Inclusions

The system allows working with the inclusions in the polished diamond.

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Access information about inclusions

Information about inclusions, their positions, sizes, and shapes comes with the project file containing a model. The information itself is gotten by external tools.

Note Inclusions can also be created manually in the HP Oxygen system itself. See Created Cr	te inclusions manua	Ily below.		
access information about inclusions, do one of the following:				
the Recut mode, on the left panel, overview of the Inclusions section.		inclusions On the top panel, click in polished Inclusions in polished. The main v	ew goes into the Inclusions mode, the left panel goes into Plar	ns & Scans
Carbon - [MC Project-1; Preset-1; P. Result, peop] File [dt View Inclusion Workson Settings [de] Preset ensore file and the set of the set o	** – 🗆 X		* - □ X • P P # \$	
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Filter inclusions with QC filter

You can filter inclusions visualization in Scene. This can be done via the Inclusions panel, its QC Filter (Quality Control Filter).

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s Mode.				
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		V QC Filler			
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SI1 SI1 Curved Crack-6	• SI1	v			
SI1 SI1 Flat Crack-4	• SI1				
SI2 SI2 3D-7	• SI2				
SI2 SI2 3D-8	• SI2	V			
CD CD Flat Crack 1	en 🗌				
Appraiser	Manual appr	raiser selection			
Diamond Allocation					

Activate the QC Mode button to start using specified filters. De-activate it - all solution inclusions will be displayed without filtering.

The $\ensuremath{\textbf{QC}}\xspace$ Panel applies filters to the model inclusions, such as:

- Clarity select one or several clarity values from the list only inclusions with the specified clarities will be displayed
- Diamond for multiple diamond solutions you can select only inclusions for the selected diamond will be displayed
- Inside/Outside check if to display inclusions inside, outside the diamond or both
- Depth of the area where to display the inclusions (works together with Inside/Outside) use the slider or type in the value in µm

Filters utilize the AND logic, for example, if "Diamond 1", VS1 clarity, "inside" and 90 µm are selected, then only VS1 inclusions within 90 µm area inside Diamond 1 will be displayed.

A Notes

- For now, the diamond filter cannot work with nonconvex models.
- Rarely, some filter combinations may cause the filter to fail, the system shows notification try other parameters if so.

Use inclusions statuses

To change how inclusions affect algorithm work and produced solutions, you can change the statuses of the inclusions.

Status	Instructs an algorithm	May be used for
Green Status	"You should not do anything to include or exclude these inclusions".	Speeding up an algorithm work by marking the inclusions that you are sure do not affect the result (definitely will be outside or inside potential diamonds).
Yellow Status	"You should exclude or include these inclusions depending on condition".	Automatic show up only the solution with a better price (may be with or without marked inclusions).
Red Status	"You should exclude these inclusions".	Getting better clarity.
Grey Statuses	"These inclusions do not exist".	Getting maximum mass.

See the details in the sections below.

The default status of inclusion is set automatically due to its clarity group. The approximate correspondence is like following:

Clarity Group Default Status

IF	Green
VVS1	
VVS2	Yellow
VS1	
VS2	
SI1	
SI2	
SI3	Red
11	
12	
13	

Green status

Specifying this status instructs the algorithm "You should not do anything to include or exclude these inclusions". May be used for speeding up an algorithm work by marking the inclusions that you are sure are not important.

Yellow status

Inclusions having this status may be included or not included in the solution.

The algorithm:

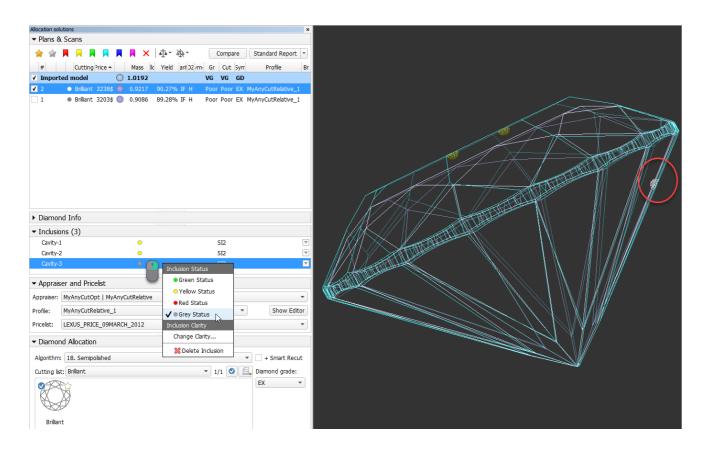
- takes all the yellow inclusions of the worst clarity group, marks them as red and builds the solution which does not include these inclusions, estimates its price;
 takes the same inclusions, marks them as green and builds the maximum mass solution that may have these inclusions inside, estimates its price;
- 3. compares prices;
- 4. selects only the solutions with a higher price;
- 5. makes one step up in the hierarchy of clarity groups and repeats steps 1-4 for it;
- 6. compares prices of previous and current clarity groups solutions;
- 7. shows only the solutions with a higher price.

Red status

Specifying this status instructs the algorithm "You should exclude these inclusions". May be used for getting better clarity.

Grey status

Inclusions having this status will not be taken into account during allocation. The solutions are built as if these inclusions do not exist, they are still presented within the produced solutions and affect their price.



Clarity groups

The system automatically assigns the clarity group to every inclusion in accordance with the size of the inclusion. If necessary, you can change the clarity group of the inclusion manually.

Cavity-1 SI2 Inclusion Status Appraiser and Pricelist Appraiser: MyAnyCutOpt MyAnyCutRelative Profile: AnyCutRelative_ForSquareCutting Pricelist: LEXUS_PRICE_09MARCH_2012 Inclusion Clarity Change Clarity		ons (1)						
Appraiser and Pricelist Appraiser: MyAnyCutOpt MyAnyCutRelative Profile: AnyCutRelative_ForSquareCutting Pricelist: LEXUS_PRICE_09MARCH_2012 Inclusion Clarity Change Clarity Show Edito Show Edito Cavity 1 Current clarity group: S12 Cancel Inclusion Clarity Specify Inclusion Clarity Change Clarity Specify Inclusion Clarity Specify Inclusio	Cavity-:	1	•	SI2	(
WS2 VS1	Cavity-: • Apprais Appraiser: Profile:	1 Ser and Pricelist MyAnyCutOpt MyAny AnyCutRelative_ForSqu	/CutRelative uareCutting	· · · · · · · · · · · · · · · · · · ·	Show Edito	 Green Status ✓ Yellow Status Red Status Grey Status Inclusion Clarity Change Clarity	Cavity-1 Current clarity group: S12 Car Inclusion contrast: High Automatic measurement results: Dimensions: 200 x 200 x 100 Suggested clarity group: S12 O 0K, 1 agree with suggested clarity O 0K, 1 agree with suggested clarity IF UVS1 UVS1 UVS1 UVS2	K ncel

Clarity groups of the inclusions define the final clarity of a stone. Note that there is a default clarity setting in the system, which describes the accuracy of the current observing tool (lens, microscope). It means "the clarity is this because with this observing tool we cannot see anything smaller".

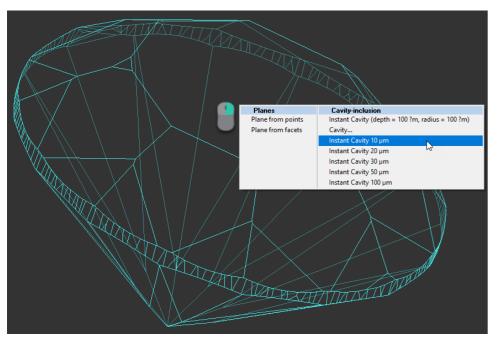
Default Diamond Clarity	& Color		>	<
Select default color: Select default clarity for clear diamonds	H VS1	~ [~	OK Cancel]
The value means in newly allocated cla		ity to be as:	signed to	
Please notice: this va inclusions with better allocated clear diamo specified in your proje	clarity. In this o nds correspond	case the cla	rity of newly	

The setting is available from the main menu, Settings > Default diamond clarity and color.

Create inclusions manually

You can create inclusions manually in HPO:

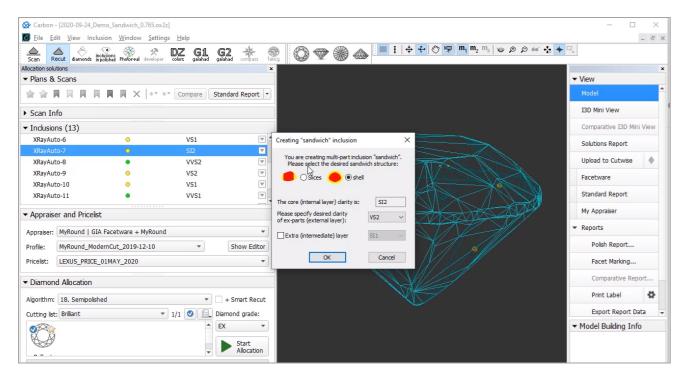
- 1. Use the Recut mode.
- In the Scene, right-click the model at the position where you want to place a new inclusion.
 From the context menu, select the appropriate inclusion option from the list.



The inclusion will be created.

Create "sandwich" inclusions

For the stones with inclusions, the system now supports the ability to increase in some cases the mass of the solution by specifying that some part of inclusion can be included in the future solution. This can be done by marking an inclusion as multi-part ("sandwich").



For a future "sandwich" inclusion you can specify:

- Desired structure: Slices (Recommended) or Shell.
- Desired clarity of the external layer compared to the internal layer clarity.
- Optionally Extra (intermediate) layer presence and clarity.

To make an inclusion "sandwich":

- 1. In the Recut mode, access the Inclusions panel.
- 2. From the menu for your inclusion, select Make Sandwich. The Creating "Sandwich" Inclusion dialog is displayed.
- 3. Specify the "sandwich" options and then click OK. In the Inclusions panel, your inclusion will be slit into the corresponding parts.
- 4. Run optimization with your new inclusions.

You can find some details in the video below:

Video Increas	ing Mass - Using Sandw	rich Inclusions		
Published:	2020, October 16	Last Updated:	2020, October 16	v.2.0
Your browser do	pes not support the HTML	5 video element		
It splits anThe extern	Inclusion function allows in inclusion into layers	uded in the solution the	a solution without a decrease us it becomes bigger, increas s keeps the Clarity bigh	,

- Big inclusions outside but close to the surface give the chance for using "Sandwich"
- Appropriate inclusions can be searched using QC Panel

Video keywords: clarity, inclusion, sandwich, QC panel

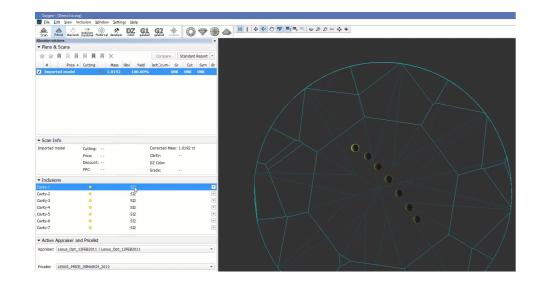
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Published in:	Release Notes	2020-12-29 - HP Carbon 1.1.33
	Documentation	Inclusions
	Playlists	All Videos YouTube: HP Carbon
	Also	As Separate Page On YouTube Specification

Deleting inclusions

You can delete existing inclusions. This can be useful if some caverns have been added by mistake.

To delete the inclusion:

- 1. In the Plans & Scans mode, in the Inclusions section, right-click the inclusion you want to delete.
- The context menu is displayed.
- 2. From the context menu, select Delete Inclusion.



() Alternatively, you can delete inclusion using the pop-up menu.

Cavity-2		SI2	
Cavity-3	•	SI2	Michasion Status
Cavity-4	0	SI2	Green Status
Cavity-5	•	SI2	✓ ○ Yellow Status
Cavity-6	•	SI2	Red Status
Cavity-7	•	SI2	Inclusion Clarity
			Change Clarity
 Active Apprais 	er and Pricelist		X Delete Inclusion

You can delete several inclusions at once. To do so:

Select inclusions clicking their names holding the CTRL or SHIFT keys
 Use the context or pop-up menu as described above.