SRI LANKA STANDARD 795: PART 1: 1987

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SPECIFICATION FOR

COATED FABRICS

PART 1 - POLYVINYL CHLORIDE (PVC) COATED WOVEN FABRICS FOR UPHOLSTERY

SRI LANKA STANDARDS INSTITUTION

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SLS 795:Part 1:1987

Gr. 7

SRI LANKA STANDARDS INSTITUTION
53, Dharmapala Mawatha,
Colombo 3,
Sri Lanka.

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This standard does not purport to include all the necessary provisions of a contract.

SRI LANKA STANDARD
SPECIFICATION FOR COATED FABRICS
PART 1: POLYVINYL CHLORIDE (PVC) COATED WOVEN FABRICS FOR UPHOLSTERY

FOREWORD

This Sri Lanka Standard was authorized for adoption and publication by the Council of the Sri Lanka Standards Institution on 1987-10-08, after the darft, finalized by the Drafting Committee on Coated Fabrics, had been approved by the Chemicals Divisional Committee.

This part covers only the PVC-coated woven fabrics mainly used for upholstery. It may also be used for manufacture of bags and for shoe uppers. PVC-coated knitted fabrics used for upholstery and coated fabrics used for water resistant clothing will be covered in separate parts.

Clauses 5.3, 5.4 and 6.2 of this specification call for agreement between the purchaser and the supplier.

All standard values in this specification are given 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 shall be the same as that of the specified value in this specification.

In the preparation of this specification, the assistance derived from the publications of the International Organization for Standardization, the British Standards Institution, the Indian Standards Institution and the South African Bureau of Standards is gratefully acknowledged.

1 SCOPE

This part prescribes the requirements and methods of sampling and test for PVC-coated woven fabrics used for upholstery.

2 REFERENCES

IS 2244 Glossary of terms relating to treated fabrics

CS 62 Determination of colour fastness of textile material to daylight

CS 63 Determination of colour fastness of textile material to rubbing

CS 102 Presentation of numerical values

SLS 428 Random sampling methods

SLS 732 Tests for plastics

Part 1: Qualitative evaluation of bleeding of colourant

SLS 761 Tests for rubber or plastic coated fabrics

Part 1 : Determination of roll characteristics

Part 2 : Determination of tear strength

Part 3 : Determination of breaking strength and elongation at break

Part 4 : Determination of resistance to damage by flexing (dynamic method)

Part 5 : Standard atmospheres for conditioning and testing

Part 6 : Determination of coating adhesion.

3 TERMINOLOGY

For the purpose of this specification definitions given in **IS 2244:1972** shall apply.

4 TYPES

This specification covers the following types of PVC-coated woven fabrics

Type 1 : for use in heavy duty upholstery

Type 2 : for use in medium duty upholstery

Type 3 : for use in light duty upholstery.

5 REQUIREMENTS

5.1 General requirements

The coated fabric shall be made by coating suitably the base fabric with polyvinyl chloride (PVC). The PVC coating may contain an expanded layer. The coated fabric shall be flexible and shall not emit and unpleasant odour during normal service. The base fabric shall be made up of natural or synthetic yarn.

5.2 Appearance

The coating of the fabric shall be uniformly applied and shall be free from visible flaws and cracks. When viewed under a magnification of X 10 the coated fabric shall be substantially free from pinholes. The base base fabric shall not be visible through the coating.

5.3 Colour, grain (design/pattern) and finish

The colour, grain and finish of the coated fabric shall be as agreed to between the purchaser and the supplier.

5.4 Width

The usable width (see Note) of the coated fabric when measured in accordance with SLS 761:Part 1 shall be as agreed to between the purchaser and the supplier.

NOTE – The term 'usable width' means the width of the fabric that is coated in such a manner that it complies with the requirements specified in 5.2.

5.5 Bleeding of colourant

The coated fabric when tested and examined in accordance with **SLS 732:Part 1** shall not show any staining or marking.

5.6 Other requirements

The coated fabric shall comply with the requirements given in Table 1 when tested in accordance with the methods given in Column 6 of the table.

6 PACKAGING

6.1 The product shall be securely packed in the form of a roll so as to ensure safe transportation.

6.2 A roll may contain one or more pieces. If a roll consists of more than one piece or length, the number of pieces and the minimum length of each piece of the fabric shall be as agreed to between the purchaser and the supplier.

7 MARKING

7.1 The following information shall be legibly and indelibly marked on each roll or on a label securely attached:

a) The name of the product;

b) Type, (with the intended use);

c) Name and address of the manufacturer (including country of origin);

d) Length and width of the material in metres;

e) Trade mark, if any;

f) Brand name, if any; and

g) Batch or code number.

TABLE 1 - Requirements for PVC-coated fabric

Sl No. (1)	Characteristic (2)	Requirement for Type 1 (3)	Type 2 (4)	Type 3 (5)	Method of test (6)
i)	Total mass per unit area, g/m^2, min.	550	420	340	SLS 761:Part 1
ii)	Coating mass per unit area, g/m^2, min.	300	240	170	SLS 761:Part 1
iii)	Tear strength, N/50 mm				
	Longitudinal direction, min.	40	29	18	SLS 761:Part 2
	Transverse direction, min.	40	29	18	Method A1
iv)	Breaking strength, N/50 mm				
	Longitudianl direction, min.	580	450	300	SLS 761:Part 3
	Transverse direction, min.	580	450	300	
v)	Coating adhesion, N/50 mm, min.	26	26	26	SLS 761:Part 6
vi)	Flex cracking, number of cycles, min.	300 000	300 000	250 000	SLS 761:Part 4
vii)	Shrinkage, per cent, max.	3	3	3	Appendix B
viii)	Volatility of plasticizer, per cent, max.	3	3	3	Appendix C
ix)	Printwear (change of appearance) Grey scale rating, min.	4	4	4	Appendix D
x)	Resistance to burning, time to flame extinction, s, max.	5	5	5	Appendix E
xi)	Thickness (at 2 kPa), mm, minimum individual reading	0.4	0.4	0.4	SLS 761:Part 1
xii)	Colour fastness				
	a) to light (Blue wool standard), min.	5	5	5	CS 62
	b) to rubbing (Grey scale rating), min.	4	4	4	CS 63

7.2 The rolls may also be marked with the Certification Mark of the Sri Lanka Standards Institution illustrated below on permission being granted for such marking by the Sri Lanka Standards Institution.

NOTE - The use of the Sri Lanka Standards Institution Certification Mark (SLS Mark) is governed by the provisions of the Sri Lanka Standards Institution Act and the regulations framed thereunder. The SLS mark on products covered by a Sri Lanka Standard is an assurance that they 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 Institution and operated by the producer. SLS marked products are aslo continuously checked by the Institution for conformity to the relevant standard as a further safeguard. Details of conditions under which a permit for the use of the Certification Mark may be granted to manufacturers or processors may be obtained from the Sri Lanka Standards Institution.

8 SAMPLING

8.1 Lot

All the rolls of fabric of the same type and belonging to one batch of manufacture shall constitute a lot.

8.2 Scale of sampling

8.2.1 Samples shall be tested from each lot for ascertaining its conformity to the requirements of this specification.

8.2.2 The number of rolls to be selected from each lot shall be in accordance with Table 2.

TABLE 2 - Scale of sampling

No. of rolls in the lot (1)	No. of rolls to be selected (2)
Up to 15	2
16 to 35	3
36 to 50	4
51 and above	5

8.2.3 The rolls shall be selected at random. In order to ensure randomness of selection, tables of random numbers as given in SLS 428 shall be used.

8.3 Number of tests

8.3.1 Each roll selected as in 8.2.2 shall be inspected for packaging and marking requirements.

8.3.2 One piece shall be selected at random from each roll selected as in 8.2.2 and a sample of size given in Figure 1 shall be cut from each piece so selected and examined for appearance (5.2). Specimens (see Note) shall be cut from each of these samples and tested for the requirements given in 5.5 and 5.6.

NOTE - The method of selecting specimens from each sample shall be in accordance with the Figure 1 of Appendix A.

9 METHODS OF TEST

9.1 Tests shall be carried out as specified in CS 62, CS 63, SLS 732, SLS 761 and Appendices B to E of this specification.

9.2 During the analysis, unless otherwise stated, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

9.3 Test specimens wherever necessary shall be conditioned in accordance with SLS 761:Part 5 by method of conditioning *A* or *B*, as the case may be.

10 CRITERIA FOR CONFORMITY

A lot shall be declared as conforming to the requirements of this specification if the following conditions are satisfied:

10.1 Each roll inspected as in 8.3.1 satisfies the relevant requirements.

10.2 Each specimen examined for appearance satisfies the relevant requirements.

10.3 The value of the expression, $\bar{X} - 0.8s$ (see Notes), calculated using the test results on total mass per unit area, coating mass per unit area, tear strength and breaking strength is not less than the specified value for each requirement.

10.4 The value of the expression, $\bar{X} + 0.8s$ (see Notes), calculated using the test results on shrinkage and volatility of plasticizer is not more than the specified value for each requirement.

NOTES

1. *Mean* $(\bar{x}) = \frac{\text{Sum of the observed values}}{\text{Number of values}}$

2. *Standard deviation (s)*

The positive square root of the quotient obtained by dividing the sum of squares of deviations of the observations from their mean by one less than the number of observations in the sample.

10.5 The test results on flex cracking, colour fastness to light and rubbing, print wear, resistance to burning, coating adhesion and bleeding of colourant satisfy the relevant requirements.

10.6 The measured values of thickness satisfy the relevant requirements.

APPENDIX A

METHOD OF SELECTION OF TEST SPECIMEN

The specimens for testing shall be selected from the sample in accordance with the scheme illustrated in the Figure 1 which shows the pisitions from which the specimens for each type of test shall be taken, except that the specimens required for testing bleeding of colourant and colour fastness to light shall be selected from any suitable portion of the sample.

Key

M	-	Mass determination (3 pieces, 50 mm x 50 mm)
Tr(l)	-	Tear strength (Longitudinal direction) (5 pieces, 225 mm x 75 mm)
Tr(t)	-	Tear strength (Transverse direction) (5 pieces, 225 mm x 75 mm)
Bs(l)	-	Breaking strength (Longitudinal direction) (5 pieces, 200 mm x 50 mm)
Bs(t)	-	Breaking strength (Transverse direction) (5 pieces, 200 mm x 50 mm)
Fl(l)	-	Flex cracking (Longitudinal direction) (3 pieces, 105 mm x 65 mm)
Fl(t)	-	Flex cracking (Transverse direction) (3 pieces, 105 mm x 65 mm)
Rb	-	Colour fastness to rubbing (wet and dry) (4 pieces, 230 mm x 50 mm)
P	-	Print wear (2 pieces, 230 mm x 50 mm)
Vm	-	Volatility of plasticizer (2 pieces, 100 mm x 100 mm)
Ad	-	Coating Adhesion (2 pieces, 200 mm x 75 mm)
B	-	Resistance to burning (2 pieces, 150 mm x 150 mm)
Sr	-	Shrinkage (2 pieces, 250 mm x 250 mm).

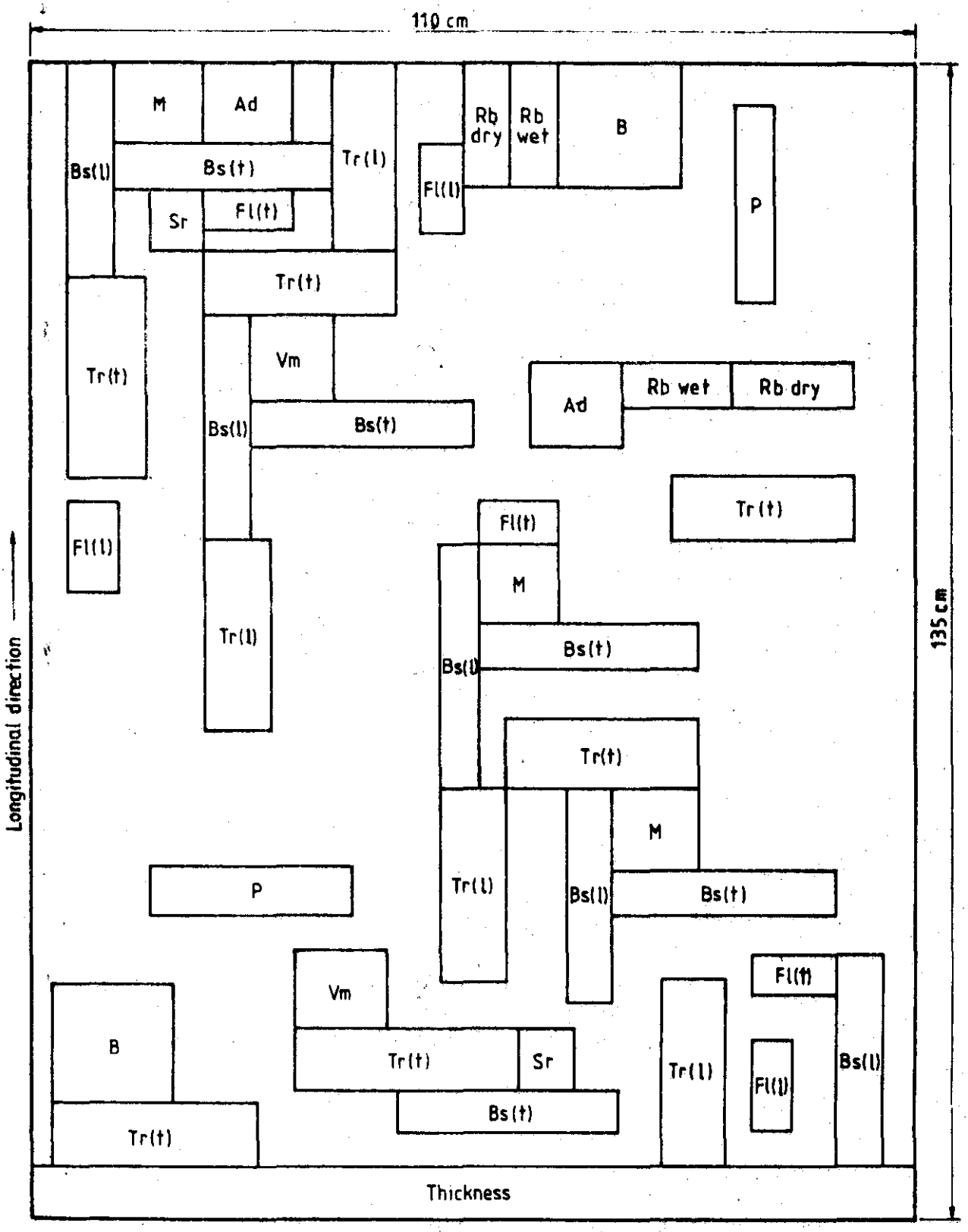

FIGURE 1 - Scheme for selection of test specimens

APPENDIX B

DETERMINATION OF SHRINKAGE

B.1 PROCEDURE

Cut two specimens each of size 250 mm x 250 mm. Mark two lines parallel to and two lines perpendicular to the longitudinal direction of each specimen. Condition the specimens in atmosphere "A" and measure the distance between the marked lines in both longitudinal and transverse directions to the nearest millimetre. Lay the specimens flat 25 mm below the surface of water, containing 0.5 per cent of a suitable wetting agent maintained at a temperature between 25 °C and 30 °C. Use suitable means, such as small weights to keep the specimens submerged. Leave the specimens to soak for two hours, rinse in plain water and leave to dry on a flat surface at a temperature between 25 °C and 3 °C. Dry, condition in atmosphere "A" and measure the distance between the lines.

B.2 CALCULATION

Calculate the percentage of shrinkage between each pair of lines

$$\text{shrinkage, per cent} = \frac{(l_1 - l_2)}{l_1} \times 100$$

where,

l_1 = distance, in millimetres, between the lines before shrinkage treatment; and

l_2 = distance, in millimetres, between the lines after shrinkage treatment.

APPENDIX C

DETERMINATION OF VOLATILITY OF PLASTICIZER

C.1 PROCEDURE

Cut two test specimens each of size 100 mm x 100 mm from the sample and condition in atmosphere "A".

Weigh to the nearest milligram, the conditioned test pieces and suspend in a hot air circulating oven for 5 hours at 100 °C. Cool and condition the test pieces once again in atmosphere "A". Weigh the test pieces to the nearest milligram.

C.2 CALCULATION

$$\text{Loss in mass, per cent} = \frac{(m_1 - m_2)}{m_1} \times 100$$

where,

m_1 = mass, in grams, of the specimen taken for test; and

m_2 = mass, in grams, of the specimen after test.

APPENDIX D

DETERMINATION OF RESISTANCE TO PRINT WEAR

D.1 APPARATUS AND MATERIALS

D.1.1 The apparatus shall be as described in CS 63 with the following modifications.

a) The weight applied to the peg shall be such that a total mass of 1 500 g is brought to bear on the glass plate.

b) Use as the abradant a cotton fabric, desized, scoured and bleached, free from fluorescent brightening agents, having a fluidity not greater than 8, a mass per unit area of 93 g/m^2 and a construction of 40 ends/cm 39 picks/cm, 11.36 tex warp, 9.23 tex weft in plain weave.

D.1.2 Grey scale for assessing change in colour.

D.2 PROCEDURE

Cut two specimens of coated fabric each of size 230 mm x 50 mm from the sample, one with its length parallel to the longitudinal direction of the sample and the other with its length parallel to the transverse direction. Also cut two circular pieces (see Note) of the bleached cotton fabric each 30 mm in diameter, avoiding lumps and nops.

NOTE - Initially four circular pieces of abradant cotton fabric should be cut to enable a double thickness of cotton cloth to be mounted on the peg, but only the outermost layer coming into contact with the coated, fabric specimen needs to be renewed at each test.

Condition the test specimens and bleached cotton fabric in atmosphere A.

Using the clamps, mount the test specimen securely on the bed of the machine with the coated side uppermost and under sufficient tension to hold the specimen flat.

Before testing wipe the coated surface of the specimen with a clean, dry cloth to remove dust.

Secure the conditioned bleached cotton fabric to the base of the brass peg, with the ribbed side of the bleached cotton fabric in contact with the brass peg. Lower the peg onto the specimen and run the machine for 500 cycles. Repeat the procedure using the second specimen and bleached cotton fabric.

Assess the degree of surface print wear on the specimens, using the Grey scale as comparator. If one specimen exhibits greater print wear than the other, the result of that specimen shall be taken as the test result.

Report the change in shade between the abraded and unabraded portions of the test specimens by reference to the Grey scale for change in colour.

APPENDIX E

DETERMINATION OF RESISTANCE TO BURNING

E.1 APPARATUS AND MATERIALS

E.1.1 *Stand*, a suitable stand situated in a draught-free atmosphere, fitted with a clamp at least 150 mm along, and capable of rigidly supporting a specimen such that the lower edge is at a height of 25 mm above the rim of the container.

E.1.2 *Container*, a metal container of diameter approximately 20 mm and height approximately 5 mm.

E.1.3 *Stop-watch.*

E.2 PROCEDURE

Cut two specimens each of size 150 mm x 150 mm from the sample. Clamp each specimen (in turn) along the full length of one edge. Place the container directly under the midpoint of the lower edge of the specimen. Place 0.30 ml alcohol in the container and ignite the alcohol. Start the stop-watch and determine the time taken before the flame is extinguished.

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

The Sri Lanka Standards Institution (SLSI) is the National Standards Organization of Sri Lanka established under the Sri Lanka Standards Institution Act No. 6 of 1984 which repealed and replaced the Bureau of Ceylon Standards Act No. 38 of 1964. The Institution functions under the Ministry of Science & Technology.

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.

The development and formulation of National Standards is carried out by Technical Experts and representatives of other interest groups, assisted by the permanent officers of the Institution. These Technical Committees are appointed under the purview of the Sectoral Committees which in turn are appointed by the Council. The Sectoral Committees give the final Technical approval for the Draft National Standards prior to the approval by the Council of the SLSI.

All members of the Technical and Sectoral Committees render their services in an honorary capacity. In this process the Institution endeavours to ensure adequate representation of all view points.

In the International field the Institution represents Sri Lanka in the International Organization for Standardization (ISO), and participates in such fields of standardization as are of special interest to Sri Lanka.

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