Understanding Biobased Content
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• What is biobased content?
  • Biobased content is how much “new” or recent organic carbon is in an object or substance, compared to the amount of “old” organic carbon it contains.

A tree is 100% Biobased

Coal is 0% Biobased
Understanding Biobased Content

- Biobased content is calculated using **only** organic carbon. What is organic carbon?

Organic carbon has C-H bonds (and often C-C bonds)

Glucose (sugar) contains organic carbon (and can be broken down to make many other organic molecules.)

Water, carbonate, and other inorganic or non-carbon molecules are **not** considered when calculating biobased content.

*An organic molecule is *not* the same as an “organic” food you would buy at the store.*
Some milk cartons are 90% biobased (biobased paper coated with a petroleum-based plastic coating).

Styrofoam is typically 0% biobased (it is made from polystyrene, a petroleum derivative).

The organic carbon in some paint comes from 80% plant oil and 20% petroleum derived materials. This makes the paint 80% biobased.
Calculation of Biobased Content

This equation can be used to calculate biobased content:

\[
\frac{\text{"new" organic carbon}}{\text{"new" organic carbon} + \text{"old" carbon}} \times 100 = \% \text{ biobased content}
\]

For example:

\[
\frac{\text{corn}}{\text{corn} + \text{oil}} \times 100 = \% \text{ biobased content}
\]
Calculation of Biobased Content

• **Summary:**
  – Biobased content is calculated using the ratio of “new” organic carbon (plant or agricultural-based) to total organic carbon (“new” organic carbon + “old” or fossil fuel-based organic carbon).
  – The test method ASTM D6866 is used to quantify this value.
  – Inorganic carbon and water are excluded.

If you still have questions about how to calculate biobased content, please contact USDA BioPreferred Program staff (help@usdbiopreferred.net)