



# Newsprint & Ink testing Quote

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Your Fee

| 1   |      | WAN-IFRA Material testing packages  |  |  |
|---|------|---|--|--|
| WAN-IFRA Testing custom test studies  | 1.1  | <b>Newsprint &amp; ink printability tests</b><br>ISO 2846-2 conformance tests, Set-off & Print through, picking(fluf), Trapping(wet-on-wet)               |  |  |
|   | 1.2  | <b>ISO 2846-2 Conformance Test</b><br>Ink Mileage (requirement), Optimum IFT, Color confirmity, Transparency.   |  |  |
|   | 1.3  | <b>ISO 12647-3 Conformance study for Newsprint &amp; ink</b><br>Newsprint LAB, Primary & Color conformances to ISO, Color space overlap with ISO.         |  |  |
|   | 1.4  | Characteristic property study of various GSM of paper - 40 vs 42 vs 45 gsm<br>(1 sample of Each 40, 42 & 45 gsm tested & compared for 10 Key properties.) |  |  |
|   | 1.5  | Vendor selection guideline based on quality standards for paper & ink   |  |  |
|   | 1.6  | Newsprint Yield - Grammage consistency & Deviation (Per Brand of NP)  |  |  |
|   | 1.7  | Set-off,print-through,Trapping tests on paper & Ink combination (1NP & 1 Cmyk ink set)  |  |  |
|   | 1.8  | General print Quality Evaluation - Visual (Based on ICQC metrics, max 32Pgs per copy)   |  |  |
| 2   |      | Key NewsInk Property Tests *  |  |  |
| Ink testing   | 2.1  | Ink Mileage (CMYK ink on 1 Newsprint set)   |  |  |
|   | 2.2  | Fineness of grind ( pigment size)   |  |  |
|   | 2.3  | Color shades at optimum density ( at 0.8D , Per CMYK set)   |  |  |
|   | 2.4  | Transparency  |  |  |
|   | 2.5  | Viscosity   |  |  |
| 3   |      | Key Newsprint property Tests *  |  |  |
| Physical  | 3.1  | Grammage  |  |  |
|   | 3.2  | Dimensional stability / Change  |  |  |
|   | 3.3  | Thickness   |  |  |
|   | 3.4  | Bulk  |  |  |
| Optical   | 3.5  | Shade   |  |  |
|   | 3.6  | Gloss   |  |  |
|   | 3.7  | Brightness  |  |  |
|   | 3.8  | opacity   |  |  |
| Mechanical  | 3.9  | % of Elongation   |  |  |
|   | 3.1  | Tensile strength -- MD & CD   |  |  |
|   | 3.11 | Tearing strength  |  |  |
| Miscellaneous   | 3.12 | Moisure content   |  |  |
|   | 3.13 | Porosity or Roughness   |  |  |
|   | 3.14 | Ash Content   |  |  |
|   | 3.15 | Pick test   |  |  |
| <b>Note:</b>  |      |   |  |  |
| * Section 1 tests can be carried out as standalone                                    |      |   |  |  |
| * Section 2 & 3 needs atleast 3 tests in total with one minimum tests from section 1. |      |   |  |  |

Aprove the Quote  
(Sign & Seal )



## Paper Tests objectives

### **PAPER TESTS:**

#### **Grammage :**

**What :** Basis weight of the paper per unit surface area of the sheet.

**Purpose :** In consistent mileage means variation in the area printed per tonn paper.

#### **Thickness :**

**What :** Defines the thickness of the paper.

**Purpose :** Consistency of caliper throughout the paper web is an important consideration. An abrupt increase or decrease in caliper can affect the extent to which the printing plate or blanket contacts the paper and transfers a complete printed image, as well as other printability and runnability issues.

#### **Bulk**

**What :** Thickness of the paper in relation with GSM.

**Purpose :** Not only is consistent thickness required in web offset lithography, where varying bulk within a single roll can cause the roll to unwind with uneven tension, which is responsible for various printing defects as well as web breaks. Higher bulk of same GSM will reduce the show through defects.

#### **Porosity or Roughness**

**What :** A degree of peaks and valleys on the surface of the paper.

**Purpose :** High roughness of the paper results in more consumption and many other printability defects too.

#### **Dimensional stability**

**What :** A measure of the extent to which a paper will resist a change in size as the result of a change in moisture content.

**Purpose :** Dimensional instability will result into mis-registration in the press.

#### **Brightness :**

**What :** Brightness is typically a function of the reflectance characteristics of paper

**Purpose :** *Better brighter paper makes it to read easier specially on the texts.*

#### **Opacity :**

**What :** opacity is a property of paper that describes the amount of light which is transmitted through it.

**Purpose :** While paper that has a low degree of opacity is more translucent, or allows much light to pass through it. A paper's opacity determines the extent to which printing on a particular side of paper will be visible from the reverse side (called show-through).

#### **Shade :**

**What :** The colour of the print substrate.

**Purpose :** Better L shadeof paper makes increase the ability to better colors and wider color gamuts, also A & B matters to maintain the neutral shade of the paper, otherwise it will impact the tonal reproductions.

#### **Bursting Strength :**

**What :** Bursting strength the maximum pressure that a paper can tolerate before rupture.

**Purpose :** Its important property for packaging materials , not so important for newsprint / commercial papers.

#### **% of Elongation :**

**What :** The maximum length a paper can be stretched without breaking, expressed as a percentage of the material's original length.

**Purpose :** Important parameter to relate in terms of breaks.

#### **Compressibility:**

**What :** The degree of reduction in thickness under compressive forces or pressure is known as compressibility of the paper.

**Purpose:** It influences the ability of paper to change its surface contour and conform to make contact with the printing plate or blanket during print prodction.



## Paper Tests objectives

### **Tearing strength :**

**What :** Tearing strengths is the ability of the paper to withstand any tearing force with out break.

**Purpose:** Its useful to evaluate web runnability, controlling the quality of newsprint and characterizing the toughness of packaging paper.

### **Tensile strength -- MD & CD :**

**What :** Paper's ability to withstand a stretching force without break. Its measured in in Machine Direction (MD) and in Cross-machine direction (CD).

**Purpose:** Higher the tensile strength of the paper is less the chances of web breaks due o high tension at press.

### **Relative Moisire content**

**What :** % of moisire content in the paper is known as relative moisire content.

**Purpose:** High moisire content will increase the weight of the paper and increase the cost of paper. At the same time low moisire content will make the paper brittle and increases the chances of break in production.

### **Roughness or Porosity**

**What :** Roughness indicates varying degree of porosity of the paper.

**Purpose:** Porosity is an direct indication of paper to accept ink or water.

### **Ash Content**

**What :** The residue left after complete combustion of paper at high temperature is known as ash content of the paper.

**Purpose:** It is generally expressed as percent of original test sample and represents filler content in the paper. Ash content is not important property of paper but it helps to know the level of fillers in the paper and grade of papers.

### **pH or Alkalinity of paper**

**What :** The pH value of paper indicates the residual acidic/alkaline chemicals in pulp, or atmospheric pollutants.

**Purpose:** Its an environmental KPI parameter in paper making . Acid free paper are gaining popular and has pH of 7 or slightly higher.

### **Pick test**

**What :** Gives an indication of fluff accumulation in the newsprint.

**Purpose:** Decides the strength of the fibr rbonding on the paper surface. Often studied to relate fluff accumulation on the Press.

### **Water absorbency**

**What :** Water absobant capacity of the paper in terms of kilogram per square metre is known as water absorbency.

**Pupose:** To know the moisire % that may affect the runnability and yield .



## INK TESTS & PRINTABILITY TESTS

### **INK PROPERTY TESTING:**

#### **Color shades**

**What** : The colour of the printed surface as per ISO standard specification.

**Purpose**: Right shade will reduce the color variation in production . So, less possibility of color complaints.

#### **Ink Mileage**

**What** : Total amount of surface area a given quantity of ink to produce the standard density.

**Purpose** : Different ink brands and different batches can give different mileage. As ink is one of the major material, an ideal study of ink mileage will help to save the cost.

#### **Transparency**

**What** : The most significant use for transparent pigments is to "extend" pigments of other colors, thus reducing the cost of more expensive pigments and substances.

**Purpose** : Transparency of ink is must in process color reproduction as it's the only property helps to produce the millions of colors (theoretically). Improper transparency will change the color reproduction and some time increase the ink consumption to produce the right shade.

#### **Viscosity**

**What** : viscosity refers to the extent to which ink will resist flowing. It will depend on the printing process

**Purpose** : High viscous ink sticky and does not flow easily, possibly results into ink feeding problem and so.

### **INK & PAPER INFLUENCED PRINTABILITY TESTS:**

#### **Ink requirement**

**What** : Quantity of ink required to print standard density or IFT.

**Purpose**: Decides the mileage of the ink and contributes to cost of the print production process. Mileage in terms of pages or area produced in the press will only give a indicative (approx) mileage as the ink coverage is not same or solid on all the days. So, solid area is printed in IGT printability tester to estimate accurate and more realistic mileage. Ink mileage comparison of two batch/brands will help in decision making.

#### **Colour Picking**

**What** : The delamination / amount of damage of the paper surface during the printing operation.

**Purpose** : High tack ink possibly increases the delamination of the fiber from the paper. Also, the strength of the fiber on the paper surfaces impacts the amount of delamination. This test helps in deciding fluff accumulation on the Press.

#### **Trapping (Wet on Wet Printing)**

**What** : The trapping of one ink over the second ink in wet printing condition.

**Purpose** : Poor trapping will results affects the ink transfer ability on the PRESS and results in wrong color reproduction. Trapping should be decided as per the print ink sequence (CMYK or KCMY).

#### **Set Off / Print through**

**What** : The tendency for printing ink to transfer to paper printed when pressed without friction against a freshly printed surface

**Purpose** : Diff Ink & ink combination can be helpful to minimise the set-off. Also different ink of same paper can be studied.

#### **Color Gamut analysis**

**What** : The total range of colors that can be reproduced with a given set of inks (or other colorants), on a given paper stock, and on a given printing press

**Purpose** : ISO 12647-3 defined the color space required for Newspaper production . ISO recommends a minimum overlap of 75% , between the color space produced in PRESS and ISO specified color space.

#### **Color shade conformance to ISO 2846-2 & ISO 12647-3**

**What** : Color difference between (Delta E) measured and standards (ISO) within specified IFT.

**Purpose**: Deviation in primary ink colors will produce wrong color shades in print production. This deviation will be the minimum beyond the operator control. It will also impacts the secondary color reproduction.



### WAN-IFRA CUSTOM STUDY ON NEWSPRINT & INK:

#### A) ISO Conformance studies

ISO 2846-2 Conformance Test : Ink Mileage (requirement), Optimum IFT, Color confirmity, Transparency.

ISO 12647-3 Conformance Test : Newsprint LAB, Primary & Color conformances to ISO, Color space overlap with ISO.

B) **Characteristics study of various GSM of paper** - 40 Vs 42 Vs 45 gsm: As many migrate from 45 to 42 or lower GSM, this study will be helpful in finding what all the quality concerns and compromises between your existing 45 or 42 gsm to lower GSM. This will give a comparative study.

C) **Ink mileage a study (Different Ink Vs Different paper):** Ink is being one of the major cost in print production, its wiser to use the ink which possibly could produce better mileage than other batch or brand. This mileage study will test mileage of different ink on different paper and this will be absolute guide to choose the ink with better mileage rather than comparing it with approximate mileage in terms of pages produced per kg (calculated on pages with varying tints, texts & images everyday) which will vary in every day edition.

D) **Vendor rating and selection guideline based on paper & ink testing** : This study is purely based on testing results of different materials from different manufacturer & suppliers. Vendor rating could be done based on quality reproduction parameters or based on financial benefits like better mileage & yield.

E) **Newsprint Yield Study - Grammage consistency & Deviation:** This special study will check the consistency of GSM and ground facts on the newsprint yield. Remember , even small increase from the actual GSM (what suppose to be) will incur poor yield & ultimately cost.

### HOW TO SEND MATERIAL FOR TESTING

Intiate your shipment state via email to [prabhu.n@wan-ifra.org](mailto:prabhu.n@wan-ifra.org)

#### How to send the ink samples

1. Approximately 150 grams of each ink (C, M and Y) would be sufficient for the tests.
2. Pack them in a leak proof container.
3. Mark the ink sets. (Ex: CMYK, Batch No, Ink-set 1 , 2, 3) and document the names marked.
4. Pack all the inks in a card board box and courier it to the Research Centre address below.

#### How to send newsprint samples

1. Cut the paper to 40cm x 40 cm.
2. Mark the MD and CD directions on paper, Name the samples (Ex: Brand, Variant, Gsm, or A,B,C )
3. Ideally 25 sheets per sample. .Wrap them properly to water tight and prevent light entering. Pack in non-foldable hard board packet & courier us .

### Address to send Material:

Prabhu Natrajan  
Research & Material Testing Centre  
C/O PII-RIND, 2nd Main, CIT campus, Taramani ,  
Chennai, 600113, TN, India  
Landmark: Asian College of journalism,

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