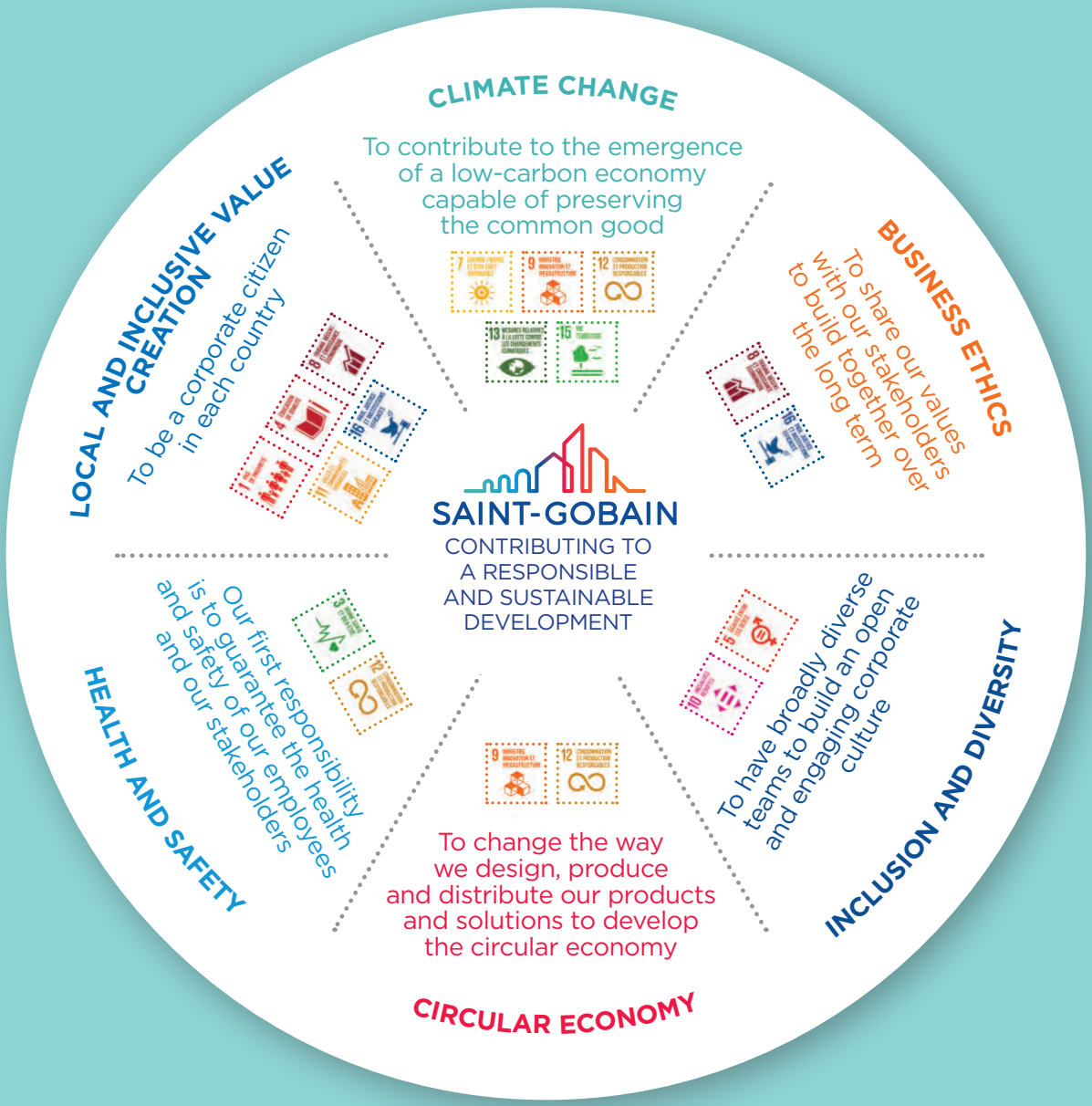
CIRCULAR ECONOMY

ECO-DESIGN FOR SUSTAINABLE CONSTRUCTION

LE CERCLE VERTUEUX DE L'HABITAT

SAINT-GOBAIN

The purpose of this brochure is to present the various initiatives, programs and actions in place in the field of circular construction within Saint-Gobain's various activities in France.



CIRCULAR ECONOMY

ECO-DESIGN FOR SUSTAINABLE CONSTRUCTION

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Construction: the virtuous circle of the circular economy

More than a third of global greenhouse gas emissions and resource consumption can be linked to the world of building and construction market. This in a context where the urban population will double in the next 30 years. It is therefore necessary to significantly reduce the resource intensity of our buildings, if this growth is to be compatible with the planet boundaries. This implies acting voluntarily at the time of building design, at the end of its life to ensure that the waste generated is properly reused or recycled, but also throughout the entire life of the building to maximize its use.

France has the means to be a forerunner on these subjects. This is the Government's ambition with its law against waste and for the circular economy (AGEC law) adopted at the beginning of 2020. It is also the ambition of Saint-Gobain, which is already particularly committed to these issues at all stages in the life of a building. This guide is there to prove it. This voluntarism is in line with the commitment made by Saint-Gobain at the UN climate summit in September 2019 towards carbon neutrality by 2050. An important part of this commitment will be achieved through the circular economy.

Our vision is that the building of tomorrow will be increasingly comfortable, affordable, carbon-free and environmentally friendly and low resource intensity. It will be designed and operated so that, at the end of its life, it becomes a true bank of materials

Emmanuel NORMANT
Sustainable development director,
Saint-Gobain

SAINT-GOBAIN

Arch. ARCHIfact - Ph. Thierry Mercier ;
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INTRODUCTION

France, like many countries for several decades, has developed on a growth model based on intensive use of resources. Today, however, it faces the dual challenge of stimulating the growth needed to provide jobs and well-being for its citizens, and ensuring that the quality of this growth leads to a sustainable future. The construction sector is strategically important in these areas: almost 35% of final energy consumption is attributable to housing, offices, stores and other buildings across the public and private sectors. The construction sector represents by elsewhere 40% of raw materials extracted and 40% of solid waste landfilled[1].

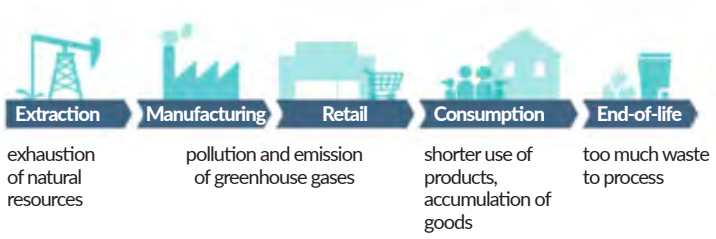
The increase in population, coupled with accelerated urbanization, and the major impact of the construction sector on the environment require us to change our ways of designing our buildings. The aging of the existing building stock requires an increased effort to construct new buildings and renovate older ones. At the same time, climate change and the increasing scarcity of natural resources require action to limit energy consumption and the use of raw materials. No significant progress can therefore be made without massive action in favor of sustainable construction.

It is therefore more necessary than ever to rethink the traditional model of the linear economy «extract, manufacture, use then throw away», through a model of circular economy, a necessary alternative to our unsustainable modes of production, distribution and consumption.

[1] Source : ADEME

WHAT IS THE CIRCULAR ECONOMY?

The circular economy is a new way of producing and consuming that concerns all actors in society. It aims to move away from the paradigm of the linear economy, which consists of extracting, manufacturing, consuming and throwing away, to call for a more sustainable path, targeting the sober and efficient management of resources, and the minimization of the environmental impacts associated with the use of these resources over their entire life cycle.



Circular model (according to ADEME)

Circular economy: 3 areas, 7 pillars

WHAT DECLINATION IN THE BUILDING SECTOR?

In 2015, the HQE-GBC Alliance published its framework for the circular economy in the building industry based on the ADEME definition.

WHAT IS SAINT-GOBAIN'S «CIRCULAR ECONOMY» STRATEGY?

With and for our customers, we design, produce and distribute materials and solutions that have a positive impact on everyone's life, bringing well-being, quality of life and performance, while taking care of the planet.

Our 350 years of history, the strength of our collective and our leadership give us the responsibility and the power to pursue our development in an inclusive manner, taking up the great challenges of humanity. Among them, the challenges of climate change and the protection of resources occupy a prominent place. In this context, the transition to a circular economy is both a responsibility and a necessity.

Thanks to its capacity for innovation, the Saint-Gobain Group provides concrete responses to several challenges posed by the transition to a circular economy ensuring sustainable development. In particular, as a producer and supplier of building materials, the Saint-Gobain Group is an important stakeholder in the construction sector. Managing and reducing the impact of resource use throughout the life cycle of its products and services is therefore part of the Group's primary responsibility.

As such, we focus our efforts on:

- Improving the design of our products and systems to minimize their environmental impacts throughout their life cycle.
- Optimizing the consumption of resources
- Reducing and recovering the internal production residues generated by our industrial processes
- Reducing and recovering our products during the installation phase and at the end of their life cycle
- Developing territorial / geographical networks for sustainable economy
- Providing data transparency for the building industry

DATA TRANSPARENCY FOR THE BENEFIT OF THE BUILDING INDUSTRY PLAYERS

In order to improve, we must first measure. The Life Cycle Analysis (LCA) is the main tool used by Saint-Gobain to evaluate the environmental impact of products and solutions. Rigorous and comprehensive, this standardized tool is the most widely used today in the sustainable construction market. The results make it possible to understand where the main environmental impacts associated with a product are located. They help Saint-Gobain to choose the priority areas for work to improve the product. LCA results are also integrated into Environmental and Health Declaration Sheets (EHSDS) for our customers, verified by approved third parties and available on the INIES database (www.inies.fr). These sheets provide essential data for construction players in order to optimize design choices and move towards more sustainable buildings.

All Saint-Gobain product families intended for the building market have a life cycle analysis and EHSDS.

ECO-DESIGN FOR SUSTAINABLE CONSTRUCTION

Saint-Gobain's objective is to provide its customers with real added value by developing and distributing innovative solutions that reduce the environmental impact of buildings and infrastructures throughout their life cycle. The Group has developed an internal tool to measure the sustainability of construction products. This tool is based on life cycle analysis indicators and other criteria such as VOC emissions and recyclability. The aim of this tool is to help eco-innovation through the reduction of environmental impacts and improvement of user benefits.

Ecophon®
SAINT-GOBAIN
A SOUND EFFECT ON PEOPLE

The glass wool used to manufacture Ecophon ceiling tiles, baffles and wall panels in Europe contains a minimum of 70% recycled glass. On average, less than one bottle of recycled glass is needed to make a ceiling tile.

Certification:
Our Ecophon factories are ISO 14001 certified. All our packaging is recyclable.

SUPPLY-CHAIN, INSTALLATION AND USE OF PRODUCTS AND SYSTEMS

The glass wool used to make Ecophon ceiling tiles, baffles and wall panels is a lightweight material and requires less fuel to transport than other materials.

A 70 m3/26 ton truck can transport 3,500 m^2 of ceiling, with its frames and its installation accessories. Thanks to the lightness of the glass wool, 17% less fuel will be used than for a traditional ceiling. This limits greenhouse gas emissions and improves the carbon balance/m^2 of delivered product.

Example:
Gedina's carbon footprint:
2,86 kg CO_2 equiv/m^2

Ecophon ceilings, wall panels, baffles and floating units contribute to improved acoustic comfort and reduce noise pollution.

NEWS 2020: FOCUS LEVELS, ACOUSTIC PANELS TO BE GLUED TO WALLS AND CEILINGS

Most Ecophon systems are easily disassembled. They allow for easy access to the technical plenum, maintenance of hidden networks such as mechanical ventilation, piping, electrical and computer supply circuits.

Our ceiling tiles allow easy integration of light fixtures and ventilation grids. This ease of dismantling and maintenance allows for the extension of the life span of our systems.

ECO-INNOVATION ET TRANSPARENCE DES PRODUITS

Ecophon products are subject to life cycle analysis, and benefit from 10 EHSDS (to be downloaded from the INIES database - www.inies.fr) and 19 DEP (environmental declarations).
Use of recycled material (at least 70% of the composition is recycled material). Our production units use up to 100% renewable energy depending on the location of our plants. All waste generated by our industrial processes is recycled.
Our products are designed to last up to 50 years if the building is well maintained. Ecophon panel coatings are designed to be easily cleaned and to preserve their original visual appearance.

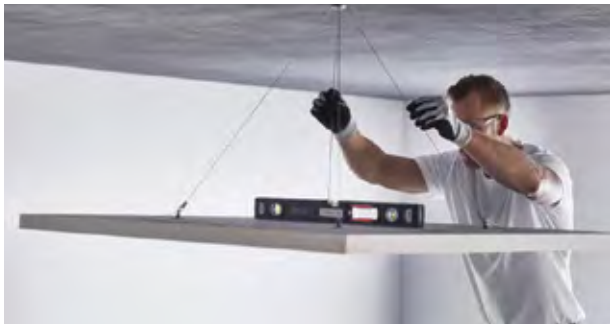
Easily cleanable

Removable

FDES verified

Ecophon has developed a maintenance and usage guide for our tiles to extend the life span of our systems, while preserving their visual, hygienic and functional properties.

https://www.ecophon.com/globalassets/brochure_guide-entretien_20-mai_compressed.pdf



END-OF-LIFE PRODUCT MANAGEMENT

All Ecophon tiles are 100% recyclable. Connect steel grid and accessories are 100% recyclable.

Justification of fuel savings with Ecophon glass wool ceilings:

A GOOD CHOICE BY ROAD, SEA OR RAIL

Glass wool is a very light material and its transport requires less fuel than other materials.

Example:
A 18 meters' truck (load capacity 70 m3 / 26 tons) can transport approximately **3,500 m2 of Ecophon ceiling** composed of «reference panels», together with the necessary frames and accessories.
The total weight of the load is **9 tons**. If the same truck were now filled with 3,500 m^2 of wet-felt ceiling, the panels of which have a thickness of 18 mm and a weight of 3.3 kg/m^2, the total load weight of the panels, including frames and accessories, would reach **15.3 tons.**

For a journey of 575 km (corresponding to the transport distance used in the life cycle analysis of the Ecophon «reference panel»), the following fuel consumption results:
- For the Ecophon ceiling: **167 liters**
- For the wet-felt ceiling: **196 liters**
- i.e. a surplus of about **17%.**

SUSTAINABLE RESOURCES MANAGEMENT

Eurocoustic manufactures its products from basalt, a raw material found in abundance in the natural environment. The quarry is located less than 10 km from the production site, thus minimizing the impact of transportation.

The raw material extraction quarry is continuously restored using the scraps from our melting process which, once cooled, are recovered to fill the voids in the quarry.

• The plant producing EUROCOUSTIC ceilings, based in France, is ISO 14001 certified.

• Our production residues are close-loop recycled in the process to manufacture new glass wool products, thus preserving natural resources.

• Our wools contain on average 45% by mass of recycled materials.

SUPPLY-CHAIN, INSTALLATION AND USE OF PRODUCTS

• In order to optimize our logistics and reduce our CO2 emissions, the loads of our trucks from the factory are optimized.

• The implementation of Eurocoustic products requires little energy and no water. Eurocoustic ceiling tiles can be cut easily, without noise or dust.

• During installation on site, mineral wools generate less than 5% waste.

• The assembly systems are designed to be practical and easily dismantled, thus simplifying recovery during deconstruction.

• During the life of the building, Eurocoustic products contribute to the comfort and health of the occupants (acoustic, visual, thermal and sanitary comfort; and passive fire protection).

• Eurocoustic ceilings require very little maintenance and can be easily disassembled. The mounting systems are designed to be practical and easily dismantled, thus simplifying access to the fluids circulating in the plenum for maintenance purposes. Even the most cumbersome systems can be replaced without damaging the frame.

ECO-INNOVATION AND PRODUCT TRANSPARENCY

• Third party validated Environmental and Health Data Sheets (FDES) are available for the majority of Eurocoustic products, and are available on the INIES database (www. inies.fr).

• The use of Eurocoustic products contributes to obtaining points in environmental certifications such as LEED®, BREEAM® and NF HQE® and thus allows the building to be certified.

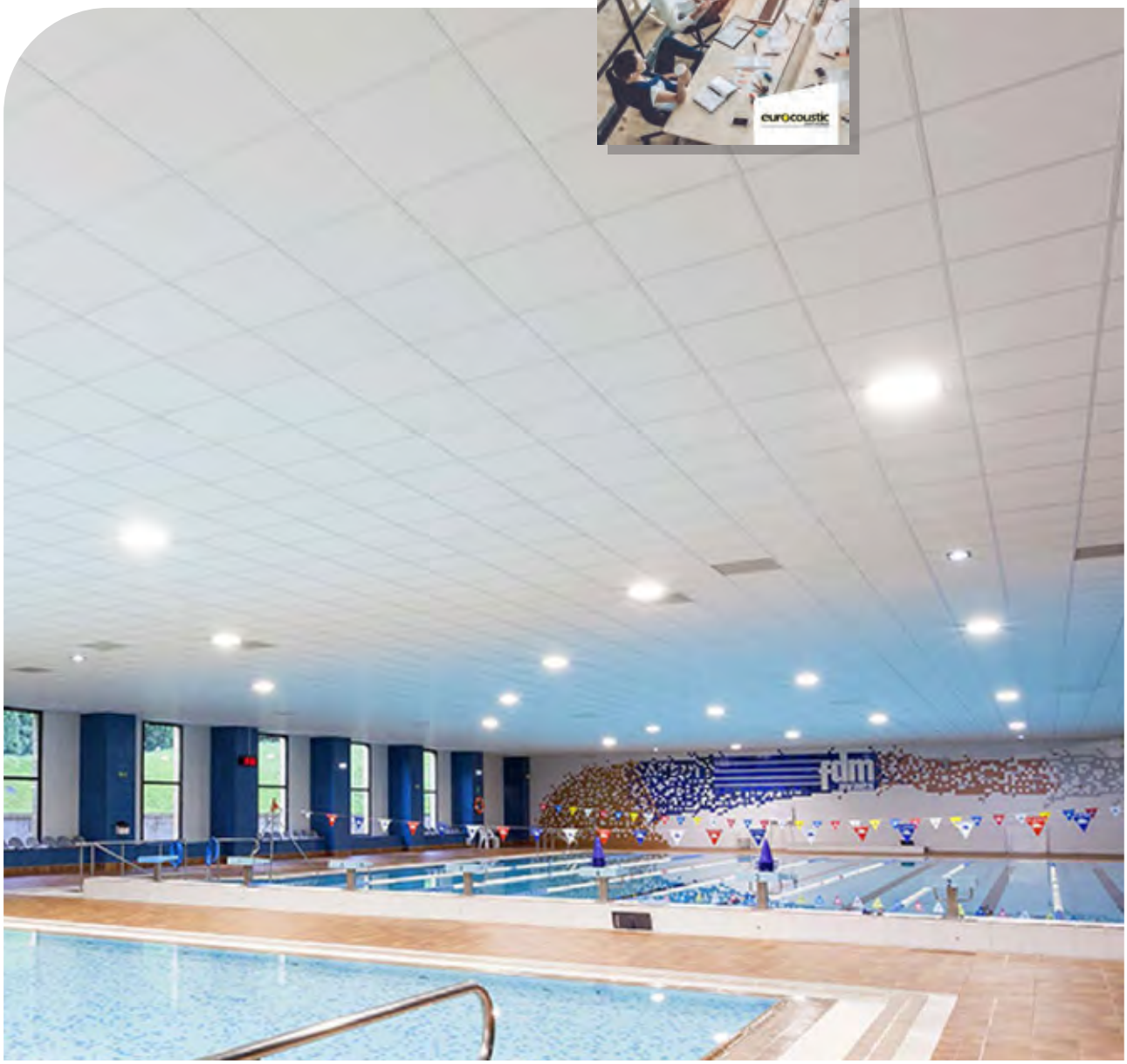
• Our Quick-Lock® packaging is particularly resistant and easily resealable. They allow the conservation of unused products at the end of construction sites and thus limit waste on site.

END-OF-LIFE MANAGEMENT

• The steels we use for our frames and accessories are 100% recyclable and this in an infinite way. In practice, on the construction site, steel frames are collected and recycled.

• The ease of disassembly of Eurocoustic products allows the reuse at the end of the product's life.

You can download our brochure on:
www.eurocoustic.fr/brochures-0



SUSTAINABLE RAW MATERIAL MANAGEMENT AND PRODUCTION

All PVC windows are manufactured in French factories: Cougnaud in Aizenay and Azur Production in Chambley.

These 2 factories are certified NF PVC windows (NF220), which guarantees the durability of the windows' performance. Their suitability for use has been validated by a Technical Application Document issued by the Centre Scientifique et Technique du Bâtiment (CSTB).

Exclusive PVC window profiles are manufactured at the Cougnaud site using 30 to 40% recycled raw materials from internal waste or from the recycling of end-of-life windows.

This generates an annual saving of about 3,000 tons of virgin PVC material

SUPPLY-CHAIN, INSTALLATION AND USE OF PRODUCTS AND SYSTEMS

Reduction of PVC window packaging:
Elimination of plastic covers for deliveries on construction sites.
New design of the product packaging (protective and transport wedge, hardware box).

This saves about 24 tons of plastic film per year

The lifetime of the windows indicated in their FDES is 30 years, whatever the material: PVC, aluminum, wood.

The windows are designed to be repairable, many components are replaceable: glazing, seals, hardware. This extends the product's useful life.

ECO-INNOVATION AND PRODUCT TRANSPARENCY

The developments carried out on PVC profiles and the integration of materials from recycling promote the circular economy and contribute to the reduction of the carbon footprint of GIMM and LES MENUISERIES FRANCAISES PVC windows.

In light-colored PVC: 60.6 kg equivalent CO2/UF, recovered in the FDES (over the entire life cycle). 10% gain compared to a product without recycled material.

The design of the windows allows the quick replacement of worn or possibly broken components. The codes present on the window or its components simplify traceability and the replacement of identical parts.

Example: the Naviglass code on Saint-Gobain windows allows you to know all their characteristics from a smartphone.

END-OF-LIFE PRODUCT MANAGEMENT

Recycling of end-of-life windows:

Professional commitment with UFME1 to recycle end-of-life window materials and reuse them in the manufacture of new windows (improvement of the FDES balance sheet).

This approach is consistent with the ECV (Commitment to Green Growth) for flat glass.

The manufacturers who have signed the charter commit themselves to:
• Communicate to their customers (installers and general contractors) good practices and waste collection points;
• Give priority in their supplies to products incorporating recycled materials.

[1] UFME : Union des Fabricants de Menuiseries

Map of PVC collection points

Map of glass collection points

SUSTAINABLE MANAGEMENT OF RAW MATERIALS AND PRODUCTION

ISONAT prefers to buy local Douglas fir certified PEFC. This raw material is taken from the heart of local forests and supplied by nearby sawmills (recycled wood), within a radius of approximately 50 km around the production site of Mably. The ISONAT company is also under PEFC certificate.

All our production waste is either reused in production or valorized with local partners (manufacture of potting soils).

SUPPLY-CHAIN, INSTALLATION AND USE OF PRODUCTS AND SYSTEMS

The insulation products manufactured by ISONAT are proposed in pallets that can be stored outside thanks to a specific packaging adapted to bio-sourced products.

We offer logistics adapted to our customers thanks to our partnership with ISOVER:
- Flexible delivery offer
- Possible mix of ISONAT and ISOVER products

All ISONAT products are ACERMI certified and ISONAT holds the first Technical Opinions for FLEX wood fiber insulation in interior insulation, for a serene implementation and an insurable construction site.

ISONAT's FLEX 55 product has a comfort veil for an optimized installation.

ISONAT offers a range of thicknesses and dimensions of its products adapted to the various construction systems for both new construction and renovation.

Implementation guides are available on our website: **www.isonat.com**

ECO-INNOVATION AND PRODUCT TRANSPARENCY

The Mably plant and its R&D center have innovative manufacturing processes 100% integrated.

ISONAT is the only player in the wood fiber industry to have FDES validated by an independent third party and published on the INIES* database for its entire range, flex range and rigid range, in accordance with the NF EN15804 standard, which frames the life cycle of construction materials. This approach is essential for all customers seeking HQE, E+C-, Bio-sourced Building labeling procedures...

END-OF-LIFE PRODUCT MANAGEMENT

ISONAT products are assembled and fixed without adhesives, thus facilitating their disassembly during deconstruction operations.

ISONAT is now studying the recycling of dismantled products in order to anticipate this point in anticipation of a potential deposit in the coming decades. Indeed, considering the young age of the industry and of our plant, the cases of dismantling of buildings insulated with isonat wood fiber products is still anecdotal.

Objective:
To develop up to 80,000 tons
of local forestry by-products annually by 2023.

SUSTAINABLE MANAGEMENT OF RAW MATERIALS

Our glass wool and rock wool products are designed and manufactured in France.

The ISOVER plants are certified ISO 14001 (environmental management) and ISO 50001 (energy management).

Glass wool products contain **at least 40% recycled glass** (of which nearly 30% is post-consumer).

La Nouvelle Laine's binder is **100% bio-sourced,** elaborated from raw materials from cereal and sugar industries.

SUPPLY-CHAIN, INSTALLATION AND USE OF PRODUCTS AND SYSTEMS

ISOVER is a signatory of the charter FRET 21, allowing to better integrate the impact of the transport of our products and to reduce related CO_2 emissions.

ECO-INNOVATION AND PRODUCT TRANSPARENCY

Our products and solutions benefit from life cycle analyses and are subject to FDES, available on the INIES database (www.inies.fr). They are calculated for **an insulation life of 50 years**.

ISOVER offers complete insulation systems, designed to be easily disassembled and recoverable.

ISOVER
manufactures
new glass wools

ISOVER
receives the waste
and transforms it into cullet,
one of the raw materials
of glass wool

THE CLIENT
lay the glass wool
and organizes
waste management

THE CLEANING COMPANY
removes and sorts
glass wool from the
building

THE COLLECTOR
films and transports
the bales

THE COLLECTOR
compresses glass wool
in a baler

THE COLLECTOR
controls the sorting
of glass wool

END-OF-LIFE PRODUCT MANAGEMENT

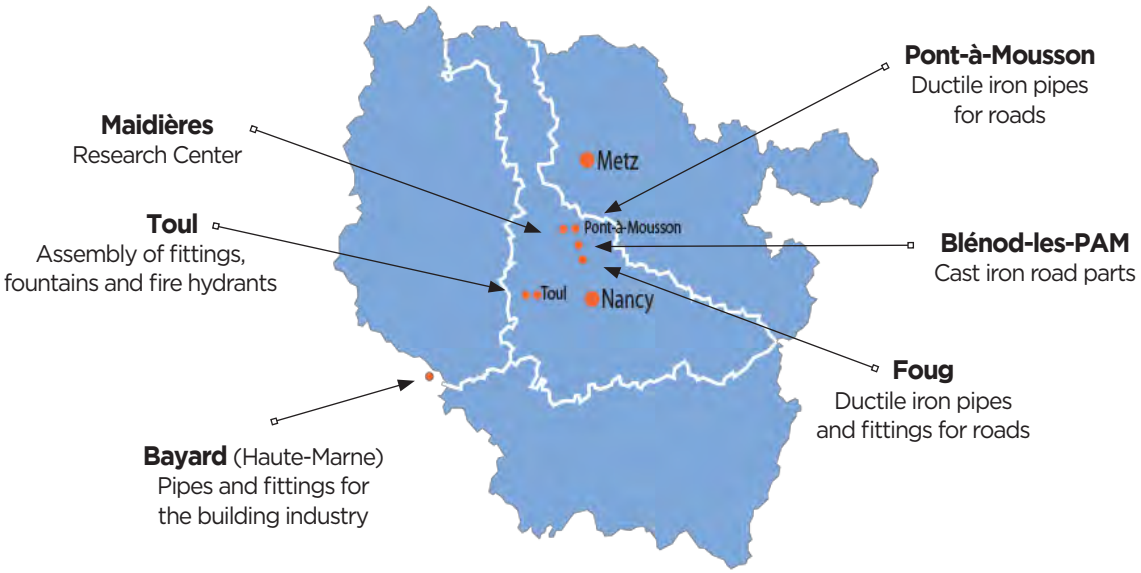
ISOVER glass wool is 100% recyclable, indefinitely.

ISOVER has set up a recycling channel for glass wool waste from the construction industry: ISOVER Recycling. It aims to give a second life to our products and to increase the proportion of recycled content of our insulation materials. This service offer is currently being deployed throughout the country.

It is the first time in the world that a closed-loop recycling solution, including for used glass wool, is being offered to the market.

PAM
SAINT-GOBAIN

A RESPONSIBLE INDUSTRIALIST ON ITS SITES



All our production sites are ISO 14001, ISO 9001 and the Bayard and Blénod plants are ISO 50 00.

PAM: A PLAYER COMMITTED TO LIMITING ITS ENVIRONMENTAL IMPACTS

Achievement of **90% of our sites' production residues** recovered.
Recycling of 100% of slag in road construction.

Decrease of 70% of water consumption
at the PAM plant in Bayard since 2001. Recirculation of more than 60% of cooling water at PAM since 2015.

Objective:
reduce CO_2 emissions by 15% by 2025

Decrease of our atmospheric emissions

Integrated transport, gradual switch to solvent-free

OUR SYSTEMS FOR THE BUILDING INDUSTRY: 100% RECYCLABLE AND 99% RECYCLED CONTENT

100% recyclable: infinitely recyclable and made from recycled content.

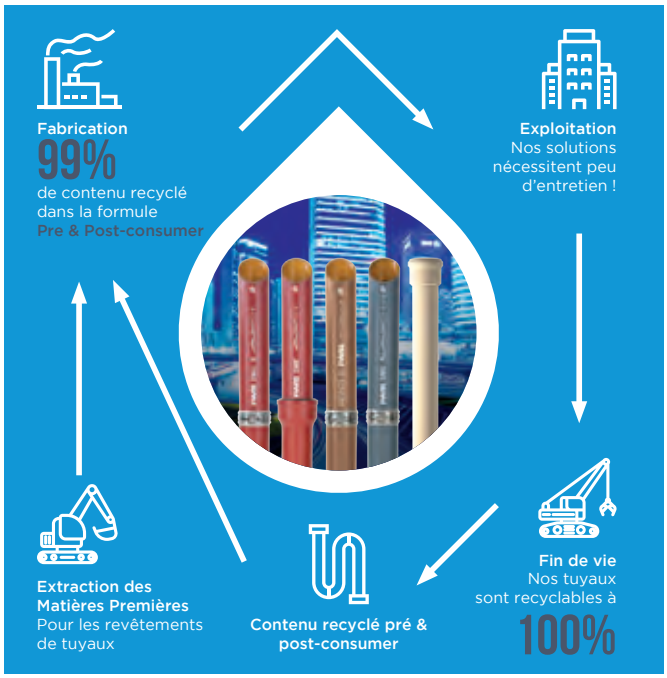
For the SMU-S, SME and SME+ systems, the recycled content is 99%, of which 11.5% is pre-consumer* and 87.5% is post-consumer according to the ISO 14021:1999 standard.**

Recycling channels exist: raw material suppliers all over France, but local sourcing is favored (<200 km from the plant) to limit the costs and impacts related to transport.

**Pre-consumer content = waste from the manufacture of products that have not yet been delivered to the final customer or new scrap metal (scrap from cutting scrap metal for the manufacture of cars, washing machines, etc.).*

***Post-consumer content = waste generated after delivery to the end customer (waste from End-of-Life Vehicle (ELV) recycling or from the construction, demolition and renovation of buildings).*

SYNTHESIS OF THE LIFE CYCLE OF A CAST IRON PIPE & FITTINGS SYSTEM FOR THE BUILDING INDUSTRY

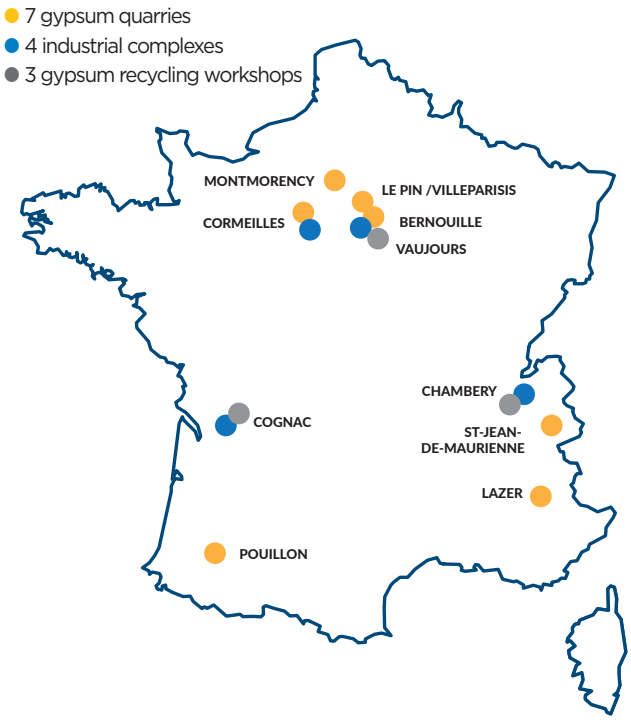


FDES sheet for the SMU-S, SME and SMU+ ranges available on the INIES data base (www.inies.fr).

© Raphaël DEMARET

SUSTAINABLE RESOURCE MANAGEMENT

- Responsible operations of quarries (environmental monitoring, restoration)
- ISO 14001 (Environmental Management System) certified sites for manufacturing sites and quarries (for the 4 quarries in the Ile de France region and the two quarries supplying the Chambéry site)
- Design and manufacture of products in France - Placo® products incorporate a portion of recycled material from installation or demolition sites
- Paper, from responsibly managed forests or from 100% recycled material
- A complete industrial network
  > 7 gypsum quarries
  > 4 industrial complexes
  > 3 gypsum recycling workshops
- Gypsum production scraps are recycled since 1993.



SUPPLY-CHAIN, INSTALLATION AND USE OF PRODUCTS AND SYSTEMS

Placo® is a signatory of the FRET 21 convention, in order to better integrate the transport impact of our products and reduce the related CO2 emissions.

FRET 21 LES CHARGEURS S'ENGAGENT

Placo® offers lightweight construction solutions that can be easily dismantled, allowing the reduction of CO2 emissions, as well as the reduction of resource requirements compared to traditional solutions.
(C Stil® lightweight wall / F4 lightweight facade).

ECO-INNOVATION AND PRODUCT TRANSPARENCY

• Placo® offers a complete range of solutions for the interior design of buildings

• By inventing more efficient, ecological, functional and aesthetic solutions every day, Placo® is helping to build the housing of tomorrow: healthier, safer and more evolutive

• FDES available in the INIES database (www. inies.fr), calculated over a 50-year lifespan

• LEAN by Placo®: the cut-to-size service that allows efficient and responsible management of construction sites, minimizing off-cuts waste and offering the possibility of recovering and recycling waste that is nevertheless generated.

END-OF-LIFE PRODUCTS MANAGEMENT

• Gypsum is 100% recyclable and infinitely recyclable

• The Placo® Recycling channel allows the recycling of plasterboard waste:

- 170 referenced collectors over the territory
- 3 reprocessing workshops
- 50,000 tons of plaster recycled annually
- Reintroduction in the production of new plasterboards

Our objectives:
Recycle 150,000 tons of gypsum waste by 2025.

PLACO® RECYCLING, AN OPERATIONAL AND RELIABLE RECYCLING ORGANIZATION

why recycling plaster based waste?

• Limit the environmental nuisances related to their dumping into landfill

• Meet regulatory obligations

• Take advantage of a competitive solution compared to landfilling

• Preserve as much as possible the natural resources of the quarries from which the gypsum is extracted

Mode d'emploi de la filière en 7 étapes

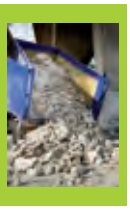
Sites concernés
> Chantiers (Construction/Déconstruction)
> Déchetteries
> Dépôts entreprises plaquistes
> Plateformes distributeurs

Etape 1
Sélection d'un collecteur à proximité du site à partir de cette carte ou sur www.placo.fr

Etape 2
Mise à disposition sur site d'une benne dédiée aux déchets de plâtre avec signalétique des déchets admis et non admis.

Etape 3
Transport de la benne jusqu'à la plateforme du collecteur.

Etape 4
Tri séléctif et massification sur la plateforme du collecteur



Etape 5
Transport optimisé à l'atelier de recyclage Placo® dédié. Contrôle de la conformité et édition d'un B.S.D (Bordereau de suivi de déchets)

Etape 6
Transformation des déchets en poudre de gypse. Broyage et séparation du carton et autres matières.

Etape 7
Recyclage et valorisation par ré-introduction dans le process de fabrication de nouvelles plaques de plâtre.

Acteur engagé pour la valorisation des déchets de plâtre
Placo® Recycling

AN UNPRECEDENTED INITIATIVE ON THE MARKET

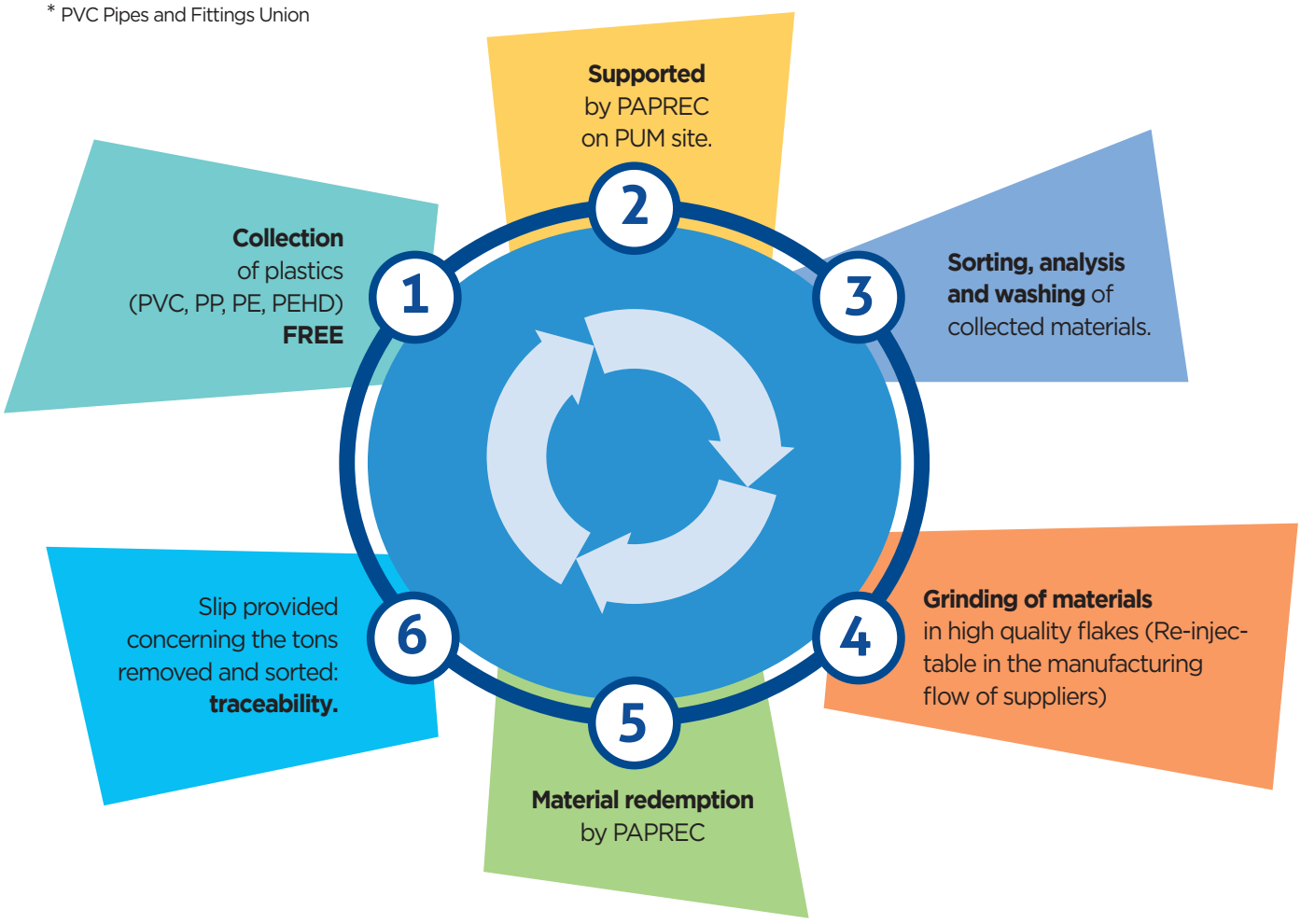
PUM wishes to promote and facilitate access to recycling for its clients. Support and awareness-raising are at the heart of the environmental challenges of the trade specialized in synthetic materials.

2016
PUM and STR PVC* are setting up a pilot operation to collect and recycle plastic pipes and fittings in France

1st partnership
created between a distributor (PUM) and a recycler (PAPREC Group)

2020
Creation of the big bag collection on site at cost price

* PVC Pipes and Fittings Union



SOME FIGURES

13 PUM agencies
equipped with skips in France

More than 40 tons recovered
in the pilot operation, i.e. an average of 3 tons per agency

100% of plastics recycled in 2025.
Increasing the network from 5% to 20% of the agencies.

A trusted partner to ensure the regeneration process. . PAPREC is THE French specialist in the recycling of synthetic materials.

NEW **Big bags** to recover plastic waste on site

Because we are convinced that companies that combine growth, sustainability and positive impact on society will be the leaders of tomorrow, PUM is committed.

With PURE, PUM is mobilizing for a committed network.

PURE
POUR UN RÉSEAU ENGAGÉ

SAINT-GOBAIN

GLASS WITH LESS THAN 10 KG OF CO_2 ÉQ. /M²

The new reference for 4 mm glass in the building industry.

With several dozen verified FDES, Saint-Gobain provides precise information on almost all of its glass products with transparency and service for specifiers and builders of tomorrow's buildings.
These FDES, which will be online in 2021, show a 20 to 30% gain compared to the previous ones, which were then representative of the market.

These excellent performances are the result of multiple actions implemented to reduce CO2 emissions over the entire life of the glass: the improvement of manufacturing processes to reduce their energy consumption, the reintroduction into the furnaces of production cuttings or the recovery of end-of-life glazing recovered from deconstruction sites. Or a very strong regional presence to limit the number of kilometers traveled by the materials.

For a low-carbon glass industry:

In France, the presence of 3 flat glass (float) manufacturing plants and 50 processing and distribution sites specialized in glass products throughout the country (short circuit), enables Saint-Gobain to be as close as possible to its customers, to minimize energy consumption for transport and to benefit from a low CO2 emissions source of energy.
Glass is made from sand, soda ash and limestone.

Their exploitable reserves for the production of flat glass are rare and limited. In order to meet this challenge, the integration of cullet (scrap of recovered glass) is essential.

In addition, the manufacture of 1 ton of glass from cullet avoids 300 kg of CO2 in the atmosphere, a direct gain of 60% on emissions. In France, Saint-Gobain already includes 35% cullet in the composition of its products, of which 13% comes from cuttings from glass processing and 1% from cullet from renovation or deconstruction.

The objective for 2025 is to increase this percentage to 50% cullet, thanks to the Glass Recycling initiative.

TRANSPORT

The glass is transported in special trucks (Inloaders) which carry directly on optimized trestles for a minimum of handling.

Since 2020, barges have been transporting part of the cullet introduced into our furnaces.

Some of the cullet flows are made in inloaders to reduce empty returns.

CLOSED-LOOP FLAT GLASS RECYCLING

We already recycle 75,000 tons of external cullet per year.

In line with our objective of carbon neutrality by 2050, we are developing a closed-loop glass recycling organization.

For the recovery of end-of-life windows, we rely on two services that are deployed throughout the country: a network of collection points for craftsmen in the distribution agencies, and partnerships with waste management companies who are in direct contact with the construction sites.

In 2019 we recovered 5,000 windows, in 2020 we will have recovered nearly 15,000, and we aim at collecting 50,000 in 2021.

Starting today, recycling end-of-life glass in the floats through a closed-loop approach is possible!

To enable this closed-loop recycling, it is necessary to ensure that the complete window is kept intact throughout the dismantling process, storage on site, and transport to qualified partners. The Glass Recyclage logo enables to identify them easily.

To achieve our goal, we have set up partnerships:

• Partnership with waste management companies for the windows collection, transport, dismantling and preparation of the resource

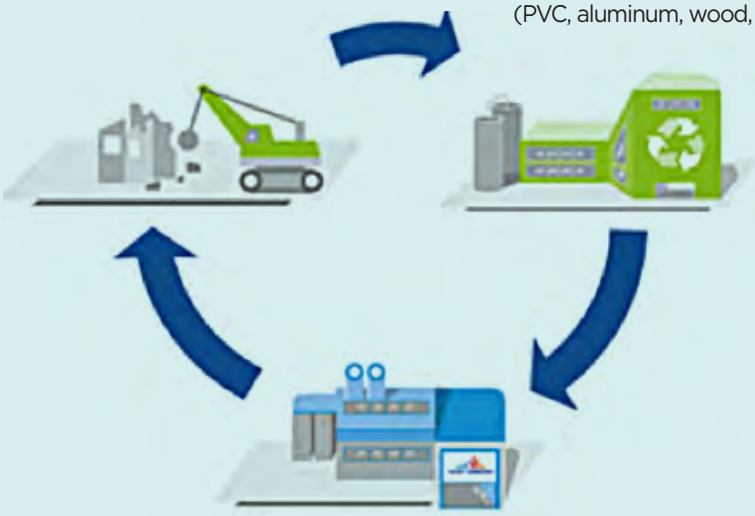
• Partnership with Saint-Gobain Building Distribution for collection (waste collection centers at Point P and La Plateforme du Bâtiment)

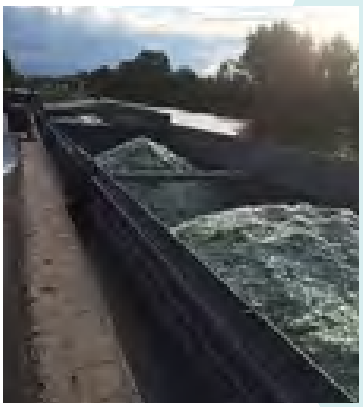
• Partnership with the Saint-Gobain Vitrage Bâtiment network for collection of cullet from their industrial customers, guaranteed to be closed-loop recycled

To get in touch with us:
RecyclonsLesVitrages@saint-gobain.com

BUILDINGS
• Provide end-of-life windows to waste management companies
• Organize on-site collection or voluntary drop

WASTE MANAGEMENT COMPANIES
• Collect and dismantle end-of-life windows
• Prepare cullet to «Float» quality
• Valorize materials other than glass (PVC, aluminum, wood, etc.)





SAINT-GOBAIN GLASS FACTORIES
• Accompany and educate the waste management companies to facilitate the preparation of cullet to the «Float» quality
• Solicit the actors of renovation and deconstruction to provide flows to the waste management partners
• Recycle into the process the cullet once received, in order to make new glass plates.

LA PLATEFORME DU BATIMENT

WASTE RECOVERY AND SORTING

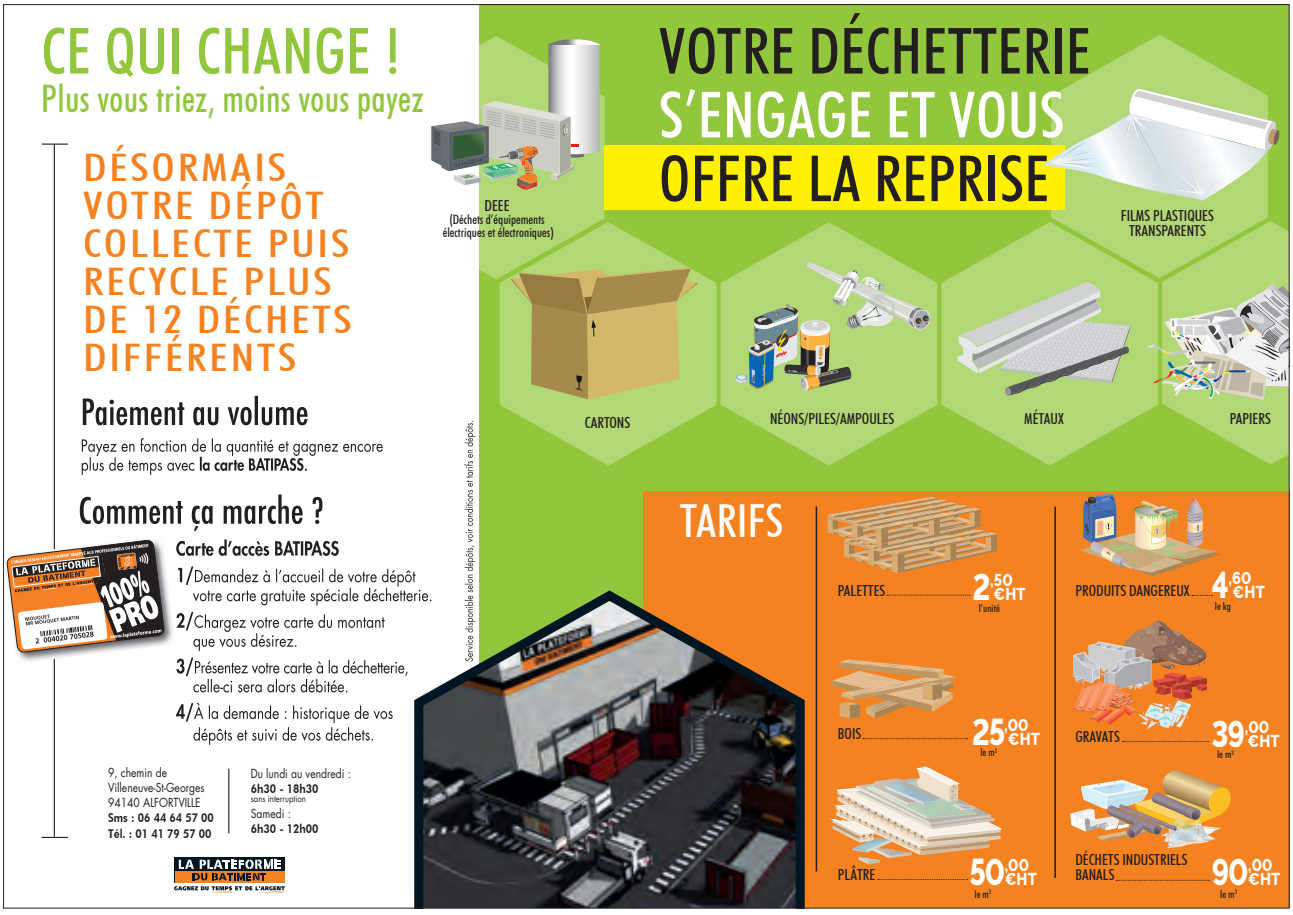
Customer waste:

Implementation of multi-flow waste collection centers at the depots: 13 deployed, 2 in progress and 11 planned for 2021. The customer can deposit up to 12 different types of waste, which are then collected and recycled by different partners in the appropriate channels.

Example of the material flows below:

Internal waste

- Installation of presses to make cardboard/plastic bales
- Recovery of lost wooden pallets
- Implementation of «reverse logistics» sorting on City and Compact formats
- Sorting of office waste at the head office, accompanied by Lemon sorting. National deployment in 2021
- Recycling of cartridges and toners planned for 2021
- To support employees, a sorting guide was created



CORPORATE SOCIAL RESPONSIBILITY : WE CONTINUE, WE ADAPT, WE GO FURTHER

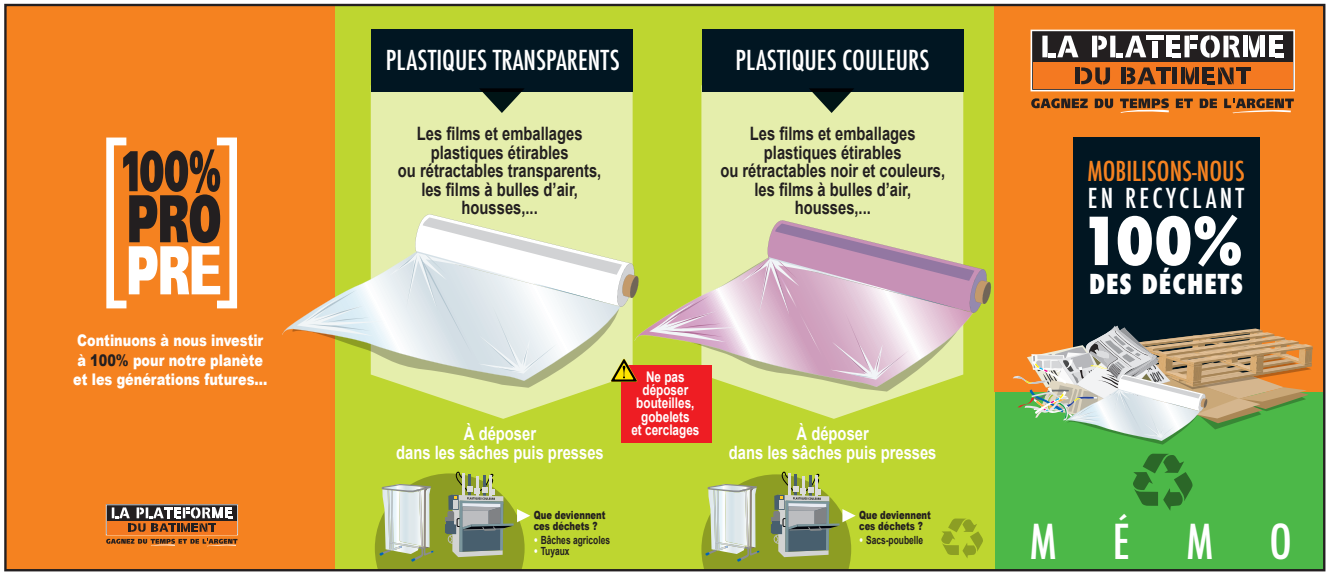
LES RIPEURS DU BÂTIMENT

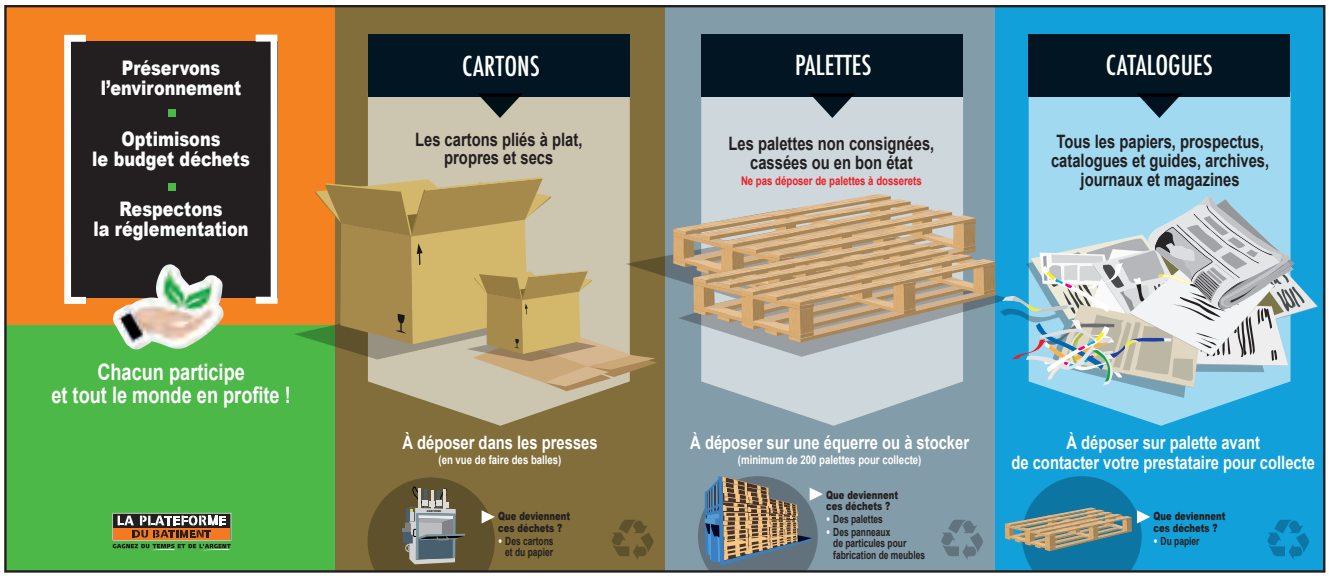
The Building Shavers service allows our customers to have their waste removed directly on site, even upstairs. The service was rolled out in 2018 in all our sales outlets in the Paris region.

The RIPEURS now offer a range of different services:

A few key figures:

- **more than 1,450 customers have used the service provided by LES RIPPEURS,**
- **more than 40,000 tons of waste have been evacuated and 81% of this waste has been revalorized.**





POINT.P

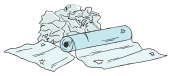
Article 93 of the Energy Transition Law for Green Growth sets the objective of «recovering 70% of waste from the building and public works sector by 2020», through recycling, reuse or backfilling.

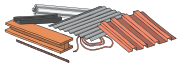
Saint-Gobain Building Distribution France's commitment to waste recovery and recycling is part of its overall eco-responsible policy.

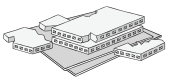
2 INSEPARABLE AXES:

1. Management of our own waste: implementation at the end of 2021 of a 7-flow sorting system in all SGDBF sales outlets.


Boxes

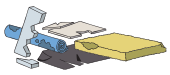

Plastic films


Ferrous and non-ferrous metals


gypsum


Wood


Inert gravas


Non-hazardous waste

CONQUÊTE 2025

2. To offer our customers various innovative solutions to help them in their daily life.

Implementation of waste collection centers

In the last ten years, the SGDB France network has created the first network of waste collection centers for construction craftsmen, as well as multiple partnerships to recover waste on construction sites.

SGDBF's objective

254 multi-stream waste collection centers throughout the country

Their role: : to simplify the life of craftsmen. They come to deposit easily their various wastes and leave with new construction materials.

2019

Brand	2 flow	7 flow	10 flow +	TOTAL
PdB	29	0	0	29
Point P	58	12	15	85
TOTAL	87	12	15	114

2020

Brand	2 flow	7 flow	10 flow +	TOTAL
PdB	17	0	12	29
Point P	54	12	21	87
TOTAL	71	12	33	116

Objectif 2022

Brand	2 flow	10 flow +	TOTAL
PdB	0	29	29
Point P	5	150	155
Other	0	70	70
TOTAL	5	249	254

Waste collection on construction sites

SGDBF has concluded partnerships with innovative companies that provide our customers with sorting solutions adapted to their site:

Privileged partnership

Willingness to rely on **Solution Recyclage Bâtiment** to provide an offer to individual home builders

Solutions available to companies, for both new and renovation projects

Other partnerships are in the process of being established.

Our objective: a complementary offer throughout the country.

Proposed solutions:
- collection of sorted waste by van
- rental of skips with separate collection
- supply and removal of big-bag or rubble bags, even on the elevated floor

SUSTAINABLE MANAGEMENT OF RAW MATERIALS

Promote the circular economy: from raw materials to waste, target -30% reduction in carbon footprint by 2025

• Transport of sand by barge to supply the Bonneuil site

• ISO 14001 certification of our production sites (environmental management).

• Design and manufacture of products in France: we have obtained the label «Origine France Garantie» for nearly 70% of our products. A label that certifies to our customers that they contribute to the local, regional and national economic health through their Weber purchases.

• Industrial techniques to reduce manufacturing waste: by 2025, a reduction of nearly 20% in the use of virgin non-renewable raw materials, a 30% reduction in the plastic materials used in its packaging, 5% reduction per year of its production residues and a commitment to recover at least 90% of it.

• Work on the use of recyclable buckets with a high recycled content for ready-to-use products.

SUPPLY-CHAIN, INSTALLATION AND USE OF PRODUCTS AND SYSTEMS

• 15 distribution sites in France allowing a very good coverage of the territory and an optimization of the transport of the products to their place of use.

• Optimized inter-site transport.

• Deployment of the Weberfloor service, a solution for the transportation and application of flooring products that avoids the use of packaging (bags and overpackaging) and reduces the carbon impact of product transportation.

ECO-INNOVATION AND PRODUCT TRANSPARENCY

A product strategy oriented towards a new range of eco-committed solutions:

- Strict charter of eco-responsible criteria
- Transparency via certified FDESs

Weber is actively working to take into account the reduction of environmental impacts in the development of its new products.

A few examples of this are:

- Use of bio-sourced and renewable products in exterior insulation solutions in cork with the Webertherm XM natura system and in wood fiber with the Webertherm XM FdB system
- Webercol flex eco: a tile adhesive using a secondary raw material that saves natural non-renewable resources while reducing the product's carbon footprint by more than 50%. It also promotes a safe circular economy through the elimination of hazardous substances.
- Reduction of waste generated during plastering by the development of new finishes.

END-OF-LIFE MANAGEMENT OF PRODUCTS

- Weber France's mineral mortars are 100% recyclable via existing concrete recycling channels (crushing, grinding, rubble).
- We propose to our customers a rubble collection service in particular (Webercollect service launched in the regions), and we are committed to clean building sites and against landfill.

LIFE CYCLE ANALYSIS: THE ESSENTIAL PART OF ANY PRODUCT DEVELOPMENT.

Les éco-engagés

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