

TOWEFO Toward Effluent Zero	Partner ENEA	Identification code TM-108-010	Rev. 0	Dis CO	Pag. of 1 24
ANNEX 4 MODULES OF TEXTILES PRINTING PROCESS					

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1 Electronic table reactive printing – Viscose fabric

Name	Electronic table reactive printing	
Sources	Report LCA I02: TM-108-003	F.4.3 Electronic table reactive printing
Reference year	2000	
Geographic reference	Italy	
Technological level	average	
Reference flow	100 kg of viscose fabric	
Equipment	Electronic hand table operating mode: batch bath volume (m3): - run time (h): 7,5 N.of cycles/year 90 absorbed power (kW): 9 processed fabric per run (kg): 285 processed fabric (kg/yr): 25765	
Notes	Production of chemicals considered: Solubilizing agent, Reactive colours	
Procedural steps (flow-chart)		
Reactive printing paste (1) Water: Well 2200 l/h	<pre> graph TD A[Reactive printing paste (1)] --> B[Squeezing] B --> C[Table continuous washing (2)] </pre>	Wastewater: 2200 l/h COD [mg/l] = 2750 ; TSS [mg/l] = 270 .

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	Flow	Units	Value
INPUTS	(r) Natural Gas (in ground)	kg	1,37E+01
	(r) Oil (in ground)	kg	1,40E+01
	(r) Uranium (U, ore)	kg	1,07E-04
	Viscose fabric: to Printing	kg	1,00E+02
	Water: Public Network	litre	1,31E+02
	Water: Unspecified Origin	litre	6,06E+02
	Water: Well	litre	1,48E+04
OUTPUTS	(a) Alkane (unspecified)	g	1,49E+00
	(a) Ammonia (NH3)	g	6,17E+00
	(a) Aromatic Hydrocarbons (unspecified)	g	1,20E-01
	(a) Arsenic (As)	g	7,49E-03
	(a) Butane (n-C4H10)	g	2,06E+00
	(a) Cadmium (Cd)	g	1,69E-02
	(a) Carbon Dioxide (CO2, fossil)	g	8,86E+04
	(a) Ethane (C2H6)	g	1,67E+01
	(a) Ethylene (C2H4)	g	2,24E+00
	(a) Heptane (C7H16)	g	2,29E-01
	(a) Hexane (C6H14)	g	4,58E-01
	(a) Hydrocarbons (except methane)	g	1,25E+02
	(a) Hydrocarbons (unspecified)	g	6,02E-01
	(a) Methane (CH4)	g	6,57E+02
	(a) Nickel (Ni)	g	3,36E-01
	(a) Nitrogen Oxides (NOx as NO2)	g	1,67E+02
	(a) Nitrous Oxide (N2O)	g	1,17E+00
	(a) Propane (C3H8)	g	4,20E+00
	(a) Sulphur Oxides (SOx as SO2)	g	6,76E+02
	(a) Toluene (C6H5CH3)	g	1,94E-01
	(a) Vanadium (V)	g	1,25E+00
	(s) Chromium (Cr III, Cr VI)	g	7,75E-04
	(s) Cobalt (Co)	g	6,17E-04
	(s) Copper (Cu)	g	1,66E-02
	(s) Nickel (Ni)	g	4,25E-04
	(s) Zinc (Zn)	g	1,52E-03
	(w) Ammonia (NH4+, NH3, as N)	g	2,12E+01
	(w) Benzene (C6H6)	g	1,64E-01
	(w) Cadmium (Cd++)	g	5,62E-04
	(w) Chromium (Cr III)	g	8,48E-04
	(w) Chromium (Cr III, Cr VI)	g	1,47E-02
	(w) Nitrogenous Matter (unspecified, as N)	g	6,98E-01
	(w) Oils (unspecified)	g	1,16E+00
	(w) Phosphates (PO4 3-, HPO4--, H2PO4-, H3PO4, as P)	g	6,53E-02
	(w) Phosphorus (P)	g	2,05E-01
	Viscose fabric: to Steaming	kg	1,00E+02
Wastewater	litre	1,48E+04	
REMINDERS	E Feedstock Energy	MJ	5,93E+01
	E Fuel Energy	MJ	1,26E+03
	E Non Renewable Energy	MJ	1,23E+03
	E Renewable Energy	MJ	5,88E+01
	E Total Primary Energy	MJ	1,39E+03
	Electricity	MJ elec	2,58E+02
	COD: to Wastewater Treatment Plant	Kg	1,13E+01
	TSS: to Wastewater Treatment Plant	Kg	2,55E+00

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2 Rotary machine reactive printing – Viscose fabric

Name	Rotary machine reactive printing	
Sources	Report LCA I02: TM-108-003	F.4.4 Rotary machine reactive printing
Reference year	2000	
Geographic reference	Italy	
Technological level	average	
Reference flow	100 kg of viscose fabric	
Equipment	Rotary machine operating mode: batch bath volume (m3): - run time (h): 3,75 N.of cycles/year 184 absorbed power (kW): 9 processed fabric per run (kg): 285 processed fabric (kg/yr): 52313	
Notes	Production of chemicals considered: Solubilizing agent, Reactive colours	
Procedural steps (flow-chart)		
Reactive printing paste (1) Water: Well 2200 l/h	<pre> graph TD A[Squeezing] --> B[Table and cylinders continuous washing (2)] </pre>	Wastewater: 2200 l/h <i>COD [mg/l] = 903 ;</i> <i>TSS [mg/l] = 10 .</i>

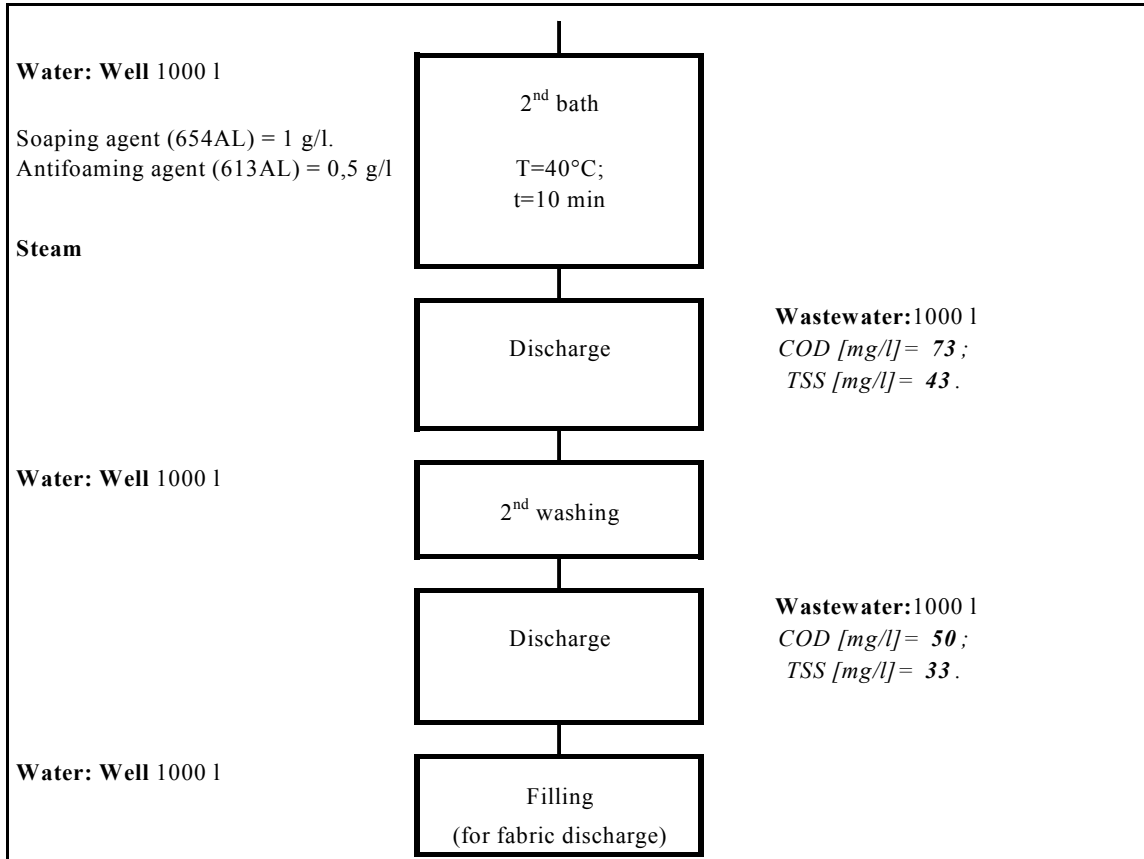
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	Flow	Units	Value	
INPUTS	(r) Natural Gas (in ground)	kg	1,31E+01	
	(r) Oil (in ground)	kg	1,23E+01	
	(r) Uranium (U, ore)	kg	1,07E-04	
	Viscose fabric: to Printing	kg	1,00E+02	
	Water: Public Network	litre	1,31E+02	
	Water: Unspecified Origin	litre	5,97E+02	
	Water: Well	litre	1,48E+04	
OUTPUTS	(a) Alkane (unspecified)	g	1,28E+00	
	(a) Ammonia (NH3)	g	6,17E+00	
	(a) Aromatic Hydrocarbons (unspecified)	g	1,10E-01	
	(a) Arsenic (As)	g	6,44E-03	
	(a) Butane (n-C4H10)	g	1,78E+00	
	(a) Cadmium (Cd)	g	1,48E-02	
	(a) Carbon Dioxide (CO2, fossil)	g	8,05E+04	
	(a) Ethane (C2H6)	g	1,45E+01	
	(a) Ethylene (C2H4)	g	1,87E+00	
	(a) Heptane (C7H16)	g	1,99E-01	
	(a) Hexane (C6H14)	g	3,97E-01	
	(a) Hydrocarbons (except methane)	g	8,45E+01	
	(a) Hydrocarbons (unspecified)	g	5,96E-01	
	(a) Methane (CH4)	g	5,96E+02	
	(a) Nickel (Ni)	g	2,94E-01	
	(a) Nitrogen Oxides (NOx as NO2)	g	1,52E+02	
	(a) Nitrous Oxide (N2O)	g	1,05E+00	
	(a) Propane (C3H8)	g	3,63E+00	
	(a) Propylene (CH2CHCH3)	g	7,25E-02	
	(a) Sulphur Oxides (SOx as SO2)	g	5,93E+02	
	(a) Toluene (C6H5CH3)	g	1,67E-01	
	(a) Vanadium (V)	g	1,08E+00	
	(s) Chromium (Cr III, Cr VI)	g	7,10E-04	
	(s) Cobalt (Co)	g	6,17E-04	
	(s) Copper (Cu)	g	1,66E-02	
	(s) Nickel (Ni)	g	4,25E-04	
	(s) Zinc (Zn)	g	1,32E-03	
	(w) Ammonia (NH4+, NH3, as N)	g	2,11E+01	
	(w) Benzene (C6H6)	g	1,42E-01	
	(w) Cadmium (Cd++)	g	5,04E-04	
	(w) Chromium (Cr III)	g	7,10E-04	
	(w) Chromium (Cr III, Cr VI)	g	1,43E-02	
	(w) Nitrogenous Matter (unspecified, as N)	g	6,05E-01	
	(w) Oils (unspecified)	g	1,01E+00	
	(w) Phosphates (PO4 3-, HPO4--, H2PO4-, H3PO4)	g	6,52E-02	
	(w) Phosphorus (P)	g	2,04E-01	
	Viscose fabric: to Steaming	kg	1,00E+02	
	Wastewater	litre	1,48E+04	
	REMINDERS	E Feedstock Energy	MJ	5,38E+01
		E Fuel Energy	MJ	1,15E+03
		E Non Renewable Energy	MJ	1,12E+03
E Renewable Energy		MJ	4,93E+01	
E Total Primary Energy		MJ	1,28E+03	
Electricity		MJ elec	2,19E+02	
COD: to Wastewater Treatment Plant		Kg	1,10E+01	
TSS: to Wastewater Treatment Plant		Kg	2,51E+00	

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3 Acid printed washing – Viscose fabric

Name	Acid printed washing	
Sources	Report LCA I02: TM-108-003	H.1.3 Acid printed washing
Reference year	2000	
Geographic reference	Italy	
Technological level	average	
Reference flow	100 kg of viscose fabric	
Equipment	Rope washer operating mode: batch bath volume (m3): 0,8 run time (h): 1 N.of run/year 5978 absorbed power (kW): 9 processed fabric per run (kg): 19 processed fabric (kg/yr): 113579	
Notes		
Procedural steps (flow-chart)		
Water: Well 1000 l Soaping agent (654AL) = 1 g/l. Steam Water: Well 1000 l	<pre> graph TD A["1st bath T=30°C; t=10 min"] --> B["Discharge"] B --> C["1st washing"] C --> D["Discharge"] </pre>	Wastewater: 1000 l COD [mg/l] = 398 ; TSS [mg/l] = 271 . Wastewater: 1000 l COD [mg/l] = 247 ; TSS [mg/l] = 89 .



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	Flow	Units	Value	
INPUTS	(r) Coal (in ground)	kg	3,34E+00	
	(r) Natural Gas (in ground)	kg	1,49E+01	
	(r) Oil (in ground)	kg	8,28E+00	
	(r) Uranium (U, ore)	kg	2,32E-05	
	Viscose fabric: to Washing	kg	1,00E+02	
	Water: Public Network	litre	0,00E+00	
	Water: Unspecified Origin	litre	5,06E+01	
	Water: Well	litre	2,63E+04	
OUTPUTS	(a) Aldehyde (unspecified)	g	1,10E+01	
	(a) Alkane (unspecified)	g	2,39E+00	
	(a) Ammonia (NH3)	g	1,36E+01	
	(a) Arsenic (As)	g	5,25E-03	
	(a) Benzene (C6H6)	g	3,48E-01	
	(a) Butene (1-CH3CH2CHCH2)	g	1,49E-02	
	(a) Cadmium (Cd)	g	1,05E-02	
	(a) Carbon Dioxide (CO2, fossil)	g	6,86E+04	
	(a) Ethane (C2H6)	g	1,25E+01	
	(a) Ethylene (C2H4)	g	7,56E+00	
	(a) Heptane (C7H16)	g	1,49E-01	
	(a) Hexane (C6H14)	g	2,97E-01	
	(a) Hydrocarbons (except methane)	g	6,59E+01	
	(a) Methane (CH4)	g	3,27E+02	
	(a) Nickel (Ni)	g	2,07E-01	
	(a) Nitrogen Oxides (NOx as NO2)	g	9,10E+01	
	(a) Nitrous Oxide (N2O)	g	6,73E-01	
	(a) Propane (C3H8)	g	3,22E+00	
	(a) Sulphur Oxides (SOx as SO2)	g	4,13E+02	
	(a) Toluene (C6H5CH3)	g	2,28E-01	
	(a) Vanadium (V)	g	8,22E-01	
	(s) Arsenic (As)	g	1,23E-04	
	(s) Chromium (Cr III, Cr VI)	g	1,53E-03	
	(s) Zinc (Zn)	g	4,61E-03	
	(w) Benzene (C6H6)	g	1,09E-01	
	(w) Cadmium (Cd++)	g	3,02E-04	
	(w) Chromium (Cr III)	g	3,22E-03	
	(w) Chromium (Cr III, Cr VI)	g	1,98E-03	
	(w) Nitrogenous Matter (unspecified, as N)	g	4,56E-01	
	(w) Oils (unspecified)	g	1,23E+00	
	Viscose fabric: to Finishing	kg	1,00E+02	
	Wastewater	litre	2,63E+04	
	REMINDERS	E Feedstock Energy	MJ	2,86E+01
		E Fuel Energy	MJ	1,04E+03
E Non Renewable Energy		MJ	1,02E+03	
E Renewable Energy		MJ	4,74E+01	
E Total Primary Energy		MJ	1,07E+03	
Electricity		MJ elec	1,98E+02	
COD: to Wastewater Treatment Plant		Kg	3,39E+00	
TSS: to Wastewater Treatment Plant		Kg	1,89E+00	

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4 Saturated steaming - Viscose fabric

Name		Saturated steaming
Sources		Report LCA I02: TM-108-003 G.1 Saturated steaming
Reference year		2000
Geographic reference		Italy
Technological level		average
Reference flow		100 kg of viscose fabric
Equipment		Steamer operating mode: continuous bath volume (m3): - run time (h): 11,54 N.of cycles/year 61 absorbed power (kW): 19,8 processed fabric per run (kg): 1420 processed fabric (kg/yr): 87588
Notes		
Procedural steps (flow-chart)		
<p>Steam: 9232 kg</p> <div style="text-align: center; border: 1px solid black; width: 100px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> Steaming </div>		

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	Flow	Units	Value
INPUTS	(r) Natural Gas (in ground)	kg	7,62E+01
	(r) Oil (in ground)	kg	3,40E+00
	(r) Uranium (U, ore)	kg	1,46E-04
	Viscose fabric: to Steaming	kg	1,00E+02
	Water: Public Network	litre	0,00E+00
	Water: Unspecified Origin	litre	8,02E+01
	Water: Well	litre	0,00E+00
OUTPUTS	(a) Aldehyde (unspecified)	g	1,21E+00
	(a) Alkane (unspecified)	g	9,03E+00
	(a) Ammonia (NH3)	g	1,10E+01
	(a) Arsenic (As)	g	2,84E-03
	(a) Benzene (C6H6)	g	1,34E+00
	(a) Butane (n-C4H10)	g	2,97E+00
	(a) Cadmium (Cd)	g	4,24E-03
	(a) Carbon Dioxide (CO2, fossil)	g	2,01E+05
	(a) Ethane (C2H6)	g	1,33E+01
	(a) Ethylene (C2H4)	g	3,77E+01
	(a) Hydrocarbons (except methane)	g	1,05E+02
	(a) Hydrogen Sulphide (H2S)	g	1,23E+00
	(a) Lead (Pb)	g	1,37E-02
	(a) Manganese (Mn)	g	1,85E-02
	(a) Methane (CH4)	g	3,17E+02
	(a) Nickel (Ni)	g	8,39E-02
	(a) Nitrogen Oxides (NOx as NO2)	g	1,29E+02
	(a) Nitrous Oxide (N2O)	g	6,49E-01
	(a) Propane (C3H8)	g	3,87E+00
	(a) Sulphur Oxides (SOx as SO2)	g	2,14E+02
	(a) Toluene (C6H5CH3)	g	6,70E-01
	(a) Vanadium (V)	g	3,23E-01
	(s) Arsenic (As)	g	6,30E-04
	(s) Chromium (Cr III, Cr VI)	g	7,89E-03
	(s) Zinc (Zn)	g	2,37E-02
	(w) Benzene (C6H6)	g	5,80E-02
	(w) Cadmium (Cd++)	g	2,15E-04
	(w) Chromium (Cr III)	g	1,66E-02
	(w) Nitrogenous Matter (unspecified, as N)	g	1,99E-01
	(w) Oils (unspecified)	g	3,43E+00
	Viscose fabric: to Washing	kg	1,00E+02
	Wastewater	litre	0,00E+00
	REMINDERS	E Feedstock Energy	MJ
E Fuel Energy		MJ	3,37E+03
E Non Renewable Energy		MJ	3,37E+03
E Renewable Energy		MJ	2,52E+01
E Total Primary Energy		MJ	3,40E+03
Electricity		MJ elec	1,15E+02
COD: to Wastewater Treatment Plant		Kg	0,00E+00
TSS: to Wastewater Treatment Plant		Kg	0,00E+00

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5 Printing – Silk fabric

Name	PRINTING
Sources	Report LCA I15: TM-108-006
Reference year	2001
Geographic reference	Italy
Technological level	average
Reference flow	100 kg of silk fabric
Equipment	Acid blender preparation in Blender Preparator operating mode: batch cycle time (h,m): 1 N. of cycle/year 1961 absorbed power (kW): 18 processed fabric (kg/yr): 503971
Equipment	Acid colours preparation in colour preparator operating mode: batch cycle time (h,m): 0,6 N. of cycle/year 981 absorbed power (kW): 4,5 processed fabric (kg/yr): 503971
Equipment	Acid colours thickeners preparation in thickener preparator operating mode: batch cycle time (h,m): 0,1 N. of cycle/year 98 absorbed power (kW): 4,5 processed fabric (kg/yr): 503971
Equipment	Acid printing pastes preparation in Mixer operating mode: batch cycle time (h,m): 0,1 N. of run/year 128205 absorbed power (kW): 4,5 processed fabric (kg/yr): 503971
Equipment	Flat table acid printing in Flat Table operating mode: batch cycle time (h,m): 1 N. of run/year 4519 absorbed power (kW): 2,7 processed fabric per run(kg/h): 27 processed fabric (kg/yr): 122014

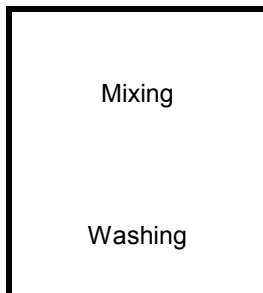
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Equipment	Printing screen washing in Screen Washer operating mode: batch cycle time (h,m): 0,1 N. of run/year 160735 absorbed power (kW): 2,7 processed fabric per hour (kg/h): - processed fabric (kg/yr): 884192
Equipment	Kids washing in Kids Washer operating mode: batch bath volume (m3): 1500 cycle time (h,m): 2,3 N. of run/year 2679 absorbed power (kW): 11 processed fabric per hour (kg/h): - processed fabric (kg/yr): 884192
Equipment	Acid printing saturated steaming in Steamer operating mode: continuous cycle time (h,m): 0,11 N. of cycle/year 6363 absorbed power (kW): 9,7 processed fabric per hour (kg/h): 216 processed fabric (kg/yr): 251896
Equipment	Acid printing washing in Continuous Washer operating mode: continuous bath volume (m3): 10500 cycle time (h,m): 3,57 N. of cycle/year 140 absorbed power (kW): 13,5 processed fabric per hour (kg/h): 300 processed fabric (kg/yr): 251896
Procedural steps (flow-chart)	

Acid blender preparation

Water from Softening: 217 l

Thickening agent = 60 g/kg
 Acid donor = 30 g/kg
 Anti fermentative agent = 1,5 g/kg
 Anti foaming agent = 10 g/kg
 Solubilizing agent = 30 g/kg
Water from Storage: 450 l



Wastewater: 450 l

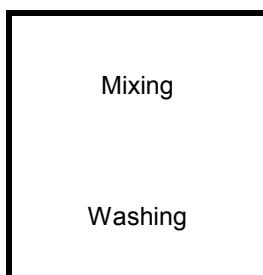
COD [mg/l]=1000
 TSS [mg/l]=250

Acid colour preparation

Water from Softening: 1 l

Acid dyestuffs = 40 g/kg
 Solvent = 40 g/kg
 Solubilizing agent = 50 g/kg
 Acid donor = 30 g/kg
 Acid thickener= 500 g/kg

Water from Storage: 450 l



Wastewater: 450 l

COD [mg/l]=1000
 TSS [mg/l]=250

Acid colour thickeners preparation

Water from Softening: 41 l

Thickening agent = 120 g/kg
 Anti fermentative agent = 1,5 g/kg
 Anti foaming agent = 10 g/kg

Water from Storage: 450 l



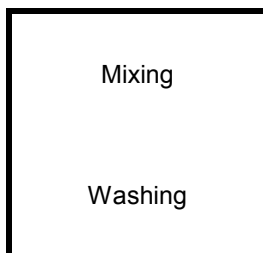
Wastewater: 450 l

COD [mg/l]=1000
 TSS [mg/l]=250

Acid printing pastes preparation

Acid colour= 0.2%
 Acid thickener= 1:50

Water from Storage: 450 l



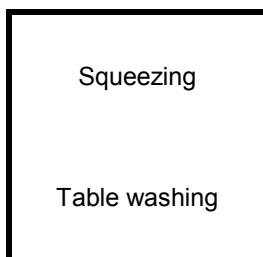
Wastewater: 450 l

COD [mg/l]=1000
 TSS [mg/l]=250

Flat table acid printing

Acid printing paste: 3.5 kg

Water from Storage: 100 l

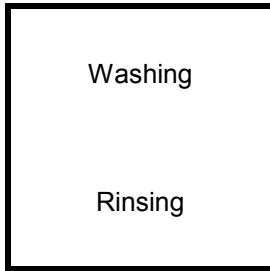


Wastewater: : 100 l

COD [mg/l]= 200
 TSS [mg/l]=50

Printing screen washing.

Water from Storage: 450 l



Wastewater: 450 l

COD [mg/l]= 400
TSS [mg/l]= 67

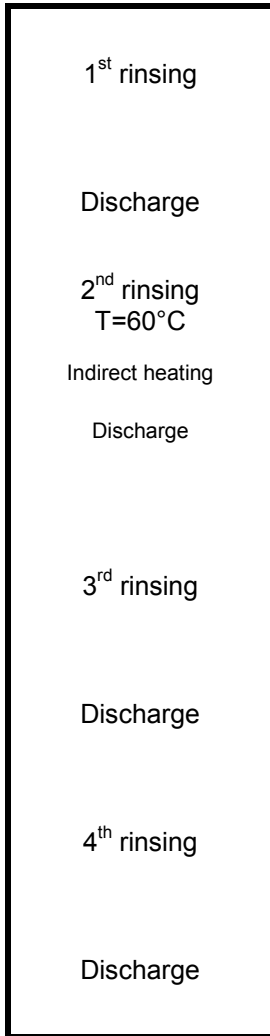
Water from Storage: 450 l

Wastewater: 450 l

COD [mg/l]= 150
TSS [mg/l]= 20

Kids washing

Water from Storage: equip volume



Wastewater: equip volume

COD [mg/l]= 300
TSS [mg/l]= 87

Water from Storage: equip volume

Steam

Indirect heating

Wastewater:

Discharge

COD [mg/l]= 50
TSS [mg/l]=20

Water from Storage: equip volume

3rd rinsing

Wastewater: equip volume

Discharge

COD [mg/l]= 80
TSS [mg/l]= 32

Water from Storage: equip volume

4th rinsing

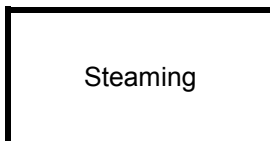
Wastewater: equip volume

Discharge

COD [mg/l]= 4107
TSS [mg/l]= 2125

Acid printed saturated steaming

Steam: 11 kg



Wastewater: 50 l

Water from Softening 100 l ;

COD [mg/l]= 300
TSS [mg/l]= 10

Water from Softening 50 l

Acid printed washing.

Water from Softening: 1500 l + 1188 l
(reintegration)

Water from Softening: 1500 l

Soaping agent: 1 g/l;
Soaping agent: 0,5 g/l;
Dispersant agent : 0,5 g/l.

Steam

Water from Softening: 1500 l

Soaping agent: 1 g/l;
Soaping agent: 0,5 g/l;
Dispersant agent : 0,5 g/l.

Steam

Water from Softening: 1500 l

Steam

Water from Softening: 1500 l

Soaping agent: 1 g/l;
Soaping agent: 0,5 g/l;
Dispersant agent: 0,5 g/l.

Water from Storage: 1500 l

Water from Storage: 1500 l

Doping bath

1st bath

T= 40°C

Indirect heating

2nd bath

T= 40°C

Indirect heating

1st rinsing

T=40°C

Indirect heating

3rd bath

T= 40°C

Indirect heating

2nd rinsing

3rd rinsing

Wastewater: 1500 l

COD [mg/l]= 300
TSS [mg/l]= 20

Wastewater: 1500 l

COD [mg/l]= 1108
TSS [mg/l]= 68

Wastewater: 1500 l

COD [mg/l]= 830
TSS [mg/l]= 35

Wastewater: 2000 l

COD [mg/l]= 31
TSS [mg/l]= 5

Wastewater: 1500 l

COD [mg/l]= 428
TSS [mg/l]= 10

Wastewater: 1500 l

COD [mg/l]= 41
TSS [mg/l]= 5

Wastewater: 1500 l

COD [mg/l]= 24
TSS [mg/l]= 3

Note: Productions of thickening agent, acid donor, anti fermentative agent, anti foaming agent, solubilizing agent, acid dyestuffs, solvent, acid thickener, acid printing paste, soaping agent and dispersant agent are excluded because of lack of data.

TOWEFO Toward Effluent Zero	Partner ENEA	Identification code TM-108-010	Rev. 0	Dis CO	Pag. 17	of 17
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	Flow	Units	Value	
INPUT	(r) Iron (Fe, ore)	kg	1,99E-01	
	(r) Natural Gas (in ground)	kg	3,94E+01	
	(r) Oil (in ground)	kg	7,60E+00	
	(r) Uranium (U, ore)	kg	7,13E-05	
	Silk fabric to Printing	kg	1,00E+02	
	Water: from Softening Treatment	litre	7,28E+02	
	Water: from Storage	litre	3,04E+04	
	Water: Unspecified Origin	litre	1,12E+02	
OUTPUT	(a) Aldehyde (unspecified)	g	7,11E+00	
	(a) Alkane (unspecified)	g	5,14E+00	
	(a) Ammonia (NH3)	g	2,89E+01	
	(a) Arsenic (As)	g	5,10E-03	
	(a) Benzene (C6H6)	g	7,59E-01	
	(a) Butane (n-C4H10)	g	2,43E+00	
	(a) Cadmium (Cd)	g	9,67E-03	
	(a) Carbon Dioxide (CO2, fossil)	g	1,26E+05	
	(a) Ethane (C2H6)	g	1,45E+01	
	(a) Ethylene (C2H4)	g	1,96E+01	
	(a) Hydrocarbons (except methane)	g	7,15E+01	
	(a) Lead (Pb)	g	2,28E-02	
	(a) Methane (CH4)	g	3,69E+02	
	(a) Nitrogen Oxides (NOx as NO2)	g	1,15E+02	
	(a) Propane (C3H8)	g	3,91E+00	
	(a) Sulphur Oxides (SOx as SO2)	g	3,98E+02	
	(a) Vanadium (V)	g	7,54E-01	
	(s) Arsenic (As)	g	3,25E-04	
	(s) Chromium (Cr III, Cr VI)	g	4,07E-03	
	(s) Zinc (Zn)	g	1,22E-02	
	(w) Ammonia (NH4+, NH3, as N)	g	3,49E-01	
	(w) Benzene (C6H6)	g	1,05E-01	
	(w) Cadmium (Cd++)	g	3,09E-04	
	(w) Chromium (Cr III)	g	8,54E-03	
	(w) COD (Chemical Oxygen Demand)	g	9,04E-01	
	(w) Nitrate (NO3-)	g	7,19E-02	
	(w) Nitrogenous Matter (unspecified, as N)	g	4,25E-01	
	(w) Oils (unspecified)	g	2,20E+00	
		Silk fabric to Finishing	kg	1,00E+02
		Wastewater	litre	3,10E+04
	REMINDERS	E Feedstock Energy	MJ	3,03E+01
		E Fuel Energy	MJ	2,03E+03
		E Non Renewable Energy	MJ	2,02E+03
E Renewable Energy		MJ	4,60E+01	
E Total Primary Energy		MJ	2,06E+03	
Electricity		MJ elec	3,49E+02	
COD to Wastewater Treatment Plant		kg	1,68E+01	
TSS to Wastewater Treatment Plant		kg	3,75E+00	