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⑤④ **Method for waterproofing treatment of leather.**

⑤⑦ The present invention provides, in a process for chrome tanning hide, a method for imparting hide with waterproofness, which is a method for waterproofing treatment of leather which is characterized by that in a greasing step falling in the last step of the chrome tanning process, hide after dyeing treatment is subjected to drumming with a treating solution containing two greasing agents having a hydrophobic effect and one waterproofing agent for a required time thereby imparting said hide with oily feel and waterproofness, and thereafter is subjected to re-chrome tanning and subsequently to water-repellent treatment.

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SPECIFICATION

1. Title of the Invention

METHOD FOR WATERPROOFING TREATMENT OF LEATHER

2. Background of the Invention

(1) Field of the Invention

This invention relates to a treating method which imparts leather with waterproofness in a greasing step which falls in the last treating step in a leather tanning process.

(2) Prior Art

In general, leather is produced by a tanning treating process which comprises soaking of hide which has been salted, liming treatment, deliming and bating treatment -- pickling treatment -- chrome tanning and re-chrome tanning treatment -- neutralization tanning treatment -- dyeing treatment -- greasing treatment -- finishing treatment.

The greasing step in the above-described tanning treatment is conducted in order that the hide, which has been degreased by the proceeding treatment and the water absorption and permeation of which has been increased, be decreased in the water absorption and permeation and be imparted with softness and oily feel by adding a greasing agent.

The hydrophobic property and oily feel vary depending on the amount of the greasing agent imparted to the hide, and with an increase in the degree of greasing, both hydrophobic property and oily feel are enhanced. However, leather still has another problem of gas permeability, and this gas permeability has a tendency to decrease with the degree of greasing.

For that reason, there is a certain limit on the enhancement of the hydrophobic property by impartation of a greasing agent from a viewpoint of the gas permeability, and since satisfactory waterproofness cannot be obtained merely with the greasing agent, a waterproofing agent is permeated into hide. However, even with this, semipermanent maintenance of the waterproofness for an extended period of time is regarded difficult.

3. Summary of the Invention

Under the above-described circumstances, the present inventors have been intensively studying on the waterproofing treatment of leather and, as a result, have discovered that on greasing treatment, by imparting a waterproofing agent together with a greasing agent, the waterproofness may be enhanced without decreasing the gas permeability. In addition, it has been also discovered that the waterproofness generated by the greasing treatment is even further enhanced by subsequent water-repellent

treatment and the waterproofness may be maintained even when after use over an extended period of time.

Accordingly, an object of this invention is to provide a novel waterproofing treating method which can produce leather having excellent waterproofness without losing softness and gas permeability by simultaneous use of a greasing agent and a waterproofing agent plus water-repellent treatment after greasing and waterproofing treatment.

This invention having the above-described object stipulates as a first condition that hide after dyeing treatment is subjected to greasing treatment using both of a plurality of greasing agents having a hydrophobic effect and a waterproofing agent having a softening effect. Further, it stipulates as a second condition that said greasing treated hide is subjected to re-chrome tanning treatment and subsequently subjected to water-repellent treatment.

The hide treated by the these two conditions will have softness and oily feel and at the same time have waterproofness maintainable for a prolonged period of time without losing gas permeability regardless of the treating steps from the starting water soaking to the dyeing treatment.

4. Detailed Description of the Invention

The greasing agent used in this invention is a greasing composition exerting two hydrophobic effects which comprises a greasing agent comprising a mixture of triethanolamine and a carboxylic acid and a greasing agent comprising a mixture of a polymeric alkane and a sulfinated synthetic ester.

Further, as the waterproofing agent, a mixture of a higher paraffin and a polymeric sulfosuccinic acid ester is used.

The mixture of the greasing agent and the waterproofing agent is formulated such that the amount of each of the greasing agents be somewhat smaller than the amount of the waterproofing agent and the amounts of both greasing agents be equal. The amount of the mixture used is in the range of 10 - 20% based on the tanned hide weight, preferably about 16%, and is used in solution in water weighed in a proportion of 200% based on the tanned hide weight in a drum. Further, about 2% of synthetic tanning is added to the water in the drum, and dyeing treated hide is placed therein, drummed for about 10 minutes and, after adding about 1% of formic acid, drummed again for about 10 minutes.

The greasing and waterproofing treated hide is washed with water, then re-chrome tanned, further washed

with water, and water-repellent treated. The water-repellent agent used in this water-repellent treatment is preferably a fluorine type water-repellent oil agent and used in an amount of 3 - 5% based on the tanned hide weight by adding to 200% of water. The treatment is conducted by drumming for about 30 minutes, and after the treatment, washing with cold water and subsequent drying treatment are conducted.

Examples are shown hereinbelow.

Example 1. For Golf Shoes Leather

Waterproofing Process

200%		Water at 60°C	
13%		Waterproofing agent	
(A) 4%		Triethanolamine·Carboxylic acid	
		"CUTAPOL HS" (produced by DR. TH. BÖHME)	
(B) 4%		Polymeric alkane·Synthetic Sulfite ester	
		"ESKATAN GLH" (do)	
(C) 5%		Higher paraffin·Polymeric Sulfosuccinic acid	
		"PLUVION L7" (do)	
+2%	Syntan		10' drumming
+1%	Formic acid		10' drumming

Running water

Topping

200%		Water at 45°C	
3%		Chrome powder	20' drumming

Running water

10' drumming

Treatment

200%

Water at 50°C

3%

Fluorine resin agent 30' drumming

"LCC Ripeller-FX" (produced by Dai-Nippon
Ink & Chemicals, Inc.)

Running water (cold)

Example 2. For Garment Leather

Waterproofing Process

200%

Water at 60°C

13%

Waterproofing agent

(A)

6%

(B)

6%

(C)

8%

Same as in Example 1 hereinafter.

The test results in respect to the case of this invention and the case of the prior art process are shown below.

Table 1 (Present Invention)

Test Item		Specimen	Measured Value
*Water Resistance		No. 1	1 hr. 30 min.
		No. 2	8 hrs. or longer
		No. 3	8 hrs. or longer
*Gas Permeability		No. 1	41 sec.
		No. 2	45 sec.
		No. 3	48 sec.
*Dynamic Waterproofing Test	Water Permeating Time	No. 1	34 min.
		No. 2	54 min.
		No. 3	41 min.
	Degree of Water Absorption on Water Permeation	No. 1	4.3%
		No. 2	5.5%
		No. 3	5.1%

Table 2 (Comparative Example)

Test Item		*Specimen	Measured Value
*Water Resistance		No. 1	15 sec.
		No. 2	18 sec.
		No. 3	16 sec.
*Gas Permeability		No. 1	30 sec.
		No. 2	28 sec.
		No. 3	29 sec.
*Dynamic Waterproofing Test	Water Permeating Time	No. 1	3 min. 3 sec.
		No. 2	3 min. 5 sec.
		No. 3	3 min. 14 sec.
	Degree of Water Absorption on Water Permeation	No. 1	23%
		No. 2	28%
		No. 3	31%

- * The specimens are the hip.
- * The water resistance test is according to the testing method designated by JIS K 6550.
- * The gas permeability test is according to the testing method designated by JIS P 8117.
- * The dynamic waterproofing test was done using a Pentrometer manufactured by Bally AG, Switzerland (53 rpm, span 40 mm, flex stroke 6 mm).

The temperature on measurement is 20°C and the relative humidity is 50%.

As evident from the above-described test results, it has been proven that the waterproof leather imparted with waterproof finish according to the method of this invention is remarkably excellent in water resistance while maintaining good gas permeability and that the water permeating time by the dynamic waterproofing test is long and the water absorption on water permeation is low.

5. Claims

(1) In a process for chrome tanning hide, a method for imparting hide with waterproofness, which is a method for waterproofing treatment of leather which is characterized by that in a greasing step falling in the last step of the chrome tanning process, hide after dyeing treatment is subjected to drumming with a treating solution containing two greasing agents having a hidrophobic effect and one waterproofing agent for a required time thereby imparting said hide with oily feel and waterproofness, and thereafter is subjected to re-chrome tanning and subsequently to water-repellent treatment.

(2) The method for waterproofing treatment of leather as defined in Claim 1 wherein the aforesaid treating solution contains a greasing agent comprising a mixture of triethanolamine and a carboxylic acid, a greasing agent comprising a mixture of a polymeric alkane and a sulfinated synthetic ester and a waterproofing agent comprising a higher paraffin and a polymeric sulfonsuccinic acid, and is dissolved in 200% of water in the range of 10-20% based on the tanned hide weight.

(3) The method for waterproofing treatment of leather as defined in Claim 1 wherein the aforesaid water-repellent agent comprises a fluorine type water-repellent oil agent and is used by adding to 200% of water in a proportion of 3 - 5% based on the tanned hide weight.



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	SOVIET INVENTIONS ILLUSTRATED, week C40, 12th November 1980, abstract no. 70862, D18, Section Chemical, Derwent Publications Ltd.; SU - A - 715 625 (MOSC. LIGHT IND. TECH.) 16-06-1978	1	C 14 C 9/00 C 14 C 9/02
A	DE-B-1 800 244 (RÖHM & HAAS) * Claim 1 *	1	
A	DE-A-2 119 083 (PENNWALT CORP.) * Claim 1 *	2	
A	SOVIET INVENTIONS ILLUSTRATED, week C16, 28th May 1980, abstract no. 28645, D18E17, Section Chemical, Derwent Publications Ltd.; & SU - A - 679 626 (VOLGA DON. CHEM. WKS.)09-03-1977	2	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	EP-A-0 107 948 (3M) * Abstract *	3	C 14 C
A	GB-A-1 123 829 (3M) * Page 1, lines 12-29 *	3	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 04-09-1986	Examiner GIRARD Y.A.
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			