

Imerys Innovation

Imerys Analysts visit | December 2021

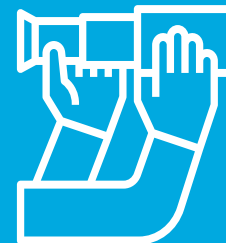
Frederic Jouffret - Vice-President Science & Technology
Global coordination for Performance Minerals



**Key figures
and organization**



**Innovation
Strategy**



**Performance
Minerals key
innovation projects**

Imerys Innovation Key Figures



350

Scientists
& Technicians



€70m

Total Spend
for R&D
and technical
support



7

Main Imerys
Technology
Centers (ITC)



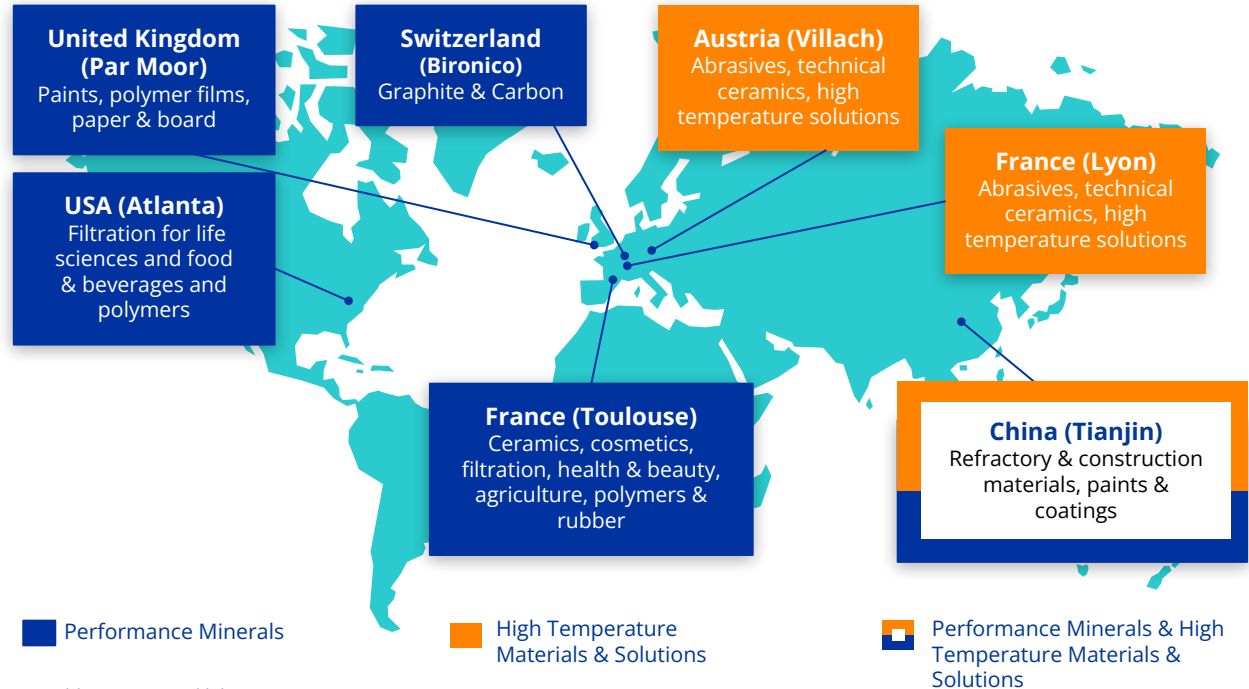
70

New product
launches
(2020)

Imerys Innovation Organization: Global footprint

Areas of innovation

- Mobile energy
- Green mobility
- Reuse and life cycle of minerals
- Synthetic minerals
- Natural solutions
- Building and sustainable construction
- Alternative food packaging
- Industry 4.0: automatisisation, robotics and engineering
- Sustainable solutions to reduce materials consumption



In addition, regional labs:

- Japan (Kawasaki); lithium-ion batteries
- Brazil (Bras Cubas); paints & coatings



Key figures
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Innovation Strategy at Imerys



Driving an innovation culture

→ Excellence in people, execution and equipment



Investing in sustainable growth

→ Sustainability as a lever for growth



Addressing global challenges

→ Market driven innovation



Creating value for stakeholders

→ Explore all mineral capabilities



Excellence in People, Execution & Equipment



- **Global coordination of projects** to avoid duplication per region with 40 new projects entering in the pipeline every year
- **International pool of talent** with PhD (50) and scientists coming from the industry and academia
- **Management portfolio governance** through stage gate process (Accolade), business lead, analytics and KPIs review
- **Monthly project review with** all marketing, sales and technical teams on key projects (“go to next gate”); 63% of R&D time spent on top priority projects
- **Quarterly “Portfolio Review”** meeting under the leadership of Senior VPs, Market segment VP & S&T VP
 - Reporting of New Product Development (launches, sales) intended for measuring the vitality of the product portfolio
- Balancing **New product development vs technical support** for long term and short term projects

Sustainability as a lever for growth



- **Sustainability inclusion in our NPD development process** during stage gate process (2022 target with 50% market launched NPDs as sustainable solutions)
- **Product Sustainability Assessment** used for each Innovation project analysis to pass gate 1 together with market perspective
- Assessment of the **current portfolio** is underway (2022 target to assess 40% of our portfolio)
- Launch a **pilot wave of products with highest sustainability rating** and assess market response before potential expansion
- Introduce **projects on circular minerals** as new business model
- **Product Stewardship and REACH certification**, a license to operate

“We are finding ways to embed sustainability in all we do; integrating it within our processes, tools, and operations. It is a part of how we innovate and guides the way we spend money”





Market driven & customer centric R&D organization



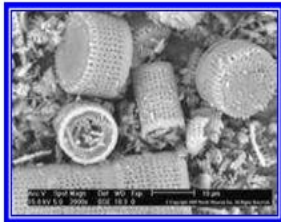
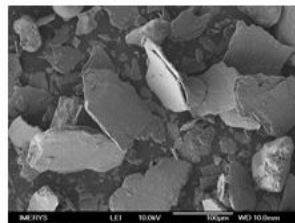
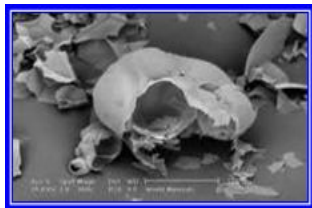
AkzoNobel



- R&D Directors and Innovation teams **organized by markets or applications**
- Our main focus: develop solutions, applications and services based on **market trends and customers needs**
- Create **development partnerships** through open innovation at our customers and tech days
- **Recognition at our customers** as key innovative supplier at multiple occasions (Akzo, UPM, Tarkett, Duracell, Premix, SK, JM, ...)



Explore all Industrial Mineral Capabilities



Natural minerals: majority of our sales and development; New technologies includes sustainable and/or natural solution for global mega trends, replacement of oil based materials, new process innovations....



Circular Minerals: answers to market key questions on ore availability, recyclability and sustainability; re-use, regenerate, design out of waste



Synthetic Minerals: New functionalities (tailor made solutions) for high value niche applications

Minerals 'naturally' different: not every market or customer need can be addressed by a single mineral in its natural state....

Performance Minerals markets served



Polymer & Coatings

Gloss and opacity, conductivity and lightweighting



Paper and Board

Whiteness, opacity, gloss and Pitch control



Ceramics & Building

Whiteness and hardness



Filtration & Life Sciences

Purification of liquids, moisture absorption and smoothness



Mobile Energy

Lifespan and fast charging

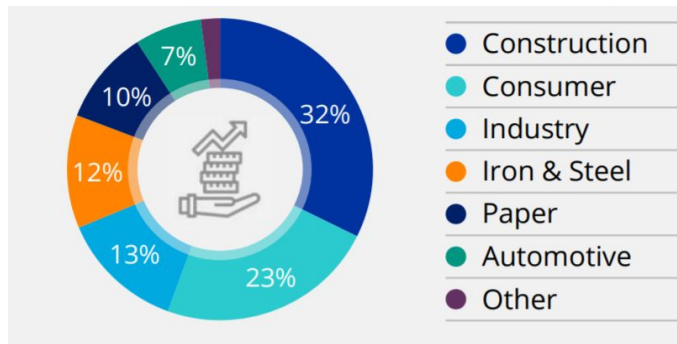
... Applications at Imerys Technology Center Toulouse

Imerys delivers value-added solutions that are formulated to meet the technical specifications of each customer

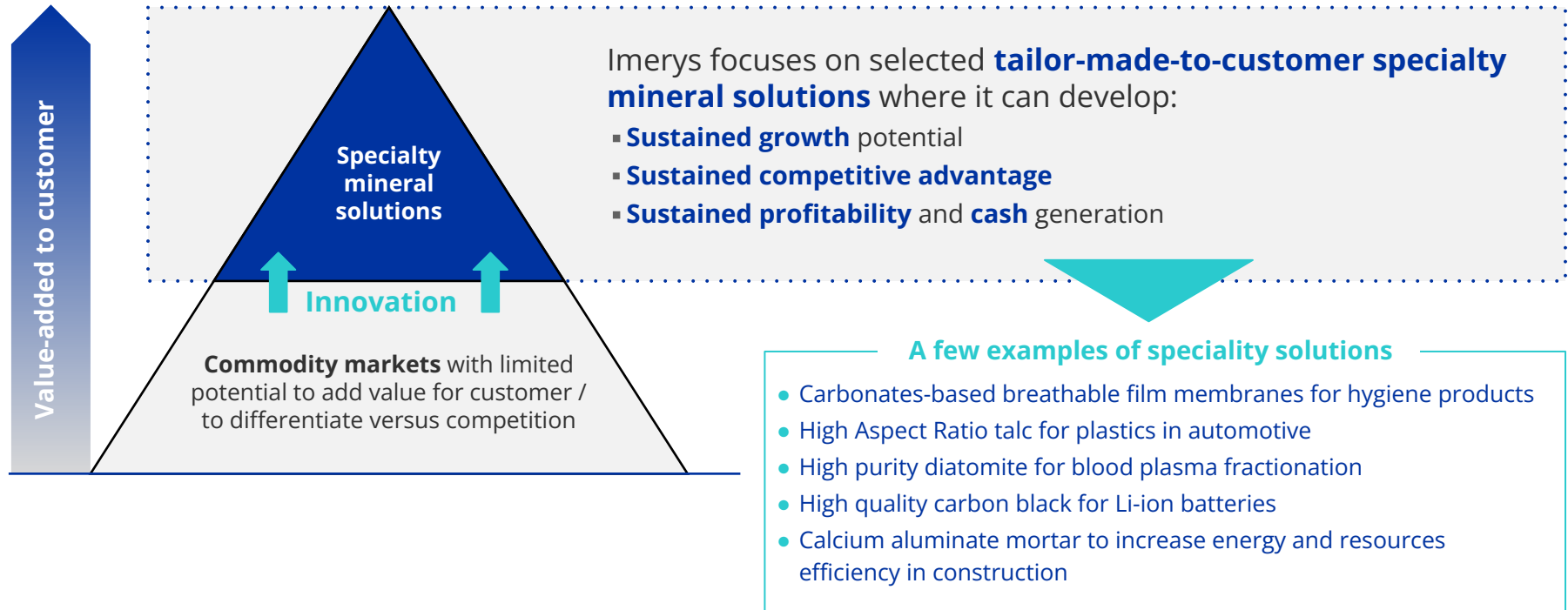
The solutions contribute to the performance of a multitude of products in different categories:

1. **Functional additives:** added to the mineral formulation of customers' products
2. **Mineral components:** essential constituents in the formulation of customers' products

Revenue by end market



Focusing on specialty niches to bring high value to customers

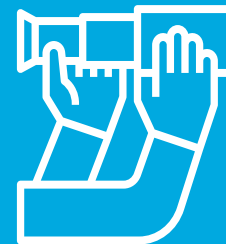




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Performance Minerals: Development areas in project portfolio



**Low-Emission
Mobile Energy**



**Green
Mobility
Materials
(Lightweight)**



**Sustainable
Construction**



**Natural
Solutions
for Consumer
Goods & Life
Science**



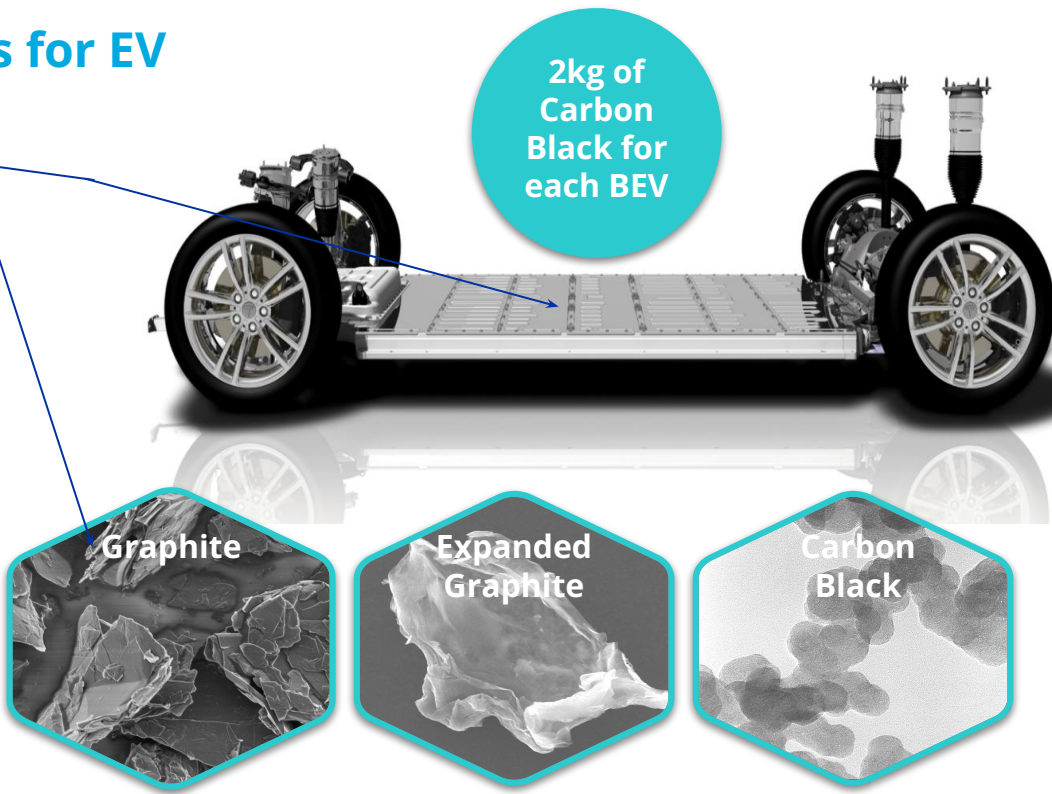
**Circular
Minerals**

Focus #1: Low-Emission Mobile Energy



Li-ion batteries & Fuel cells for EV

- **Conductive additives** for anode and cathode (G&C)
- **Fuel cells:** High purity Carbon Black and Graphite for microporous layer and catalyst support
- **Participation to ERMA, European Institution,** *"securing access to critical raw material"*
- **Lithium** as raw material supply
- **Ceramics products** for production of electrode active material
- **Special additives** for better conductivity in electrolyte
- **Permeable films** for battery separator



Focus #2: Green Mobility



Lightweighting in automotive

- **Lightweighting focus**
for automotive for low emission and longer driving range; main target on EV
- **Supply of innovative reinforcing minerals** to lighter plastic parts (exterior & interior)
- **Regional source of barrier minerals for tire inner liner** (lower weight by reduced thickness)



*Citroën Ami:
6 kg of mineral
in exterior
plastic parts*

12-15kg
of talc in
plastic per
vehicle in
Europe

Focus #3: Sustainable Construction



Lightweighting and waste management

- **Lightweighting** for ceramics large tiles (slabs) and facade
- **Mineral foams:** Lightweight foamed material (insulation, fire-resistant, no organic volatile compounds)
- **Sustainable building material** with Geopolymers
- **Circular waste management** from construction in tile ceramic business (sanitaryware waste recycling)
- **Kiln furniture** to replace single use plates in sanitaryware (patented)
- **Functional minerals for ETICS** (External Thermal Insulation Composite System): lightweighting and better insulation with expanded perlite
- **Pozzolans as low CO₂ additive** in construction hydraulic binders
- **Long lasting inorganic** additives for waste water pipeline protection



Up to -60%
reduction
in CO₂
emissions

Focus #4: Natural Solution



Applications for Consumer Goods & Life Science

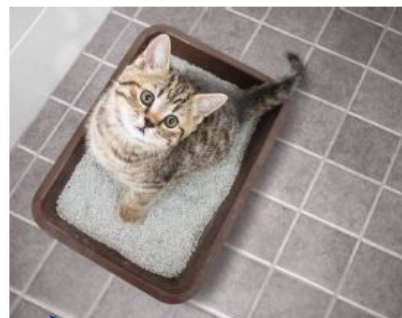
- **Barrier coating for carton board and paper containers** replacing plastic packaging
- **Natural minerals for Personal care:** French mica for cosmetic applications
- **Agriculture:** Natural solutions as **biocontrol** agents against pesticides and as **biostimulants** (Plant available Silicon) against toxic chemicals
- **Biofuels:** New absorbent purifying waste feedstocks for conversion into renewable diesel (Hydrotreated Vegetable Oils) and aviation fuel
- **Paints & Coatings:** Lightweight renders, zero titanium dioxide solutions
- **New bleaching earth** for oil discoloration
- **Pet Litter:** **Lightweight** solutions for ageing population having pets as company



- French patented mica: **ImerCare® 6M** for make up powders



-25%
reduction
In chemical
products



Focus #5: Circular Minerals: from linear to circular economy



- **Imerloop project in board & packaging** to reprocess industrial mineral waste
- **Re-mining as key example** in North America with Sylacauga operation (reclassification of Imerys waste)
- **Waste filtration cakes** as feedstock for ceramics
- **New ideas through “start up Innovation challenge”**
Alternative (post-industrial) feed materials or assisting external circular value chains

Circular solution with 40% recycled content



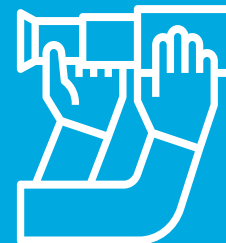
New Imerys circular mineral product launch



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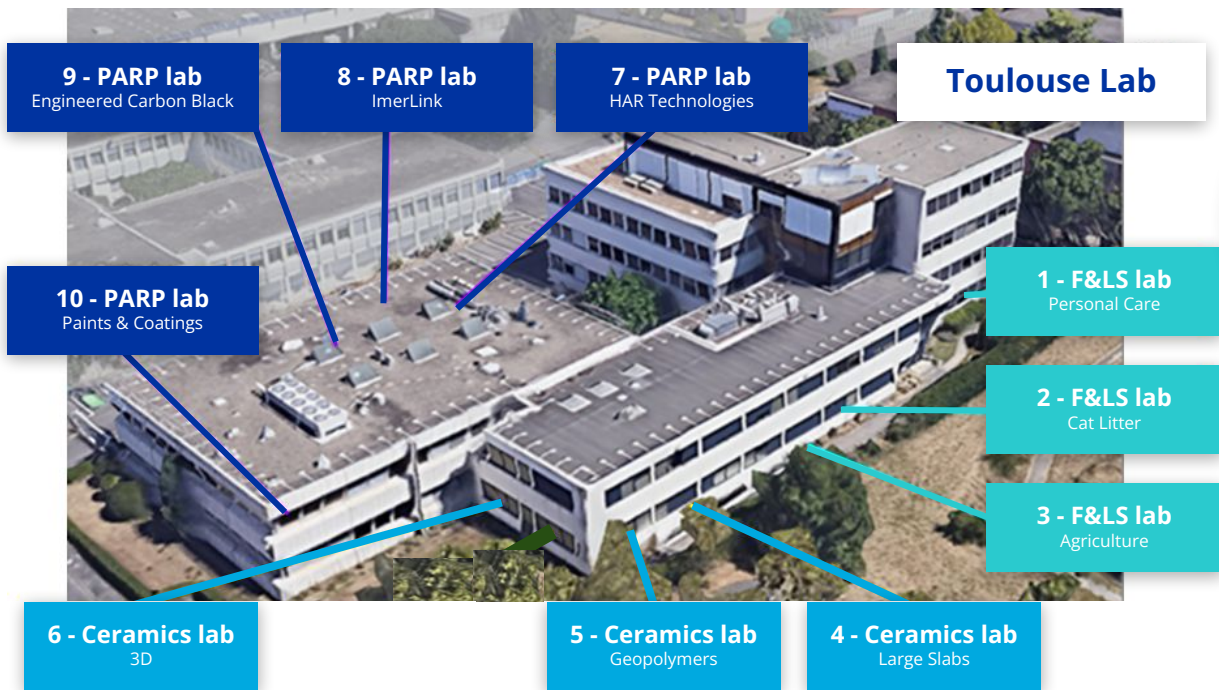


**Innovation
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Imerys ITC Toulouse - Laboratories



50
French and international technicians and scientists in the laboratories

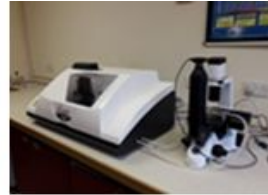
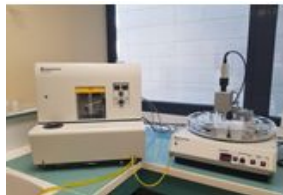
2020
The lab expansion was done in 2020

>2500m²
of laboratories

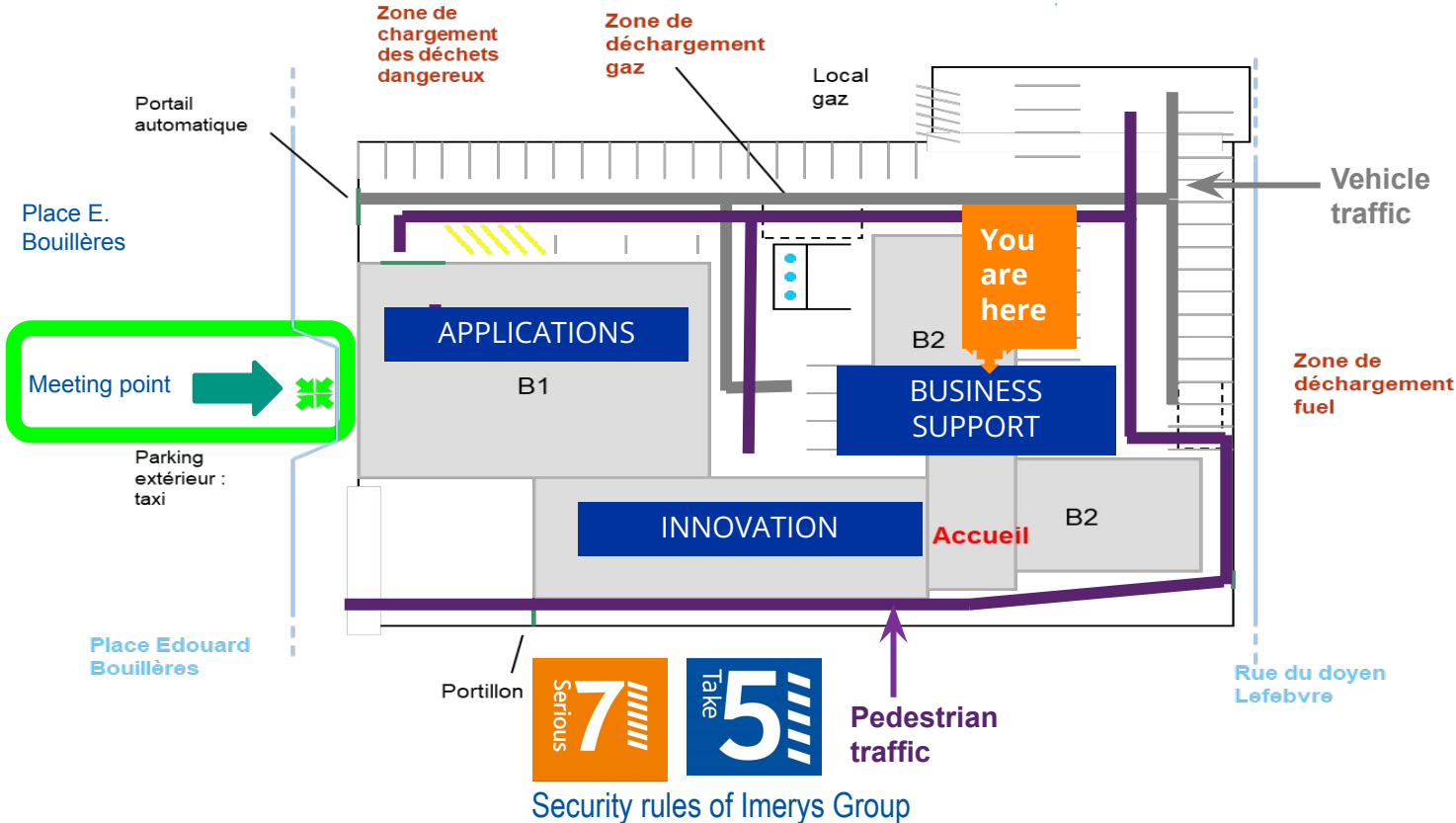
Imerys technology world center of excellence for polymers development

Laboratories & safety instructions

- **Safety equipment:** safety glasses in all laboratories, plus, if applicable, other safety equipment notified on the front door
- **Do not touch the equipment**, the products and respect the safety limits marked on the ground
- **Indicate your presence** to the guide before the visit
- **If you see an unusual situation** (immediate danger, start of fire, etc.), notify your attendant
- Some machines may be in operation for demonstration, please **respect the safety distances**



Emergency exit in case of fire alarm



If you hear the siren or if an evacuation is requested ...

- Go to the meeting point in front of the building (Place E. Bouillère side)
- Indicate your presence to your evacuation manager

Who's who - Performance Minerals EMEA



Frédéric JOUFFRET

S&T Vice President
Performance Minerals



Philippe BARRE

PARP S&T Director



Christel CAREME

F&LS S&T Director



Murielle PERRONNET

Ceramics & Building
Products S&T Director

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