Here's a list of different units (factors & values) used to rate insulation materials. Also included is a brief summary of how these units are applied and used together for evaluation of effective insulation performance. This material has been taken from the Internet sources as noted.

Insulation K-value, or K-factor, is used to rate the material's ability to allow heat to pass through it, independent of its thickness. The lower the K-value, the better the insulator.

Insulation C-value, or C-factor, is used to rate thermal conductance; it's the number of BTU (British thermal units) that pass through a square foot of material with a 1 degree temperature difference for a specified thickness. The lower the C-value, the more effective the insulation.

Insulation U-value is known as thermal transmittance, which refers to the heat transmission through an area of a material construction, induced by temperature differences between the adjacent environments. The lower the U-value, the better.

It can be tough to put insulation terms like these into layman's terms, but what you basically need to know when it comes to insulation U-value, K-value and C-value is that:

A lower U-value (which can kind of be thought of as temperature difference between adjacent areas) indicates more effective insulation.
A lower C-value means the insulation performs better—and the same thing with a higher R-value.
The lower the K-value, the greater the insulating value for a particular thickness and given set of conditions.

https://www.goldstarinsulation.com/blog/insulation-k-value-c-value-u-value/

Rating the Performance of Industrial Thermal Insulation:

R-Value vs K-Value: Thermal insulation's primary purpose is reducing the exchange of heat between two distinct environments. When you are selecting an insulation for your application, K, U, R, and C-value ratings are crucial considerations, each representing a factor in thermal insulation performance. The values are determined by the type of material and can be affected by its thickness. Here's what each value means:

K-Value: This represents a material's thermal conductivity, measuring its ability to conduct heat energy. A low K-value insulation delivers good insulation performance, and most insulation products have a K-value lower than 1. Specifically, the K-value measures the heat in BTUs (British thermal units) per hour that passes through one square foot of one-inch-thick insulation, thus decreasing or increasing the temperature by 1 °F on the other side of the material. K-value is important in applications with extreme temperature differences, such as exhaust systems and engines.

R-Value: R-value is a material's thermal resistance, describing its effectiveness at preventing heat escape. An insulation's R-value increases with its thickness and density, so the higher the R-value, the better the insulation. R-value calculations are most useful in residential or building applications, where there are few large temperature fluctuations.

U-Value: Also known as thermal transmittance, U-value refers to the rate of heat transfer through a material. A low U-value insulation transmits thermal energy more slowly, providing better insulation properties.

C-Value: A measurement of conductivity similar to the K-value, the C-value is the thermal conductance factor measuring the amount of heat that passes through one foot of the insulation material. The lower the C-value, the better the insulation performance.

https://www.firwin.com/blog/k-u-r-c-value-thermal-insulation/