

**AGC Fine Chemicals**



**AGC Pharma Chemicals Europe, S.L.U.**

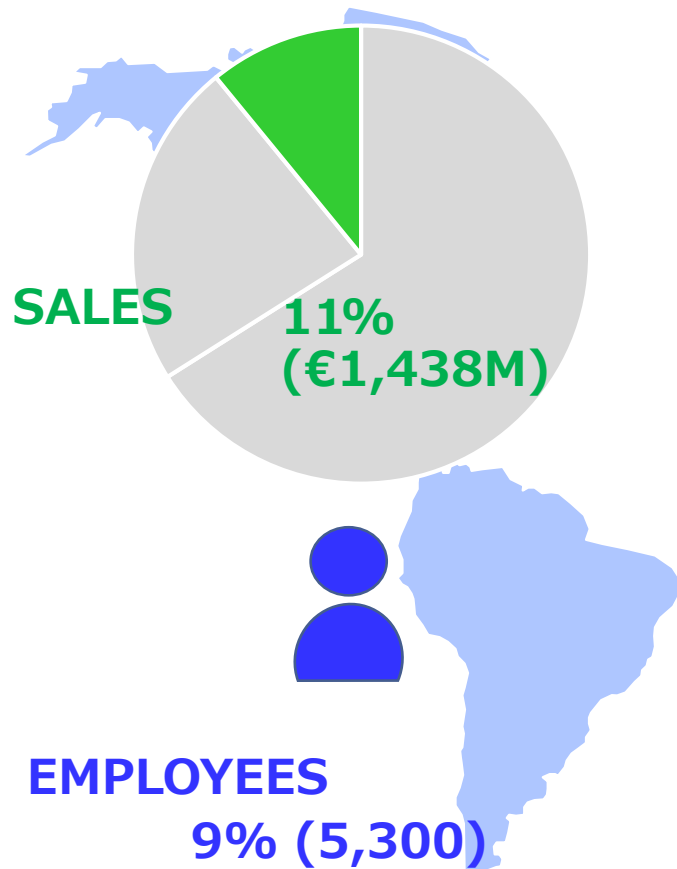
Your Dreams, Our Challenge



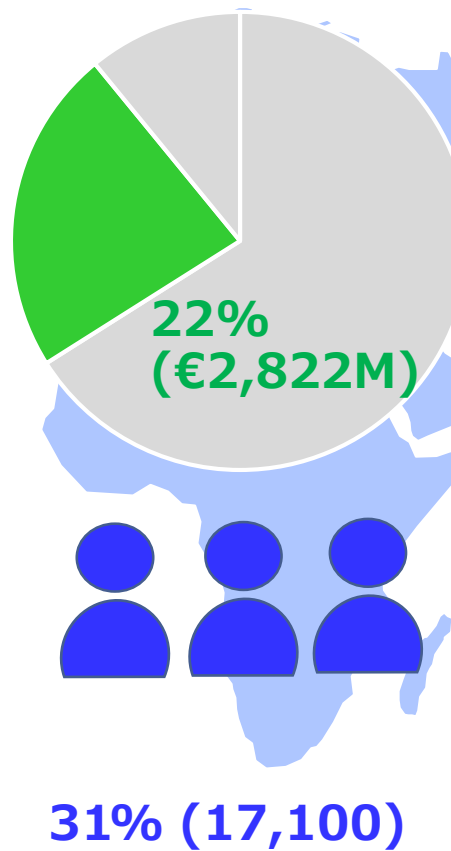
# Global Operation

Net sales : € 12,650 million    OP : € 847 million    Group Employees : 55,600  
Results of FY2019

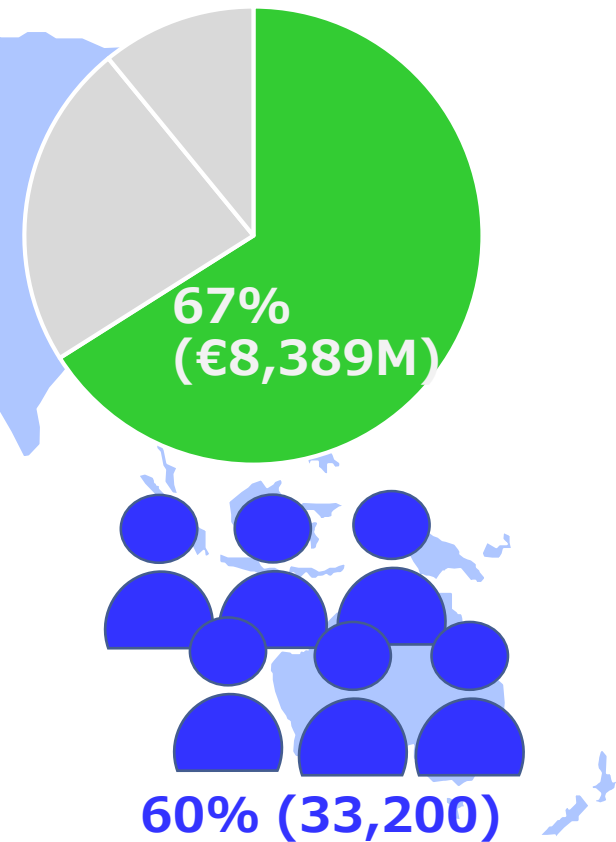
## US



## Europe



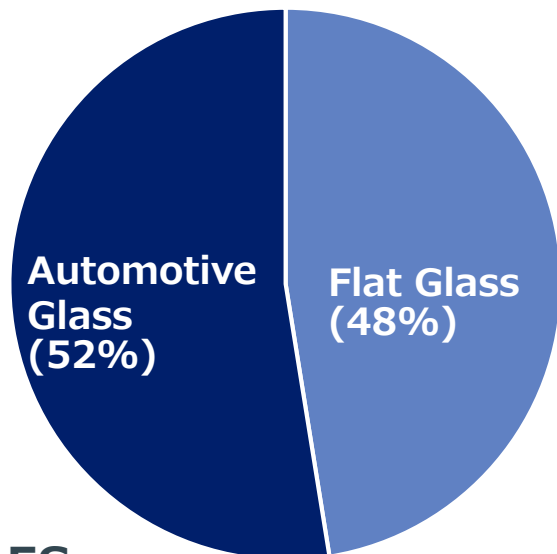
## Japan/Asia



※Sales and operating income by region are before eliminations and cross regional expenses, therefore, the total amounts of sales and operating income for geographic segments do not agree with total sales and operating income of the AGC Group.

Results of FY2019

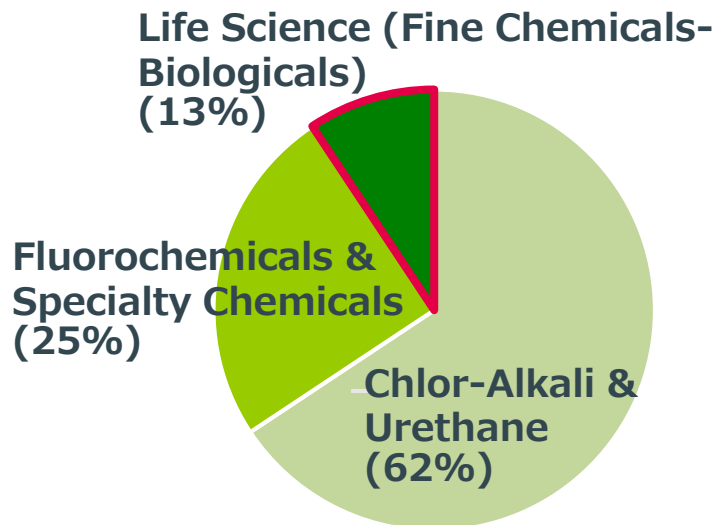
## Glass



**SALES 49% (€6,191M)**



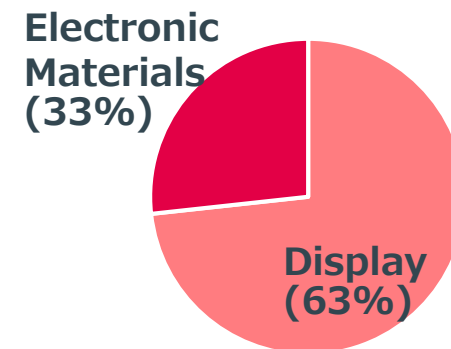
## Chemicals



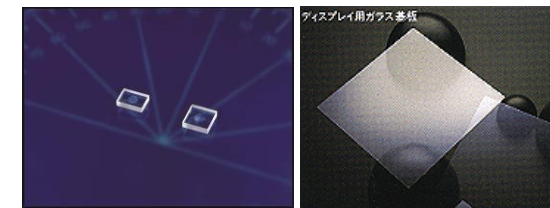
**31% (€3,965M)**



## Electronics



**18% (€2,306M)**



## Ceramics

**2% (€0,63M)**

※Sales composition is calculated without inter-segment sales/transfers.

※Sales and operating income by segment are before eliminations; therefore, the total amounts of sales and operating income for business segments do not agree with total sales and operating income of the AGC Group.



Life Sciences is one of the strategic pillars of AGC

Mobility



Electronics



Life Science



Bioscience CDMO

Fine Chemicals CDMO (Pharma + Agro)

# AGC Life Science Global service network

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*Bio*



*Fine Chemicals*

**May 2020**

**AGC Biologics**  
Colorado, US



**Feb 2017**

**AGC Biologics**  
Copenhagen,  
Denmark



**Aug 2020**

**AGC Biologics**  
Milan, Italy



**Mar 2019**

**AGC Pharma**  
**Chemicals Europe**  
Barcelona, Spain



**AGC Tokyo, Japan**



**GMP Facilities**  
(FC & Bio) Chiba



**Feb 2017**

**AGC Biologics**  
Seattle, US



**AGC Wakasa (FC)**  
Fukui

**PR&D (FC & Bio)**  
Yokohama



**Aug 2016**

**AGC Biologics**  
Heidelberg  
Germany



**AGC now offers services all over the world**

# AGC - Fine Chemicals Small molecules - Pharma and Agro CDMO in Japan and Spain

- **Two cGMP plants:**

- CMP: Supports your clinical phase projects
- CMP2: Started operations from early 2020 - ideal size ( $\sim 15 \text{ m}^3$  vessels) for high volume commercial phase manufacturing
- Key facts:
  - Multi purpose plant for clinical stage/commercial production for APIs and Intermediates
  - High potent substances handling (OEL:  $1 \sim 10 \mu\text{g} / \text{m}^3$ )
  - Ultra low temperature reaction (  $-100^\circ\text{C}$ )
  - Hydrogenation

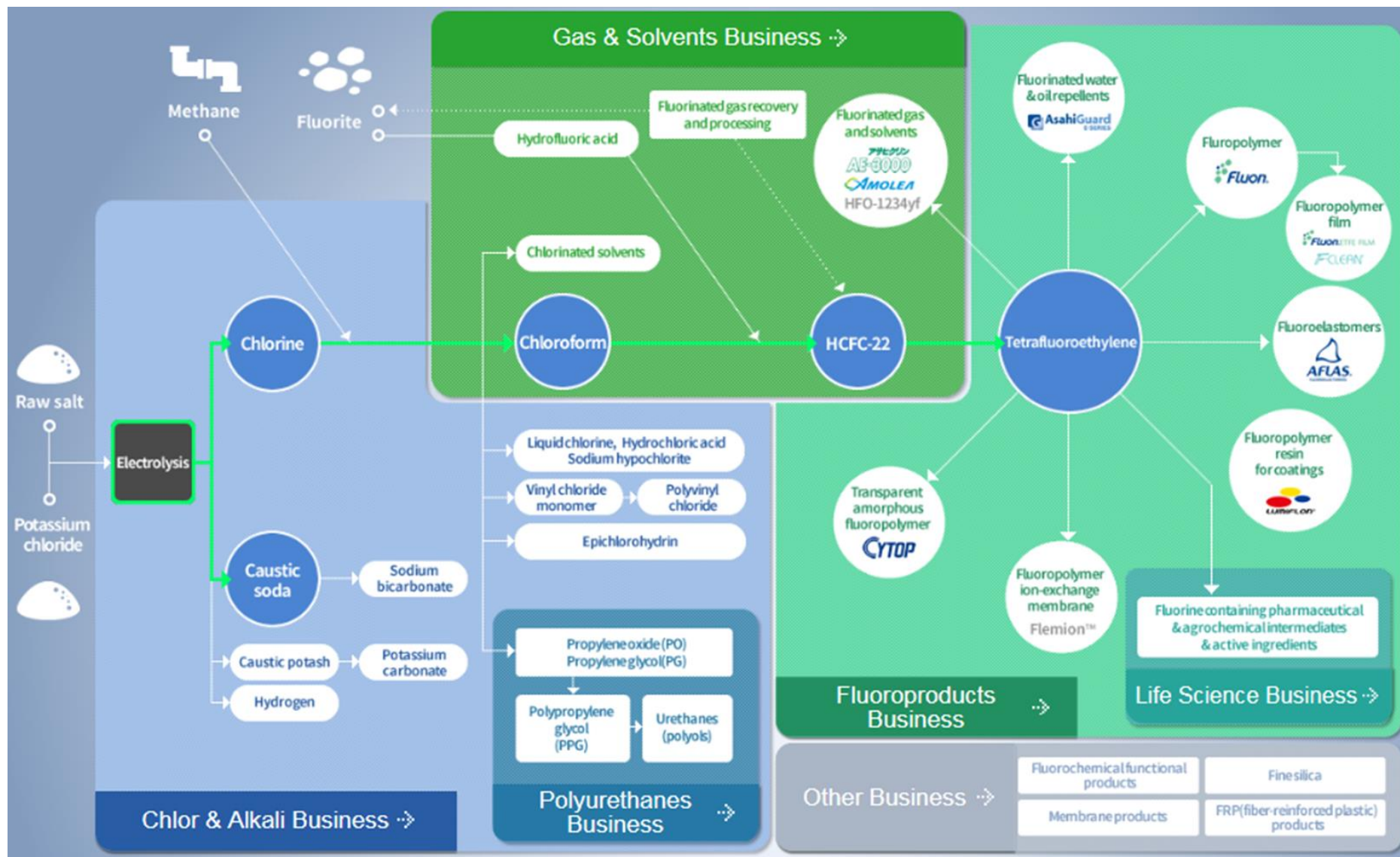
- **Fluoro Multipurpose Plant (FMP)**

- Non-GMP facilities
- High Temp/Pressure gases reactions
- Scale-up from Lab to Commercial





# AGC's F-Chemical chain as building blocks



- **3 Units:**

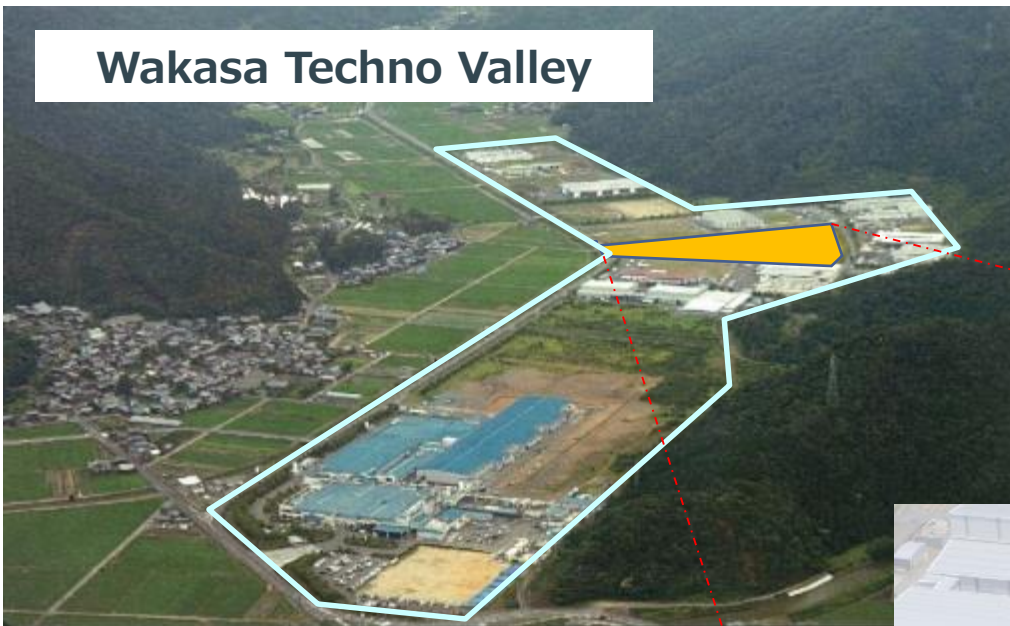
- cGMP compliant unit (Prostaglandines)
- Non-GMP unit for Agrochemicals
- Non-GMP unit for Registered starting materials & raw materials





# AGC Wakasa Chemical (Kaminaka site)

## Wakasa Techno Valley



Multi purpose plant for AIs & IMs for agrochemicals up to several 1000MT

Site Area  
28,400m<sup>2</sup>





## Kashima Chemicals

1968, AGC's Share 78.8%

C3 Chemistry (Allylchloride, Epichlorohydrine)

### C3 derivatives

#### Chlorination

- IPC (2-chloropropane)
- 2-CPEN (2-chloropropene)
- TCP (1,2,3-trichloropropane)

#### Hydroxylation

- CPD (3-chloro-1,2-propanediol)
- 1,3-DCH (1,3-dichloro-2-propanol)

#### Amination

- APD (3-amino-1,2-propanediol)
- Allylamine (3-amino-1-propene)



- AGC acquired Malgrat Pharma Chemicals, former API plant of Boehringer Ingelheim 1<sup>st</sup> March 2019
- Since September 2019 operational as **AGC Pharma Chemicals Europe** (\*)
- **First FDA registered site in Europe** for AGC to broaden its pharmaceutical CDMO business



(\*) see presentation: *AGC Pharma Chemicals Europe*



# Three Synthesis Facilities and Pilot Plant

- cGMP compliance
- Production capability is set up in a multipurpose concept for the production of small molecule
- The facilities provide 120 m<sup>3</sup> of total reactor capacity with vessel sizes of up to 6 m<sup>3</sup>
- Process chemistry can be conducted at temperatures between -20°C and +190°C



- **Fluorination technology**
  - Nucleophilic fluorination
    - Halogen exchange
    - Diazo-fluorination
  - Electrophilic fluorination
  - Electrolytic fluorination
- **Building blocks with “F” components**
  - Delivered from tetrafluoroethylene
  - As fluorine containing gas components
  - Others
- **C3 compounds** (propylene-based chemicals)
- **Ultra-low temperature reaction** ( $\sim -100^{\circ}\text{C}$ )
- **Hydrogenation**
- **Hazardous reactions** (e.g. cyano, diazo,  $\text{Cl}_2$  reactions)
- **High Potent API (OEL: 1-10 $\mu\text{g}/\text{m}^3$ )**
- **General organic reaction**
  - Friedel-Crafts
  - Grignard
  - Cross coupling
  - Oxidation/reduction

**END**

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