Creating Isosurfaces from a Geosoft Voxel

A 3 dimensional surface that passes through points of equal value is called an isosurface. Isosurfaces can be thought of as 3D contours. Isosurfaces are written to a geosurface file. The geosurface file is able to save more than one isosurface. This allows you to easily share your results with colleagues to collaborate on projects.

In Geosoft, there are three different ways to create isosurfaces from a voxel:

❯ Create a single isosurface at a specified value.

❯ Visually clip the minimum data values from a voxel and automatically extract an isosurface at the specified clip value.

❯ Automatically create multiple isosurfaces using a linear, log or user-specified distribution.

To create a single isosurface at a specified value:

1. In the 3D Viewer, click **Add to 3D menu | Isosurface | Create Isosurface**.
2. Browse to and select the **Input voxel**.
3. You can optionally change the default **Output geosurface name.**
4. Enter a **Surface value**.

   This will be the 3D contour value.

   The value you enter must be a data value in the voxel range.

5. You can optionally change the **Colour**.
6. If the Output geosurface file exists, you can append the isosurface to it by selecting **Append to geosurface**.
7. Click **OK** to create the isosurface.

To visually clip a voxel to create an isosurface:

1. Add the voxel to the 3D Viewer (**Add to 3D | Voxel**).
2. Select the **voxel** in the *3D Viewer tree list*.
3. Click the **Clipping** tab below the tree list.
4. In the *Minimum data value field*, specify a value larger than the minimum. You can type in a value or use the data slider.
5. Click **Define isosurface using minimum data clip value**.
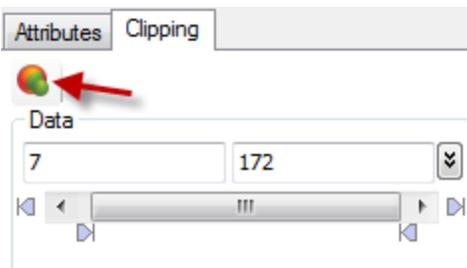
The *Create Isosurface from Voxel* dialog will open automatically populated with the Input voxel, Output geosurface name, Surface value and Colour.

6. Click **OK** to create the isosurface.

⚠ *Notes:*

You can optionally specify a different minimum data value on the Clipping tab. Then use the Define isosurface using minimum data clip value again to append another isosurface to the geosurface file.

For the *Create Isosurface from Voxel* dialog:

❯ Isosurfaces can be appended to a geosurface as long as the Input voxel used to create the geosurface is the same.

❯ Appending the same surface value to the geosurface will overwrite the surface value and will update the colour if it was changed.

❯ If Append to geosurface is disabled and the Output geosurface exists, you will be prompted if you want to overwrite the output file.

To create multiple isosurfaces from a voxel:

1. In the 3D Viewer, click **Add to 3D | Isosurface | Create Multiple Isosurfaces**.

2. Browse to and select the **Input voxel**.

   If the options under *More* are not changed, 5 isosurfaces will be extracted at linearly-spaced intervals between the input voxel's minimum and maximum values.

3. Click **More**.

4. You can optionally change the **Number of isosurfaces** to extract.

5. Distribution - after clicking **Use a linear distribution** or **Use a log distribution**, you can optionally change the *Minimum* and *Maximum* used to define the range from which to calculate the isosurface values.

6. You can also manually change the **Isosurface Value** and **Colour** by clicking a cell to edit.

7. Click **OK**.

⚠ *Notes:*

Colour tables can be loaded and saved.

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