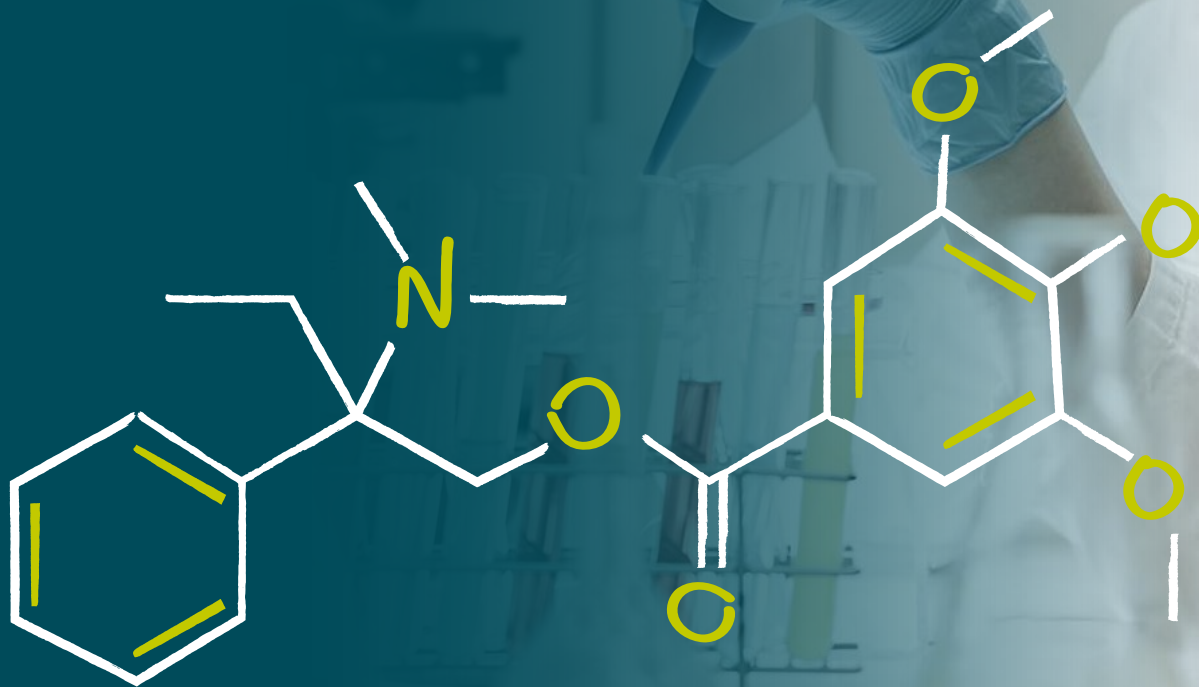


WHERE
YOUR MOLECULES
TAKE FORM



We are committed on **Active Pharmaceutical Ingredients** (API) and **advanced intermediates** for the pharmaceutical industry

100 m²
REACTOR CAPACITY

**FDA
INSPECTED
MANUFACTURING
SITE**



Zach
Avrillé



ZACH IN FEW WORDS

- ✓ A STRONG TRACK RECORDS WITH DIFFERENT **AUTHORITIES**
- ✓ A BROAD RANGE OF **TECHNOLOGIES** IN A **FLEXIBLE** MANUFACTURING FACILITY
- ✓ **SPRAY-DRYING OF APIs & LOW ENDOTOXIN EXCIPIENTS**
- ✓ A **GMP KILOLAB PLANT**
- ✓ A **GMP PILOT PLANT**
- ✓ **ISO 14001 CERTIFICATION SINCE 2002**

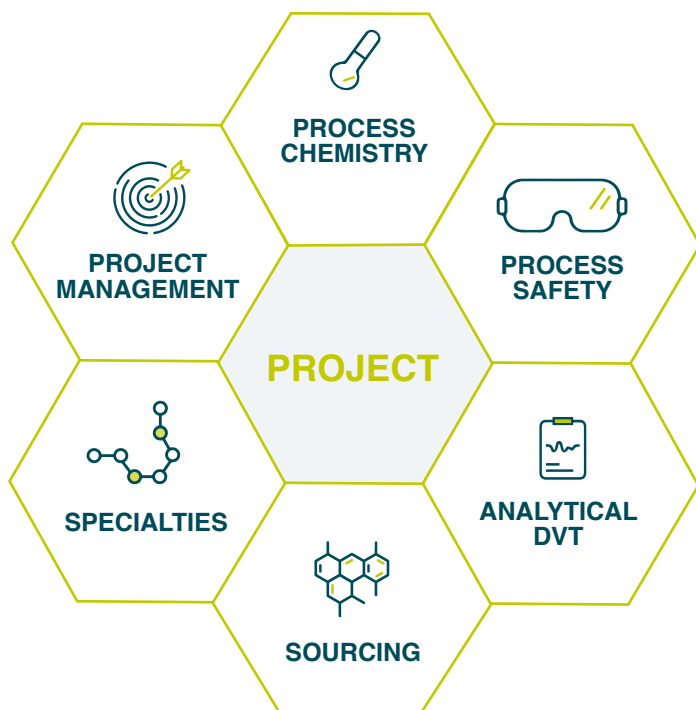
REGULATORY & GLOBAL COMPLIANCE



ansm



R&D MISSION & FACTS



We provide to our customers the **highest level of science** through an **innovative R&D approach**

- ✓ **30-35**
process steps/year
- ✓ **300-350**
analytical methods/year
- ✓ **50**
safety risk assessments/year

R&D FACILITIES

PROCESS CHEMISTRY LABS

(0.1 – 10 lt glass reactors, including O₃, H₂ and flow chemistry posts; 24 standard and walk-in fume-hoods)

KILO-LAB

(15 lt and 30 lt glass reactor skids, 0.07 m² agitated filter; -80°- 150°C)

HPAPI LAB

(OEB5, OEL > 0.1 µg/m³; 4 standard and walk-in fume-hoods, including spray-drying post)

PROCESS SAFETY LAB

(DSC, TGA, RC1, ARC; 5 fume-hoods)

ANALYTICAL LABS

(HPLC, UPLC, GC, HPLC-MS, HRMS-TOF, GC-MS, 400MHz NMR; 5 fume-hoods)

OUR PILOT PLANT

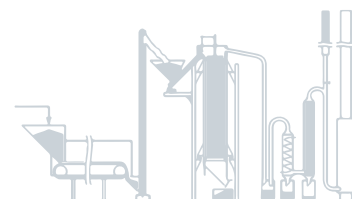
11 REACTORS
WITH A TOTAL
CAPACITY
OF 5100 L

5 GLASS LINED
REACTORS
(100 TO 600 L)

6 STAINLESS
STEEL REACTORS
(50 TO 1000 L)

3 FILTER DRYERS
(0.2 TO 0.7 m²),
2 IN CLEAN ROOMS

2 HYDROGENATION
REACTORS
(400 L & 1000 L,
5 BAR)



✓ **CRYOGENIC UNIT**
STAINLESS STEEL (70L)

✓ **TEMPERATURE RANGE**
(FROM -80°C TO +150°C)

✓ **WIPED FILM
EVAPORATOR**

OUR REACTORS

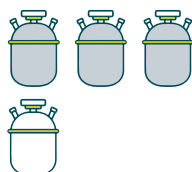


STAINLESS STEEL



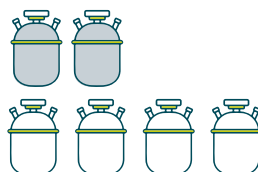
GLASS LINED

4 1000 to 2000 L

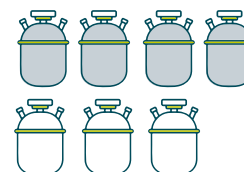


*1 cryogenic (-90°C)

6 2000 to 3000 L



7 3000 to 4000 L



*3 autoclaves (up to 12 bar)

1 4000 to 6000 L



4 6000 to 8000 L



2 8000 to 10000 L



CORE CHEMISTRY

BATCH SIZE

REDUCTION	Catalytic H ₂	Pd/C, Pt/C, PtO ₂ , Ir/C	100s kg
	Asymmetric H ₂	RhL*, RuL*	10s kg
	C=C, C=O	LAH (powdr, sln), DIBAL (sln), LiAlH(OtBu) ₃ , BH ₃ , CBS rdxn	10s – 100s kg
	C–O cleavage	TES, TIBAL (pure, sln)	100s kg – MTs
OXIDATION	H ₂ O ₂	H ₂ O ₂ / H ₂ WO ₄ Alk ₂ S oxdn	100s kg
	Periodate, permanganate	NaIO ₄ , 75°C; KMnO ₄ , 25°C	10s kg
	Asymmetric	Sharpless	100s kg
	Ozonolysis	SS 50 / 1500 l, cryo	100s kg
METALATION, ALKYLATION, C–C FORMATION	Lithiations	AlkLi, LDA, LiHMDS, Li / NH _{3(l)}	10s – 100s kg
	DMS, DES alkylation	room / high T	MTs
	Eschweiler-Clarke	HCHO / HCOOH	MTs
	Cyanation	KCN, NaCN	100s kg
	Grignard	Mg or AlkMgX/ether; VinylMgCl, -80°C	100s kg
	Pd-cat coupling	Heck, Suzuki	10s – 100s kg
MISCELLANEOUS	High T/P aminolysis	Aq. NH ₃ , 160°C / 8 bar	100s kg
	Mitsunobu	Ph ₃ P, DIAD	10s kg

SPRAY DRYER

A sustainable technology for an **efficient drying**

PSD1

for **SOLVENT SOLUTIONS**

- Drying gas (N₂)
rate: 100 kg/h
- Inlet temperature ≤ 250 °C
- Spray: bi-fluid nozzle
- ATEX design

PSD2

for **AQUEOUS SOLUTIONS**

- Drying gas (air)
rate: 360 kg/h
- Inlet temperature ≤ 250 °C
- Spray: High Pressure
nozzle / bi fluid nozzle
- Sanitary design
(+ steam decontamination)



PURIFICATION OF MACROMOLECULES

MOLECULE TYPE

Peptide like
Carbohydrates
Cyclodextrins
Aminoacid derivatives

CHEMICAL MODIFICATION

Activation
Protection
Functionalization

PURIFICATION

Ultrafiltration
Nanofiltration
Ion exchange
Electrodialysis

ISOLATION

In solution
Spray drying
Freeze drying

From pilot to tens of tons/year



Bacterial control

- ✓ Equipment sanitization
- ✓ Purified water
- ✓ Low endotoxin content



MISSION

Our everyday activity is **tailored** to deliver **benefits** to our customers and to **support** them in **achieving** their global **objectives**

**WE CREATE
VALUE
TRANSFORMING
RESOURCES
INTO FINAL
PRODUCT**



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