

Rubber recycling expert

Understand and apply the most common recycling methods in the sector for different rubber waste streams. Provide recycling equipment, supervise recycling workers, perform inspections, research rubber recycling policies and legislation and supervise their implementation to ensure that rubber waste management occurs according to regulations.

ESCO Mapping - link to ESCO (European Skills, Competences, Qualifications and Occupations)

| ID | NAME | Concept URI |
|----------|----------------------|---------------------|
| 2143.1.3 | Recycling specialist | URI |
| 9612.1 | Recycling worker | URI |

Context

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|------------------------|---|
| EQF Levels | 5-6 |
| Departments | Production Maintenance Quality Assurance RnD Design Intellectual, Legal Recycling HSE (Health, Safety and Environmental) |
| Profile Sectors | Rubber sector (manufacturing, production, recycling) |

Green Competences

| Name | Type | Description | Level | ESCO |
|----------------------|-------|---|-------|------|
| Mechanical recycling | Skill | - Sorting rubber waste: manually or automatically sort rubber waste by separating it into its different elements. | 3 | |

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|----------------------|-------|---|---|--|
| | | - Operate rubber recycling processing equipment such as shredding, granulation and separation equipment. | | |
| Chemical recycling | Skill | <ul style="list-style-type: none"> - Apply extraction and separation techniques: application of extraction and separation techniques and methods (conventional and advanced) to separate the different components from a complex mixture. They could be used as pre and post treatments to separate, purify and analyse recycled rubber products. - Operate rubber recycling processing equipment, specifically pyrolysis and chemolysis equipment. - Chemical characterization (FTIR, GC, HPLC, UV, etc): study recycled rubber products to analyse their chemical composition and characteristics by using spectroscopic and chromatographic techniques, among others. | 3 | |
| Devulcanization | Skill | - Operate rubber recycling processing equipment, specifically devulcanization equipment for the different treatments: thermal, mechanical, chemical and their combinations. | 3 | |
| Biological recycling | Skill | - Operate rubber recycling processing equipment, specifically bio-reactors to cultivate specific bacteria and fungi for the recycling of rubber. | 3 | |

Digital Competences

| Name | Type | Description | Level | ESCO |
|--|-------|--|-------|---------------------|
| Use resource-efficient technologies in rubber industry | Skill | - Implement sustainable technological improvements in the rubber industry, which allow the production of more value using limited resources while reducing the impact on the environment, restraining the risks of scarcity. | 2 | URI |

SSbD (Safe and Sustainable by Design Chemicals)

| Name | Type | Description | Level | ESCO |
|------|------|-------------|-------|------|
|------|------|-------------|-------|------|

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|--|-----------|--|---|---------------------|
| Energy efficiency | Knowledge | - Field of information concerning the reduction of the use of energy. It encompasses calculating the consumption of energy, providing certificates and support measures, saving energy by reducing the demand, encouraging efficient use of fossil fuels, and promoting the use of renewable energy. | 3 | URI |
| Sustainable technologies | Knowledge | - Technologies with the aim of reducing environmental and ecological risks, achieving at the same time, a positive economic, social, and environmental impact. They are innovative technologies designed to prevent, reduce and recover from the negative impact of humanity on the planet. | 2 | URI |
| Promote sustainability | Skill | - Promote the concept of sustainability to the public, colleagues and fellow professionals through speeches, guided tours, displays and workshops. | 2 | URI |
| Produce sustainable products | Skill | - Manufacture goods in a sustainable manner throughout the product lifecycle which involves promoting social responsibility, conserving resources, and minimizing negative environmental impacts. | 2 | URI |
| Dispose of hazardous waste | Skill | - Dispose of dangerous materials, such as chemical substances, according to environmental and to health and safety regulations, which comply with recycling and waste management procedures except for waste incineration. | 3 | URI |
| Communicate insights about recycling processes | Skill | - Convey the needs of the rubber recycling industry to producers so that they can take appropriate measures to facilitate and improve the recycling of rubber waste according to the SSbD principles. | 3 | |

Transversal Competences

| Name | Type | Description/Context | Level | ESCO |
|-----------------|-------|---|-------|---------------------|
| Collect samples | Skill | - Set up and operate equipment to collect samples for testing, including raw materials, rubber products, recycled and waste products. | 3 | URI |

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|--------------------------------------|-------|--|---|---------------------|
| Identify new recycling opportunities | Skill | - Investigate ideas and spot opportunities to improve the collection, process and recycling of waste materials. | 3 | URI |
| Maintain sorting equipment | Skill | - Perform routine maintenance as well as minor repairs on the equipment used for sorting waste and recyclable materials. | 2 | URI |

Sector Specific

| Name | Type | Description/Context | Level | ESCO |
|------------------------------------|-----------|--|-------|---------------------|
| Rubber technology | Knowledge | - Knowledge of raw materials, rubber compounding, mixing and processing, characterization of unvulcanised and vulcanized rubber compounds to produce rubber products with controlled properties for achieving the requirements for their use in different applications and their recycling at the end of their life. | 3 | URI |
| Manage end-of-life rubber products | Skill | - Manage the operations which deals with the collection, storage, shipment, treatment and disposal of rubber ensuring compliance with legislation. | 3 | |
| Rubber waste and scrap products | Knowledge | - Offered waste and scrap products from the rubber industry, their functionalities, properties and legal and regulatory requirements. | 3 | URI |

Other

| Name | Type | Description | Level | ESCO |
|-------------------------------|-----------|---|-------|---------------------|
| Sustainable development goals | Knowledge | - The list of 17 global goals set by the United Nations General Assembly and designed as a strategy to achieve a better and more sustainable future for all. | 1 | URI |
| Circular Economy | Knowledge | - The circular economy aims to keep materials and products in use for as long as possible, extracting the maximum value from them while in use and recycling them at the end of their life cycle. It improves | 2 | URI |

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|-----------------|-----------|--|---|---------------------|
| | | resource efficiency and helps to reduce the demand for virgin materials. | | |
| Green Chemistry | Knowledge | - The process of creating chemical products that diminish or cancel the negative impact on the environment caused by the use of hazardous substances. It follows all the phases of chemical product generation from the design to the manufacturing and its disposal | 1 | URI |