

An experience-based tool to aid color universal design



What is the significance of color universal design?

For universal access, "confusing color combinations" should be avoided in documents that may be read by people with color vision deficiency (CVD). However, for people with normal color vision, it is not easy to imagine which color combinations are confusing for individuals afflicted with CVD. Variantor helps you to understand what the world looks like to color deficient people. You can easily see the confusing color combinations just by wearing Variantor.

[Application]

Product development cars / electrical appliances / stationery

Printed matter and publications brochures / packages / educational material / magazines

City planning directional signs / guide displays

Education People who engage in educational work

This tool was developed jointly by Prof. Shigeki Nakauchi, Toyohashi University of Technology, Prof. Keizo Shinomori, Kochi University of Technology and Itoh Optical Industrial Co.,Ltd. supported by the Chubu Bureau of Economy, Trade and Industry, Japan.



Variantor has been recognized as a useful tool for color universal design by the authorized NPO color universal design organization (CUDO), Japan.

CAUTION: Variantor is not designed to assist people with color vision deficiency. Variantor does not cure color vision deficiency. Driving a vehicle or operating a machine with Variantor may lead to serious injury or vehicle damage. Before using Variantor, please read the instruction manual carefully. Notice: Variantor cannot simulate the ability of color discrimination as expected for CRT/LC displays and LED lights.

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Variantor is recognized as Shinrenkei project by the Chubu Bureau of Economy, Trade and Industry, Japan.
Itoh Optical Industrial Co. Ltd. / KICTEC Inc. / SUN CONTACT LENS Co. Ltd. / TAIHEI Printing Co. Ltd.

<http://www.variantor.com/>

What is Variantor?

1 Spectacles for normal color vision people

Variantor helps people with normal color vision to understand what the world looks like to, and which color combinations are confusing for color deficient people.



Disaster prevention map.

LEFT: Normal color vision,

RIGHT: Color vision deficiency simulation by Variantor

2 Just by wearing Variantor!

You can easily view the confusing color combinations experienced by people with color vision deficiency just by wearing the spectacles. It does not require any special skills.



3 World first

Variantor is the first and only wearing device in the world which simulates the ability of color discrimination on people with color vision deficiency. The filter used in the glasses was developed through a national project in Japan.



▲ National project members

Poster presentation at the 29th European conference on visual perception in St. Petersburg, Russia. ▶



Why do we need color universal design?

Perceived color



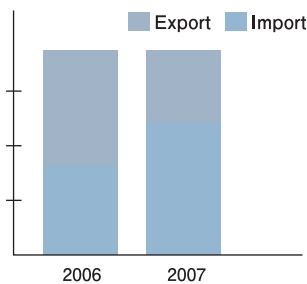
For color vision deficient people, it is difficult to distinguish colors between, for example, red and green with similar intensity. Color vision deficiency affects a significant number of people. It occurs in about 6-8% of males in Europe and about 200 million people worldwide.

How to use Variantor?



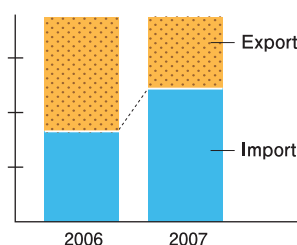
1. Let's design as usual

This figure is colored in pink and light blue. For normal color vision people, there is no problem.



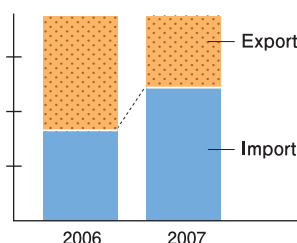
2. See the figure with Variantor

With Variantor, we notice that pink and light blue are confusing for people with color vision deficiency. Color legends are also confusing.



3. Change the color and shape

Different colors are chosen, and polka-dot pattern and white lines are added. Legends are directly written in the figure.



4. Check it with Variantor again

This figure is color universal accessible both for people with normal color vision and people with color vision deficiency.