

Step into Your Dog's World with DIY Canine Vision Goggles

A simple "build-it-yourself" project that allows you to see the world in the same way as your canine companion.



Dogs experience the world in a way that is vastly different from humans. While we see a full spectrum of colors, our canine companions have **dichromatic vision**, meaning they primarily perceive shades of **blue and yellow**, with reds and greens appearing as muted tones of gray or brown. Additionally, dogs rely less on fine details and more on **motion detection and contrast**, as their vision is optimized for **low-light conditions** and detecting movement rather than intricate textures.

For dog owners looking to **experience the world through their pet's eyes**, building **DIY dog vision goggles** is a fun and educational project. By crafting a pair of custom goggles that simulate a dog's vision, you can gain **a new perspective on how they interact with their environment**, helping you make informed choices about toys, training methods, and even home adjustments.

This guide will walk you through the process of constructing **dog vision goggles**, including choosing the right filters, adding a blur effect to match a dog's visual sharpness, and selecting a comfortable goggle frame for easy modification. By stepping into their world, you may uncover surprising insights that transform how you interact with your pet every day.

Why Dogs Have No Red-Green Vision

Canines evolved **dichromatic vision**, seeing mainly **blue and yellow**, because it suited their **hunting and survival needs**. As **crepuscular predators**, dogs and their ancestors relied more on **motion detection, low-light vision, ultraviolet acuity**, and an incredible sense of smell than on

distinguishing colors. Their eyes contain **more rod cells**, enhancing **night vision and contrast sensitivity** at the cost of full color perception.

Since **most prey animals blend into natural backgrounds**, red-green differentiation wasn't essential. Instead, their vision prioritizes **detecting movement and contrast**, making them highly efficient hunters. Trichromatic vision offered no **survival advantage**, so natural selection favored their current **high-contrast, motion-sensitive eyesight**.



How to Simulate Dog Vision in DIY Goggles

To replicate a dog's **color perception and visual clarity**, you need to address two key factors:

1. **Color Filtering**—Using a combination of blue and yellow filters to block red and green light, ensuring only the **colors dogs actually see** pass through the lenses.
2. **Blurring Effect**—Adding a light diffusion layer to **mimic a dog's reduced visual acuity**, making the image softer and less detailed.

By combining these elements, you'll create an **immersive experience** that brings you closer to your dog's visual reality.

Step 1: Choosing the Right Goggles as a Base

You need a sturdy, comfortable frame that can hold your custom lenses. Consider the following options:

- **Safety Goggles (Best Budget Option)**—Available at hardware stores, clear safety goggles offer an **affordable, easy-to-modify** frame.
- **Ski or Snowboard Goggles (Most Comfortable)**—These provide a **wide field of view** and better padding, ideal for extended wear.
- **Welding Goggles (Durable & Compact)**—With **removable lenses**, these allow for **quick lens swapping**, making them ideal for testing different filter combinations.
- **Swimming Goggles (Minimalist Choice)**—If you want a **compact, lightweight** option, swimming goggles provide a **tight seal and simple modification**.

Where to Find Them:

- Safety goggles: **Hardware stores, home improvement retailers**
- Ski goggles: **Sporting goods stores**
- Welding goggles: **Industrial supply shops**
- Swimming goggles: **Sports retailers**

Step 2: Selecting the Right Filters

Dogs see primarily in **blue and yellow hues**, so the right filter combination is crucial.

Cellophane Wrap

- *Blue filter:* Blue cellophane (gift wrap)
- *Yellow filter:* Yellow cellophane (gift wrap)
- *Availability:* Craft stores, office supply stores

Photography Gels

- *Blue filter:* Roscolux #3202 Full Blue
- *Yellow filter:* Roscolux #312 Canary Yellow
- *Availability:* Camera stores, film supply shops

Sunglasses Lenses

- *Blue filter:* Blue-tinted sunglasses
- *Yellow filter:* Yellow-tinted sunglasses
- *Availability:* Sunglass kiosks, discount stores

Colored Acetate Sheets

- *Blue filter:* Transparent blue acetate
- *Yellow filter:* Transparent yellow acetate
- *Availability:* Art supply stores

Stage Lighting Filters

- *Blue filter:* LEE Filters 079 Just Blue
- *Yellow filter:* LEE Filters 010 Medium Yellow
- *Availability:* Theater supply stores

Plastic Report Covers

- *Blue filter:* Blue transparent cover
- *Yellow filter:* Yellow transparent cover
- *Availability:* Office supply stores

How to Apply the Filters:

1. Cut the **blue and yellow** filters to fit your goggle lenses.
2. Attach them **with double-sided tape or glue** to keep them in place. Ensure there are no protruding edges.
3. Wear the goggles in different lighting conditions to ensure **reds and greens appear muted** as they would to a dog.
4. Explore variations in color and depth perception by admitting a different color or amount of diffusion to each eye.

Step 3: Adding a Diffusion Effect for Realism

Dogs see with **less sharpness than humans** (approximately **20/75 vision**). To approximate this, experiment with adding a **diffusion layer** over your lenses using the following materials:

Thin Tracing Paper

- *Effect:* Light blur
- *Availability:* Art supply stores

Translucent Plastic Sheet

- *Effect:* Moderate blur
- *Availability:* Hardware stores

Matte Scotch Tape

- *Effect:* Mild to strong blur (depending on layers)
- *Availability:* Office supply stores

Light Diffusion Film

- *Effect:* Best blur accuracy
- *Availability:* Photography stores

Cooking Oil or Vaseline

- *Effect:* Variable according to thickness of coating
- *Availability:* Supermarket

Sandpaper (Fine Grit)

- *Effect:* Customizable blur (scuff clear plastic for different effects)
- *Availability:* Hardware stores

How to Apply the Diffusion Layer:

1. Cut the material to **match the shape of the lenses**.
2. Attach it inside the goggles for **aesthetic cleanliness**.

3. Layer additional diffusion sheets if you need a stronger blurring effect.



Step 4: Interacting with Your Dog While Wearing the Goggles

Once you have assembled your dog vision goggles, try engaging with your dog in various ways to better understand their world:

- **Play Fetch with Different Colored Toys:** Notice which toys stand out the most. Did your dog struggle to find a red toy on the green grass while you wore the goggles?
- **Explore Outdoor Terrain:** Observe how visibility changes in different lighting conditions.
- **Engage in Training Sessions:** See how your dog perceives hand signals, obstacles, and treat placement.
- **Move Through Your Home Together:** Identify potential obstacles or confusing areas for your pet.
- **Observe Their Behavior at Different Times of Day:** Assess their ability to see in low-light environments.
- **Calm Aggressive dogs:** It may help to wear **colors like red, green, or brown** that from a dog's perspective are muted and do not stand out strongly.

Can a Dog's Color Vision be Extended?

Irrespective of their limited perception of color, dogs still enjoy a perfectly adapted and fully engaging view of their world. Nonetheless, one might wonder if corrective color blindness glasses for humans would work on dogs. Unfortunately not. Their **dichromatic** eyes **lack the red-sensitive cone cells altogether**. However, instead of trying to “introduce” **red**, high-contrast **yellow or amber lenses**, as used in certain sports, could **darken greens and lighten reds** to both make objects more distinguishable and compensate for a natural shortfall in depth perception. This has yet to be explored.

Final Considerations and Safety Notes

While wearing the goggles, **your depth perception and color recognition will be altered**. Some users may experience mild disorientation while wearing the goggles due to altered depth perception. It's best to wear them for short periods initially and take breaks if needed. Be cautious when walking, running, or interacting with moving objects to **avoid tripping or misjudging**

distances. Do not wear the goggles while driving or performing any activity requiring normal vision.

By safely engaging in this experiment, you can deepen your connection with your dog and gain a greater appreciation for their unique way of experiencing the world.