# HJ

# Standard for Environmental Protection of the People's Republic of China

HJ 2539-2014

## Technical Requirement for Environmental Labeling Products

## Printing, Part 3: Printing-Recess printing

Issued on September 28, 2014 Putting into effect as of December 1, 2014

**Issued by Ministry of Environmental Protection**

# Content

## Foreword

This standard is developed for the purpose of implementing the Law of the People's Republic of China on Environmental Protection, reducing the impact of recess printing on environment and human health.

For planographic printing, the standard is Technical requirement for environmental labeling products-Printing, Part 1: Planographic printing (HJ 2503-2012). For commercial form printing, the standard is Technical requirement for environmental labeling products-Printing, Part 2: Commercial form printing (HJ 2530-2013).

This standard is the first version.

This standard is applicable to the certification of China Environmental Labelling products.

The development of the standard is organized by the Department of Science, Technology and Standards of the Ministry of Environmental Protection.

Main drafters are Environmental Development Center of Ministry of Environmental Protection, China Printing Technology Association and China Green Businesses and Cultural Development Center.

This standard was approved by Ministry of Environmental Protection on September 28, 2014.

This standard shall be put into effect as of December 1, 2014.

This standard shall be interpreted by Ministry of Environmental Protection.

# Technical Requirement for Environmental Labeling Products

# Printing, Part 3: Printing-Recess printing

## 1. Application Scope

This standard specifies the terminology, definition, basic requirements, technical contents and testing method for environmental labeling products of recess printing.
This standard is applicable to recess printing process and products with paper, plastic and composite materials as substrate.

## 2. Standard Quotation Documents

The standard has quoted items from following document. The latest versions of all quotation documents without specific date are applicable to this standard.
GB 9683 Hygienic standard for composite laminated food packaging bag
GB/T 7707 The intaglio prints for decorating
GB/T 9851.1 Printing technology terminology part 1: basic technology
GB/T 9851.5 Printing technology terminology part 5: recess printing technology
GB/T 18348 Bar code for commodity-testing for bar code symbol print quality
YBB 00132002 General rule for laminated films and bags for medicine
CY/T 6 Quality requirement and testing method for recess prints
HJ/T 220 Technical Requirement for Environmental Labeling Products-adhesives
HJ/T 371 Technical Requirement for Environmental Labeling Products-gravure and flexible printing ink

## 3. Terminology and Definition

The following terminologies and definitions are applicable to this standard.
3.1 recess printing

It refers to a printing method. On the plate, the graphic parts are lower than non-graphic parts (GB/T 9851.5).

3.2 substrates

It refers to the final carrier to receive chromogenic agent/ pigment image, such as ink (GB/T 9851.1).

## 4. Basic Requirements

4.1 The product quality of prints should comply with requirements in GB/T 7707, GB/T 18348, and CY/T 6.

4.2 Products for medicine packaging should comply with YBB 00132002, and products for food packaging should comply with GB 9683.

4.3 The pollution discharge of enterprises must meet the requirements of national or local pollution discharge standards.

4.4 The producer should enhance clean production.

## 5. Technical Contents

5.1 Requirement on raw materials during printing

5.1.1 Ink should comply with requirement in HJ/T 371.

5.1.2 PVC cannot be used as substrate.

5.1.3 Ink, adhesive, thinner and detergent cannot use solvents listed in Table 1.

**Table 1 Solvents that Ink, Adhesive, Thinner and Detergent cannot Use**

| **Types** | **Solvent** |
|---|---|
| benzene | benzene, toluene, xylene, ethylbenzene |
| glycol ethers and its esters | glycol ether, ethylene glycol monomethyl ether acetate, ethylene glycol ethyl ether, ethylene glycol ethyl ether acetate, diethylene glycol monobutyl ether acetate |
| halogenated hydrocarbons | dichloromethane, dichloroethane, chloroform, |

| | |
|---|---|
| | trichlorethylene, carbon tetrachloride, methylene bromide, ethylene dibromide, bromoform, tribromoethane, carbon tetrabromide |
| alcohols | methanol |
| alkanes | hexane |
| ketones | 3,5, 5-trimethyl-2-cyclohexenyl-1- ketone (isophorone) |

5.2 The integrated evaluation scores of raw materials in Table 2 used during printing process should be more than 60.

**Table 2 Requirement on Raw Materials Used During Printing**

| **Raw Materials** | | **Requirement** | **Score** | **Total Score** |
|---|---|---|---|---|
| Substrate Note 1 | Paper | Use paper which have passed FSC certification | 25 | 25 |
| | | Use non-chlorine bleached paper | 20 | |
| | | Use paper which have 70% recycled paper pulp (except those which required by the State) | 20 | |
| | Plastic and Composite Materials | Use a single type of polymer and copolymer | 25 | |
| | | Use co-extruded film | 25 | |
| | | Use biodegradable plastics | 20 | |
| Plate | | Use electronic or laser engraving plate | 15 | 15 |
| | | Use non-cyanide plating edition | 10 | 10 |
| Ink | | Use water-based ink | 25 | 25 |
| | | Use ink which does not contain acetone, methyl ethyl ketone, cyclohexanone, tetramethyl-pentanone | 15 | |
| Adhesive | | Use non-solvent adhesives | 25 | 25 |
| | | Use adhesives which accord with | 20 | |

| | | | |
|---|---|---|---|
| | requirement on water packaging adhesives in HJ/T 220 | | |
| Note 1: Substrates will be evaluated according to materials separately. If involving 3 materials including paper, plastic and composite material, evaluation will be conducted comprehensively in proportion with total score under 25. | | | |

5.3 If energy saving measures in Table 3 are adopted during printing process, the integrated evaluation scores should be more than 60.

**Table 3 Energy Saving Measures in Printing**

| **Index** | **Procedure** | **Requirement** | **Score** | **Total Score** |
|---|---|---|---|---|
| Resource saving | Pre-printing | Improve material utilization of layout by layout optimization and reasonable make-up | 3 | 10 |
| | | Establish and implement printing process management system | 3 | |
| | | Establish and implement printing plate management system | 4 | |
| | Printing | Ink consumption will be prescribed according to plate inked area, network lines and depth of dots | 3 | 22 |
| | | Configure ink together | 3 | |
| | | Use machine connection for printing and finishing process | 2 | |
| | | Use continuous production of non-stop automatic feeding of materials | 2 | |
| | | Build and run the ink viscosity automatic control device | 2 | |
| | | Tension control, reasonable printing | 2 | |

| | | | | | |
|---|---|---|---|---|---|
| | | | speed adjustment | | |
| | | | Build and run online prints testing device | 2 | |
| | | | Build and run independent drive device | 2 | |
| | | | Build and implement collation and saving mechanism | 2 | |
| | | | Build and implement consumption substance management mechanism | 2 | |
| | After printing | | Complex process of non-stop automatic feeding of materials | 2 | 6 |
| | | | Build and implement collation, finished product signature and semi-finished product consumption control mechanism | 1 | |
| | | | Build and implement control mechanism of waste from every procedure | 3 | |
| Energy saving | Pre-printing | | Co-use plate of same standard and series | 2 | 3 |
| | | | Reduce electronic corona treatment | 1 | |
| | Printing | | Recycle and use left dry heat | 3 | 11 |
| | | | Build and implement chromatograph edition and signature time system | 3 | |
| | | | Build and implement dry temperature and wind control system | 3 | |
| | | | Build and implement edition change time system | 2 | |
| | After | Plasti | Recycle and use of left dry heat | 3 | 13 |

| | | | | | |
|---|---|---|---|---|---|
| | printing Note 1 | c and composite materials | Build and implement complex, cut, package, product change time system | 3 | |
| | | | Build and implement machine adjustment and finished product signature time system | 2 | |
| | | | Adjust dry speed and wind control according to complex edition and complex speed | 3 | |
| | | | Adjust processing temperature according to material performance, heat seal area and package speed | 2 | |
| | | paper | Recycle and use of left dry heat | 4 | |
| | | | Build and implement energy consumption assessment system of processing device after printing | 5 | |
| | | | Build and implement processing system after printing | 4 | |
| Pollution control and waste recycle and use | | | Build and implement atmosphere pollutant control device | 8 | 35 |
| | | | Build and implement recycle system of left ink and adhesives | 6 | |
| | | | Build and implement recycle system of thinner used to clean plate, ink box, ink tray, composite screen halftone, adhesive box and adhesive tray | 4 | |
| | | | Build and implement recycle system of waste air | 6 | |
| | | | Build and implement waste classification system | 5 | |

| | | | |
|---|---|---|---|
| | Build and implement hazardous substance management system | 6 | |
| Note 1: After-printing will be evaluated according to materials separately. If involving 3 materials including paper, plastic and composite material, evaluation will be conducted comprehensively in proportion with total score under 13. | | | |

**6. Testing Method**

6.1 The requirement in technical content 5.1.1 shall be conducted in accordance with HJ/T 371.

6.2 Other requirement in technical content should be examined by document review and on-site inspection.