RECOVERING CENTER WORKER

UNIT 3 - REPARE/REUSE/ CO-CREATE/SALES

This project has been funded with support from the European Commission.

Training Repository – unit 3 – 42h

Thanks to this unit, we want to put in place a technical training that allows the students to acquire skills that promote their socio-professional integration.

By the alternation of theoretical courses, practical work, visits and internships in the company, training « RECOVERING CENTER WORKER » tends to develop the following skills:

- DF1. Training Area 1 **(2 days)**

Reminder: Management of bulky in the context of the recovering **(1/2 day)**

- The collection
- The sorting
- The recognition and materials composition
- Comply with safety and ergonomics rules
  - Take responsibility for your own safety and ensure the safety of others
  - Adapting your own behavior in accordance with the safety and ergonomic rules
  - Take responsibility for selecting, using and preserving PPE (Personal Protective equipment)
  - Take responsibility for preparing the workstation in accordance with the conditions of security and accessibility.
- Protecting the work environment
  - Demonstrate responsibility for the rational use of resources.
  - Adapt your own behavior to reduce nuisance.
  - Adapting your own behavior to improve working conditions
  - Be responsible for the work environment and act accordingly.

Clean, disassemble, reassemble (1.5 days)

- Follow established cleaning procedures
- Demonstrate responsibility for the use of tools and cleaning products
- Ensure cleaning operations in accordance with the intended procedures
- Most correctly associate the tools and cleaning techniques with goods/ sub-elements to be cleaned.
- Ensure superficial repair operations in accordance with the intended procedures
- Take responsibility to adopt the most appropriate cleaning technique for goods/sub-elements
- Exercise autonomy in the implementation of the reassembly procedures.
- Respect the repair operations.
- Ensure the quality control of the repaired property according to the standards in force.

- DF2. Area of expertise 2 (2 days)

Co- Creative, Recovery and introduction to design

Initiation and awareness

- Application of the basic techniques to the recovering of old materials and materials (Wood, textile…)
- Developing creativity
  - Adapt a behavior that promotes the imagination, the ability to surpass itself, and to create together with an artisan, an individual
- Awareness of the concepts of recovery, of recovering. Eco-Design.

Draft of a project of upgrading

- Tools, time, cost, plans, execution plan

- DF3. Training Area 3 (2 days)

Introduction to Sales

- Sales process
  - Adapting a behavior to sell its products based on the elements that make up its design
- Concept of Display
- Pricing Policy

- 4. Evaluation

At the end of this unit the participants will be able to:

- Follow and apply cleaning and safety procedures
- To be autonomous in dismantling and reassembling
- To Co-Create and sell their products

Each DF will be subject to evaluation criteria by:

- The knowledge
- The skills
- Acquired abilities

Example of an evaluation grid:

	Knowledge	Skills	Abilities	Acquired	Non-acquired
DF1	Knowledge1	Skill1 Skill2	Ability1	☐	☐
	Knowledge 2	Skill1 Skill2 Skill3	Ability 1 Ability 2	☐	☐
DF2	Knowledge 1	Skill1	Ability 1	☐	☐
	Knowledge 2	Skill2	Ability 1	☐	☐
DF3	Knowledge 1	Skill1	Ability 1	☐	☐

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I. Security

Panels **of obligation** for the use of PPE

Personal Protective equipment (PPE) is a device or means intended to be carried or maintained by a person to protect it against one or more risks likely to endanger its safety and its health.

The risks can be of different kinds: chemical (Dust, vapor, solvent...), mechanical (Shock, cut, projection...), electrical, thermal, biological, ionizing radiation or not (infrared, laser, ultraviolet), noise....


Eye protection


Safety helmet


Ear


Mandatory respiratory protection


Safety footwear


Gants de protection


Protective clothing


Protective visor


Safety harness


Mandatory pedestrian crossing


General obligation (if appropriate, supported by an additional panel giving further instructions)


See instructions, manual

Identification of Safety pictograms


Smoking ban


Open flames ban


Pedestrian restriction


Extinguishing fire with water restriction

Forklifts b


Interdit aux chariots


Interdiction de toucher


Eau non potable


Entrée interdite aux personnes non autorisées

No admission for unauthorized persons

Emergency rescue Panels

Firefighting equipment

Fire alarm point

Fire hose

Ladder

Extinguisher

In case of fire phone

Directions to follow
Additional indicating signals to other panels about firefighting equipment

Chemical labelling

Environmental pollutant

Dangerous, harmful and irritating

Corrosive

Combustion

Explosive

Dangerous Product for health

Toxic

Gas under pressure

Flammable

Source : www.inrs.fr (Institut national de recherche et de sécurité)

Dangerous behavior

You will be required to work with electromechanical machines that are dangerous in case of improper handling.

Take care of the necessary protections, make slow movements while maintaining a perimeter, check the condition of your tools, never leave a machine running if you do not use it, unplug them after use.

You must always equip yourself with the PPE necessary for the activity and the manipulation of the tool you are going to use. In case of doubt, the technical manager is here to inform you.

Accident management

Protect :	Alert rescue
▪ Neutralize the cause ▪ Keep the individual at risk ▪ If loss of consciousness appears: lateral security position ▪ If respiratory arrest appears: remove what prevents to breathe and tilt the head back Only people having Certificate of Training in First Aid can do these manipulations.	Emergency call: ▪ Rescue: ▪ Firefighter: Message: ▪ Address, location ▪ Cause of the accident ▪ Number, person(s)'s condition and age Send people find rescue.

Hazardous materials storage

Defaulting storage may have significant consequences: dangerous chemical reactions, important release of harmful products, even explosion or fire, intoxication, one-foot fall, injuries… Many parameters are involved in storing security:

- Quantity of products stored,
- Presence of volatile, flammable or incompatible products or with the materials present,
- Ventilation,
- Packaging stowage,
- Packaging products stability to changes in temperature, radiation…

Signalling

Storage locations must be clearly identified. Warning panels must appear at the entrance as for example « Flammable materials », « Corrosive materials», « Toxic materials » …

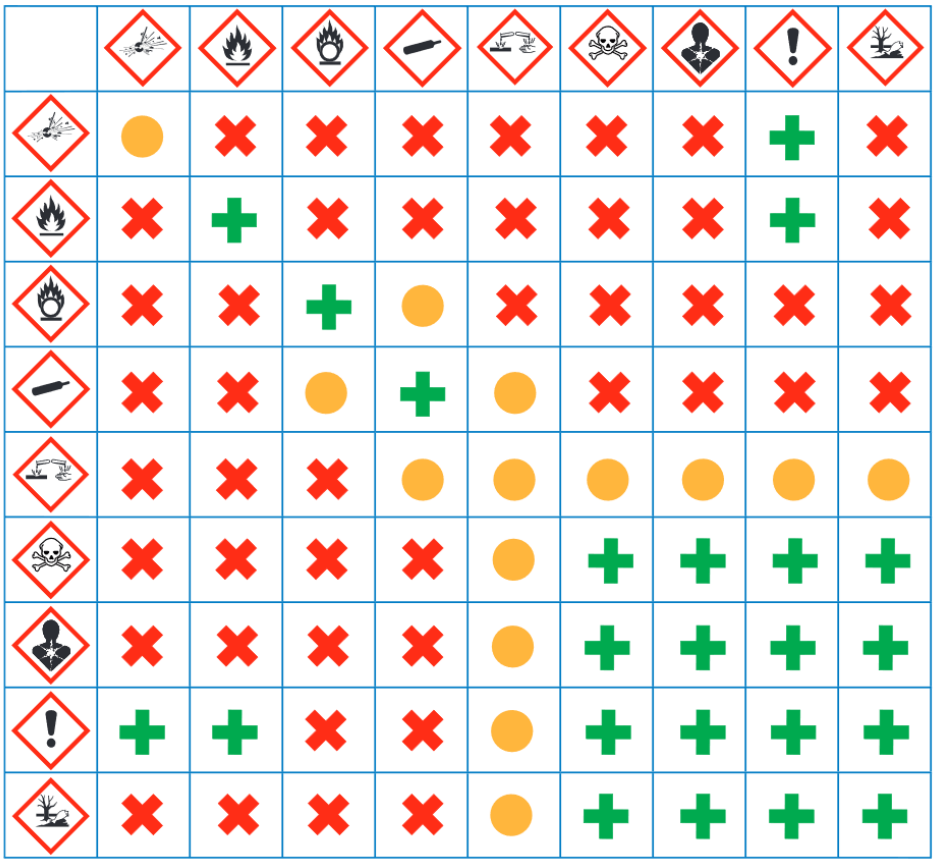
Separating incompatible poroducts / Dangerous reactions

Some products can react with each other, sometimes causing explosions, fires, projections or emissions of dangerous gazes. These incompatible products must be physically separated.

Other products still **react violently with water**: they must be stored in such a way that any contact with water is impossible, even in the event of flooding. Flammable products must be stored separately in a dedicated and constantly ventilated enclosure.

If a product has several hazard pictograms: consider, the following order: explosive > combustion > flammable > corrosive > toxic > harmful> irritating.

Inform yourself: even if they display the same pictogram, some products may not be stored together. See the safety data sheet (SDS), the operating instructions, storage and safety instructions or contact your supplier.



✖ Cannot be stored together

● Can be stored together under certain conditions

✚ Can be stored together

Source : Table designed and directed by Efficience Santé au Travail (Décembre 2013)

II. Reminder: Mathematics/Geometry

The international system of measurement units

Unit of measure name	Symbol	Name of measured physical size	Symbol of physical size
Second	s	Time	**t**
Kilogram	kg	Mass	m
Meter	m	Length	l
Square meter	m^2	Surface	S
Watt	W	Power	P
Joule	J	Energy	W

8 Mechanics units			
Unit of measure name	Symbol	Name of measured physical size	Symbol of physical size
Newton	N	Power	**F**
Pascal	Pa	Pressure	p
Meter per second	$m.s^{-1}$	Linear speed	v
Radian per second	$rad.s^{-1}$	Angular speed	Ω
Newton meter	N.m	Torque (or time of force)	c
Meter per second squared	$m.s^{-2}$	Acceleration	a
Kilogram meter per second	$Kg.m.s^{-1}$	Amount of motion	q
Kilogram square meter	$Kg.m^2$	Moment of inertia	J

Definition of newton: Force that gives, to a body having a mass of 1 kilogram, an acceleration of 1 meter by square second

Definition of pascal: Even pressure, acting on a flat surface of 1-meter square, puts perpendicularly to this surface a total force of 1 newton.

Definition of joule: Energy produced by a force of 1 Newton whose application point moves 1 meter in the direction of force.

Definition of watt: Power of an energy system in which an energy of 1 joule is transferred evenly for 1 second.

Source : http://www.gecif.net

Weight and Mass

The mass of an object measures the amount of material contained in this object that means the mass of the particles that constitute this object (atoms or molecules) This amount of material (so the mass) will be the same regardless of where the object is in the universe.

The mass unit is the kilogram (**kg**)

The weight measures the force of attraction that a star exerts on an object and this force of attraction will be greater as this star will have a high mass**.** Which means that the weight of an object varies in the universe and depends on the star where it is.

The weight unit is the newton (N)

- The relashionship between mass and weight is given by the following formula:

Weight=mass x g

Where g represents the so-called acceleration or intensity of gravity which has a different value according to the star where we are.

Example: **g** on Earth is about 6 times larger than g on the moon that is to say that the earth will attract objects 6 times more towards it than the moon and their weight is 6 times greater on Earth than on the moon (as the heroes can see of Tintin in « We walked on the moon »)

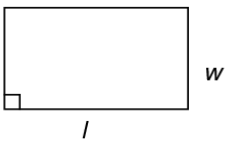
9,81 N/Km: Value commonly used for calculations

Source : phys.free.fr

Volume and surface

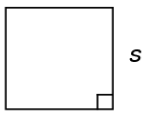
Geometric Formulas

Rectangle



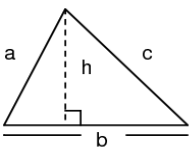
Perimeter: $P = 2l + 2w$
Area: $A = lw$

Square



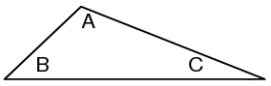
Perimeter: $P = 4s$
Area: $A = s^2$

Triangle



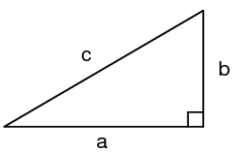
Perimeter: P = a + b + c
Area: $A = \frac{1}{2}$ b h

Sum of Angles Of Triangle



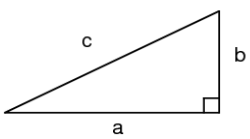
$A + B + C = 180°$
The sum of the measures of the three angles is $180°$.

Right Triangle



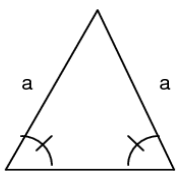
Perimeter: $P = a + b + c$
Area: $A = \frac{1}{2} ab$
One $90°$ (right) angle

Pythagorean Theorem (for right triangles)



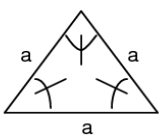
$a^2 + b^2 = c^2$

Isosceles Triangle



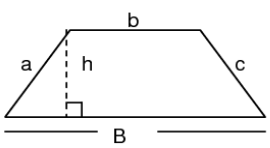
Triangle has two equal sides and two equal angles.

Equilateral Triangle



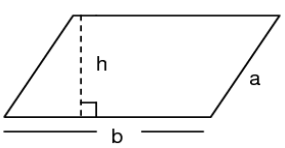
Triangle has three equal sides and three equal angles.

Trapezoid



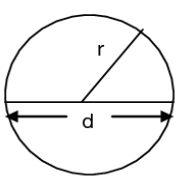
Perimeter: $P = a + b + c + B$
Area: $A = \frac{1}{2} h (B + b)$

Parallelogram



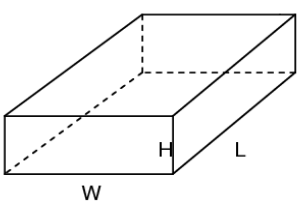
Perimeter: $P = 2a + 2b$
Area: $A = bh$

Circle



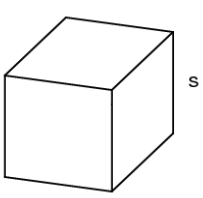
Circumference: $C = \pi d$ $C = 2\pi r$
Area: $A = \pi r^2$

Rectangular Solid



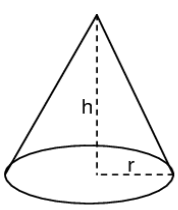
Volume: $V = LWH$
Surface Area: $S = 2LH + 2LW + 2WH$

Cube



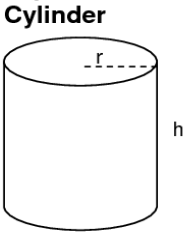
Volume: $V = s^3$

Cone



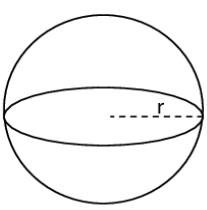
Volume: $V = \frac{1}{3} \pi r^2 h$

Right Circular Cylinder



Volume: $V = \pi r^2 h$
Surface Area: $SA = 2\pi r^2 + 2\pi r h$

Sphere



Volume: $V = \frac{4}{3} \pi r^3$

Other Formulas:

Distance: d = rt (r = rate, t = time)
Percent: p = br (p = percentage, b = base, r = rate)

Temperature: $F = \frac{9}{5} C + 32$ $C = \frac{5}{9} (F - 32)$

Simple Interest: I = Prt
(P = principal, r = rate, t = time in years)

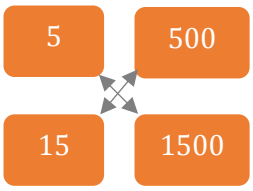
Source : mathematiques.lfsl.free.fr

Rule of three (cross product)

Example: To paint 5 chairs I need 500ml of paint, so how much do i need paint to paint 15 chairs ?

For 5 chairs=> 500ml
For 15 chairs => X ml

$$X = \frac{15 \times 500}{5} = 1500ml$$



III. Recognition of different materials

Plastics

In many cases, a plastic object has an indication of the nature of the polymer used, with a surface-molded code. The codes are:

- 1 = PET ou PETE : Polyethylene terephthalate
- 2 = HDPE ou PEHD : High Density polyethylene
- 3 = PVC ou V : Polyvinyl chloride
- 4 = LDPE ou PELD : Low Density polyethylene
- 5 = PP : Polypropylene
- 6 = PS : Polystyrene
- 7 = OTHER ou O : Other polymers, or mixtures of polymers, resins...

Source : wiki.scienceamusante.net

The **Pet**, or **Polyethylene terephthalate,** is a very used plastic. It is mainly found in water bottles, trays and plastic cooking bags. PET bottles are susceptible to migrate traces of antimony trioxide. This

compound is classified as possibly carcinogenic. This is why it is not necessary to consume bottled water that has been exposed to the sun.

The **High-Density polyethylene** is also a very used plastic, especially in milk bottles, rigid food cans and bottles of cleaning products. According to Canada's National Institute for Environmental Health Information, this plastic produces little migration when put in contact with food. Other studies confirm that this plastic would have a good food compatibility.

The **Pvc**, or **Polyvinyl chloride,** is rarely used in food packaging. The manufacture of this plastic requires phthalates, including DEHA (2-ethylhexyl) and sometimes bisphenol A (BPA). All these substances are highly toxic.

There is a **Low-Density Polyethylene** In frozen food packages, in bread packages, supermarket bags, freezer bags, and disposable cups and bowls for hot drinks. According to the Health Environment network, this plastic generates few migrations, it can be suitable for food use.

The **Polypropylene** is often used in reusable trays to be reheated in the microwave, plastic cups, plastic bottle caps, some drinking bottle and cups. This plastic shows a very low migration when put in contact with food. However, polypropylene degrades, and can over the years, contaminate food with degradation molecules.

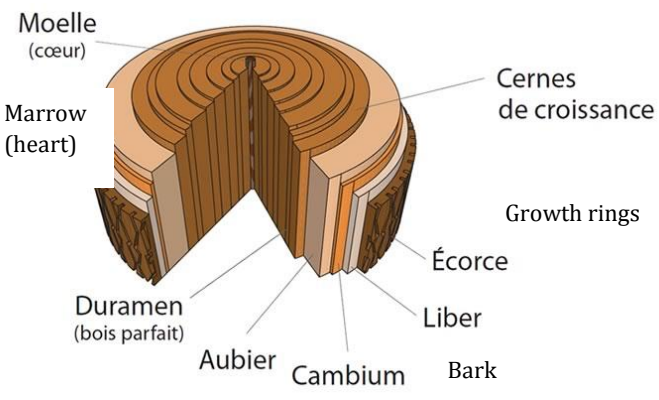
The **Polystyrene** is often used to make tumblers, disposable cutlery and packaging of dairy products (yoghurts, trays). Polystyrene contains styrene, a potential carcinogen for humans, which, when heated, is likely to migrate in foods.

The seventh category is all plastics that do not belong to any of the categories. Included in the **Polycarbonate,** a very controversial plastic. Indeed: it can let traces of bisphenol A in food. Note that in the European Union the use of polycarbonate is now banned in the manufacture of baby bottles, but it is still allowed for other packaging (cans, food containers, crockery…). This category also contains other plastics such as **polysulfone** and the **polyether sulfone.**

Source : www.lasantedanslassiette.com

Wood

The sapwood Is the young part of the tree, under the bark. It's a wood with living



cells, clearer, less hard. Between the sapwood and the bark, the **sap** climbs in the tree by the **bast**. The **heartwood** (or perfect wood) is by contrast hardwood, the core of the tree has no longer living cells.

Heartwood
(perfect wood)
sapwood
Bast

- Two large families are distinguished : coniferous and hardwoods

Hardwoods (angiosperms) are derived from deciduous plants, that is, that fall cyclically every year. **Coniferous** woods(gymnosperms) are derived from plants with evergreen foliage.

Exceptions : Green oak which is deciduous evergreen or even larch, which is a conifer whose needles fall in winter.

The difference between the two families is:

Hardwood:		**Softwood:**	
Food:	The sap	Food :	Resin
Soil Type:	Fertile	Soil Type:	Less rich
Growth:	Slow	Growth :	Fast
Tissues:	Compact and spongy	Tissues :	Very airy
Figure:	Various	Figure :	Conical
Fruit:	Very different	Fruit :	Conical
Stem:	Straight then divided	Stem :	Single and straight
Crown:	Ball shaped	Crown :	Conical
Structure:	Complex because they have 3 or 4 cell types: - Short fibers (ensure rigidity) - Vessels (lead water) - Reserve cells - Spinal rays	Structure :	Simplified Only one type of cell, the tracheids, constitutes the mass of the wood and serves as a conduit for water. Long fiber.

The physical and mechanical properties of each wood species allow us to identify them. Among these different properties, we can cite the visual aspect, the smell, the touch, the density or even the hardness.

The visual appearance of the wood essence is determined by its color, its veining and its grain.

The color can also be variable between the woods of the same essence, depending on its place in the tree, the geographical situation of the tree or the richness of the land on which it has pushed.

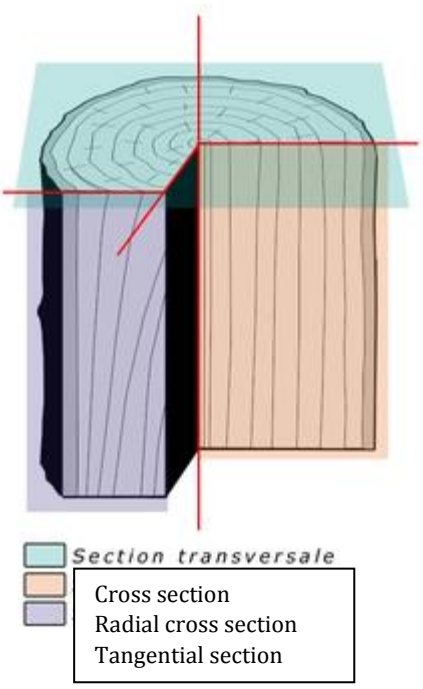
Veining: the drawing formed on the surface of the wood by the veins and the modular rays.

The term “wood of yarn” is used to name the general orientation of the veining. This one is variable according to the flow of the pieces of wood, which allows to cut the fibers from different angles.

With a radial cut, we obtain a veining composed of parallel veins, more or less regular. We are talking about « wood of yarn ».

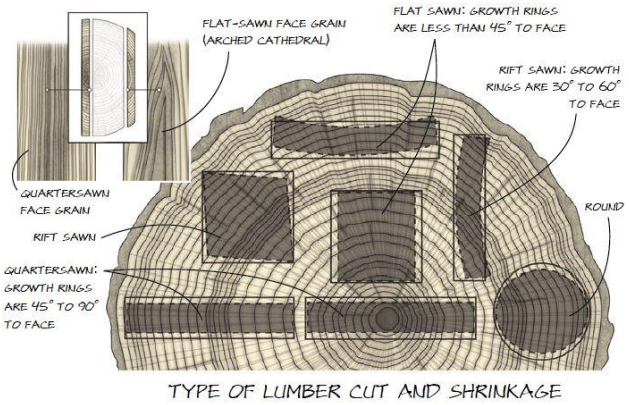
With a tangential cut, An irregular veining is obtained forming drawings. We are talking about « flame wood »

With the third cut, called **“transversal”,** we don’t really visualize

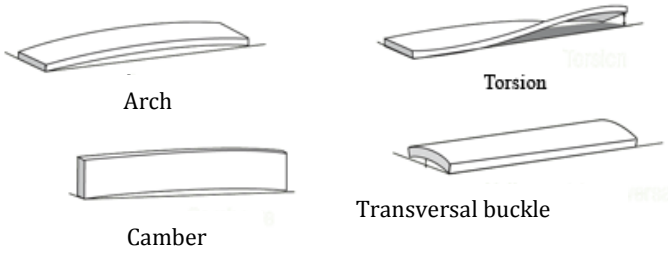


the veining, but the rings and the modular rays. We are talking about « end grain ». This last cut makes it very difficult to identify the essence of the piece of wood.

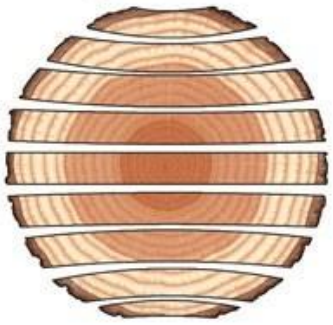
Finally, the grain of the wood also allows to facilitate the identification of the species. The grain is the visual impression produced by the dimension of anatomical elements (such as vessels and fibers), as well as their distribution. A « fine grain » is referred to when vessels are little or no visible to the naked eye and thus an impression of surface homogeneity. On the other hand, we are talking about « coarse grain »when they are very distinct.



TYPE OF LUMBER CUT AND SHRINKAGE



Wood deformation for rift sawn



- Wood species

(See appendix for the complete list)

African mahogany

Origin: Ivory coast. Cameroon, Gabon.
Description: Satin reflection.
Grain: Medium-thin,
Cross-grain: More or less charged and regular.
Sapwood: Thin.
Hardness: Soft and light.
Shrinkage: Medium, light nervous

Medium mechanical resistance. Elastic, impact resistant. Easy work with all the tools. Wax, painted, varnished without difficulty. Nails and screws sink and hold well. No problem with gluing. Medium sustainability.
Exterior and interior carpentry, decoration.

Balsa

Origin: Central and Tropical America.
Description: Glossy appearance
Sapwood: Distinct
Grain: Coarse
Hardness: The lightest and softest commercial wood.
Shrinkage: Light, little nervous.

Very low mechanical resistance in absolute value, but good enough for its weight. Very soft wood with some machining difficulties. Does not hold the screws. Alterable. Models, toys, thermal and phonic insulation, rafts, buoys. Aircraft constructions.

Birch

Origin: Europe and Asia
Description: Whitish wood with brown or rosé reflections
Density: 0,60 à 0,70
Hardness: Medium-hard
Shrinkage: Strong
Sapwood: Not distinct
Grain: Thin
Use: Plywood, veneer, furniture, toys and paper pulp.

Presence of cross-grain, which gives a valued figuration in veneers. Pretty nervous, very good bending resistance, good compression and shock resistance. Sawing, pretty easy. Unfolds, slices and sticks well. Fast enough drying. Alterable.

Chestnut.

Origin: France, Europe
Description: Tawny yellow wood to light brown, with sometimes shades of gray or rosé.
Grain: medium-thin, medium to little nervous.
Straight grain: Heterogeneous structure.
Sapwood: Differentiated, whitish, very thin.
Hardness: Medium hard, Half-heavy.
Shrinkage: fairly low.
Use: Flooring, furnishings, fences, stakes. Scale amounts

Mechanical properties close to those of the oak. Generally, more elastic, but less adherent and fissile. Better suited for all machining, shaping and finishing work. Hangs well. Very durable wood in the weather but subject to a particular overheat.

Oak

Origin: Europe and Western Asia.
Description: light yellow to light brown. Darkens on exposure to light. Potential mesh presence
Grain: Coarse
Straight grain: Heterogeneous structure
Sapwood: distinct, whitish
Hardness: medium-hard, medium-heavy to heavy
Shrinkage: Medium to strong. Nervous.
Use: Furniture, decoration. Interior and exterior carpentry. Flooring (parquet flooring). Stairs. Various constructions: frameworks, buildings, cooperage…

Excellent mechanical resistance (fast growing wood). Resists well in compression, very well in bending, fairly resilient. Adherent, little fissile in the tangential direction but has a weak cohesion in the radial direction (big rings). Sometimes difficult to work if the increases are too wide. Very delicate drying. Nails, screws, sticks without difficulty. Relatively easy to finish. Very durable perfect wood, but the sapwood must be eliminated or treated.

Douglas *(Douglas fir, Oregon Pine).*

Origin: Massif Central, West coast of the United States and Canada.
Description: Perfect wood, very heterogeneous and veined, resinous. Straight wire. Sapwood: Distinct pale.
Hardness: Mid-hard, half-heavy.
Shrinkable: Average to low total,
Pretty Little nervous.
Use: Decoration, Interior fittings. Interior and exterior carpentry.

Yellow Wood (Coast) has mechanical resistances superior to that of red color (Mountain). Resists well in compression, very well in traction and bending. Easy to work with. The presence of large knots can make the sawing delicate. Very large heterogeneity has disadvantages for planing (wavy surface). Nails and screws well, but it is recommended to drill pilot holes. Sticks well. The finish is not always perfect (presence of resin). Pretty durable perfect wood.

Spruce

Origin: France, Scandinavia, Russia,
Description: Wood, straight wood thread.
Sapwood: not distinct.
Hardness: Soft and light.
Shrinkable: low
Pretty Little nervous.
Use: Interior and exterior carpentry. Lightweight frame. Flooring, formwork.

Pretty easy to work with. A certain tendency to pull the fibers when sawing. Fine sanding is not usually the intention. Before putting in wax, oiling or application of a matte varnish, it is recommended to practice a wood burning, followed by sanding. Is not suitable for the application of parquet varnishes. Medium-lasting wood.

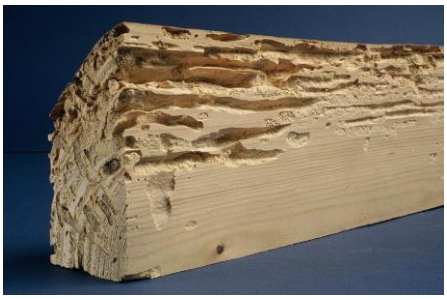
Insects wood attacks

- Capricorn (Long-horn beetle)

If the adult Capricorn proves harmless to our homes, its larvae are on the contrary true consuming of wood. Can live from 3 to 10 years **in the larval state, its main activity is to dig galleries** with the help of its powerful mandibles.

Adult insect
Length: 10 to 20 mm
Color: Dark brown to Black
Oval exit holes: 4 à 7 mm

- Up to 25 mm long
- Active for several years
- Difficult to detect
- Attack the coniferous woods (pines, spruce.)



Dry-rot in the shape of small kegs

Oval or irregular emergence openings of diameter 7 to 10 mm

Furniture and deathwatch beetle

Adult insect
Deathwatch beetle
Length: 6 to 11 mm
Color: Dark brown
Round exit holes: 4 mm
Furniture beetle
Length: 2,5 to 5 mm
Color: Brown + or- dark
Round exit holes: 2 to 3 mm

Attacked wood appearance
Sapwood of conifers and hardwoods (Wood infested with a cubic or fibrous rot fungus for Deathwatch beetles).
Circular Orifice 1 to 3 mm parallel to the wood thread (The insect comes to the surface to take flight)
Panel (Multiplex, ...)
Presence of finely granular uniform dry rot.

Lyctus beetle

Adult insect
Length: 2,5 to 6 mm
Color: Red brown
Circular exit holes: 1 to 2 mm

Attacked wood appearance
Hardwood only.
Circular section galleries parallel to the wood thread.
Presence of fine uniform dry-rot

Wood attacks by mushrooms

- Blue stain fungi

The discolorations of softwoods and some deciduous species, felled or implemented, are due to the invasion of wood by inhabiting fungi. The best known are those that give the wood a more or less intense blue color: **they are thus designated as bluing agents of wood.**

There is no destruction of wood, but only a coloring.

- **Origin and cause:**

Primary bluing: it is usually the sapwood of sawing and newly sawn timber that are attacked (Pine, sometimes also fir, spruce and larch as well as some exotic woods such as the koto, for example). Secondary bluing: Untreated wood or weather-exposed varnish (garage doors, doors, facade coverings, indoor pools, ice rinks, etc.).

- **Economic importance:**

The origin of the primary bluing on freshly sawn lumber and sawn timber can result in heavy losses in sawmills, because blue lots are hard to sell. The damage caused by the secondary bluing is rather of an aesthetic than physical nature.

www.xylophene.fr

- Lacrymans Serpula dry-rot fungus

Lacrymans Serpula is a highly destructive fungus that attacks softwood lumber with excessive or accidental moisture. It develops by feeding on the cellulose of the wood which will turn into dust. It

develops its rhizomorphs through masonry, aspiring water and causing very important damage by destroying mortar or natural stones.


- The mold

Classification: Other mushrooms
Features: Only lives on the surface of the wood, without penetrating into the mass. Often gives an appearance of cotton or fluff.
Development conditions:

- Temperature: 24 to 28 °C.
- Wood moisture: 30 to 150 %.
- Growth is favored by moist and stagnant air.

Wood destruction:
There is no destruction of wood, only a coloring that can be black, yellow, red or green.
Origin and cause:
Attack the freshly sawn wood, but also dried wood in poorly ventilated and often heated new constructions.

Wood and sustainable development

The wood is sustainable, it is constantly regenerating and participates in the uptake of the molecules of CO2. However, the wood is durable only to the extent that it is replanted. Excessive exploitation of exotic species has weakened biotopes, soils, local populations and economies of the southern countries.

It is preferable to consume native wood or labeled FSC. Some exotic woods, often wanted because more solid or rot-proof are developed durably without being labeled, this is the case of bamboo.

- **For a durable wood purchase, the rules are as follows :**
  - Ask for a local wood species
  - Request untreated wood
  - Ask for treated wood without harmful products
  - Apply for certified wood
- **FSC Certification " Forest Stewardship Council "**

The (FSC), or Forest Stewardship Council, is an independent non-governmental organization that works to promote sustainable forest management at the global level.

Source : http://www.massoz.be/menus/certification.html, pages consultées en 2008

Sustainable forest management is a way of managing forests that considers the protection of the environment, it has a social dimension and is economically profitable. The FSC was created in 1993 by representatives from all concerned sectors: forest owners, commercial wood sector, social movements and organizations for nature conservation.

- It preserves the environment
- It respects the social rights of local communities and forest workers
- It is economically viable

Wood defects

Standing timber		
DEFECT	**DESCRIPTION**	**CAUSES**
Winter injury	Slit pointing from the bark to the heart; The walls of the crevices are smooth and blackish	Influence of jelly separating tissues according to medullary rays

Cadranure	Large, radiant crevices going by slimming from the heart to the bark	Tree decline due to old age
Roulure	Separation of two annual layers leaving an empty space between them.	Violent wind tending to twist or subdue the tree to frequent and exaggerated inflections; Complication of winter injury. Thawing warming and dilating the outer part of the trunk more quickly
Double sapwood	Clearer, sapwood-like circular layer located in the perfect wood	Rigorous cold and lack of nutrition of the layer that can turn into perfect wood
Burr knot	Irregularly shaped growth and bristling of roughness that occurs on the stump or trunk	Many adventitious buds that could not develop normally, welded and lignified
Burr	Woody growth of globose form with smooth surface that occurs on the trunk or on a branch	Healed wound, insect sting that caused an excitation of the cambium
Fiber twist	Sinuous fiber describing irregular propellers more or less inclined in relation to the trunk direction	Wind action on strong antlers Physiological
Wood decay	Disease modifying the composition of the wood and which is manifested by a change of color and consistency that can go as far as complete disaggregation	Circulation defect and fermentation. Parasitic fungi and microbes
Caducity	Disease common to old trees, characterized by a slowing of vegetation and visible to the thinning crown.	Old age

Metals

Materials	Alloys	Oxidation	Density	Recycling/Recovering
Iron, Steel		Yes: rust	7.9	Easy
Copper		Yes: Grey Green	8.9	Easy
Aluminum		Yes: Alumina	2,7	Easy
Lead		Yes		Easy but polluting
Silver		Yes	10.5	Easy
Gold		?	19.3	Easy
Bronze	60% copper + 40% tin	Yes		Easy
Tin		?		Easy
Brass	Copper + zinc	Yes		Easy

Zinc		Yes	7.1	Easy
Cast Iron	94% steel + 6% carbon	Yes		Easy
Stainless	Steel + carbon + chrome + nickel	No		Easy
Nickel		No		Easy
Mercury		?		**
Titanium		No		Easy
Cadmium		Good resistance to oxidation		Polluting
Chrome		No		Easy
Nickel silver	62% copper + 20% zinc + 18% nickel	Yes		Pretty easy
Ferrite	Iron oxide molding + zinc + nickel carbonate + ...	?		Easy

*Liquid at room temperature!

**Difficult because very toxic and polluting!

Steel and Iron:

When a small amount of carbon is added to the iron, steel is obtained (1% Carbon) or cast iron (from of 2% to 7%of carbon). If we add too much carbon, the alloy becomes brittle and therefore not usable. Steel is much stronger than pure iron.

- Surface treatment of metals

The surface treatment of metals allows:

- To protect against oxidation and corrosion
- To change the appearance and beautify their surface

Galvanic processes (Electrolysis)

- Chromium plating: white-silver with slight bluish shade nickel plating: white-silver with slight yellowish shade
- Copper plating: Red-brown to brown
- Tin plating: silver, yellowish
- Silvering: Gilding:
- Zinc plating: Silver, lower grey, toxic

Spray plating

Veneer: The tin is a sheet of steel coated by rolling a thin sheet of pewter.

Enameling: coating of the same nature as glass, applied by baking. Glazed materials are easy to clean and resistant to corrosion. They resist shocks and chip.

Hard anodizing: Anodic oxidation. It is only suitable for alu and alloys

Lamination: Coating of a layer of synthetic material that protects from rust, pleasant touch, soundproofing features.

Paint: Spray or immersion

Burnishing: Chemical pathway to protect against rust. Surface treatment only by stainless steel. The amount reached is measured in microns.

Metal recognition thanks to their color

Only gold and copper can be clearly distinguished from other: Gold thanks to its yellow color, and copper thanks to its orange-red color.

The other metals, when stripped, all have a more or less pronounced grey color and can hardly be identified from their color.

Attraction of metals by a magnet

The magnet only attracts metals of **Iron**. Metals other than iron are not susceptible to magnetic magnet attraction.

Nickel and **Cobalt** are also attracted by a magnet

This test is also positive for **alloys containing iron**, as **Steel** and Cast **Iron**

Recognize Metals through their Density

Definition: The density of a body

The density of a solid or liquid body corresponds to the ratio of its mass by the mass of the same volume of water.

Reminder: 1 L of pure water (1 dm3) weighs 1 kg. Therefore, water density is 1.

Example:

A body with a volume equal to DM 10^3 Has a mass m_1 of 50 kg, while the same volume of water (DM 10_3) has a mass m_2 of 10 kg.

The density of this body is : $d = \frac{m1}{m2} = \frac{50}{10} = 5$

Since the density is defined as a relationship between two masses, it does **not have a unit**.

Textile

Most textile products are manufactured in the Third World, and especially in Asia. Some of the materials used are among the most polluting. Cotton cultivation, for example, uses 28% of global pesticides, while it does not represent more than 2.5% of cultivated land. In addition, the working conditions and wages of basic workers in this sector are often among the most deplorable, especially in view of the significant profits made by intermediaries and brands.
Fashion has a responsibility in the main social and environmental issues. In Europe and Canada, creators have become aware of these issues and propose creations that are more respectful of man and the environment. (Misericordia, les baskets Veja, Ideo)

Distribution of the price of a garment

Raw materials and supplies	8% to 14%
Workforce	5% to 14%
Miscellaneous charges	2% to 3%

Margin manufacturers	15% to 17%
Store margin	55% to 67%

In the large distribution the established margin is currently 2.1

IV. Cleaning

Products and cleaning tools

Before use see product sheet (chemicals)

tools	Products*	chemicals**
Wool rag	White vinegar	Polish
Microfiber rag	Baking soda	Bleach
Brush	Soda Crystals	Cleaner
Sponge (not abrasive)	Household alcohol	Disinfectant
Squeegee blade	Water Demineralize	
	Flax oil	
	Marseille soap	
	Black Cleaning Soap	
	La terre de Sommières	

**Natural-based products, and 100% biodegradable.*

Cleaning techniques

Before cleaning a set, it is necessary to determine the nature of the constituent materials this set (and under Set) each material (Plastic, metal, wood etc.) must be treated with the appropriate product and tools, in order not to alter the state of the object (Stripes, loss of varnishing, discoloration etc.)

- Cleaning of varnished wood furniture

A. Avoid:
   - Abrasive sponge
   - No powder
   - Bleach or other acidic products

B. Technique:
- Always proceed by dabbing.

C. Regular maintenance:
- Wet microfiber cloth moistened with liquid for dishes (well wrung)

D. Little dirty:
- Preparation (Vinegar/oil) : Mix ¾ of oil with ¼ of vinegar
  Or
- Preparation (Tea): Porter To boil 1 liter of water and add 3 sachets of tea (ordinary), let brew and polish with a soft cloth.
  The preparation should be used cold.

E. Very dirty
- To clean and revive your varnished wood, prepare a mixture **essence of turpentine** and **of flax oil** (Equal quantity).

Cleaning of raw wood furniture

Raw wood, white wood or natural wood is a wood that has not been varnished, painted, waxed or oiled.

F. Maintenance
- Using a Brush impregnated with a bit of grated Marseille soap or in diluted shavings in lukewarm water. Rinse and wipe.
  or
- **Clean** the **White Wood** or in **Raw Wood** Rubbing them with a brush soaked in black soap diluted in hot water.

Cleaning/disinfecting Plastic toys

G. Cleaning/disinfection

Rigid plastic toy not containing electronic component: you can place it in the top rack of the dishwasher, on a high temperature cycle. It is also possible to boil it in a saucepan. It will be cleaned and disinfected.

Plastic toy containing electronic component: Using a clean sponge and a classic dishwashing liquid diluted in hot water and rinse thoroughly with clear water. In a second step, the surface of the toy must be wiped with a disinfectant solution, having verified beforehand that it contains no health-damaging elements.

Fabric dolls, plushies and blankets are usually machine washable. Before you **Clean these toys**, be sure to read the manufacturer's recommendations listed on the label. In order not to damage them when they move to the washing machine and dryer, place the toys in a laundry net or in a pillowcase. In

addition, the choice of hypoallergenic detergent is recommended, and it is also possible to add a laundry disinfectant, which will eliminate more bacteria.

Source : www.laviefacile-enfant.com

- Cleaning Brass Objects

A. Soapy water

Clean a brass object with soapy water, then rinse. Dry and polish with microfiber rag

B. Toothpaste

Pour a little toothpaste on a rag, apply on the **brass object, rub** gently, rinse and then polish with microfiber rag.

For very dirty brass objects:

C. Soda Crystals

Clean the brass by rubbing it with a rag soaked in water with soda crystals (1/2 laundry glass per liter of hot water)

D. Black Soap

Clean the brass with a solution composed of 1 liter of water, 2-3 tablespoons of black soap.

Strengthen if necessary is the action of the solution by a spoonful of bicarbonate diluted in hot water.

- Cleaning Copper objects

Using a mixture of water and soap

Mix vinegar with flour and coarse salt in a more or less equal proportion but it takes a little half a cup of the mixture is enough, it costs nothing.

Source : http://www.toutpratique.com

E. Clean or scrape copper even very old and covered with grey green

Vinegar, flour and coarse salt

Mix the three ingredients to obtain a liquid dough that can be easily spread from the fingertips without rubbing hard. Then just rinse with water.

Source : http://www.toutpratique.com

- Cleaning Steel Objects

Clean the stainless steel with a cloth soaked in soapy water and dry immediately. If there are still marks, add a drop of oil to the soapy water and a drop of vinegar

- Cleaning of silver objects (silverware)

F. Alcohol and water

Clean the silver with a rag moistened with an equal mix of mineral water and household alcohol.

Rinse under water, then dry with a rag, and polish with microfiber cloth

- Cleaning of stainless steel objects

G. Household alcohol

If ever the stainless steel of a furniture, fridge, cooker or sink is dull, use a soft damp cloth impregnated with a few drops of household alcohol.

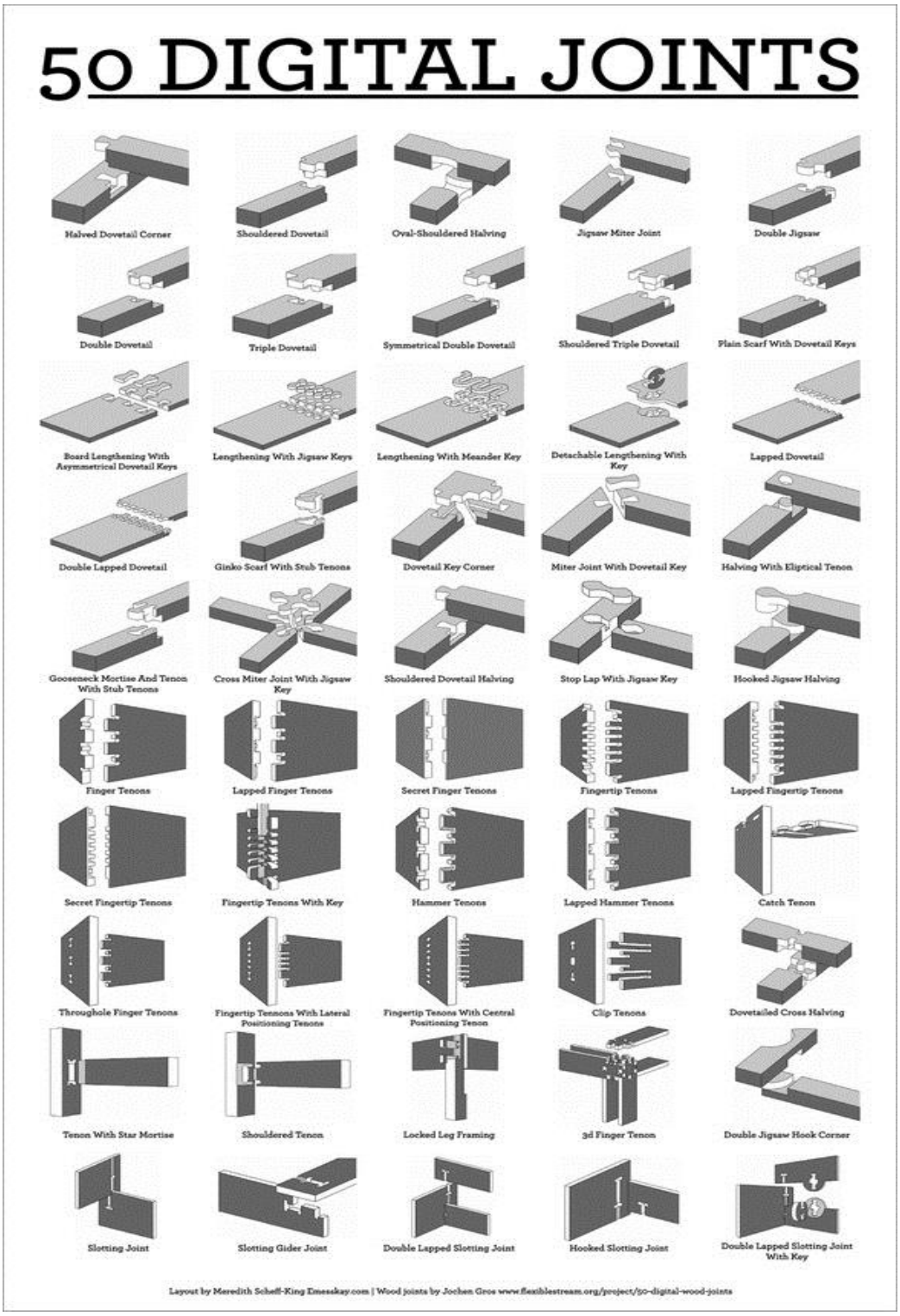
Source : http://www.toutpratique.com

V. Repair

Tools and specifications

Machine	**Hardware**	Staples for wood
Drill/Screwer	Hammer	Wood Chisel
Sander	Screwdriver	Wood Glue
Jigsaw	Allen key	Welding machine
Circular Saw	Ruler	Multimeter
Grinder	Abrasive paper	Paint
		Brushes
		Wood dowel (pin)
		Carpeting Nails

List of the most common assembly systems.



Source : pinterest

Repairing metal Objects

1. Visual examination of the object

When an object is deposited, it is necessary to make a first visual examination, in order to try to determine quickly whether it is worthwhile to be taken over, what costs would be expected, if it can be resold with profit.

- Textile condition (Blow, tear, fold, walls delamination, condition of welds, …)
- Paint condition (Claws, deep traces, scales, overlays of paints, …)
- Condition of fasteners, rivets, welds, …
- Corrosion problem (rust, oxidation)
- Hinges, locks, latches condition
- Interior accessories condition (Separation plates, etc.) and possible external (rollers,…)

2. Proposal preparation

The purpose of this estimate will be to establish the cost of reclamation of the object, if it is necessary and to what extent should work be initiated to make the object marketable again.

- Time needed for work
- Cost of screwings, accessories, welding work, …
- Cost of paints and primers
- Cost of any parts for restoration

3. Disassembly

The object is likely to have to be reassembled as is, in whole or in part. It is therefore necessary to check how it was built to disassemble it without box.

All parts which must be dismantled and (possibly) reassembled must be marked. Several methods exist. The most common is the one that uses numbers and locations (Ex. No. 1 on the right).

Do not forget to prepare a box or a bag to collect the spare parts without losing them.

Several assembly methods can even coexist (the most common):

- Welding
- Hardware (metal screws or bolts and nuts)
- Riveting (pop rivet or hot/cold rivet)
- Metal Clips

- Each method to its dismantling technique :

A. Welding:

- Grind Welding Point
- Use a metal chisel to break the weld
- Grind remaining weld traces

B. Hardware:

Screws: It is advisable to choose the screwdriver with the correct imprint to unscrew/screw without damaging the head. In case of damaged screw head, there are special tools to extract them (damaged screw extractor of several impacts), although the use of a piece of wide elastic, placed on the head of the screw, allows the screwdriver to return to better support. Another technique is to cut the screw head with a metal blade or a small grinding disc, to use a flat screwdriver.

Bolt and nut: Use a flat wrench appropriate to the diameter of the bolt head and nut, or a so-called tube wrench and a flat wrench. By default, a monkey wrench (adjustable wrench in size), Often the bolt does not loosen because it is corroded. In that case, it is necessary to spray a lubricating/greasing product which will partially dissolve the rust and allow the nut to be rotated around the bolt. You can also use the heat to dilate the net and then unscrew the two parts *(caution, it should be ensured that nothing can ignite by using this technique).* If the assembly resists, particularly because it was too tight, a hammer stroke on the nut (or on the wrench holding the nut) can be used to offset the whole.

C. Riveting:

- By piercing the rivet head to the drill with a drill with a diameter equal to or slightly less than the diameter of the rivet body: it is a matter of crossing the riveting;
- By piercing the head of the rivet with a drill with a diameter significantly greater than the diameter of the rivet body: the aim is then to cut the head;
- By sawing or by grinding the head of the rivet;
- By cutting the head of the rivet with a metal chisel and a hammer, if the material is sufficiently tender (aluminum or stainless).

Then the rivet body, which it is enough to remove, pushing it with the drill, a rod or a pin-chaser, or even by hand. The danger of drilling methods is essentially to enlarge the hole of the rivet, and the disadvantage of other methods is to damage the surface of the first riveted piece.

D. Metal Clips:

- If it is possible to tighten the part that makes "spring" with a clamp, then to remove the clips by pulling on it using a pliers (or levering with a flat screwdriver).
- If it is not possible to reach it. In this case, a flat screwdriver blade should be slid under the head and leverage; If nothing works, it is necessary to grind the head of the clips, which will then fall.

- 4.Reassembly

If possible, reverse the dismantling, keeping the same mounting systems. Failing that, a more convenient system can be considered (A pop rivet instead of a clip, for example.)

The metal parts must be straightened if necessary, without any traces of corrosion.

Any locks are checked and if necessary lightly oiled (fine oil for sewing machine or spray), as well as hinges and other closing systems.

If interventions had to be made to the metal parts, it should be ensured that the reassembled parts will be accessible to anti-corrosive treatment or post-reassembling paint.

If not, coat with a rust-proof or anti-oxidation product (aluminum parts in particular) before reassembly (keeping in mind that if parts are to be welded again, the metal must be bare. It will then be protected).

If the condition of the paint on the sheet metal requires, it will be necessary to consider:

- First a sanding (see what grain to use) to sandpaper for metal
- Possibly, stripping with a product provided for this purpose (must be done in a well ventilated room or outdoor)
- Then, if necessary, provide a body-type coating to equalize the surfaces
- Then apply a rust-proof product
- Finally apply a coat of paint

The drying between two applications must be respected, just like a light sanding to enhance second coat of paint retention.

Check whether a small body work should not be considered: if there are blows, dents in metal panels, It will probably straighten them (unless they can be masked by a type coating used by coachbuilders).

In case of "tip" in the sheet, it is possible to make it fit by hitting on the protruding point to the round hammer while holding a mallet behind, then chewing and coating

- 5. The different methods of reassembly (reconstruction) :

- □ Riveting (cold or hot – more tricky) :
- □ Riveting by "Pop rivet"
- □ Welding
- □ Screwing (metal screw or bolt and nut)
- □ "Clipping"

E. Cold riveting

It is the traditional rivet mounted cold or hot according to its size. It can be of mild steel, copper, aluminum, duralumin or alloy with sufficient plasticity. The chosen metal depends on the expected resistance but also on the materials to be assembled. Its head can be round, flat or countersunk (82°, 90, 120° but more generally 100°). Its length is adjusted to the thickness of the assembly: too short the assembly will be impossible and too long, the dimension of the head protruding from the assembly weakens it.

Two major types exist: Solid rivets and semi-drilled rivets. The latter underwent an additional step in the manufacture with the creation of a more or less deep cylindrical hole on the opposite side to the head. The crimping is then by turning the wall on itself by forming a snap. Typical use: folding chairs.

There are also plastic rivets, the riveting usually being hot practically without pressure.

F. Hot riveting

General: Hot riveting, the first generalized method of assembly in metal construction, is no longer used for the rehabilitation of old works. It is nevertheless an excellent assembly technique, the only flaw of which is ultimately its heavier implementation

G. Riveting by "pop rivet"

A real revolution in riveting was achieved by the appearance of the "blind rivet" (or "pop rivet", which is a registered trademark) which no longer requires double access to riveted parts (a counter-rivet set and a rivet set on which one strikes to crush the rivet). This rivet consists of a hollow body (tube with flange) in deformable alloy and a rod with one end swollen: nail. The head can be round, countersunk or wide to better distribute the tightening effort. It is installed with a riveting pliers, which pulls on the rod whose swollen tip penetrates the body of the rivet to achieve the riveting. When the locking occurs, the rod will break automatically leaving the rivet in place. The nail breaks because of a decrease of the diameter made under its head during its manufacture. This breaking point is important because the clamping force will depend on the force necessary to break the nail.

H. Welding

Welding or molecular union.

Welding is a permanent means of assembly designed to create continuity of the nature of the assembled materials: metals and plastics including.

The welding allows the permanent assembly by merging the edges of the parts to be assembled and avoids the inflows of parts and products of union such as rivets, staples, bolts.

The filler metal is identical to that of the parts to be welded. When the filler metal is different from the parts to be welded or the two parts are of different metals, we talk about **braze-welding**, but the technique remains the same.

That is why, unlike soldering, welding first requires a merging of the ends of the parts to be assembled before assembling them into a single coherent set.

This melting of the material requires a more or less important elevation of the temperature according to the materials to be welded.

Which materials can be welded?

We distinguish mainly:

- Aluminum welding
- Copper Welding,
- Steel welding,
- Stainless Steel welding,
- Zinc welding,
- Cast iron welding,
- Gold Welding,
- Plastic welding.

Welding machine

The welding machine is called **welding machine** and consists in the principle of a device capable of bringing a high temperature rise controlled at a precise point of the materials to be welded.

According to the method for raising the melting temperature of the materials to be welded, we distinguish:

Flame welding using:

- Welding lamp
- Acetylene oxygen torch
- Gas welding station

Heating Iron welding:

- Soldering iron
- Welding station

Electric arc welding:

- Arc welding machine
- MIG-MAG welding machine
- TIG welding machine

- The energy of Welding

The energy to be used for welding will depend mainly on the melting point of the material to be welded.

For low melting materials, flame welding or heated electric iron will achieve the desired temperature, but for high temperature materials from the melting point, only electricity can obtain the adequate temperature.

Electricity-powered welding is divided between:

- Laser welding ;
- Ultrasound welding ;
- Electric arc welding according to various methods :
- Point Welding,
- Coated electrode welding,
- Semi-automatic welding,
- MIG welding,
- TIG welding,
- Plasma welding,
- Resistance welding.

- Welding methods :

Whether welding aluminum, copper, steel, inox, zinc, gold, cast iron or plastic, each metal requires a welding mode according to its structure and according to the thickness of the parts to be welded.

I. Aluminium welding

- Braze

Aluminium		
Braze	MMA welding	MIG-MAG welding
Recommended	Impossible	MIG only

Recommended: Aluminum braze to the welding lamp (450° - 500 °C)

Using **Zinc Chloride** Powder used as a stripper and use of aluminum rods as a filler metal.

- Welding

Alternating current (AC).

Aluminum welding and its alloys: To TIG Pure Argon			
Thickness to be welded (mm)	Welding current intensity (A)	Diameter of the intake wand (mm)	Protection gas flow (L/min)
0.8	35	Sans ou 1.5	6
1	45	1.5	7
1.5	70	2	7
3	125	3	7

Possible: Aluminum welding to MIG :

Possible using argon which allows to achieve a smooth and stable metal transfer, but in a less resistant way than with the mixtures of argon and helium in terms of penetration intensity and protection against porosity due to hydrogen.

Helium-argon mixtures containing 30% to 70% helium are usable.

The most used mixture contains 50% argon and 50% helium (I3).

Pure helium is not suitable for aluminum welding due to very uneven thick drops and the transfer of metal carried by the background current.

J. Copper welding

Copper welding		
Braze	MMA welding	MIG-MAG welding
Recommended	Impossible	MIG only

- **Braze:**

Possible: Smooth braze to the tin using a welding lamp (90°- 450 °C).

Recommended: Strong braze (braze-welding) to copper or oxygen-acetylene torch agent (875 °C).

- **Welding**

Copper welding and its alloys: to TIG on pure Argon		
Current: Continuous in direct polarity (electrode = pole-)		
Thickness to be welded (mm)	Welding current intensity (A)	Diameter of the welding rod (mm)
80A per mm thick welding metal		1,6 mm ≤ 160 A

	2,4 mm ≤ 240 A 3,2 mm ≤ 320 A

Possible: Aluminum welding to MIG.

Using pure argon exclusively that allows to achieve a smooth and stable metal transfer and as a wire a DIN 1733 wire (coppers and copper alloys).

K. Steel welding

Steel welding		
Braze	MMA Welding	MIG-MAG Welding
Impossible	Recommended	MAG only

Recommended: Welding steel with MMA coated electrode. Welded steel and its alloys to the coated electrode

Current: Reverse polarity continuous (electrode = + pole)		
Thickness to be welded (mm)	Welding current intensity (A)	Electrode diameter
1,5 2 et 3 2 à 5 3 à 10 5 et +	40 à 60 60 à 70 80 à 100 100 à 130 130 à 160	1,6 2 2,5 3,2 4

Recommended: Welding Steel MAG

MAG welding of steels is done under mixture of argon and carbon dioxide and/or oxygen (O2).

The content of carbon dioxide and/or oxygen depends on the soldering steel (alloyed or unalloyed), the filler material (solid wire or cored wire) and the welding conditions.

To weld a carbon steel, a gas mixture must be used with at least 8% carbon dioxide. Argon gas + 20% carbon dioxide is used to weld in MAG the grades of carbon-manganese steel.

Recommended: Welding Steel TIG

Pre-gas and post-gas settings: 8 seconds at 50 A - 10 seconds at 100 A - 15 seconds at 200 A – 25 seconds at 250 A

Welding steel and its alloys in TIG		
Current: Continuous in direct polarity (electrode = pole-)		
Thickness to be welded (mm)	Welding current intensity (A)	Diameter of welding rod
0.7 1.2 1.5 2	60 100 120 130	-- -- 1.5 1.5

L. Stainless Steel Welding

Stainless-Steel Welding		
Braze	MMA Welding	MIG-MAG Welding
Not recommended	Recommended	Not recommended

Recommended: The stainless-steel welding with the MMA coated electrode.

Stainless steel welding with coated electrode

Current: Reverse polarity continuous (electrode = + pole)		
Thickness to be welded (mm)	Welding current intensity (A)	Electrode diameter
1,5 et +	80 à 100	1,5

Recommended: Welding Stainless Steel TIG

Pre-gas et post-gas settings: 8 Seconds to 50 A - 10 seconds to 100 A - 15 seconds to 200 A 25 seconds to 250 A.

Stainless steel welding in pure argon

Current: Continuous in direct polarity (electrode = pole-)			
Thickness to be welded (mm)	Welding current intensity (A)	Diameter of welding rod	Type of electrode
0.6 0.8 1 1.5 2 3	25 40 70 90 100 125	-- -- 1 1.5 1.5 2	Tungsten thoriated or ceriated

M. Zinc welding

Zinc Welding		
Cold welding	Braze	MIG-MAG et TIG arc welding
Possible	Recommended	Not recommended

Recommended: Zinc cold Welding.

Use the solder paste after etching with hydrochloric acid and light sanding with emery cloth.

Recommended: brazing zinc using a welding lamp equipped with an iron or a soldering iron.

After stripping of the area to be welded using the specific stripper for zinc (if zinc is old first pass a little hydrochloric acid to the brush) then roughening to fine sandpaper, to tin as filler metal.

N. Cast iron soldering:

	Welding and cast iron Laminated cast iron welding	Spheroidal cast iron welding
Cold welding	Possible	Possible
Braze	Recommended	Possible
MMA	Impossible	Recommended

MIG-MAG	Impossible	Recommended
TIG	Impossible	Impossible

Possible: Cast iron cold welding

Use the solder paste after etching with hydrochloric acid and light sanding with emery cloth.

Recommended: Soldering of lamellar cast iron:

Moderate heating to the soldering lamp beyond 450 °c, but not to exceed 600 °c and without creating hot spots but by heating around the areas of the weld.

Pay attention to the cooling which must be as slow as possible.

Recommended: Soldering of the cast iron to the coated electrode (MMA) :

It is advisable to heat the outlines of the welding areas a little and to compress the soldering cord to the jackhammer before it cools to improve penetration.

Pay attention to the cooling that must be as slow as possible.

Spheroidal cast iron welding with coated electrode (MMA)

Current: Continuous in reverse polarity (electrode = pole +) or alternating current		
Thickness to be welded (mm)	Welding current intensity (A)	Electrode diameter
30 to 40 a per mm electrode diameter	Follow the instructions: The length of the soldering cord must be less than à 10 times the diameter of the electrode. The width of the cord must be not more than 2 times the diameter of the electrode.	

Recommended: Solder cast iron to MAG :

It is advisable to heat the outlines of the welding areas a little and to compress the soldering cord to the jackhammer before it cools to improve penetration.

Pay attention to the cooling that must be as slow as possible. Welded cast iron spheroidal to MAG under Argon + 2.5% carbon dioxide

Current: Continuous in direct polarity (electrode = pole-)		
Thickness to be welded (mm)	Welding current intensity (A)	Diameter of the welding rod (mm)
80A per mm thick metal solder		1,6 mm ≤ 160 A 2,4 mm ≤ 240 A 3,2 mm ≤ 320 A

Repair of wooden objects

- Seal a hole or crack on a wooden furniture

Hands protected by household gloves **fill** the **hole** with wood **dough** either with the finger if **the hole** is small or using a spatula or a knife to be smeared if the notch is more important.

Let dry and sand with abrasive paper to smooth and remove the surplus.

Then apply paint if it is a **furniture** or a **painted parquet, wax** if it's a **waxed furniture,** stained **varnish** if it's a varnished piece of furniture or hide the **repair** depending on the **wood** quality.

- Hide a repair or scratch on mahogany wood

Pass on **scratch or repair** on wood either a wax pencil or a pencil for makeup or restore with a coating, then cover with polish... of the same color of the wood.

- Hide a scratch on oak wood

Use on **scratches** a cotton swab impregnated with a cream-colored wax.

- Hide a scratch on walnut wood

Use on the **scratches** either a wax pencil or a pencil for makeup or waxing... of the same color of the wood. Or use on the **scratch** or the **repair** A rag soaked in walnut husk.

- Hide a stripe on the birch

If the scratch is light, apply a damp cloth and then pass an iron.

If it is a **repair** or a scratch rub gently with circular movements using a soft cloth soaked in car polish.

Let dry.

Use a microfiber cloth to wipe.

Or, use a cotton swab impregnated with a wax of the same color.

- Hide a scratch on pine wood

Use on the **scratches** a rag impregnated with a cream or white wax, depending on the color of the wood.

- Hide a scratch on the teak

Repair **scratches** on **teak** by using sandpaper and then coating flax oil mixed with turpentine.

- Soften a scratch on the varnished wood

Use gently on the s**cratch** a cotton swab soaked with a bit of solvent then use a cotton swab soaked in alcohol at 90 °.

Let dry.

Then rub gently **the wood** using a soft rag.

If a trace remains, apply another cotton swab soaked in a mixture of turpentine and a little bit of olive oil.

Source :http://www.toutpratique.com/5-La-maison/229-Renover-un-meuble-en-bois/432-Reparer-le-bois-.php

VI. Sales

Customer's buying behavior:

It is all the ways of acting or reacting between the moment when the customer is aware of the need and the one when he makes the decision to buy a product spotted in an identified UC. The decision to purchase is explained by various factors: social class, family unit, needs, motivations, attitudes, lifestyle. The decision to purchase is influenced by many social, cultural (religion), psychological, personal (age, gender, profession...). The seller cannot control them but must analyze them to identify the customer's buying behavior, classify and qualify each indication obtained.

Why we buy: The individual will feel a need that will turn into motivations. The need can be classified according to the Pyramid of Maslow.

1. Physiological needs (drinking, eating)
2. Security
3. Membership (group integration)
4. Esteem (self-confidence)
5. accomplishment (self-realization)

Typology SONCAS

The objective of this method is to identify in your interlocutor what is the dominant side of his personality. In order to do this, it is necessary, through questions or selective listening, to identify in it the subject to which it is sensitive.

Security: No one who needs to be reassured, to be trusted, to have safe values

Pride: Looking for anything that can value it, essentially socially, has a brand image to maintain.
Novelty: Unwavering attraction for novelty and new technologies. Seeking to have what has just come out, curiosity.
Comfort: Ease, time saving, solidity... anything that can reassure him.
Money: Speaks in terms of profitability, value for money, fear of losing
Sympathy: Works with immediacy, confident, has no real logic in its purchase and favors the good relationship with the person facing it.

But the motivations of an individual are often altered by external elements :

- **Personality** (Dominant role of an individual in his or her usual social life) Social-economic characteristics (age, income)
- **Experience** (Product acquired by the potential consumption and which has resulted in satisfaction or dissatisfaction)
- **Culture** (Social, linguistic, cultural, artistic habits)
- **Contact Group** (Membership group of the individual)

Product characteristics

- **Technical characteristics:** They are specific to the product (dimensions, colors, power)
- **Commercial characteristics**: They are specific to the product and to the sales point (Sale price, terms of payment, warranty, after sales service, packaging, promotions)
- **Psychological characteristics:** They are specific to the product and to the brand and allow to give an image to the customer.

The 10 steps of the sale.

Not all steps are necessary. The order of intervention steps is however important.

Reception	This phase makes it possible to put the customer in confidence in order to promote comfort throughout the sale. It will allow to continue the maintenance in the ideal conditions. The first 20 seconds: Smile, clear voice, articulate, have a dynamic attitude and an assured approach, a welcoming word.

	Hello … I'll let you discover for yourself, I'm yours right away....
Search of needs	It allows to identify the needs, motives, mobiles of purchase and the brakes of the customer, they can be identified as the buying behavior. This phase will also allow to target the argument based on the information that the seller will collect. - Know your client - Listen (without cutting off) - Make proposals (between 2 alternatives) - Reply on customer's response - Ask open questions - Ask closed questions (more specific) What can I do for you? Looking for something in particular? Are you looking for this or that? If I understand well, you need …
Presentation of the products	It is a matter of presenting products that correspond to the needs of the customer. This presentation must be accompanied by arguing. - Find the right time, nor too soon (The customer no longer has the impression of having a choice), nor too late (weariness). - Present Max three products at a time. - **Show Your Enthusiasm** I have something very good, I am completely fan,... What do you think of this? This is excellent.
The argument	The argumentation will allow the customer to discover the advantages of the various products presented, which correspond to the identified needs and to the mobile purchase. **Valuing the need** Customer advantage, "think customer": Clear the customer benefit for each feature mentioned above. Evidence **Advice** - Customize the argument « so for you… » - Structuring the argument (first…) - Control the scope of the arguments by observation (non-verbal communication) - Reformulate accepted benefits by scoring a downtime after each benefit to make the customer say Yes (lock) - Limit your arguments to 3 or 4 to keep them to inflate the sale after a series of objections, or to close the sale to an agreement - Repeat it or the arguments that matters - Make a demonstration of the product if you feel the need - Show your comments to the customer (Documentation, sketches…) - Be enthusiastic

	- Talk to the present or immediate future rather than conditional - Avoid negative expressions, be enthusiastic "This is very important security … This product is excellent by that…Look, I myself have one it's indestructible…"
Enunciating price	It must be done as late as possible and obligatory after giving the benefits to the customer so that he can spot the price as an advantage It only costs … It costs so much to the unit and so much for the whole lot …
Answer to objections	This phase will help to reduce the customer's objections by using a technique that allows him to regain confidence in the product. Don't say NO or BUT Techniques: - Weakening: Minor objection with another major argument. - Diversion: Ask a question requiring the interlocutor to respond positively. -Compensation: Show that the advantages are greater than the disadvantages. - The erosion: trying to get the interlocutor to justify itself-dilatory method: Accept the objection and say that it will be treated later. - boomerang: Turning an objection into argument-testimonial: Referring to the experience of a third person - Isolate: "Is that the only thing that makes you think?" (History of raising all objections) (Price is high but) this is the best quality possible. If you buy something else, I can make you 10%. I can't lower the price, but I can deliver it quickly. Compared to what do you find this too expensive? Don't lose Your Enthusiasm
Closing of the sale	This is where we will get the customer's approval. The goal is to get a yes from the customer. Once the signal is established: Anticipation: Consider the customer as already possessor of the object. (You prefer to be delivered this morning or this afternoon?) Switch. Two Solutions
Additional sale	The seller must offer a complementary or additional product to the customer in order to increase the turnover of the store. I have something that goes very well with what you have... If you want, for maintenance, …
Products collection	This phase must allow the products to be safely cashed and to reassure the customer in his purchase. It's also when services are offered. « I'll wrap it up…,i'll complete the warranty… »
Taking leave	By leaving the customer, must have a good image of the store and the desire to return. This is the first step to loyalty. Put back the coat, umbrella, hold the door, greet, possibly inform or present a last product, only for info.

	See you soon... Thank you for visiting …

Run a cash register

The cash register contains entries and cash outs in a business. It is the financial journal establishes every day, it contains the description of the objects sold, the seller in store, discounts, … The total of the day must amount to the sum of the prices of the items sold (Less the possible expenses).

The information that must appear on the cashier's book:

Date	
Seller	
Cash Fund (start of the day)	In cash

Time Purchase	Name	Qty	Unit Price	Discount (%)	Total	Payment Mode

Total of the day	BC :	CC :	Cash :
Cash fund (end of day)	In cash		

Concept of Display

The goal of the display is to attract the attention of the consumer. A pedestrian moves at the average speed of one meter per second. In front of a display of three meters, he has the possibility to see it for 3 seconds.

- **Attract customer:** Catching his attention, stopping or slowing him.
- **Direct his choice:** Guide the customer's look to what you want to sell.
- **Try the customer:** To be retained by customary advice, special offers, …

We'll think about the layout inside the store.

Where should the cash register be located, privileged domain of the seller? How to arrange the different sort of object? Some by their size and value have their place here while others by selling boards they will require have their place there. How to place shelves? How will they direct the customer in his wandering? Should we focus on closed or open shelves? Where to place the podiums?

- **Exercise:** Draw a resourcing, you have a flat space of 500m ^{2}, how do you organize it?

- **Principles:**

- **Motion:** Motion draws attention. Placing an inanimate object dynamically, a drape on a dummy, attracts attention.
- **Spaces:** Each object must have its own space and all the space should be used to the maximum. It is about giving the idea of abundance without saturating the space for as much. Keep more space for the products you want to sell. Anticipate stumbling points but also release points for the eyes of the consumer. Mirrors can be used to enlarge the space.
- **Simplicity:** A display too complex weary or discarded, stay simple in your decoration without adding too much extravagance. The decor must be pleasant, sober and without superfluous.
- **Color:** Colors must match. Observe the color associations, learn about the colors in the spotlight in the fashion catalogs. Lighting with incandescent lights yellows products. Natural lighting is always better.
- **Novelty:** Put it in sight. Customer is always tempted by new products.
- **Packaging:** Some products sell better packaged. This is the case of textiles or lint
- **Information:** Give the maximum information about the products, Suggest use Ideas.
- **Price:** The price must be of a good size, Information without obscuring the product. The size of the reduction must be more important than that of the price.

A product purchased It's a waste avoided

- The sale of goods in a resourcing :
  - **The sale generates a turnover entirely injected in the operation of the structure.**
    "No structure lives only on its sales"
  - **The sale allows the reduction of waste.**
    « A product purchased in a resourcing = 1 waste avoided »
  - **A Sales space = awareness space**
    « A client in a resourcing business = 1 sensitized person »

Source : http://www.laressourceriedelile.com/#la-boutique-de-reze

Exercise: Setting a price

IKEA Table in good condition.

Formica table

Singer Sewing Machine

Dresser Louis XV, in good condition

The right price is mainly to avoid subjectivity

Consider:

- Condition, wear level
- Matter
- Season
- Value (Internet search) / Market price
- Time spent
- Catchment area
- Audience
- Management of the flow... and the price policy of the structure!

Methodology for setting a price

Set prices from the costs

- Sales price = Cost + Margin

Set prices from those of competition

- Price equal to the average market price aligned with the competition
- Higher price (if better quality justified for example)
- Lower price (risk)

Set prices from the request

- Psychological or acceptability price = the price level for which there will be the greatest number of potential consumers

Merchandising

The 5"r" rule :

- The right product (assortment concept)
- In the right place (linear, point of sale organization)
- At the right time (seasonality/opportunity, event)

Au bon prix

- With the right amount
- With the right information

The right price is interacting with the other criteria. The rules of merchandising should be applied and adapted to sell more, earn more... but also reduce more waste and raise public awareness.

Source : diaporama « vente » réseau national des ressourcerie.

VII. Co-Create

Eco-Design

Eco Design is a concept that exists only since the beginning of the years 2000 in France.

Eco design, ecological design, sustainable design or the responsible design is like a willingness to design products that respect the principles of sustainable development.

ECO design principles are respect for the environment, the use of durable raw materials and the setting up of a non-polluting method of manufacture.

Here are some examples:

- Cardboard: decorative objects but especially cardboard furniture.

- Bamboo: Furniture, tableware, table art
- Scrap and breakage: Eco design lights, furniture...

Eco designers reflect on product life cycle: from the beginning with its raw material until its end of life and therefore its possibilities of recycling and recovery.

In practice, the designer must verify that the proposed modification will not degrade other product characteristics.

(For example, the improvement of the "recyclability" of a product must be accompanied with an audit of the changes generated: is the product heavier ? Does it generate more waste? Are the functions of the product respected? Is quality not diminished? etc.

It is essential to avoid pollution movements or, at least, to arbitrate between these different sources of pollution in order to determine which one should be reduced in priority. The Eco design leads to a continuous improvement process.

More and more creators adopt cardboard which is one of the most malleable and robust materials at the same time. Thanks to the ingenuity of these creators, new furniture appears: unique and original furniture. Creators participate and contribute through their realization to sustainable development.

Bamboo from Asian countries is one of the most used renewable raw materials in decorating. It is a natural resource with multiple qualities: supple, resilient, fast growing.

It recycles a large amount of carbon dioxide further, it grows without pesticide or chemical fertilizers. Bamboo has become an indispensable material in the field of decoration: furniture, construction of housing, we find it also in the floors of our houses in the form of parquets. But the most popular decorating objects today are the bowls, bowls and bamboo platters. A new art of the table: lighter and contemporary.

Look critically at the design of the objects around you.

When you consider a design, try to identify what you like or dislike and think about what makes certain designs more qualitative and relevant than others.

For example, if you look at a graphic design, pay attention to how colors, lines, proportions, text and shapes make this design more or less enjoyable and to what extent the message supposed to be conveyed is clearly transmitted.

Egg armchair. Its name is easy to remember because it is just the shape of an egg. Arne Jacobsen drew it in 1958 for the Radisson Hotel in Copenhagen,

Source : http://www.notreloft.com/10771-grands-classiques-du-design/

Think of a design in order to satisfy a need or solve a problem. If it strives to embellish things, the design differs from other arts by its application to treat the practical aspect.

- A logo, for example, is a type of graphic design that allows a brand or company to be quickly identified.
- A garment is intended to cover the body while making the person wearing it more attractive.
- The design of the dashboard of a car is designed to facilitate the reading of the different indicators as well as to highlight the aesthetics of its interior.

Source : https://www.trendhunter.com/slideshow/peculiar-shelving-units

Look at the way things are done. When you work as a designer, you should not only take into account the aesthetics, but also the means to implement your design.

- Footwear stylists must consider all the technical aspects of the creation, whether to determine the points of assembly of the leather or even to choose the type of sole.
- For an object such as a cell phone shell, industrial designers must think about the type of plastic and the casting process that will have to be used, but also by assembling each of the components of the shell.

Source :decobio.over-blog.com/article-qu-est-ce-que-l-eco-design-67485427.html

Source : https://fr.wikihow.com/devenir-designer

Objects reuse