

**LEATHER SPECIFICATION ACCORDING IULTCS PART II,  
Continuation and discussion**

by : Koentoro Soebijarso

**Abstract**

This Part II publication of Leather Specification According IULTSC (the International Union of Leather Technologists and Chemists Societies), is the continuation of Part I edition, in the bulletin "Sain dan Teknologi Kulit" ISSN : 0853-3660, n0. 2 th II, Desember 1991. In this publication the writer will concentrate on the specification of shoe uppers, lining and upholstery leather. At the end of this publication a discussion on IULTCS specification and IUF, IUP, IUC, etc. test methods for the benefit of the Government, tanners and scientists will be conducted. This is to consider the existing Indonesian Industrial Standard that already adopted as Indonesian Nasional Standard.

**Quality standard and test method**

The quality standard and test method are given below in table form.

**A. Test and Specification of Shoe Upper Leather**

Shoe upper leather is special made for shoe manufacturing. The Java box is typical shoe upper leather well known throughout the world made in Indonesia. Usually shoe upper leather made from calf hides are the best for shoe upper, bearing the superior quality of its natural origin. Leather for shoe upper according IULTCS system use IUP/6; IUP/8; ILS-F-6; IUF/450; IUF/470; IUP/20; IUP/15; IUP/10; IUF/402; IUC/11 and IUP/4, for quality testing.

**a. Tensile strength parallel to backbone  
test method IUP/6**

No.	Type of test/leather	IULTCS Specification
1.	<u>Tensile strength // to backbone</u> Shoe upper leather - elongation at grain crack - elongation at break - force at break - strength at break :	min. 35% min. 40 % min. 150 N/cm
2.	Side & pig upper leather	min 20 N/mm
3.	Goat upper leather	min 15 N/mm
4.	Sheep upper leather	min 12 N/mm

**b. Tear strength**  
test method IUP/8

No.	Type of test/shoe upper	IULTCS Specification
1.	<u>Tear strength</u> leather for lined shoes	min. 35 N
2.	leather for unlined shoes	min. 50 N
3.	leather for children and safety shoes	min. 100 N

**c. Lastability**  
test method ILS-F-6

No.	Type of test/leather	IULTCS Specification
1.	<u>lastability</u> All shoe upper leather	no grain crack at 25% elongation

**d@.Rubfastness**  
test method IUF/450

No.	Type of test/leather	IULTCS Specification
	<u>Rubfastness</u>	no marked damage of leather and marked staining of felt after :
1.	finish upper leather - wet felt on dry leather - dry felt wet leather - rubber on dry leather - rubber on wet leather	50 cycles 50 cycles 50 cycles 30 cycles 20 cycles
2.	flesh side only for unlined shoes - wet felt on dry leather - dry felt on wet leather	50 cycles 50 cycles

a,b,c, & d : source F. Van Hulten modified by Koentoro S.

**e. Adhesion of finish**  
Test method IUF/470 (draft)

No.	Type of test/leather	IULTCS Specification
1.	<u>Adhesion of finish</u> fulgrain leather	dry      wet dry      wet min 3 N/cm    min 2 N/cm
2.	corrected grain	min 5 N/cm    min 2 N/cm
3.	very tin finish	min 2,5 N/cm    min -
4.	patent leather	min 4 N/cm    min 2 N/cm
5.	coated split	min 10 N/cm    min 10 N/Cm

**f. Flexometer**  
Test method IUP/20

No.	Type of test/leather	IULTCS Specification
1.	coated split (at 20°C)	only slight damage after 100.000 flexes dry & wet
2.	patent leather - at 20°C - at 0°C	15.000 flexes dry after 5.000 flexes undamaged
3.	all other leather (at 20°C)	50.000 flexes dry and 20.000 flexes wet

**g. Water vapour permeability**  
test method IUP/15

No.	Type of test/leather	IULTCS Specification
1.	<u>water vapour permeability</u> all kind of upper leather	min. 1mg/cm <sup>2</sup> .h



**h. Water proofness**  
test method IUP/10

No.	Type of test/leather	IULTCS Specification
1. 2.	<u>water proofness</u> upper leather other leather	absorption after 2 h. max. 25% water penetration in 2e.h. max. 0,5 g absorption after 30 minutes max. 30% water penetration after 30 minutes max. 0,5 g

**i. Light fastness**  
test method IUF/402

No.	Type of test/leather	IULTCS Specification
1.	<u>light fastness</u> upper leather for shoes	min. 3

**j. Inorganic water solubles**  
test method IUC/6

No.	Type of test/leather	IULTCS Specification
1.	<u>inorganic water solubles</u> all kind of shoe upper leather	max 1,5 %

**k. pH**  
test method IUC/11

No.	Type of test/leather	IULTCS Specification
1.	pH all kind of shoe upper leather	min. 3,5 when between 3,0 and 3,5 the difference figure max. 0,7

**l. @ Substances soluble in dichloromethane**  
test method IUP/4

No.	Type of test/leather	IULTCS Specification
1.	<u>solubility of substances in dichloromethane</u> All shoe upper leather - one component neoprene - two component neoprene - one component PU - two component PU - direct vulcanizing - PVC injection moulding	max. 9% max. 12% max. 12% max. 15% max. 8% max. 15%

**B. Test and specification of Shoe Lining Leather**

In the shoe production processes, shoe maker use lining leather especially for thin upper leather, made of goat or sheep skins. The purpose, among other, is to give more strenght to the shoe produced. The test methods according IULTCS system for quality determinization is the IUP/8, IUF/450, IUP/15, IUP/4, IUP/11, and IUC/6.

**a. Tear strength**  
test method IUP/8

No.	Type of test/leather	IULTCS Specification
1.	<u>tear strength</u> lining leather	min. 15 N if the lining has a strength liming function min. 30 N.

**b. Rubfastness**  
test method IUF/450

No.	Type of test/leather	IULTCS Specification
1.	<u>rubfastness</u> Shoe lining leather  - dry felt on dry leather - wet felt on dry leather - dry felt on wet leather - felt with perspiration (pH=9) on dry felt	No marked damage of leather and marked staining of felt after : 100 cycles 50 cycles 50 cycles 50 cycles

**c. Water vapour permeability**  
test method IUP/15

No.	Type of test/leather	IULTCS Specification
1.	<u>water vapour permeability</u> Shoe lining leather	min. 1 mg/cm <sup>2</sup> .h

@e,f,g,h,i,j,k,&l : source F.Van Hulten, modified by Koentoro S.

d. Substance soluble in dichloromethane  
test method IUP/4

No.	Type of test/leather	IULTCS Specification
1.	<u>substance soluble in dichloromethane</u> shoe lining leather	max. 10%

e. Inorganic water soluble  
test method IUC/6

No.	Type of test/leather	IULTCS Specification
1.	<u>inorganic water soluble</u> shoe lining leather	max. 1,5%

f. pH  
test method IUC/11,

For shoe lining leather, refer pH test for shoe upper leather, use the same specification.

a, b, c, d, e, & f: Source F. Van Hulten, modified by Koentoro S.

C. Test and Specifition of Upholstery Leather

IULTCS issued specification and test method for upholstery leather using the IUF/450, IUP/20, IUF/420, ILS-F9, IUP/8 and ILS-F10. Upholstery leather are now widely used in homefurniture and automobile or aircraft-seats. It is very luxurious article and expensive, elegance, and comfortable for long sitting with specific extraordinary design.

a. Rubfastness  
test method IUF/450

No.	Type of test/leather	IULTCS Specification
1.	<u>rubfastness</u> upholstery leather - dry felt on dry leather - wet felt on dry leather - felt with perspiration (pH=9) on dry leather - wet felt on leather previously tested according ILS-F9.	only very slight damage of finish and staining of felt after :  500 cycles 200 cycles 100 cycles 100 cycles

b. Flexometer  
test method IUP/20

No.	Type of test/leather	IULTCS Specification
1.	<u>flexometer</u> Upholstery leather on dry leather	No damage of finish after 200.000 flexes

c. Light fastness  
test method IUF/402

No.	Type of test/leather	IULTCS Specification
1.	<u>light fastness</u> upholstery leather	min. 3



d. Repeated stretching  
test method ILS-F9

Type of test/leather	IULTCS Specification
<u>repeated stretching</u> upholstery leather	no damage of finish after 30.000 stretches of 30%

e. Tear strength  
test method IUP/8

Type of test/leather	IULTCS Specification
<u>tear strength</u> Upholstery leather	min. 50 N.

f. @ Artificial aging  
test method ILS-F10

Type of test/leather	IULTCS Specification
<u>artificial aging</u>	After treatment the rub tests (wet felt and felt with perspiration) and flexometer test are carried out.

c,d,e and f : source F.Hulten modified by Koentoro S.

D. Test and Specification of Garment Leather

Leather for garment manufacturing has a specific character of its softness like nappa, suede and nubuck. Colour fastness is also important for this kind of leather. Test method according IULTCS used the following system IUF/450, IUP/20, IUF/402, IUP/8, IUF/420, IUF/421, and IUF/458.

a. Rubfastness  
test method IUF/450

No.	Type of test/leather	IULTCS Specification
	<u>rubfastness</u>	only very slight damage of finish and staining of felt after :
1.	Garment leather <u>finished nappa</u> - dry felt on dry leather - wet felt on dry leather - felt with perspiration (pH=9) on dry leather	50 cycles 20 cycles 20 cycles
2.	Garment leather <u>Suede and nubuck</u> - dry felt on dry leather - wet felt on dry leather - felt with perspiration (pH=9) on dry leather	20 cycles 10 cycles 10 cycles

b. **Flexometer**  
test method IUP/20

No.	Type of test/leather	IULTCS Specification
1.	flexometer test Garment leather <u>Finished Nappa</u> - dry leather	no damage of finish after 50.000 flexes.

c. **Light fastness**  
test method IUF/402

No.	Type of test/leather	IULTCS Specification
1.	<u>light fastness</u> Finished nappa Suede, nubuck	min. 4 min. 3

d. **Tear Strength**  
test method IUP/8

No.	Type of test/leather	IULTCS Specification
1.	<u>tear strength</u> Finished nappa Suede, nubuck	min. 30 N min. 30 N

e. @ **Colour fastness**  
test method IUF/420,421,426

No.	Type of test/leather	IULTCS Specification
	<u>colour fastness to water</u> <u>spotting (IUF/420)</u>	
1.	Garment leather; Finished nappa	min. 4
2.	suede, nubuck	min. 3
	<u>colour fastness to water (IUF/421)</u> Finished nappa, suede and nubuck	min. 4, staining of wool and cotton
	<u>colour fastness to perspiration</u> <u>(IUF/426)</u> Finished nappa, suede and nubuck	min. 4, staining of wool and cotton
	- crocking IUF/458 Finished nappa, suede and nubuck	indicate temperature

@ a,b,c,d, and e Source F.Van Hutten, modified by Koentoro S.



Discussion concerning IULTCS Specification and test methods presented PART I and PART II edition merely to make aware that there are plenty of institutions in the world pay attention in standardization. However the IULTCS in this particular case, as the organization of scientists all over the world takes a special and deep studies of leather and leather product standardization. The big product is the IULTCS Specification and test methods and used as Quality Standard used by Governments, testing laboratories, scientists all over the world. To know the global aspect of the numerous Standardization system of each country in the world, men must also managed the IULTCS system of standardization. Especially in the field of leather and leather products specification is a key factor for success trading.

Implementing IULTCS specification with the Indonesian National Standard (SNI) system is not difficult, the problem arises because SNI has its own specifications and testing procedures in line with the production system available in Indonesia. The Institute of Leather and Allied Industry (Balai Besar Penelitian dan Pengembangan Industri Barang Kulit, Karet dan Plastik) in Yogyakarta is well equipped with testing apparatus for conducting chemical as well as physical testing a wide variety of leather and leather product, according SII or I system of product testing. IRDLAI has its capability and long experiences testing and standardization of leather and leather product.

It is concluded that IRDLAI should be equipped with facilities to implement international standard to anticipate the coming economic globalization and the open market system.

It is suggested that modernization of testing apparatus is a urgent need for IRDLAI.

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