Rheonova
Shaping rheology solutions

Training Programme in Rheology and Rheometry



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OBJECTIVES

Rheology is a science that applies to **all industrial sectors**. It concerns a wide range of **fluid materials** (pastes, gels, emulsions, suspensions, polymer melts, resins, polymer solutions, slurries, powders…) in the context of many **processes**: pumping, mixing, coating, encapsulation, extrusion, atomization…

Training pathway

	COMMON CORE	
	Level Green Discover the basic concepts of rheology	
Level Blue – Powders Discover the potential of **powder** rheology	**Level Blue** Discover the application potential of rheology	
ANALYTICAL TRACK	***R&D TRACK***	***PRODUCTION TRACK***
Level Red Independent on a rheometer: build your own protocols	**Level Red** Rheology for formulation: formulate better using rheological properties	**Level Red** Rheology for processes: sizing of installations
	Level Black Developing advanced methods for texture (sensory) analysis	**Level Black** Developing methods to simulate production processes

The Blue – Powders level is a stand-alone course dedicated to powder rheology, separate from the fluids pathway.

The overall objective is to acquire skills in the use of rheology in a professional and industrial context: quality control, formulation and industrialization.

Our Trainers



Jérémy Patarin

Expert in industrial rheology and process rheology

A PhD and Grenoble INP engineer in fluid mechanics, Jérémy Patarin has 15 years of experience in industrial rheology in the chemical, cosmetics, food, pharmaceutical, healthcare, energy and environmental sectors.



Guillaume Darsy

Training specialist in fluid rheology and rheometers

With 10 years at Rheonova, Guillaume Darsy knows rheology from the field. Holding a PhD in materials science and a chemical engineering degree from ENS Montpellier, he has supported hundreds of companies in their projects, on all types of fluids and rheometers.



Mohamed Mouzaoui

Expert in powder rheology and process engineering

Holding a PhD in process engineering from IMT Mines Albi, he is our powder rheology expert. With 7 years of industrial experience covering both fluids and powders, he supports companies with their most complex field challenges.



Mickael Goni

Expert in process sizing

A mechanical and energy engineering graduate of Grenoble INP – Ense3 with more than 5 years of experience at Rheonova, he works with our clients directly in the field and handles a wide variety of fluids and issues.

Types of Training

Training courses can be held at our premises or on site as in-company training. The prices given below correspond to in-company training. They include the training materials, the provision of our easyRheo rheometer for the entire duration of the course, and the trainer's travel.

Assessment: each participant is assessed at the end of the course through a quiz (a quiz tailored to each type of course) and a satisfaction questionnaire.

Practical Information

Getting to Rheonova

- By car: ring road (N87), Exit 1 "Domaine Universitaire". Free parking.
- By Grenoble public transport (TAG): Tram B or C, Condillac Université stop.
- 1 h 15 from Lyon airport; 3 h from Paris by TGV.



Specific Accessibility

We are able to consider welcoming people with disabilities subject to certain organizational conditions. Please contact our Disability Officer, Jérémy Patarin, at the following address: gestion@rheonova.com

Green Level Training: Introduction to Rheology

½ day – 4 h | 3 – 6 participants | Webinar | **From €400 excl. VAT per participant**

Prerequisites: Minimum two-year post-secondary degree (Bac+2) in science, or equivalent.

A half-day training course on discovering rheology and how it is used. The objectives are to:

- Introduce rheology, its fundamental principles and its uses,
- Discover the rheological behaviours of everyday products and their physico-chemical origins,
- Understand the influence of parameters such as temperature, dry matter content, etc.,
- Provide general knowledge of characterisation techniques for fluid materials,
- Represent the rheological properties of everyday products in order to describe the texture of a new product,
- Study first concrete examples of rheology applications in R&D and production.

PROGRAMME

Introduction to rheology:

- Discovering the terms and uses related to rheology.
- Basic principles of fluid mechanics.
- Rheological behaviours of gelled, shear-thinning and thixotropic products.
- Principle and practical use of viscoelasticity measurements (G′, G″, tan δ…).

Introduction to rheometry:

- Choice of instruments and geometries.
- Choice of protocols (flow, oscillation).
- Influence of artefacts.

Industrial use of rheology:

- Evaluation of shear rates in production and application processes such as mixing, emulsification, filling, storage and coating.
- Concrete industrial examples of the use of rheology.

Blue Level Training: Discover the Potential of Rheology

2 days – 14 h | 3 to 6 participants | In-company | **Flat fee of €4,000 excl. VAT + trainer travel expenses**

Prerequisites: Minimum two-year post-secondary degree (Bac+2) in science, or equivalent, and basic knowledge of rheology and rheometry or equivalent experience.

A two-day training course on discovering rheology and how it is used. The objectives are to:

- Introduce rheology, its fundamental principles and its uses,
- Discover the rheological behaviours of everyday products and their physico-chemical origins,
- Understand the influence of parameters such as temperature, dry matter content, etc.,
- Provide general knowledge of characterisation techniques for fluid materials,
- Represent the rheological properties of everyday products in order to describe the texture of a new product,
- Study first concrete examples of rheology applications in R&D and production.

PROGRAMME

Day 1:

Introduction to rheology:

- Discovering the terms and uses related to rheology.
- Basic principles of fluid mechanics.
- Constitutive laws (Newtonian, shear-thinning, shear-thickening, yield-stress fluids…) to represent products.
- Physical origin of gelled and shear-thinning products: physical or chemical network; crowding effect; thixotropy.
- Principle and practical use of viscoelasticity measurements and mechanical spectroscopy (G′, G″, tan δ…).

Introduction to rheometry:

- Choice of measurement methods (empirical and scientific).
- Choice of geometries (advantages and drawbacks).
- Choice of protocols (flow, oscillation).
- Influence of artefacts (wall slip, thixotropy…).

Industrial use of rheology:

- Evaluation of shear rates in production and application processes (mixing, emulsification, filling, storage, sprayability and coating).
- Modelling and extraction of the data needed to optimize product formulations and processes.
- Choice of appropriate characterization methods.

Day 2:

Practical use of rheometers and implementation of measurement protocols

- Rotational rheometry at large deformation on model fluids: application of flow curve protocols depending on the product (thixotropy, instability, degradation), analysis of behaviours and extraction of data from various materials, in particular yield-stress and shear-thinning materials, and interpretation.

- Rotational rheometry in oscillation on model fluids: application to small-amplitude oscillation methods (SAOS in strain, frequency and temperature); limits and interpretation.

Blue Level Training: Discover the Potential of Powder Rheology

2 days – 14 h | 3 to 6 participants | In-company | **Flat fee of €4,000 excl. VAT + trainer travel expenses**

Prerequisites: Minimum two-year post-secondary degree (Bac+2) in science, or equivalent, and basic knowledge of rheology and rheometry or equivalent experience.

PROGRAMME

Day 1:

Introduction to powders

- Divided media
- Liquids vs. powders comparison
- Typical flow problems
- Evaluation techniques

Mechanics of granular media

- Particle–particle interactions
- Interaction with the process
- Interaction with the equipment

Flow after consolidation

- Consolidation
- Internal and wall friction
- Flow in a hopper

Free flow

- Instability during flow
- Variation of flow rate
- Aeration

Bulk powders

- Compressibility
- Permeability

Day 2: Practical use of rheometers and implementation of measurement protocols

- Shear tests: application of protocols to evaluate cohesion and internal friction between particles for a given storage condition, choice of protocol, analysis of behaviours and extraction of data from various materials, and interpretation.
- Wall friction tests: application of protocols to evaluate friction between the powder and the container surface, analysis of behaviours and extraction of data from various materials, and interpretation.
- Compressibility tests: application of protocols to evaluate compressibility, calculation of densities and compressibility indices of various materials, and interpretation.
- Dynamic flow energy measurements: application of protocols to evaluate powder flow behaviour, evaluate powder stability (segregation, granulation, etc.), evaluate sensitivity

to flow rate, analysis of behaviours and extraction of data from various materials (Newtonian, cohesive and non-cohesive), and interpretation.

Red Level Training – Analytical Track: Independent on a Rheometer: Build Your Own Protocols

2 days – 14 h | 3 to 6 participants | In-company | **Flat fee of €5,200 excl. VAT + trainer travel expenses**

Prerequisites: Completion of the level 1 training course, or a minimum five-year post-secondary degree (Bac+5) in engineering sciences, physics or chemistry, or equivalent experience.

PROGRAMME

Day 1:

Objectives: Exploit the full potential of rheometers for the complete characterisation of traditional rheological properties, and avoid protocol bias and measurement artefacts.

- Review of rheology definitions
- Viscometry: principles, practice, advantages and limits
- Consistometry and TPA: principles, practice, advantages and limits
- Introduction to rotational rheometry: controlled strain and controlled stress
- Introduction to specific geometries: vane and helix
- Choice of geometries: type, diameters, surface finish, material
- Evaluation and measurement of thixotropy and irreversibility
- Definition and identification of artefacts in rotational rheometry
- Modelling of classical and non-classical flow curves
- Yield stress measurement: principles and techniques, advantages and limits
- Oscillation measurements of reaction kinetics: thermal, UV, evaporation. Choice of strains, stresses and frequencies according to product properties, process characteristics and instrument specifications.
- Modelling of oscillation curves: WLF analysis, similarity between flow and oscillation curves: the Cox–Merz rule.

Day 2:

- Laboratory practice / Rotational rheometry at large deformation on real fluids
- Laboratory practice / Rotational rheometry in oscillation on real fluids

Red Level Training – R&D Track: Rheology for Formulation: Formulate Better Using Rheological Properties

2 days – 14 h | 3 to 6 participants | In-company | **Flat fee of €5,200 excl. VAT + trainer travel expenses**

Prerequisites: Completion of the level 1 training course, or a minimum five-year post-secondary degree (Bac+5) in engineering sciences, physics or chemistry, or equivalent experience.

Objectives: Use rheological properties to speed up the formulation process: ingredient selection, benchmarking, performance, sensory analysis, industrial feasibility.

PROGRAMME

Day 1:

- Review of rheology and rheometry
- Semi-liquids and semi-solids: a suitable texture for each application
- Identify the critical steps in the use of a product and evaluate key parameters
- Track the impact of a formulation change
- Comparative study of competing products on a market
- Study of intra- and inter-batch variability
- Anticipate the mechanical stability of a product
- Establish a design of experiments. Choose protocols and limit the number of tests. Communicate your characterization request clearly
- Viscometry/rheometry correlation
- Curve modelling (flow and oscillation)
- Interpretation of rheological properties in a usage context
- Evaluation of adhesion (tack) by rheometry
- Map properties to build a marketing pitch
- Reaction monitoring: gelation, cross-linking, vulcanization, drying
- Prepare industrial scale-up: mixing, pumping and pipe transport

Day 2:

- Laboratory practice / Rotational rheometry in oscillation on real fluids
- Group work / Instrumental sensory study with statistical analysis
- Group work / Choice of texturing agent and stabilization of complex systems

Red Level Training – Production Track: Rheology for Processes: Sizing of Installations

2 days – 14 h | 3 to 6 participants | In-company | **Flat fee of €5,200 excl. VAT + trainer travel expenses**

Prerequisites: Completion of the level 1 training course, or a minimum five-year post-secondary degree (Bac+5) in engineering sciences, physics or chemistry, or equivalent experience.

Objectives: Organize a strategy for controlling rheological properties: line sizing, industrialization of new products, day-to-day quality control, investigation of non-conformities.

PROGRAMME

Day 1:

- Review of rheology and rheometry
- Differences between flow rate/velocity/force and shear rate/stress
- Identify the critical steps of a process and evaluate key parameters: shear rate, stress
- Everyday characterization tools: viscometry and consistometry
- In-line measurement: principles, advantages and limits
- Sizing a mixer: agitation speed, dead-zone analysis, wall scraping, degassing, sedimentation, restart
- Sizing pumps. Choice of technologies. Calculation of pressure losses and suction pressures. Evaluation of shear
- Key rheological properties for coating: knife, roll, curtain
- Sprayability: influence of viscosity, elasticity and extensional properties
- Encapsulation: interface dynamics and film stability
- Bead deposition: definition of plasticity and relevance of creep
- Bottle filling: filament break-up kinetics
- Storage: migration at rest or under flow and pot-life evaluation
- Migration in pipes: effect of plasticity and shear-thinning
- Reaction monitoring: gelation, cross-linking, vulcanization, drying
- Statistical approaches for exploiting product properties

Day 2:

- Laboratory practice / Rotational rheometry at large deformation on real fluids
- Group work / Mixer scale-up study
- Group work / Pump selection

Black Level Training – Production Track: Developing Methods to Simulate Production Processes

2 days – 14 h | 3 to 6 participants | In-company | **Price on request**

Prerequisites: Completion of the level 2 training course for the relevant track, or a minimum eight-year post-secondary degree (Bac+8, PhD) in engineering sciences, soft matter physics or organic chemistry.

Objectives: Set up designs of experiments, special protocols and an analysis strategy to evaluate the organoleptic properties of new formulas. The course is divided into two parts: the first is dedicated to group work on rheometry methodology applied to texture analysis; the second takes place 100% in the laboratory, with the definition and implementation of a protocol dedicated to texture analysis.

PROGRAMME

Day 1: Group work

- Review of rheology and rheometry
- Establish a design of experiments in line with the specifications: choice of stresses, temperatures, concentrations…
- Sensory descriptors and rheological properties: relative or absolute approach
- Instrumental simulation: using a rheometer to reproduce the use of a product
- Statistical approaches for exploiting product properties: standard deviation, PCA and ANOVA

Day 2: Laboratory practice

- Large-amplitude oscillation rheometry
- Rheometry during drying
- Rheometry in compression and DMA
- Tribology and tribometry: elastohydrodynamic contact
- Building protocols to evaluate organoleptic properties

Black Level Training – R&D Track: Developing Advanced Methods for Texture (Sensory) Analysis

2 days – 14 h | 3 to 6 participants | In-company | **Price on request**

Prerequisites: Completion of the level 2 training course for the relevant track, or a minimum eight-year post-secondary degree (Bac+8, PhD) in engineering sciences, soft matter physics or organic chemistry.

Objectives: Set up designs of experiments, special protocols and an analysis strategy to evaluate the organoleptic properties of new formulas. The course is divided into two parts: the first is dedicated to group work on rheometry methodology applied to texture analysis; the second takes place 100% in the laboratory, with the definition and implementation of a protocol dedicated to texture analysis.

PROGRAMME

Day 1: Group work

- Review of rheology and rheometry
- Establish a design of experiments in line with the specifications: choice of stresses, temperatures, concentrations…
- Sensory descriptors and rheological properties: relative or absolute approach
- Instrumental simulation: using a rheometer to reproduce the use of a product
- Statistical approaches for exploiting product properties: standard deviation, PCA and ANOVA

Day 2: Laboratory practice

- Large-amplitude oscillation rheometry
- Rheometry during drying
- Rheometry in compression and DMA
- Tribology and tribometry: elastohydrodynamic contact
- Building protocols to evaluate organoleptic properties

GENERAL TERMS AND CONDITIONS OF SALE – RHEONOVA SERVICES

14/12/2022

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Telephone: +33 (0)4 76 61 38 40
Email: contact@rheonova.com
Registered with the Grenoble Trade and Companies Register (RCS) under number: 803 705 342
Intra-community VAT number: FR36803705342

1 SCOPE

These general terms and conditions of sale (hereinafter the "General Terms and Conditions") constitute, in accordance with Article L.441-1 of the French Commercial Code, the basis of the commercial relationship between the Parties.

Their purpose is to define the conditions under which RHEONOVA provides its services, in particular rheological measurement services, to its professional buyers (hereinafter the "Clients") who request them. These General Terms and Conditions apply only to the provision of services by RHEONOVA. Any supply of products shall be governed by a specific contract or specific general terms and conditions.

In the event of any contradiction between these General Terms and Conditions and the Client's general terms and conditions of purchase, the Parties agree that these General Terms and Conditions shall prevail in their entirety.

The specifications mentioned in brochures, commercial printed matter and documentation issued by RHEONOVA are provided for information purposes only and are merely indicative. The Services are provided in accordance with the specifications detailed by RHEONOVA in its commercial offers.

Any order for Services implies the Client's acceptance of these General Terms and Conditions.

2 DEFINITIONS

Each of the terms below shall have the meaning given in its definition, namely:

- "Client": the legal entity that has issued an Order accepted by RHEONOVA.
- "Order": an order issued by the Client.
- "Background Knowledge" means all technical and/or scientific information and knowledge, in particular know-how, data, databases, software, technical files, plans, diagrams, drawings, formulas and/or any other type of information, in whatever form, whether patentable or not and/or patented or not, and/or all other intellectual property rights arising therefrom, necessary for the performance of the Service, belonging to or held by a Party before the date of the Order or independently of the performance of the Services, and over which it holds rights of use.
- "Documentation" means the documentation relating to any Sample provided by the Client to RHEONOVA for the performance of the Services.
- "Sample": the products supplied by the Client that are necessary for the performance of the Services.
- "Confidential Information": means, without limitation, information of any kind, in particular of a technical or commercial nature, know-how, plans, drawings, reports, computer data and archives, exchanged mutually by the Parties by any means, and which they expressly identify as confidential upon disclosure or, in the case of oral disclosures, which they identify as such no later than thirty (30) days thereafter.
- "Deliverables": means any report or written document produced by RHEONOVA and delivered to the Client upon completion of the Service.
- "Offer": the document containing the description of the Services, the completion time and the financial terms.
- "Party": either the Client or RHEONOVA.
- "Service": any consulting, study, development, training or other service requested by the Client, excluding any maintenance service for RHEONOVA products.
- "Acceptance": the procedure for assessing the conformity of the Services with the Specifications.
- "Results" means all technical and/or scientific information and knowledge resulting from the performance of an Order, in particular know-how, data, databases, software, files, plans, diagrams, drawings,

formulas and/or any other type of information, in whatever form, whether patentable or not and/or patented or not, and all intellectual property rights arising therefrom, generated by RHEONOVA in the course of performing an Order.

– "Specifications" means the specifications referred to in the Offer accepted by the Client.

3 ORDERS

The Client may order Services in accordance with these General Terms and Conditions by sending RHEONOVA a written Order. An Order may not be cancelled without RHEONOVA's prior consent.

In the absence of a special written agreement derogating in whole or in part from these General Terms and Conditions, any Order issued by the Client or any acceptance by the Client of an Offer from RHEONOVA shall constitute the Client's full and complete acceptance of these General Terms and Conditions, to the exclusion of all other documents issued by the Client.

The General Terms and Conditions prevail over any other document issued by the Client, and any special condition proposed by the Client shall not be binding on RHEONOVA unless agreed in writing by the latter.

4 PERFORMANCE OF THE SERVICES

4.1 Terms of performance

RHEONOVA undertakes to perform the Order with all due diligence and in accordance with its best-efforts obligation, namely to perform the Services in accordance with good practice, based on its knowledge and experience at the time the Services are performed and in light of the Specifications provided by the Client. RHEONOVA undertakes to deploy the necessary resources and to assign a sufficient number of staff with the required expertise to perform the Services entrusted to it.

For the proper performance of the Order, the Client undertakes to provide RHEONOVA as soon as possible with, in particular, all documents, information or Samples necessary for the performance of the Services, as well as any specific constraints resulting from its activity and/or the nature of the Samples, to designate a competent and authorised contact person to receive the Deliverables, and to facilitate contact with its staff or any other person involved in the performance of the Services.

4.2 Lead times

RHEONOVA undertakes to deploy the necessary resources to meet the lead times for performing the Services.

In any event, Rheonova's commitments regarding lead times are subject to the Client's compliance with its own obligations, in particular the timely provision of all documents, information or Samples necessary for the performance of the Service, or the payment of any down payments provided for in the Offer.

4.3 Deliverables

RHEONOVA shall deliver to the Client the Deliverables listed in the Offer.

4.4 Acceptance

Unless otherwise provided in the Offer, the Client shall have ten (10) days from the date of delivery of the Deliverables to assess their conformity with the Specifications and to accept or reject the Deliverables ("Acceptance Period").

If no reservation has been notified by the Client during the Acceptance Period, the Services and Deliverables shall be deemed accepted.

4.5 Changes

Any change to the Specifications of the Offer requested by the Client shall be submitted in writing to RHEONOVA and must be approved by both Parties. Such a change may result in an increase in the price of performing the Services.

5 SUPPLY OF SAMPLES

Where performance of the Services involves the Client sending Samples to RHEONOVA, the Client shall provide RHEONOVA, beforehand or at the latest when sending the Samples, with all necessary Documentation concerning the Samples, in particular their storage conditions, and, free of charge, an appropriate quantity of Samples for the sole purpose of enabling RHEONOVA to fulfil its obligations under the Order. RHEONOVA agrees and accepts that the Documentation and Samples are and shall remain the exclusive property of the Client.

The Client undertakes to comply with the deadline for receipt of the Samples and Documentation specified in the Offer sent by RHEONOVA. If the Client fails to meet this deadline and does not remedy this failure within seven (7) days of receiving a notice from RHEONOVA indicating this failure, RHEONOVA shall be free to cancel the scheduled Services and reschedule them at a later date according to its availability.

The Client shall ensure that the Sample complies with the laws and regulations in force, in particular regarding labelling and hazardous waste, and undertakes to systematically inform RHEONOVA in writing, before the Sample is delivered, of all relevant information concerning in particular the safety and security of the Samples, their transport and their disposal, including any known and/or suspected characteristics of toxicity and/or contamination, flammability or risk of explosion, and to inform RHEONOVA of the risks that the Samples may present to RHEONOVA's premises, equipment and staff, in particular by using appropriate labelling.

6 AUDIT

Where the Services performed by RHEONOVA involve carrying out an audit at the Client's site, the conditions for carrying out such audits shall be specified in the Order. In any event, the Client undertakes to grant RHEONOVA access to the site specified in the Order on the agreed dates and times.

The Client shall be solely responsible for its compliance with any conclusions and recommendations issued by RHEONOVA following the audit. RHEONOVA cannot be held liable for the consequences of compliance or non-compliance with any such conclusions and recommendations.

7 INTELLECTUAL PROPERTY

7.1 Background Knowledge

Subject to the provisions below, the performance of the Services does not entail any assignment or licence of the holding Party's rights to its Background Knowledge.

7.2 Results

The Client owns the Results, including the intellectual property rights to the Results.

Where the Results are not capable of giving rise to intellectual property rights, whether under copyright, a patent or, more generally, any other intellectual property right, the Client shall be free to use the Results of the Service as it sees fit without any restriction, for its own needs or those of third parties, to exploit them for consideration or free of charge, in any form, in any circumstances and without geographical or other limitation. The Client may likewise communicate the Results to any third party and reproduce them without any limitation.

Where the Results are capable of being protected by copyright, RHEONOVA agrees to assign irrevocably and exclusively, upon full payment of the price of the corresponding Services, all rights of use and reproduction on any medium, and the rights of adaptation, modification and distribution, free of charge or for consideration, of the Results both in France and abroad. These rights are assigned for the legal term of copyright protection.

Where the Results are capable of being protected by a patent, the Client alone shall be entitled, where applicable, to file patent applications relating to the Results worldwide, in its own name and at its own expense.

RHEONOVA shall obtain and provide to the Client, free of charge, all files, information, documents and deeds necessary for the implementation of the provisions of this article.

The names of RHEONOVA's inventors (if any) shall be mentioned. Each Party shall be responsible for remunerating its own inventors.

The price of the assignment of the industrial and intellectual property rights to the Results is included in the flat-rate price defined in the Quotation.

7.3 Improvements

However, improvements to RHEONOVA's Background Knowledge made by RHEONOVA during the Services shall not be considered Results, provided that such improvements have been generated without the use of the Client's Background Knowledge and Confidential Information.

8 PRICES AND PAYMENT TERMS

Unless otherwise stipulated in the Offer, prices are exclusive of tax.

Travel expenses shall be invoiced on the basis of actual costs.

For Sample analysis Services, the Company reserves the right to apply a surcharge to the prices indicated in the Offer if particular properties of the Samples, unknown at the time the Quotation was drawn up, generate additional costs for the performance of the Service.

In the event of late payment of an instalment by the Client, any sum due shall automatically become immediately payable on the day following the payment date shown on the invoice, without any reminder or formal notice being necessary. Any sum not paid when due shall give rise to the payment by the Client of penalties at the interest rate applied by the European Central Bank to its most recent refinancing operation plus ten (10) percentage points. The rate applicable during the first half of the year concerned shall be the ECB rate in force on 1 January of that year and, for the second half, the rate in force on 1 July. Pursuant to Article L441-10 of the French Commercial Code, these penalties are payable automatically, without any reminder being necessary.

In addition, in accordance with Articles L.441-3 and L.441-6 of the French Commercial Code, any late payment shall automatically entail, in addition to the late payment penalties, the Client's obligation to pay a minimum flat-rate indemnity of 40 euros for recovery costs, it being understood that RHEONOVA reserves the right to claim additional compensation, upon presentation of supporting documents, if the recovery costs exceed the amount of the flat-rate indemnity.

9 CONFIDENTIALITY

Each Party undertakes not to use for its own benefit or for the benefit of a third party, and not to disclose to unauthorised third parties, the Confidential Information that the other Party has communicated to it or that it holds in the course of performing an Order, without the other Party's prior written authorisation.

Each Party shall take all security measures to prevent the unauthorised disclosure of Confidential Information.

The Parties agree that their confidentiality obligation does not apply to information for which a Party can provide proof:

- That it was or has become known to the public before or after the date of its transmission, through no fault of its own;
- That it obtained it lawfully from a third party entitled to communicate it;
- That it was disclosed by order of a court or administrative authority.

These obligations are continuing obligations throughout the performance of the Services and shall remain in force for a period of five (5) years from the completion or interruption of the Services covered by an Order.

10 PERSONAL DATA

In the course of performing the Services, RHEONOVA may collect personal data relating to its contacts within the Client's company.

Accordingly, RHEONOVA undertakes to process such personal data in compliance with the applicable regulations and, in this respect, undertakes to:

- Collect and process personal data only for purposes related to the performance of the Services;
- Preserve the security, integrity and confidentiality of personal data whenever it collects or records them in the course of performing the Services;
- Not communicate personal data to any third party whatsoever, except to third parties to whom it is strictly necessary to transmit the personal data for the performance of the Services;
- Not transfer any personal data outside the territory of the European Union, except to third countries offering an adequate level of protection within the meaning of the supervisory authorities, or to a subcontractor authorised by the Client and a signatory to the standard contractual clauses issued by the European authorities;
- Notify the Client without delay in the event of a breach, loss or unauthorised disclosure of personal data collected in the course of performing the Services.

Any request to exercise the rights of the Client or its staff relating to personal data collected by RHEONOVA must be sent to the email address indicated in the preamble of these GTCs.

11 LIMITATION OF LIABILITY

It is expressly agreed between the Parties that RHEONOVA is bound only by a best-efforts obligation. Consequently, its liability may only be incurred on the basis of a fault on its part proven by the Client.

In any event, the Services are implemented under the sole control, direction and responsibility of the Client.

Any use of the Results obtained through the implementation of the Services falls within the sole competence and sole responsibility of the Client. It is the Client's responsibility, as part of its general duty of care as a professional, to check the consistency and accuracy of the Results obtained each time they are processed.

EXCEPT FOR CLAIMS OR DAMAGES RESULTING FROM A BREACH BY THE CLIENT OF ITS CONFIDENTIALITY OBLIGATIONS OR FAILURE TO RESPECT RHEONOVA'S INTELLECTUAL PROPERTY RIGHTS, AND FOR CLAIMS FOR PERSONAL INJURY OR DEATH, IN NO EVENT SHALL EITHER PARTY BE LIABLE TO THE OTHER PARTY FOR INDIRECT DAMAGES SUCH AS (A) LOSS OF PROFIT OR REVENUE, (B) OPERATING LOSSES, (C) LOSS OF CUSTOMERS, (D) THIRD-PARTY CLAIMS.

Notwithstanding the foregoing, it is expressly agreed between the Parties that RHEONOVA's liability, in the event of a fault proven by the Client, is expressly limited to the total amount paid or due to RHEONOVA for the Order giving rise to the claim.

12 CONTRACTUAL DOCUMENTS

The contractual documents binding the Parties consist exclusively of the following documents, listed in descending order of precedence:

- The Offer
- These General Terms and Conditions

In the event of any contradiction between one or more provisions in any of the documents, the higher-ranking document shall prevail.

13 TERMINATION

In the event of non-payment to RHEONOVA, or in the event of a breach by either Party of any of its obligations that is not remedied within thirty (30) days of the sending of a registered letter with acknowledgement of receipt notifying the breach in question, or in the event of receivership or liquidation proceedings or equivalent proceedings applied to either Party, and subject to the application of the legal provisions in force, the other Party may automatically terminate the Order without prejudice to any other remedies provided for by law.

14 FORCE MAJEURE

Neither Party shall be held liable for the non-performance or delay in performance of any of its obligations towards the other Party in the event of force majeure.

Force majeure within the meaning of these GTCs shall mean (i) any event as defined by law and/or case law and (ii) any of the following events, without this list being exhaustive: war, riot, fire, earthquake, total or partial strike, explosion, flood, failure of telecommunications, disruption of means of transport, delay or failure in the supply of raw materials for any reason whatsoever, insufficient electricity and energy, threat of attack, machine breakdown, receivership or liquidation of suppliers and/or subcontractors, decisions, requirements or prohibitions issued by public authorities.

The Party affected by force majeure must inform the other Party no later than eight (8) days after the occurrence of the force majeure event.

If the force majeure lasts more than thirty (30) days, the other Party shall have the option of terminating the Order affected by the force majeure.

The obligations of the affected Party shall be suspended for the duration of the force majeure.

15 DISPUTE RESOLUTION – GOVERNING LAW – JURISDICTION

The Parties agree that any disputes relating to these General Terms and Conditions, their validity, their interpretation or their breach shall be governed by French law, notwithstanding any conflict of laws.

The Parties shall endeavour to settle such disputes amicably.

Failing an amicable solution within one month of notification of the dispute by either Party, express and exclusive jurisdiction is granted to the Commercial Court of Grenoble.