



Check list for leather manufacturing

Date

Check list documents

Auditor Name:		Factory's Name	
email:		Contact Name	
Tel:		Tel:	
Fax:		mail	
Cell:		Cell:	
Layout	Layout of the process plants	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Electric schemes	Scheme and technical project	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Heating plant	Scheme and technical project	<input type="checkbox"/> YES	<input type="checkbox"/> NO
HVAC plant	Scheme and technical project	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Cold water production	Scheme and technical project	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Bills	Electricity bills:	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Bills	NG bills	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Bills	Oil bills	<input type="checkbox"/> YES	<input type="checkbox"/> NO

Energy Bills

Month	Electricity		Natural Gas		Water	
	[kWh]	[€]	[m3]	[€]	[m ³]	[€]
January						
February						
March						
April						
May						
June						
July						
August						
September						
October						
November						
December						
TOTAL						

Product and process

Type of letaher produced	Process characterization		Cycle phases	
Wet blue	<input type="checkbox"/>	Full cycle	<input type="checkbox"/>	Whole cycle on site
Wet white	<input type="checkbox"/>	From tanned- to finished leather	<input type="checkbox"/>	Cycle only partially on site
Crust	<input type="checkbox"/>	From Crust to finished leather	<input type="checkbox"/>	beamhouse
Finished	<input type="checkbox"/>	Other (please specify)	<input type="checkbox"/>	tanning
Other	<input type="checkbox"/>			Post-tanning operations
Vegetal tanned leather				finishing
				mechanical operation
				Other (please specify) _____

Offices										
General information of the building										
Dimension		Building dates				Refurbishment				
Volume [m3]		<input type="checkbox"/> Before 1919	<input type="checkbox"/> 1919 - 1945	<input type="checkbox"/> 1946 - 1960	<input type="checkbox"/> 1961 - 1971	What	<input type="checkbox"/> Floor insulation	<input type="checkbox"/> Roof insulation	<input type="checkbox"/> Wall insulation	<input type="checkbox"/> Door and windows
Surface [m2]		<input type="checkbox"/> 1972 - 1981	<input type="checkbox"/> 1982 - 1990	<input type="checkbox"/> 1991 - 2000	<input type="checkbox"/> after 2000	When				
General information of HVAC plant										
Heating system										
Typology		Heat generator				Terminals				
<input type="checkbox"/> Central	<input type="checkbox"/> Independent	<input type="checkbox"/> Boiler	<input type="checkbox"/> Heat pump	<input type="checkbox"/> CHP	<input type="checkbox"/> District heating	<input type="checkbox"/> Hot air generator	<input type="checkbox"/> Radiator	<input type="checkbox"/> Radiant panels	<input type="checkbox"/> Fan Coil	<input type="checkbox"/> Air units
Fuel		Temperature control			Hot water production					
<input type="checkbox"/> Nat gas	<input type="checkbox"/> GPL	<input type="checkbox"/> Other	<input type="checkbox"/> Central	<input type="checkbox"/> Local	<input type="checkbox"/> Gas water heater	<input type="checkbox"/> Elect water heater	<input type="checkbox"/> Combi heater	<input type="checkbox"/> District heating	<input type="checkbox"/> Solar heating	<input type="checkbox"/> Other
Cooling system										
Air conditioning system				Cooling facility			Fuel (in case of adsorption chiller)			
<input type="checkbox"/> None	<input type="checkbox"/> Central with air	<input type="checkbox"/> Central with water	<input type="checkbox"/> Split system	<input type="checkbox"/> Other	<input type="checkbox"/> Compressor	<input type="checkbox"/> Adsorption chiller	<input type="checkbox"/> Heat exchanger	<input type="checkbox"/> Natural Gas	<input type="checkbox"/> GPL	<input type="checkbox"/> Other
Lighting system					Office Equipment					
Lamp Typology	n° of lamps	Watt/ lamp	work hours/day	Autom Control?	Equipment typology	N° of devices	Watt/device	work hours/day	Turned on uselessly?	Obsolete?
Fluorescent				<input type="checkbox"/> Yes <input type="checkbox"/> No	Computer				<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Incandescent				<input type="checkbox"/> Yes <input type="checkbox"/> No	Printer				<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
LED				<input type="checkbox"/> Yes <input type="checkbox"/> No	Copier				<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Neon				<input type="checkbox"/> Yes <input type="checkbox"/> No	Monitor				<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Other (_____)				<input type="checkbox"/> Yes <input type="checkbox"/> No	Other (_____)				<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Evaluations										
Environment		Building Envelope			HVAC Plant			Lighting		
Internal summer t [°C]	Internal winter t [°C]	Insulation?	Windows airtight	Internal build-up condensation?	Age of heat generator	Different comfort in different rooms?	Temp. Regulation for different zones?	Electronic Ballast or control system?	lighting compliant with requirements?	Light are turned on uselessly?
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> >20 y <input type="checkbox"/> <20 y	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

Process Phase - Beamhouse

Outturn of this process phase

Input 1		Amount [t]		Input 2		Amount [t]	
Ouput tipology 1		Amount [m2]		Ouput tipology 2		Amount [m2]	

Employed Machines

Machine function		Machine datasheet						Embedded electric motors		
N° of machines	Typology	Year of production	Total Elect Power [kW]	Thermal power [kW]	Temperature [°C]	working hours (h/year)	Notes	1 Pel (kW)	2 Pel (kW)	3 Pel (kW)

Other facilities not embedded in a specific machine

<u>Electric Motors</u>	Number of motors	Year of production	Nominal power (kW)	speed [rpm]	<u>Lighting</u>	Number of lamps	Year of production	Nominal power (kW)	Typology of lamp	Luminous flux (lm)
Type 1					Type 1					
Type 2					Type 2					
<u>Pumps</u>	Number of pumps	Year of production	Nominal power (kW)	water flow [m3/h]	<u>Fans</u>	Number of fans	Year of production	Nominal power (kW)	Air flow [m3/h]	total head (m)
Type 1					Type 1					
Type 2					Type 2					

Energy final use

Steam		Hot water		Electricity		Compressed Air		Cooling water	
Temperature [°C]		Temperature [°C]		Consumption [kWh/y]		Consumption [m3/y]		Temperature [°C]	
Consumption [t/y]		Consumption [m3/y]		Voltage [V]		Pressure		Consumption [m3/y]	



Notes

Process Phase - Tanning

Outturn of this process phase

Input 1	Amount [t]	Input 2	Amount [t]
Ouput tipology 1	Amount [m2]	Ouput tipology 2	Amount [m2]

Employed Machines

Machine function		Machine datasheet						Embedded electric motors		
N° of machines	Typology	Year of production	Total Elect Power [kW]	Thermal power [kW]	Temperature [°C]	working hours (h/year)	Notes	1 Pel (kW)	2 Pel (kW)	3 Pel (kW)

Other facilities not embedded in a specific machine

<u>Electric Motors</u>	Number of motors	Year of production	Nominal power (kW)	speed [rpm]	<u>Lighting</u>	Number of lamps	Year of production	Nominal power (kW)	Typology of lamp	Luminous flux (lm)
Type 1					Type 1					
Type 2					Type 2					
<u>Pumps</u>	Number of pumps	Year of production	Nominal power (kW)	water flow [m3/h]	<u>Fans</u>	Number of fans	Year of production	Nominal power (kW)	Air flow [m3/h]	total head (m)
Type 1					Type 1					
Type 2					Type 2					

Energy final use

Steam		Hot water		Electricity		Compressed Air		Cooling water	
Temperature [°C]		Temperature [°C]		Consumption [kWh/y]		Consumption [m3/y]		Temperature [°C]	
Consumption [t/y]		Consumption [m3/y]		Voltage [V]		Pressure		Consumption [m3/y]	



Notes

Process Phase - Post Tanning

Outturn of this process phase

Input 1		Amount [t]		Input 2		Amount [t]	
Ouput tipology 1		Amount [m2]		Ouput tipology 2		Amount [m2]	

Employed Machines

Machine function		Machine datasheet						Embedded electric motors		
N° of machines	Typology	Year of production	Total Elect Power [kW]	Thermal power [kW]	Temperature [°C]	working hours (h/year)	Notes	1 Pel (kW)	2 Pel (kW)	3 Pel (kW)

Other facilities not embedded in a specific machine

<u>Electric Motors</u>	Number of motors	Year of production	Nominal power (kW)	speed [rpm]	<u>Lighting</u>	Number of lamps	Year of production	Nominal power (kW)	Typology of lamp	Luminous flux (lm)
Type 1					Type 1					
Type 2					Type 2					
<u>Pumps</u>	Number of pumps	Year of production	Nominal power (kW)	water flow [m3/h]	<u>Fans</u>	Number of fans	Year of production	Nominal power (kW)	Air flow [m3/h]	total head (m)
Type 1					Type 1					
Type 2					Type 2					

Energy final use

Steam		Hot water		Electricity		Compressed Air		Cooling water	
Temperature [°C]		Temperature [°C]		Consumption [kWh/y]		Consumption [m3/y]		Temperature [°C]	
Consumption [t/y]		Consumption [m3/y]		Voltage [V]		Pressure		Consumption [m3/y]	



Notes

Process Phase - Finishing**Output of this process phase**

Input 1	Amount [t]	Input 2	Amount [t]
Ouput tipology 1	Amount [m2]	Ouput tipology 2	Amount [m2]

Employed Machines

Machine function		Machine datasheet						Embedded electric motors		
N° of machines	Typology	Year of production	Total Elect Power [kW]	Thermal power [kW]	Temperature [°C]	working hours (h/year)	Notes	1 Pel (kW)	2 Pel (kW)	3 Pel (kW)

Other facilities not embedded in a specific machine

<u>Electric Motors</u>	Number of motors	Year of production	Nominal power (kW)	speed [rpm]	<u>Lighting</u>	Number of lamps	Year of production	Nominal power (kW)	Typology of lamp	Luminous flux (lm)
Type 1					Type 1					
Type 2					Type 2					
<u>Pumps</u>	Number of pumps	Year of production	Nominal power (kW)	water flow [m3/h]	<u>Fans</u>	Number of fans	Year of production	Nominal power (kW)	Air flow [m3/h]	total head (m)
Type 1					Type 1					
Type 2					Type 2					

Energy final use

Steam		Hot water		Electricity		Compressed Air		Cooling water	
Temperature [°C]		Temperature [°C]		Consumption [kWh/y]		Consumption [m3/y]		Temperature [°C]	
Consumption [t/y]		Consumption [m3/y]		Voltage [V]		Pressure		Consumption [m3/y]	


Notes

Process Phase - Post Finishing

Outturn of this process phase

Input 1		Amount [t]		Input 2		Amount [t]	
Output typology 1		Amount [m2]		Output typology 2		Amount [m2]	

Employed Machines

Machine function		Machine datasheet						Embedded electric motors		
N° of machines	Typology	Year of production	Total Elect Power [kW]	Thermal power [kW]	Temperature [°C]	working hours (h/year)	Notes	1 Pel (kW)	2 Pel (kW)	3 Pel (kW)

Other facilities not embedded in a specific machine

<u>Electric Motors</u>	Number of motors	Year of production	Nominal power (kW)	speed [rpm]	<u>Lighting</u>	Number of lamps	Year of production	Nominal power (kW)	Typology of lamp	Luminous flux (lm)
					Type 1					
					Type 2					
<u>Pumps</u>	Number of pumps	Year of production	Nominal power (kW)	water flow [m3/h]	<u>Fans</u>	Number of fans	Year of production	Nominal power (kW)	Air flow [m3/h]	total head (m)
					Type 1					
					Type 2					


Energy final use

Steam		Hot water		Electricity		Compressed Air		Cooling water	
Temperature [°C]		Temperature [°C]		Consumption [kWh/y]		Consumption [m3/y]		Temperature [°C]	
Consumption [t/y]		Consumption [m3/y]		Voltage [V]		Pressure		Consumption [m3/y]	



Notes

Energy production and distribution											
Steam			Hot water			Cold water			Compressed air		
Consumption	<i>t/year</i>		Consumption	<i>m3/year</i>		Consumption	<i>m3/year</i>		Consumption	<i>Nm3/year</i>	
Direct use	%		Process	%		Process	%		Hours of operation	<i>h</i>	
Hot water production	%		Climatization	%		Climatization	%		Pressure	<i>bar</i>	
Power	<i>kW</i>		Power	<i>kW</i>		temperature	<i>°C</i>		Compressor 1	<i>Constructor</i>	
Pressure	<i>bar</i>		Pressure	<i>bar</i>						<i>model</i>	
temperature	<i>°C</i>		temperature	<i>°C</i>						<i>Nominal power</i>	
CHP	<i>Year of production</i>		Heat exchangers	<i>Year of production</i>		Chiller 1	<i>Elpower kW</i>			<i>Flow rate [m3/h]</i>	
	<i>number</i>			<i>Number</i>			<i>Model</i>			<i>Installation year</i>	
	<i>Electric power (kW)</i>			<i>Thermal power (kW)</i>			<i>Refr power kW</i>			Compressor 2	<i>Constructor</i>
	<i>Thermal power (kW)</i>			<i>Temperature(°C)</i>			<i>COP</i>		<i>model</i>		
	<i>Temperature(°C)</i>			<i>Model</i>		Chiller 2	<i>Elpower kW</i>		<i>Nominal power</i>		
	<i>Model</i>						<i>Model</i>		<i>Flow rate [m3/h]</i>		
Boiler	<i>Year of production</i>		Boiler	<i>Year of production</i>			<i>Refr power kW</i>		<i>Installation year</i>		
	<i>number</i>			<i>number</i>		<i>COP</i>		Compressor 3	<i>Constructor</i>		
	<i>Efficiency(%)</i>			<i>Efficiency(%)</i>		<i>Model</i>			<i>model</i>		
	<i>Nominal power (kW)</i>			<i>Nominal power (kW)</i>		<i>Th power input</i>			<i>Nominal power</i>		
	<i>Temperature(°C)</i>			<i>Temperature(°C)</i>		<i>Refr power kW</i>			<i>Flow rate [m3/h]</i>		
	<i>Model</i>			<i>Model</i>		<i>COP</i>			<i>Installation year</i>		
						Adsorption chiller					

Waste processing										
Employed Machines										
Phase	Machinery	Machine datasheet					Embedded electric motors			
		Year of production	Total Elect Power [kW]	Thermal power [kW]	Temperature [°C]	working hours (h/year)	Nominal power (kW)	Year of production	Nominal power (kW)	Year of production
Waste water treatment	Grids									
Waste water treatment	Blowers									
Waste water treatment	Pumps									
Waste water treatment	Belt filter press/filter press									
Waste water treatment	Sludge thickener									
Waste water treatment	Sludge digester									
Air treatment	Cyclone									
Air treatment	Extractor fan									
Air treatment	Scrubber									
Air treatment	Catalytic combustor									
Chrome recovery	Pumps									
Chrome recovery	Grids									
Chrome recovery	Settling									
Other facilities not embedded in a specific machine										
<u>Electric Motors</u>	Number of motors	Year of production	Nominal power (kW)	speed [rpm]	<u>Lighting</u>	Number of lamps	Year of production	Nominal power (kW)	Typology of lamp	Luminous flux (lm)
Type 1					Type 1					
Type 2					Type 2					
<u>Pumps</u>	Number of pumps	Year of production	Nominal power (kW)	water flow [m3/h]	<u>Fans</u>	Number of fans	Year of production	Nominal power (kW)	Air flow [m3/h]	total head (m)
Type 1					Type 1					
Type 2					Type 2					
Energy final use										
Steam		Hot water		Electricity		Compressed Air		Cooling water		
Temperature [°C]		Temperature [°C]		Consumption [kWh/y]		Consumption [m3/y]		Temperature [°C]		
Consumption [t/y]		Consumption [m3/y]		Voltage [V]		Pressure		Consumption [m3/y]		

SOAKING AND TANNAGE	RINVERDIMENTO E CONCIA	DYEING AND DRYING	TINTURA E ESSICCAMENTO
Salt-removing machines	Dissalatori	Dyeing wooden drums	Bottali in legno per tintura
Wooden drums	Bottali in legno	Dyeing stainless steel drums	Bottali in acciaio inox per tintura
Stainless steel drums	Bottali in acciaio inox	Dyeing plastic drums	Bottali in plastica per tintura
Plastic drums Paddle	Bottali in plastica	Alternative combined resetting and sammying machine with rollers and work span up to 1800 mm	Macchina combinata a ritenerne ed asciugare alternativa a rulli con luce di lavoro fino a 1800
Paddle	Aspo	Alternative combined resetting and sammying machine with rollers and work span beyond 1800 mm	Macchina combinata a ritenerne ed asciugare alternativa a rulli con luce di lavoro oltre 1800mm
Unhairing machine for sheep hides	Macchina depilatrice per pelli ovine	Through-feed combined resetting and sammying machine with work span up to 1800 mm	Macchina combinata a ritenerne ed asciugare continua con luce di lavoro fino a 1800mm
Scudding machine	Macchina purgatrice	Through-feed combined resetting and sammying machine with work span beyond 1800 mm	Macchina combinata a ritenerne ed asciugare continua con luce di lavoro oltre 1800mm
Fleshing machine with working width up to 2100mm	Scarnatrice con luce di lavoro fino a 2100mm	Pole dryer	Essiccatoio a bastoni
Fleshing machine with working width beyond 2100mm	Scarnatrice con luce di lavoro oltre 2100mm	Dryer-nailing machine with vertical frame	Essiccatoio-inchiodatore a telaio verticale
Through-feed fleshing machine	Scarnatrice continua	Dryer-nailing machine with horizontal frame	Essiccatoio-inchiodatore a telaio orizzontale
Pelt splitting machine	Spaccatrice in trippa	Vacuum dryer - 1 level with horizontal movement	Essiccatoio sottovuoto a 1 piano con movimento orizzontale
Alternative wet-blue sammying press with rollers and working width up to 1800 mm	Pressa per l'asciugatura in wetblue alternativa a rulli con luce di lavoro fino a 1800mm	Vacuum dryer - 1 level with vertical movement	Essiccatoio sottovuoto con movimento verticale
Alternative wet-blue sammying press with rollers and working width beyond 1800 mm	Pressa per l'asciugatura in wetblue alternativa a rulli con luce di lavoro oltre 1800mm	Radio frequency dryer	Essiccatoio a radiofrequenza
Through-feed wet-blue sammying press with working width up to 1800 mm	Pressa per l'asciugatura in wetblue continua con luce di lavoro fino a 1800mm	Pasting dryer	Essiccatoio pasting
Through-feed wet-blue sammying press with working width beyond 1800 mm	Pressa per l'asciugatura in wetblue continua con luce di lavoro oltre 1800mm	Overhead chain dryer	Catena aerea
Wet-blue splitting machine	Spaccatrice in wet blue		
Wet-blue shaving machine with working width up to 1000 mm	Rasatrice per wetblue con luce di lavoro fino a 1000mm		
Wet-blue shaving machine with working width from 1000 to 1800 mm	Rasatrice per wetblue con luce di lavoro da 1000 a 1800mm		
Wet-blue shaving machine with working width beyond 1800 mm	Rasatrice per wetblue con luce di lavoro oltre 1800mm		
FINISHING MACHINE	MACCHINE PER RIFINIZIONE	AUTOMATION AND MOVEMENT	AUTOMAZIONE EMOVIMENTAZIONE
Moisture-free splitting machine	Spaccatrice a secco	Hide loading machine in the drums	Sistema di carico pelli nei bottali
Moisture-free shaving machine	Rasatrice a secco	Skins conveyor belt to the fleshing machines	Sistema a nastro di trasporto pelli alle scarnatrici
Wet buffing machine	Smerigliatrice in umido	Water mixing system	Sistema per la miscelazione dell'acqua
Band buffing machine	Smerigliatrice a nastro	Chemical products dosage system	Sistema di dosaggio dei prodotti chimici
Roller buffing machine	Smerigliatrice a cilindro	Bath temperature detection system	Sistema per la rilevazione della temperatura del bagno
Dedusting machine	Depolveratrice	Selecting and stacking machine	Macchina per selezionare e impilare
Wetting machine	Umidificatrice	Stacker	Impilatore
Rotary staking machine	Palissone rotativo	Rolling machine	Arrotolatore
Continuous staking machine with vibration	Palissone continuo a vibrazione	Bundles preparer	Preparatore mazzi
Boarding machine	Palmellatrice		
Glazing machine	Macchina lissatrice		
Wooden milling drum	Bottale di follonaggio in legno		
Stainless steel milling drum	Bottale di follonaggio in acciaio inox		
Spraying booth (with alternative and rotary motion)	Cabina di spruzzatura (con moto alternativo e moto rotativo)		
Spraying booth with manual painting	Cabina di spruzzatura con verniciatura manuale		
Synchronized roller coating machine	Spalmatrice a rullo in syncro		
Reverse roller coating machine	Spalmatrice a rullo in reverse		
Combined roller coating machine	Spalmatrice a rullo in combinata		
Foaming machine	Macchina schiumatrice		
Pad coating machine	Spalmatrice a tampone		
Curtain coating machine	Macchina a velo		
Drying tunnel for finishing lines	Tunnel di essiccazione per linee di rifinizione		
Ironing and embossing rotary press	Pressa rotativa per stampare e stirare		
Plates ironing and embossing press	Pressa a piani per stampare e stirare		
Polishing machine	Macchina lucidatrice (a polire)		
Electronic surface measuring roller machine	Misuratrice elettronica di superficie a rulli		
Electronic surface measuring belt machine	Misuratrice elettronica di superficie a tappeto		
SOLE HIDE VEGETABLE TANNAGE SPECIFIC MACHINES	MACCHINE SPECIFICHE PER CONCIA AL VEGETALE E/O PER CUOIO DA SUOLA	SPECIFIC MACHINES FOR THE MANUFACTURE OF LEATHER WITH HAIR	MACCHINE SPECIFICHE PER LA LAVORAZIONE DI PELLI CON PELO
Plants for vegetable tannage in tanks	Impianti per la concia vegetale in vasche	Band leveller	Ugualizzatrice del pelo a rullo o a nastro
Closed shaving machine	Rasatrice chiusa	Ironing machine	Stratrice
Degraining machine	Macchina sgranatrice	Carding machine	Cardatrice
Small roller press	Pressa a rullini	Wetting machine	Macchina bagnatrice
Drying plant for sole leather	Impianto di essiccazione per cuoio da suola	Degreasing machine	Sgrassatrice
Leather cylinder	Cilindro per cuoio		
LABORATORY MACHINES	MACCHINE DA LABORATORIO		
Testing drums	Bottalini di prova		
Cabinet turn testing drums	Giragiere		
Laboratory vacuum	Sottovuoto da laboratorio		
Spraying booth with manual painting	Cabina di spruzzatura manuale		
Laboratory coating machine	Spalmatrice da laboratorio		
Physical test equipment	Attrezzature per prove di controllo fisico		
Chemical analysis equipment	Attrezzature per prove di analisi chimiche		