

Lipstick Quality at Every Production Stage

On its way to the final product a lipstick passes many different physical states ranging from liquid over pasty to the molded final stick. Consistent lipstick quality can only be guaranteed, if every production step is controlled. BYK-Gardner offers the complete solution for measuring liquid and pasty materials as well as the final product quality of the lipstick.

Lipstick is made of dyes and pigments in a fragrant oil-wax base. Pigments are first dispersed in an oil base, then added to an oil/wax phase and mixed until a homogeneous product has been achieved. Last, effect pigments like metallic or pearlescent pigments may be added to obtain high effect colors. The final lipstick paste is then either molded, or it is poured into pans and stored for future molding. In case of the lipstick mass being stored before it is poured and molded, it must be reheated, checked for color consistency (color bleeding) and adjusted to specifications.

Due to the complex production process an objective QC system is needed to guarantee a high quality product at the end. Realistic color and gloss tolerances need to be set up for each production step. High quality color and gloss meters with excellent repeatability and inter-instrument agreement are needed to assure efficient communication among the different production phases, which might also include various suppliers. And standardized sample preparation methods need to be established to ensure uniform sample surfaces.

Measurement of pigment paste

For a quick and efficient quality control of the pigment paste it is necessary to measure the paste in a liquid stage. Therefore, it needs to be stirred thoroughly and poured into a cup. For ease of handling a special sample holder was developed, which can be easily cleaned and comes with disposable plastic spoons. For repeatable results the same amount of pigment paste needs to be poured into the spoon by means of a syringe. Care must be taken

to achieve a smooth and homogeneous surface. The sample holder is designed for non-contact measurement by placing the BYK-mac i on a mask to ensure centered positioning. A light barrier prevents entry of ambient light.

Measurement of lipstick paste

After adding the wax phase the final lipstick material will be very viscous. In order to control color/effect and gloss of this high viscous material either the mass is measured in a sample holder with round dishes (see powders and creams) or a drawdown is made on a test chart. Applying the lipstick on a test chart will be closer to simulating the color of the lipstick as it is applied on the lips. The following best practice can be applied for making a drawdown of the lipstick paste:

1. Heat lipstick paste in a water bath to decrease the viscosity.
2. Stir lipstick paste for uniform dispersion shortly before applying.
3. Heat applicator and substrate plate to keep a low viscosity and avoid freezing of the paste; a square applicator is recommended as it shows best drawdown results.
4. Use an automatic film applicator, as the draw down speed and pressure on the applicator tool will always be the same.

A special wet drawdown template was developed for placing the color or gloss instrument onto the sample without contact. For ease of handling the template is made of easy-to-clean hard-anodized aluminum.

BYK-Gardner Solution



Solid Color & Gloss
spectro2guide



Multi-Angle Color & Effect
BYK-mac i



Gloss
micro-gloss



Automatic Film Applicator
byko-drive



Measurement of lipstick

After the lipstick is molded in its shape, it is flamed to seal pinholes and improve the finish. At this point, color is of high importance as now the lipstick is in its final production stage, being ready to be sold to the customer.

The difficulty in measuring the color of a lipstick is the high curvature and the pasty material. Therefore, the sample holder cosmetics together with the lipstick kit was developed. Thus, the lipstick in its compartment can be easily positioned for color analysis and a mask ensures non-contact measurement (see page 23).

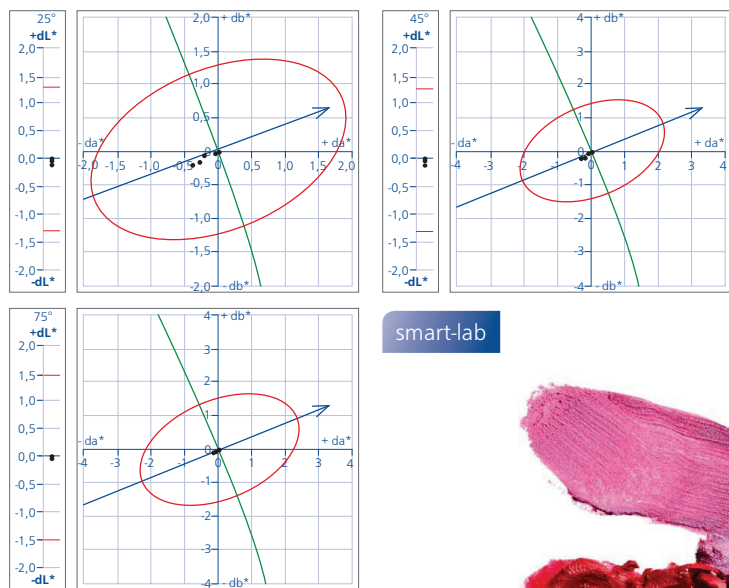
Repeatability check: Measurement of lipstick

The same red metallic lipstick was measured 5 times by taking 3 readings each time. After the first 3 readings the lipstick was taken out of the holder and put back into it.

Data interpretation

The data was analyzed using dECMC tolerances. As can be seen on the graphs on the right, the repeatability of the five measurements is well within the defined specification. Prerequisite is a uniform sample surface.

Color:



Pigment Paste Accessory

Sample Holder Liquid Paste – for BYK-mac i



Wet Drawdown Accessory

for spectro2guide/ micro-gloss/ BYK-mac i



Lipstick Accessory

Sample Holder Cosmetics