SRI LANKA STANDARD 604:1983
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SPECIFICATION FOR

DUPLICATING INK FOR TWIN CYLINDER ROTARY MACHINES

BUREAU OF CEYLON STANDARDS

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SLS 604:1983

Gr. 5

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Sri Lanka.

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FOREWORD

This Sri Lanka Standard was authorized for adoption and publication by the Council of the Bureau of Ceylon Standards on 1983-04-08, after the draft, finalized by the Drafting Committee on Duplicating Ink, had been approved by the Chemicals Divisional Committee.

All standard values given in this specification are in SI units.

For the purpose of deciding whether a particular requirement of this specification is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with CS 102. The number of significant places retained in the rounded off value should be the same as that of the specified value in this specification.

In the preparation of this specification, valuable assistance derived from the relevant publications of the Indian Standard Institution and the United States Federal Supply Service, General Services Administration is gratefully acknowledged.

1 SCOPE

This specification prescribes requirements and methods of sampling and test for emulsion based and oil based duplicating ink for use on twin cylinder rotary duplicating machines.

2 REFERENCES

CS 3 Paper sizes

CS 102 Presentation of numerical values

SLS 169 Duplicating ink for single drum rotary machines

SLS 428 Random sampling methods

SLS 535 : Part 3 : Section 3.8 Tests for paints - Fineness of grind

SLS ... Stencil paper.

3 DEFINITIONS

For the purpose of this specification, the definitions given in SLS 169 shall apply.

4 REQUIREMENTS

4.1 General requirements

4.1.1 The ink shall be in the form of a paste and shall be free from grit and other objectionable matter, such as skins, lumps and other separated material. It shall be free from any toxic material and shall not have or develop any objectionable odour during the duplicating operation.

4.1.2 The ink shall not dry on the cylinder or clog the stencil carrier, the stencil or the ink distributor during the operation of the machine.

4.2 Consistency

The consistency of the ink shall be such that it spreads easily on the cylinders of the duplicating machine after a few revolutions of the cylinders. It shall not run or drip off the cylinders nor shall it be so stiff as to be difficult to spread it on the cylinders.

4.3 Performance

The ink shall perform satisfactorily to produce acceptable reproductions on both sides of the paper when tested in accordance with Appendix A.

4.4 Colour

The colour of the impressions produced in the performance test (Appendix A) shall be the same as that indicated on the label.

4.5 Resistance to smudging

The impressions obtained with the ink in the performance test, shall not smudge when tested by the method prescribed in Appendix B.

4.6 Resistance to fading

The impressions made by the ink (see Appendix A) shall remain unchanged and shall be readable when tested by the method prescribed in A.2.4.

4.7 Stability

The material shall not show any appreciable variation in its apparent consistency when tested as prescribed in Appendix C.

4.8 Shelf life

The ink in unopened containers shall be workable after storage under normal conditions for a period of one year from the date of manufacture.

4.9 Fineness of dispersion

The pigment particles in the medium shall not be coarser than 50 μm when tested by the method prescribed in **SLS 535:Part 3:Section 3.8.**

5 PACKAGING

Ink shall be packed in suitable containers, so designed to provide for the efficient and complete utilization of the ink contained therein and shall not leak in transit. Containers shall be individually packed in paperboard boxes, or any other suitable enclosure.

6 MARKING

6.1 Each box and the enclosed container shall be marked legibly and indelibly with the following information:

a) Name of the material and type of machine on which the ink is to be applied;

b) Colour;

c) Name and address of manufacturer;

d) Registered trade mark (if any);

e) Month and year of manufacture;

f) Net mass in g, of the material;

g) Batch or code number.

6.2 The containers may also be marked with the Certification Mark of the Bureau of Ceylon Standards illustrated below on permission being granted for such marking by the Bureau of Ceylon Standards.

NOTE - The use of the Bureau of Ceylon Standards Certification Mark (SLS mark) is governed by the provisions of the Bureau of Ceylon Standards Act and the regulations framed thereunder. The SLS mark on products covered by a Sri Lanka Standard is an assurance that these have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control, which is devised and supervised by the Bureau and operated

by the producer. SLS marked products are also continuously checked by the Bureau for conformity to the relevant standard as a further safeguard. Details of conditions under which a permit for the use of Certification mark is granted to manufacturers or processors may be obtained from the Bureau of Ceylon Standards.

7 SAMPLING

The method of drawing representative samples of the material shall be as specified in Appendix D.

8 METHODS OF TEST

Tests for the requirements laid down in 4 shall be carried out as prescribed in Appendices A, B, C and **SLS 535:Part 3:Section 3.8.**

9 CONFORMITY TO STANDARD

A lot shall be considered as conforming to the requirements of this specification if all the containers examined as in **D.5.1** and tested as in **D.5.2** satisfy the relevant requirements.

APPENDIX A

TEST FOR PERFORMANCE

A.1 APPARATUS

A.1.1 *Duplicating machine*, an electrically operated twin cylinder rotary machine shall be used.

A.1.2 *Stencil paper*, stencil paper conforming to **SLS** ... shall be used.

A.1.3 *Duplicating paper*, white duplicating, semi absorbent paper of size A4 (see **CS 3**) having a substance of 75 g/m^2 with a tolerance of ± 4 per cent and a minimum pH of 5.0 shall be used.

A.2 PROCEDURE

A.2.1 Clean carefully the machine, the screen, the impression roller and the ink roller and place them in proper position on the duplicating machine **(A.1.1)**. Cut on the stencil **(A.1.2)** 25 lines of typed matter, each nearly 150 mm long with an electric typewriter having clean pica type, using all the letters both upper and lower case along with numerals and symbols. Apply about 20 g of ink on the cylinder and run the machine till the ink spreads evenly on the rollers. Fix the stencil securely in position, apply about 15 g of ink and again run the machine at a speed of 125 ± 5 copies per minute, till the prints begin to fade. The ink shall pass the

performance test if a minimum of 200 clear and legible copies are obtained before the fading starts.

A.2.1.1 Repeat the test using about 15 g of ink by cyclostyling 100 sheets on both sides.

A.2.2 Examine all the copies, excluding the first 5 copies. The ink shall not exhibit any strike-through and set-off sufficient to interfere with the legibility of the finished work on either side of the paper.

A.2.2.1 When the printed copies are stacked, there shall be no objectionable transfer of ink from one sheet to the other.

A.2.3 After the operation in A.2.1, remove excess ink on the stencil using a blotting paper and sotre it carefully between 2 non-absorbent papers at a temperature of 27 ± 2 °C and relative humidity of 65 ± 5 per cent. After 30 days of storage, use the stencil again as prescribed in A.2.1 using about 30 g of ink. The material shall be considered to have passed the test if a minimum of 100 clear and legible copies are obtained before fading starts.

A.2.4 Resistance to fading

Take six copies of sheets from A.2.1 printed on one side with equally good impressions. Expose three of these sheets with the printed side up to an ultra violet lamp at a distance of 0.25 m from the source for 48 hours. The lamp should emit radiations at 366 nm so that intensity at 0.9 m from the lamp is approximately 4.5 W/m^2. Keep the other three sheets of printed paper for reference away from the ultra violet lamp. There shall be no appreciable change in intensity of the impressions of the paper exposed to ultra violet light when compared with the three sheets reserved for reference.

APPENDIX B

TEST FOR RESISTANCE TO SMUDGING

Take a printed sheet produced during the performance test (A.2.1) which has been allowed to dry for 2 minutes and place it on a flat surface with the printed side up and cover with a clean sheet of blank duplicating paper (see A.1.3). Place a 100 g mass of 24 mm diameter on one edge of the paper and draw the clean sheet of duplicating paper and the 100 g mass slowly across the printed sheet. Repeat this test and examine after each test. The ink shall be considered to have passed the test if there is no smudging.

APPENDIX C

TEST FOR STABILITY

Pour about 10 g of the sample ink into a clean shallow vessel approximately 60 mm in diameter and 8 mm in depth and place in an oven at 60 ± 2 °C for 2 hours. The material shall not change its consistency appreciably or show signs of separation of oil layer or any signs of bubbles.

Into another similar vessel, pour about 10 g of the sample and maintain the vessel at 0 ± 2 °C for 2 hours. It shall show no signs of congealing and remain in a workable consistency.

APPENDIX D

SAMPLING

D.1 GENERAL REQUIREMENTS

In drawing representative samples the following precautions and directions shall be observed.

D.1.1 Samples shall be taken in an unexposed place.

D.1.2 Samples shall be drawn from originally unopened containers.

D.1.3 Precautions shall be taken to protect the samples from adventitious contamination.

D.1.4 Samples shall be stored in such a manner, that conditions of storage do not unduly affect the quality of the material.

D.2 LOT

All containers in a single consignment of the material drawn from a single batch of manufacture shall constitute a lot. If a consignment is declared or known to consist of different batches of manufacture, the containers belonging to the same batch shall be grouped together and each such group shall constitute a separate lot.

D.3 SCALE OF SAMPLING

D.3.1 Samples of duplicating ink shall be tested from each lot for ascertaining the conformity to the requirements of this specification.

D.3.2 The number of containers (n) to be chosen from the lot shall depend upon the size of the lot and shall be in accordance with Table 1.

D.3.3 These containers shall be chosen at random from the lot. In order to ensure randomness of selection, a random number table as given in **SLS 428** shall be used.

TABLE 1 - Scale of sampling

Lot size	No. of containers to be selected (n)
Up to 50	2
51 to 100	3
101 to 300	4
301 and above	5

D.4 REFERENCE SAMPLE

If a reference sample is required, the number of containers to be selected from each lot shall be three times the value given in Table 1. One third of this sample shall be retained by the purchaser, one third by the supplier and one third shall be kept at a place agreed to between the purchaser and the supplier to be used in case of dispute between the two.

D.5 NUMBER OF TESTS

D.5.1 Each container selected as in D.3.2 shall be examined for packaging and marking (5 and 6).

D.5.2 After examining for packaging and marking (D.5.1) each container shall be individually tested for consistency (4.2) performance (4.3), colour (4.4), resistance to smudging (4.5), resistance to fading (4.6), stability (4.7) and fineness of dispersion (4.9).

D.5.3 Only the required quantity of ink shall be drawn from each container as and when tests are carried out.

SLS CERTIFICATION MARK

The Sri Lanka Standards Institution is the owner of the registered certification mark shown below. Beneath the mark, the number of the Sri Lanka Standard relevant to the product is indicated. This mark may be used only by those who have obtained permits under the SLS certification marks scheme. The presence of this mark on or in relation to a product conveys the assurance that they have been produced to comply with the requirements of the relevant Sri Lanka Standard under a well designed system of quality control inspection and testing operated by the manufacturer and supervised by the SLSI *which includes surveillance inspection of the factory, testing of both factory and market samples.*

Further particulars of the terms and conditions of the permit may be obtained from the Sri *Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.*

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SRI LANKA STANDARDS INSTITUTION

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The principal objects of the Institution as set out in the Act are to prepare standards and promote their adoption, to provide facilities for examination and testing of products, to operate a Certification Marks Scheme, to certify the quality of products meant for local consumption or exports and to promote standardization and quality control by educational, consultancy and research activity.

The Institution is financed by Government grants, and by the income from the sale of its publications and other services offered for Industry and Business Sector. Financial and administrative control is vested in a Council appointed in accordance with the provisions of the Act.

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