Here you have a simplified 3D model of the CIE L*a*b* color space.

One color – three numbers
In the CIE L*a*b* color space you define one color with three values: L*, a* and b*.

Cyan sample:
L*  55
a*  -37
b*  -50
1. CIE L*a*b* color space

Lightness (L*)
The L* tells how light or dark the color is. The values are always ranging from 0-100. Black is 0 and 100 is white.

On each level the lightness is the same in all colors.
1. CIE L*a*b* color space

The six corner stones of the cmyk color space:
Cyan, magenta, yellow, red, green and blue.

The system of coordinates with the two axes a* and b* tells where the color is chromatically placed.

In the middle of the diagram the values are 0 in both a* and b*. From there you go plus or minus – in both axes.

The range of a* and b* never exceeds -100 to 100 in the cmyk color space. In other color spaces the values can be higher.

The six-sided area is the target for paper type 2 (white backing) according to the ISO standard.

The diagram does not show the L* values.
1. CIE L*a*b* color space

Green sample:
- L* 75
- a* -68
- b* 25

Brown sample:
- L* 25
- a* 68
- b* 25
1. CIE L*a*b* color space

A view – without L*

The diagram is a simplified view! The colors are not accurate and the L* values are not shown.

The full color space is a three dimensional model and the diagram only shows two dimensions. If you wish to see all colors in correct position, it would demand 101 levels of L* (0-100).

On the left-hand side the simplified model.

On the right-hand side all colors are L* 47. On this level you only see the red color in correct position. The other five corner stones of cmyk are placed on other levels of L*.

The compromise is to have a simple diagram showing the chromatic placement – without L*. 