

AceForm4.0 Public Consultation

Fields marked with * are mandatory.



Introduction

This is your chance to influence the EU-research agenda for the formulated product industries!

The **main purpose of this consultation** is to **identify the common technological challenges faced by the European Formulation Industry and its associated actors** along the whole value chain. These findings will serve as **guidelines for the allocation of European public funding for research and development activities during the next 5-10 years**. This is your chance to make sure that those areas that will effectively **enable your organisation to increase its competitiveness and its innovation ability** get governmental support!

ABOUT THE SURVEY:

- This consultation **targets industrial/commercial organisations producing formulated products/formulations** as well as **all associated actors along the value chain**.
- The survey is divided into **four sections** and it **takes ca. 20-25 min** to complete.
- The **first two sections** of the survey are dedicated to **identifying the profile** of the participant and the **technical challenges and opportunities**.
- The **third and fourth sections** are exclusively **dedicated to** the identification of challenges and opportunities for the formulation industry in the context of the two

mega trends **Circular Economy** and **Industry 4.0**, respectively.

- Some key definitions are provided as guidelines when deemed necessary to help align the mind-set of participants.

ABOUT WHAT HAPPENS AFTERWARDS:

- The survey will be conducted during the first and second quarter of 2017.

- The findings from this survey will be analysed and translated into a common vision for sustainable formulated products and an implementation plan for 2025. One-to-one interviews and workshops will be carried out as part of the process to preparing this common vision.

- Findings will be made available to the public on a continuous basis during 2017 and 2018 through the AceForm4.0 project website (<http://www.formulation-network.eu>).

Section 1: ABOUT YOUR ROLE AND THE ORGANISATION YOU REPRESENT

1. Contact name

Michèle Kint

2. Contact details - e-mail address and phone

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* 3. Please specify your position or role within your organisation.

- ☒ Manager (specify type)
- ☐ Product developer
- ☐ Research/Scientist
- ☐ Process Engineer
- ☐ Technical Support
- ☐ Regulatory
- ☐ Marketing
- ☐ Other /Please specify

Comments

Business Development Manager

*** 4. Please indicate**

the nature of the organisation you work for/represent (ok to select more than one).

- ☐ Industrial/commercial organisation producing formulated products
- ☐ Industrial/commercial organisation developing formulations for downstream use in other applications (within or outside the organisation)
- ☐ Specialty chemical producer
- ☒ Research Institute/RTO
- ☒ Contract Research Organisation
- ☐ Consultant
- ☐ Manufacturing contractor
- ☐ Equipment and/or instrumentation manufacturer/supplier
- ☐ Academia
- ☐ Government body or agency
- ☐ Non-Governmental organisation or consumer group
- ☐ Other/ Please specify

Comments/Additional information

5. Please provide your organisation's name

Flamac

6. Please indicate the size of your organisation

- ☒ Small/medium sized organisation (<250 employees)
- ☐ Large organisation (>250 employees)

*** 7. Please indicate the geographical location (country) where your activities are based**

Belgium

*** 8. Who are your organisation's customers?**

- ☒ Downstream industrial customers/users
- ☐ End consumers
- ☐ Not applicable

9. Please provide an outline of products or services your organisation offers.

At Flamac we have developed unique high-throughput platforms to accelerate materials R&D. These include accelerated synthesis, formulation, application and characterisation techniques. Flamac offers its service in either collaborative, multi-disciplinary research between industry, universities and research centres or contract research.

We combine our competences in high-throughput experimentation with a thorough understanding of our customers' needs, across a variety of application areas and industries.

This enables both large corporations and small & medium sized companies to stimulate new product and process development and to shorten their time-to-market for new materials.

10. Please indicate the market sector(s) that **your organisation targets (if applicable)**. Multiple selections are possible.

- ☒ Home care
- ☒ Personal care
- ☒ Industrial care
- ☐ Pharmaceuticals
- ☒ Health care and medical device
- ☒ Agro Technologies & Plant Protection
- ☒ Coatings, paints & Ink
- ☒ Lubricants and Adhesives
- ☒ Chemical industry
- ☒ Food & Feed
- ☒ Oil and mining industries
- ☒ Additive manufacturing
- ☒ Paper and Packaging industries
- ☐ Others/Please specify

Comments/Additional information

Section

2: CHALLENGES FOR THE FORMULATION INDUSTRIES

Key definition No. 1. Formulated Product

A formulated product is composed of at least two ingredients which are selected, processed and combined in a specific way to obtain well-defined target properties, functionality and performance. It can exist in liquid, semisolid or powder form. A formulated product has a commercial value and is either meant for direct consumer use or for downstream use in other industrial applications.

Key definition No. 2. Formulation

The word “formulation” can be used to refer to different things:

Formulation= Recipe

A list of ingredients and detailed processing steps used for the development of a blend displaying well-defined target properties, functionality and performance.

Formulation= The act of formulating something

The combination of processes used for mixing and conditioning of ingredients (actives, protective agents and stabilising agents) as well the know-how and technologies that enable selection of ingredients and mixing processes for the production of a blend with specific target properties, performance and functionality.

Formulation= The actual blend of ingredients

* 11. Do you use the term “formulation” in your organization?

- ☒ Yes
☐ No

12. Which alternative term(s) for formulations do you use in your organisation or communication with customers (if any)?

Recipe, bill of materials

* 13. What do you consider are the 3 most important business drivers for the type of formulated products that you deal with?

- ☒ Product performance/Quality
☒ Innovation
☐ Lowering manufacturing cost
☒ Sustainability profile of the product
☐ Sustainability profile of manufacturing processes and supply chain
☐ “Clean label” attribute
☐ “Ethical label” attribute
☐ Safety and regulatory Compliance
☐ Other/ Please specify

Comments/Additional information

* 14. Please indicate

what you consider are the 3 most important technical challenges with respect to the **performance/quality** of a formulated product.

- ☒ Physical stability of the formulation (shelf life)
- ☒ Chemical stability of the actives/ingredients (shelf life)
- ☒ Robustness of the formulation
- ☐ Controlled/targeted delivery of actives
- ☐ Improve efficiency of active
- ☐ Solubilisation of actives
- ☐ User compliance/Ease of use
- ☐ Sensory properties (texture, smell, taste etc)
- ☐ Interaction with packaging materials
- ☐ Other/ Please specify

Comments/Additional information

* 15. Please indicate

what you consider are the 3 most important challenges during **production/manufacturing** of formulated products.

- ☒ Scale up (from lab to pilot scale and pilot to full scale)
- ☐ Variations in raw material quality
- ☒ Robustness of production process
- ☒ Environmental impact/sustainability of processes
- ☐ COGS (cost of goods sold)
- ☐ Process automation
- ☐ Process control
- ☐ Other/ Please specify
- ☐ Do not know

Comments/Additional information

* 16. Please indicate

what you consider are the main challenges associated to **regulatory/safety compliance** of formulated products.

- ☒ Toxicity levels of different ingredients
- ☒ Ingredient traceability
- ☐ Manufacturing process
- ☐ Work environment
- ☐ Do not know

Please provide additional comments and details if possible.

17. Do you or your organisation have any collaborative activities with other industrial partner, consultants, academia or other actors related to formulation?

- ☒ Yes
- ☐ No

18. Please indicate the overall aspects addressed within these collaborations. Multiple selections are possible.

- ☒ Fundamental research
- ☒ Formulation design
- ☒ Product development
- ☒ Process design
- ☐ Manufacturing
- ☒ Product functionality tests
- ☐ Regulatory
- ☐ Other/Please specify

Comments/ Additional information

19. How do you or your organization find partners for collaborations related to formulation today?

- ☒ Scientific conferences
- ☒ Industrial conferences & fairs
- ☒ Trade associations
- ☐ EU brokerage events
- ☐ Enterprise Europe Network
- ☐ Technology broker agencies
- ☒ Contacts within your existing network
- ☐ Social Media (e.g. LinkedIn-groups)
- ☐ Web searches/Websites

- ☒ Sector-specific events, theme-days or workshops
- ☐ Other/Please specify

Comments/ Additional
information

* 20. Within which areas

do you see an additional need for collaboration between industries, academia and other actors in the formulation network?

- ☒ Formulation development-High throughput/experimental design tools
- ☒ Product performance/quality – predictive/assessment/modelling tools
- ☐ Innovation tools
- ☐ Product/Process Sustainability
- ☐ Production scale-up
- ☐ Process control and plant automation
- ☐ Safety/compliance
- ☐ Other/ Please specify
- ☐ None

Comments/ Additional
information

* 21. How do you think

those collaborations could be best organized?

- ☒ Information exchange events across industrial sectors
- ☐ Flexible training programs in modular form
- ☒ Sector targeted information exchange events
- ☒ Formation of long-term strategic alliances with selected research-basis
- ☒ Participation in collaborative R&D projects
- ☐ Other/ please specify
- ☐ I do not know

Comments/ Additional
information

* 22. Please indicate

what you consider are the 3 most important technical areas related to formulation that your company would like to grow stronger in the next 5-10 years?

- ☒ Formulation development-High throughput/experimental design tools
- ☒ Product performance/Quality- predictive/assessment/modelling tools
- ☐ Production Scale up
- ☐ Process control and automation
- ☒ Process/Product sustainability
- ☐ Other/Please specify

Comments/ Additional
information

* 23. Please indicate

what you consider are the 3 areas in greater need for innovation in relation to formulated products?

- ☒ Formulation development-High throughput/experimental design tools
- ☒ Product performance/Quality- predictive and/or assessment tools
- ☐ Process control and automation
- ☐ Production scale-up
- ☐ Process control and plant automation
- ☒ Process/Product sustainability
- ☐ Other/Please specify

Comments/ Additional
information

* 24. To what extent are

the current technical needs of your organisation met by existing training programs/formal university education/networking or information sharing events?

- ☐ To a great extent
- ☒ Partly covered by existing programs
- ☐ They are not covered at all
- ☐ I do not know

Section 3: CHALLENGES IN THE CONTEXT OF CIRCULAR

ECONOMY

Key Definition No. 3. Circular Economy

The Circular Economy concept is about maintaining the value of products, materials and resources in the economy for as long as possible, while minimizing the generation of waste. EU's 2015 implementation plan for Circular Economy addresses aspects related to: Production design and process, consumption, waste management and from waste to resources. In the context of these aspects the concepts of "re-use", "resource productivity", "renewable energy" and "down-cycling" play a very important role.

*25. Are you familiar with the term "Circular Economy" within your organization?

- ☒ Yes
- ☐ No
- ☐ Do not know

* 26. Which of the following areas, relevant to the Circular Economy trend, is your organisation currently working actively on?

- ☒ Sourcing raw material from sustainable sources
- ☒ Ingredient exchange or reformulation to improve sustainability profile
- ☒ Development of raw materials from sustainable biomass or waste for inclusion in formulated products
- ☐ Undertaking a full product life cycle assessment to determine and manage environmental impact
- ☐ Product Life Management
- ☐ Lean production
- ☐ Waste management during the production process
- ☐ From waste to resources
- ☐ From waste to energy
- ☒ Recycling end product after utilisation
- ☐ Others/Please specify
- ☐ Do not know

Comments/ Additional information

*27. Does your organisation have a defined strategy for addressing one or several aspects related to Circular Economy?

- ☐ Yes, we do have a Circular Economy strategy

- ☒ Yes, we have a strategy that covers some of the aspects of the Circular Economy concept
- ☐ No, we do not have a common strategy at all
- ☐ Do not know

*28. Please indicate what

you consider are the most important areas related to Circular Economy that your company would benefit from growing stronger within the next 5-10 years?

- ☒ Sourcing raw material from sustainable sources
- ☒ Ingredient exchange or reformulation to improve sustainability profile
- ☒ Development of raw materials from sustainable biomass or waste for inclusion in formulated products
- ☐ Undertaking a full product life cycle assessment to determine and manage environmental impact
- ☐ Product Life Management
- ☐ Lean production
- ☐ Waste management during the production process
- ☒ From waste to resources
- ☐ From waste to energy
- ☒ Recycling end product after utilisation
- ☐ Others/Please specify
- ☐ Do not know

Comments/ Additional information

*29. To what extent are

your current technical needs/gaps in the context of Circular Economy met by existing training programs/formal university education/networking or information sharing events?

- ☐ To a great extent
- ☒ Partly covered by existing programs/events
- ☐ They are not covered at all
- ☐ Do not know

30. What research activities and technological themes

should be included in the Strategic Research Agenda for formulated products with respect to Europe's transition to a Circular Economy?

Utilizing high throughput methodologies to speed up transition to a Circular Economy

Section

4: CHALLENGES IN THE CONTEXT OF INDUSTRY 4.0

Key Definition No. 4: Industry 4.0

A term that encompasses different aspects of the **optimization of process and systems through digitalization** in order to **enable increased connectivity** between these. For the manufacturing industries, Industry 4.0 has been said to offer unique opportunities for attaining: i) Reduced time to market, ii) More flexibility, iii) High performance (as high quality as possible) and iv) Save resources.

*31.

Are you familiar with the term "Industry 4.0" within your organization?

- ☒ Yes
- ☐ No
- ☐ Do not know

* 32. In which of the

following areas, has your company implemented/is considering implementing the use of **smart (interconnected) devices** encompassed by Industry 4.0?

- ☐ Supply chain management and integration
- ☒ Accelerating new product development
- ☒ Developing new, in stream analytical and control processes
- ☒ Improving accuracy of analytical and control processes
- ☐ Sensor work across manufacturing plants and/or supply chain for gathering operational data and analytics.
- ☐ Health and safety
- ☒ Robotic/Factory automation
- ☒ Prototyping Equipment
- ☒ Test and Inspection
- ☐ Communication (Optical, wireless, RFID)
- ☐ Reducing or eliminating pollution
- ☐ Product Distribution
- ☐ Product utilisation by end-users
- ☐ Others/Please specify
- ☐ Do not know

Comments/ Additional
information

* 33. In which of the following areas has your company implemented or is considering implementing **advanced simulation software**?

- ☒ New formulation development and predicting performance of potential new formulations
- ☐ Modelling scale-up from manufacturing from lab-scale to production
- ☐ Modelling and simulation of new manufacturing processes to achieve optimal use of ingredient and resources
- ☐ Modelling and simulation of plant operational scenarios
- ☐ Virtual design of manufacturing plants
- ☐ Training operators and staff
- ☐ Do not know

* 34. Does your organization have a defined strategy for addressing one or several aspects encompassed by Industry 4.0?

- ☐ Yes, we do have an Industry 4.0 strategy
- ☒ Yes, we have a strategy that covers some of the aspects of the Industry 4.0 concept
- ☐ No, we do not have a common strategy at all
- ☐ Do not know

* 35. Please indicate the 3 aspects enabled by Industry 4.0 which you think would be of highest priority for your organization within the next 5-10 years?

- ☒ Reduce time to market for new product development
- ☐ Development of fully autonomous manufacturing processes
- ☐ Increasing automation of existing manufacturing and quality control processes
- ☐ Increasing visibility of plant operation and performance.
- ☐ Predicting and reducing plant maintenance needs and costs
- ☐ Gathering plant data to improve and aid operational and business decision making.
- ☐ Further integrating logistics and supply chain partner.
- ☐ Greater Flexibility of Manufacturing processes
- ☐ Reducing utilisation of material and energy resources
- ☐ Transformation of existing supply chain
- ☐ Development of new business models using data and digitised services
- ☐ Other/please specify
- ☐ Do not know

Comments/ Additional information

36. Which **key technological and commercial challenges** faces your organisation in the **adoption of digital technologies** to accelerate innovation of new products, improve manufacturing plant operations and supply chain integration?

Flamac's key area of expertise is to accelerate innovation of new products via high throughput technology. Necessary technology available. Commercial challenge : increase visibility, communication to promote benefits of high throughput technology.

*37. To what extent are your current technical needs/gaps in the context of Industry 4.0 met by existing training programs/formal university education/networking or information sharing events?

- ☒ To a great extent
- ☐ Partly covered by existing programs/events
- ☐ They are not covered at all
- ☐ Do not know

Contact

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