## Purpose

## The purpose of the pigment testing is to ensure the quality of the pigment and checking either it is suitable for our system or not.

## Scope

This test method covers the determination of the stability of the pigment, light fastness, solvent bleeding etc data. This will help us, so that by compiling the result we can find out that in which application we can use that pigment.

## Responsibilities

Trainee Engineer- REC/Supervisor

## Procedure

Different kinds of tests are performed as per requirement/demand i.e. heat stability, solvent bleeding, Oil absorption test, resistance to acid and alkali, volatile matter, migration to surface, matter soluble in water, Ph of pigment and specific gravity.

**4.1. Heat Stability:**

1. Take 5g of sample pigment.
2. Put it into the oven at 2200C for 10min.
3. Then make its direct shade on two roll mill i.e. 1g pigment and 49g polymer (LLDPE).
4. Make its thin film.
5. Make its tint shade also. I.e. 0.5g pigment, 5g TiO2 and 44.5g polymer (LLDPE).
6. Make direct shade, thin film and tint of the Pigment. I.e. before heat.
7. After that compare the Lab\* values of Standard pigments chips vs. sample pigment chips by using data color apparatus.

## 4.2. Solvent bleeding test:

1. Weigh 0.5g of pigment and 20ml of solvent in a conical flask.
2. Shake for 30 min. on a flask shaker.
3. Filter the contents through Whitman No.44 filter with Balance Fix bed.
4. Observe the color of filtrate and assess the degree of bleeding on 1 to 5 scales.
5. **Scale -1** Considerable bleeding **Scale-5** No bleeding

**4.3. Volatile Matter:**

1. Weigh a clean, dry Petri-dish accurately on a balance (W1).
2. Take 4g sample in a weighed dish and reweighed it (W2).
3. Keep it open in an oven at 102o+ C for 2 hrs.
4. Cool in the desiccators and weigh it (W3).

**×100**

**4.4. Matter Soluble in Water:**

1. Weight 5g of pigment.
2. Add 10ml. of methanol and make a paste.
3. Add about 200ml. of water and boil for 5 minutes.
4. Cool to room temperature.
5. Transfer it to 250ml. volumetric flask through balance fixed bed.
6. Take 100ml. of filtrate in a previously weighed 150ml. beaker (W1).
7. Evaporate the solution on a hot plate till dryness.
8. Keep the beaker in an oven at 102±2oC for 1 hour.
9. Cool in the desiccators to room temperature and reweigh the beaker (W2)

**4.5. PH of Pigment:**

1. Weigh 10g pigment in a 250ml beaker; add 5ml of water to wet the pigment.
2. Make a paste with a glass road.
3. Add 150ml water and boil for 5 minutes.
4. Cool the mixture to room temperature.
5. Filter through Whitman no.5 filter paper.
6. Make the volume of filtrate to 250ml. in volumetric flask.
7. Check the pH of filtrate using glass and reference electrode or pH paper.

**4.6. Fastness to Migration:**

1. Full shade PVC Sheet is placed between 2 pieces of white flexible PVC Sheets under a weight of 100g for 1 hour at 120o C.
2. Migration is assessed on 1 to 5 scales.  
     
   Scale 1 - Heavy migration Scale 5- No migration

**4.7. Oil Absorption Test**

1. Weigh accurately about 5g of organic or 10g Inorganic pigment.
2. The sample is placed on a glass or marble plate.
3. Linseed oil is then added slowly, 4 to 5 drops at a time from burette & rubbed into pigment with palette knife.
4. This addition is continued until agglomerates of oil and pigment are formed and form this point, oil is added only one drop at a time followed by a thorough rubbing with a knife.
5. The paste will be such that it will just spread without cracking or crumbling.
6. By noting the quantity of oil used, the oil absorption value is calculated and expressed as the grams of oil required to wet 100g of pigment or in percentage.

**4.8. Color Dispersion/ Spotting Test:**

1. Take 4-5 gm piece of direct two roll chip of pigment.
2. Make thin film at two roll mill.
3. Check the thin film under digital microscope or on a light box to check the dispersion and spotting ratio.
4. Scaling is done as more, considerable and less spotting than standard.

**4.9. Bulk Density/ Tap Density**

1. About 10g of organic pigment or 30g of inorganic pigment is accurately weighed and transferred into a 50ml measuring cylinder.
2. The cylinder is then fixed on Bulk Density apparatus and 50 strokes are given to the cylinder.
3. Volume is noted.
4. Bulk Density is expressed as the grams of the material per cc of its volume.

## Associated Documents and Records

* Shade Card
* Pigment testing report

**AMENDMENT HISTORY**

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| --- | --- | --- |
| **REV. #** | **SECTION** | **AMENDED TEXT** |
| 1 | 4.8. |  |
| 4.9. | Color Dispersion Test instead of ~~Specific Gravity test~~ |
| 5 | Pigment testing report, Shade card |
| 2 | 4 | ~~Light fastness~~ |

\* All changes made in the document are notified in the Amendment History Table.