
Graphic technology — Vocabulary —
Part 3:
Printing terms

Technologie graphique — Vocabulaire —
Partie 3: Termes d'impression

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Foreword

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ISO 12637-3 was prepared by Technical Committee ISO/TC 130, *Graphic technology*.

This first edition cancels and replaces ISO 12637-5:2001, of which the terms and definitions have been incorporated.

ISO 12637 consists of the following parts, under the general title *Graphic technology — Vocabulary*:

- *Part 1: Fundamental terms*
- *Part 2: Prepress terms*
- *Part 3: Printing terms*
- *Part 4: Postpress terms*

Introduction

Documentation gives rise to numerous international exchanges of both intellectual and material nature. These exchanges often become difficult, either because of the great variety of terms used in various fields or languages to express the same concept, or because of the absence or the imprecision of useful concepts. To avoid misunderstandings due to this situation and to facilitate such exchanges, it is advisable to select terms to be used in various languages or in various countries to express the same concept and to establish definitions providing satisfactory equivalents for the various terms in different languages. The purpose of this part of ISO 12637 is to provide definitions that are rigorous, uncomplicated and which can be understood by all concerned.

This part of ISO 12637 contains terms and definitions of printing technology and addresses printing systems and processes.

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Graphic technology — Vocabulary —

Part 3: Printing terms

Scope

This part of ISO 12637 defines terms for printing systems and processes.

Terms and definitions

1

analogue copying machine

image-producing device that operates by transferring the original image via a lens onto a photosensitive substrate and creates a visual image by utilizing electrophotographic or other means

2

anilox cell

engraved, etched, ablated or otherwise created recession in the anilox roller to contain the ink to be transferred to the printing forme

3

anilox roller

cylinder with evenly distributed cells generally mounted on a flexographic printing press to transfer a controlled quantity of ink to the printing forme

4

anti-setoff powder

anti-setoff spray powder
particles sprayed onto a printed surface to prevent ink set-off

5

aperture size

aperture width
<screen printing> distance between two adjacent warps or weft wires (strands, threads) measured in the projected fabric level

6

back printing

reverse printing
printing on the underside of a transparent film so that a readable image is visible on the top side

7

back-up cylinder

roll which holds down the small diameter impression cylinder to prevent bending

8

bearer

hardened steel ring mounted on both sides of the impression, blanket and plate cylinders which is the true pitch circle diameter of the gear cylinders

9

bias roller transfer

support for the rubber blanket that acts as the intermediate carrier of the original images from the forme to the substrate

10

blanket

(offset printing) elastomeric image carrier that transfers original images from the printing forme to the substrate in offset printing

11

blanket cylinder

rolling rubber blanket in contact with the plate cylinder of an offset press which transfers the inked image to the substrate carried by the impression cylinder

12

blanket-to-blanket web offset printing

process in which sets of plate and blanket cylinders simultaneously print on both sides of the substrate with each blanket cylinder acting as the impression cylinder for the other

13

bleeding

(ink) penetration or migration of substances from the ink film into or onto a substrate, during or after printing, causing an overlap of colours

14

blocking

condition that occurs when layers of printed substrates stick together

15

capsule toner

(electrophotography) colorant carrier, designed for low temperature melting that is formed by a low melting, point resin with a hard shell

16

carrier

(electrophotography) magnetic beads transporting toner particles to the photoconductor used in a multi-component dry electrophotographic developer

17

channel

⟨gravure printing⟩ area that links two adjacent cells in electromechanical engraving of pyramid-shaped cells in circumferential direction

18

charge transfer

⟨electrophotography⟩ process in which colorant particles are conveyed from the photoconductor to a substrate by corona treatment

19

charging roller

charge roller

⟨electrophotography⟩ roller that applies a static charge to the photoconductor prior to imaging

20

clogging

⟨flexo printing⟩ filling of the anilox cells with dried ink remains

21

clogging

⟨ink jet printing⟩ blockage of printer head

22

coating thickness

⟨screen printing⟩ difference between the screen-printing stencil thickness and thickness of mesh

23

conductive brush charging

⟨electrophotography⟩ process that uses electroconductive fibres tied together in brush form, the ends of which are then brought into contact with a photosensitive surface and charged with DC voltage

24

corona transfer

⟨electrophotography⟩ process of electrostatic charging of photoconductors and substrates by passing them under a thin, high voltage wire

25

crawling

insufficient wetting of the print substrate by the printing ink

26

creep

tendency of a printed image to drift out of register or position

27

cylinder press

printing press with a moving flat bed that holds the forme while a fixed rotating impression cylinder provides the pressure

28

dampening system

device that wets the printing forme prior to the inking rollers

29

deflection electrode

〈continuous ink jet printing〉 electrode that determines the trajectory direction of charged ink droplets

30

direct stencil

〈screen printing〉 stencil produced on the screen-printing carrier

31

direct-indirect stencil

〈screen printing〉 stencil with which the direct and the indirect production methods are combined

32

doctor blade

blade that wipes the excess (surface) ink from a gravure cylinder or anilox roller before printing or the excess coating from a cylinder during finishing operations

33

doctor roll

fountain roll in a flexographic press

34

dot area

percentage of the surface which appears to be covered by a single colour

35

double sheet detector

device on a sheet-fed press that can be set to automatically stop the feeding action when the sheet separation unit of a feeder picks up two or more sheets simultaneously

36

dry back

change in colour, gloss or density of an ink film as it dries and penetrates the substrate

37

dryer tunnel

compartment through which the substrate passes for final drying after printing

38

dye ink

ink containing a colorant in dissolved form

39

effective squeegee angle

〈screen printing〉 angle between the blade and the forme when pressure has been applied

40

feathering

spreading of particles from the ink film onto the substrate, creating an irregular larger image

41

fill in

plugging

undesired effect in which small non-image areas are filled by ink

42

flooding

flow coating

flood coating

flood pulling

〈screen printing〉 filling the openings of the screen-printing forme with printing ink before the printing process

43

flooding

flow coating

flood coating

flood pulling

〈gravure printing〉 condition where the ink volume is so great that the image of the individual cells is no longer visible

44

flooding

flow coating

flood coating

flood pulling

〈offset printing used in lithography〉 excess water on the printing plate or in the ink caused by improper ink and/or water balance

45

forme roller

ink or dampening roller that directly contacts the printing forme

46

fountain solution

dampening solution

mixture of water and chemical agents used to wet the lithographic forme

47

frame height

〈screen-printing〉 distance of the frame above the substrate for the correct screen release

48

gear mark

irregular density that appears at regular intervals as bands in half-tones and solids parallel to the gripper margin of the sheet

49

ghost image

undesirable, faint printed images appearing on substrates where they are not intended to be reproduced

50

grain

〈plate〉 roughened or irregular surface of a printing plate

51

gravure cell

engraved, etched, ablated or otherwise created recession in the gravure cylinder to contain the ink to be transferred to the substrate

52

gravure cylinder

printing forme with an engraved pattern used in the gravure process, directly resulting in the printing image after inking in a gravure press

53

half-tone gravure

printing process in which the ink-receptive cylinder cells are produced to vary in surface area and depth

54

halo

irregular outline that appears around printed characters and/or images, especially in relief forme printing, flexo and letter press printing

55

hickey

imperfection on a printed sheet caused by unwanted particles that cling to the image carriers during lithographic or letterpress printing

56

image area

part of the printing area on which ink is laid down

57**impression bar**

small diameter rod or bar supported by another part of sufficient rigidity used in place of the impression cylinder for running delicate substrates

58**impression cylinder**

device which presses the substrate against an inked image carrier transferring the original image to the substrate

59**indirect stencil**

〈screen printing〉 stencil that, after its production, is attached to the screen-printing stencil carrier

60**ink-absorbing layer**

coating layer on a substrate to provide a quality image without irregular bleeding

61**ink consumption**

〈screen printing〉 wet volume of a certain printing ink required for printing with a certain printing forme

62**ink-ejecting heater**

tiny heater plate located in the pressure chamber of the thermal ink jet printer head

63**ink fountain**

pan on a printing press that holds the ink supply to be transferred to the inking system

64**ink rest**

area on the upper surface of the screen-printing forme outside the printing area

65**ink trail**

〈screen printing〉 area on the surface of the screen-printing forme outside the printing area

66**ink transfer**

amount of ink supplied to a substrate as expressed in a percentage of the total ink available

67**in-line press**

combination of modular printing and converting units

68

inner frame dimension

〈screen printing〉 inner length and width of the area enclosed by the screen-printing frame, excluding all parts firmly attached to the frame

69

keyless offset

inking mechanism of an offset press in which an ink metering roller is used instead of adjustment keys for controlling the ink flow

70

laser printer

〈electrophotography〉 digital electrophotographic printer using a laser to form the image

71

laser thermal transfer

printing process employing a high-energy laser beam to transfer colorant from transfer layer to a substrate with the use of physical and/or physicochemical phenomena such as sublimation

72

magnetic-brush developing device

〈electrophotography〉 device that transfers toner particles to charged areas of a photoconductor in dry toner systems and some of magnetographic printing systems

73

magnetic printer

printer in which a magnetic print head transfers an image to a magnetized drum that picks up toner with the opposite magnetic polarity and transfers it to the substrate to form the printed image when the drum is demagnetized

74

make-ready

preparation process and operations in which adjustments are made to the press to ensure a satisfactory printed image on the substrate

75

mass tone

colour of an ink in bulk which has sufficient thickness to hide the substrate colour such as ink in a can or thick-layered ink film

76

mesh count

〈screen printing〉 number of threads per unit length in a screen mesh

77

mesh elongation

〈screen printing〉 increase in length or width of the mesh due to applied force during the print operation

78**mesh tension**

〈screen printing〉 tensile force with which the screen-printing stencil carrier strains the screen-printing frame

79**misting**

undesirable mist or fog of tiny ink droplets released off the printing press during printing and idle rotation of the ink distribution rollers

80**mottle**

cloudy or uneven appearance of printing, mostly in the solid areas

81**non-contact fusing**

〈electrophotography〉 technique that uses heat transfer via radiation and/or convection to perform a heat fusing process without having the heat source directly contact the toner

82**off-contact distance**

〈screen printing〉 distance between the lower side of the screen-printing forme and the printing substrate when ready to print

83**oil-less fusing**

〈electrophotography〉 means to thermally fix a toner without using release oil in such a way to disperse the toner in a polypropylene or polyethylene wax which bleeds on the toner surface, producing a release effect upon being heated at the time of fusing

84**OK sheet**

OK print

during production printing, the sheet singled out as a reference for the remaining production

NOTE Adapted from ISO 12647-1:2004, definition 3.26.

85**open mesh area percentage**

〈screen printing〉 ratio of the total area of all mesh openings to the total screening surface area, expressed as a percentage

86**open stencil area**

〈screen printing〉 sum of printing stencil area of all image elements to the printing stencil

87**orifice plate**

metal plate containing tiny nozzles in a thermal ink jet printer head

88

outer frame dimension

〈screen printing〉 length and width of a screen-printing frame measured over all those parts belonging to the frame in the projected frame level

89

overprint

condition where one or more layers of colorant, usually ink, are printed on top of another

[ISO 13656:2000, definition 3.18]

90

packing

underlay material placed under the blanket to adjust the effective thickness of the blanket on press

[ISO 12636:1998, definition 2.8]

91

peeling time

total amount of time required from first heat application to the ink ribbon until release of the ribbon from the ink with carrying material in the thermal transfer process

92

permanent head

mechanical or electrical part of a printer that generates ink droplets continuously and/or intermittently

93

pick

rupture of the surface of a paper or board during printing which occurs when an external tensile force is applied to the surface

NOTE 1 In the case of coated papers, the rupture can take the form of particles of coating or fibres wholly or partly detached from the sheet, blistering of the surface or gross stripping. In the case of uncoated papers, the rupture normally takes the form of the removal of fibre aggregates and is difficult to determine due to the paper surface structure, since the visual assessment is easily influenced by human factors.

NOTE 2 Adapted from ISO 3783:2006, definition 3.1.

94

piezo ink jet system

drop-on-demand ink jet printing process whereby droplets are ejected from tiny ink chambers by physical deformation of the ink chamber wall

95

piling

build-up of debris such as paper, dust, ink and so forth on the offset blanket and/or plate to a degree which impairs print quality

96

plate cylinder

supporting device which carries the printing forme

97

pressure fixing

〈electrophotography〉 method of fixing the toner image atop a paper substrate by passing the substrate between rollers where to pressure is applied

NOTE The pressure is generally between 20 kg/cm to 40 kg/cm, and the toner is made with materials whose viscosity decreases when pressure is applied.

98

printing area

length and width of area in common to the image carrier and substrate available to the printed image

99

printing side

〈screen printing〉 side of the screen-printing forme from which the printing ink is applied to the substrate

100

radiant fusing

〈electrophotography〉 means of toner fusing based on heat injection by a quartz lamp with a 2 500 K filament

101

relative mesh elongation

〈screen printing〉 mesh extension divided by the original mesh length

102

relative screen volume

〈screen printing〉 total volume enclosed by the mesh and the thickness of the stencil divided by the total surface of the mesh

103

release layer

layer that assists the release process in the ink layer formed between the thermal ink ribbon holder and the thermal ink layer

104

roller stripping

failure of ink to adhere to the inking roller

105

rotary screen printing

〈screen printing〉 screen-printing procedure in a cylindrical form

NOTE Since the rotary forme rotates synchronously with the substrate, a seamless pattern can be printed.

106

screen

〈screen printing〉 carrier with regular openings of the same size

107

screen-printing forme

〈screen printing〉 image carrier used in screen printing

108

screen-printing frame

〈screen printing〉 device that holds and fixes the screen-printing stencil carrier

109

screen-printing stencil

〈screen printing〉 blocking layer on or in the screen-printing stencil carrier making the screen impermeable in the non-image areas

NOTE Together, the screen-printing stencil and the screen-printing stencil carrier constitute the screen-printing forme and can be manufactured from the same material.

110

screen-printing stencil carrier

〈screen printing〉 part of the printing forme where the stencil is mounted

NOTE Together, the screen-printing stencil carrier and the screen-printing stencil constitute the screen-printing forme and can be manufactured from the same material.

111

scumming

undesirable inking on non-image areas on the offset forme caused by sensitization of the non-image area during the printing process

112

set-off

condition that results when wet ink from a printed sheet is transferred to the back of the following sheet

113

sheet-fed press

printing machine that prints on substrates in sheet form

114

slur

printing defect appearing as loss of sharpness in the printed image as a result of directional deformation of the image element

115**snap-off**

〈screen printing〉 release of the screen-printing forme from the printing ink applied to the printing material during the printing process

116**soft roll fuser**

type of thermal roll process where the surface of the roller coated with a thin layer of heat-resistant material envelops the toner in such a way to produce a fixed image of uniform gloss and limited expansion when the two rollers come into contact and are heated

117**solid ink jet system**

phase-change printer that employs melted wax-based inks and a piezo electric ejection mechanism

118**squeegee**

〈screen printing〉 device for simultaneously pressing the screen-printing forme against the substrate, forcing the printing ink through the openings of the forme on the substrate and scraping the excess ink from the forme, consisting e.g. of a holder and a blade or a roll coater (revolving doctor)

119**squeegee angle**

〈screen printing〉 angle between the blade and the forme before pressure has been applied

120**squeegee blade**

〈screen printing〉 part of the squeegee that forces the ink through the open areas of the forme onto the substrate

121**squeegeeing area**

〈screen printing〉 width of the squeegee blade (contact area with forme)

122**squeegee pressure**

〈screen printing〉 linear pressure with which the squeegee acts upon the forme along a given section per unit of length

123**squeegee side of screen**

〈screen printing〉 side of the screen-printing forme on which the printing ink is laid

124**stencil area**

〈screen printing〉 length times width of the rectangle oriented in the direction of the squeegee stroke enclosing the image elements of a screen-printing stencil

125

stencil carrier area

〈screen printing〉 mesh area length multiplied by width of the mesh area that can be stencilled

126

strike through

penetration of components of the printing ink through the substrate so that the ink is observed as an image on the opposite side

127

sublimation dye transfer printing method

method of printing in which every dot density varies to produce gradation and through the control of heating sublimates and transfers the ink onto the substrate

128

Surface Rapid Fusing system

SURF system

〈electrophotography〉 fusion process that uses a thin film thermal-resistant endless belt to apply the un-fused toner to the image and then apply heat to fuse the toner with line-style heaters from behind

129

tack

adhesive quality of an ink

130

theoretical ink volume

〈screen printing〉 thickness of mesh and stencil multiplied by open screen volume

131

thermal belt fusing

〈electrophotography〉 fusion deposition process which allows reduced warm-up time by minimizing the required temperature with the use of a thin-layer heat-resistance belt to heat the toner layer

132

thermal dye transfer

thermal dye diffusion

process that transfers an image from a donor sheet to a receiving sheet by means of heat

133

thermal ink jet

ink jet printing process which employs thermal energy to eject ink droplets through nozzles

134

thermal transfer ribbon

ribbon using an exudation mechanism to transfer the image in which the ink layer contains thermofusible wax ink with fillers that control the ink transfer

135

thermofusible transfer

imaging method with the use of thermofusing ink which is solid at room temperature

136

thickness of mesh

(screen printing) distance between upper and lower sides of the stencil carrier

137

thickness of the screen-printing forme

(screen printing) distance between the upper and the lower sides of the screen-printing forme

138

tinting

undesirable colour cast on the non-image area of the substrate caused by contamination of the dampening solution or by emulsification of the ink

139

toner

colorant which consists of a polymer binder and pigment-charge agent and is used in magneto-electrophotographic and ion-deposition printing processes

140

tone-value increase

dot gain

difference between the dot area on the printed substrate and the dot area on the printing forme

141

toning

(offset printing) undesirable inking on non-image areas on the plate

142

transfer cylinder

press device which conveys the substrate to be printed from one printing unit to another in a multi-printing unit press

143

transfer roller

electrically-charged roller which transfers a counter-charged toner from a photosensitive substrate onto a paper substrate by bringing it into contact with the opposite side

144

trapping

ink property that shows how well an ink film transfers to a freshly printed ink film