

Our products and solutions for rubber compounds

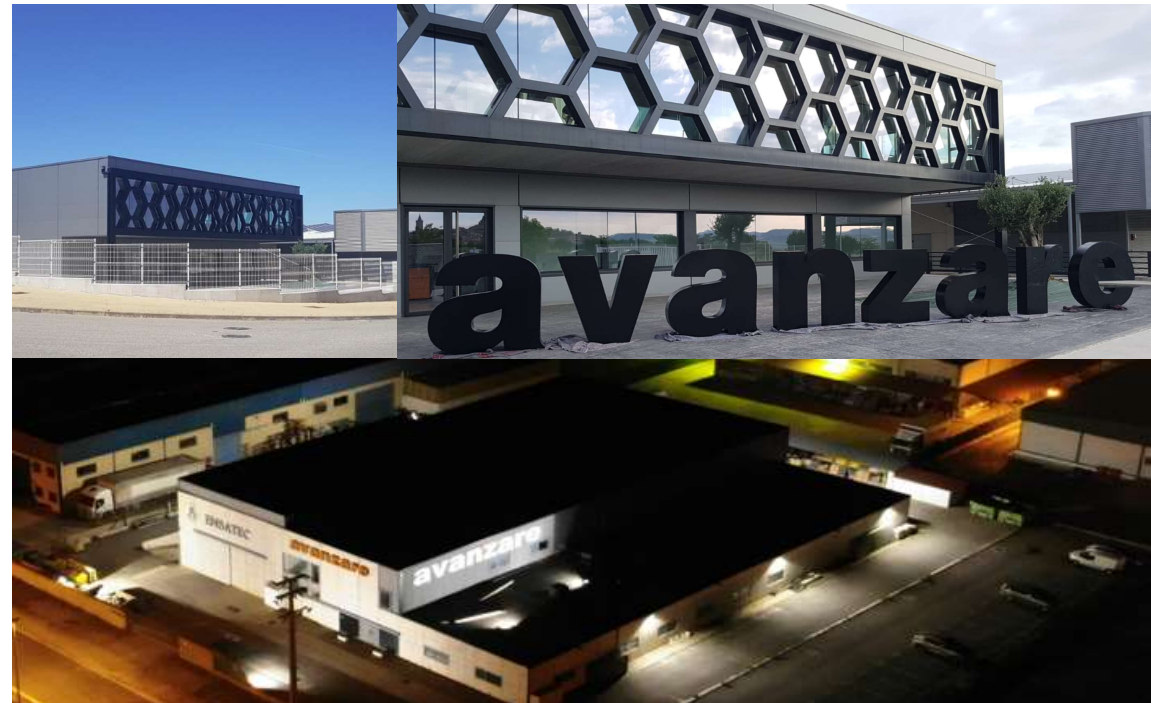


Avanzare Innovación Tecnológica

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About us **avanzare**

- **We develop and produce differential additives for rubber, plastics and resins:**
 - ✓ 10.000 m² production plant.
 - ✓ 3.500 m² R&D (fully equipped).
 - ✓ 12 Chemistry PhD. (37 R&D – graduates in biology, biochemistry, chemistry, etc.)
 - ✓ Mainly focused on differential additives
 - ✓ Chemical and additives specialist
 - ✓ Taylor made solution
 - ✓ 100 % European products.



avanzare Presence in the world



Our products

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Our products are specifically made for various materials:

RUBBER, NBR, EPDM, NR, SBR etc



Graphene
Electrical and Thermal
Conductive solutions



Colorless Antistatic /
ESD additives



Anti-counterfeiting (Chemical
tracer)



Other: Flame retardant,
anti-block, anti bacterial



Density amplifier



Metallic and Magnetic tracer



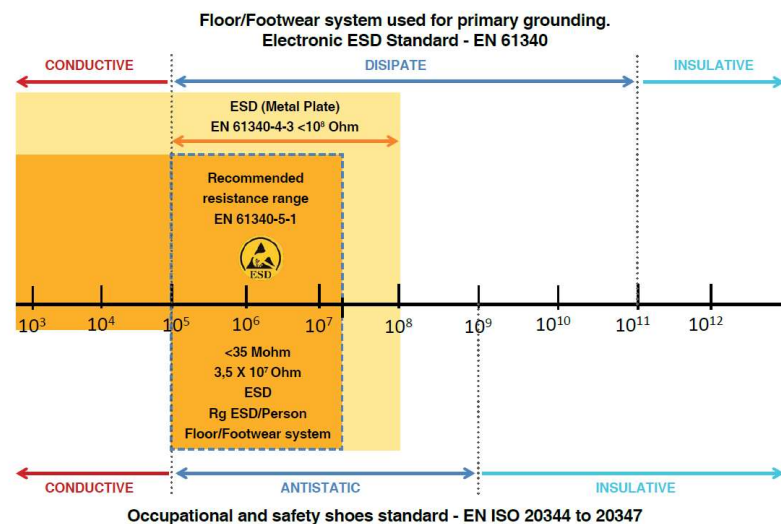
Antistatic agents

Conductivity ranges

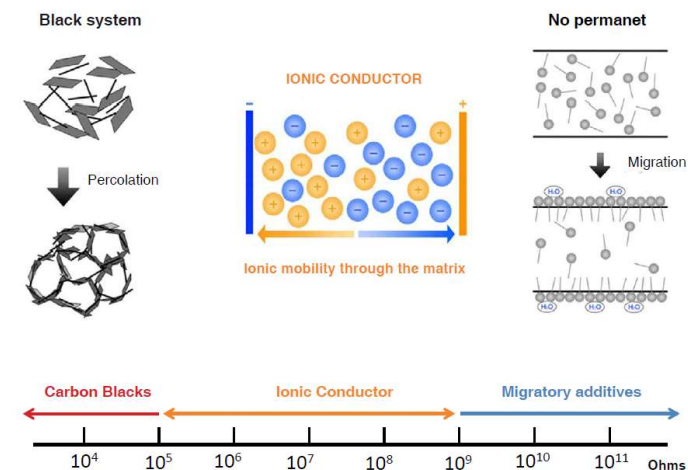
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Our products are produced according to various ranges

Ranges of conductivity



Mechanism to generate antistatic



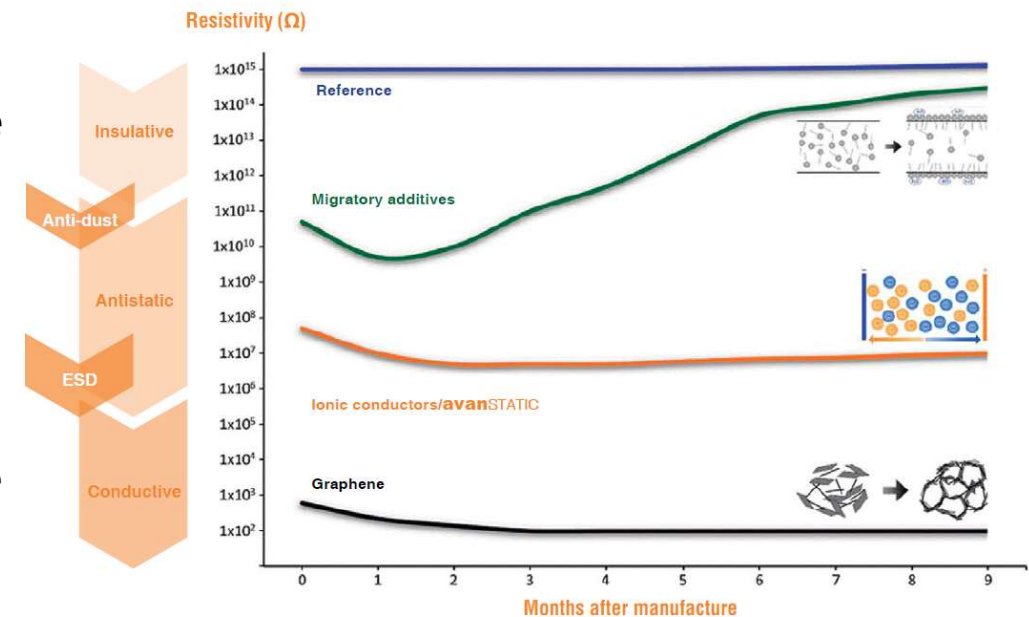
	Avanzare Graphene percolation	Avanzare Ionic Conductor	Migratory Additives
Colourable	NO/PARTIALLY	YES	YES
Permanent	YES	YES	NO
Humidity Dependent	NO	NO	YES
Resistance level Range	<10 ⁵ ohms	10 ⁵ to 10 ¹⁰ Ohms	10 ⁹ -10 ¹² Ohms

Conductivity ranges

Characteristics:

- Static dissipative and ESD levels permanent performance
- Colorless and colorable
- Low dosage required
- Cost-effective
- Minimal effect to host material
- Non-migratory
- Solid, liquid, pellet MB forms available depending on the product
- Food grade in some applications

Evolution of conductivity with the time



Antistatic Solutions for Rubber

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	Uses	phr	Format	Characteristics
avanSTATIC RUBBER	NBR	1-5	Powder	
avanSTATIC SBR/EPDM	SBR, EPDM,	7-12	Powder	
avanSTATIC 455 FDA	NBR, SBR, EPDM, etc	7-12	Powder	FDA applications
avanSTATIC PLAST RUB	NBR, SBR/NBR	2-8	Liquid	
avanSTATIC PLAST	SBR, NBR,	5-12	Liquid	Plasticizer
avanSTATIC NBR 535	NBR, SBR/NBR	2-8	Liquid	



Antistatic agents (additive)

Application in NBR

Application in SBR

Application in EPDM

Application in NR

Application in FOOD GRADE (FDA)



Electrical Conductive solution

avanGRP Conductive; Graphene and Graphene MB for high conductivity rubber application

	Uses	Format	%
avanGRP 700 MB	General use Low dosage of MB for conductivity but not critical the mechanical properties	Pellet, Black	30-50
avanGRP 505 MB	EVA, NBR, EPDM, SBR, PP, EVA, etc Higher dosage of MB, good to maintain mechanical properties.	Pellet, Black	35-70

Characteristics:

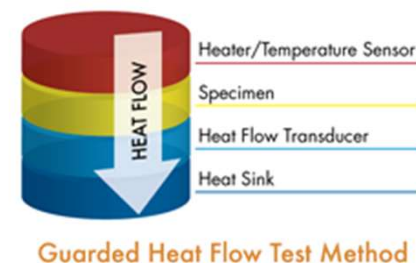
- ✓ **Extremely low resistivity** > 10 Ohms/cm
- ✓ **Range of conductivity** from 1 to 10^6 Ohms/cm
- ✓ **MB available compatible with several Matrix**
- ✓ **Cost-effective**
- ✓ **Non-migratory**





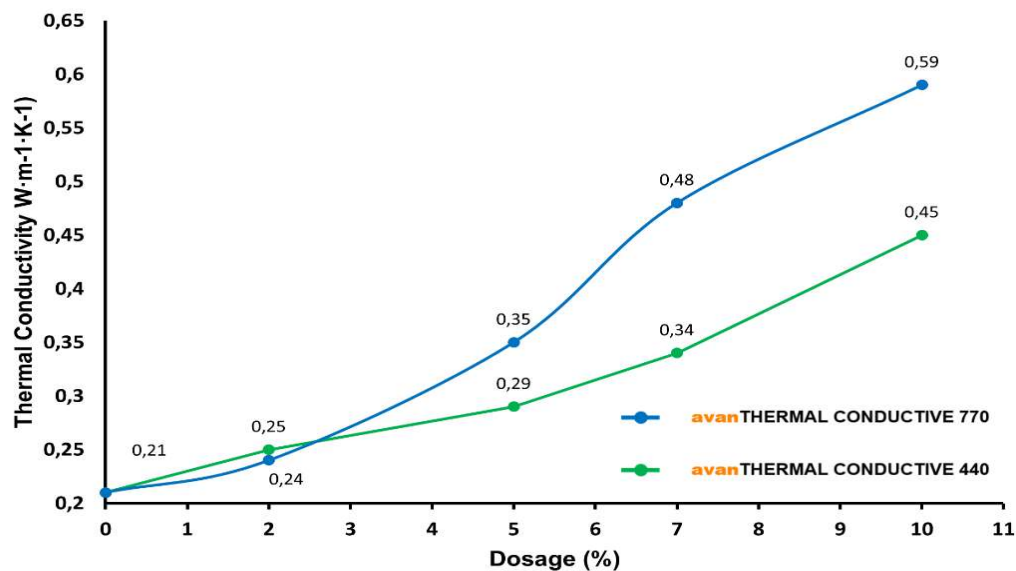
Thermal Conductive solution

avanTHERMAL CONDUCTIVE solutions are a series of very effective Graphene based additives specifically designed to provide thermal conductivity in rubber and other matrices



✓ Increase 10 times Thermal dissipation

THERMAL CONDUCTIVITY OF SBR

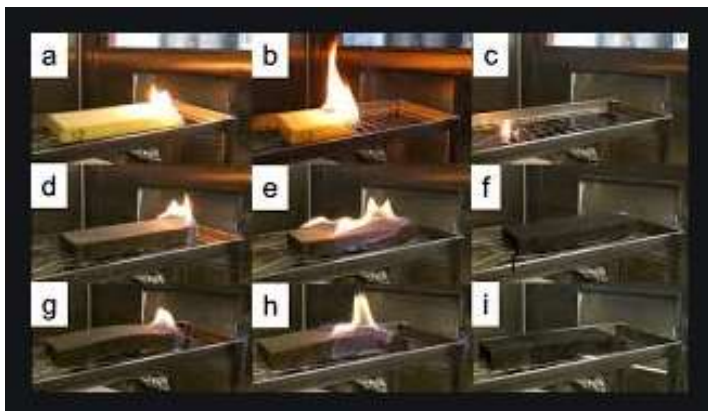




Flame retardant

avanFIRE (group), is the new grade of flame retardants halogen free plastic

- For passing different normative
- **avanFIRE GR8**, synergetic effect with standard products
- Viscosity tailored final products



avanFIRE GR8

- ❖ Increase the carbonaceous layer (CHAR)
- ❖ reducing dripping
- ❖ distributing the energy produced by the flame (heat)

Metallic tracer (colorless)



WHY? Allows to detect contamination of rubber parts in processing lines (e.g. food).

Advantages

- ✓ Light Color → Colorable
- ✓ Powder or MB ready to use
- ✓ Electronic and magnetically techniques

APPLICATIONS:

- ✓ Conveyor Belts
- ✓ Composite Tools
- ✓ Compounding
- ✓ Packaging



□ Density amplifier



WHY? Allows to drastically amplify the density of rubber

- ✓ MB compatible with all matrices
- ✓ Density MB from 5,5 to 11 g/cm³.
- ✓ 100 % adjustable, customize your plastic from densities (1.1 - 11 g/cm³)
- ✓ Corrosion and chemical resistivity
- ✓ Valid 10/2011 and FDA (Food grade)
- ✓ Colorable



APPLICATIONS:

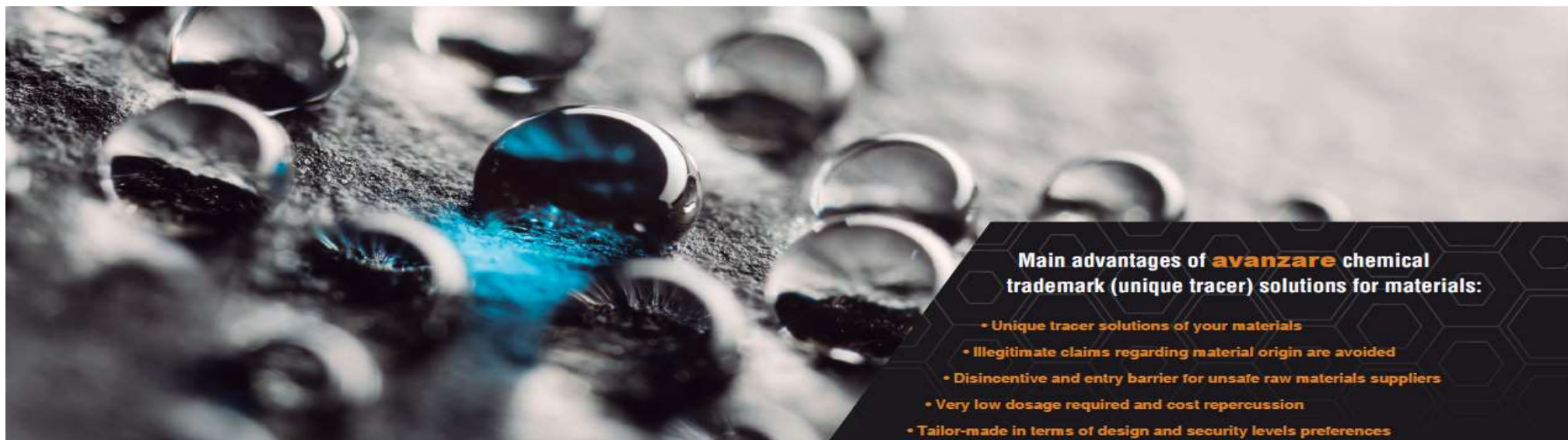
Casino chips, Luxury packaging, fishing tackle, exercise weights, golf clubs, hunting supplies, cutlery, appliances and hunting ammunition

Chemical tracer (anti-counterfeiting)



Unique solutions of tailor-made additives based on organometallic compounds for plastic differentiation/identification, which allow avoiding illegitimate claims.

- ✓ Unique for each customer
- ✓ Fingerprint
- ✓ Extremely low dosage
- ✓ Tailor made



Main advantages of **avanzare** chemical trademark (unique tracer) solutions for materials:

- Unique tracer solutions of your materials
- Illegitimate claims regarding material origin are avoided
- Disincentive and entry barrier for unsafe raw materials suppliers
- Very low dosage required and cost repercussion
- Tailor-made in terms of design and security levels preferences



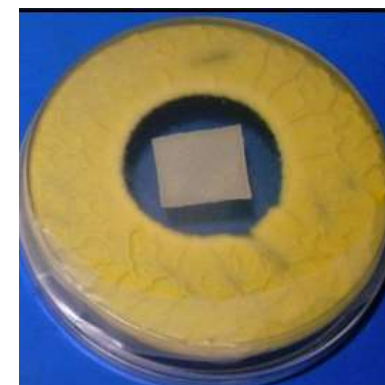
Biocide



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avanZnO BAC is a powerful biocide agent, specially formulated to be introduced in rubbers matrices.

Food grade / FDA solutions, and concentrates available!



According to the European directive nº 1048/2005 (13/June/2005) and directive (CE) nº 528/2012 regulating the applications of biocides in the industry

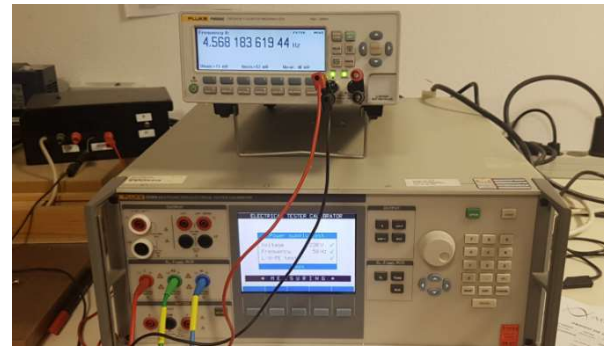
Bacteria	Fungi	Algae
Escherichia coli	Aspergillus niger	Cladosporium
Staphylococcus aureus	Aureobasidium pullulans	cladosporioides
Streptococcus faecalis	Chaetomium globosum	Sclerophoma pityophila
Klebsiella pneumoniae	Alternaria alternata	Trichoderma viride
Pseudomonas aeruginosa	Penicillium brevicaulis	Chlorella pyrenoidosa
Salmonella typhimurium	Cladosporium cladosporioides	
	Sclerophoma pityophila	
	Trichoderma viride	

➤ **99,9 % elimination**

➤ Ensayos ISO 22196

We have the capabilities to customize solutions according to customer needs and requirements

- **Certification lab**
- **Pilot plant**
- **Customize solutions.**

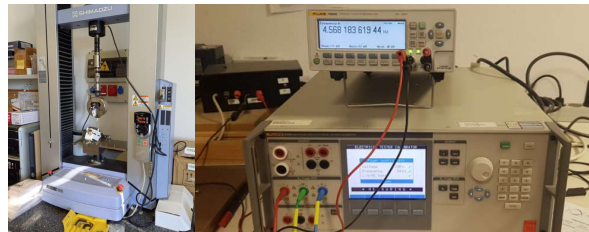


□ Technical capabilities

- ✓ 3.500 m² fully equipped laboratory
- ✓ 12 Chemistry PhDs.
- ✓ European accredited lab for customer trials
- ✓ Customized solutions (adjust recipes)

□ Equipment and Facilities

- ✓ Polymer pilot plant, Extrusion machines (singles and twin screw), Injection samples, R&D filament extrusion for 3-D
- ✓ R&D polymer lab (extrusion machine, injection, MFI analysis, FTIR etc)
- ✓ Aging test, QUV, Xenon, UV-absorption, etc
- ✓ Chemical Characterization: EDAX, RAMAN, SEM, X-Ray, EEA, etc
- ✓ Mechanical Characterization: Impact, mechanical testing, etc
- ✓ Fire lab: radiant panel, Single burning item, Non combustibility test, etc
- ✓ ESD and Conductive area: Conductivity/resistance characterization instruments. (1 Ohms- 1 ¹³ Ohms)



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Materials



Metrology and Calibration



Fire



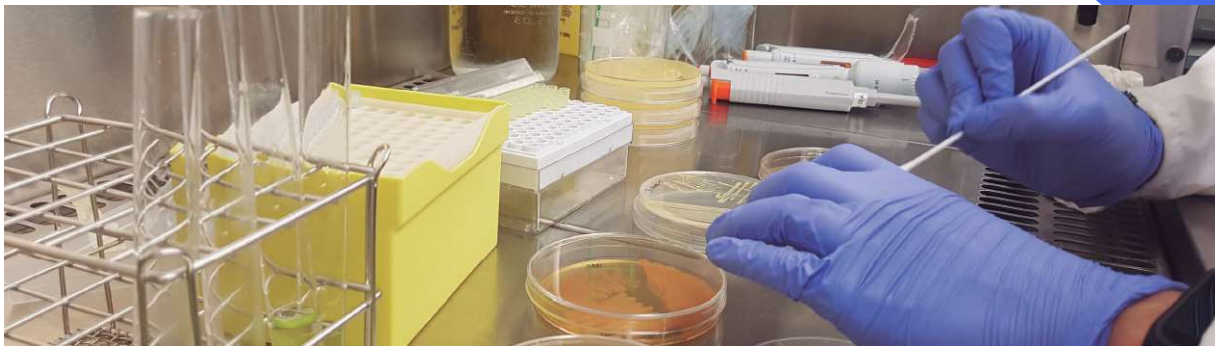
Enclosures



Testing and Certification LAB.



avanzare's capabilities microbiology



Technical capabilities (microbiology lab)

- 200 m² division microbiology)
- 2 PhD division microbiology
- European accredited lab for testing customer trials
- Customized solution (recipes adjust)



avanzare has a fully equipped laboratory of microbiology that allows us to analyze and test each of our products, increasing the quality criteria and comparing their efficiency and effectiveness against a large number of different microorganisms and tests.

- Standard Zone of Inhibition Test (Kirby Bauer Qualitative Test for growth inhibition)
- Quantitative method for the determination of minimum inhibitory concentration of microbial growth
- Test for antimicrobial activity according Japanese Industrial Standard (JIS Z 2801)
- Measurement of antibacterial activity on plastics (ISO 22196:2011)
- Isolation and determination of microorganisms causing contamination
- Other biotechnological applications (on demand)



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