material, Specification and Special Process (es),					
3	Functional Testing					
4	1. Part Number	2. Part Name		3. Serial Number		4. FAI Report Number
5	PN3110526191	Bracket				
6	5. Material or Process Name	6. Specification Number	7. Code	8. Special Process Supplier Code	9. Customer Approval Verification (Yes/No/Na)	10. Certificate of Conformance Number
7		PS1230B.pdf REV B				
8		PS4250 REV A				
9	*11. Functional Test Procedure Number*	*12. Acceptance report number, if applicable*				
10						
11						
12						
13						
14						
15	13. Comments					
16	14. Prepared By			15 Date		

Form 3 of AS9102

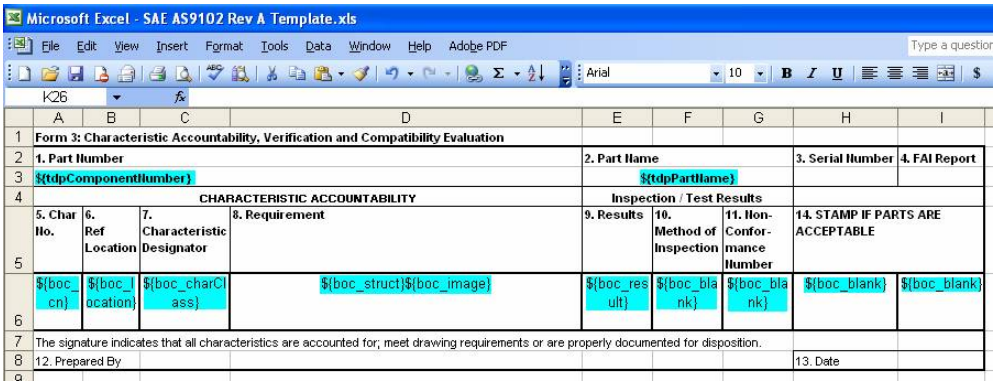
The following table shows some of the common tokens that can be applied to Form 3 of a First Article Inspection sheet during an export from DISCUS to Excel. Again, these tokens are general however and can be applied to any sheet of an Excel file (i.e. a general inspection format, not necessarily specific to Aerospace Standard AS9102). Each of these types of data is optional but again a successful export and import requires that the data must be entered in DISCUS and a properly formatted token representing the data exist in a cell within the Excel template spreadsheet.

Token Name	What it Represents…	Example(s)
${tdpComponentNumber}	The part number entered in the Part Number field of the Basics tab in the TDP Properties dialog box**	3110526191
${tdpPartName}	The part name entered in the Part Name field of the Basics tab in the TDP Properties dialog box**	Bracket
${boc_cn}	CN - The characteristic (balloon) number identifier from the BoC	1 1.1
${boc_location}	The pre-formatted zone location of a balloon on a drawing (when zone / grids are applied), indicating the sheet number and grid location	S1 A-7
${boc_charClass}	The characteristic class of the requirement identified in the BoC	Minor Major Critical
${boc_struct}	The pre-formatted default representation of an exported structured requirement (applied through the use of the built-in Excel export template: "DISCUS-AS9102.xls") - it includes the note or defined tolerance, KEY if a characteristic is flagged as a key characteristic, any comments added and number of places entered if greater than 1	Surface Roughness: 1 mm < x < 10 mm KEY
${boc_image}	The image requirement representing a characteristic that is shown in the BoC, if the image token is used alone it will import the image into the cell, if combined with another token (i.e. ${boc_struct} ${boc_image}) it will create a split-cell for characteristics consisting of both a structured and image requirement - exporting both types of data	
${boc_result}	Can be used to display "NR" (not reportable) in the result column for requirements that are indicated as such in the BoC, otherwise it is blank	NR
${boc_blank}	Blank cell - used as a placeholder to create a formatted cell (i.e. one with a border)	

** Some tokens may already be applied in another cell, possibly in another sheet (i.e. Form 1). Keep in mind that these values can be referenced and reused within Excel utilizing formulas (i.e. *='Sheet 1'!A4*). As a result it may not be necessary to duplicate tokens throughout a template file.

Example 3 - Exporting AS9102 Form 3 Data to an Excel Template

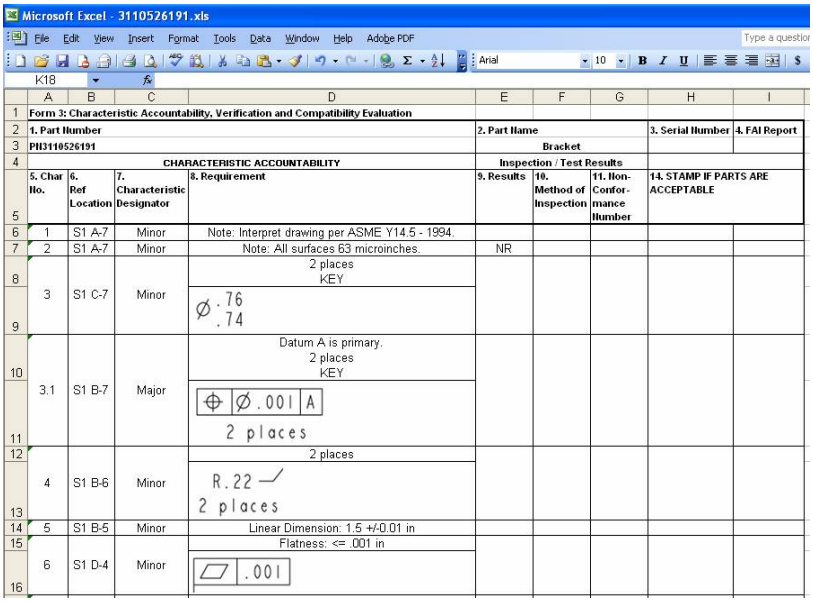
Using the tokens listed in the previous table within your template will result in a similar output as the built-in default template that DISCUS uses as its standard (DISCUS-AS9102.xls). The following example illustrates how some of these respective tokens *could* be arranged within a template to mimic the output of DISCUS to its built-in default format. The tokens are highlighted in turquoise for clarity.



Microsoft Excel - SAE AS9102 Rev A Template.xls

	A	B	C	D	E	F	G	H	I
1	Form 3: Characteristic Accountability, Verification and Compatibility Evaluation								
2	1. Part Number				2. Part Name			3. Serial Number	4. FAI Report
3	${tdpComponentNumber}				${tdpPartName}				
4	CHARACTERISTIC ACCOUNTABILITY				Inspection / Test Results				
5	5. Char No.	6. Ref Location	7. Characteristic Designator	8. Requirement	9. Results	10. Method of Inspection	11. Non-Conformance Number	14. STAMP IF PARTS ARE ACCEPTABLE	
6	${boc_cn}	${boc_location}	${boc_charClass}	${boc_struct}${boc_image}	${boc_result}	${boc_blank}	${boc_blank}	${boc_blank}	${boc_blank}
7	The signature indicates that all characteristics are accounted for; meet drawing requirements or are properly documented for disposition.								
8	12. Prepared By							13. Date	

The BoC tokens need only be listed one time within a column as they signal DISCUS where to start filling in data down that column. Notice the combination ${boc_struct}${boc_image} creates split-cells for characteristic numbers that have both a structured requirement and an image requirement. For cases where there is just a structured requirement or just an image requirement in DISCUS, the export will ignore the empty token and only import data to the token that has a value in it. In general this is true - empty tokens will be ignored and skipped over during the import of data to the template file.



Microsoft Excel - 3110526191.xls

	A	B	C	D	E	F	G	H	I
1	Form 3: Characteristic Accountability, Verification and Compatibility Evaluation								
2	1. Part Number				2. Part Name			3. Serial Number	4. FAI Report
3	PI13110526191				Bracket				
4	CHARACTERISTIC ACCOUNTABILITY				Inspection / Test Results				
5	5. Char No.	6. Ref Location	7. Characteristic Designator	8. Requirement	9. Results	10. Method of Inspection	11. Non-Conformance Number	14. STAMP IF PARTS ARE ACCEPTABLE	
6	1	S1 A-7	Minor	Note: Interpret drawing per ASME Y14.5 - 1994.					
7	2	S1 A-7	Minor	Note: All surfaces 63 microinches.	NR				
8	3	S1 C-7	Minor	2 places KEY Ø .76 .74					
10	3.1	S1 B-7	Major	Datum A is primary. 2 places KEY ⌖ Ø.001 A 2 places					
12	4	S1 B-6	Minor	2 places R.22 2 places					
14	5	S1 B-5	Minor	Linear Dimension: 1.5 +/-0.01 in					
15	6	S1 D-4	Minor	Flatness: <= .001 in ⏥ .001					

Additional Tokens

The following table shows additional sets of tokens that can be applied and combined in creative ways within your Excel template.

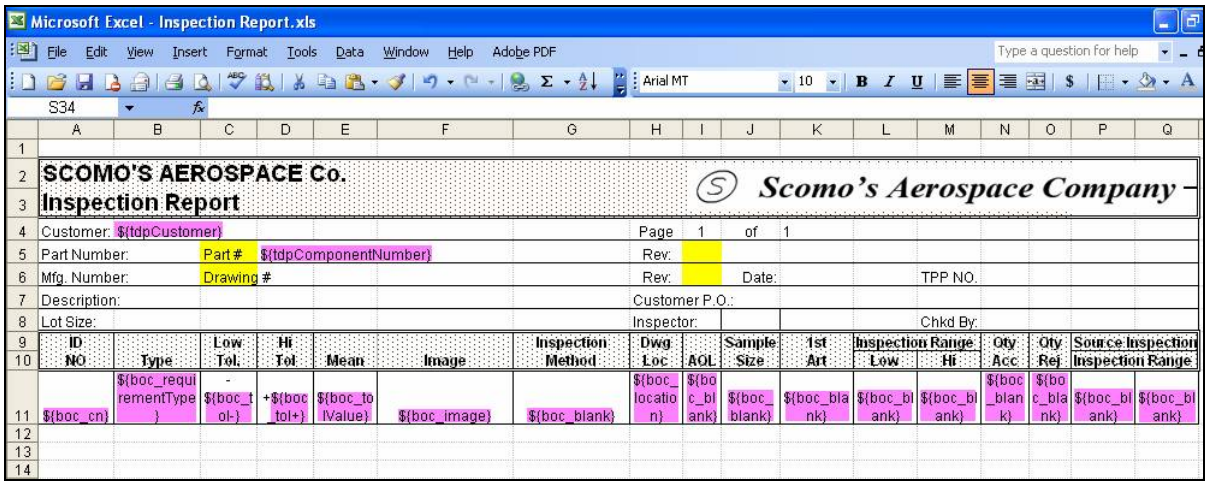
Token Name	What it Represents…	Example(s)
${boc_sheet}	The sheet number of the document (drawing, spec, etc.) containing the identified requirement	1
${boc_zone}	The zone location of a balloon on a drawing (when a zone / grid is applied)	A-2
${boc_requirementType}	The type of characteristic requirement identified (comes from the Req-Type dropdown list in the BoC)	Note Linear Dimension Diameter
${boc_requirementSubType}	The subtype of the requirement identified from the Req-SubType dropdown list in the BoC	Range Single Value Tolerance Text
${boc_uom}	The unit of measure that the characteristic is specified in	inches millimeters kilohertz
${boc_uomAbbr}	The abbreviation for the unit of measure that the characteristic is specified in	in mm kHz
${boc_singleValue}	The numeric value entered for a tolerance of a Single Value subtype requirement	5.00
${boc_singleValueOp}	The logical operator sign associated with a Single Value subtype requirement	< <= = > >=
${boc_rangeMin}	The numeric minimum value of a Range subtype requirement	1.00
${boc_rangeMinOp}	The logical operator sign associated with the minimum value of a Range subtype requirement (permits the specification of an inclusive or exclusive lower bound value for the tolerance definition)	> >=
${boc_rangeMax}	The numeric maximum value of a Range subtype requirement	2.00
${boc_rangeMaxOp}	The logical operator sign associated with the maximum value of a Range subtype requirement (permits the specification of an inclusive or exclusive upper bound value for the tolerance definition)	< <=
${boc_tolValue}	The numeric nominal value of a Tolerance subtype requirement	1.315

Token Name	What it Represents…	Example(s)
${boc_tol-}	The numeric value of the lower tolerance of a Tolerance subtype requirement	0.005
${boc_tol+}	The numeric value of the upper tolerance of a Tolerance subtype requirement	0.015
${boc_note}	The text entered for a Note type requirement	Heat treat per PS1255.
${boc_keyChar}	Is either a Y or N based upon whether the identified requirement is a key characteristic or not	Y N
${boc_comment}	The text entered in the comment field of the BoC	Datum A is primary.
${boc_places}	The number of places indicated in the BoC	4
${boc_singleMin}	-- Is equal to ${boc_singleValue} if a Single Value is used **AND** the ${boc_singleValueOp} is ">" **OR** ">=" -- OTHERWISE it is an empty value	
${boc_singleMax}	-- Is equal to ${boc_singleValue} if a Single Value is used **AND** the ${boc_singleValueOp} is "<" **OR** "<=" -- OTHERWISE it is an empty value	
${boc_signedTol-}	Is equal to ${boc_tol-} with a minus sign (-) in front of the value	
${boc_signedTol+}	Is equal to ${boc_tol+} with a plus sign (+) in front of the value	
${boc_reportableYesNo}	Produces a “Yes” or “No” depending on whether the requirement is reportable or not	
${boc_value}	-- Is equal to ${boc_tolValue} if a Tolerance subtype is used -- Is equal to ${boc_singleValue} if a Single Value is used **AND** the ${boc_singleValueOp} is "=" -- OTHERWISE it is an empty value	

Token Name	What it Represents…	Example(s)
${boc_min}	-- Is equal to ${boc_rangeMin} if a Range subtype is used -- Is equal to ${boc_tol-} if a Tolerance subtype is used -- Is equal to ${boc_singleValue} if a Single Value subtype is used **AND** ${boc_singleValueOp} is ">" **OR** ">=" -- OTHERWISE it is an empty value	
${boc_max}	-- Is equal to ${boc_rangeMax} if a Range subtype is used -- Is equal to ${boc_tol+} if a Tolerance subtype is used -- Is equal to ${boc_singleValue} if a Single Value subtype is used **AND** ${boc_singleValueOp} is "<" **OR** "<=" -- OTHERWISE it is an empty value	

Example 4 - Additional Token Data Applied to a General Inspection Sheet

The following example uses some of the tokens listed in the previous table to set up a general inspection sheet. The tokens are highlighted in pink for clarity.

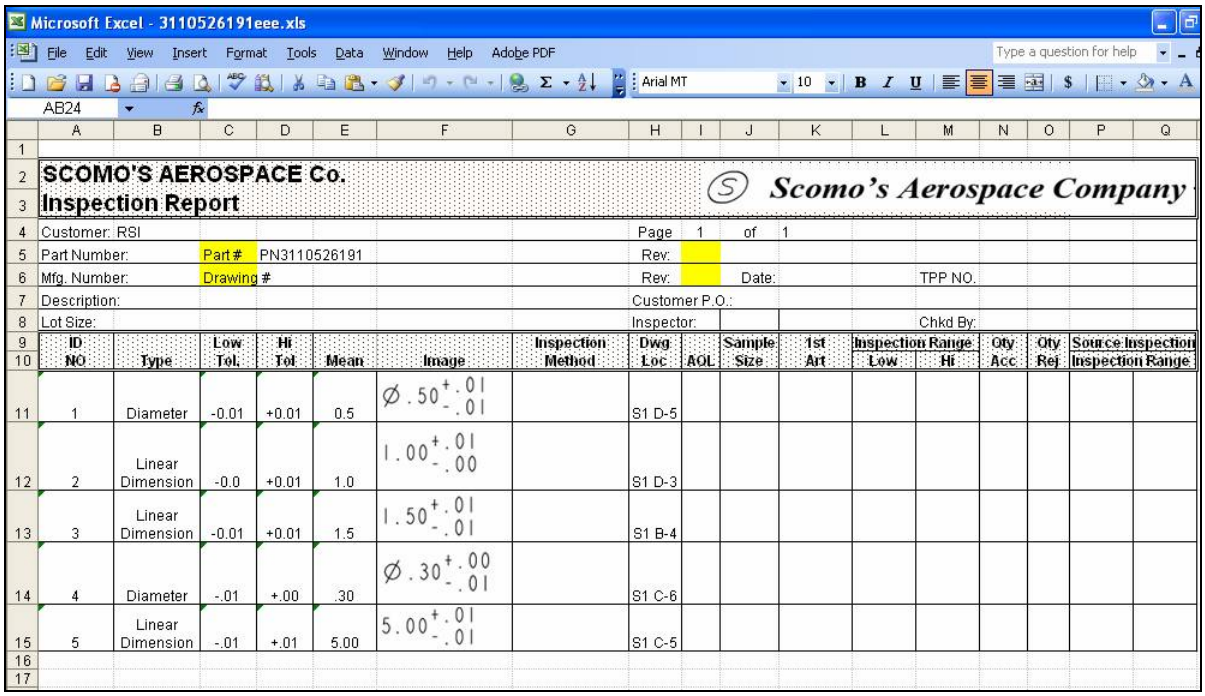


Microsoft Excel - Inspection Report.xls

SCOMO'S AEROSPACE Co.
Inspection Report
Scomo's Aerospace Company

Customer: ${tdpCustomer}								Page 1 of 1									
Part Number:		Part #	${tdpComponentNumber}					Rev:									
Mfg. Number:		Drawing #						Rev:		Date:			TPP NO.				
Description:								Customer P.O.:									
Lot Size:								Inspector:					Chkd By:				
ID NO	Type	Low Tol.	Hi Tol	Mean	Image	Inspection Method		Dwg Loc	AQL	Sample Size	1st Art	Inspection Range Low	Inspection Range Hi	Qty Acc	Qty Rej	Source Inspection Inspection Range	
${boc_cn}	${boc_requirementType}	${boc_tol-}	+${boc_tol+}	${boc_toIValue}	${boc_image}	${boc_blank}		${boc_location}	${boc_blank}	${boc_blank}	${boc_blank}	${boc_blank}	${boc_blank}	${boc_blank}	${boc_blank}	${boc_blank}	${boc_blank}

Notice how the ${boc_tol-} and ${boc_tol+} tokens have a minus sign and a plus sign placed before them, respectively. This is another example of how general text and symbols can be intermixed with the token variables of a template.



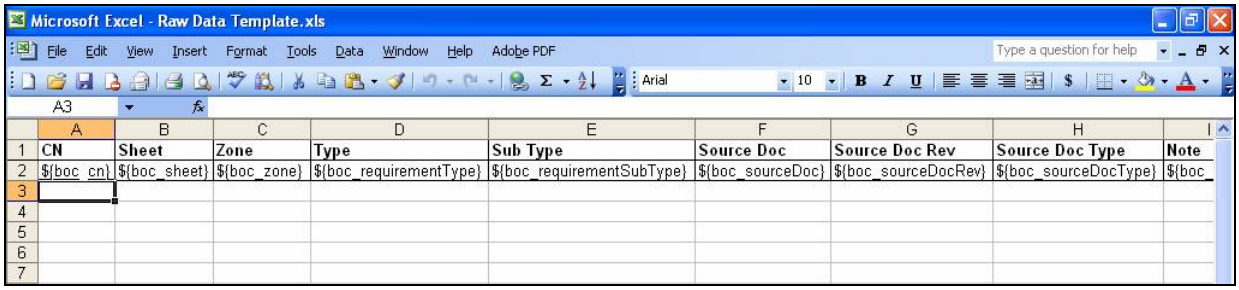
Microsoft Excel - 3110526191eee.xls

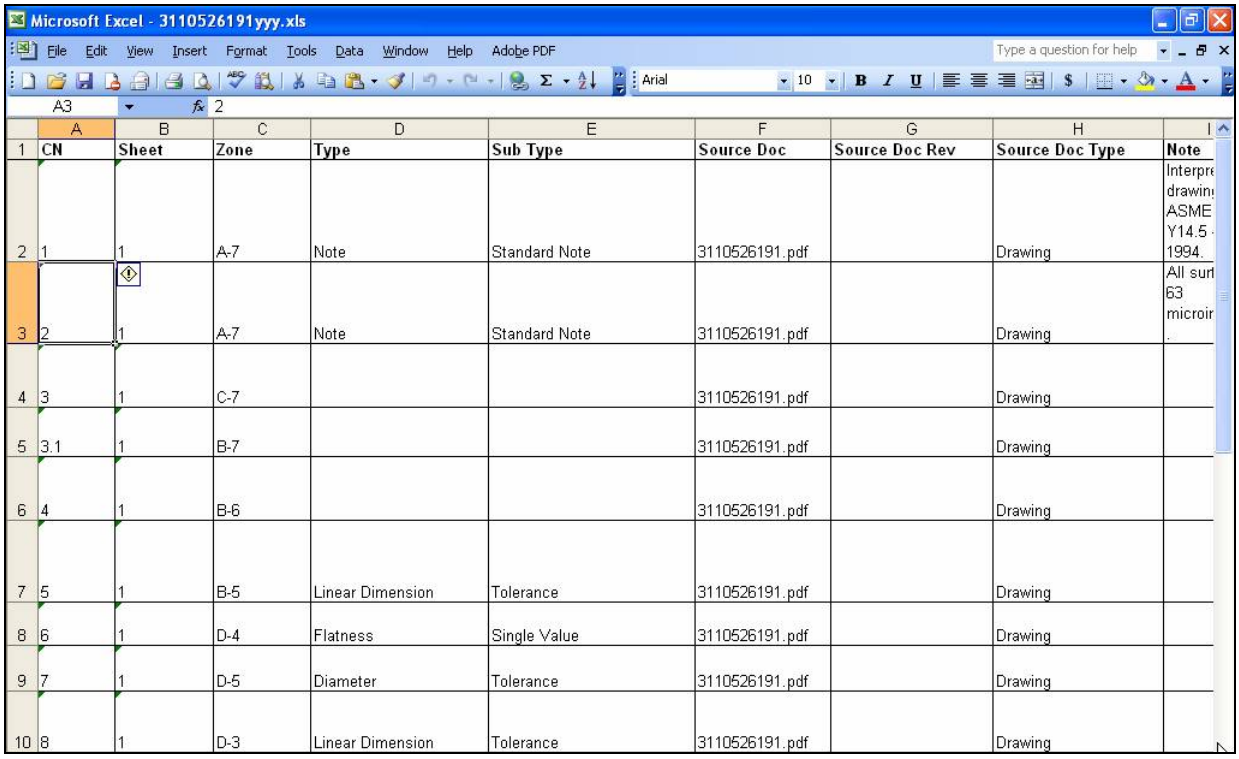
SCOMO'S AEROSPACE Co.
Inspection Report
Scomo's Aerospace Company

Customer: RSI								Page 1 of 1									
Part Number:		Part #	PN3110526191					Rev:									
Mfg. Number:		Drawing #						Rev:		Date:			TPP NO.				
Description:								Customer P.O.:									
Lot Size:								Inspector:					Chkd By:				
ID NO	Type	Low Tol.	Hi Tol	Mean	Image	Inspection Method		Dwg Loc	AQL	Sample Size	1st Art	Inspection Range Low	Inspection Range Hi	Qty Acc	Qty Rej	Source Inspection Inspection Range	
1	Diameter	-0.01	+0.01	0.5	Ø.50 +.01 -.01			S1 D-5									
2	Linear Dimension	-0.0	+0.01	1.0	1.00 +.01 -.00			S1 D-3									
3	Linear Dimension	-0.01	+0.01	1.5	1.50 +.01 -.01			S1 B-4									
4	Diameter	-.01	+.00	.30	Ø.30 +.00 -.01			S1 C-6									
5	Linear Dimension	-.01	+.01	5.00	5.00 +.01 -.01			S1 C-5									

Example 5 - Raw Data Export from DISCUS

The next example shows how it is possible to use the DISCUS-to-Excel capability to produce a raw data sheet. One possible application of this could be to in turn use the data sheet to fill in the tables of a database. In addition to other database management systems, Microsoft Excel integrates particularly well with Microsoft Access. Another possible use for raw data sheets involves Excel macros. Users that have familiarity with Excel macros can write them to interact with data from DISCUS in many different ways.





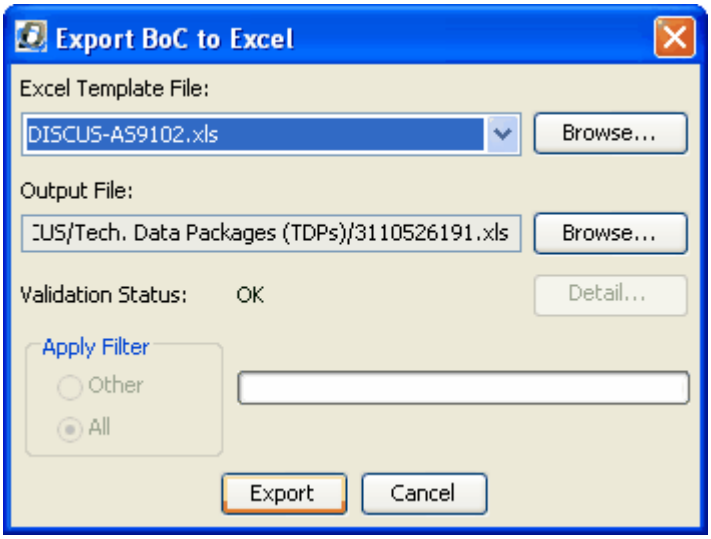
Exporting to Excel

Once your template file(s) are created you're ready to export data from DISCUS. DISCUS has built-in validators which ensure that proper information is specified for the export. Additionally any filters that are applied will impact which characteristics are exported into the Excel inspection sheet.

To export to Excel follow these steps:

1. Click **BoC**, click on **Export** and then select **Export to Excel**.

2. The **Export BoC to Excel** dialog box pops up. If the validation status is not OK click **Details** to see which characteristics are invalid. Make any necessary corrections before exporting.



3. Click Excel Template File **Browse** to select your template file. Once this file is found and selected click the second **Browse** button (for the **Output File**), then locate and name the output Excel file. Finally, click the **Export** button.

4. Next you can choose to open the file.

Remember, a properly formatted template can export data to multiple sheets (tabs) of the Excel file.