Essential Quality Control Checklist for Eyewear Startups

	No.	Checklist	Requirements	**Reference check** (See Link to Notes Below in Each Section
☐	**1.**	**Color**	Compare color with golden samples or specified values on **Pantone** color chart, or compare directly to golden sample. Take a random sample pulled from mass production for both **Pantone and Golden Sample** color code comparison	Golden Sample (verified sample) / Pantone Color Chart **>Go to full description<**
☐	**2.**	**Frame Outlook**	**Compare the Frame** – match with Golden sample for any deviations on style, rimmed and rimless, model and numbers. **Bridge Check** – frame thickness, shape, and material. **Temple Check** - check for any deviation and the tilt angle	Verified Sample and/or Technical Drawing as Reference **>Go to full description<**
☐	**3.**	**Eye Size and Dimensions**	Verify that **frame and eye size** match customer's specifications. Frame dimensions should include the head curvature, pantoscopic tilt and nose width. They must comply with specified **ISO standards** if a **CE** mark is present on the frame	Verified Sample and/or Technical drawing as reference **>Go to full description<**
☐	**4.**	**Hinge**	**Bend test –** a regular hinge can sustain opening to an exterior angle of 20° (or as otherwise specified by the customer) with no deformation after return to original position **Temple Check –** look for any deviations using verified sample or drawing, temple should not touch glasses (important for sunglasses) **Symmetry –** make sure that the left and right opening angles are symmetric **Movement –** check the hinge functionality is smooth and without any squeaks	Visual Inspection **>Go to full description<**
☐	**5.**	**Logo & Labels**	The **Logo** should be legible and clear. Make sure **logos and labels comply with relevant standards** and specifications provided by the client, this includes the brand name, model number, UV rating etc.	Visual Inspection **>Go to full description<**

	No.	Checklist	Requirements	Reference check (See Link to Notes Below in Each Section
☐	**6.**	**Lens**	**Gap Test** – there should be no gap around the edges where light can be seen between lens & frame **Tight Lens** – Lens should fit tight when force is applied and not pop out easily **No cracks** – imperfections or chips, nothing loose or extruding **No scratches** visible	Visual Inspection **>Go to full description<**
☐	**7.**	**Alignment**	The frame should be put through **a Standard Alignment test** (also called four-point touch) as part of the verification process	Verified Sample and/or Technical Drawing **>Go to full description<**
☐	**8.**	**Imprint**	Should be clearly visible and legible and should be able to pass the 3M tape test.	Visual Inspection and 3M tape test **>Go to full description<**
☐	**9.**	**Cosmetics**	**Look for any manufacturing defects** – chips, dripping paint marks, visible scratches, dirt, any markings that look out of place etc. on any area of the frame **Clean Hinge** – hinge should be clean and clear, free of dust or foreign objects **No** sharp points – on the outer frame, coating pits, blemishes or any handling damage at all.	Visual Inspection **>Go to full description<**
☐	**10.**	**Packaging**	Make sure packaging conforms to existing regulations and contractual specifications.	Visual Inspection **>Go to full description<**

For a thorough quality inspection checklist, we've included the Material Inspection Process as well.

Material Inspection Process:

- **Glass** – make sure specified raw materials and additives in the production of glass lenses meet standard requirements.
- **Coatings** – only approved coating and finishing materials should be used to ensure desirable properties such as UV protection, thickness, color, anti-reflectance, water resistance, abrasion resistance, static resistance and rust resistance. A simple salt water dip test would be a good idea – submerge glasses in a bath of salt water and leave for a few hours to test the results, any visible deviations (if any) in quality should appear at this point.
- **Frames** – make sure that specified materials or a combination thereof are being used i.e. carbon fiber, plastic, rubber and/or light metal alloy etc.
- **Plastic Resin and Additives** – only the correct type of resins and additives in the production of plastic lenses should be used. It is of utmost importance that these materials possess the specific gravity, refractive index, Abbe value specified

1. Color:

There are generally two methods used to make sure your colors meet the specified requirements.

- **Golden Sample:** you will typically compare a randomly selected sample, taken from mass production to your golden sample or “master” sample that has been pre-approved to see if the samples coming off the line meet your exact color requirements. To find out more about how big your sample size should be, check out this resource on Inspection Level & Selecting An AQL.
- **Pantone Color Swatch:** a color swatch can be used to directly compare the color that has been predetermined for your eyewear, to identify if the colors meet your requirements.

2. Frame:

Compare the frame with the golden sample to check any deviations on style, rimmed and rimless, model, number, etc. For length and thickness checks it's always a good idea to carry a calibrated caliper/vernier as a measuring tool.

- **Frame Style Check –** compare frame with verified (golden sample) samples for any deviations on style, rimmed or rimless, model, number, etc.
- **Frame color –** compare color with verified sample and/or specified values in the Pantone color chart as specified.
- **Temple Check –** verify that eyewear temples do not have any noticeable deviations from that of verified samples or technical drawings including style, material, thickness, color, and length. (Use calibrated measuring tool).
- **Attachments –** if there are any frame attachments included you need to check compliance to specifications. There should be no signs of damage or defects, scratches, imperfections or chips.

3. Eye Size and Dimensions:

- **Eye Size and Dimensions -** verify that the eye size and related dimensions are according to specifications and/or are the same as verified samples or technical drawings.
- **Bridge Check –** the bridge frame should be the same thickness, shape, material, and color contractually specified and/or approved samples.

4. Hinge:

A hinge, in theory, should be the only moveable part of eyewear and thus the most susceptible to wear and tear, and for this reason, a hinge should be of the best possible quality and durability. As simple as it may sound give the eyewear you're testing a rigorous "open and close" test to test for any vulnerability on moveable hinges or "joints".

- **Bend test -** a regular hinge can sustain opening to an exterior angle of 20° with no deformation after return to original position, give the eyewear a bend or two, slowly though you don't want to get carried away and rip the eyewear in half on your first go, yes it happens.
- **Temple Check –** look for any deviations using your good old verified sample or drawing. It is important that the temple should not touch the glasses (particularly for sunglasses).
- **Symmetry –** make sure that the left and right opening angles are symmetric, if you've ever sat on a pair of glasses you'll know exactly what to look for.

5. Logo & Labels:

The logo displaying on the eyewear is directly related to the brand and brand image, and the same goes for the labels on packaging, therefore it is important that it be of good quality.

- **Logo -** the logo should be clearly visible if so desired, aligned and in proportion to technical drawings and/or match with verified sample.
- **Labeling –** verify that the labels used in the product comply with relevant standards as well as with the specifications provided for by the importer including brand name, model, UV rating, etc.

6. Lens:

The lens is arguably the most important part of eyewear, and there are a wide variety of in-depth QC tests available for testing lenses i.e. *Impact Resistance Test, Refractive Index Check, Abbe Value Test, Transition Lens Check* etc. to name a few, however, here we will concentrate on the visual part of the inspection only.

- **Lens Fit –** lenses should fit into the frame appropriately tight so they don't "pop out" during normal wearing conditions. Laboratory testing can be conducted to determine the maximum force required for lenses to detach from the frame if necessary. This type of testing is recommended for high-end sunglasses and industrial eyewear.
- **Gap Test -** there should be no gaps around the edges where light can be seen between the lens & frame.
- **No cracks -** imperfections or chips, nothing loose or extruding and no visible scratches.

7. Alignment:

- **Standard Alignment Test:** once the lenses have been fabricated and mounted, the frame should be put in “Standard Alignment” (also called four-point touch) as part of the verification process to make sure the lens does not “distort” from its original form. Frames should be checked for horizontal and vertical alignment; temples should be at 90 degrees to the frame front when extending backward and the frame front should not be skewed in one direction or the other, when viewed from above and sideways.
- **The Table Top Test:** is a good way to check for standard alignment: Sit the inverted frame on a table top with the temples open and there should be no wobble

8. Imprint:

The imprint (or print) design on the eyewear will generally include all the specifications provided by the client, this includes the brand name, model number, UV rating etc. Your first test would be to vigorously rub the imprint with your thumb to see if it fades or comes off, then you would move onto the 3M tape test.

- **3M Tape Test:** the 3M tape generally refers to 610 tape which is applied to the imprint or printing which is then removed shortly afterward. If the imprint/ printing or coating sticks to the tape the 3M test has failed and the imprint is not up to standards. This test is done quickly on site and is a surefire way of quickly determining any problems with your imprint/printing

9. Cosmetics:

- **Manufacturing defects –** chips, dripping paint marks, visible scratches, dirt, any markings that look out of place, etc. on any area of the frame
- **Clean Hinge –** hinge should be clean and clear, free of dust or foreign objects
- **Sharp Points –** there should be no sharp points present anywhere on the eyewear, especially on the outer frame. Also take a closer look for coating pits, blemishes or any handling damages.

10. Packaging:

It's always a good idea to double check that both retail and shipper's packaging are in accordance with existing regulations and also contractual specifications as stipulated.

Retail Packaging:

- Inspect for any scuffing or scratching on packaging
- Pay attention to wording to see if there is any wrong wording or image on the packaging
- Any tears or breaks in the packaging exposing the product

Individual Packaging:

- Any sharp or protruding objects that could be considered dangerous
- Safely packaged with minimum risk of damage due to handling i.e. bubble wrap

Master Shipping Box/Carton

- Make sure the correct barcode is printed
- That any required wording on the boxes are legible and correct
- Look for any breaks on the boxes that could expose the retail boxes

About **Precision Eyewear Laboratory**

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We offer a variety of eyewear testing solutions to assure that your products, no matter their category of eyewear, reach and maintain the highest possible standards.

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- Reading glasses
- Sunglasses
- Ophthalmic lenses
- Safety glasses
- Children's glasses
- Swimming goggles
- Ski goggles
- Glasses frames
- Hazardous substance testing
- Glass and frame property analysis

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