



INTERNATIONAL UNION OF LEATHER  
TECHNOLOGISTS AND CHEMISTS SOCIETIES

## The IULTCS official methods of analysis for leather

The IULTCS, through the IULTCS Testing Commissions (IUC, IUF and IUP), provides help and protection for the leather tanning industry worldwide by developing and publishing test methods that are explicitly relevant to leather manufacture and leather usage. Without the work of the IU Commissions, which develop these test methods, the leather industry could be open to having to meet performance standards of other materials that bear no relationship to the reality of working with leather.

The IULTCS test methods are accepted by the International Organisation for Standardisation (ISO), and following agreements in 1990 and re-affirmed in 2005, the ISO recognises IULTCS as an International Standardising Body. ISO has assigned the responsibility for the establishment of test procedures for leather to IULTCS and the resultant test method documents are published as a joint IULTCS and ISO Standards. Since 1990 many of the IU methods have been adopted by ISO as international standards and **from 2005 it has been agreed that ISO will be responsible for publishing all new joint IULTCS and ISO Standards**. Member countries of ISO very often use the ISO Standards to establish their own National Standards.

Further, the European Committee for Standardisation (Comité Européen de Normalisation - CEN) has through the CEN/TC 289 Technical Committee "Leather" (Secretariat: UNI Italy) jointly adopted many of the IU / ISO Standards. Once formally accepted the EN Standards are mandatory in all EU member countries.

Now the IU Commissions and the CEN TC 289 Working Groups hold their technical meetings together to co-ordinate the development of leather test methods. Consequently, this combined work of the IU Commissions, CEN TC 289 and ISO allows the development of leather test methods that are adopted as International, European and IULTCS Standards.

### Test methods up to 2005

Sets of the Official IULTCS and SLTC Methods **up to 2005** are published by the Society of Leather Technologists and Chemists (SLTC). They are available in a loose-leaf, durable binder.

#### Orders from:

Society of Leather Technologists and Chemists (SLTC)  
United Kingdom

**Price:** In Sterling or USD, on application.

**E-mail:** office@sltc.org

### Test methods since 2005

IULTCS / ISO joint test methods published **since 2005** are published only by ISO. The joint ISO/IULTCS Standards are available as the ISO Standard version from your local country Standards Organisation.

If you have any questions or comments relating to leather test methods, please contact either the IULTCS Secretary or the respective Chairman of the IUC, IUF or IUP Commissions (see [www.iultcs.org](http://www.iultcs.org) for their details).

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**Set out below is a complete list of the IULTCS official methods together with the reference numbers for the equivalent ISO Standards and European Norm (EN) methods.**

Standards with numbers that include DIS (Draft International Standard) or FDIS (Final Draft International Standard) are still in preparation and are not yet officially approved Standards.

June 2010



The IULTCS official methods of analysis for leather, including the equivalent  
ISO and EN Standards

- last update June 2010

\* If no date is listed for the IU method then the latest version is the joint ISO Standard. Some equivalent EN Standards can have later publication dates but they are the same as the ISO Standard.

IULTCS - CHEMICAL TEST METHODS			
IU No. *	Method name	ISO Standard *	EN Standard *
IUC 1 (1965)	General comments	-	-
IUC 2	Sampling location (same as IUP 2)	ISO 2418:2002	EN ISO 2418
IUC 3	Preparation of chemical test samples	ISO 4044:2008	EN ISO 4044
IUC 4	Determination of matter soluble in dichloromethane and free fatty acid content	ISO 4048:2008	EN ISO 4048
IUC 5	Determination of volatile matter	ISO 4684:2005	EN ISO 4684
IUC 6	Determination of water soluble matter, water soluble inorganic matter and water soluble organic matter	ISO 4098:2006	EN ISO 4098
IUC 7	Determination of sulphated total ash and sulphated water insoluble ash	ISO 4047:1977	EN ISO 4047
IUC 8-1	Determination of chromic oxide content Part 1: Quantification by titration	ISO 5398-1:2007	EN ISO 5398-1
IUC 8-2	Determination of chromic oxide content Part 2: Quantification by colorimetric determination	ISO 5398-2:2009	EN ISO 5398-2
IUC 8-3	Determination of chromic oxide content Part 3: Quantification by atomic absorption spectrometry	ISO 5398-3:2007	EN ISO 5398-3
IUC 8-4	Determination of chromic oxide content Part 4: Quantification by inductively coupled plasma (ICP-OES)	ISO 5398-4:2007	EN ISO 5398-4
IUC 9	Determination of water soluble magnesium salts	ISO 5399:1984	EN ISO 5399
IUC 10	Determination of nitrogen and hide substance	ISO 5397:1984	-
IUC 11	Determination of pH and difference figure	ISO 4045:2008	EN ISO 4045
IUC 13 (1975)	Determination of zirconium	-	-
IUC 15 (1973)	Determination of phosphorus	-	-
IUC 16 (1969)	Determination of aluminium	-	-
IUC 17 (1980)	Determination of hydroxyproline in materials containing collagen	-	-
IUC 18	Determination of hexavalent chromium content	ISO 17075:2007	EN ISO 17075
IUC 19-1	Determination of formaldehyde content in leather Part 1: Quantification by HPLC	ISO 17226-1:2008	EN ISO 17226-1
IUC 19-2	Determination of formaldehyde content in leather Part 2: Quantification by colorimetric analysis	ISO 17226-2:2008	EN ISO 17226-2
IUC 19-3 (final draft)	Determination of formaldehyde content in leather Part 3: Formaldehyde emissions from leather	ISO FDIS 17226-3 (final formal vote stage)	prEN ISO FDIS 17226-3 (final formal vote stage)
IUC 20-1	Chemical tests for the determination of certain azo colorants in dyed leathers - Part 1: Determination of certain aromatic amines derived from azo colorants	ISO 17234-1:2010 (replaces ISO/TS 17234:2003)	EN ISO 17234-1 (replaces CEN ISO/TS 17234)
IUC 20-2 (final draft)	Chemical tests for the determination of certain azo colorants in dyed leathers - Part 2: Determination of 4-aminoazobenzene derived from azo colorants	ISO FDIS 17234-2 (final formal vote stage)	prEN ISO FDIS 17234-2 (final formal vote stage)
IUC 21 (2003)	Method for the detection of certain azo colourants in dyestuff mixtures.	-	-
IUC 22 (2003)	Determination of aluminium oxide content of aluminium tanning agents	-	-
IUC 24 (2003)	Determination of basicity of aluminium tanning agents.	-	-
IUC 25	Determination of pentachlorophenol content	ISO 17070:2007**	EN ISO 17070**
IUC 26	Determination of free-formaldehyde content in leather processing chemicals	ISO 27587:2009	EN ISO 27587
IUC 27-1 (final draft)	Chemical determination of metal content. – Part 1: Extractable metals	ISO FDIS 17072-1 (final formal vote stage)	prEN ISO FDIS 17072-2 (final formal vote stage)
IUC 27-2 (final draft)	Chemical determination of metal content. – Part 2: Total metal content	ISO FDIS 17072-2 (final formal vote stage)	prEN ISO FDIS 17072-2 (final formal vote stage)



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<b>IUC 28</b> (draft in preparation)	Determination of free and ethoxylated nonylphenols in leather	ISO/NP 13364 (draft in preparation)	prEN ISO/NP 13364 (draft in preparation)
<b>IUC 29</b> (final draft)	Determination of preservative content (TCMTB-OPP-CMK-OIT) in leather	ISO FDIS 13365 (final formal vote stage)	prEN ISO FDIS 13365 (final formal vote stage)
<b>IUC 30</b> (draft in preparation)	Determination of chlorinated hydrocarbons in leather	ISO/NP 13382 (draft in preparation)	prEN ISO/NP 13382 (draft in preparation)
<b>IUC 31</b> (draft in preparation)	Determination of organo-tin compounds in leather by GC/MS method	(draft in preparation)	(draft in preparation)
<b>IUC 32</b> (final draft)	Quantitative analysis of tanning agents by filter method	ISO FDIS 14088 (final formal vote stage)	prEN ISO FDIS 14088 (final formal vote stage)

\*\* Standard is at present undergoing revision following a systematic review and an updated version is in preparation



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<b>IULTCS – PHYSICAL TEST METHODS</b>			
<b>IU No.</b>	<b>Method name</b>	<b>ISO Standard</b>	<b>EN Standard</b>
<b>IUP 1 &amp; IUP 3</b>	Sample preparation and conditioning	**ISO 2419:2006	**EN ISO 2419
<b>IUP 2</b>	Sampling location (same as IUC 2)	ISO 2418:2002	EN ISO 2418
<b>IUP 4</b>	Measurement of thickness	ISO 2589:2002	EN ISO 2589
<b>IUP 5</b>	Measurement of apparent density	ISO 2420:2002	EN ISO 2420
<b>IUP 6</b>	Measurement of tensile strength and percentage elongation	**ISO 3376:2002	**EN ISO 3376
<b>IUP 7</b>	Measurement of static absorption of water	ISO 2417:2002	EN ISO 2417
<b>IUP 8</b>	Measurement of tear load – Double edge tear	ISO 3377-2:2002	EN ISO 3377-2
<b>IUP 9</b>	Measurement of distension and strength of grain by the ball burst test	ISO 3379:1976	-
<b>IUP 10-1</b>	Water resistance of flexible leather. Part 1: Linear compression method (Penetrometer)	**ISO 5403-1:2002	**EN ISO 5403-1
<b>IUP 10-2 (draft out for comments)</b>	Water resistance of flexible leather. Part 2: Angular compression method (Maeser)	ISO DIS 5403-2:2002 (draft out for comments)	prEN ISO DIS 5403-2 (draft out for comments)
<b>IUP 11</b>	Measurement of water resistance of heavy leather	**ISO 5404:2002	**EN ISO 5404
<b>IUP 12</b>	Measurement of resistance to grain cracking and the grain crack index	ISO 3378:2002	EN ISO 3378
<b>IUP 13 (1961)</b>	Measurement of two dimensional extension	-	-
<b>IUP 14 (1960)</b>	Measurement of waterproofness of gloving leathers	-	-
<b>IUP 15</b>	Measurement of water vapour permeability	**ISO 14268:2002	**EN ISO 14268
<b>IUP 16</b>	Measurement of shrinkage temperature up to 100 °C	ISO 3380:2002	EN ISO 3380
<b>IUP 17 (1966)</b>	Assessment of the resistance of air dry insole leathers to heat	-	-
<b>IUP 18 (1969)</b>	Resistance of air dry lining leathers to heat	-	-
<b>IUP 19 (1969)</b>	Resistance of air dry upper leather to heat	-	-
<b>IUP 20</b>	Determination of flex resistance. Part 1: Flexometer method	**ISO 5402-1:2002	**EN ISO 5402-1
<b>IUP 21 (1963)</b>	Measurement of set in lasting	-	-
<b>IUP 22 (1963)</b>	Assessment of scuff damage by use of the viewing box	-	-
<b>IUP 23 (1963)</b>	Measurement of scuff damage	-	-
<b>IUP 24 (1964)</b>	Measurement of surface shrinkage by immersion in boiling water	-	-
<b>IUP 26 (1993)</b>	Measurement of resistance to abrasion of heavy leather	-	-
<b>IUP 28 (1969)</b>	Measurement of the resistance to bending of heavy leather	-	-
<b>IUP 29</b>	Measurement of cold crack temperature of surface coatings	ISO 17233:2002	EN ISO 17233
<b>IUP 30 (1983)</b>	Measurement of water vapour absorption and desorption (See IUP 42)	-	-
<b>IUP 32</b>	Measurement of area	ISO 11646:1993	EN ISO 11646
<b>IUP 35</b>	Determination of the dimensional stability of leather (Old title: Measurement of dry heat resistance of leather)	ISO 17227:2002	EN ISO 17227
<b>IUP 36</b>	Measurement of leather softness	**ISO 17235:2002	**EN ISO 17235
<b>IUP 37</b>	Measurement of water repellency of garment leather	ISO 17231:2006	EN ISO 17231 (former EN14340:2002)
<b>IUP 38</b>	Measurement of heat resistance of patent leather	ISO 17232:2006	EN ISO 17232:2009 (former EN 13540)
<b>IUP 39</b>	Determination of flex resistance. Part 2: Vamp flex method	**ISO 5402-2 (former ISO 22288:2006)	**EN ISO 5402-2 (former EN ISO 22288:2009)
<b>IUP 40</b>	Measurement of tear load – Single edge tear	**ISO 3377-1:2002	**EN ISO 3377-1
<b>IUP 41</b>	Measurement of surface coating thickness	**ISO 17186:2002	**EN ISO 17186
<b>IUP 42</b>	Measurement of water vapour absorption	ISO 17229:2002	EN ISO 17229
<b>IUP 43</b>	Measurement of extension set	ISO 17236:2002	EN ISO 17236
<b>IUP 44</b>	Measurement of stitch tear resistance	ISO 23910:2007	EN ISO 23910
<b>IUP 45</b>	Measurement of water penetration pressure	ISO 17230:2006	EN ISO 17230 (former EN 14289:2003)
<b>IUP 46</b>	Measurement of fogging characteristics	ISO 17071:2006	EN ISO 17071 (former EN 14288:2003)



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<b>IUP 47</b>	Measurement of resistance to horizontal spread of flame	ISO 17074:2006	EN ISO 17074 (former EN 14326:2003)
<b>IUP 48-1</b>	Measurement of abrasion resistance. Part 1: Taber method	**ISO 17076-1:2006	**EN ISO 17076-1 (former EN 14327:2003)
<b>IUP 48-2</b> (final draft)	Measurement of abrasion resistance. Part 2: Martindale ball plate method	ISO FDIS 17076-2 (final formal vote stage)	prEN ISO FDIS 17076-2 (final formal vote stage)
<b>IUP 49</b> (Draft: 2002)	Measurement of bagginess	-	CEN/TS 14689:2006
<b>IUP 50</b> (final draft)	Determination of soiling. Part 2: Tumbling method	ISO FDIS 26082-2 (final formal vote stage)	prEN ISO FDIS 26082-2 (final formal vote stage)
<b>IUP 51</b> (Draft: 2002)	Measurement of Surface Friction	-	-
<b>IUP 52</b> (Draft: 2002)	Measurement of Compressibility	-	-
<b>IUP 53-1</b>	Determination of soiling. Part 1: Martindale method	**ISO 26082-1:2007	**EN ISO 26082-1
<b>IUP 54</b> (final draft)	Determination of flexural properties	ISO FDIS 14087 (final formal vote stage)	prEN ISO FDIS 14087 (final formal vote stage)

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<b>IULTCS – FASTNESS TEST METHODS</b>			
<b>IU No.</b>	<b>Method name</b>	<b>ISO Standard</b>	<b>EN Standard</b>
<b>IUF 105</b> (1966)	Numbering code for fastness tests	-	-
<b>IUF 120</b> (1966)	General principles of colour fastness testing of leather	***ISO 105-A01:2010	***EN ISO 105-A01
<b>IUF 131</b> (1966)	Grey scale for assessing change in colour	***ISO 105-A02:1993 (incl. later amendment)	***EN ISO 105-A02
<b>IUF 132</b> (1966)	Grey scale for assessing staining	***ISO 105-A03:1993 (incl. later amendment)	***EN ISO 105-A03
<b>IUF 151</b> (1975)	Preparation of storable standard chrome grain leather for dyeing	-	-
<b>IUF 201</b> (1966)	Approximate determination of the solubility of leather dyes	-	-
<b>IUF 202</b> (1966)	Fastness to acid of dye solutions	-	-
<b>IUF 203</b> (1966)	Stability to acid of dye solutions	-	-
<b>IUF 205</b> (1972)	Stability to hardness of dye solutions	-	-
<b>IUF 401</b> (1972)	Colour fastness of leather to light: Daylight	***ISO 105-B01:1994 (incl. later amendment)	***EN ISO 105-B01
<b>IUF 402</b> (1975)	Colour fastness of leather to light: Xenon lamp	***ISO 105-B02:1994 (incl. later amendments) (Revision in progress)	***EN ISO 105-B02
<b>IUF 412</b>	Change of colour with accelerated ageing.	**ISO 17228:2005	**EN ISO 17228
<b>IUF 420</b>	Colour fastness to water spotting	ISO 15700:1998	EN ISO 15700
<b>IUF 421</b>	Colour fastness to water	**ISO 11642:1998	**EN ISO 11642
<b>IUF 423</b>	Colour fastness to mild washing	ISO 15703:1998	EN ISO 15703
<b>IUF 426</b>	Colour fastness to perspiration	**ISO 11641:1993	**EN ISO 11641
<b>IUF 434</b>	Colour fastness of small samples to solvents	ISO 11643:2009	EN ISO 11643
<b>IUF 435</b>	Colour fastness to machine washing	ISO 15702:1998	EN ISO 15702
<b>IUF 441</b> (1972)	Colour fastness in respect of staining raw crepe rubber	-	-
<b>IUF 442</b>	Colour fastness to migration into plasticised poly(vinyl chloride)	ISO 15701:1998	EN ISO 15701
<b>IUF 450</b>	Colour fastness to cycles of to-and-fro rubbing	**ISO 11640:1993	**EN ISO 11640
<b>IUF 452</b>	Colour fastness to crocking	ISO 20433:2005	-
<b>IUF 454</b> (1975)	Fastness to buffing of dyed leather	-	-
<b>IUF 458</b> (1984)	Colour fastness of leather to ironing	-	-
<b>IUF 470</b>	Leather – Test for adhesion of finish	ISO 11644:2009	EN ISO 11644

The following textile fastness Standards do not have equivalent IU leather test methods but are recommended for use as the International Standard for leather.

-	Instrumental assessment of the degree of staining of adjacent fabrics	ISO 105-A04:1989	EN ISO 105-A04
-	Instrumental assessment for change in colour for grey scale	ISO 105-A05:1996	EN ISO 105-A05
-	Colour fastness & ageing to artificial light at high temperatures: Xenon	ISO 105-B06:1998 (incl. later amendment)	EN ISO 105-B06
-	Oil repellency – Hydrocarbon resistance test	ISO 14419:1998 (incl. later amendments) (Revision in progress)	EN ISO 14419

\*\* Standard is at present undergoing revision following a systematic review and an updated version is in preparation

\*\*\* Nearest textile International Standard, recommended for use as the International Standard for leather



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**SPANISH VERSION:**

Many of the IUP Methods above have been translated into Spanish by AQEIC, Spain, with the permission of the Editor of JSLTC.  
If you wish to obtain copies they are available at an estimated 30 EUR, plus postage.

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