FoamGeo

User Guide

GEODICT Release 2026

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GeoDict

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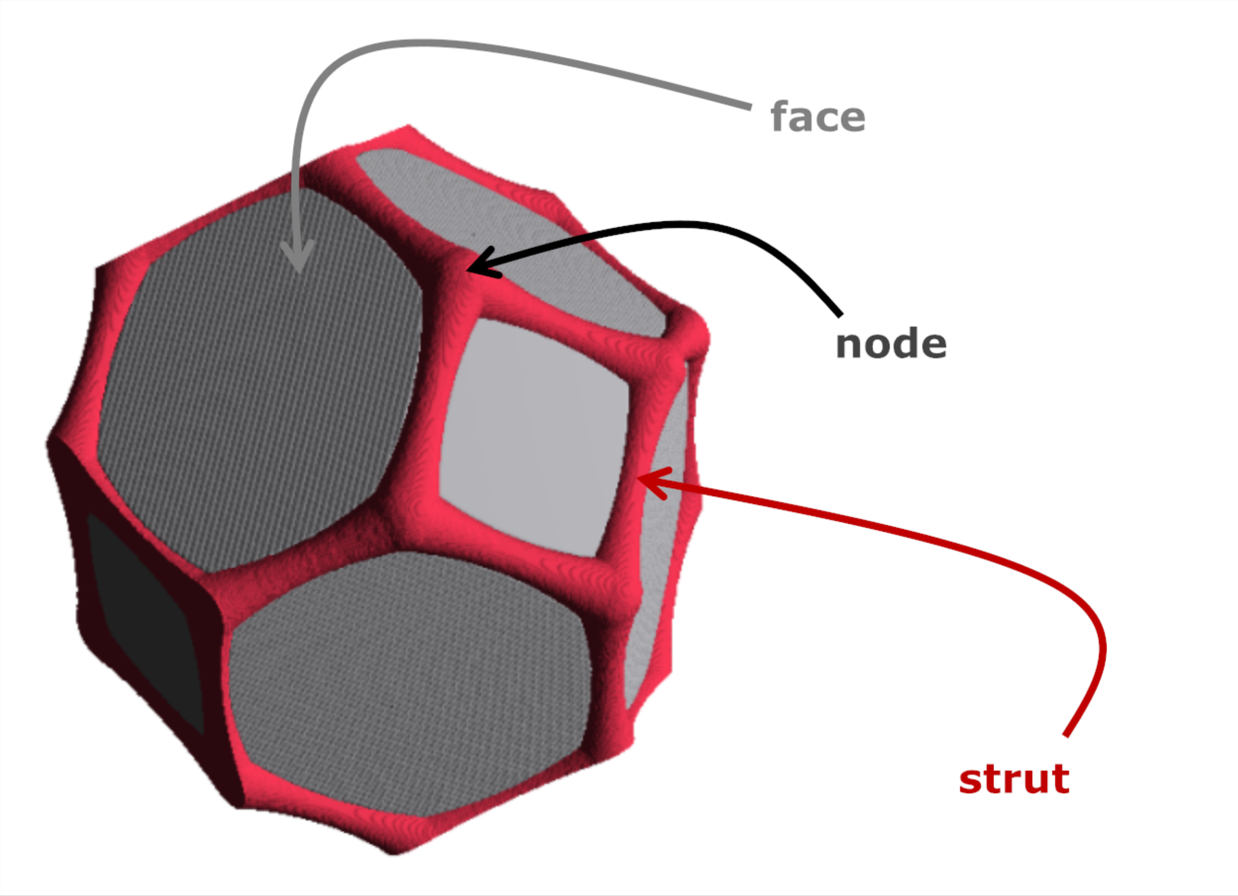
FoamGeo

1 FoamGeo

The FoamGeo module in GeoDict is used to model regular Kelvin structures and random foams. A foam consists of individual cells that have the following components:

- A **strut** is an edge of a foam cell.
- A **node** is where the struts meet.
- A **face** is a surface surrounded by struts and nodes. No faces are generated when the structure is an open-cell foam (as opposed to a closed-cell foam).



New in GeoDict 2026

- The number of parallel processes used for the generation of a random foam can now be specified in the GUI.

Two types of foams can be generated with FoamGeo:

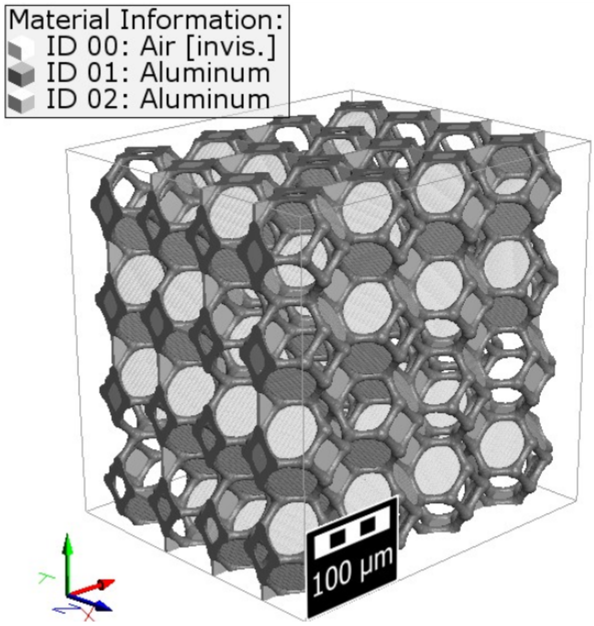
- [Kelvin Structure](5)
  Kelvin structure generation options.
- [Random Foam](25)
  Random foam generation options.

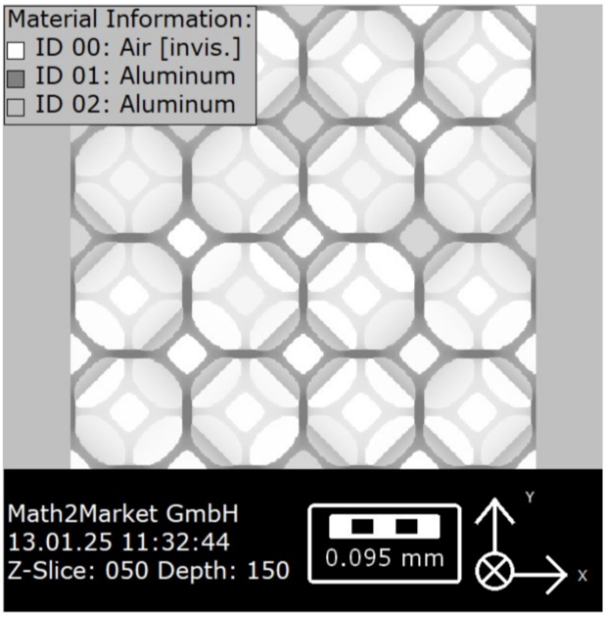
Join the conversation

Visit the Community on GeoDict Forum to be inspired and get answers to top questions.
Find illustrative application examples on the website.
Our tutorials and seminar videos give you a first hands-on experience. They are collected in the Learning Center.
Send your Support Request to our technical Support.

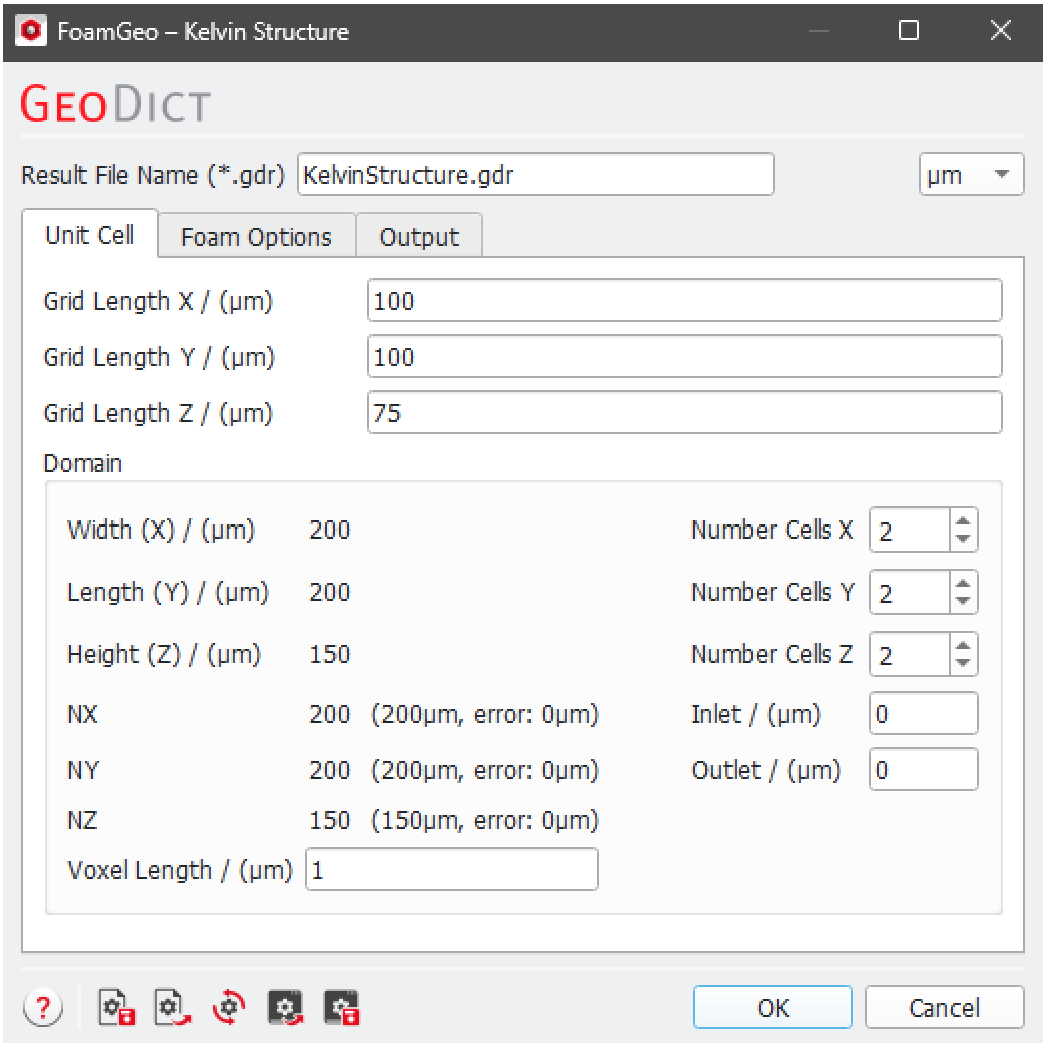
1.1 Kelvin Structure

Kelvin Structures are regular foams based on the bitruncated cubic honeycomb (or tessellation) by which space is partitioned into cells of equal volume. Kelvin structures are made up of 4 truncated octahedra around each vertex. Being composed entirely of truncated octahedra, it is cell-transitive. It is also edge-transitive, with 2 hexagons and one square on each edge, and vertex-transitive. It is one of 28 uniform honeycombs.





The **FoamGeo - Kelvin Structure** dialog box for the generation of Kelvin structures opens by clicking the **Edit...** button. It contains the **Unit Cell**, **Foam Options**, and **Output** tabs. The available units (m, cm, mm, µm, nm, and Inch) are selectable from the pull-down menu on the top right.



A customized **Result File Name (*.gdr)** can be entered to differentiate the results of different FoamGeo runs. The *.gdr result file created during the generation is automatically saved to the chosen project folder.

Learn how to generate a Kelvin Structure:

- Unit Cell 6
  A Kelvin Structure consists of multiple unit cells that can be defined under the Unit Cell tab.
- Foam Options 9
  The Foam Options tab allows you to enter the materials of the foam components and the strut options.
- Output 19
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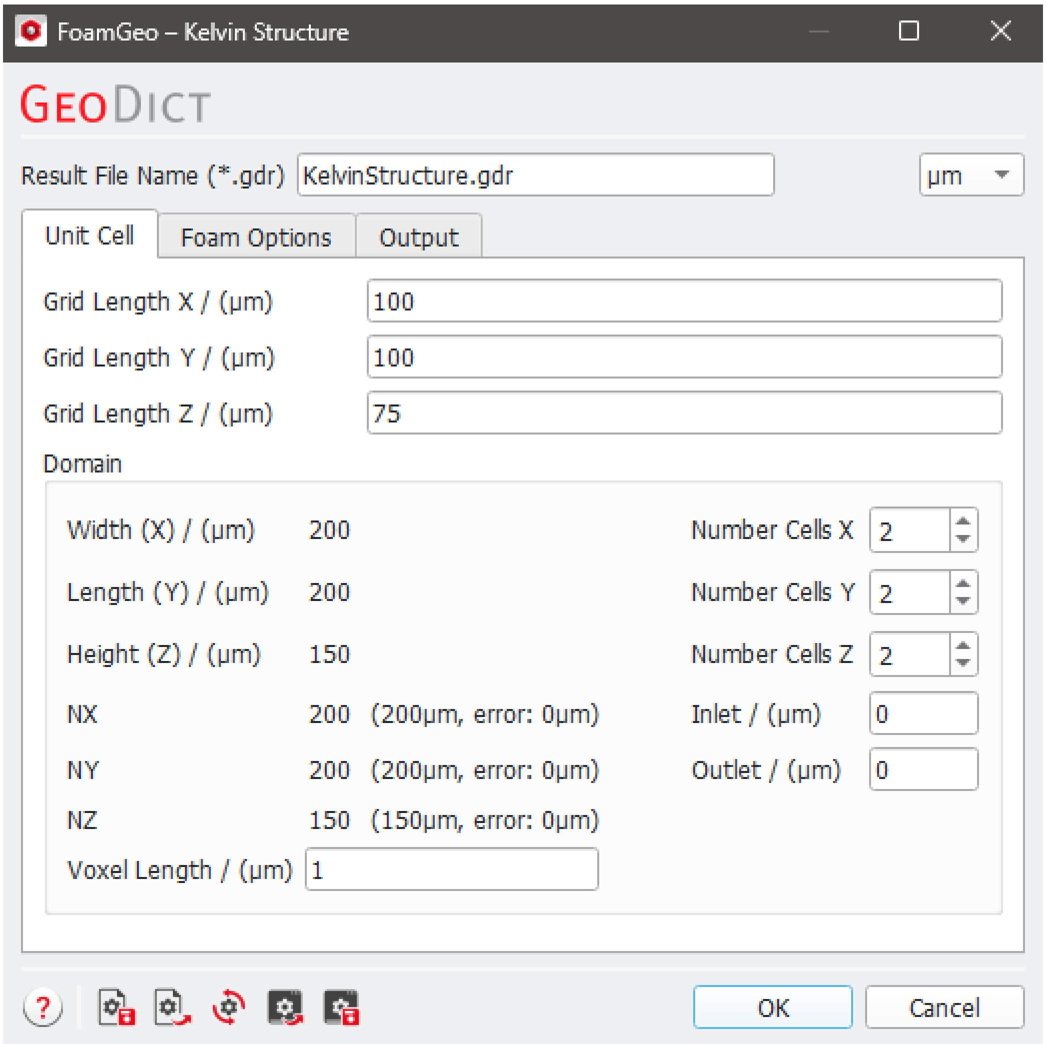
- Result Files 21
  Description of Kelvin Structure results and resulting files.

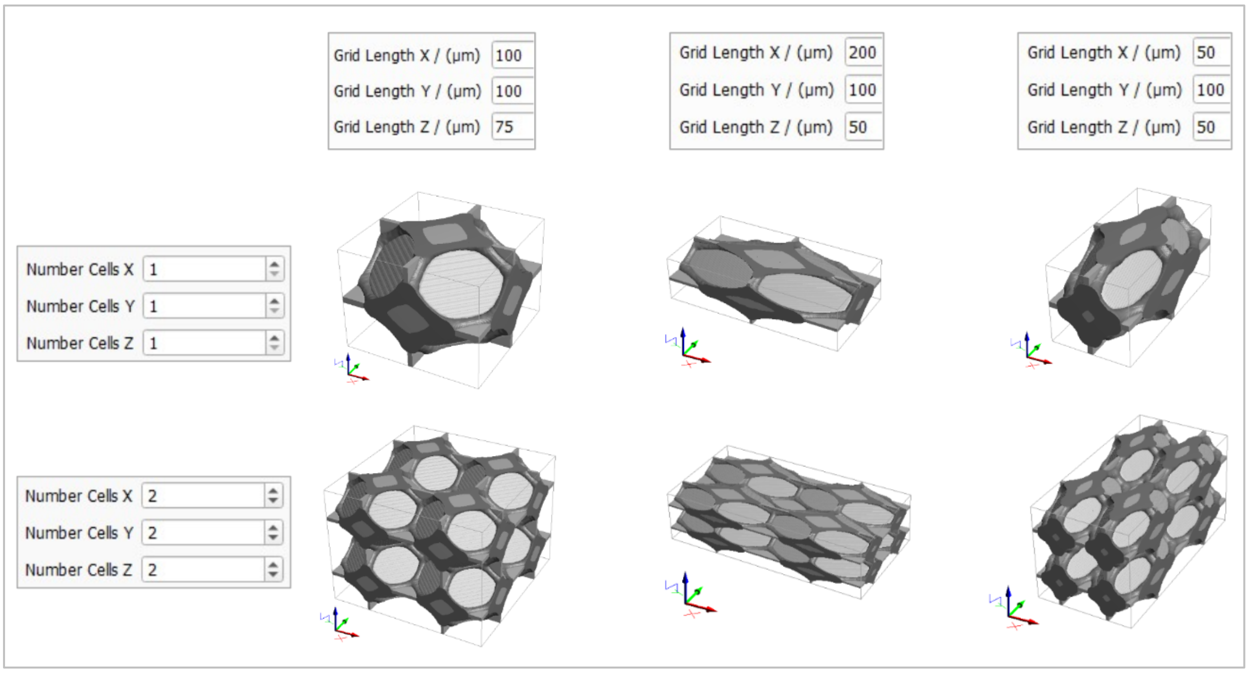
1.1.1 Unit Cell

A Kelvin Structure consists of multiple unit cells, which can be defined under the **Unit Cell** tab.



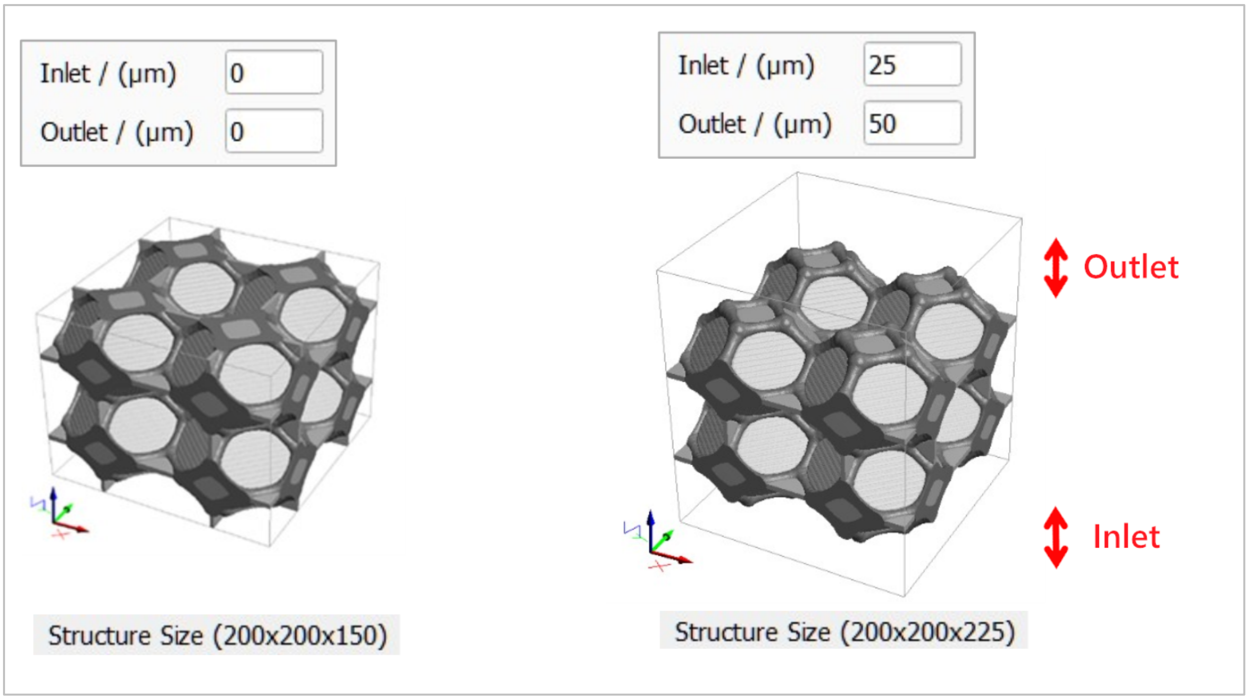
The size of a cell is defined by its length in each direction, **Grid Length X**, **Grid Length Y**, and **Grid Length Z**. The default values define a Kelvin structure of 100 x 100 x 75 µm, but these values can be changed as shown below.

The total size of the final Kelvin structure is the product of the grid lengths and the number of cells (**Number Cells X**, **Number Cells Y**, and **Number Cells Z**) that should be generated in the three directions in the **Domain** panel.



Additionally, an **Inlet** and **Outlet** for the structure can be specified. The full size of the foam in Z-direction is the result of combining the **Grid Length Z** for all cells and the size of the **Inlet** (below) and **Outlet** (above) void regions.

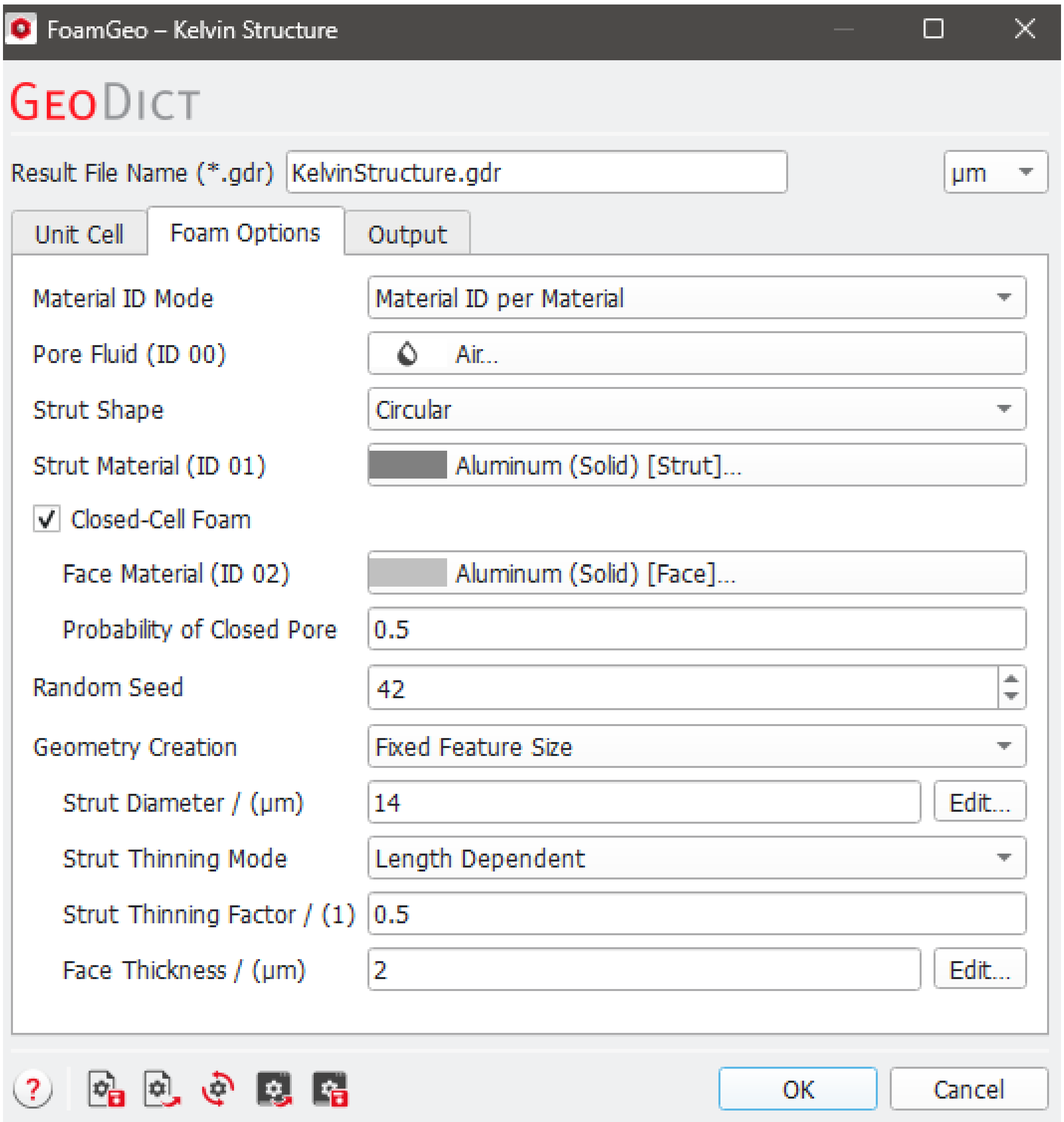
The following foams are generated with and without **Inlet** and **Outlet**.



The final size of the domain is shown in the chosen metrical unit as **Width (X)**, **Length (Y)**, and **Height (Z)** in the **Domain** panel of the **Unit Cell** tab. Also shown are the number of voxels in each direction (**NX**, **NY**, and **NZ**), which depends on the defined **Voxel Length**.

1.1.2 Foam Options

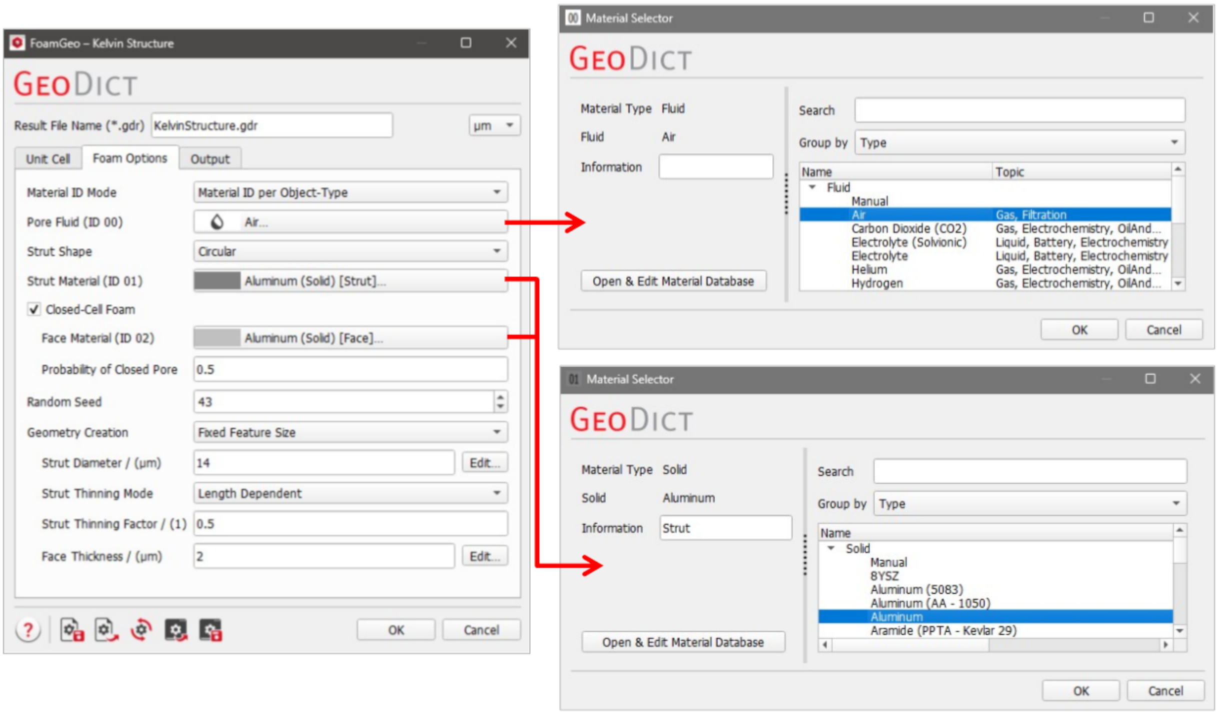
In the **Foam Options** tab the materials of the foam components and the options for the struts can be entered. Here, you can also choose to model either an open-cell or a closed-cell foam. If a closed-cell foam is modeled, options for the faces become available.



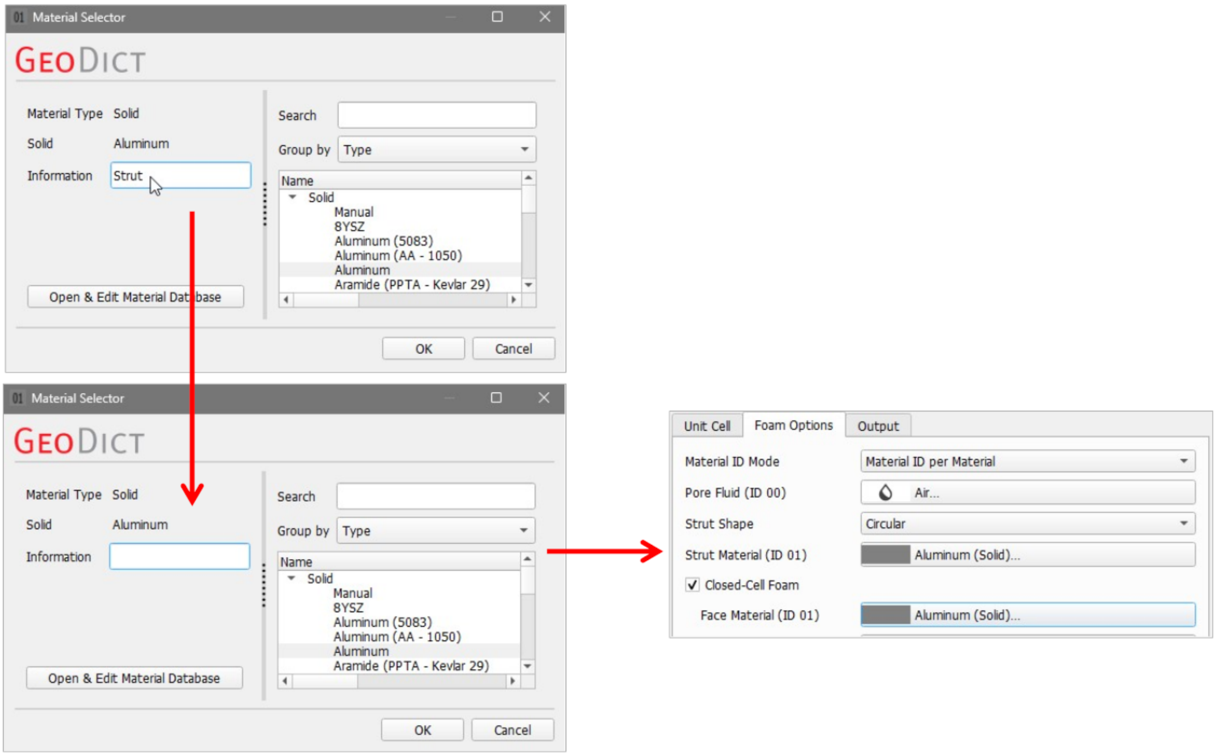
Material Options

The pull-down menu for the **Material ID Mode** has two options: **Material ID per Object-Type** and **Material ID per Material**.

For **Material ID per Object-Type**, different IDs are assigned to the fluid material in the pore space and the solid materials of the struts and faces. The materials for **Pore Fluid (ID 00)**, for the **Strut Material (ID 01)** and, below, the **Face Material (ID 02)** can be selected from the **Material Selector** by clicking the buttons consecutively.

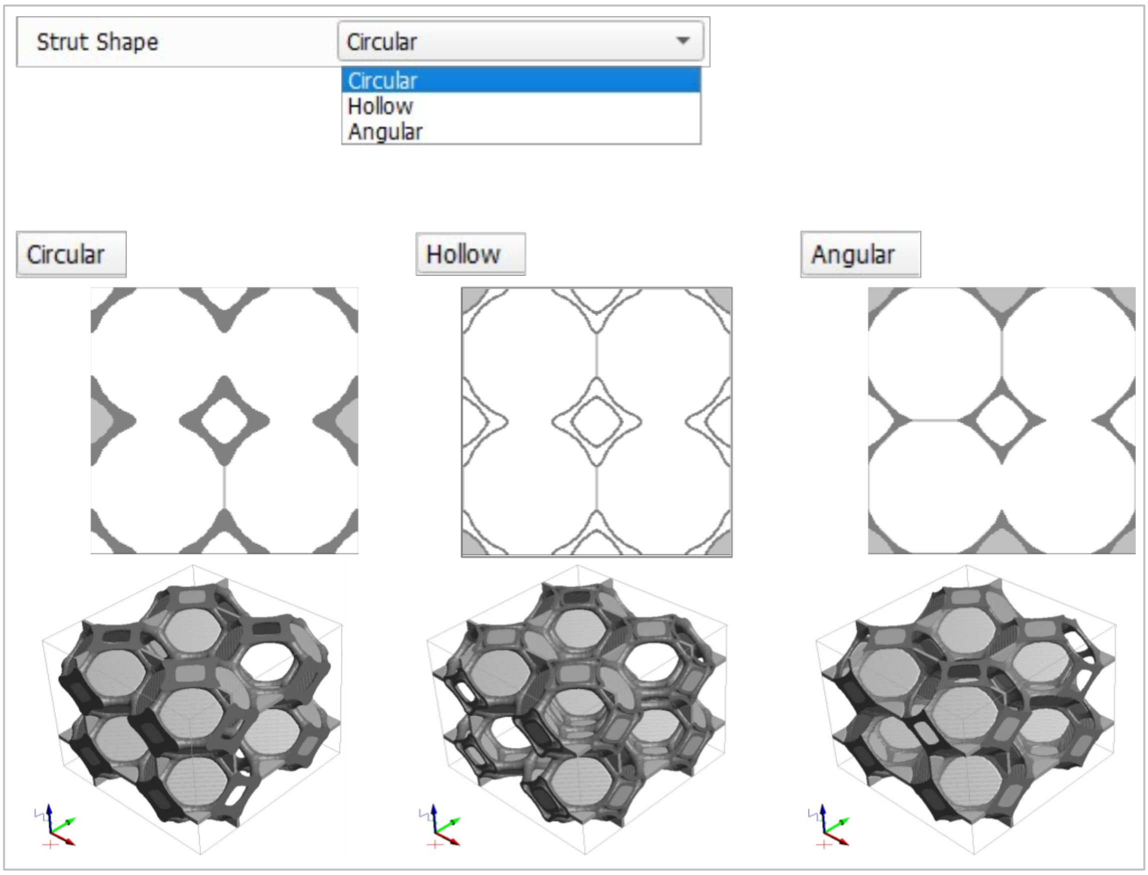


For **Material ID per Material**, **Strut Material** and **Face Material** are assigned to the same Material ID (ID 01), if the same material is chosen. By default, the materials have the additional information **Strut** or **Face**. This has to be deleted in order to have the same material for both components. To do so, click on the material name and clear the **Information** field in the **Material Selector**.



Strut Shape

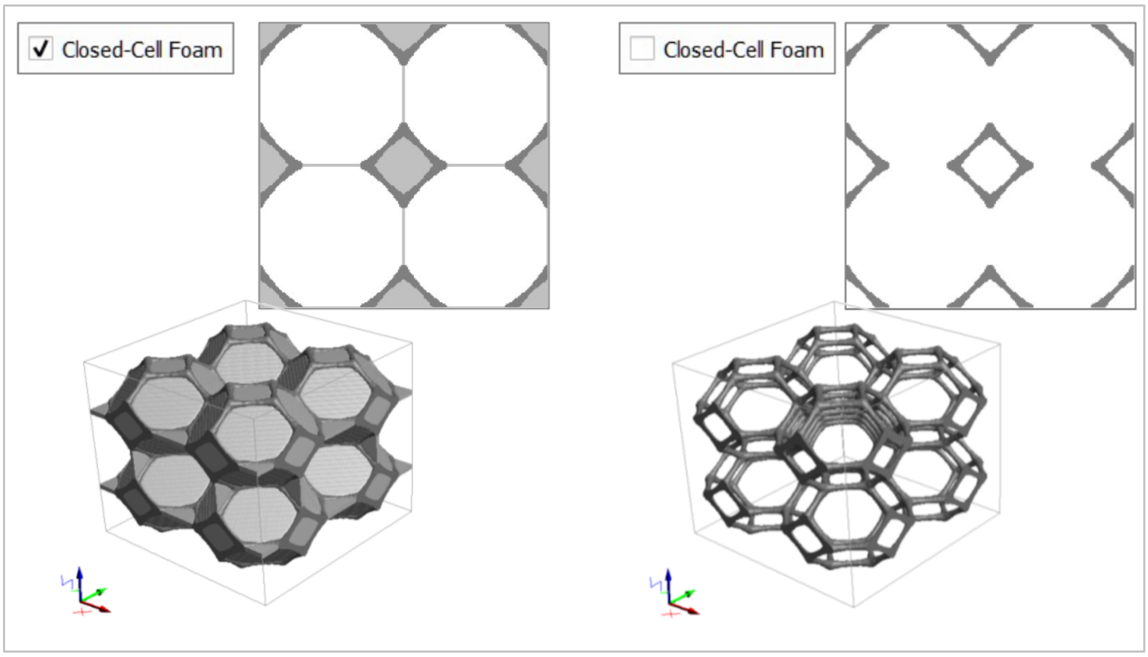
The shape of the foam cell strut can be selected in the **Strut Shape** pull-down menu. The strut shape can be **Circular**, **Hollow** or **Angular**.



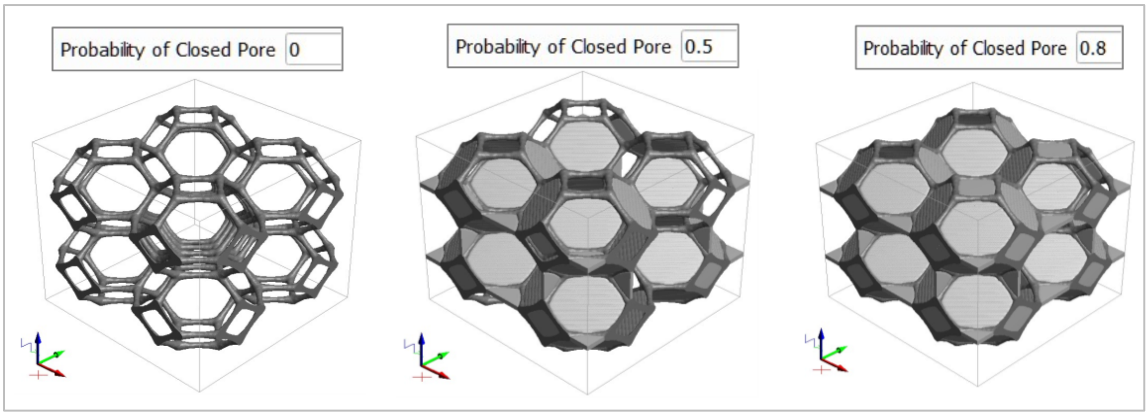
Closed-Cell Foam

If **Closed-Cell Foam** is checked, cells with faces are generated. The **Probability of Closed Pore** determines how many cells are closed.

Unchecking **Closed-Cell Foam** generates a sponge or open-cell foam, with the struts forming a polygon without faces in between.



When the structure is a closed-cell foam, values between 0 and 1 can be entered for the **Probability of Closed Pore**. When the value is 1, all pore walls are closed. When the value is 0, the result is an open-cell foam.



When **Closed-Cell Foam** is unchecked, the structure has no faces and thus, the **Face Material**, the **Probability of Closed Pore**, and the **Face Thickness** cannot be chosen.

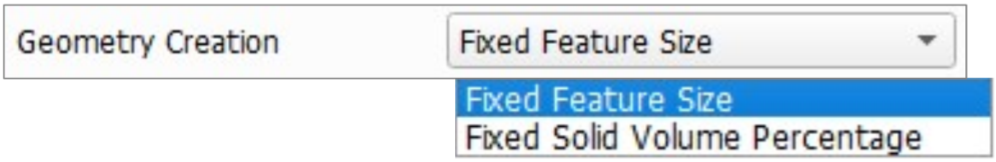
Random Seed

The **Random Seed** initializes the random number generator behind the structure generator. Changing its value produces different sequences of random numbers and hence, different realizations of the specified structure. If all settings are equal, generating with the same **Random Seed** value produces exactly the same structure. The **Random Seed** is a positive integer number.

Varying the **Random Seed** allows generating different samples of the same foam structure.

Geometry Creation

The chosen **Geometry Creation** mode defines the parameters of the structure, that can be selected. **Fixed Feature Size** or **Fixed Solid Volume Percentage** are available as Geometry Creation modes.

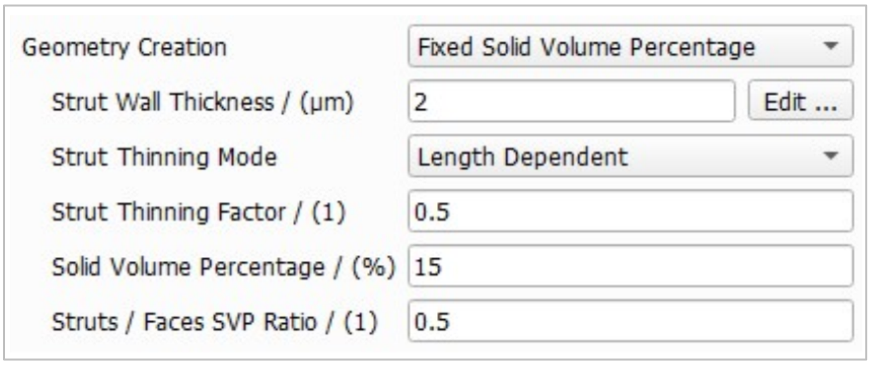


Select **Fixed Feature Size** to create a foam with a fixed size distribution for the strut diameters, the face thickness and, if **Hollow** as Strut Shape is selected, the thickness of the strut walls.

The **Strut Diameter** distribution, **Strut Wall Thickness** distribution, and **Face Thickness** distribution can be entered by clicking the **Edit...** buttons in this mode. Details are explained below 14.

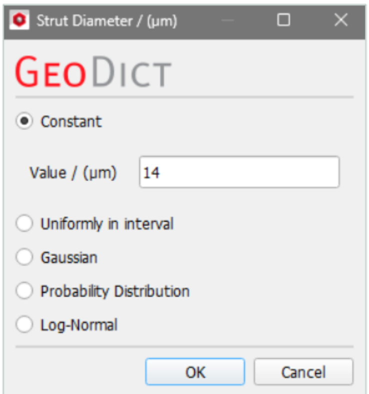
For both modes, the thinning of struts is defined by the **Strut Thinning Mode** and the **Strut Thinning Factor**. The **Strut Thinning Factor** determines the rate by which the diameter of the strut diminishes towards the center of each strut. The **Strut Thinning Mode** defines if this thinning depends on the length of the strut or is independent of the length and thus fixed. More details can be found in the section on Strut Thinning 18.

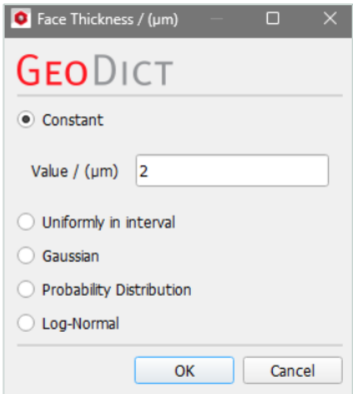
With the Geometry Creation mode **Fixed Solid Volume Percentage**, the **Solid Volume Percentage** of the structure created as well as the **Struts/Faces SVP Ratio** are defined instead. The **Strut Wall Thickness** is only available for the Strut Shape **Hollow** and can be defined in the same way as before.



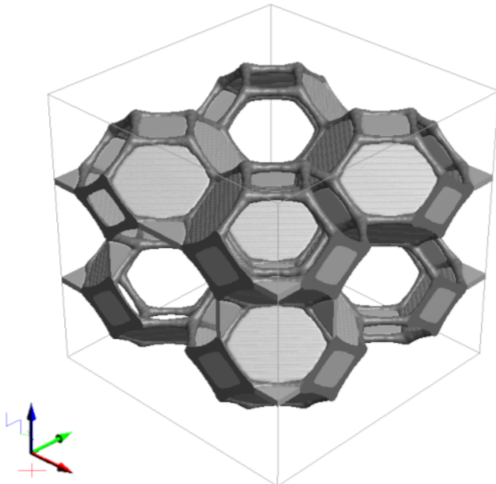
Strut Diameter, Face Thickness and Strut Wall Thickness Distribution

Clicking on the **Edit...** button for the **Strut Diameter**, the **Face Thickness**, and the **Strut Wall Thickness** (for hollow strut shapes) offers several options. Every parameter can be set to a **Constant** value, or to follow a distribution (**Uniformly in interval**, **Gaussian**, **Probability Distribution**, or **Log-Normal**).

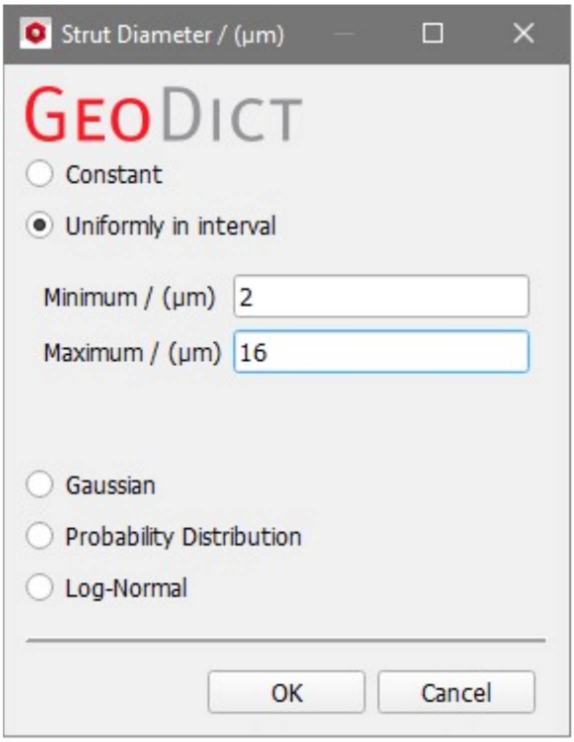


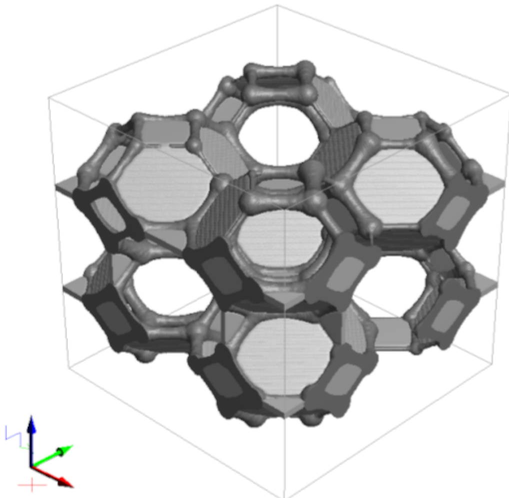


Observe the effect of entering values of **Strut Diameter**, as shown in the dialog boxes, on the generated random foam shown on the right.



When selecting **Uniformly in interval**, and entering a **Minimum** value and a **Maximum** value, the strut diameter can take any value within this interval.

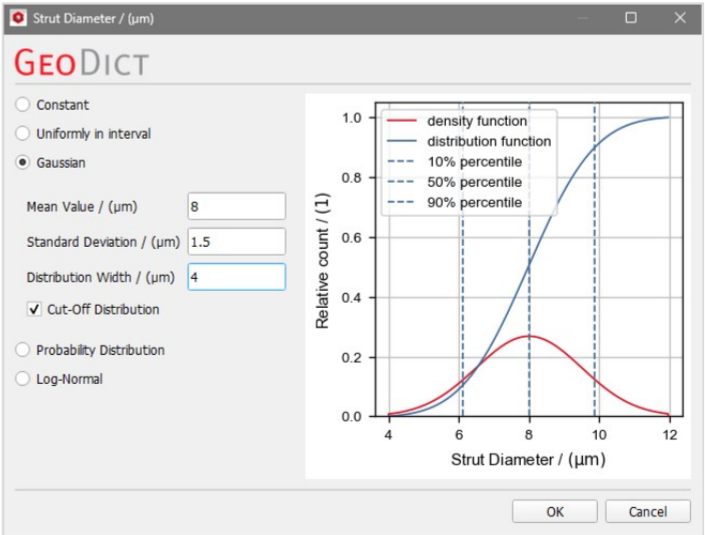


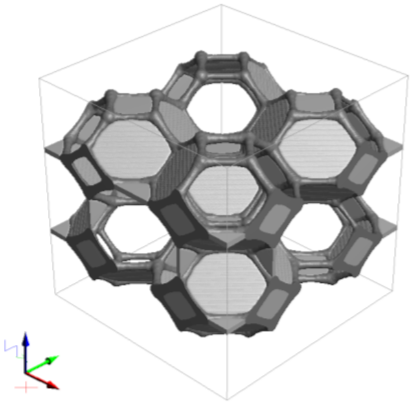


Taking the **Gaussian** (or **normal**) distribution, the value follows a bell-shaped distribution. The strut diameter value clusters around the entered **Mean Value** but may vary according to the entered **Standard Deviation**.

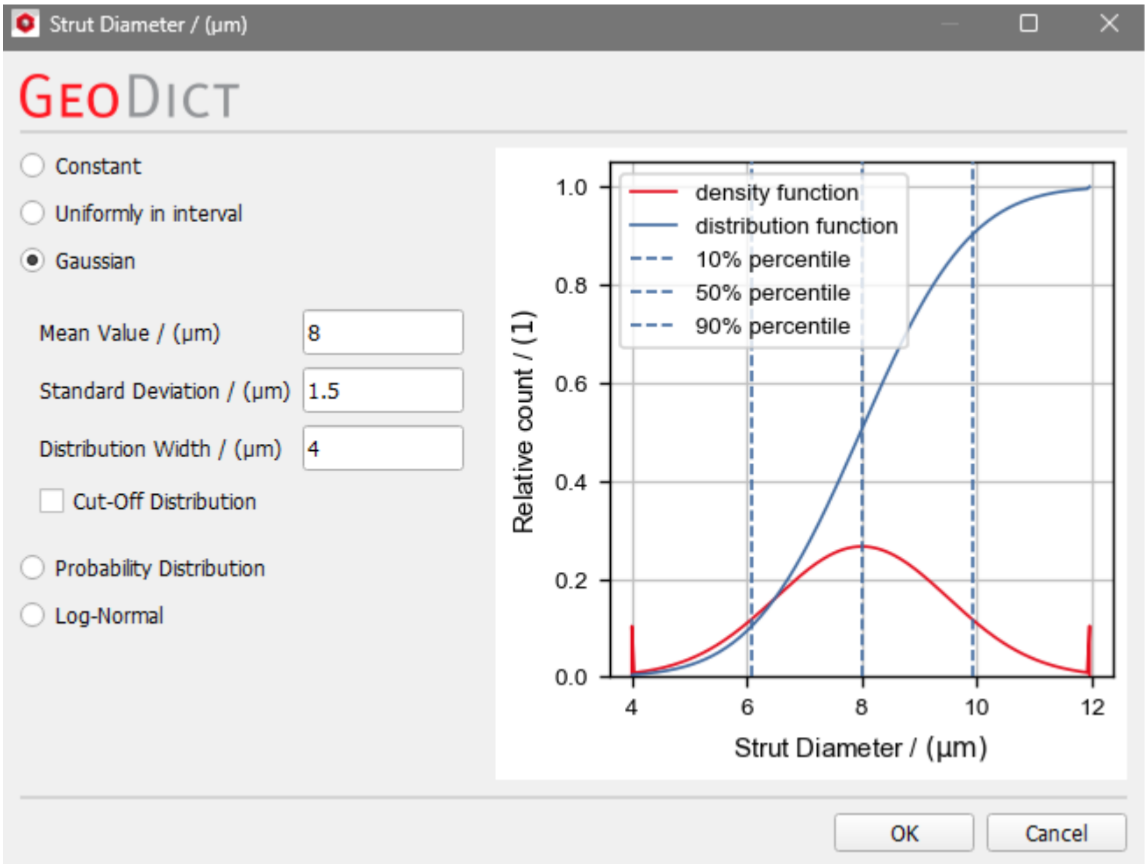
The value in **Distribution Width** corresponds to the interval on both sides of the mean value limiting the random value that is acceptable. For the strut diameter, a **Distribution Width** value of 4 µm means that diameter values may vary only between -4 µm to +4 µm from the given **Mean Value**, here 8 µm, resulting in strut diameters between 4 µm and 12 µm. The parameters must be set so that no negative values are possible.

The diagram on the right of the dialog shows the distribution of strut diameters.





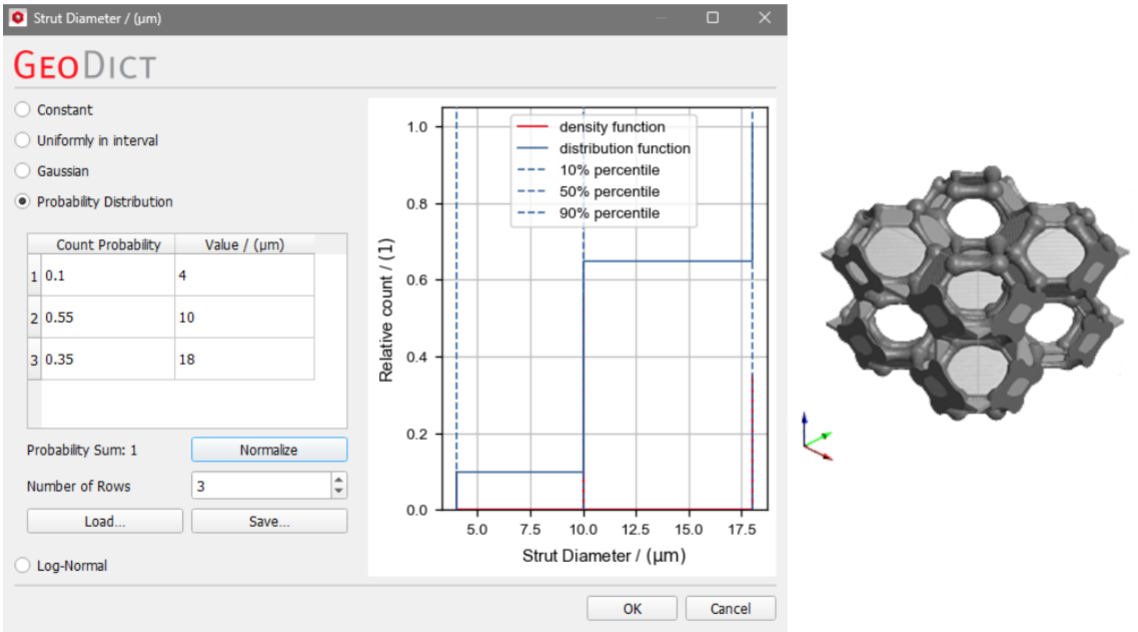
If **Cut-Off Distribution** is checked, the distribution is truncated at the bounds. This means, that all values outside the bounds are dropped and not considered for generation. If this option is not checked, then all values that are outside of the bounds are set to be on the distribution bound.



The **Probability Distribution** table describes the probability that the strut diameter takes certain values. The **Number of Rows** can be increased or decreased to enter as many **Values** and their **Count Probability** between 0 and 1 as desired.

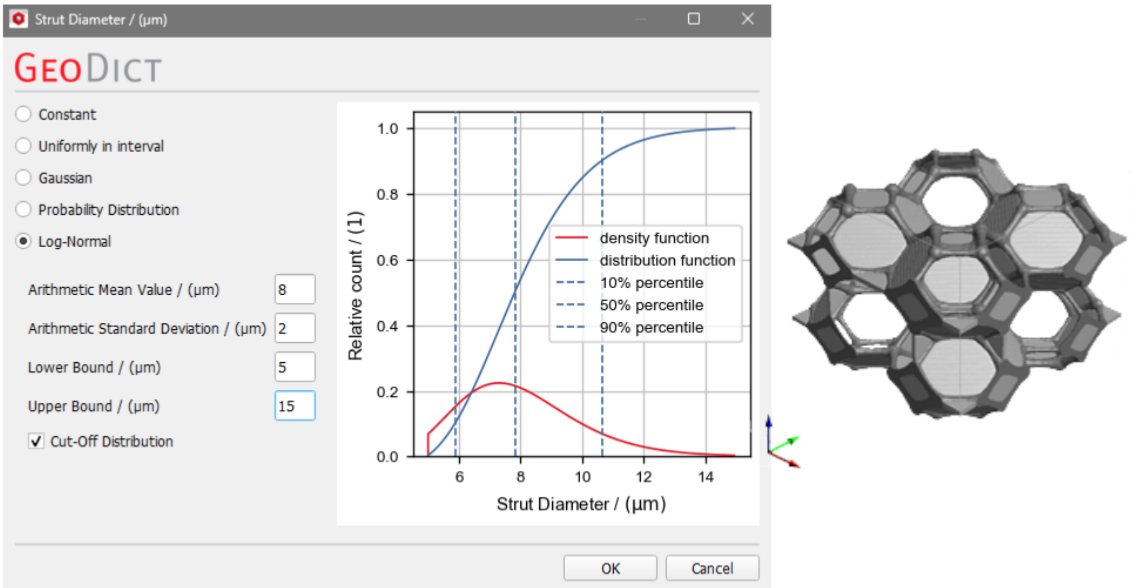
For large tables, it is useful to observe the value of **Probability Sum**. It corresponds to the sum of the count probabilities. When the **Probability Sum** is not equal to 1, click the **Normalize** button to automatically normalize the **Count Probability** values, such that the probability sum is 1.

Use **Load** and **Save** to load a probability distribution previously saved as *.txt file or to save the current one for later use.



The **Log-Normal** distribution describes the situation in which the logarithm of the strut diameter follows a Gaussian distribution.

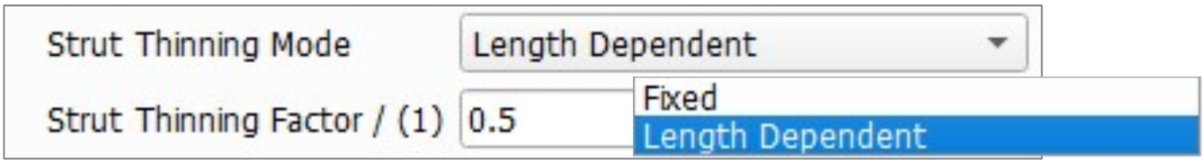
The strut diameter values group around the entered **Arithmetic Mean Value** but may diverge according to the entered **Arithmetic Standard Deviation**. The values in **Lower Bound** and **Upper Bound** limit the possible values under and over the arithmetic mean value, thus restricting the values that the random diameters can take. The effect of **Cut-Off Distribution** is the same as described before when choosing Gaussian distribution.



Strut Thinning

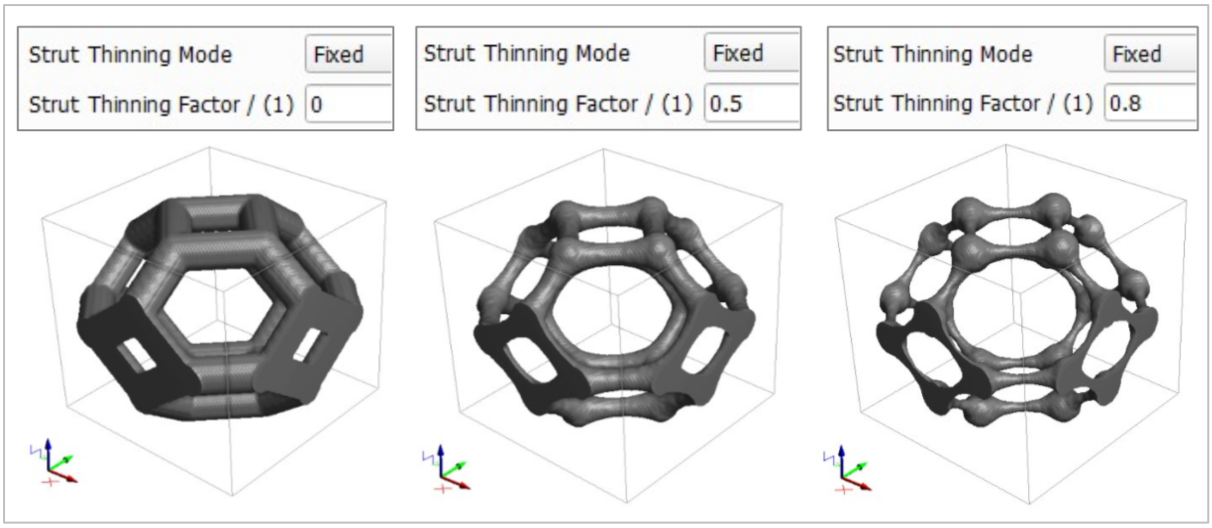
The **Strut Thinning Factor** determines the rate by which the diameter of the strut diminishes towards the middle of one strut.

The **Strut Thinning Mode** determines if this thinning is length dependent or not. Select **Fixed** to thin all struts equally, independent of their length. Choose **Length Dependent** for a thinning dependent on the length of each strut. Short struts have less thinning than long struts.



Thinning factor values vary from 0 to 1. When the value is 0, the strut diameter does not change. For fixed strut thinning, with a value of 0.5, the strut diameter decreases by 50% from near the nodes to the middle of the strut. For length dependent strut thinning, the strut diameter decreases by 50% from the nodes to the middle for the longest strut. The other struts have less thinning, dependent on their relative length, compared to the longest strut.

The effect of different thinning factors for the thinning mode **Fixed** is shown here:

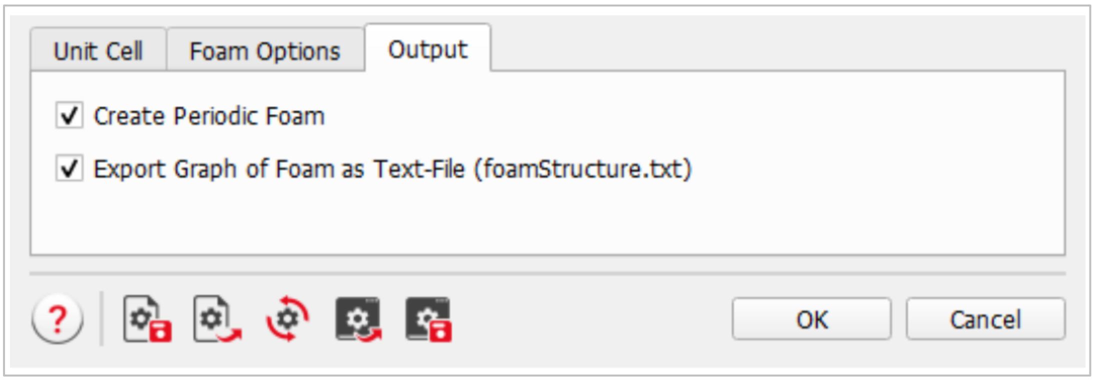


Since the effect of length dependent strut thinning is more visible in random foams, an example is shown in the Random Foams Options section 34.

1.1.3 Output

Under the **Output** tab, it is possible to choose whether the generated foam structure is periodic or not.

It is also possible to export a text file containing all geometric information of the foam as a graph.



The text file is explained below:

foamStructure.txt

```
0.0 0.0 0.0 (domain origin)
2.000000e-04 2.000000e-04 1.600000e-04 (domain size)
```

Domain origin and size

```
224 (number of nodes)
0 1.250000e-05 6.250000e-05 3.312500e-05
1 1.250000e-05 3.750000e-05 5.187500e-05
2 1.250000e-05 6.250000e-05 7.062500e-05
3 1.250000e-05 8.750000e-05 5.187500e-05
...
```

Coordinates of all nodes, first column contains object ID

```
64 (periodic copies: identical nodes)
0 0 146
1 1 120 147 213
2 2 115 148 208
3 3 149
...
```

Node ID and the IDs of its periodic copies

```
388 (number of edges)
0 0 1
1 1 2
2 2 3
3 3 0
...
```

IDs of nodes that build an edge

```
108 (periodic copies: identical edges)
0 0 248
1 1 207 249 371
2 2 250
3 3 251
...
```

Edge IDs and the IDs of its periodic copies

```
182 (number of faces)
0 4 0 1 2 3
1 4 4 5 6 7
2 4 8 9 10 11
3 4 12 13 14 15
...
```

Number and IDs of edges that build a face

```
46 (periodic copies: identical faces)
0 0 113
1 2 73
2 6 93 135 174
3 7 145
...
```

Face IDs and the IDs of its periodic copies

```
17 (number of cells)
0 14 0 1 2 3 4 5 6 7 8 9 10 11 12 13
1 14 14 15 16 17 18 19 20 21 22 23 24 25 26 6
2 14 27 28 17 29 30 31 32 33 34 35 36 37 7 38
3 14 15 39 40 41 42 43 44 45 46 10 47 48 49 50
...
```

Number and IDs of faces that build a cell

```
3 (periodic copies: identical cells)
0 1 7 11 15
1 2 12
2 3 8
```

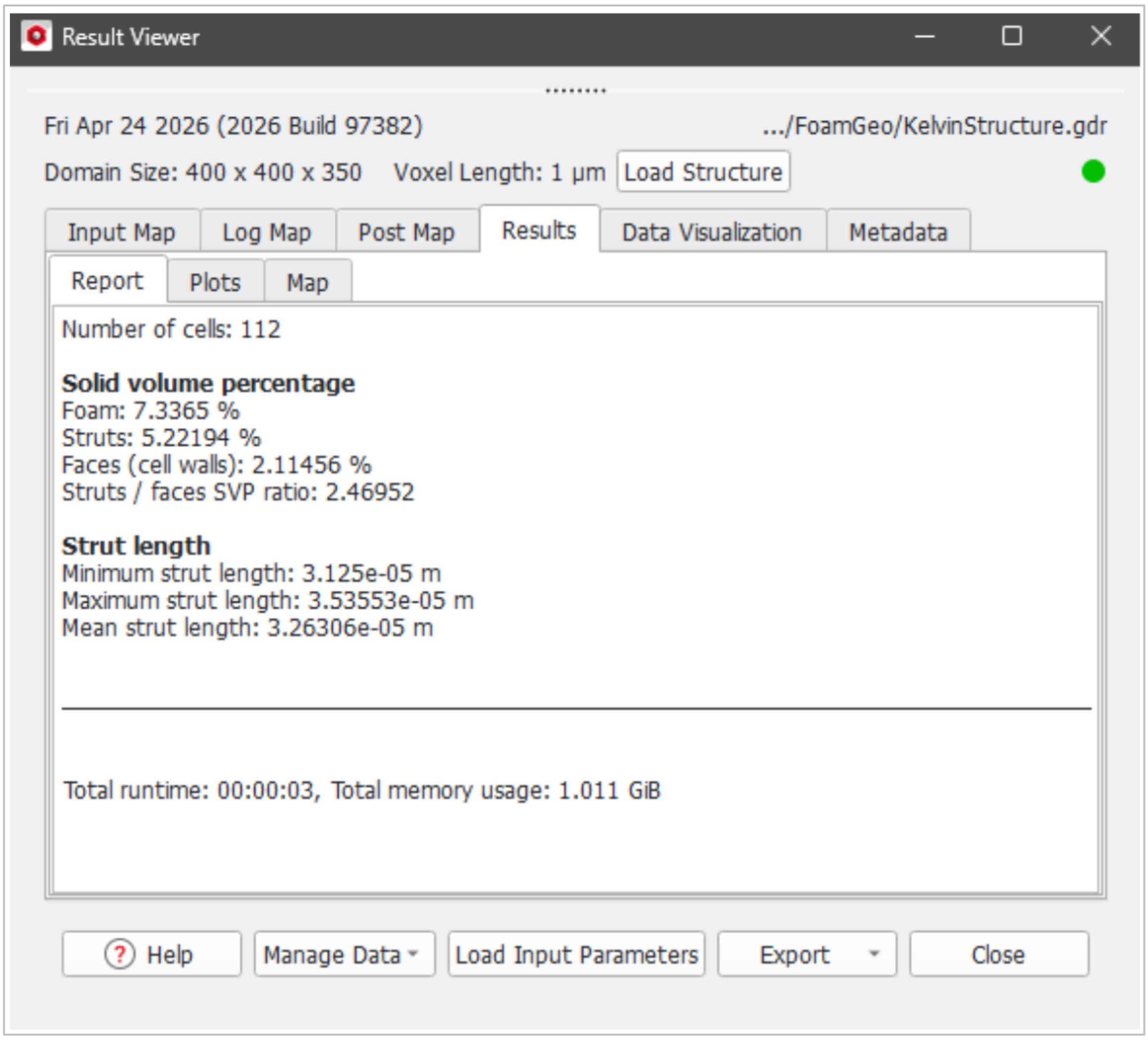
Cell ID and the ID of its periodic copies

1.1.4 Result Files

As soon as the foam generation process is completed, the created foam is displayed in GeoDict's main window.

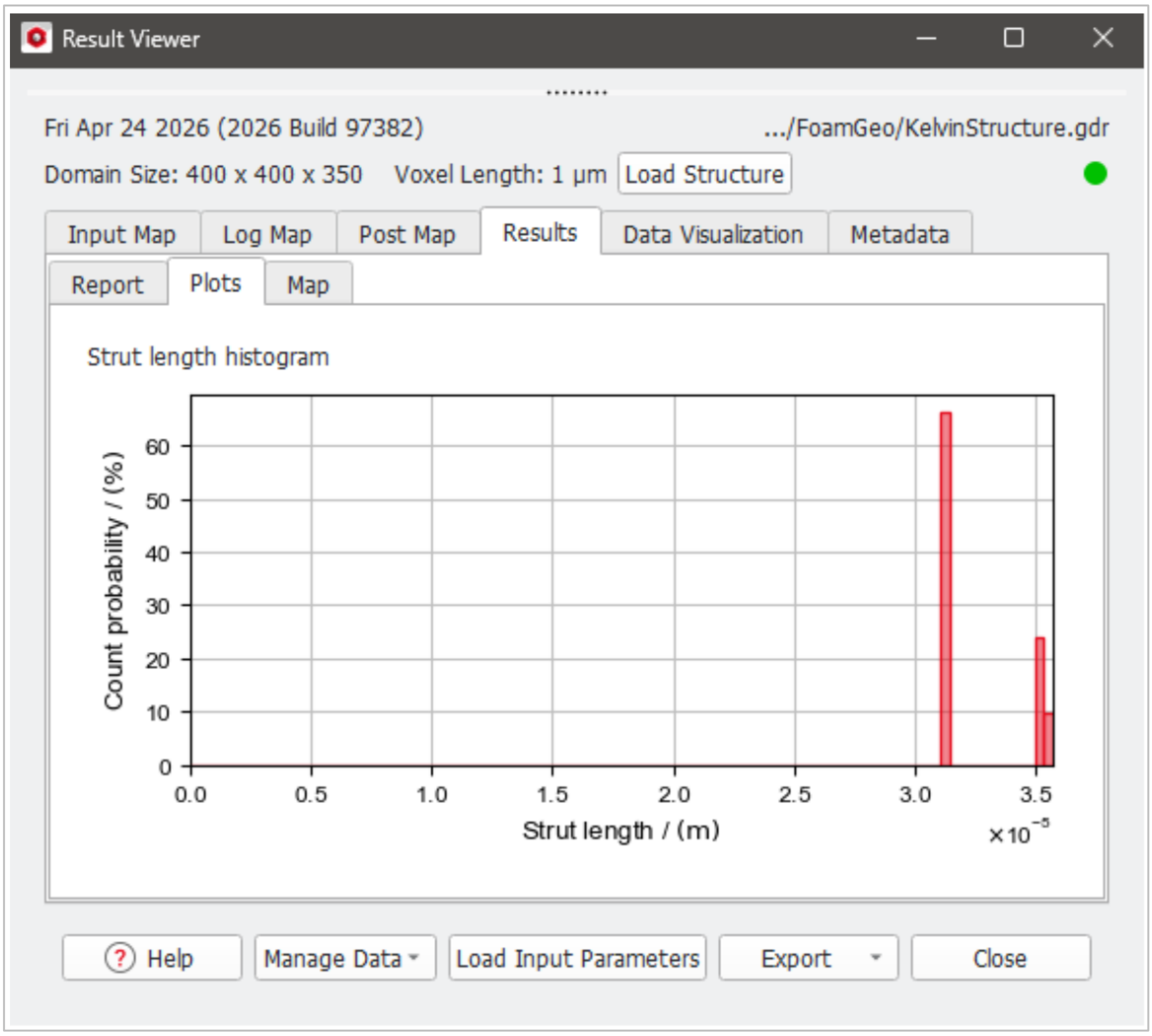
Result Viewer

The GeoDict Result Viewer with the created *.gdr file opens automatically after the generation is finished. More information on working with the Result Viewer can be found in the Result Viewer user guide.



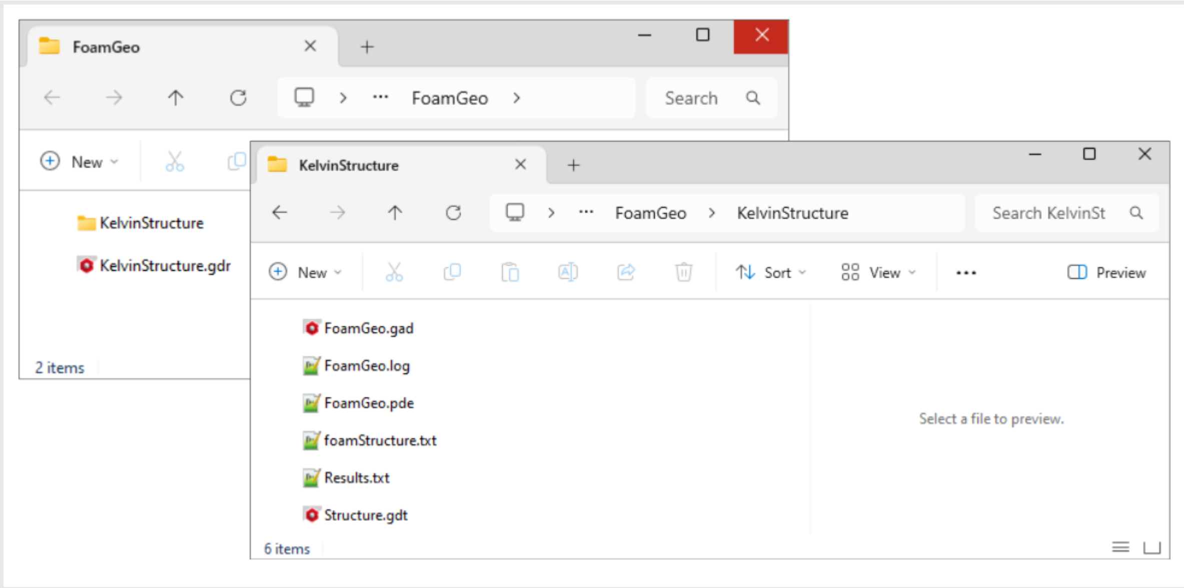
The **Results - Report** subtab lists the solid volume percentages (SVP) for the entire foam, as well as for struts and faces separately. The Struts / faces SVP ratio is the SVP of the struts divided by the SVP of faces; here 5.22 % / 2.11 % = 2.47. Additionally, the minimal, maximal, and mean strut length are reported.

More detailed information about the strut length distribution, is available on the **Plots** subtab, where a strut length histogram is shown.



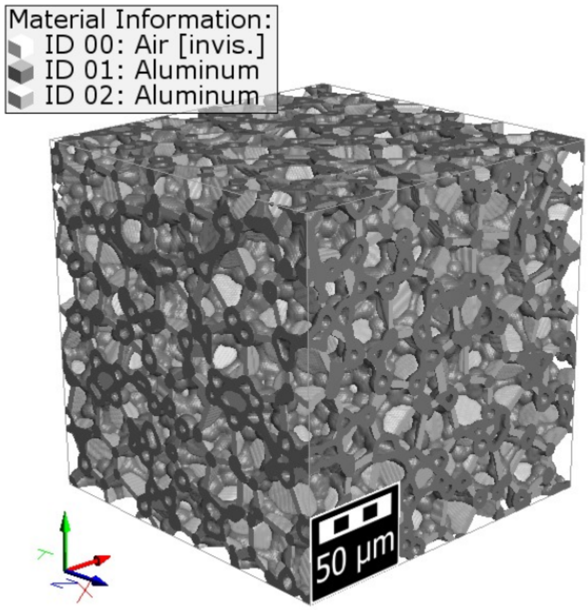
Result Files

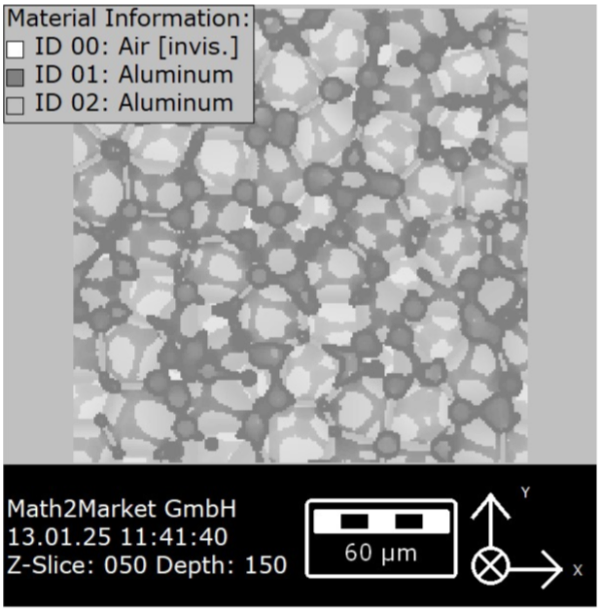
After the generation of a Kelvin structure, the project folder contains the result file (*.gdr format) and a folder with the same name as the result file, containing the structure in *.gad and *.gdt format, a *.log file of the generation, a condensed result file in *.txt format and a *.pde file with all the generation input parameters. If the Graph of Foam 19 was exported as *.txt file, this file is also located in this folder (foamStructure.txt).


FoamGeo
Search
New
KelvinStructure
KelvinStructure.gdr
2 items
KelvinStructure
FoamGeo > KelvinStructure
Search KelvinSt
New
Sort
View
Preview
FoamGeo.gad
FoamGeo.log
FoamGeo.pde
foamStructure.txt
Results.txt
Structure.gdt
Select a file to preview.
6 items

1.2 Random Foam

Random Foams are based on the Voronoi tessellation (also called Voronoi decomposition, Voronoi partition, or Dirichlet tessellation). It is a way of dividing space into a number of regions. A set of points (called seeds, sites, or generators) is specified beforehand and for each seed there will be a corresponding region consisting of all points closer to that seed than to any other. The regions are called Voronoi cells.

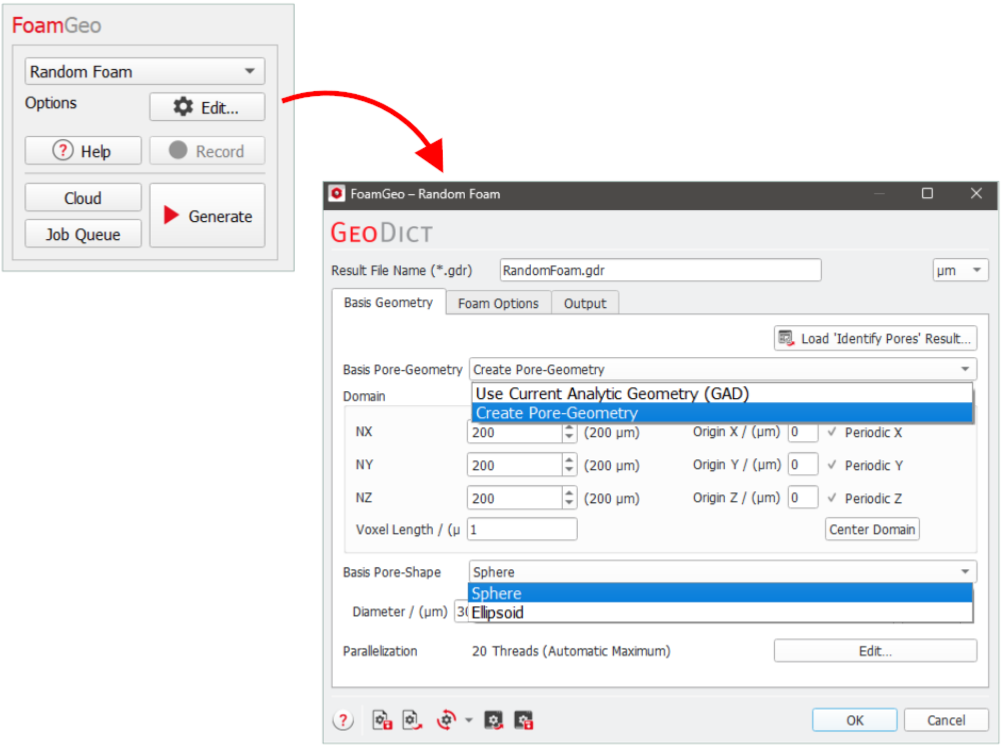




For generating random foams, please select **Random Foam** in the FoamGeo module section and click on **Edit…**.

For the Random Foam, the dialog box contains the tabs **Basis Geometry**, **Foam Options**, and **Output**.

The available units (m, cm, mm, µm, nm, and Inch) are selectable from the pull-down menu in the upper right corner.



A customized **Result File Name (*.gdr)** should be entered to differentiate the results of different FoamGeo runs. The generated result file (*.gdr) is automatically placed inside the chosen project folder.

In the upper right corner of the **Foam Options** dialog, click **Load 'Identify Pores' Result...** and select a GeoDict result file (*.gdr) from a PoroDict Identify Pores run. The data from the *.gdr file is now directly loaded into FoamGeo.

Learn how to generate a Random Foam structure:

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- Foam Options 34
  In the Foam Options tab the materials of the foam components and the options for the struts can be entered.
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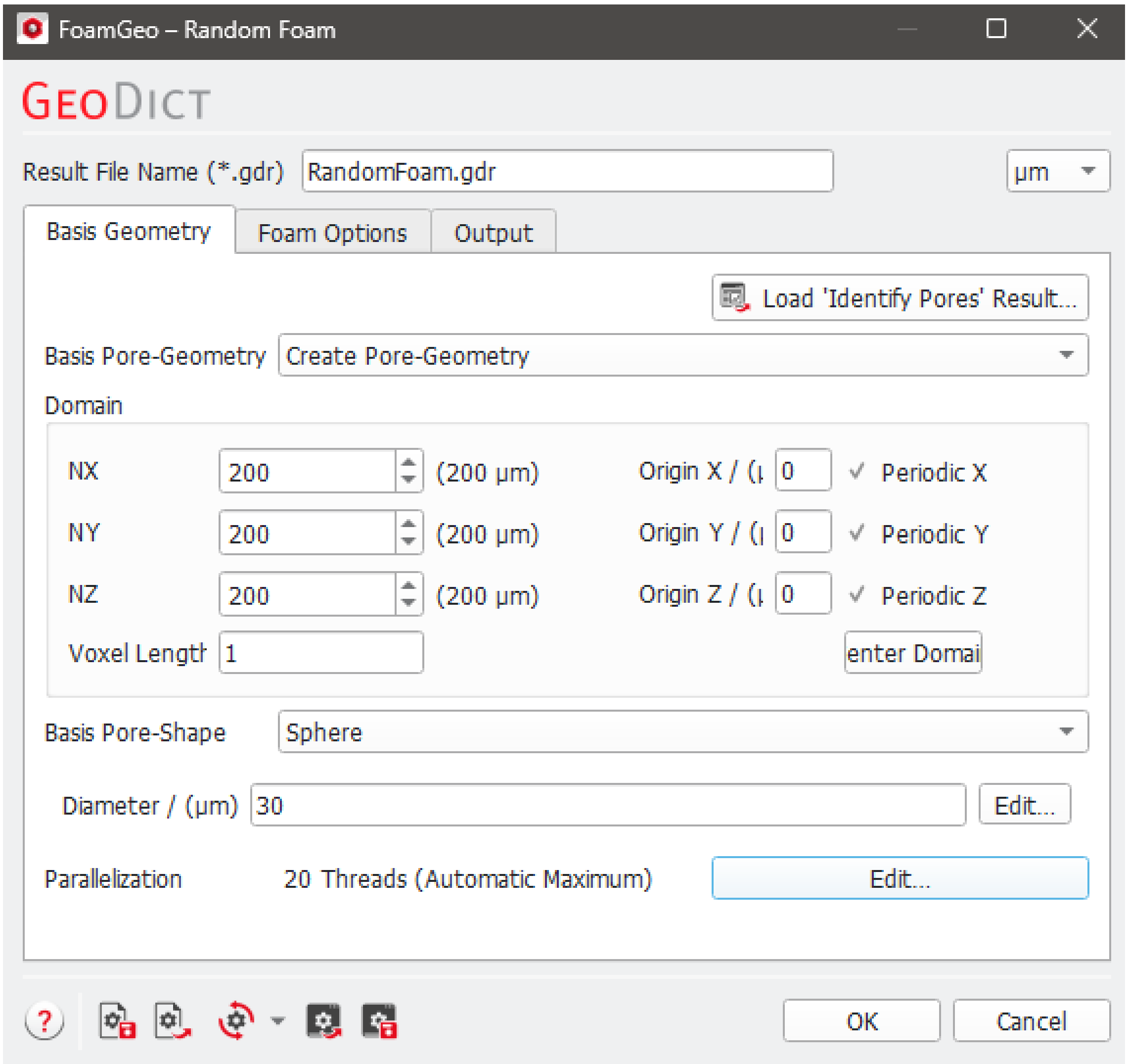
- Result Files 37
  Description of Random Foam results and resulting files.

1.2.1 Basis Geometry

Define the underlying geometry options for the foam under the **Basis Geometry** tab.

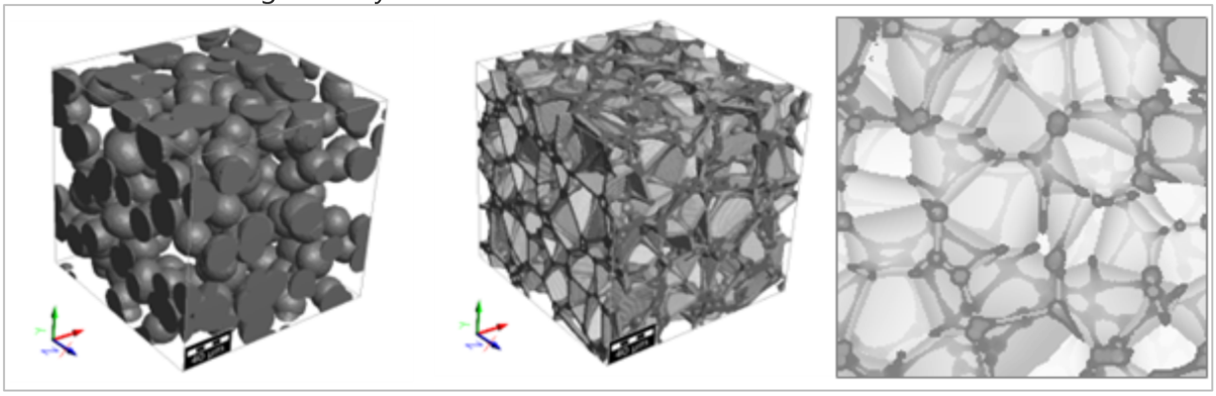


Basis Pore-Geometry

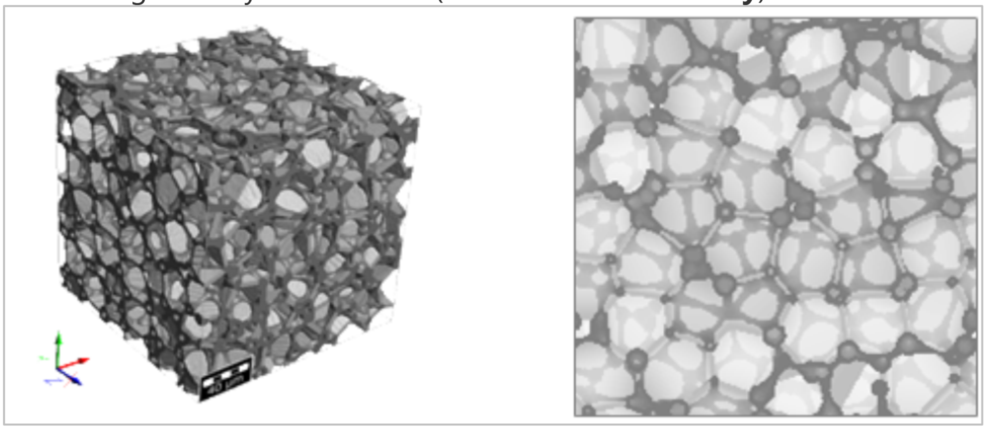
A random foam is generated based on a random homogeneous pack of spheres or ellipsoids called **Basis Pore-Geometry**. Each cell in the generated foam corresponds to an object (sphere or ellipsoid) in the **Basis Pore-Geometry**. For example, if the **Basis Pore-Geometry** contains 100 spheres with a diameter of 50 µm, the foam will contain 100 cells with a diameter of approx. 50 µm.

The **Basis Pore-Geometry** can be created:

- From a preexisting periodic packing generated, e.g., with GrainGeo as GeoDict analytic data (.gad). The periodic packing must be loaded in memory (**Use Current Analytic Geometry**), that is shown in the visualization area. To create a random foam, at least 9 GAD-objects with a minimal object diameter of 20 voxel must be present in the structure. The analytic data is then taken as basis geometry to form the foam.



- As a new geometry in FoamGeo (**Create Pore-Geometry**).



The parameters described below are only available if **Create Pore-Geometry** is chosen. If instead the current analytic geometry is used, no more settings need to be defined in the **Basis Geometry** tab.

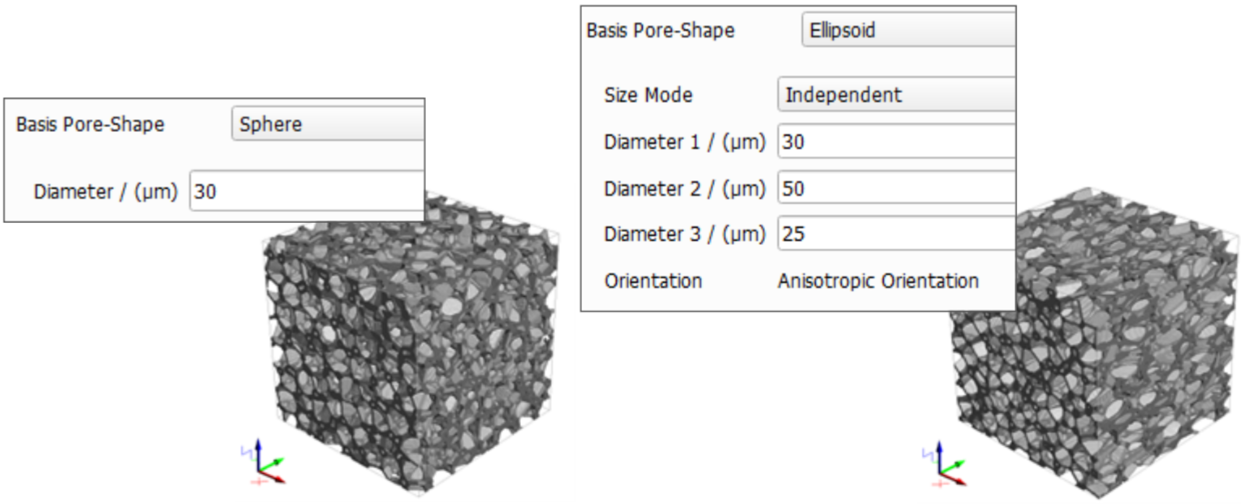
The parameters in the **Domain** panel determine the random foam size. **NX**, **NY**, and **NZ** determine the number of voxels of the grid in the X, Y, and Z direction, respectively. The size of the structure created depends on **NX**, **NY**, and **NZ** and on the entered **Voxel Length** (size of a voxel in the selected units).

The coordinates of the domain origin can be set to those given in **Origin X, Origin Y**, and **Origin Z**. Alternatively, click **Center Domain** to set the origin (0,0,0) to NX/2, NY/2, and NZ/2.

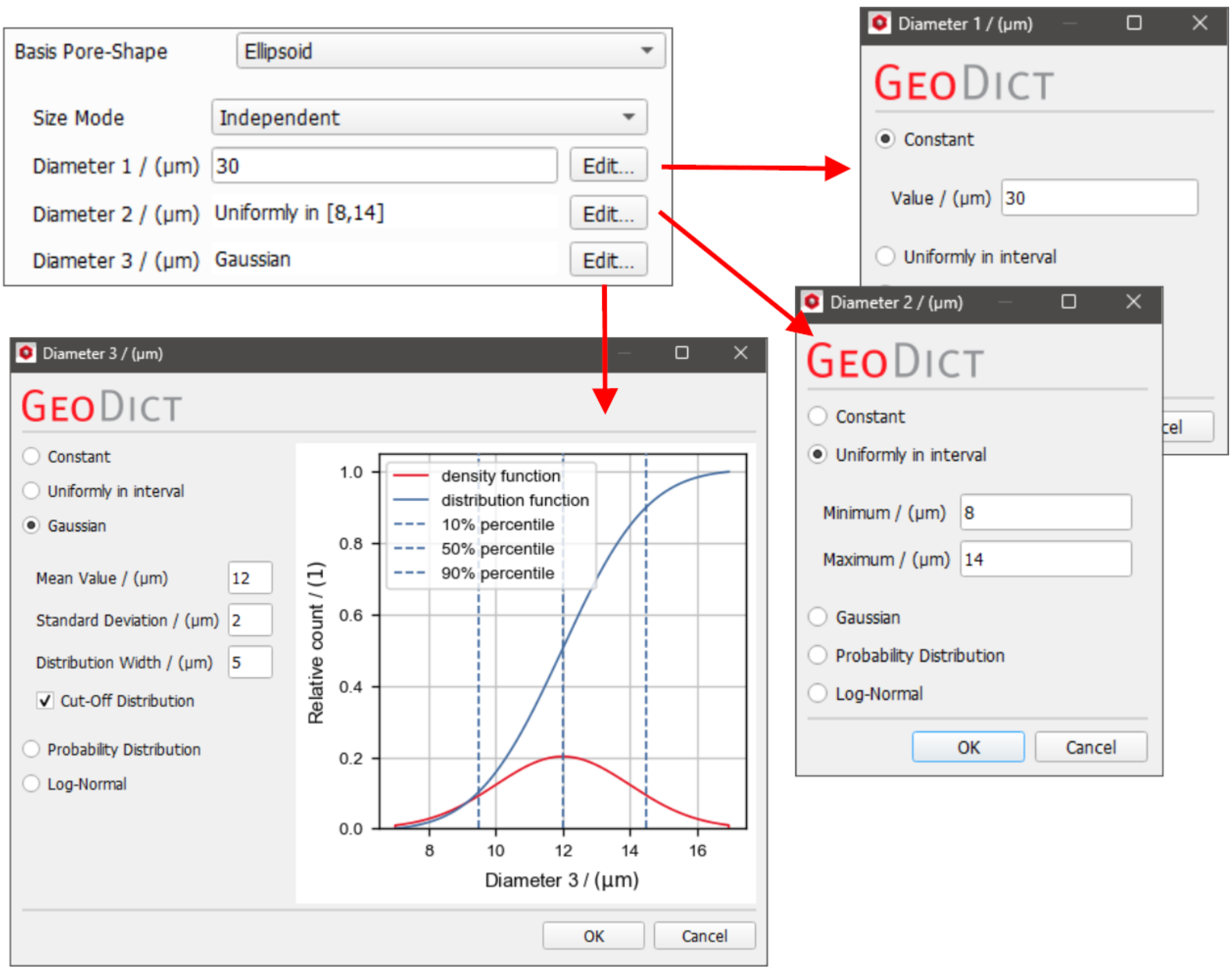
Basis Pore-Shape

From the **Basis Pore-Shape** pull-down menu, select either **Sphere** or **Ellipsoid** for the desired basis pore shape. The volume of the random foam cells resulting from the selected basis pore shape is always a bit larger than the basis pore shape volume.

When selecting **Sphere**, you need to enter the **Diameter** of the spheres on which the generated foam is based. Selecting **Ellipsoid** allows you to generate complex random foams.

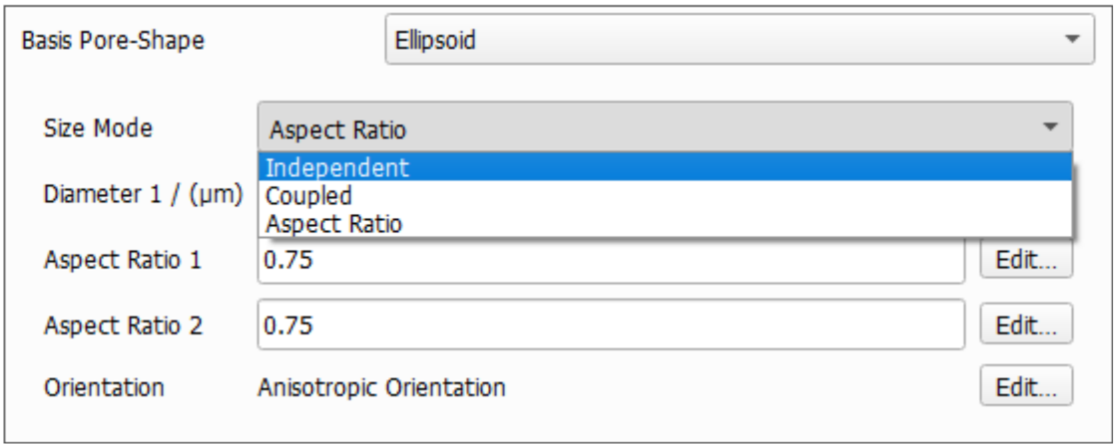


As explained for [strut diameters](14) of Kelvin Structures, the diameter of the spheres (**Diameter**) or ellipsoids (**Diameter 1** in X-direction, **Diameter 2** in Y-direction, **Diameter 3** in Z-direction) can be changed by clicking **Edit...**.



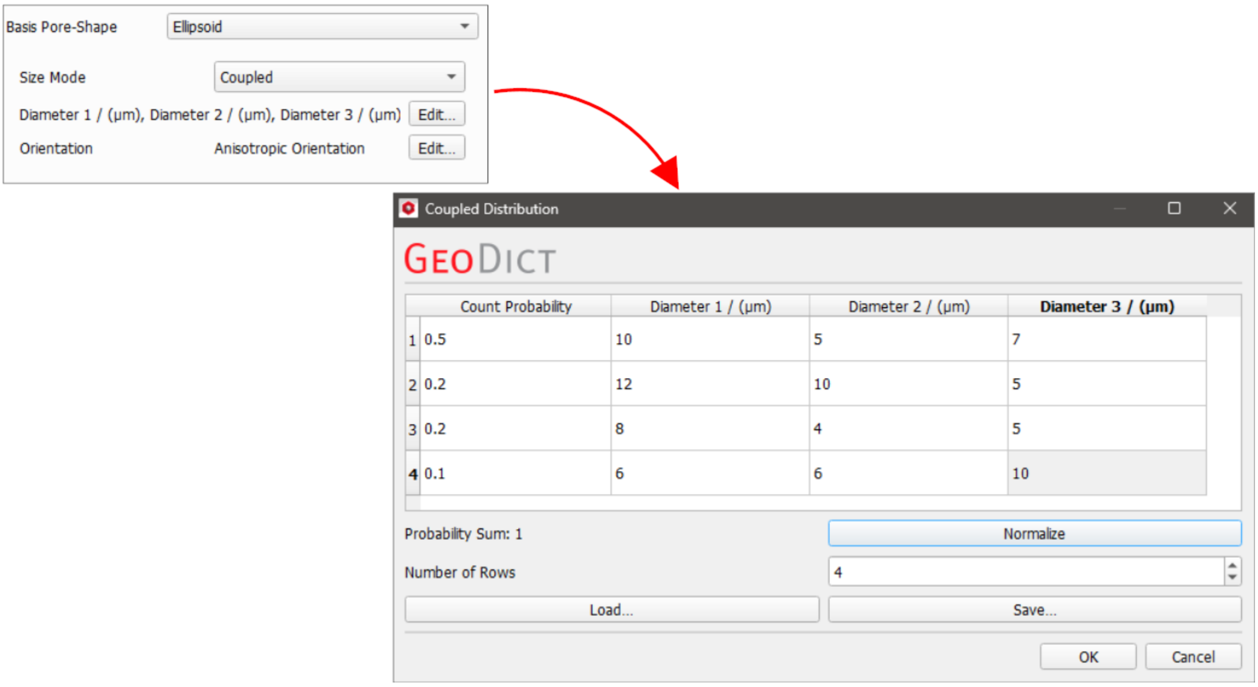
Then the diameters can be set independently to take a **Constant** value, or to follow a distribution (**Uniformly in interval**, **Gaussian**, **Probability Distribution**, or **Log-Normal**).

For the Basis Pore-Shape **Ellipsoid** three different **Size Mode**s are available: **Independent**, **Coupled**, and **Aspect Ratio**.

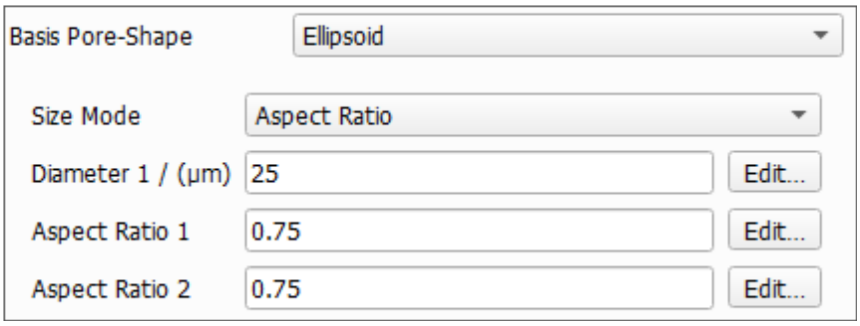


The **Independent Size Mode** allows to define the diameter for each of the three directions independently. For example, you can assign a **Constant** value for **Diameter 1**, a **Uniformly in interval** distribution for **Diameter 2**, and a **Gaussian** distribution for **Diameter 3** as in the example above.

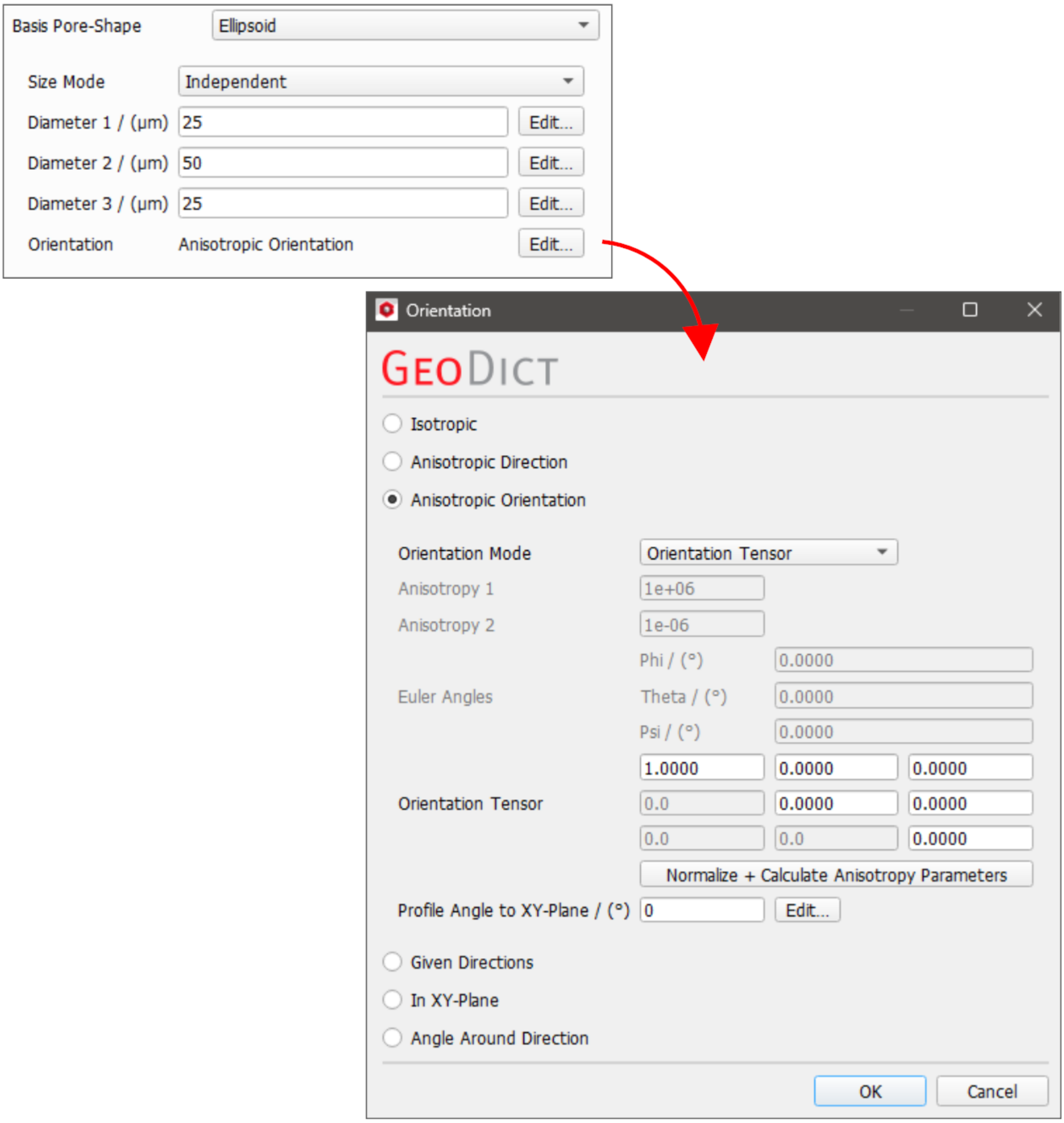
By choosing **Coupled** diameters, a probability can be assigned to the combination of the three diameters. Instead of independent probability distributions for diameters 1, 2, and 3, the three coupled diameters share the same probability in the distribution. For example, you can assign the following probability distribution table to Diameter 1, Diameter 2, and Diameter 3. According to the table, ellipsoids of diameters 10 µm / 5 µm / 7 µm have a 50% (0.5) probability to be the basis pore-shapes for the generated random foam.



The third option is to enter an **Aspect Ratio** describing the relationship between the three ellipsoid diameter. **Aspect Ratio 1** is defined by Diameter 2 divided by Diameter 1 and **Aspect Ratio 2** is defined by Diameter 3 divided by Diameter 1.



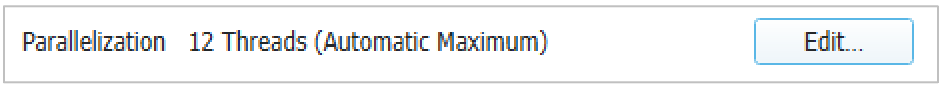
For the Basis Pore-Shape **Ellipsoid**, an **Orientation** can be set by clicking the **Edit...** button. In the **Orientation** dialog, objects can be defined to be **Isotropic**, have a certain **Anisotropic Direction**, **Anisotropic Orientation**, **Given Directions**, are oriented **In XY-Plane**, or have a maximum **Angle Around Direction**. More details on the different orientation modes can be found in the GrainGeo user guide.



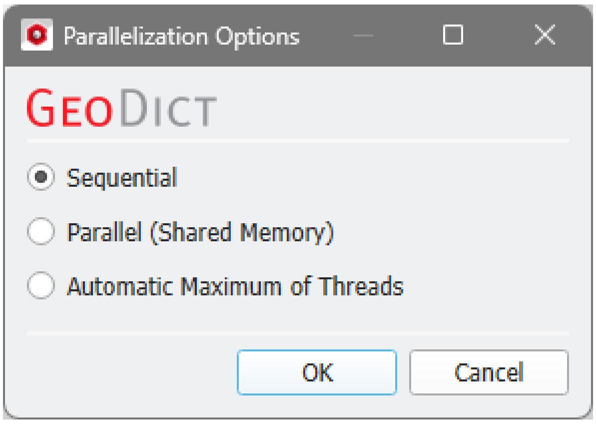
Parallelization

Control how many threads are used for the computation. Parallelization is possible if your license and hardware allow it.

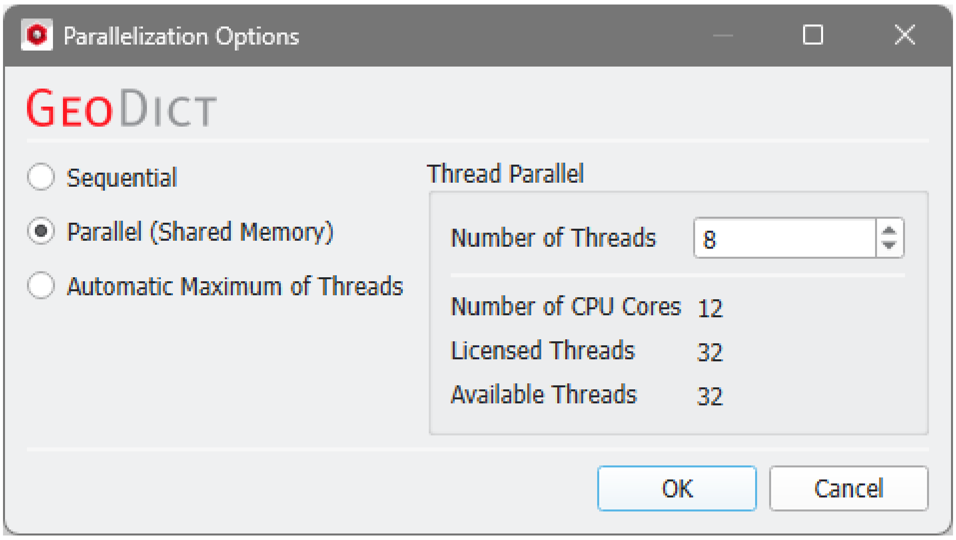
The **Parallelization Options** dialog opens when clicking the **Edit...** button and you can choose between **Sequential**, **Parallel (Shared Memory)**, or **Automatic Maximum of Threads**.



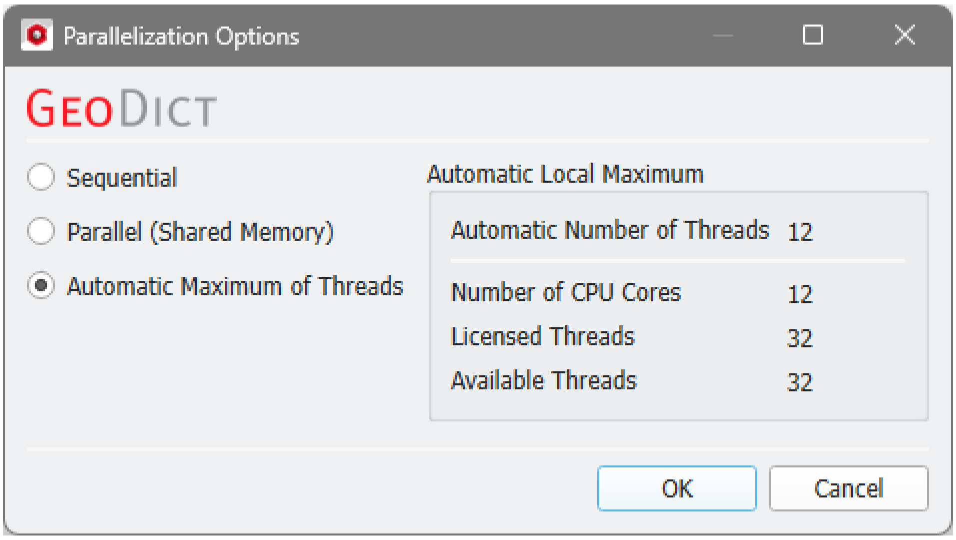
Selecting **Sequential** will not apply parallelization and only one thread is used for the computation.



When **Parallel (Shared Memory)** is selected, the **Number of Threads** can be entered. Below, the **Number of CPU Cores** that the current machine has, the maximum number of **Licensed Threads**, and the number of those licensed threads that are available (**Available Threads**) are shown in the dialog. The maximum number of parallel processes you can use is the smallest of these three numbers.



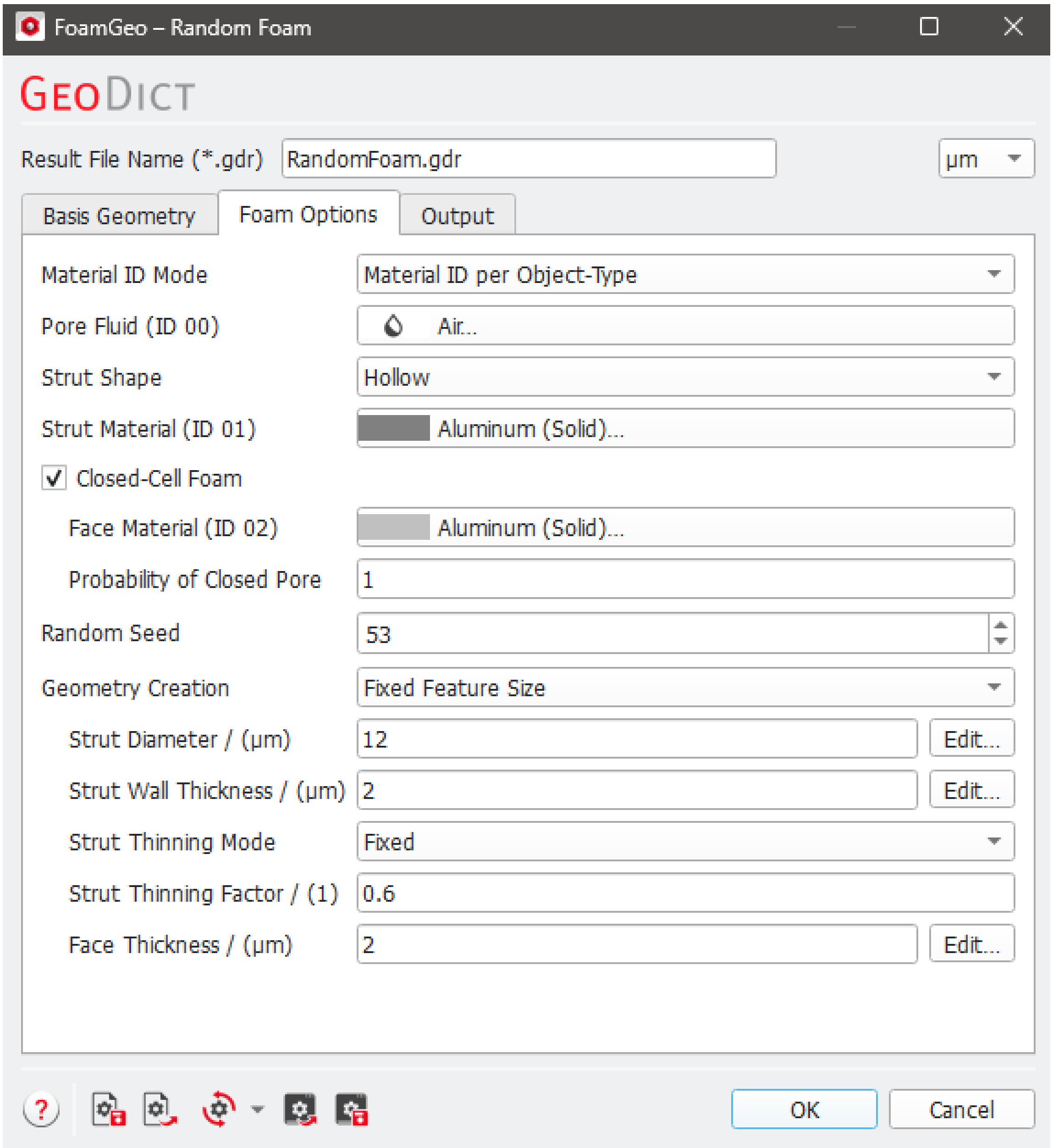
If **Automatic Maximum of Threads** is selected, the number of parallel processes is automatically selected for optimal speed, based on the CPU cores and licensed parallel processes.



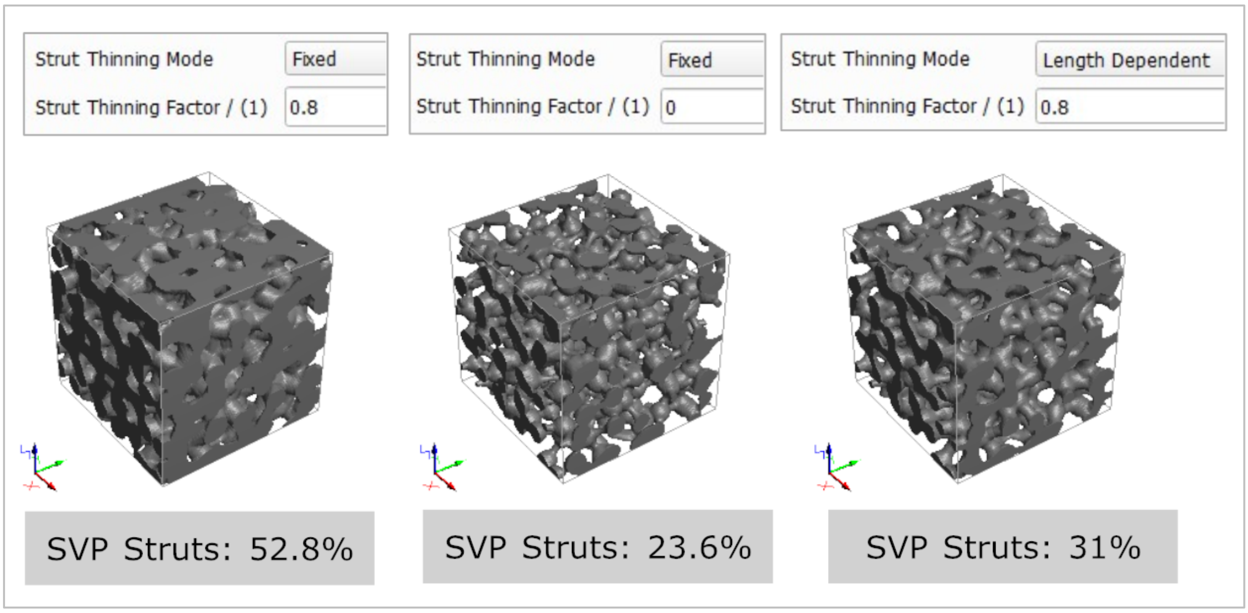
The **Automatic Local Maximum** of processes is automatically selected, which is the minimum of **Number of CPU Cores**, **Licensed Threads**, and **Available Threads**.

1.2.2 Foam Options

Under the **Foam Options** tab, the parameters are the same as explained in the Foam Options 9 for the generation of Kelvin structures.



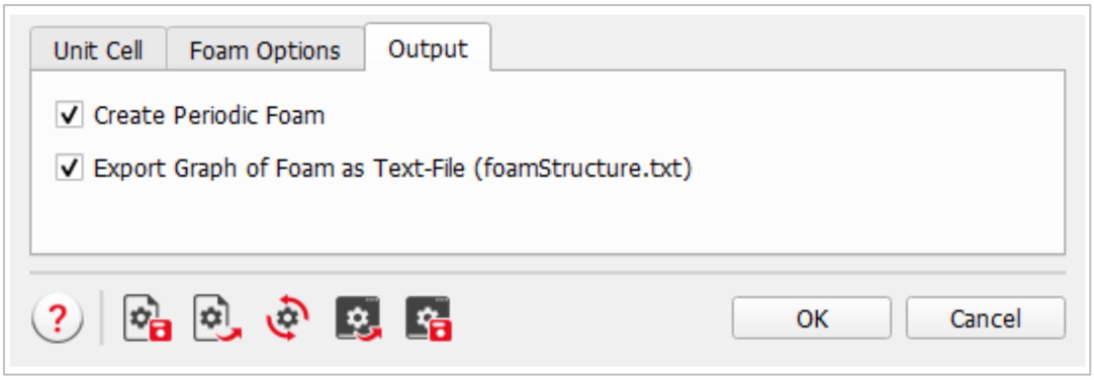
The following example demonstrates the thinning parameter specifically for random foams, using strut thinning with and without length-dependent thinning in a random open-cell foam. Note the resulting difference in the SVP of the generated struts.



1.2.3 Output

Under the **Output** tab, it is possible to choose whether the generated foam structure is periodic or not.

It is also possible to export a text file containing all geometric information of the foam as a graph.



The text file is explained below:

foamStructure.txt

Domain origin and size

```
0.0 0.0 0.0 (domain origin)
2.000000e-04 2.000000e-04 1.600000e-04 (domain size)
```

Coordinates of all nodes, first column contains object ID

```
224 (number of nodes)
0 1.250000e-05 6.250000e-05 3.312500e-05
1 1.250000e-05 3.750000e-05 5.187500e-05
2 1.250000e-05 6.250000e-05 7.062500e-05
3 1.250000e-05 8.750000e-05 5.187500e-05
...
```

Node ID and the IDs of its periodic copies

```
64 (periodic copies: identical nodes)
0 0 146
1 1 120 147 213
2 2 115 148 208
3 3 149
...
```

IDs of nodes that build an edge

```
388 (number of edges)
0 0 1
1 1 2
2 2 3
3 3 0
...
```

Edge IDs and the IDs of its periodic copies

```
108 (periodic copies: identical edges)
0 0 248
1 1 207 249 371
2 2 250
3 3 251
...
```

Number and IDs of edges that build a face

```
182 (number of faces)
0 4 0 1 2 3
1 4 4 5 6 7
2 4 8 9 10 11
3 4 12 13 14 15
...
```

Face IDs and the IDs of its periodic copies

```
46 (periodic copies: identical faces)
0 0 113
1 2 73
2 6 93 135 174
3 7 145
...
```

Number and IDs of faces that build a cell

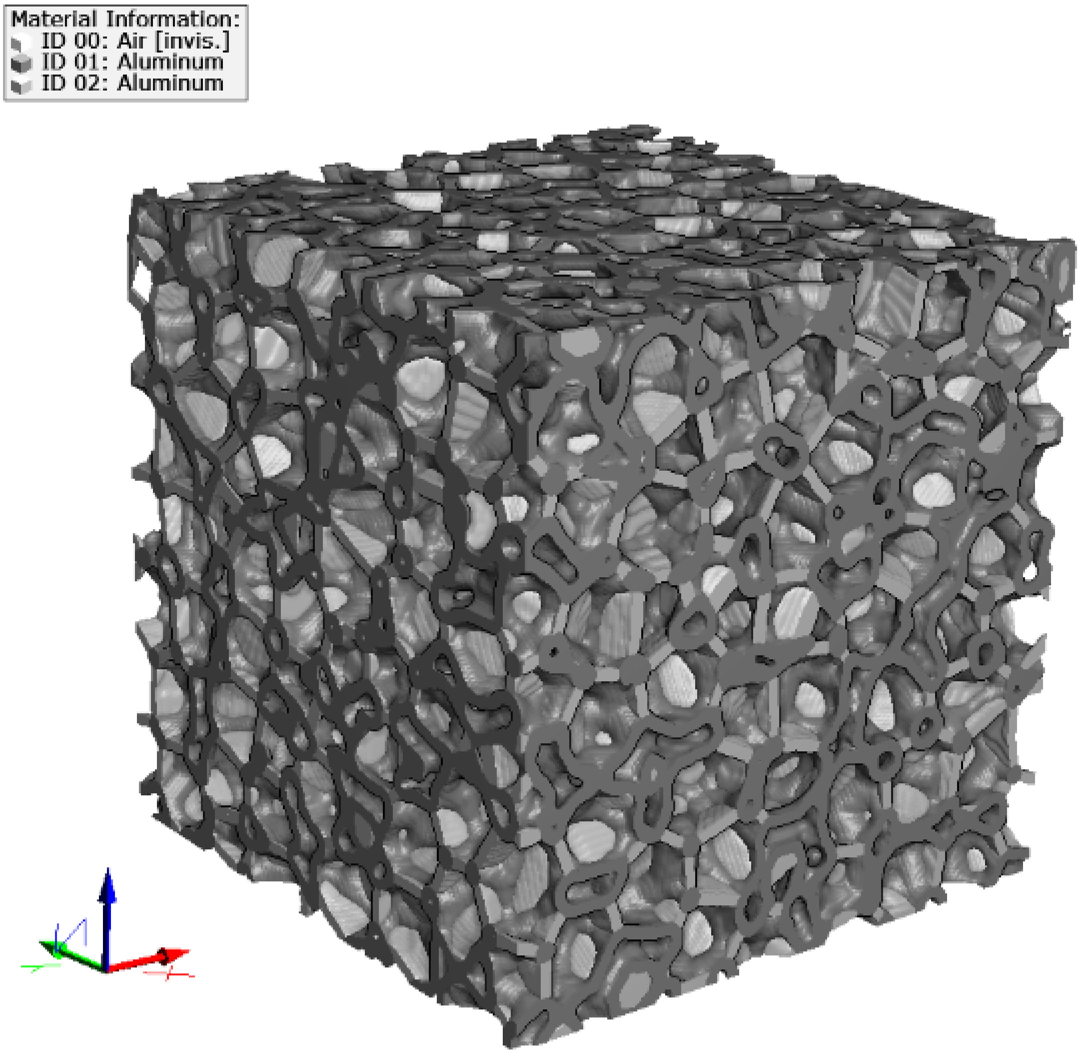
```
17 (number of cells)
0 14 0 1 2 3 4 5 6 7 8 9 10 11 12 13
1 14 14 15 16 17 18 19 20 21 22 23 24 25 26 6
2 14 27 28 17 29 30 31 32 33 34 35 36 37 7 38
3 14 15 39 40 41 42 43 44 45 46 10 47 48 49 50
...
```

Cell ID and the ID of its periodic copies

```
3 (periodic copies: identical cells)
0 1 7 11 15
1 2 12
2 3 8
```

1.2.4 Result Files

Once the foam generation process has finished, the resulting foam is displayed in the main GeoDict window.

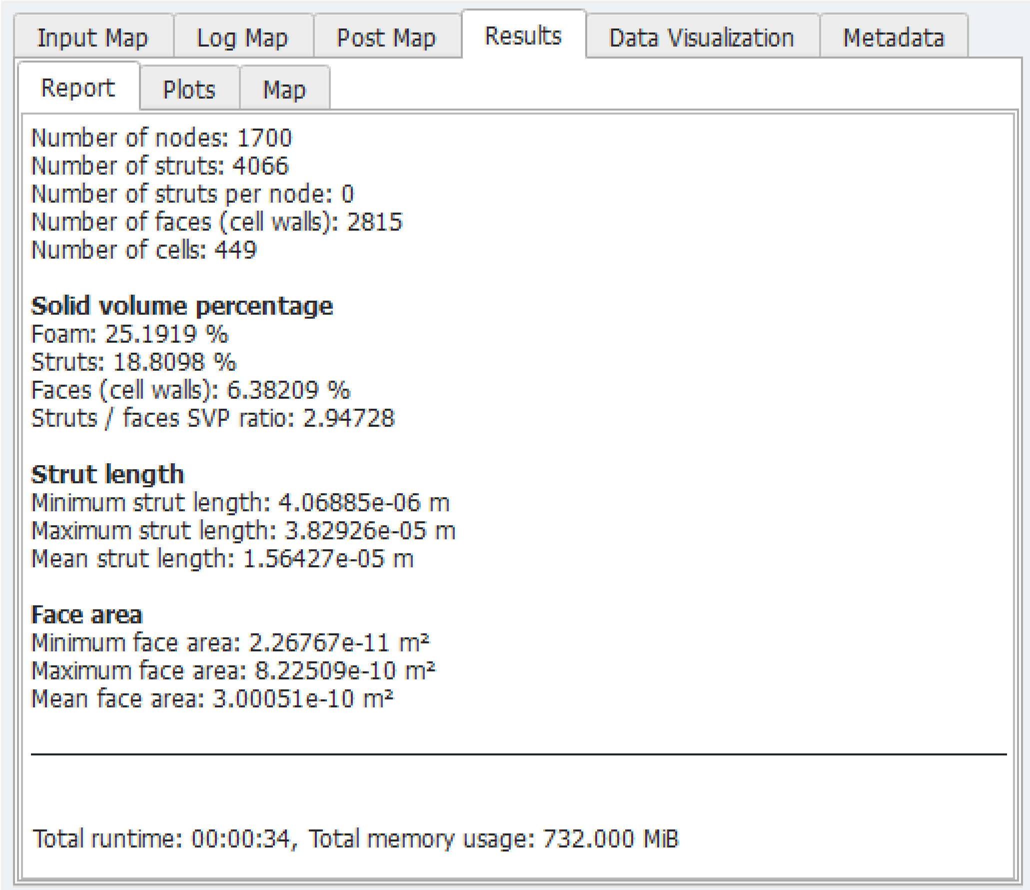


Result Viewer

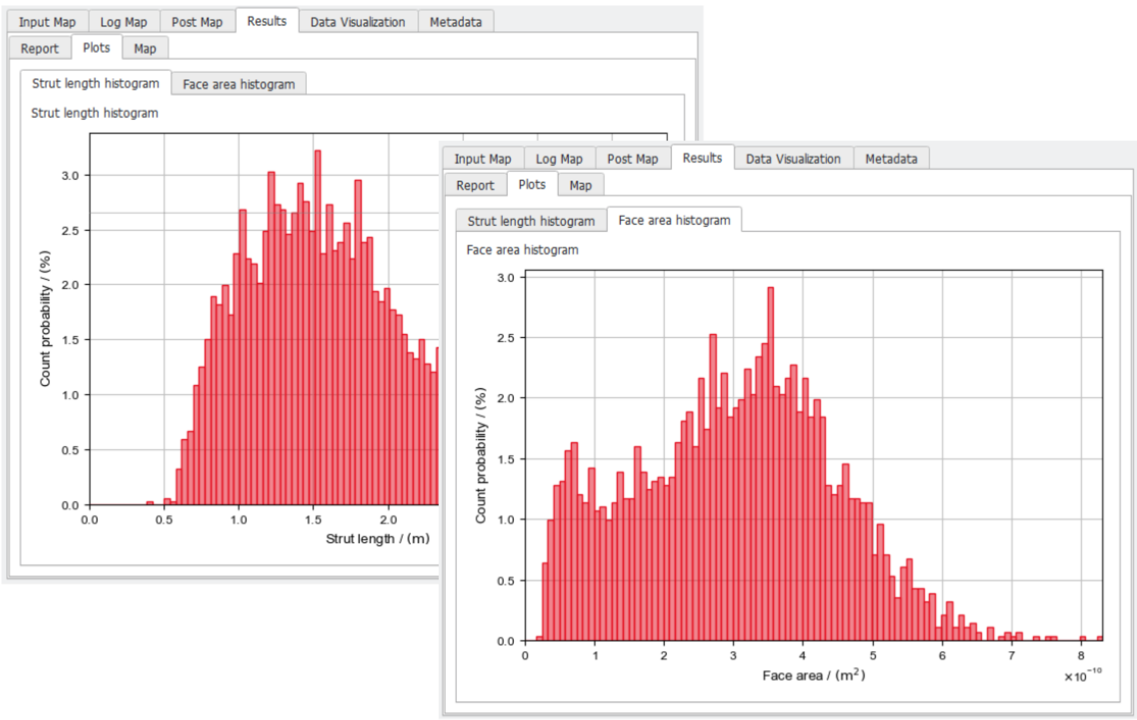
The *.gdr file created during the generation opens in the Result Viewer. In the **Results** tab, the **Report** subtab displays the number of nodes, struts, faces, and cells at the top, as well as the average number of struts per node for the random foam structure.

The solid volume percentages of the entire foam, of the struts and faces separately, and of the ratio between the SVP of the struts and the SVP of the faces are listed under **Solid Volume Percentage**.

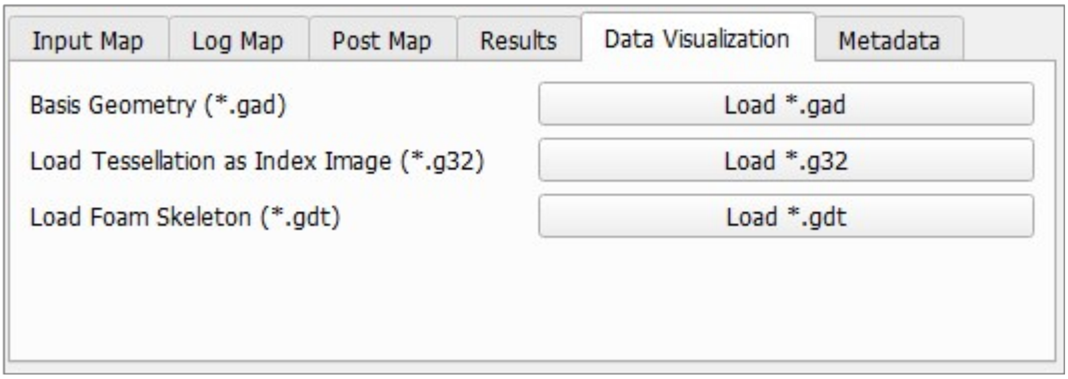
Next, the minimal, maximal, and mean length is shown for the struts, and the minimal, maximal, and mean area is shown for the faces.



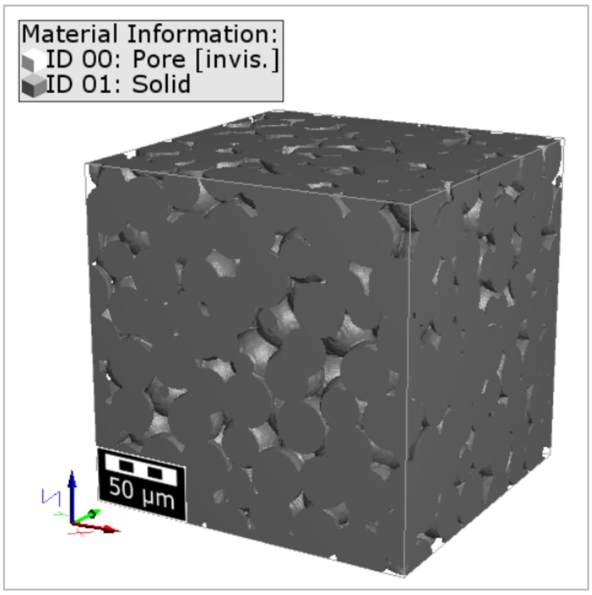
The subtab **Plots** provides more detailed information about the strut lengths and face areas. Both the strut length and face area distributions are visualized as histograms.



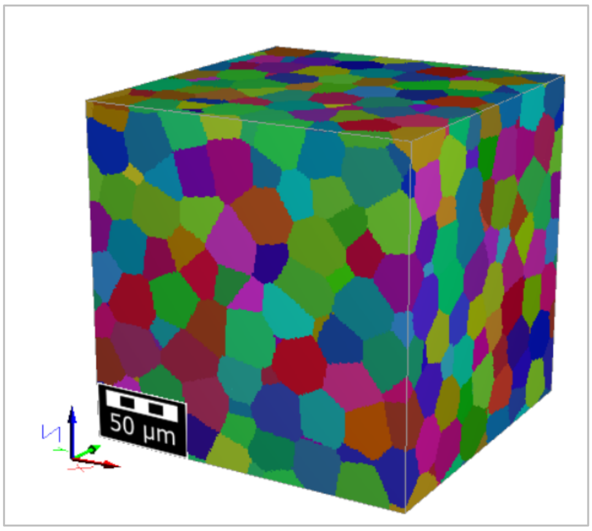
Through the **Data Visualization** tab, three files can be loaded into the visualization area of the GeoDict GUI.



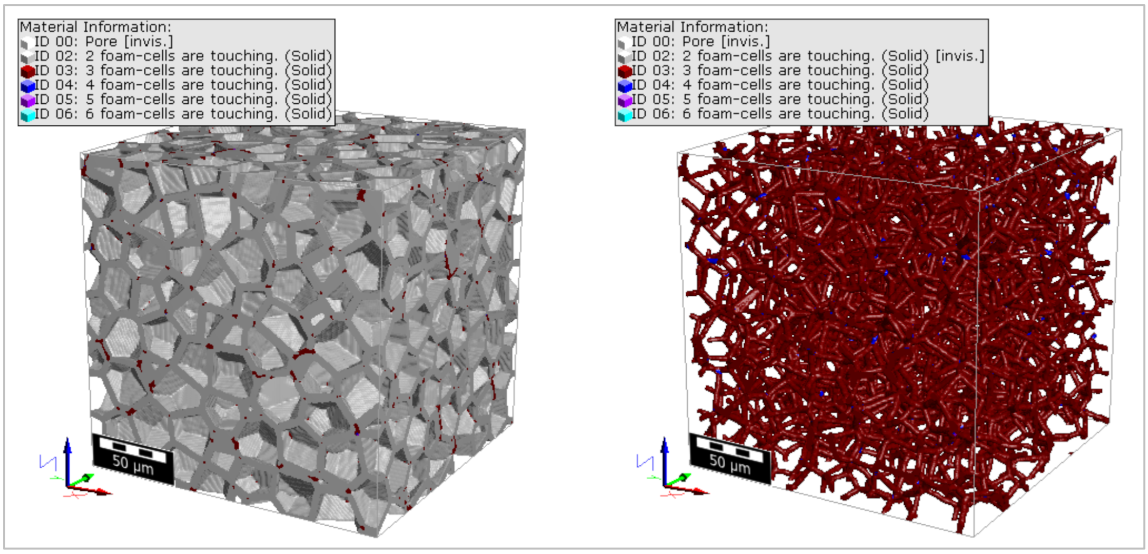
With **Load *.gad**, the **Basis Geometry (*.gad)**, which was defined in the options menu 26, can be displayed.



It is possible also to **Load Tessellation as Index Image (*.g32)** by clicking **Load *.g32**. Here, each foam cell is given an individual ID.

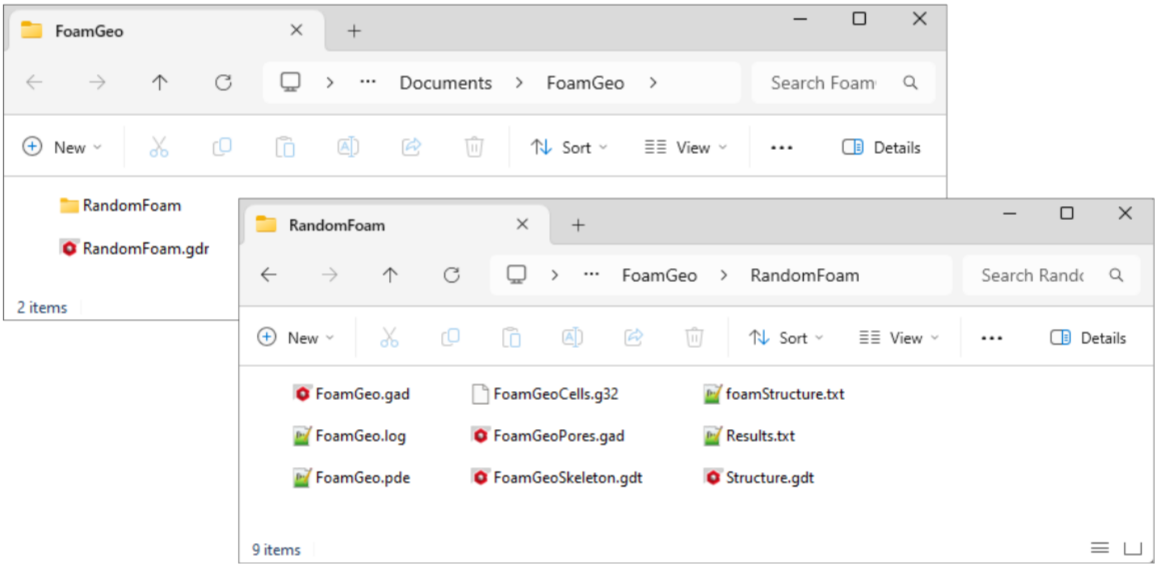


The third option is **Load Foam Skeleton (*.gdt)**, where each number of the Material ID stands for the number of cells that meet at this point. This means Material ID 2 represents the faces between two cells and Material ID 3 represents the struts of the foam. In the right picture, Material ID 2 was set to invisible, so Material ID 3 representing the struts can be seen more clearly.



Result Files

After the generation, the project folder contains the result file (in *.gdr format) and a folder with the same name as the result file.



The result folder contains several files:

- **FoamGeo.gad**: Analytical objects for generated foam structure
- **Structure.gdt**: Generated foam structure
- **FoamGeoPores.gad**: Basis Pore-Geometry (homogeneous pack of spheres or ellipsoids), which was used to generate the foam
- **FoamGeo.log**: *.log-file of the foam generation process
- **FoamGeo.pde**: List of all generation input parameters
- **Result.txt**: Result summary
- **FoamGeoCells.g32**: Index image map
- **FoamGeoSkeleton.gdt**: Skeleton of the foam
- **foamStructure.txt**: List of the coordinates of each node, the nodes of struts, and the struts of each face (optional)

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