

Code	U19 L4
	Explanations
	The aim of this unit is to introduce students to the emergence of a new economy, namely the circular economy. The latter is based on the principle of keeping a product “alive” for as long as possible. This behaviour is still largely unknown in the construction sector and consequently in the field of painting. In this unit, we discuss the focal points of the circular economy that can be applied in the paint industry.

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QUALIFICATION TITLE	PAINTER AND VARNISHER		
UNIT TITLE	CIRCULAR ECONOMY		
LEARNING OUTCOMES	The painter, varnisher and decorator must be able to feed his knowledge in the field of circular economy and be able to apply it. This chapter is dedicated to the definition of circular economy.		
	KNOWLEDGE	SKILLS	ABILITIES
1. INTRODUCTION	1.1 The linear economy versus the circular economy.	1.1.1 S/he must know the definition of linear economy. 1.1.2 S/he must know the definition of circular economy. 1.1.3 S/he must know the reason for the urgency of change in our society. 1.1.4 S/he must know the notion of resilience.	S/he is able to explain that everyday products are made from natural resources, sold, used and then thrown away: - Natural resources decrease, pollution increases, climate changes. S/he is able to explain that circular economy tries to reuse, repair, renovate, recycle to extend the life of a product. S/he is able to argue the urgency of change: reducing pollution, improving health.

	<p>1.2 Circular economy in construction.</p>	<p>1.2.1 S/he must be aware of the environmental impact of the construction sector.</p> <p>1.2.2 S/he must be familiar with the term “up-cycling”.</p> <p>1.2.3 S/he must know the deposits of reusable materials.</p>	<p>S/he is able to analyse how waste is managed in her/his region/country and knows the recycling facilities.</p> <p>S/he understands the interest of waste reuse and keeps up to date with the possibilities in her/his sector of activity.</p> <p>S/he keeps up to date with the creation of reuse material deposits and tries to include them in her/his projects or to revalorise the waste from her/his worksites within them.</p>
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LEARNING OUTCOMES	By thinking and organising a building site based on the foundations of circular economy, the decorative painter will be able to fully participate in a responsible and ecological approach that respects both her/his health and her/his client's.		
	KNOWLEDGE	SKILLS	ABILITIES
2. APPLICATION ON SITE.	<p>2.1 Organisation of an eco-responsible work site.</p> <p>Types of paint and packaging.</p> <p>Type of protection.</p> <p>Tools.</p> <p>Evacuation of waste.</p> <p>Revaluation of materials.</p>	<p>2.1.1 S/he must know the steps involved in organising an eco-responsible work site.</p> <p>2.1.2 S/he must know the types of paints, coatings and old/contemporary techniques and present them to her/his clients.</p> <p>2.1.3 S/he must choose products that are locally manufactured, in an environmentally friendly way and which contain a minimum of 95% of natural components.</p> <p>2.1.4 S/he must give priority to products with packaging made from natural, recyclable or reusable materials.</p>	<p>S/he is able to organize a work site in an eco-responsible way.</p> <p>S/he is able to juggle with the different options of ecological techniques.</p> <p>S/he is able to analyse the origins of the products s/he uses on site and their packaging.</p> <p>S/he is able to choose quality tools (stainless steel, FSC* wood, natural bristles) and maintains them with ecological solutions (vegetable solvents, black soap...). Product scraps are collected and deposited in recycling points.</p>

		<p>2.1.5 S/he must give priority to quality tools and maintain her/his equipment with care in order to ensure its long life.</p> <p>2.1.6 S/he must know about reusable protections in order to ensure their long life.</p> <p>2.1.7 S/he must have a good knowledge of her/his client's needs in order to proceed with a grouped order and reduce the impact of displacements.</p> <p>2.1.8 S/he must favour green delivery services to carry her/his merchandise (cargo bike, hydrogen or electric transport).</p> <p>2.1.9 S/he must draw up a list of materials to be deconstructed and consider their second life.</p> <p>2.1.10 S/he must calculate the gain in CO2 emissions through her/his eco-responsible approach.</p>	<p>Favour Tornado** type tool cleaners...in order to save water...</p> <p>S/he is able to promote reusable protection on the work site.</p> <p>S/he is able to favour environmentally friendly transportation for both staff and goods. S/he manages her/his stock of materials responsibly to avoid waste.</p> <p>S/he is able to describe the materials on site and draw up a list of materials in 3 categories: reuse on site, reintegration into reuse channels, recycling.</p> <p>S/he is able to manage her/his CO2 impact.</p>
<p>FSC</p> 	<p>*FSC® stands for Forest Stewardship Council. FSC® has defined a standard that companies must comply with when processing FSC products. FSC® strives to implement responsible forest management worldwide. All companies in the trade chain, from the sawmill to the manufacturer of finished products, are able to isolate the flow of FSC® certified products from other products, both administratively and physically. FSC–certified end products such as garden furniture or paper reams usually carry the FSC label, either on the product itself or on its packaging. There are actually 3 different types of FSC labels depending on the composition of the FSC certified product: the FSC 100% label, the FSC Mixed label and the FSC Recycled label.</p>		
<p>Tornado tool cleaners</p>	<p>**TORNADO Plus V2" Roller Cleaner for fast and economical cleaning of all rollers (waterborne paints) by water pressure.</p>		

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<p>CIRCULAR ECONOMY / Reminder – Waste according to the main activities of the painter/decorator profession.</p>		

Activities	Types of waste
Setting up the site.	
Supply and stocks: products, equipment, oils and fuels.	Packaging: pallets, cardboards, plastic. Defective, expired or damaged products and materials.
Preparing the work.	
Demolition work.	Rubble, dust, wallpapers, floor covering.
Repair work (mortar, plaster).	Mortar, plaster, bricks, wood, glue.
Substrates preparation.	Rags. Used solvents (stripping, cleaning). Scraping waste (paint, rust, paint removers). Abrasives (sandpaper, used or soiled abrasives).
Paints preparation.	Packaging (pots, cans, drums). Soiled materials (container, filter, cloths, mixer). Used solvents (cleaning).
Covering work.	
Application of paints.	Dried, failed paints, residues, paint powders, pigments. Booth paint sludges, watery sludges, pots, drums. Soiled materials: covers, filters, marouflage papers, adhesive tapes, rollers, brushes, cloths. Rinsing, cleaning and stain remover solvents.
Application of flexible floor coverings (carpet, vinyl), walls (wallpaper, fibreglass) and ceilings.	Leftover covering. Cleaners and cloths. Glues, special products (levelers egalines) Packaging: cardboard boxes, pots, cans.
Putting back the site to its original state.	
Cleaning the site and evacuating the waste.	Detergent / cleaning products. Rags, absorbents. Dried products, leftovers. Failed or test pieces.
Salvaging and reconditioning of solvents.	Dried paints, decantation-distillation bags. Soiled containers.

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CIRCULAR ECONOMY / Reminder – Types of waste according to the painter’s trade.				
PACKAGING				
CONSIGNED		NOT CONSIGNED		
↓	↓			
Waste separation	Separation from other waste	Separation between packaging materials	No separation from other waste	
	↓	↓	↓	
	Disposal via approved waste operator (collector, recycler).	Disposal via approved waste operator (collector, recycler).	Disposal via any waste operator (collector, recycler).	
↓	↓	↓	↓	
Back to supplier	Access to the selective container flat fee	Access to the flat fee for plastic and wood packaging	No flat fee	
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Refund of the deposit, if any	Note: Access to the flat fee is based on the certificate(s) provided by the authorised waste operators.			

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CIRCULAR ECONOMY / Reminder – Waste according to its nature (all construction trades combined)		
Dangerous waste:		
<ul style="list-style-type: none"> - Absorbent soiled by dangerous products: rags, sand, sawdust, paper - Acids - Phosphoric and sulphuric acids, etc. - Accumulators - Concrete admixtures (depending on type) - Admixtures for paints and varnishes - Aerosols, spray paint, cleaner, degreaser, lubricant - Free asbestos – spray asbestos - Bound asbestos – asbestos cement - Bulb: mercury vapour, sodium vapour - Antifreeze and coolant: monoethylene glycols, diethylene glycols, triethylene glycols, propylene glycols - Batteries - Cans containing residues of dangerous products - Biocides: fungicide, insecticide, and packaging - Blocks, bricks soiled by dangerous products (soot...) - Treated wood - Chipboard, laminated timber, painted, varnished - Sanding sludges (paint) containing certain solvents - Thermoplastic or thermosetting synthetic adhesives (acrylic, polyvinyl acetate, urea-formaldehyde, phenol-formaldehyde, polysulphide, polyurethane) - Reinforced wallpaper glue - Compressors - Treated wood chips - Mixed, contaminated demolition waste 	<ul style="list-style-type: none"> - Degreaser – solvent and water-based degreaser cellulosic thinner, synthetic thinner, dichloromethane, trichloroethylene, ammonia, trisodium phosphate, sodium carbonate - Packaging soiled by or containing residues of dangerous products - Fuel, petrol, oil and paint filters - Tar and tarred product - Cutting oil, formwork oil, frosting oil, engine oil, hydraulic oil, machine grease (except vegetable oil) - Corrosion inhibitor used in water treatment (sulphite, phosphosilicate, molybdate, phosphonate) or in paint systems (anti-rust) - Synthetic putty (polyurethane, tiosulphide, tiocolle, butyl) - Painting equipment soiled by dangerous products - Fuel oil - Cardboard paper soiled by dangerous products - PCB* (waste contaminated with) Insulating oil, hydraulic oil, transformer, capacitor in the electrical sector - Paint in organic solvents including coaltar, coal pitch - Pigments (heavy metals) - Batteries - Surface preparation: Degreasing products (ammonia, trisodium phosphate), wood stain (trisodium phosphate, hydrogen peroxide, oxalic acid), lye, mordants (soda lye, potash lye), varnish remover-solvent (methylene chloride) - Wood treatment products - Sawdust impregnated with dangerous materials - Solvents - Soot - Contaminated excavated soil - TL pipes 	
PCB	<p>Polychlorinated biphenyls (PCBs) are halogenated hydrocarbons, high molecular weight organochlorinated aromatic compounds derived from biphenyl. Their chemical formula is $C_{12}H_{(10-n)}Cl_n$, where the number is between 1 and 10. Each phenyl nucleus may contain up to five chlorine atoms. Dioxin-like PCBs, some of which are considered toxic to human health.</p>	

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CIRCULAR ECONOMY / Reminder – Waste according to its nature (all construction trades combined)		
Non-dangerous waste:		
<ul style="list-style-type: none"> - Concrete admixtures (depending on type) - Aluminium - Slate in fibro-cement, synthetic, bituminous (shingles) - Plastic and metal cans that do not contain dangerous residues - Roofing bitumen, waterproofing membrane, coating - Untreated wood - Sanding sludge (paint) according to solvents. - Electric cables - Cardboard - Steel strapping - Water heater - Lime - Animal and vegetable glues - Untreated wood chips - Copper - Mixed construction waste (except dangerous waste) - Mixed demolition waste from residential, service or similar buildings mixed with putrescible or combustible materials (except dangerous waste) - Mixed demolition waste from industrial buildings (except dangerous waste) 	<ul style="list-style-type: none"> - Green waste: tree stump, brushwood - Packaging not soiled by dangerous products: Paper, cardboard, plastic, wood, metal, composites, etc. - Scrap metal - Fibreglass - Vegetable oil - Artificial mineral fibre insulation, synthetic insulation, plant insulation - Putty applied, linseed oil type - Unsoiled metal - Ferrous metal: Steel, cast iron - Non-ferrous metal: Aluminium, lead, zinc, copper, nickel - Pallets - Unsoiled cardboard - Water-based paints and varnishes (Acrylic and vinyl paints) - Plastics: Packaging, pipe, window frames, construction profile, insulating foam - Coated plaster, boards - Lead - Tyres - Natural untreated sawdust - Zinc 	
Inert waste:		
<ul style="list-style-type: none"> - Natural slates - Concrete slates - Clay - Asphalt (no tar) - Concrete - Blocks, bricks - Cement - Stones - Sawing and polishing mud from natural stones - Tiles, stoneware, ceramics, natural stone - Ceramics 	<ul style="list-style-type: none"> - Slabs - Cement coating - Sandstone - Gravel - Cement mortar, concrete - Cinder blocks - Bush-hammered stones - Sand - Uncontaminated soil - Terracotta tiles, concrete tiles - Glass 	