Software Update Notification

PSS0223-10: Mastersizer 3000 v2.10

PARTICLE SIZE

Introduction

This document details the release of software PSS0223-10: version 2.10 of the software for the Mastersizer 3000 laser diffraction system. It covers software issues fixed and new features introduced. This information is required to perform a risk analysis to determine if the software should be installed. In this risk analysis the benefits of the new features provided and resolved software issues must be weighed against the risk of new issues that may be introduced to vital areas of the software or possible changes to the results of future analysis. Installation instructions are provided.

Installation

It is assumed that you have authority to install or update software within your facility. It is also assumed that you have Administrator rights for the system upon which the software is installed, as this is a requirement of the installation process. If you do not have this authority please consult with your I.T. support department before proceeding.

Minimum System Requirements

The minimum requirements for running this software are highlighted in table 1 below. Although the software can run using Windows XP Professional and Windows 8 Enterprise, it has been fully tested under Windows 7. Windows 7 is therefore the preferred operating system.

Supported Languages

The Mastersizer 3000 software currently supports operation in the following languages:

- English
- French
- German
- Japanese
- Chinese (Simplified)
- Russian
- Polish
- Spanish

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The language used by the application is automatically configured based on the operating system settings. If you want to force the application to use English instead of the operating system language, you need to start the application using the **Mastersizer 3000 (English)** start menu shortcut.

Table 1: Minimum system requirements for the Mastersizer 3000 software.

Feature	Specification
Processor Type	Intel Core i5 Processor
Memory	4GB
Hard Disk Storage	250GB
Additional Storage Media	CD-ROM or DVD +/-RW drive
Display Resolution	1024 x 768
Connectivity	1 high speed USB port
Operating System	Windows 7 Professional (32 bit) Windows 7 Ultimate (64 bit) Windows 8 Enterprise (64bit)

Installation Instructions

The software suite comes on an auto-loading CD-ROM. Inserting the drive into a system configured to Auto-run a CD will run the installation program automatically. If your system does not support this feature, run the **\Mastersizer 3000\setup.exe** program from your CD drive.

Note: It is important that the software is installed before the Mastersizer 3000 instrument is connected to the computer and switched on. This will ensure that the instrument drivers are enabled, and that the firmware updates associated with this release are correctly downloaded to the instrument.

Note: Any firmware updates required for your system will be installed at the same time as the software. It is important to keep the firmware and software 'in sync', since this is the configuration that will have been tested by Malvern Instruments prior to release of the software.

Installing the Malvern Access Configurator (MAC) Application

The software suite includes a copy of the Malvern Access Configurator tool that allows you to manage the security aspects of the Mastersizer 3000. The MAC software may be installed either on the PC used to control the instrument or a separate networked PC. Installing on a separate PC allows you to manage the security centrally.

Note:

The MAC software does not auto-install. To install this software, navigate to the ***\Malvern Access Configurator*** folder on the software CD-ROM and run the **setup.exe** file.

If you are installing the MAC software on a Windows XP system then you must make sure that the Microsoft .NET framework 3.5 is installed first. To install this, navigate to the ***\Malvern Access Configurator*** folder and run the **dotNetFx35setup.exe** file.

As with all Windows applications, the MAC software must be installed by a user who is an administrator on the host computer. In addition, the MAC software uses the existing Microsoft Windows users and groups configured on the host computer to control access to the Mastersizer 3000 application. As such, prior to installing the MAC, it is important to ensure that the computer

running the Malvern software is installed on its host network. If the computer is a stand-alone system, the required users and groups must be configured on the computer prior to the use of the MAC.

Given the above requirements, it is advised that the local IT department review the requirements for use of the MAC application, and are present during the software installation process.

Note: Please read **MRK1828-xx - Guide to setting up access permissions in the Malvern Access Configurator Application** and **MRK1747-xx - Mastersizer 3000 - 21 CFR Part 11 Guide** for more information as to how to use the MAC application, particularly when operation is required in a 21CFR Part 11 compliant environment.

Uninstall Procedure

The software can be uninstalled using the standard **Add/Remove Programs** feature in the Windows Control Panel.

Software License Files

The Mastersizer 3000 software requires a valid license file to run. When connected to an instrument, the system automatically generates this file and the user will be asked to accept the license.

Note: If you wish to install the Mastersizer 3000 software on additional computers, you will need to follow the procedure below for sharing a software license.

Sharing a License

In order to enable the use of the Mastersizer 3000 on a computer which is not connected to a system, it is necessary for users to create a license. This can then be shared with other users, allowing them to gain access to the software.

To share a license, follow the steps below:

1. At the PC that is connected to the instrument, run the Mastersizer 3000 software and click on the **Application Menu** icon  at the top left of the screen.
2. Select 'About' and click on the View License.. button.
3. Click on the Share this License.. button. The system tells you what information the license file contains.
4. To accept that information click Yes and choose a location to copy the file to (e.g. a memory stick).
5. At the separate PC, install the Mastersizer 3000 software from the CD and start the program. At the license screen, click the Install button.

Browse to the folder that contains the license file from step 4 above, and select the licensee file. The licensee details will be shown and you can now accept or decline the license.

Note: : The software license is specific to a given Mastersizer 3000 system. When a license is shared, detailed user and computer information is stored in the license file, ensuring it can be traced back to its source Mastersizer 3000 system. Users should only share the license with users within their organizations who need to analyze data off-line. **The software license must not be shared with other organizations without the consent of Malvern Instruments.**

New Features

The following new features and improvements are included in version 2.10 of the Mastersizer 3000 software:

Reference(s)	Feature	Comment
27116 **27117** **27119** **27402** **27403**	Add new MiniGuides to help users discover new software features.	Improvement
17826	Provide system health check function as a diagnostic tool within the maintenance window	New Feature
26630	Ensure ultrasound is turned off during the emptying of the Hydro dispersion units.	Improvement
25056	Add a stabilizing time period for the 'continuous from start' sonication option.	New Feature
9430 **26819** **27382** **26817** **27438** **27220**	Implement an SOP Player option to allow measurement conditions to be changed during a measurement.	New Feature
22135	Remove child tree structure view from the audit trail and signatures review dialogue in order to simplify the format of the presented data.	Improvement
24056	Provide the ability to copy the output of a custom calculation as text.	New Feature
24057	Provide a report widget which enables text annotations to be added to reports.	New Feature
11082	Add Rosin-Rammler and Probability plot y-axis options to result graphs.	New Feature
27470	Move the MiniGuide short-cut from the status bar to the ribbon bar	Improvement
26445	Add the ability to change the font style and color for report parameters.	New Feature
24758	Always start the pump/stirrer on the Hydro dispersion units when initializing the Mastersizer 3000 as part of a manual measurement.	Improvement
22630	Provide a macro to allow operation of the Aero S dispersion unit in a feed-only mode.	New Feature
9422 **26198** **26200** **26201**	Provide a tool to allow service or maintenance reminders to be set within the software.	New Feature
25589	Provide a function to enable emulation factors to be calculated as part of a custom calculation.	New Feature
24909	Provide a filter option to only show the current versions of records in the records view.	New Feature
25989	Provide a 'fine powder' mode option for wet measurements, in order to help improve the measurement reproducibility when measuring in organic dispersants.	New Feature
21940	Allow sieve Mesh sizes to be specified as user sizes, and displayed in reports.	New Feature

27447	Provide an option to display all size results to 3 decimal place accuracy.	Improvement
9423 **26096**	Provide an Extend Result function, to allow results generated using sieving to be added to a Mastersizer 3000 result.	New Feature
25990 **27222**	Create virtual lens ranges, too allow the size ranges for older diffraction products to be set for Mastersizer 3000 results.	New Feature
27564	Show a live light scattering graph in the measurement manager during clean sequences.	Improvement
26685	Add ability to copy all report tables to clipboard as text.	New Feature
24847	Auto-refresh data quality report when record selection changes.	Improvement
25057	Allow SOPs to be created without a sample name being specified.	Improvement
24763	Add a save button to the SOP editor window.	Improvement
24160	Increase Hydro MV and LV fill timeout times.	Improvement
26717	Maintain state of the accessory controls when the measurement manager is closed and then opened again.	Improvement
28048	In manual mode, allow measurements to proceed if the Hydro unit tank is not full.	Improvement
26393	Display Hydro MV and Hydro LV cleaning instructions in the accessory control window.	Improvement

The **New Features Description** section towards the end of this document provides an introduction to how the major new features in this software version may be used.

Fixed issues

The main issues fixed in this release of the Mastersizer 3000 software are listed below.

Reference(s)	Issue	Comment
13682	Failed to acquire snap data error appears during measurements.	Fixed
24762	SOP version error occurs due to users being prompted to save SOPs multiple times.	Fixed
24822	Manual measurement (SOP) settings to not stay in sync with the settings applied in the measurement manager accessory controls.	Fixed
25082	'Get matrix' error occurs on first measurement.	Fixed
25428	Original record number incorrect for averaged records.	Fixed
25741	Performance verification certificates cannot be generated on systems that use a comma as a decimal separator.	Fixed
25941	Users can leave the sample name empty when carrying out manual measurements.	Fixed
26026	Software exception occurs when a manual accessory is selected and an automated accessory SOP is loaded for a manual measurement.	Fixed
26107	Manual measurement using the Aero S enters a loop if the unit fails to achieve the specified feed rate.	Fixed
26406	Cannot abort a measurement during the degas routine for Hydro units.	Fixed
26407	'Unable to achieve ultrasound demand' error message appears if ultrasound is used during a clean sequence.	Fixed
26453	Mastersizer 3000 results may be interpreted as Mastersizer 2000 results following an edit	Fixed

26843	Abort foes not end the clean process during a manual liquid dispersion measurement	Fixed
26965	Tank fill failure may be reported even when a Hydro dispersion unit tank is clearly full.	Fixed
27175	Copy raw data option crashes the software when no records are selected.	Fixed
27310	Measurement manager stops working when returning to the initialize measurement option during a measurement manager session.	Fixed
27311	Ultrasound fails to turn off before clean sequence starts.	Fixed
27312	Help does not open correctly if Internet Explorer is not selected as the default internet browser.	Fixed
27339	Cannot change the stirrer speed by clicking in the demand bar within the measurement manager.	Fixed
27369	Cancelling a batch print can cause the software to report an exception.	Fixed
27385	A strange scattering pattern displayed in the measurement window at the end of every measurement.	Fixed
26834	Cannot abort a measurement during a Hydro unit clean operation.	Fixed
26686	Sizes are not copied correctly from result graphs when using the 'Copy Raw Data' option.	Fixed
26691	Error stating that the tank has not filled in the required time sometimes appears when the sample documentation dialogue is open during the running of an SOP.	Fixed
26692	No message is given to the user to fill the sample tank when running an SOP which requests manual tank fill.	Fixed
26771	Clicking 'Fill' for liquid accessories can cause an immediate fill error to be reported.	Fixed
27448	The percentage in band is sometimes shown to double (high) precision in result tables.	Fixed
27474	Unable to open Mastersizer 2000 files that contain results with populated File Name parameters.	Fixed
27639	Manual accessory measurement sometimes hangs when reaching Measure Sample stage.	Fixed
27987	Printing a report which has been renamed can cause the software to crash.	Fixed
28046	Version number reported incorrectly in maintenance report for French language installations.	Fixed
28119	Hydro MV clean sequence can sometimes enter an infinite loop	Fixed
28236	Hydro MV and LV clean sequences can take a long time to stop when abort is clicked.	Fizxed
28072	Extract and save SOP can cause the software to crash.	Fixed
28468	Software crash can occur when comparing wet and dry SOPs.	Fixed
24849	Particle shape is not available as an independent option in the Mastersizer 2000 analysis options when the Fraunhofer optical model is used.	Fixed
25449	Result graph shown in the measurement manager is not affected by result transform or extension.	Fixed
28440	Spelling error for measurement manager status: 'LidOpen' should be 'Lid Open'.	Fixed
27374	'Save SOP' option does not close the SOP editor window.	Fixed
28331	When multiple records are selected, the Fit table shows the data for the last record in the selection whereas all other graphs show the data for the first record.	Fixed
25450	User sizes in SOP summary table view are shown to full precision.	Fixed
24911	SOP file path or name is not changed if the SOP is moved or renamed.	Fixed
25683	Result graph X and Y axis options are incorrectly presented.	Fixed

16893	Air pressure detection can sometimes fail to work when running SOPs.	Fixed
23814	Replace air pressure references that state "bar" or "mbar" to say "barg" or "mbarg" as these are the ISO units for gauge pressure.	Fixed
26628	Pre-initialization section of a measurement takes longer and longer with repeated measurements.	Fixed

Known Issues

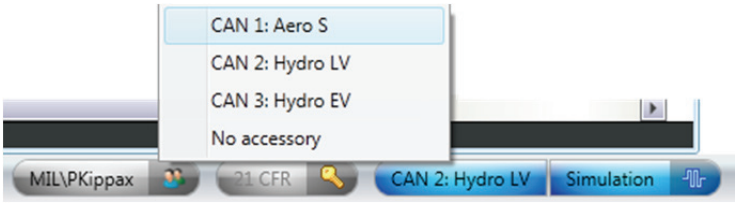
The following software bugs have been discovered within the software, and will be investigated as part of a future release. Please follow the suggested work-around for each issue when operating the software.

Issue	Work Around	Comment
"Failed to reach target air pressure and feeder drive phase lock loop out of lock" message appears when changing the feed rate of the Aero S in Feed Mode.	This bug can be avoided by not continually adjusting the feed rate. If the issue occurs then a software restart is required.	Intermittent Software Bug
Aero S feed rate doesn't match the demanded feed rate, and can jump to 100% feed	Seen for manual measurements only. Manually adjusting the feed rate corrects the issue.	Intermittent Software Bug
Some text still appears in English when running with a different language selected.	The translation of all software text will continue in future releases.	Software Bug
The Contact Malvern feature in the Maintenance window causes the software to crash or displays a message about the wrong parameter format being used.	Manually email the maintenance report text file to helpdesk@malvern.com if support is required.	Software Bug
Software does not open all files selected when they are opened using Windows Explorer.	Use the Open menu option in the Mastersizer 3000 software to open multiple files.	Software Bug
The active accessory is not always changed when the changing between wet and dry cells.	See know issue description below.	Intermittent Software Bug
An empty error message box is shown in the measurement window if the Hydro EV accessory is disconnected during a measurement.	Accessories should not be disconnected during measurements.	Software Bug
Reports occasionally appear blank or empty even when the record selection in the Records View changes.	Adjust the report zoom slider in the bottom right-hand corner of the report window to refresh the display.	Intermittent Software Bug
The software does not warn the user when it cannot open a measurement file within the Recently Used list.	This will occur if a file has been moved or deleted. A fix will be provided in a future software release	Software Bug
Record number and detector number values are displayed to one decimal place on trend and data graphs.	No work-around available. A fix will be implemented in a future software release.	Software Bug

The System Audit displays duplicated columns for each language under which the system has been run when auditing has been enabled.	No work-around available. A fix will be implemented in a future software release.	Software Bug
When graph symbols are displayed in reports, they do not show on printouts.	No work-around available. A fix will be implemented in a future software release.	Software Bug
Various fields in the Edit result window lose their 'edited' blue background appearance when a different page in the editor is selected.	No work-around available. This is a display issue only, as the software correctly applies the edit values when the OK button is pressed.	Software Bug
Software may crash when using the Save option when viewing an extracted SOP.	Use the 'Save As' option instead.	Intermittent Software Bug
The manual measurement settings do not match the connected/active dispersion unit.	See know issue description below.	Intermittent Software Bug
Mastersizer 3000 driver errors appear when using the instrument with a USB 3.0 port.	Always use a USB 2.0 port.	Software Bug
Wet accessories can go into standby mode unexpectedly when switched on for a long period of time.	When this happens, stop all measurements and then open the Manual Measurement, SOP Measurement, or Accessory Control to reactivate the accessory.	Intermittent Software Bug
Downgrading to version 2.01 causes exception.	After installing version 2.10 then downgrading to 2.01, an exception may be seen when the software is first started. To work around this, you need to delete the **Features.xml** file from **C:\ProgramData\Malvern Instruments\Mastersizer 3000\.** This will remove 21CFR settings, which you will then need to reconfigure.	Software Bug

Active accessory does not change when switching between wet and dry measurement cells

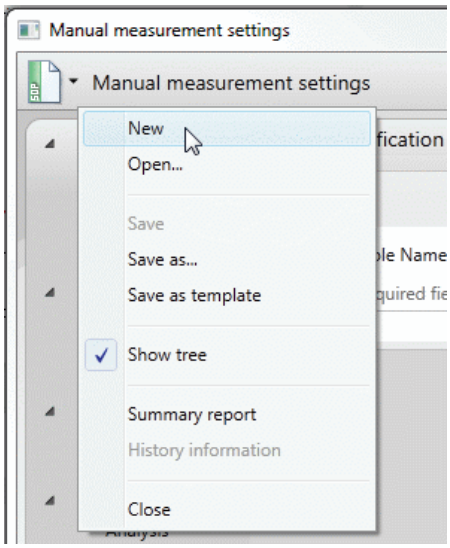
Sometimes, the software does not select the correct accessory when users insert the measurement cell into the instrument bench. If this occurs, users should manually select the accessory by clicking on the accessory icon in the status bar of the main software window. A menu will be shown of the available accessories:



Simply select the accessory from the menu to activate it.

Manual measurement settings do not match the connected / active dispersion unit

Occasionally, users may see the wet accessory related manual measurement settings when a dry unit is attached, or visa-versa. If this occurs, open the manual measurement settings window and click the **New** menu item from the Window Features menu:



This will reset all measurement settings to their defaults for the active accessory type. This issue has been reported after upgrading from early versions of the software, but does not occur on all systems.

Backward Compatibility

This software is only compatible with the Mastersizer 3000 (MAZ3000) system, and cannot be used with the Mastersizer 2000 (APA2000) system. It is possible, however, to review Mastersizer 2000 results within the Mastersizer 3000 software. Please refer to the user manuals and software help for guidance as to how this is achieved.

File Types and Locations

The Mastersizer 3000 software uses a series of different file types in order to store data and measurement settings. These are described below, in order to help users who wish to secure the Mastersizer 3000 system using the Microsoft Windows security and access settings.

File Type	Extension	Default Path
21CFR11 mode: Audit trails	.xml	C:\ProgramData\Malvern Instruments\Mastersizer 3000\Audit Trails
User sizes	.siz	C:\ProgramData\Malvern Instruments\Mastersizer 3000\User Sizes
User defined materials	.mmat	C:\ProgramData\Malvern Instruments\Mastersizer 3000\Materials
User defined dispersants	.mdis	C:\ProgramData\Malvern Instruments\Mastersizer 3000\Dispersants
Data quality addins	.mdaq	**Shared workspace:** C:\ProgramData\Malvern Instruments\Mastersizer 3000\ Workspace\Data Quality Addins **Private workspace:** C:\Users*{user_name}*\Documents\Malvern Instruments\Mastersizer 3000\Workspace\Data Quality Addins
Export data	.txt, .csv, .rtf	**Shared workspace:** C:\ProgramData\Malvern Instruments\Mastersizer 3000\ Workspace\Export Data **Private workspace:** C:\Users\KBaines\Documents\Malvern Instruments\Mastersizer 3000\Workspace\Export Data

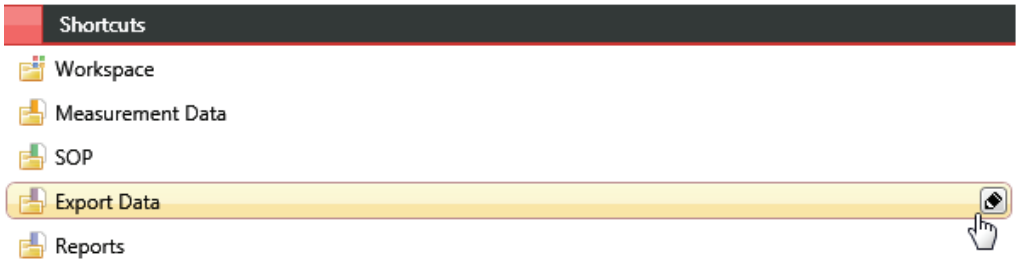
Measurement data	.mmes	**Shared workspace:** C:\ProgramData\Malvern Instruments\Mastersizer 3000\ Workspace\Measurement Data **Private workspace:** C:\Users\KBaines\Documents\Malvern Instruments\Mastersizer 3000\Workspace\Measurement Data
Reports	.mrep	**Shared workspace:** C:\ProgramData\Malvern Instruments\Mastersizer 3000\ Workspace\Reports **Private workspace:** C:\Users*{user_name}*\Documents\Malvern Instruments\Mastersizer 3000\Workspace\Reports
SOP templates	.msot	**Shared workspace:** C:\ProgramData\Malvern Instruments\Mastersizer 3000\ Workspace\SOP Template **Private workspace:** C:\Users*{user_name}*\Documents\Malvern Instruments\Mastersizer 3000\Workspace\SOP Template
SOP	.msop	**Shared workspace:** C:\ProgramData\Malvern Instruments\Mastersizer 3000\ Workspace\SOP **Private workspace**: C:\Users*{user_name}*\Documents\Malvern Instruments\Mastersizer 3000\Workspace\SOP
Data export templates	.mext	**Shared workspace:** C:\ProgramData\Malvern Instruments\Mastersizer 3000\ Workspace\Data Template **Private workspace:** C:\Users*{user_name}*\Documents\Malvern Instruments\Mastersizer 3000\Workspace\Data Template
Various system wide configuration files	Various	C:\ProgramData\Malvern Instruments\Mastersizer 3000

Changing the destination path for a particular file type

The following workspace folders can be configured from within the Mastersizer 3000 software:

- SOP
- Measurement Data
- Reports
- Export Data

To change the default file location for these files, click on the pencil icon which appears when you hover over the shortcut to the directory with the Workspace viewer:



Changing the directory associated with this shortcut will change the default directory accessed by the Mastersizer 3000 software for the selected file type.

Making a backup of the files

The Mastersizer 3000 software does not create backup copies of any of the file listed above. However, there are third-party software tools that will allow you to schedule regular backups, if required, for each of the file locations.

Why do you no longer use the Program Files folder?

With the introduction of Windows Vista and Windows 7, Microsoft changed the default permissions for the Program Files folder to prohibit software maliciously changing files associated with installed software. All software runs with standard user permissions on Windows Vista/7, even when a user is logged in as an Administrator. By adhering to these default permissions, Malvern's software platforms can execute without additional configuration changes by the end user.

New Features Description

SOP Player

Mastersizer 3000 v2.10 includes a new SOP player feature, which enables users to define an SOP playlist sequence where results can be automatically collected for a single sample using different measurement and/or analysis settings.

In order to set up an SOP playlist, users first need to create a set of SOPs for the dispersion unit they want to use that contain the measurement settings required for the sequence. Then, select the **SOP Player** option from the ribbon bar. When this is done, the SOP Player dialogue will open:

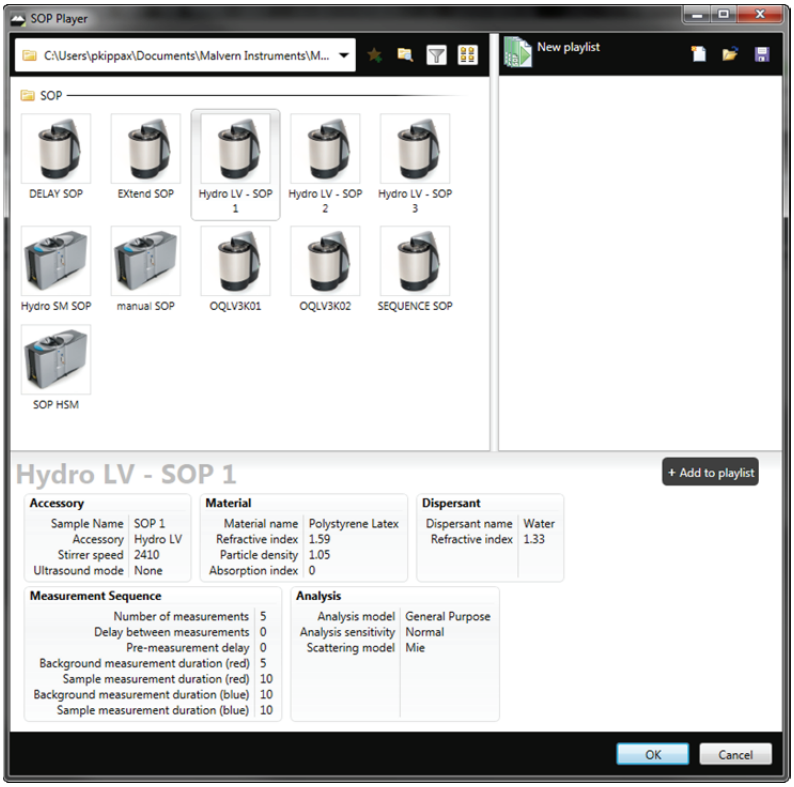


Figure 1: SOP Player dialogue.

The SOPs available for use in a playlist are shown on the left of the SOP Player dialogue, and the current playlist is shown on the right. The details for the currently selected SOP are provided in the section along the bottom of the dialogue, allowing users to confirm the settings the SOP file contains. To add SOPs to the player, you need to select them from the available SOPs list and drag them into the SOP playlist. When you've selected your SOPs, the player should look like this:

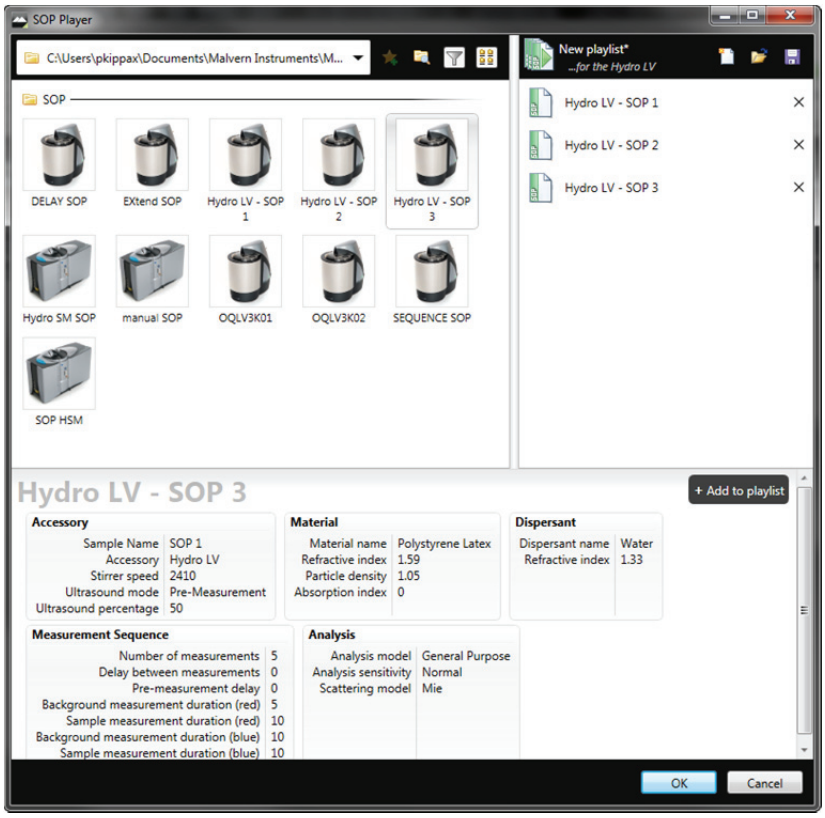


Figure 2: SOP player dialogue with an SOP playlist defined.

The SOP at the top of the playlist (**Hydro LV – SOP 1** in this case) is used to initialize the Mastersizer 3000 system and request sample details. The final SOP (**Hydro LV – SOP 3** in this case) is used to control the clean sequence. The dispersion unit, measurement and analysis settings for each SOP in the list are applied in sequence when the playlist is run. SOP playlists can be saved and loaded using the file options at the top of the SOP playlist. Once the list is set up, the sequence can be run by clicking OK.

When the sequence is playing, the current SOP name is reported in the window bar for the measurement manager:

Apart from this change, the measurement should run in a similar way to standard SOP-based measurements.

System Health Check

A new option has been provided in v2.10 to allow users to check that their Mastersizer 3000 system is functioning correctly. The tests applied are a sub-set of the test procedures used in Malvern's production department when manufacturing the Mastersizer 3000 system.

Access to the health check is provided via the **Tools->Maintenance** dialogue:

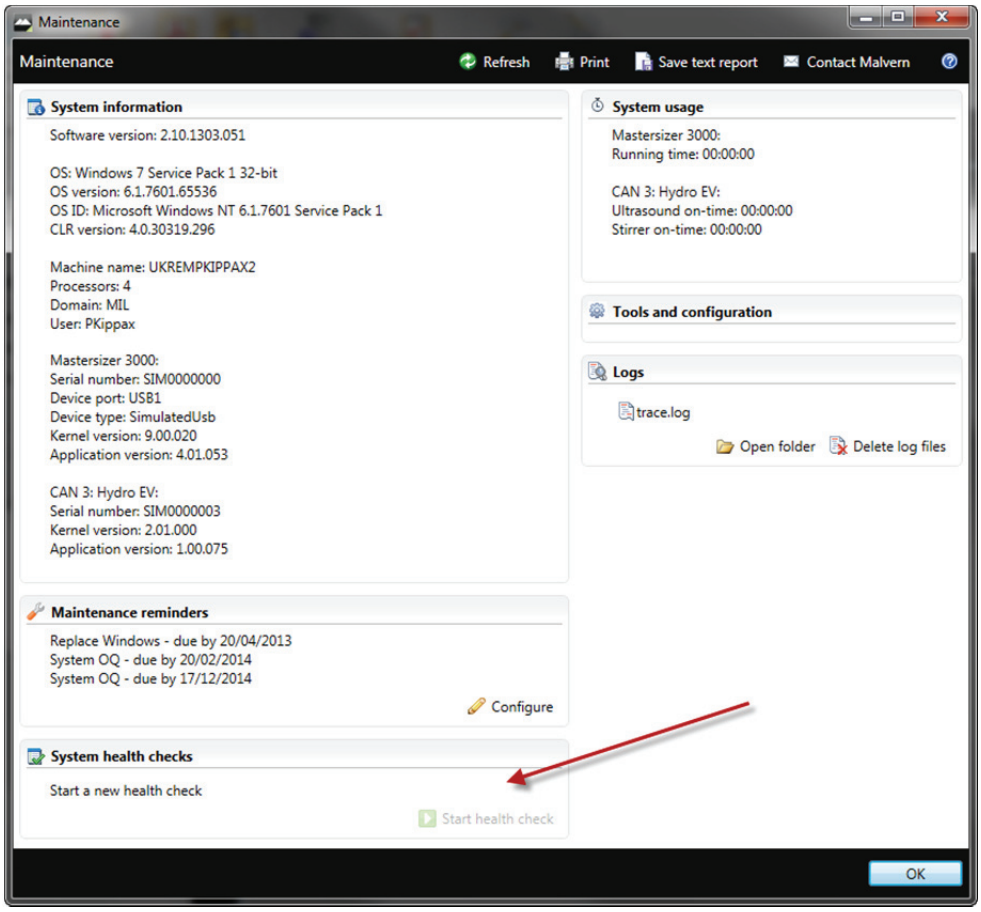


Figure 3: Maintenance window, including the new system health check option.

Connection to a system is required for this option to work. Click **Start health check** to start the test sequence. The result of the tests is reported in the **System health checks** section of the maintenance dialogue.

Copying from report elements

In v2.10, it is now possible to copy most report elements as text, enabling users to quickly export data to other Windows applications. To do this, right-click on the report element containing the data you want to access and select the **Copy raw data** option. This will enable the following data to be copied to the clipboard:

- **Size distribution graphs**: copies the complete size distribution data set, including data for all results which are over-plotted on the graph.
- **Result tables**: copies all of the size distribution data from the table.
- **Parameter grids**: copies all values for the parameters listed in the selected grid, including measurement details, analysis settings and results.
- **Data and fit graphs**: copies a data set reporting the measured signal per detector.
- **Trend tables**: copies all of the table data.

Changing the font style for report parameters

It is now possible to change the font style and color used for parameters included in report parameter grids. To do this, access the report edit mode and hover the mouse pointer over the parameter to be configured. This will cause a font edit icon to appear as part of the parameter selection area:

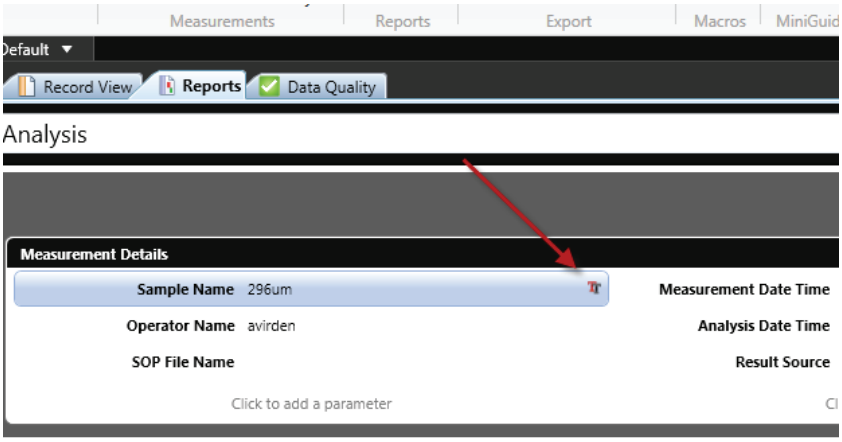


Figure 4: Parameter format edit function.

Clicking on this icon causes a menu to appear where the color and font style for the parameter can be changed, providing users with the ability to highlight key parameters:

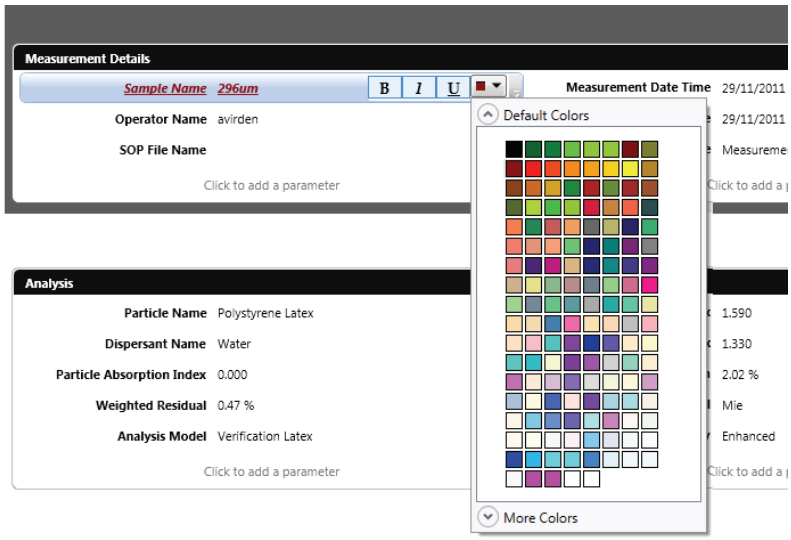


Figure 5: Parameter font and color options.

Service and Maintenance Reminders

In v2.10, reminders can be set up within the software to prompt users to carry out routine maintenance tasks. To configure these, access the **Tool->Maintenance** dialogue. Within this, there is now a **Maintenance reminders** section, listing the current reminders which are active for the system:

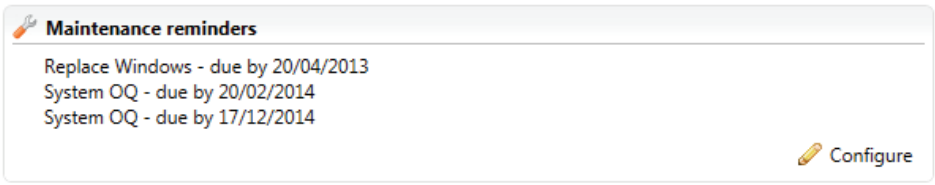


Figure 6: Active maintenance reminders.

To add a new reminder, click on the **Configure** icon. This causes a list of all the current maintenance tasks to appear, from which you can edit existing tasks or add new items:

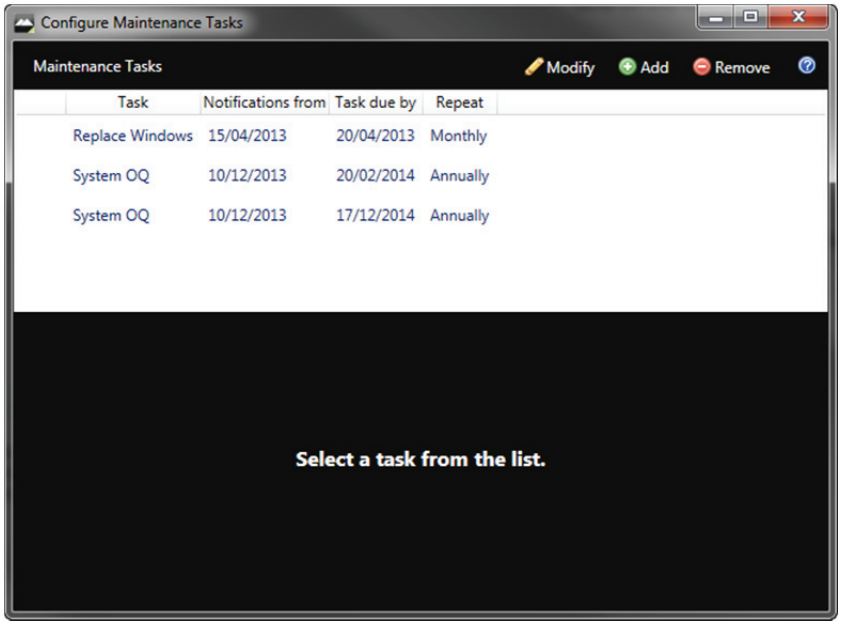


Figure 7: Configuration view for maintenance reminders.

Click 'Add' to set up a new maintenance task:

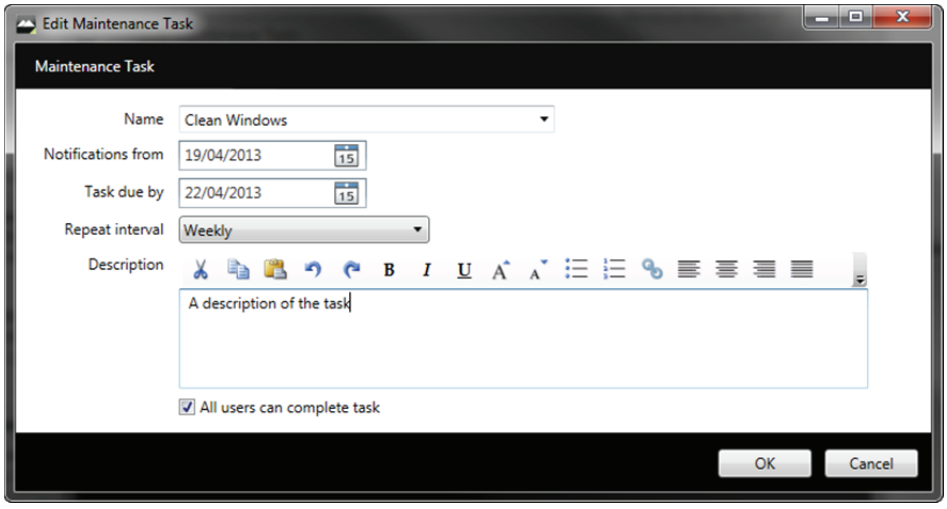


Figure 8: Maintenance reminder set-up dialogue.

The details required include:

- **Name:** a task name.
- **Notifications from:** the date when users should start being prompted to carry out a task.
- **Task due by:** the date by which the task needs to be completed.

- **Repeat interval:** how often the task should be done (weekly, monthly, yearly, etc).
- **Task description:** text providing guidance as to what needs to be done by the user.
- **All users can complete task** option: option to set whether any user can complete the task. If this is left un-ticked then only users who have the **Open Maintenance** security permission assigned to them can set the task to done. This could, for instance, apply to tasks associated with booking a service or OQ visit, where it would be the lab manager's responsibility to complete the task.

Users are alerted to tasks which are due to be carried out by a **Maintenance** icon in the Mastersizer 3000 application's status bar. Clicking on this causes the item detail to be displayed:

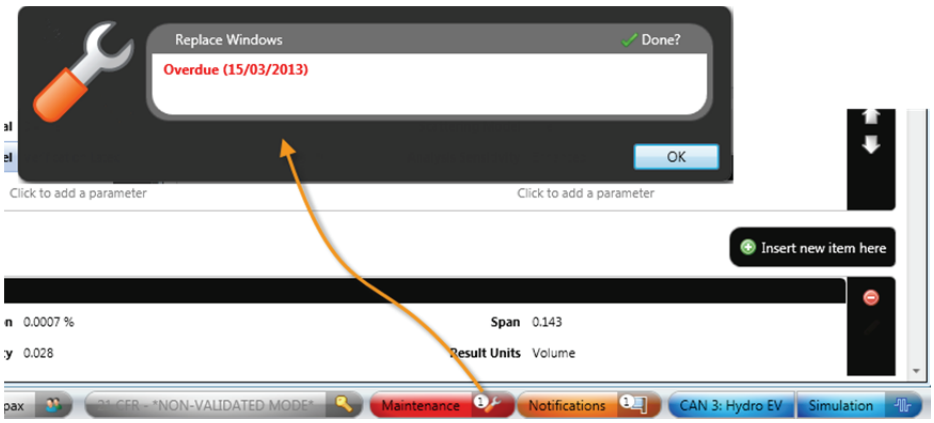


Figure 9: Maintenance reminder display.

Clicking on the **Done?** icon clears the task. If the task is not completed by the due date then a service **Notification** is generated and is displayed on the application's status bar.

Show current record versions in the records view

In previous versions of the Mastersizer 3000 software, Malvern offered the ability for users to view the current version of all records by using a file tree structure within the records view. This simplified the record view list in the case where multiple edits were carried out (for example, during method development). Unfortunately, this option caused the software to crash, and it was therefore withdrawn in v2.01.

In v2.10, a new ribbon bar option has been added which allows users to simplify the records view so that only the current versions of results are shown:

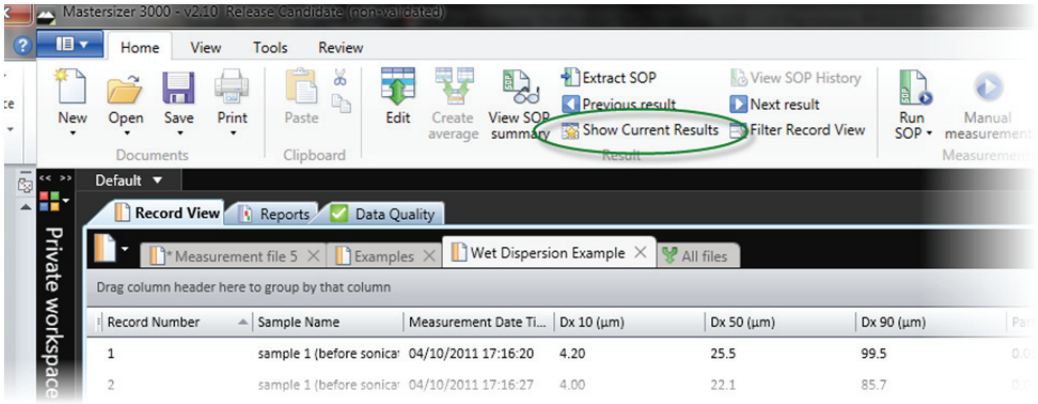
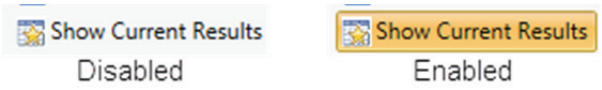


Figure 10: Show Current Results option.

The shading around the option changes according to its state:



When the option is enabled, only the current versions of records are shown. All other versions are hidden until the option is disabled.

Virtual lens ranges

A set of virtual lens ranges are now available as part of the advanced analysis options. These have been included to help with method transfer from older Malvern laser diffraction systems:

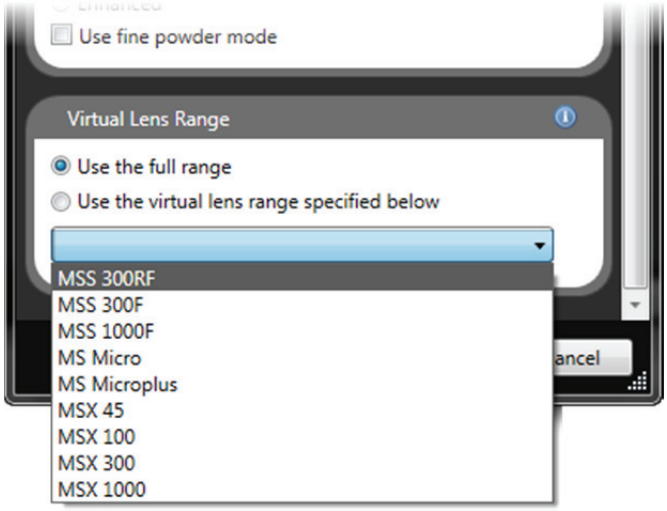


Figure 11: Virtual lens range selections.

Selecting each lens range will truncate both the detector range and the size range of the Mastersizer 3000 system to match the selected system.

Reporting sieve MESH sizes

It is now possible to set up result tables to display results using sieve MESH sizes. This is configured via the User Sizes SOP options.

In order to display MESH sizes, users must first load the required sieve size data into the **Data Processing->User Sizes** section of the SOP options. To do this, select the **Use the sizes that I specify** option and then load in the file containing the data for the sieve set you want to use. Sieve sizes are available for all standard ASTM, BS, ISO and Tyler sieve sets.

For the ISO sieve size sets, the size class data includes a list of the micron sizes for all of the available sieves. As such, the size class files for these sieves are in the same format as the standard Mastersizer 3000 size class files. In contrast, the ASTM, BS and Tyler sieve size class files include a MESH reference for each size class. As an example, here is the data loaded in for the BS410 sieve size classes:

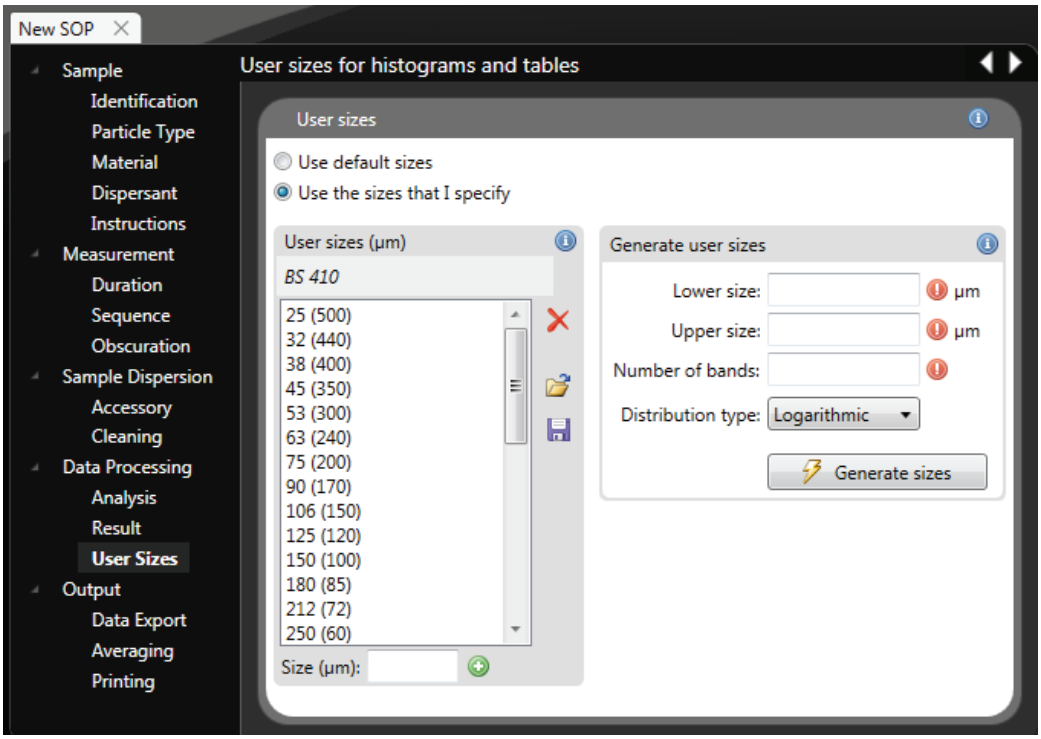


Figure 12: User size selection of BS140 sieves.

The user size list in this case includes the microns size, along with the MESH size in brackets. Users can remove different size classes from the list in order to define the sieve set they wish to use for reporting purposes.

The final step in reporting MESH sizes is to configure the result table in a report to use the MESH sizes stored in the User Sizes file rather than microns sizes. To do this, create a result table in a report, and then change the properties of the table to report the **Size in Sieve Mesh Values (if available)**:

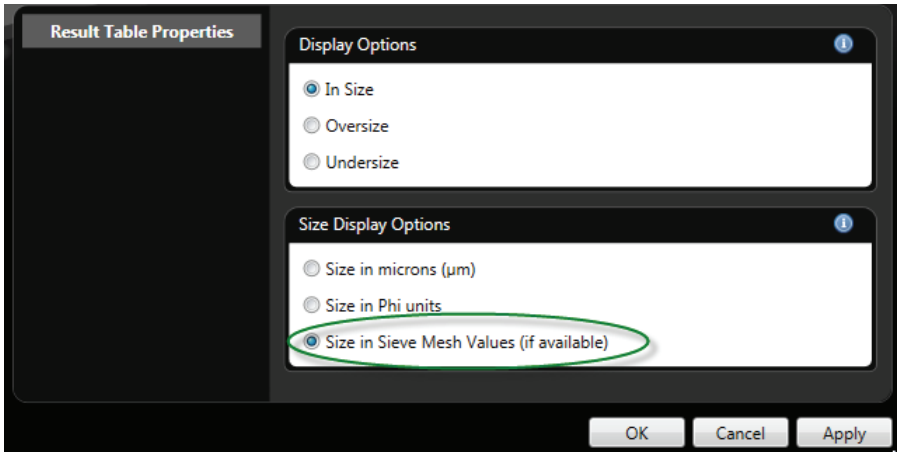


Figure 13: Report table option for displaying MESH sizes.

This will cause the result table to show MESH sizes.

Extend Result

A new Extend result function is now available as part of the **Data Processing->Result** settings for SOPs:

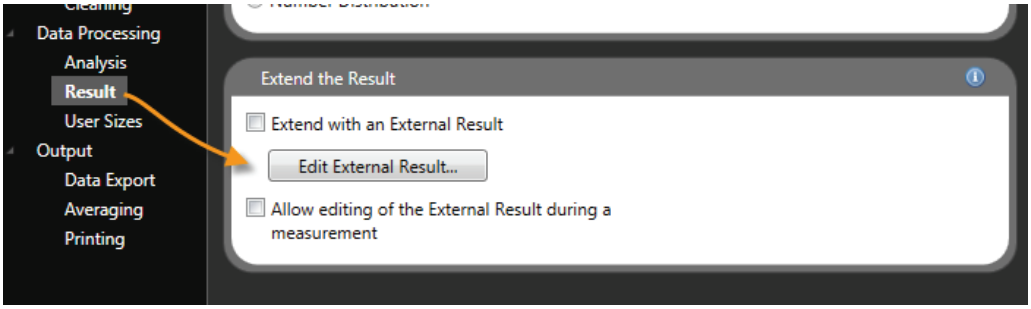


Figure 14: Extend result option.

To enable a result extension, first click the **Extend with an External Result** option. Then, click the **Edit External Result…** button to enter the size band data which you want to add to the Mastersizer 3000 result. This causes the following dialogue to appear:

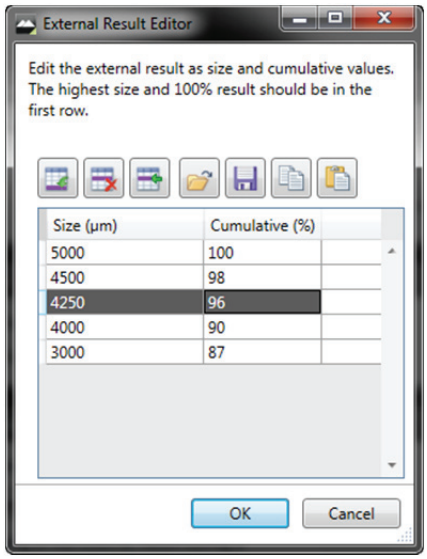


Figure 15: Extend result data entry.

Use the controls at the top of this dialogue to add or remove size bands relating to the technique you are using to extend the result. Values for the size of each band and the cumulative percentage below each size band can be entered by clicking within the table. The only requirement is that 100% of the volume of material must be present below the largest size specified in the table.

Clicking OK stores the extended result data as part of the SOP settings. These values can either be fixed for all measurements, or you can allow users to edit the applied values by enabling the **Allow editing of the External Result during a measurement** option. This enables users to enter new undersize data values for the extended size bands each time the SOP is run.

Note that, in the case where the extended size band set overlaps the Mastersizer 3000 result, it is assumed that the extended result is correct. The Mastersizer 3000 result will therefore be truncated and renormalized to fit with the extended result data set.

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