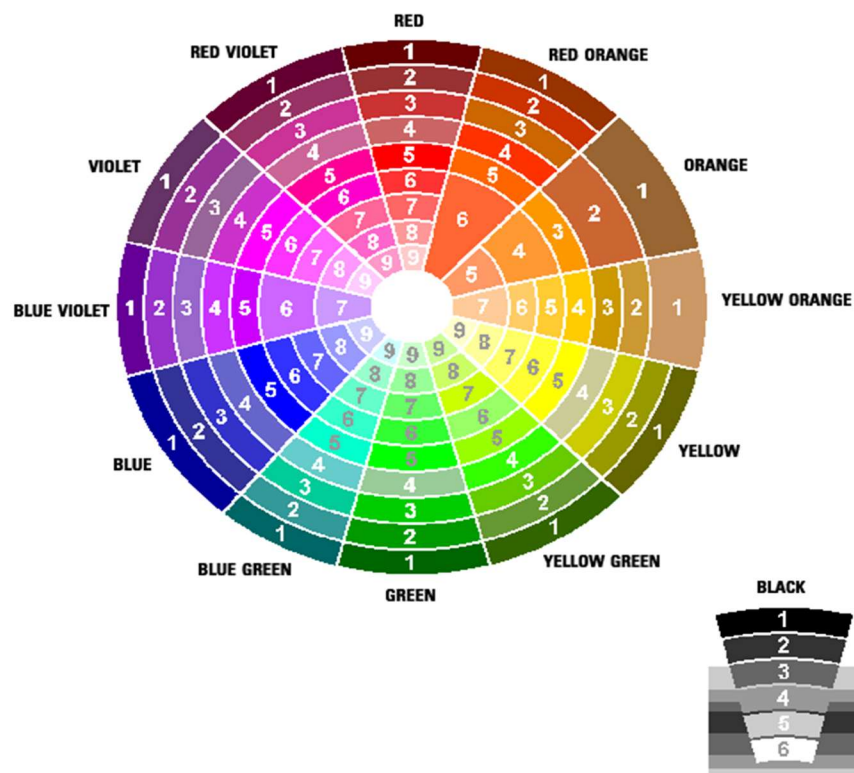


Personalized Color Solution

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HOW TO DEVELOP A TINTING SYSTEM



System and Services



SMSM is a global system and service for customized color management. SMSM is a 360° system for developing a fully personalized advanced tinting system for the decorative paint and coating field.

SMSM Includes:

- The Characterization of the base paint with the colorants;
- Actual Color formulations for all your products in the colors of your choice (NCS, RAL, GMCS Card....);
- The Optimization of the color formulas in terms of cost efficiency, productivity and repeatability;
- Supply of dedicated POS as well as laboratory software for formulas management, tinting machine connection, spectrophotometers, etc.;
- Supply of Color communication tool such as Shade Card, Fandeks, Color guides, Multimedia presentations or Catalogues;
- Start-up POS service for starting or maintaining tinting machines: AMC, calibration, software installation and configuration, etc.

SMSM is a system completely customizable, flexible and customer oriented. Everything can be personalized according to customer requirements: from pigments set, to product, to formulas, to anything else.

Even the most demanding color requirements can be satisfied with high performing, customized and timesaving solutions that will enable you to rapidly and efficiently accomplish your goals, granting you total autonomy in your future work with the tinting system.

With the technical bulletin we want to give you a guide line for an efficient tinting system development.

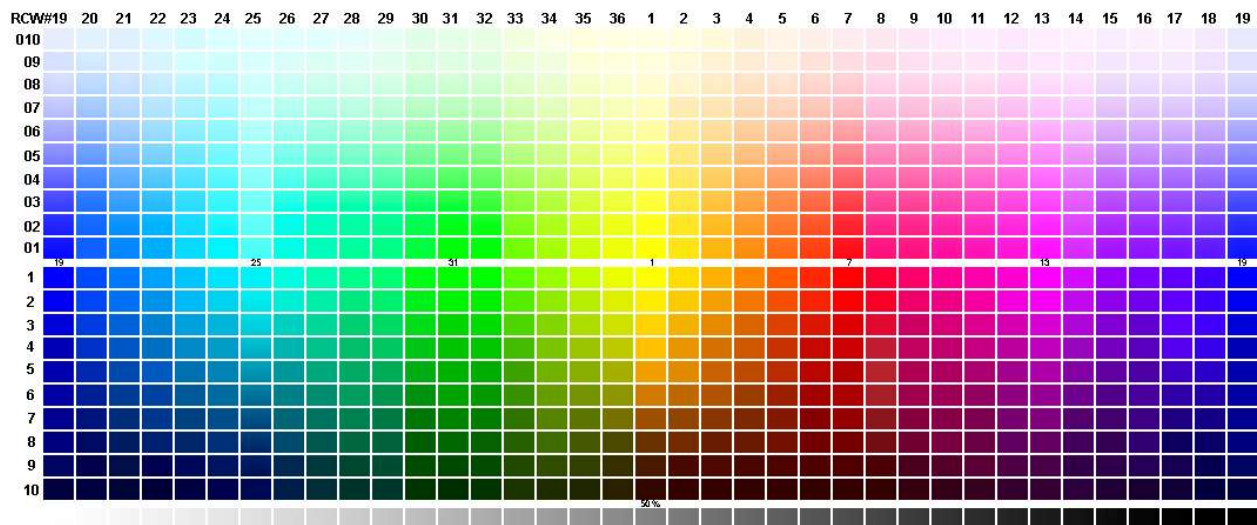


How to develop a tinting System



In order to develop a fully customized tinting system there are some procedure to follow. Our specialized technicians will assist the customer through all the phases involved in the study & development of its tailored system:

1. Analysis of the customer needs: during this step our technicians discuss the customer some topics regarding:
 - a. Type of paint & coating (kind of binder, type of application, number of bases, etc.);
 - b. Kind of application (Interior, Exterior, Both);
 - c. Quantity of binder and type of wetting and dispersing agents;
 - d. Type of packaging per each base and density of paint;
 - e. Information regarding tinting machine (type of once, level of precision, auto or manual, etc.);
2. Choice of the proper tinting machine system: during this phase our technicians in agreement with the customer select the most suitable set of pigment pastes. This selection is made according with:
 - a. Type of binder used on the paint (only water, or also some solvent product);
 - b. Type of product
 - c. Type of application
 - d. Type of final shade the customer wants to achieve (NCS, RAL, GMCS Card, Symphony etc.);
3. Development of colour formulation: in this step SMSM Lab will effect the characterization of the customer product. To speed up this phase we developed a simple procedure in order to sent to SMSM Lab only some leneta card instead of drum of paints.
4. Once we obtained all colour formulas we load the database into dedicated software: SMSMSoft. With this tool the customer will have the possibility to view formulas, create new colour if connected with a spectrophotometer, operate an automatic dispenser, etc.



Procedure to develop a t.s



1. Introduction

Because of different characteristics of the paints, final color obtained with customer bases could be different in terms of hiding power, tinting strength and shade.

In this case a complete characterization of base paint with Fandeks would be necessary, however this operation is often difficult to realize, in term of costs, time, delivery of paints, etc,

The most parameter of a base paint is:

- Hiding power, related to titanium dioxide contents; this parameter is strict influence of tinting strength of colorants;
- Whiteness grade (or yellowish grade), related to the impurities of raw material used (inorganic fillers, calcium carbonates, titanium dioxide);
- Compatibility In mixture with colorants.

For each the previous detailed parameters it is necessary to provide SMSM a “Calibration Dashboard” as following.

Important: The paint used for preparing the “Calibration Cardboard” becomes the STANDARD base paint used for quality control of future batches.

2. Calibration Pastes

“Calibration Cardboard” is prepared by the customer by mixing its base paints with the following “calibration pigments pastes”

- Black calibration paste;
- Red calibration paste;
- Yellow calibration paste;
- White calibration paste;
- Organic red calibration paste;
- Organic blue calibration paste.

Through black calibration coloring pastes SMSM is in the position to calculate difference in the terms of tinting strength toward formulations in our database;

Through Red calibration coloring pastes SMSM can calculates the stabilization of base paints and the compatibility with colorants;

Through Yellow Calibration Paste SMSM calculate the yellowish grade of base paint (the impurities of raw material);

Through White calibration past we can calculate the characteristics of NATURAL BASE PAINT OF CUSTOMER;

Through the Organic Pastes we can evaluate the colour acceptance, and calculate the bluish grade of the paint.



3. Calibration Cardboard

For the preparation of "Calibration Cardboards" SMSM will provide the Customer a complete set of calibration pastes and leneta cardboard,

- a. A cardboard only with WHITE BASE PAINT;
- b. A cardboard only with NATURAL BASE PAINT;
- c. A card board with following mixture:

WHITE BASE PAINT:	100,00g
Black Calibration Paste:	2,00g
- d. A cardboard with following mixture:

WHITE BASE PAINT:	100,00g
Yellow Calibration paste:	2,00g
- e. A cardboard with following mixture:

WHITE BASE PAINT:	100,00g
Red Calibration Paste:	2,00g
- f. A cardboard with following mixture:

NEUTRAL BASE PAINT:	180,00g
Yellow Calibration Paste:	8,00g
Red Calibration paste:	4,00g
White Calibration paste:	8,00g
- g. A cardboard with following mixture:

WHITE BASE PAINT:	100,00g
Organic Red calibration paste:	2,00g
- h. A cardboard with following mixture:

WHITE BASE PAINT:	100,00g
Organic Blue Calibration Paste:	2,00g

4. Preparation of Cardboard

For the preparation of calibration cardboards, the customer has to follow this procedure:

- a. Weight base paints and calibration paste with accuracy, using a laboratory balance(precision 0,0 or 0,00g);
- b. Mix at least 1 minute, until complete homogenizing;
Spread the mixture on SMSM Cardboard possibly with the film applicator of 200-250 microns (if not available, use a common brush);
- c. Aside the application, after speading, curry out a rub out test. This test is made by pressing with finger with circular movements in a restricted area;
- d. Wit for natural drying, at least 5-6 hours, at room temperature (20-25°C, 60% R.H.);
Send all cardboard to SMSM Laboratories.
- e. After receipt of calibration cardboards, SMSM laboratory develop the most accurate possible color formulation for the customer.



Quality assessment

Main aspects connected to a tinting system:

The most important requirement for tinting systems is to achieve the maximum colour repeatability time after time.

The differences in shade and tinting strength batch after batch must be reasonable. Not only colouring pastes influence colour repeatability but also other parameters:

1. Colorimetric Characteristics of base paint:

Base paints used for tinting system have really a deep influence on colour repeatability; usually paints producers do not consider the importance of colorimetric characteristics of their paints.

As a matter of fact, most of paint manufacturers believe that using always the same raw materials, there are no changes in base paints.

Unfortunately this statement is not completely correct. A lot of parameters are responsible for colorimetric characteristics of final paint:

- The whiteness grade of titanium dioxide used;
- The yellowish grade of titanium dioxide and raw material (fillers and extenders);
- The oil absorption of titanium dioxide and raw material;
- The activity of wetting and dispersing agents (in accordance with oil absorption of all components)
- The grade of dispersion;
- The possibility of human error (incorrect dosages) during paint manufacturing.

All the above detailed parameters can affect the quality of the final paint and in consequences the exact repeatability of the colour.

In order to avoid the any kind of problem related to the above mentioned parameters we kindly suggest to effect an accurate Quality control of the base paint.

2. Accurate Packing of base Paints:

The correct package and filling of base paints is another important parameter to observe in order to get good result on colour reputability.

Any mistake or incorrect weight of base paint compromise the right shade and tinting strength. According to the density of each base (White, Medium, and Neutral) and with the size of packaging, the producers have to control the correct filling of cans.

In case of setup of tinting system with SMSM R&D Laboratory gives to the customer all specification and indication in order to effect a correct fill.

3. Accurate Calibration of Tinting Machine / Correct dosage of Colorants:

The Correct calibration of tinting machine is another important parameter responsible for colour repeatability.

All colour formulations (colour chart collection formulas) are developed in laboratory by weight. At the same time tinting machines effect a volumetric dosage. For this reason an exact correspondence between the volumetric dosage and the real weight of colouring paste dosed is necessary.



Support and Service

the tinting machine is properly calibrated.

In order to support the customer at 360° SMSM Lab is on the position to provide a qualified guide to the choice of the right, most appropriate and cost-efficient spectrophotometers, fully automatic or manual dispensers as well as mixers or colors communication tools.

Our long experience and our active action on this filed is at your disposal for any support or suggestion:

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