

BORICA

SPECIALTY CHEMICALS

“Tytan” Organic Titanates & Zirconates 2020

Tytan – Milestone



Borica Ltd was established in Taipei through MBO of ICI

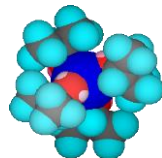
1999



Set up 'Tytan' secondary organic titanates production in Taiwan

2002

Established primary organic titanates - TIPT & TNBT production in China



2004

2007

ISO9001



2008

New plant start-up for O-Ti and O-Zr primary in China



Tytan – Milestone

Capacity increased
China – 10000 MTA
Taiwan – 2500 MTA

2012

Launch Ti-based
coupling agent



Launch next
generation RTV
sealant catalyst



2014

Establish R&D center at TW
Launch Ti catalyst for PET plastic



2016

Launch non-toxic
adhesion promoter
for ink application



2017

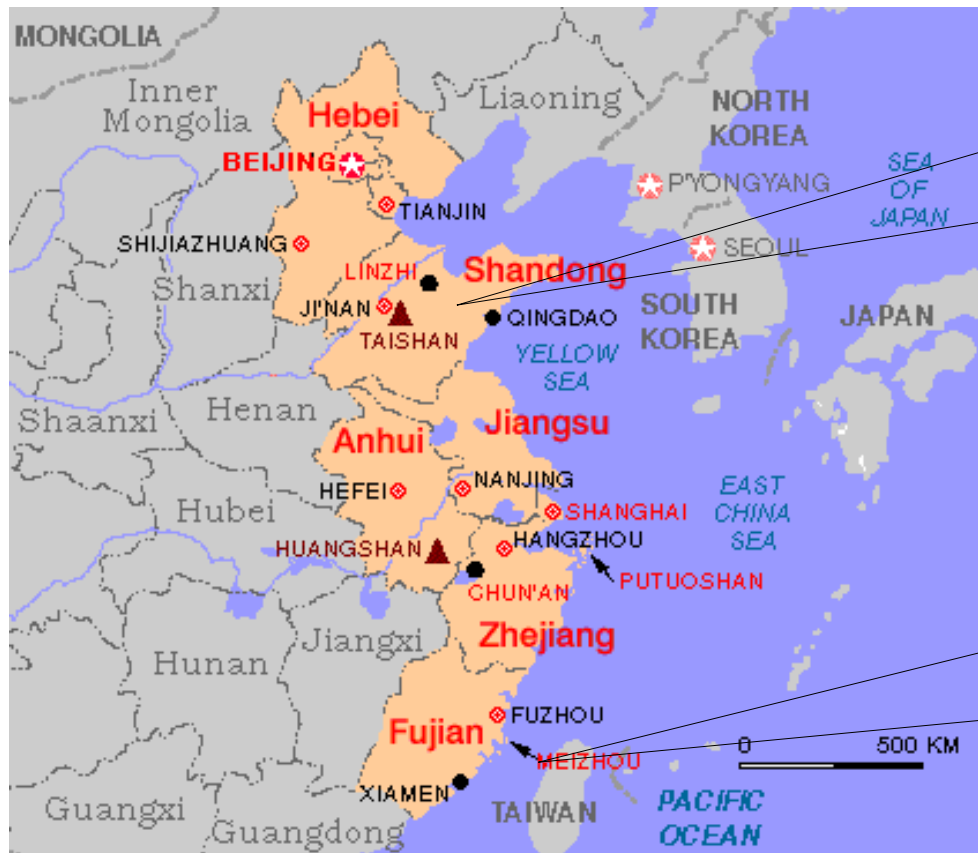
2018

2019

2nd plant
Investigating
new product

Production site

With 13500 MTA capacity of Titanates & Zirconates



Shandong, China

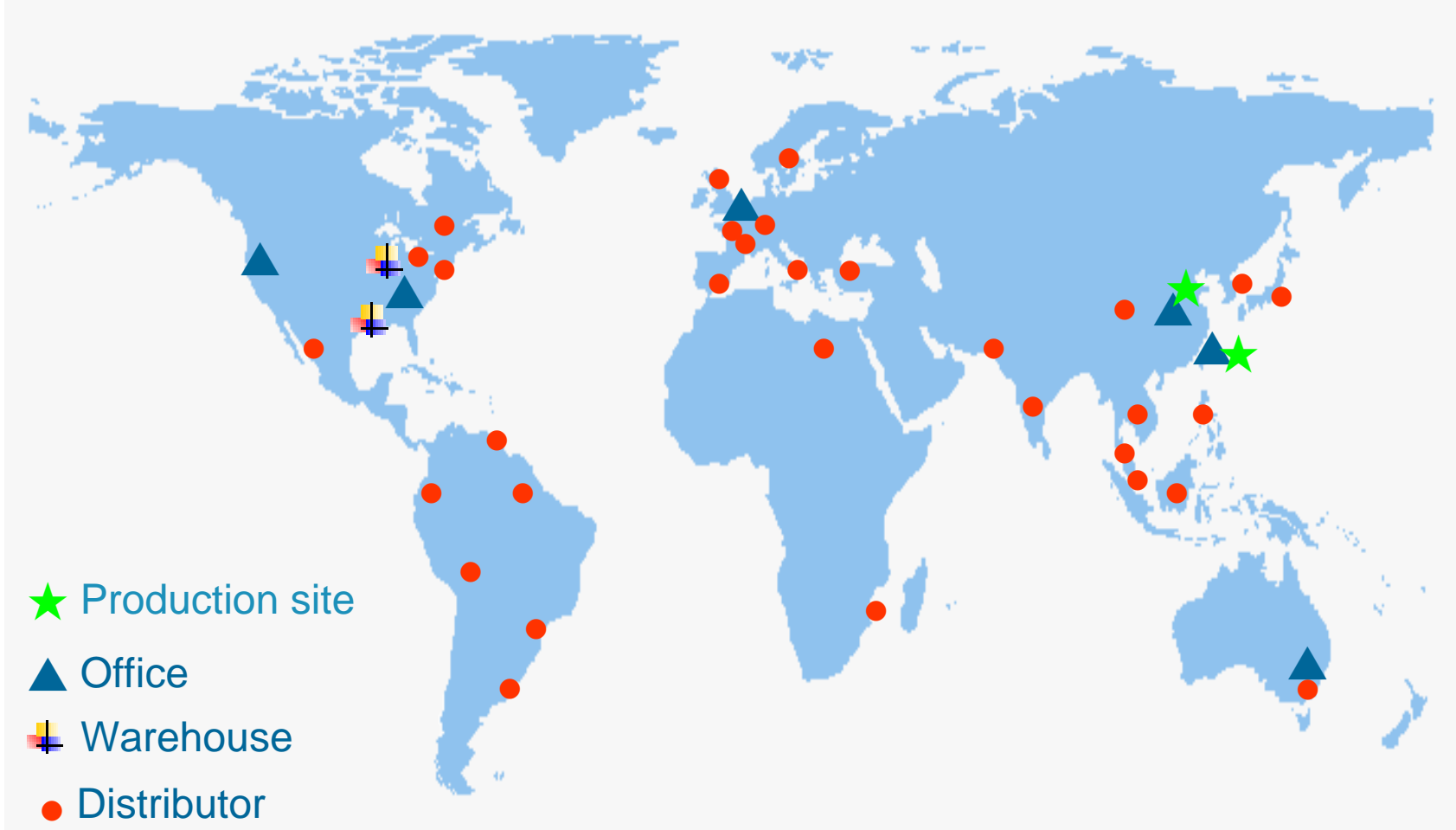
- Four production lines with 11000mt/yr primary titanates.
- Production of secondary titanates and zirconates as well.

Taipei, Taiwan

- 5000mt/year capacity producing secondary titanates and chelates such as CX/AQ range

Distribution Network

World Leading Titanates Producer, over 40% market share



Business Units

Borica

**Tytan
Manufacture**

- Titanate & Zirconate**
- Ink Adhesion
 - Industrial coating
 - Deco Paint
 - Catalyst
 - RTV Sealant

**Hymer
Technology &
Distribution**

- **Monomer**
MMA/MAA/CAN
GAA/BA/EHA
- **Specialty Monomer**
EGDMA,
TMPTMA...
- **Topanol A, M, TBX**

**Cylan
Manufacture**

- ORGANIC SILANE**
- Metal coating
 - RTV Sealant

**Pyros
Manufacture**

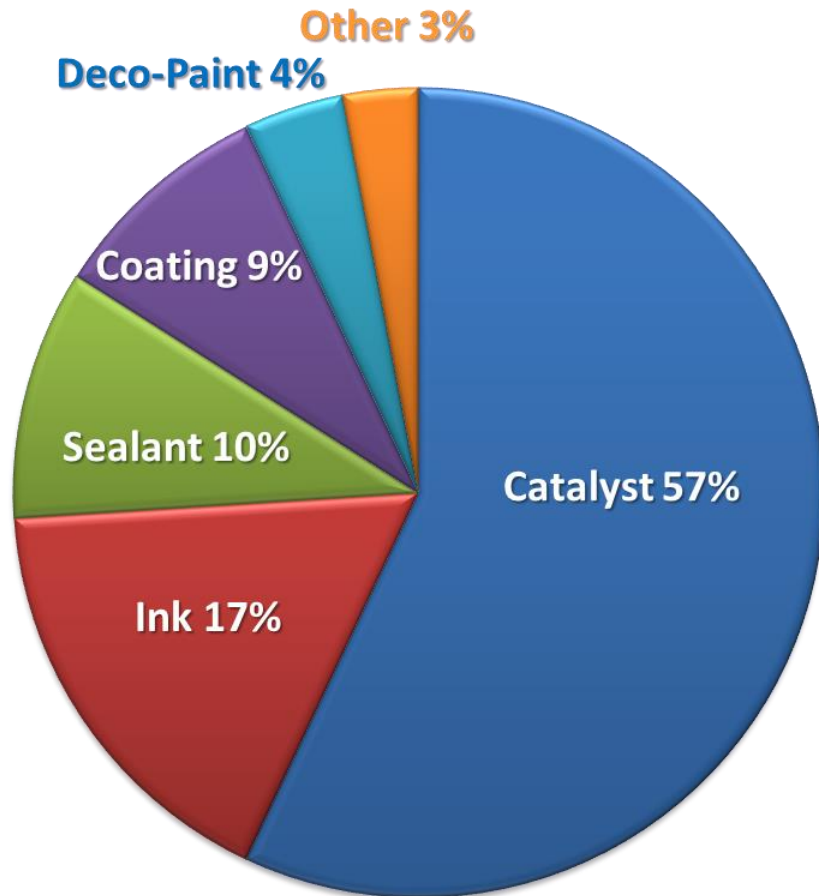
- Phosphate**
- Metal working fluid
 - Lubrication
 - Spining oil

**Citrate
Manufacture**

- Environmental
friendly plasticizer**
- ATBC
 - TBC
 - TEC

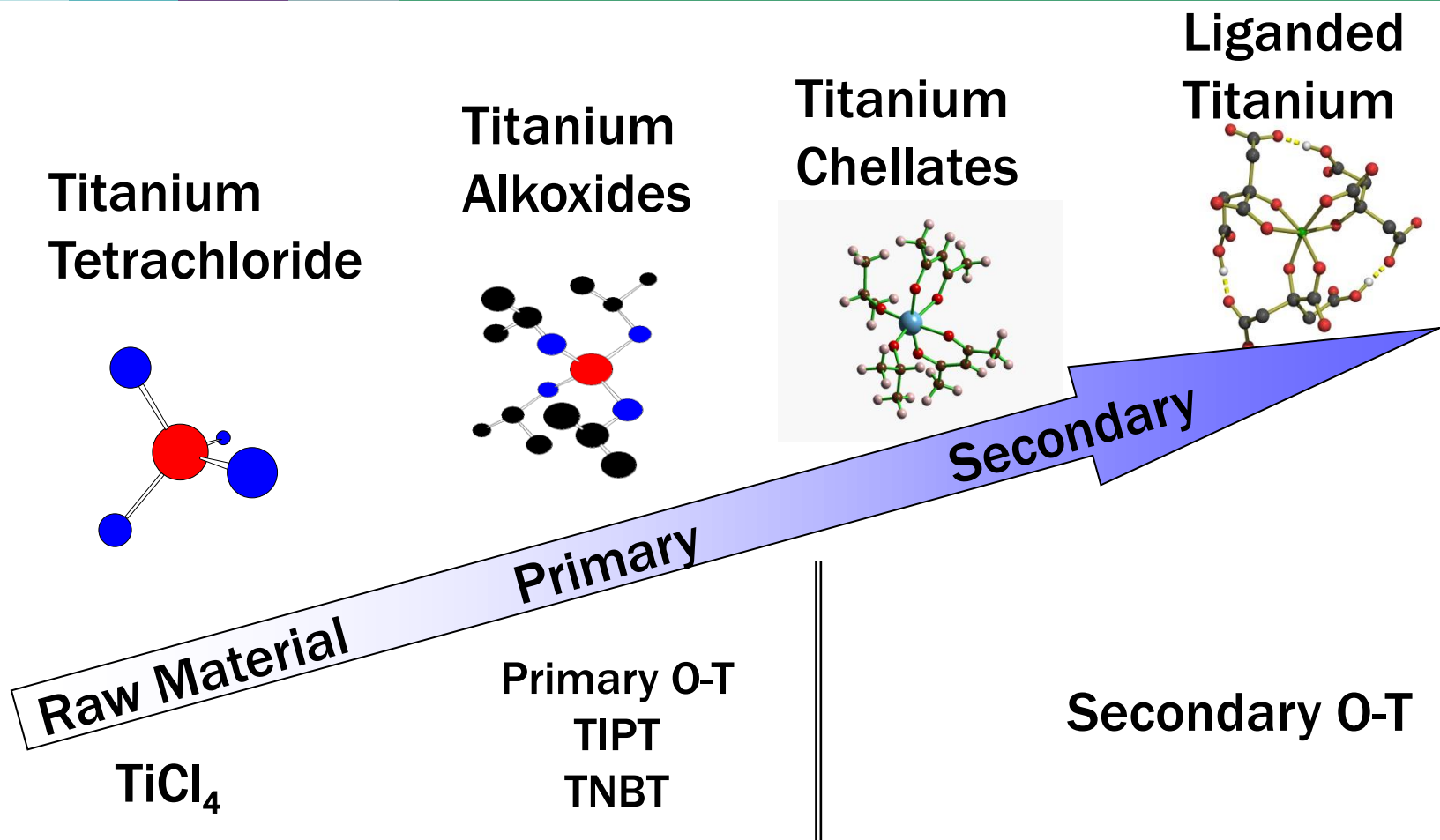
Tytan

- Sales breakdown by application

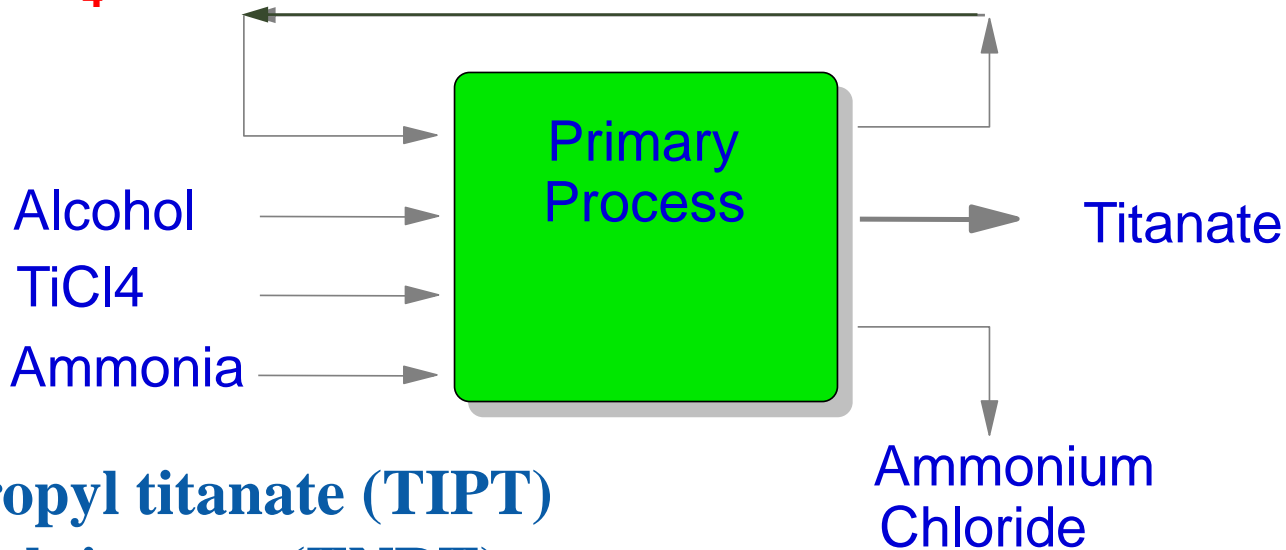
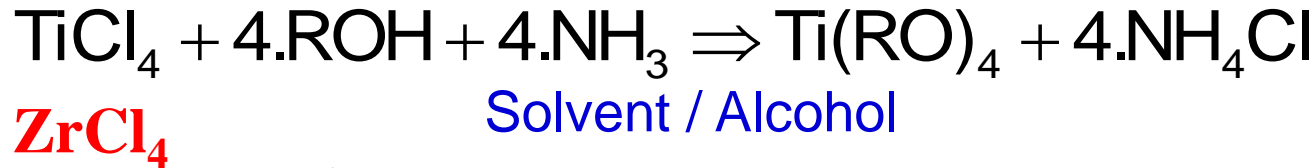


- **Catalyst**
Engineering plastic: PET, PBT, PC
Plasticizer: DOP, DOTP
MMA Trans-esterification: NBMA, EHMA
- **Ink** - adhesion promoter & cross linking agent
- **Sealant** - moisture scavenger, cross linking agent, and an environmental friendly replacement to tin catalyst
- **Coating** - cross linking agent
- **Deco-Paint** - thixotropic agent & structuring agent
- **Other:** CaCO₃ or Metal oxide dispersion, Wire enamel, BaTiO₃ powders etc.,

Technological Development



Primary Process



iso-propyl titanate (TIPT)
n-butyl titanate (TNBT)
n-propyl titanate (TNPT)
ethyl titanate (ET)

n-propyl zirconate
n-butyl zirconate

Secondary products

The primary (TIPT) is reacted or mixed with a range of chelates and/or ligands to deliver a product for specific applications such as industrial and decorative coatings, flexible food packaging inks, silicone sealants oil and gas fracking.

The range of ligands is relatively large thus allowing technically driven companies to differentiate from commodity driven companies.

These can be made in both in China and Taiwan.

Competitive Edges

- Inherited ICI titanates technology.
- Global supply distribution network.
- Full compliance with international production & logistic safety standards.
- Dual supply source for secondaries, both from China and Taiwan
- TIPT/TNBT plant located in China with competitive $TiCl_4$ supply.
- Reliable supply of zirconium tetrachloride, the critical raw material, is available from local producers.
- In house phosphate esters production in Taiwan provide key ingredient for Tytan products.
- Competent technical, R&D and production team and ISO 9002 certified.
- Continued development of new products in water based, low VOC and zirconates.
- Committed to REACH 1970/2006/EC pre-registration and registration

Applications - Overview

Polyurethanes:
CASE(Ti/Zn/Bi)

Silicones:
Sealants
Heat Resistant Paints

Olefins
LLDPE
HDPE

Esters
Direct Esterification
Trans Esterification
Interesterification
Polyesters

Wire Enamels

Cure Catalysis

Homogeneous Catalysis

Polymer Rheology Modification
Decorative Paints
Fracking
Drilling Muds

Adhesive & Cohesive Bonding

TiO₂ Coatings
Decorative
Abrasion
Resistance
Environmental

Coatings

Adhesion Promotion
Flexible Packaging Inks
Silicone Sealants

Tytan Products

Binder
Industrial Coatings
Coupling agent

Products already Registered

- TYTAN TIPT CAS 546-68-9
- TYTAN TNBT CAS 5593-70-4
- TYTAN BIP CAS
- TYTAN EHT CAS 1070-10-6
- TYTAN S2 CAS 27858-32-8
- TYTAN S6 CAS 83877-91-2
- TYTAN PBT CAS 9022-96
- TYTAN ET CAS 3087-36-3
- TYTAN CX200 CAS 68784-48-5
- TYTAN CX400 CAS 1072830-14-8
- TYTAN AP100 109037-78-7
- TYTAN TNPT CAS 3087-37-4
- TYTAN TET CAS 36673-16-2
- TYTAN CX100 CAS 68784-47-4
- TYTAN AP20 1070-10-6
- TYTAN TAA CAS 17927-72-9
- TYTAN TNPZ CAS 23519-77-9
- TYTAN TNBZ CAS 1071-76-7
- TYTAN AQZ30 CAS 101033-44-7
- TYTAN X85 CAS 94233-27-9
- TYTAN CP 326 CAS 68585-78-4

Choices of Packaging



- Various packaging to meet customer's demand



- 35 kg. pail, 200 kg. drum
1 MT IBC (tote) and 20MT Isotank.



Thank you very much for your interest in our “Tytan” organic Zirconates and Titanates.

At Borica, we are looking forward to the opportunity of becoming your reliable long term supplier and business partner.