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| **STANDARD OPERATING PROCEDURE**  **QUALITY CONTROL** |

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| Date: 30-12-2019 | |  |
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## Purpose

To ensure the quality of provided sample ink against standard ink.

## Scope

This procedure is applicable to all the staff of PCC responsible for the quality control.

## Responsible

## Assistant Manager-LAB (QC)

## Procedure

**Finished ink**

**Viscosity**

Check viscosity of sample by using appropriate flow cup as per WI of using flow cup. For selecting appropriate flow cup, please see table below:

|  |  |
| --- | --- |
| **Series** | **Cup** |
| FTP,FTW,AQF,FLC | FC#4 |
| RDP,RRP,RNP,FNP | ZC#2 |

**Mileage measurement**

For solvent based inks, reduce the viscosity of sample to 20 sec by use of appropriate solvent as per TDS of each series. Also note the amount of solvent added.

**Drawdown**

Standard ink is drawn with the sample ink (Both at same viscosity) against production sample ink by using coating rod as per WI of using coating rod.

**Drying comparison**

Standard and sample inks are drawn together on appropriate substrate (Film for solvent based inks and glass for water based inks). The prints are tapped with fingers after regular intervals to determine the time when ink film is completely dry.

**Shade evaluation**

Determine difference in shade in terms of dE between prints of standard and sample inks by using spectrophotometer (CM-2600d) as per WI.

**Gloss measurement**

Determine difference in gloss between prints of standard and sample inks by using gloss meter (ZGM 1120 @ 60) as per WI.

**pH measurement**

In case of water based ink check pH of sample as per WI of using pH meter as per WI.

**Tape test**

In case of solvent based ink, perform tape test. Apply piece of tape on both standard and sample prints. Smooth it with finger and then pull it off. Compare ink transferred to tape for standard and sample ink.

**Nail test**

Scratch prints of standard and sample ink with nail and compare the scratch resistance visually.

**Rub test**

Check rub resistance of prints of standard and sample inks as per WI of rub resistance tester at 200 RPM.

**Color paste**

**Fineness of grind**

Fineness of grind of sample is checked with the help of hegmen gauge as per WI

**Viscosity**

Check viscosity of sample by using Ford cup # 4 as per WI of using flow cup.

**Ink making**

Sample is used to produce finished ink. The ink is then compared with standard ink as per QC procedure of finished ink.

**Varnish**

**Viscosity**

Check viscosity of sample by using Ford cup # 4 as per WI of using flow cup.

**Drawdown**

Add ink of relevant series in (9:1) in varnish sample to tint it. Draw it with coating rod against similarly produced standard as per WI.

**Gloss measurement**

Determine difference in gloss between prints of standard and sample by using gloss meter as per WI.

**pH measurement**

In case of water based varnish check pH of sample as per WI of using pH meter as per WI.

**Tape test**

In case of solvent based varnish, perform tape test. Apply piece of tape on both standard and sample prints. Smooth it with finger and then pull it off. Compare transfer to tape for standard and sample.

**Decision**

Fill in the observations in appropriate format for the relevant series and compare with standard parameters. Tolerances for each parameter are given in the table below:

|  |  |
| --- | --- |
| **Parameter** | **Tolerance** |
| Viscosity | ±5% at same temperature |
| Mileage measurement | ±5% |
| Drying comparison | Visual judgment |
| Shade evaluation | dE<1.0 |
| Gloss measurement | ±5% |
| pH measurement | 7.8-8.4 |
| Tape test | Visual judgment |
| Nail test | Visual judgment |
| Rub test | Visual judgment |
| Fineness of grind | <3 micron |

If the observations are within above tolerance then declare the batch to be OK for filling. Preserve the sample of this approved lot for next 6 months.

Otherwise, rework in lab to make necessary improvement. Write components to be added on the batch paper and provide it to production department for re-processing. After re-processing collect the sample again and recheck as per procedure above. Continue till all parameters are within above tolerance limits.

## Associated Documents and Records

WI of following:

* Flow cup
* Coating rod
* Spectrophotometer
* Gloss meter
* pH meter
* Rub resistance tester
* Hegmen gauge

QC sheet formats

**AMENDMENT HISTORY**

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| --- | --- | --- | --- |
| **REV. #** | **DCR#** | **SECTION** | **AMENDED TEXT** |
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\* All changes made in the document are notified in the Amendment History Table.