

الآية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قال تعالى:

(وَاللَّهُ جَعَلَ لَكُمْ مِنْ بُيُوتِكُمْ سَكَنًا وَجَعَلَ لَكُمْ مِنْ جُلُودِ الْأَنْعَامِ بُيُوتًا تَسْتَخِفُّونَهَا
يَوْمَ ظَعْنِكُمْ وَيَوْمَ إِقَامَتِكُمْ وَمِنْ أَصْوَابِهَا وَأَوْبَارِهَا وَأَشْعَارِهَا أَثَاثًا وَمَتَاعًا إِلَى حِينٍ)

صدق الله العظيم

(النحل: 80)

Dedication

To,,,

Our parents,

Our brothers and sisters,

My Wife and Children,

Our Teachers,

Our friends,

And

For all who stand beside me and help me to come to
this level which is honor and blessing to me.

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ABSTRACT

The environmental and economic requirement to increase recycling rates is one of the principal driving forces behind technological innovation in the 21st century.

Though, this study relied on the industry wastes of leather and plastic for making soles used in footwear and aimed to determination of the physical properties of a sole from leather and thermoplastic blends.

Method one used leather and rubber buffing wastes. The leather and rubber buffing wastes resulted from buffing machine were blended and mixed with Polyurethane adhesive in different formulations 90/10, 80/20, 70/30, 60/40, 50/50, 40/60, 30/70, 20/80 and 10/90 to make up a total of 150g blend. Method two were used two different grades of Poly Vinyl Chloride (PVC) wastes injection and extrusion grades, The blend was prepared from extrusion and injection according to the following compositions ratio: 70/30, 60/40 and 50/50 to make up a total of 3Kg blend. Mechanical properties of the experimental footwear sole, such as tensile strength, elongation and hardness were evaluated. Density test had been determined as a physical test. The leather and rubber buffing wastes were blended successfully and the result showed that. the tensile strength was 28.8 (kg/cm^2), elongation 50 (%), hardness 81 (shore A) and density 0.91 (gm/cc). the optimum different composition of leather and rubber buffing wastes blends (leather\rubber 50:50) provided good mechanical and physical properties of sole. The PVC injection grade and PVC extrusion grade blends were useful for manufacture footwear sole. The optimum composition of PVC blends (extrusion/injection; 70/30) provided good mechanical and physical properties of sole.

On conclusion the wastes produced from leather and plastic proved to be a good for manufacturing sole for footwear.

المستخلص

الحاجة البيئية والاقتصادية لزيادة معدلات إعادة التدوير أحد الدوافع الرئيسية القوية وراء الابتكار التكنولوجي في القرن الحادي والعشرين. اذا في هذه الدراسة تم الاعتماد علي المخلفات الصناعية للجلود والبلاستيك لتصنيع النعل ليستخدم في الأحذية، وهدفنا تحديد الخواص الفيزيائية للنعل المصنع من خليط الجلد والبلاستيك.

الطريقة الاولي استخدمت نفايات الصنفرة من الجلود والمطاط، تم خلط مخلفات الجلود والمطاط الناتجة عن ماكينة الصنفرة وخطهما مع مادة البولي يوريثين اللاصقة بنسب تركييبة مختلفة: 90/10 ، 20/80 ، 30/70 ، 40/60 ، 50/50 ، 60/40 ، 80/70، 20/30 و 80/10 و 90/10 ليكون مجموع المزيج 150 جرام. الطريقة الثانية استخدم نوعين مختلفتين من مخلفات البولي فينيل كلورايد نوع من مخلفات البثق، والنوع الاخر من مخلفات الحقن وتم تحضير الخليط من الحقن والبثق وفقاً لنسب التركيب التالية: 30/70 ، 40/60 و 50/50 ليكون وزن المزيج 3 كيلوجرام. تم تقييم الخواص الميكانيكية للنعل المصنع، مثل قوة الشد والاستطالة والصلابة، ثم تحديد الكثافة كاختبار فيزيائي. تم خلط مخلفات الجلد والمطاط بنجاح وأظهرت النتيجة أن قوة الشد كانت 28.8 (كجم / سم²) والاستطالة 50 (%) والصلابة 81 (شور A) والكثافة 0.91 (جم / سم³) ووجد ان التركيبة المثلى من خليط مخلفات الجلد والمطاط (الجلد ١ المطاط 50:50) واطهرت خواص ميكانيكية وفيزيائية جيدة للنعل. خليط البولي فينيل كلورايد من نوعي الحقن والبثق اثبت انه صالح للاستخدام في تصنيع النعل. وكانت التركيبة الامثل لخطهما (الحقن/البثق 30/70) وقد اعطت خواص ميكانيكية وفيزيائية جيدة للنعل.

في الخاتمة ثبت ان المخلفات المنتجة من الجلد والبلاستيك يمكن ان نضع منها نعل

للاخذية.

Abbreviations

WB	wet Blue
PVC	Polyvinyl Chlorid
TR	Thermoplastic Rubber
PU	Polyurethane
EVA	Ethylene Vinyl Acetate
SBR	Styrene-butadiene Rubber
SBS	Styrene-Butadiene-Styrene
COD	Chemical Oxygen Demand
BOD	Biologocal Oxygen Demand
TDS	Total Dissolved Solids
FAO	Food and Agriculture Organization
CTS	Chromium Tanned Shavings
VTS	Vegetable Tanned Shavings
BD	Buffing Dusts
NBR	Acrylonitrile Butadiene Rubber
BR	Butyl Rubber
IR	Poly-isoprene Rubber
CR	polychloro-prene Rubber
WLB	Waste Leather Buff
PLA	Polylactic Acid
HC	Hydrolyzed Collagen
PE	Polyethylene
HDPE	High-Density Polyethylene
EPA	Environmental Protection Agency
LLDPE	Linear Low Density Polyethylene

LDPE	Low Density Polyethylene
ASTM	American Society for Testing and Materials
PVB	Poly Vinyl Butyral
DSC	Differential Scanning Calorimetry
TGA	Thermogravimetric Analysis
DMA	Dynamic Mechanical Analysis
FTIR	Fourier Transform Infrared Spectroscopy
SEM	Scanning Electron Microscopy
PS	Polystyrene
PTSA	Para-toluene Sulphonic Acid
LS	Lauryl Sulphate
T _g	Transition Temperature

Table of Content

	Title	Page No.
	الاية	i
	DEDICATION	ii
	ACKNOWLEDGEMNTS	iii
	ENGLISH ABSTRACT	iv
	ARABIC ABSTRACT	vi
	ABBREVIATIONS	viii
	TABLE OF CONTENTS	x
	LIST OF TABLES	xiii
	LIST OF FIGURES	xiv
Chapter One: INTRODUCTION		
1.1	Introduction	1
1.2	Historical footwear	1
1.3	Footwear materials	1
1.4	Footwear sole	2
1.5	Footwear sole properties	5
1.6	Problem statement	6
1.7	Objectives	7
Chapter Two: LITERATURE REVIEW		
2.1	Leather Industry	8
2.2	Leather wastes	8
2.3	Waste from leather manufacturing	10
2.3.1	Leather industry wastewater	10
2.3.2	Solid wastes in leather	11

2.4	Solid Wastes Generation	13
2.5	Properties of solid leather wastes	14
2.6	Characterization of leather waste	15
2.7	Solid Wastes Utilization	15
2.8	Current utilization of solid waste	17
2.9	Rubber sole manufacturing	18
2.10	Rubber waste	19
2.11	Reclamation of rubber products	20
2.12	Reuse of waste rubber products	21
2.13	PVC sole in footwear	23
2.14	PVC waste	23
2.15	PVC recycling	24
2.16	Natural rubber/leather waste composite	24
2.17	Polylactic Acid (PLA) Biocomposites Filled with Waste Leather Buff (WLB)	25
2.18	Polyethylene and Hydrolyzed Collagen Blend	26
2.19	Waste Leather Buff and Cellulose Biocomposites	27
2.20	Leather waste with polymer composite	28
2.21	PVC blend	28
2.22	Leather waste and LDPE/LLDPE blend Composites	30
2.23	Poly (Vinyl Butyral)- Leather Fiber Composites	31
2.24	Plasticizing Polystyrene with Waste Leather	32
2.25	High-Density Polyethylene with leather composite	32
Chapter Three: MATERIALS AND METHODS		
3.1	Materials	34
3.2	Methods	34

3.2.1	Method one: Manufacture of sole from leather shaving and rubber wastes	34
3.2.2	Method two: Manufacture of sole from Leather buffing and Rubber Waste blends	34
3.2.3	Method three: Manufacture of sole from PVC wastes grades blend	37
3.3	Testing Methods	38
3.3.1	Tensile Strength	39
3.3.2	Hardness	40
3.3.3	Density	40

Chapter Four: RESULTS AND DISCUSSIONS

4-1	Method one: Manufacture of sole from Leather / Rubber Wastes blends	42
4-2	Method two: Manufacture of sole from PVC wastes grades blend	45

Chapter Five: CONCLUSIONS AND RECOMMENDATIONS

5.1	CONCLUSIONS	50
5.2	RECOMMENDATIONS	51
	REFERNCES	52
	Appendix	

List of Tables

Table No.	content	Page no.
Table 2-1	Physicochemical parameters of leather industry wastewater	9
Table 2-2	waste ratios regarding the leather manufacturing process	10
Table 2-3	Quantum of solid wastes produced from processing	12
Table 2-4	The properties of tanned shavings and buffing dust	13
Table2-5	Characteristics properties of waste leather	14
Table 2-6	Utilization of solid waste	16
Table 3-1	Composition percentage of leather and rubber wastes blends	34
Table 3-2	Composition percentage of PVC injection grade and PVC extrusion grade blends	35
Table4-1	The mechanical and physical properties of different composites	41
Table 4-2	Tensile strength of different composites	44
Table 4-3	Elongation of different composites	44
Table 4-4	Hardness of different composites	45
Table 4-5	Density of different composites	45

List of figures

Fig. No.	content	Page no.
Figure 1-1	Material Composition in Average Shoe (% wt)	2
Figure 2-1	Flow diagram of solid wastes utilization	15
Figure 3-1	Buffing leather waste	33
Figure 3-2	Buffing rubber waste	33
Figure 3-3	Compression moulding machine	35
Figure 3-4	The injection molding machine	36
Figure: 3-5	The Tensile strength machine	37
Figure: 3-6	The hardness devices	38
Figure: 3-7	Density equipment test	39
Figure 4-1	The comparison of tensile strength in different composites	41
Figure 4-2	The comparison of elongation in the different composites	42
Figure 4-3	The Comparison of hardness in the different composites	42
Figure 4-4	The Comparison of density in the different composites	43
Figure 4-5	The comparison of tensile strength in different composites	46
Figure 4-6	The Comparison of Elongation in the different composites	46
Figure 4-7	The Comparison of hardness in the different composites	47
Figure 4-8	The Comparison of density in the different composites	47