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# STUDY OF VARIOUS ISO STANDARDS RELATED TO OFFSET PRINTING PRESSES

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## ABSTRACT

In this era of ever growing awareness for consistent quality demand by consumers it is important to standardize the process so that outcomes could be consistent. For the same standardization of each process is needed according to the standard laid by the organisation working for the same.

Though all countries has their own apex bodies for framing and regulating the processes, ISO (International Organisation Standardisation) is an international body which are framing and producing most acceptable manner for all countries
ISO is a global agency looking for and provided all types of standards. At the same time ISO has standards related with Graphic Technology by committee Technical Committee 130 vide No. 12647-2 for offset printing.
Finally we come to say ISO standards for Offset printing are respected and followed by all the countries and by all organisations having desired to produce global standards

***Keywords:*** *Standardization, Apex bodies of Graphic Technology, Technical Committee, TC-130.*

## I. INTRODUCTION

Whenever we have to communicate our idea to masses and circulate this in large numbers, for the same, there is a need help of some visual aids. Whenever we need copies in large number, printing comes to our help. Printing is technology by which any matter may be reproduced in a required number of copies in a desired time similar in all respects, and any desired size and form.

Offset printing is a commonly used printing process in which the inked image is transferred (or "offset") from a metal plate to a rubber blanket, then to the desired printing surface. Offset process is commonly classified in three sections and they are linked with each other in such a manner that going through all these sections will produce replica similar in all respect to the original. There are certain operations need to be done / performed to get the desired material ready to be print and processed.

The basic objective of printing is to produce replica of original in all respect in "N" numbers of copies, even the copies are to be printed at one press/one place or at various presses/various places. So, to achieve similarity in print we need to follow some set of standards and rules, by following some data and by following some procedures under permissible tolerance. In this era of globalization and free import-export regime, there are countries being developing as printing hub as their man, machine and establishment cost is minimum worldwide. So there is need of uniformity in prints and printing standards to get the prints acceptable across the globe.

So there must be some standards to be followed by a printer to print the minimum acceptable print quality worldwide. As India is a growing and developing country, its manpower is young and technical in nature so, by keeping their talent and energy level in use new generation Indian printers have decided to compete in world print market. Printing is well regulated field in India and Indian printers are looking and catering for global orders. There must be some outstanding performance to be recognized by global print buyers.

**Apex Bodies and important specifications for standardized print production in different countries like India, America and Europe are:-**

A) Printing standard related body for India: **The Bureau of Indian Standards (BIS)**
B) Printing standard related bodies for America: **National Standards Institute (ANSI)**
(C)Printing standard related bodies for Europe: **PSO Process Standard Offset printing developed by FOGRA / bvdm / ECI.**

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These governing bodies represent their countries either in the capacity of participating member or by the observer member in ISO (International Standards of Organization), for achieving the goal to facilitate the international coordination and unification of printing standards.

**ISO (International Standards of Organization) Standards:**
The ISO began in 1946 when delegates from 25 countries met at the Institute of Civil Engineers in London and decided to create a new international organization **'to facilitate the international coordination and unification of industrial standards'**. In February 1947 the new organization, ISO, officially began operations.

Since then, ISO has published over 19,500 International Standards covering almost all aspects of technology and manufacturing. Printing related standards are complying with ISO committee TC/130 (Graphic Technology), its secretariat in SAC(Standardization Administration of China).

In context of printing standards are prepared by TC (ISO/ TC 130) under the title of "**GRAPHIC TECHNOLOGY"**

> **Printing is defined by TC/130 as a process of reproduction involving the transfer of a medium either colour or not (ink, etc.) to a substrate, using a relief, planography, intaglio, stencil or other image element.**

Standards that come out from the initial study are ISO 2846 & ISO 12647 both are described by ISO/TC 130.

ISO 2846 consist of five parts and its part-1 deal with sheet fed and heat-set web offset lithographic printing defines the colour and transparency of lithographic printing inks. Different sets of inks (both for proof and production printing) conforming to this part of ISO 2846 will produce a similar colour when printing on the same substrate at the appropriate film thickness.

ISO 12647 consists of the following parts, under the general title Graphic technology — Process control for the production of half-tone colour separations, proof and production prints:

- Part 1: Parameters and measurement methods
- Part 2: Offset lithographic processes
- Part 3: Cold set offset lithography on newsprint
- Part 4: Publication gravure printing
- Part 5: Screen printing
- Part 6: Flexographic printing
- Part 7: Proofing processes working directly from digital data
- Part 8: Validation print processes working directly from digital data

ISO provides various standards for pre-press, press, post-press in sheet fed offset. The enormous ranges of standards which help printers to give replica of prints across the globe push us to take initiative to collect and study the guidelines in depth for making any printing organization an organization of repute.

## II. RESEARCH OBJECTIVE

Mostly Offset printing presses in India are running in a non-standardize mode without any certification and rarely following the printing standards. The basic purpose of this study is to collect set of standards and regulation for sheet-fed offset press being used globally, specially in India, Europe, and America.

1. A brief study of existing standards in India, Europe and America in the field of printing technology by their apex and leading governing bodies.
2. Collection of set of standards for Sheet fed offset presses provided by ISO in all section including Pre-Press, Press, and Post-Press.
3. To study the guideline of these ISO standards in a short and enforceable manner for small and medium offset presses.

ISSN 2348 – 8034
Impact Factor- 3.155

## III. RESEARCH MATHEODOLOGY

This part of study deals with methodology applied for fulfilling research objective. Data and facts were analysed in following steps to full fill research objective:-

1. Collection and study of data related with Indian, European, and American standards.
2. Collection of data from ISO standards by visiting BIS (Bureau of Indian Standards), New Delhi and prominent Offset Printing Presses.
3. Compilation of the guideline of ISO standards in relation with other standards for small and medium offset presses.
4. Simplification of compiled guidelines for implementation in small and medium presses.

## IV. DATA COLLECTION

The whole research was based on collecting the data from websites of apex bodies which set the standards for printing, by visiting the BIS and other printing presses. Data are collected of this study through the entire website(all mentioned in reference) related to ISO standardization and many apex bodies such as BIS, ANSI and EN of India, America and Europe respectively. Collection of data from these bodies and especially from ISO is as follows

**Existing standards in india by bis (bureau of indian standards)**
BIS is a statutory institution established under the Bureau of Indian Standards Act, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

BIS in India is the national body for the standards dealing in various fields. As far as concern of printing, BIS representing India as member body in the TC/130 Graphic Technology and its National Mirror Committee is MSD6 (Management and Systems Department) {former was MSD 5}.

**MSD 6: publications and graphic technology sectional committee**
Standardization of Practices relating to book production, illustrations, finishing, style manuals, graphic technology and any other aspects relevant to publication of documents and graphic technology. Provided standards of MSD 6 is as follows:

| S. No | IS Number/ DOC Number | Title | Reaffirm Date | No. of Amendments |
|---|---|---|---|---|
| 1 | **IS 4:1963** | Guide for layout of learned periodicals (revised) | Dec2012 | |
| 2 | **IS 790:1987** | Guidelines for preliminary pages of a book (first revision) (superseding IS 791:1956, IS 792:1964 and IS 794:1956) | Dec 2012 | 1<br>1 |
| 3 | **IS 1250:1958** | Proof corrections for printers and authors | Mar 2014 | |
| 4 | **IS 3050:1965** | Code of practice for reinforced binding of library | Dec 2012 | 1 |
| 5 | **IS 6298:1971** | Guide for selection of type and page layout in textbooks | Dec2012 | |
| 6 | **IS 6660:1972** | Guide for illustrations in books | Dec2012 | |
| 7 | **IS 7140:1971** | Symbols and notations for correction of illustrations and illustration proofs | Dec 2012 | |
| 8 | **IS 7160:2003** | Guide for print area, margins and type sizes for textbooks (First Revision of various parts of IS 7160) | Dec 2012 | |
| 9 | **IS 7400:1974** | Guide for preparation and production of textbooks | Feb 2008 | |
| 10 | **IS 8010(Part 1):1976** | Guidelines for preparation of technical reports: Part1 Research and development reports | Dec 2012 | |
| 11 | **IS 8010 (Part** | Guidelines for preparation of technical | Dec 2012 | |

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|---|---|---|---|---|
| | **2):1982** | reports: Part 2 Feasibility reports | | |
| 12 | **IS 8010 (Part 3):1987** | Guidelines for preparation of technical reports: Part 3 Industrial potential survey reports | Dec 2012 | |
| 13 | **IS 9637:1980** | Guidelines for presentation of information in technical manuals | Dec 2012 | |
| 14 | **IS 11956:1987** | Guidelines for the preparation of trade catalogues | Dec 2012 | |
| 15 | **IS 11957:1987\| ISO 18:1981** | Guidelines for contents list of periodicals | Feb 2011 | |
| 16 | **** IS 12000(Part 1):1987** | Guide for paper spoilage and wastage for printing industry: Part 1 Sheet fed, letterpress and offset processes | Dec 2012 | |
| 17 | **** IS 15306:2003** | Printing & Publishing - Glossary of terms | Dec 2012 | |
| 18 | **IS 15963 (Part 1):2012 / ISO 12647-1:2004** | Graphic Technology - Process Control for the Production of Half-Tone Colour Separations, Proofs and Production Prints Part 1 Parameters and Measurement Methods | | |
| 19 | **IS 15963 (Part 2):2012/ ISO 12647-2:2004** | Graphic Technology - Process Control for the Production of Half-Tone Colour Separations, Proofs and Production Prints Part 2 Offset Lithographic Processes | | |
| 20 | **IS 15963 (Part 3):2012/ ISO 12647-3:2005** | Graphic Technology - Process Control for the Production of Half-Tone Colour Separations, Proofs and Production Prints Part 3 Coldset Offset Lithography on Newsprint | | |

Published Standard by MSD6 for various printing processes

**Existing standards in america by ansi (american national standards institute)**

Membership: **Member body (**ISO/TC 130 - Graphic Technology (*P-Member*)
It was founded in 1918; the American National Standards Institute (ANSI) has coordinated the development of voluntary consensus standards in the United States and has represented the needs and views of United States stakeholders in standardization forums around the globe. ANSI is the United States member body to ISO and, via its United States National Committee, the International Electro technical Commission (IEC), ANSI is also a member of the International Accreditation Forum (IAF).
There are two standards development committees accredited by the American National Standards Institute (ANSI) within the United States that develop standards specifically for the printing, publishing and converting industry. The Committee for Graphic Arts Technologies Standards (CGATS) develops technical standards and the B65 Committee develops safety standards.

**CGATS standards**

| PRODUCT CODE | STANDARD DESCRIPTION | PRICE |
|---|---|---|
| **1200112** | CGATS.4 - 2011<br>Graphic technology - Graphic arts reflection densitometry measurements - Terminology, equations, image elements and procedures | $16 |
| **1200309** | CGATS.5 - 2009 (identical national adoption of ISO 13655:2009)<br>Graphic technology - Spectral measurement and colorimetric computation for graphic arts images. | $55 |
| **1200103** | CGATS.7 - 2003<br>Graphic technology - Pallet loading for printed materials | $16 |
| **1200107** | CGATS.9 - 2007<br>Graphic technology - Graphic arts transmission densitometry measurements - Terminology, equations, image elements and procedures | $16 |

| | | |
|---|---|---|
| **1200209** | CGATS.17 - 2009 (identical national adoption of ISO 28178:2009)<br>Graphic technology - Exchange format for color and process control data using XML or ASCII text | $55 |
| **1200122** | CGATS.20 - 2002 Graphic technology - Variable printing data exchange using PPML and PDF (PPML/VDX) | $45 |
| **1200211** | CGATS TR 001 - 1995 + Supplement 1<br>Graphic technology - Color characterization data for Type 1 printing (Technical Report Only) | $20 |
| **1201195** | CGATS TR 001 Data<br>Graphic technology - Digital Data for CGATS TR 001 - 1995 (R2003) (Data Only) | $20 |
| **1200311** | CGATS TR 001 - 1995 | $30 |
| **1200102** | CGATS TR 011 – 2002<br>Graphic technology - Package development workflow - Design concept through approved production file | $20 |
| **1200411** | CGATS TR 012 - 2003<br>Graphic technology - Color reproduction and process control for packaging printing | $20 |
| **1200511** | CGATS TR 015 – 2011<br>Graphic technology – Methodology for Establishing Printing Aims Based on a Shared Near-neutral Gray-scale | FREE Download |
| **1200212** | CGATS TR 016 – 2012<br>Graphic technology - Printing Tolerance and Conformity Assessment | FREE Download |
| **1401204** | CGATS/ISO 12639:2004 (identical national adoption of ISO 12639:2004)<br>Graphic technology - Prepress digital data exchange - Tag image file format for image technology (TIFF/IT) | $80 |
| **1200507** | CGATS/ISO 12639:2004 / Amendment 1:2007 (identical national adoption of ISO 12639 Amd 1:2007) | $17 |
| **1200207** | CGATS/ISO 12640-1:2007 (identical national adoption of ISO 12640-1:1997)<br>Graphic technology - Prepress digital data exchange – Part 1: CMYK standard colour image data (CMYK/SCID) | $80 |
| **1401204** | CGATS/ISO 12639:2004 (identical national adoption of ISO 12639:2004)<br>Graphic technology - Prepress digital data exchange - Tag image file format for image technology (TIFF/IT) | $80 |
| **1200507** | CGATS/ISO 12639:2004 / Amendment 1:2007 (identical national adoption of ISO 12639 Amd 1:2007) | $17 |
| **1200207** | CGATS/ISO 12640-1:2007 (identical national adoption of ISO 12640-1:1997)<br>Graphic technology - Prepress digital data exchange – Part 1: CMYK standard colour image data (CMYK/SCID) | $80 |
| **1200307** | CGATS/ISO 12640-2:2007 (identical national adoption of ISO 12640-1:2004)<br>Graphic technology – Prepress digital data exchange – Part 2: XYZ/sRGB encoded standard colour image data (XYZ/SCID) | $80 |
| **1200407** | CGATS/ISO 12640-3:2007<br>Graphic technology – Prepress digital data exchange – Part 3: CIELAB standard colour image data (CIELAB/SCID). | $80 |
| **1200308** | CGATS/ISO 12646:2008 (identical national adoption of ISO 12646:2008)<br>Graphic technology — Displays for colour proofing — Characteristics and viewing conditions | $50 |
| **1200111** | CGATS/ISO 12646:2008 / Amendment 1:2010 (identical national adoption of ISO 12646:2008/Amd.1:2010 | $16 |
| **1200405** | CGATS/ISO 15790:2005 (identical national adoption of ISO 15790:2004) | $39 |

CGATS Standards for various operations of different printing process

**B65 committee for safety standards**

The B65 Committee was accredited by ANSI in 1983, and is charged with the development of safety standards for printing-related equipment. It consists of a main committee and the six subcommittees (SC) listed below.

1. Subcommittee 0 – General Safety Requirements
2. Subcommittee 1 - Printing Press Safety

3. Subcommittee 2 - Bindery Systems Safety
4. Subcommittee 3 - Bindery Cutting Machines Safety
5. Subcommittee 4 - Platen Press Safety
6. Subcommittee 6 - Safety of Ink-Making Equipment

| PRODUCT CODE | STANDARD DESCRIPTION | PRICE |
|---|---|---|
| **1100211** | B65-1-2011<br>Graphic technology – Safety requirements for graphic technology equipment and systems – Part 1: General requirements | $55 |
| **1100311** | B65-2-2011<br>Graphic technology – Safety requirements for graphic technology equipment and systems – Part 2: Prepress and press equipment and systems | $43 |
| **1100111** | B65-3-2011<br>Graphic technology – Safety requirements for graphic technology equipment and systems – Part 3: Binding and finishing equipment and systems | $45 |
| **1100411** | B65-5-2011<br>Graphic technology – Safety requirements for graphic technology equipment and systems – Part 5: Stand-alone platen presses | $19 |
| **1100206** | B65/NAPIM 177.1-2007 (Reaffirmed 2011)<br>Safety standard – Three-roll printing ink mills | $39 |
| **1100306** | B65/NAPIM 177.2-2006 (Reaffirmed 2011)<br>Safety standard – Printing ink vertical post mixers | $39 |

B65 Safety Standards for different operations.

**Standards by ECI (european colour initiative):**
The European Color Initiative (ECI) is a group of experts, working on device independent processing of color data in digital publication systems. ECI has been founded in June 1996 in Hamburg at the initiative of the publishing houses Bauer, Burda, Gruner+Jahr and Springer.

The ECI (European Color Initiative) is a body comprising various organizations, including FOGRA info on old/new versions of ISO 12647-2 Their specifications are built upon the ISO standard. In conjunction with FOGRA the ECI issue ICC profiles, the latest of which, have become the 'Industry Standard' in much of the world. These profiles are built from *Characterization Data Sets* which are *colorimetric* data measured from an average of many print runs, at different companies, and with different presses, which are as close to the ISO Standard as is practicable. The resultant colorimetric data is then smoothed out and adjusted to the EXACT standard. The *Data Sets* are available for experts, such as ourselves, to make customized ICC profiles with parameters such as *GCR* and *TAC* adjusted to suit specific client requirements.

**ICC profiles from ECI**
**Note:** ECI profiles are not sponsored, approved or supported by the International Organization for Standardization ISO or may not be the only profiles complying with ISO International Standards.

**Overview of current printing standards, characterization data and ICC profiles**

| FOGRA / ECI | Characterization data | Profile ECI | Profile Adobe |
|---|---|---|---|
| Offset sheet/ web-fed | | | |
| Coated | FOGRA 39 | ISOcoated_v2_eci.icc | CoatedFOGRA39.icc |
| Uncoated FM raster | FOGRA 43 | PSO_Coated_NPscreen_ ISO12647_eci.icc | |
| Uncoated | FOGRA 47 | PSO_Uncoated_ISO12647_ eci.icc | |

ISSN 2348 – 8034
Impact Factor- 3.155

| | | | |
|---|---|---|---|
| Uncoated FM raster | FOGRA 44 | PSOA_Uncoated_NP screen_ISO12647_eci.icc | |

Current ICC profile

## V. COLLECTION OF SET OF STANDARDS FOR SHEET FED OFFSET PRESSES PROVIDED BY ISO

Many printing industry technical organizations from around the world are now working towards common ISO (International Standards Organization) standards. These refer to Paper Types, TVI (Tone Value Increase), SID's (Solid Ink Densities in CIE Lab values), etc. The ISO 12647 family deals with printing processes, with ISO 12647-2 being for offset printing.

These standards are updated every few years. 12647-2 was updated during 2013 to reflect recent trends in the industry, such as the increased use of Fluorescent Whitening Agents, aka Optical Brightening Agents ('OBAs') in paper, and changes in TVI curves since film was replaced by computer-to-plate some years ago.

Published ISO Standards Relating to TC130 Published, TC130 standards are shown in the table below. Note that because a review is conducted every five years, some caution is necessary before adopting a standard.

| ISO number | Title | Corresponding Japanese Industrial Standard |
|---|---|---|
| **2834:1999** | Graphic Technology - Test print preparation for offset and letterpress inks | |
| **2835:1974** | Graphic Technology – Prints and printing inks – Assessment of light fastness | K 5701-1:2000 |
| **2836:1999** | Graphic Technology - Prints and printing inks – Assessment of resistance to various agents | |
| **2837:1996** | Graphic Technology - Prints and printing inks – Assessment of resistance to solvents | |
| **2846-1:1997** | Graphic Technology – Colour and transparency of ink sets for four-colour-printing – Part 1: Sheet-fed and heat-set web offset lithographic printing | K 5701-2:2000 |
| **2846-2:2000** | - do - , but Part 2: Coldset offset lithographic printing | |
| **2846-4:2000** | - do - , but Part 4: Screen printing | |
| **5737:1983** | Graphic Technology – Preparation of standard prints for optical tests | |
| **5776:1983** | Graphic Technology – Symbols for text correction | |
| **10755:1992** | Graphic Technology – Prepress digital data exchange – Colour picture data on magnetic tape | X 0651:1991 |
| **10756:1994** | 1994 Graphic Technology – Prepress digital data exchange – Colour line art data on magnetic tape | X 0652:1992 |
| **10758:1994** | Graphic Technology – Prepress digital data exchange – On line transfer from electronic prepress systems to colour hardcopy devices | |
| **10759:1994** | Graphic Technology – Prepress digital data exchange – Monochrome image data on magnetic tape | X 0653:1993 |
| **10759:1994** | Graphic Technology – Prepress digital data exchange – Monochrome image data on magnetic tape | X 0653:1993 |
| **11628:1995** | Graphic Technology – Prints and printing inks – Determination of resistance of prints to acid | |
| **12040:1997** | Graphic Technology – Prints and printing inks – Assessment of light fastness using filtered xenon arc light | |
| **12218:1997** | Graphic Technology – Process control – Offset platemaking | B 9621:2000 |
| **12634:1996** | Graphic Technology – Determination of tack of paste inks and vehicles by a rotary tackmeter | |
| **12635:1996** | Graphic Technology – Plates for offset printing – Dimensions | |
| **12636:1998** | Graphic Technology – Blankets for offset printing | |
| **12637-2:1997** | Graphic Technology – Multilingual terminology of printing arts – Part 2: Screen printing terms | |
| **12637-5:2001** | Graphic technology – Process control for the manufacture of half-tone | |

ISSN 2348 – 8034
Impact Factor- 3.155

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|---|---|---|
| | colour separations, proof and production prints – Part 5: Screen printing | |
| **12639:1998** | Graphic Technology – Prepress digital data exchange – Tag image file format for image technology (TIFF/IT) | |
| **12640:1997** | 12640:1997 Graphic Technology – Prepress digital data exchange – CMYK standard colour image data (CMYK/SCID) | X 9201:1995 |
| **12641:1997** | Graphic Technology – Prepress digital data exchange – Colour target for input scanner calibration | X 9203:1999 |
| **12642:1996** | Graphic Technology – Prepress digital data exchange – Input data for characterization of 4-colour process printing | |
| **12644:1996** | Graphic Technology – Determination of rheological properties of paste inks and vehicles | |
| **12645:1998 densitometers** | Graphic Technology – Process control – certified reference material for opaque area calibration of transmission densitometers | |
| **12645:1998** | Graphic Technology – Process control – certified reference material for opaque area calibration of transmission densitometers | |
| **12647-2:1996** | - do -, but Part 2: Offset printing | B 9620-2:2000 |
| **12647-3:1998** | - do -, but Part 3: Coldset offset lithography and letterpress on newsprint | |
| **12647-5:2001** | - do -, but Part 5: Screen printing | |
| **13655:1996** | Graphic Technology – Spectral measurements and colorimetric computation in graphic arts images | |
| **13656:2000** | Graphic Technology – Application of reflection densitometry and colorimetry to process control or evaluation of prints and prints | B 9622:2000 |
| **TR13928:1994** | Application guide for ISO10755, ISO10756, ISO10757, ISO10758 and ISO10759 | |
| **TR14672:2000** | Graphic Technology – Statistics of the natural SCID images defined in ISO12640 | |
| **14981:2000** | Graphic Technology – Process control – Optical, geometrical and metrological requirements for reflection densitometers for graphic arts use | B9623:2002 |
| **15930-1:2001** | Graphic Technology – Prepress digital data exchange – use of PDF-Part 1: Complete exchange using CMYK data (PDF/X-1 and PDF/X-1a) | |
| **1524:2000** | Paints, varnishes and printing inks – Determination of finesse of grind | K 5600-2-5 |
| **15929:2002** | Graphic Technology – Prepress digital data exchange – Guidelines and principles for the development of PDX/X standards | |
| **TR16066:2003** | Graphic Technology –Standard object colour spectra database for colour reproduction evaluation(SOCS) | |
| **12648:2003** | Graphic technology –Safety requirements for printing press systems | |
| **15930-4:2003** | (PDF/X-1a） Graphic Technology – Prepress digital data exchange using PDF—Part 4: Complete exchange of CMYK and spot colour printing data using PDF 1.4 ( PDF/X- 1a) | |
| **15930-5:2003** | (PDF/X-2） Graphic Technology – Prepress digital data exchange using PDF—Part 5: Partial exchange of printing data using PDF 1.4 (PDF/X-2) | |
| **15930-6 :2003** | (PDF/X-3) Graphic Technology – Prepress digital data exchange using PDF —Part 6: Complete exchange of printing data suitable for colour-managed workflows using PDF 1.4 (PDF/X3) | |
| **15790:2003** | Graphic Technology & photography – Certified reference materials for reflection and transmission metrology Documentation and procedures for use, including determination of combined standard uncertainty | |
| **2836:2003** | Graphic Technology Prints and printing inks— Assessment of resistance to various agents | |
| **12646:2004** | Graphic Technology Displays for colour proofing Characteristics and viewing conditions | |
| **12649:2004** | Graphic Technology Safety requirements for binding and finishing systems and equipment | |
| **12639:2004** | Graphic Technology— Prepress digital data exchange — Tag image file format for image technology (TIFF/IT) | |
| **TR16044:2004** | Graphic Technology— Database architecture model and control parameter coding for process control and workflow (Database AMPAC) | |

ISSN 2348 – 8034
Impact Factor- 3.155

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|---|---|---|
| **12640-2:2004** | Graphic Technology — Prepress digital data exchange — Part 2: XYZ/s RGB encoded standard colour image data (XYZ/SCID | |
| **12647-1:2004** | Graphic Technology — Process control for the production of half-tone colour separations, proof and production prints — Part 1: Parameters and measurement methods | |
| **12647-2:2004** | Graphic Technology—Process control for the production of half-tone colour separations, proof and production prints — Part 2: Offset lithographic processes | |
| **15994:2005** | Graphic Technology —Testing of prints — Visual lustre | |

JIS :- **Japanese Industrial Standard**.
Table:-Published ISO standards

## VI. DATA ANALYSIS

**List of bis standards with dual number with iso standards**

| S.No | Standard No | Title | Committee |
|---|---|---|---|
| 1 | **IS 15963 (Part 1):2012 / ISO 12647-1:2004** | Graphic technology -- Process control for the production of half-tone colour separations, proof and production prints -- Part 1: Parameters and measurement methods | MSD 5 130 |
| 2 | **IS 15963 (Part 2):2012/ ISO 12647-2:2004** | Graphic technology -- Process control for the production of half-tone colour separations, proof and production prints -- Part 2: Offset lithographic processes | MSD 5 130 |
| 3 | **IS 15963(Part 3):2012)/ ISO 12647-3:2005** | Graphic technology -- Process control for the production of half-tone colour separations, proofs and production prints -- Part 3: Cold set offset lithography on newsprint. | MSD 5 130 |
| 4 | **IS 15963(Part 1):2012 Graphic Technology** | Process Control for the / ISO 12647-1:2004 Production of Half-Tone Colour Separations, Proofs and Production Prints Part 1 Parameters and Measurement Methods | |
| 5 | **IS 15963(Part 2):2012 Graphic Technology** | Graphic Technology - Process Control for the / ISO 12647-2:2004 Production of Half-Tone Colour Separations, Proofs and Production Prints Part 2 Offset Lithographic Processes. | |
| 6 | **IS 15963(Part 3):2012** | Graphic Technology - Process Control for the / ISO 12647-3:2005 Production of Half-Tone Colour Separations, Proofs and Production Prints Part 3 Coldset Offset Lithography on Newsprint | |
| 7 | **IS 15963(Part 4):2012** | Graphic Technology - Process Control for the / ISO 12647-3:2005 Production of Half-Tone Colour Separations, Proofs and Production Prints Part 3 Coldset Offset Lithography on Newsprint | |
| 8 | **IS 15963(Part 4):2012** | Graphic Technology - Process Control for the / ISO 12647-4:2005 Production of Half-Tone Colour Separations, Proofs and Production Prints Part 4 Publication Gravure Printing | |
| 9 | **IS 15963 (Part 5):2012** | Graphic Technology - Process Control for the / ISO 12647-5:2001 Production of Half-Tone Colour Separations, Proofs and Production Prints Part 5 Screen Printing | |
| 10 | **IS 11957:1987 \| ISO** | Guidelines for contents list of periodicals Feb2011 | |

| | | | |
|---|---|---|---|
| | **18:1981** | | |
| | **IS 15963(Part 6):2012** | Graphic Technology - Process Control for the / ISO 12647-6:2006 Production of Half-Tone Colour Separations, Proofs and Production Prints Part 6 Flexographic Printing | |

Standards dual with BIS and ISO

**List of iso standards as a national adoptation or dual numberwith iso standards in america (ansi):-**

| **Standard No** | **Title** | **Price** |
|---|---|---|
| 1200309 | CGATS.5 - 2009 (identical national adoption of ISO 13655:2009)<br>Graphic technology - Spectral measurement and colorimetric computation for graphic arts images. | $55 |
| 1200209 | CGATS.17 - 2009 (identical national adoption of ISO 28178:2009)<br>Graphic technology - Exchange format for color and process control data using XML or ASCII text | $55 |
| 1401204 | CGATS/ISO 12639:2004 (identical national adoption of ISO 12639:2004)<br>Graphic technology - Prepress digital data exchange - Tag image file format for image technology (TIFF/IT) | $80 |
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Standards dual number with ANSI and ISO

## VII. RESULT & DISCUSSION

In this era of globalization and ever growing consortium for achieving better print quality special in sheet fed offset printing, it is mandatory to follow the standard, tolerance provided by ISO or apex bodies of different countries.

In most of the countries like India, America, Europe they follow guidelines of ISO by adopting or by modifying it in higher scenario for betterment of print by their apex bodies of countries or by their working professional groups in respective field.

In nutshell ISO is the overall apex body for printing or specifically say sheet fed offset printing by its various technical committees, where there is representation of almost all countries either as p-member (25) or by o-member (20).

ISO is very particular about its recommendations and they keep updating them by revising it periodically. The standards or documents related with printing are available through its websites mostly on nominal payment basis.

It is pertinent to mention that ISO is not a body which gives certifications to presses, but there are bodies/companies which will make the preparations easy to get the ISO certifications

**Accreditation**

In creating the ISO12647-2 standard the ISO Organization has made an attempt to apply process control figures and tolerances to the printing process. Unfortunately, the ISO 12647-2 document only allows the reader to identify the parameters required to achieve the standard. It is not a 'How to guide' so further assistance is required in some companies.

Despite the document being created in 2004, there has been a lack of a straight forward method of official accreditation and auditing by an ISO approved organization.

The BPIF (British Printing Industry Federation) has been highly vocal in championing the ISO 12647-2 standard for the U.K. It has followed a logical path and instructed experts in the field of colour and an external International Standards accreditation body to instruct and monitor the processes as well as providing assistance in creating a framework of internal workflow documents that a company wishing to be officially certified and audited as ISO 12647-2 compliant can use

The most important side of any quality management system is that it proves to an external auditor that during every process a check takes place against agreed specifications and when non conformances are found corrective action takes place to prevent the problem arising again

A number of independent accreditation schemes have been suggested in recent years. These methods will certainly aid printers in improving quality but they are not audited by an international standards affiliated accreditation body as is the case with ISO 9001:2008.

Some accreditation schemes only provide evidence via a certificate that prove a calibration of prepress and press equipment on a given day has taken place. However, this is only a small part of the whole accreditation process and hardly provides a customer with reassurance throughout the year. The major benefit of the proposed BPIF scheme is that it is designed to be complimentary to an existing quality management system such as ISO 9001:2008. The ability to prove that work is consistently produced to the ISO 12647-2standard and the culture within a company is quality focused would be an advantage in setting a printing company apart from other companies.

To get the ISO certification/Accreditation for small offset presses in India it is suggested to follow the set of standard provided in this study in various subareas of offset printing like press, pre-press, post-press, printing substrate, ink, machinery, safety standards. The details/standards of above sub-area may by available free or may be charged.

To get the ISO certification done for sheet fed offset press it is advisable to get an accredited agency hired for better and stepwise preparation.

**Certification**
At ISO, they develop international standards, such as ISO12647, ISO 2846, but they are not involves in the certification, they do not issue certificates. This is performed by external certification bodies, thus a company or organization cannot be certified by ISO.

However ISO's committee on Conformity Assessment (CASCO) has produced a number of standards to the certification process, which are used by certification bodies

## VIII. CONCLUSION

In this era of globalization, competitiveness and ever growing consensus for quality in every domain especially in printing, it is pertinent to mention here that above all can't be achieved without set of fixed and proven set of rule/standards/guidelines.

In the field of offset printing, it is very much applicable andin this study we have studied it countries like India, Europe and America. In every country there are apex bodies for printing who has framed various set of standards/tolerance and testing method. Sheet fed offset printing is blessed in a manner that in all above countries it is a leading printing process for commercial/book/magazine production.

In this study we have already discussed apex bodies for above mention countries and there government/private bodies representing it in various technical committees of ISO for formulation of printing standards for sheet fed offset as particular.

TC/130, subcommittee of ISO responsible for developing standards for every printing processes has formulated printing standards for offset printing by"**ISO12647 graphic technology — process control for the production of half-tone color separations, proof and production prints —part 2: offset lithographic processes"**

A printer wishing to produce printed material that is compliant with the requirements of the I.S.O. 12647-2 must ensure that measuring devices capable of spectrophotometric measurements are in place. In addition, the data captured must be exportable into accompanying software that can generate reports that enable the viewer to establish if the requirements of the standard have been met Keys areas that must be displayed within a report For the standard are as follows:

- Paper white measured as C.I.E. L*a*b*
- Solid ink colours measured as C.I.E. L*a*b*

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- Overprints of the 3 process colours (cyan, magenta, yellow) to produce red, green, and violet. In addition, the 3 process colours as solid patches together.
- The tonal value increase (T.V.I. or dot gain)
- Midtone spread

The spectrophotometric measurements must be made under the following conditions:

- D50 Illuminated
- 2º observer
- 0/45 or 45/0 geometry
- Black backing
- Without polarization filter

A primary requirement is that the paper selected must be the correct shade of white. The ISO 12647-2 document lists the target values a paper must have in relation to whiteness, gloss and brightness. The papers are also currently categorized into 5 types for different surface finishes. These are as follows:

- Paper types 1&2 gloss and matt coated papers
- Paper type 3 Gloss coated web offset paper
- Paper type 4 uncoated white paper
- Paper type 5 uncoated yellow paper

(N.B. new categories for papers are due to be introduced)

A clear and acceptable method of certification with independent audits against an all year round quality system can bring obvious benefits for the printer wishing to go through the process.

A reduction in waste, an increase in press uptime and greater customer satisfaction would be an attractive proposition for most printers. Therefore, printers should have at least an understanding of the requirements of the standard to remain competitive and consider if achieving accreditation would set them apart.

It would be advisable to follow a nationally recognized method of implementation and audit of the standard with independent proof that processes are understood and controlled.

However ISO's committee on Conformity Assessment (CASCO) has produced a number of standards to the certification process, which are used by certification bodies.

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