BORN2BOND | Academy

Adhesive Selection & Technical Requirement

Confidential-Internal use only

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ARKEMA

Tech. Requirement

- Substrates
- Design of parts
- Mechanical constraints
- Environmental resistance
- Process

Etc...

Brainstorming & selecting an adhesive tehcnology

Other aspects: regulations, HSE, cost, etc.

Sélection of a short list of potential references

Validation tests

Type of failure is VERY important

Technical Requirement

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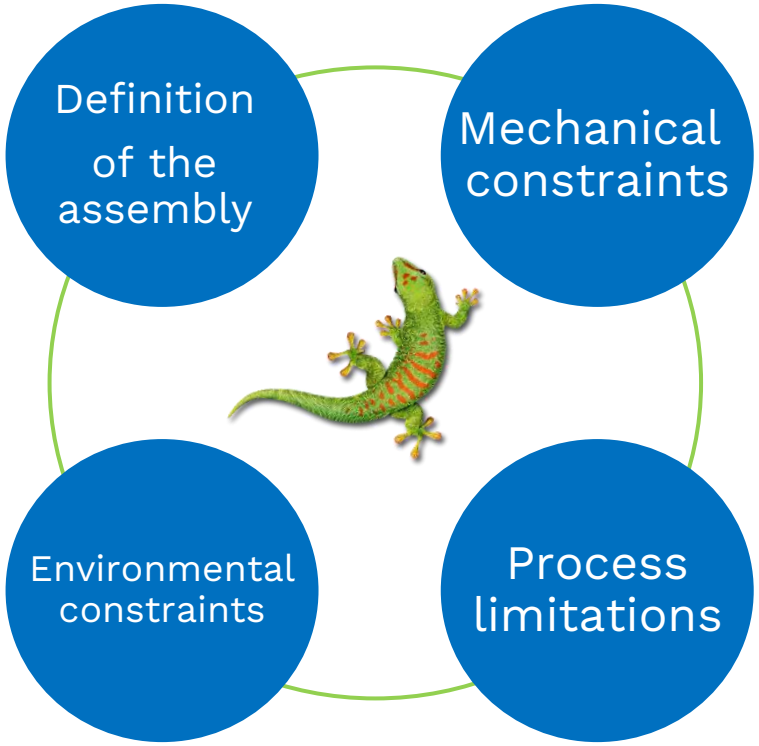
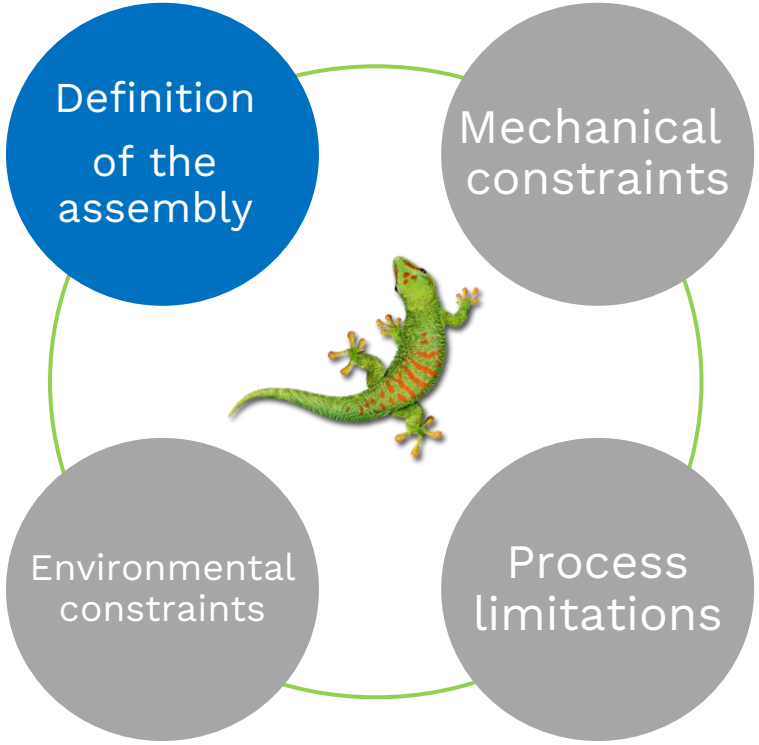
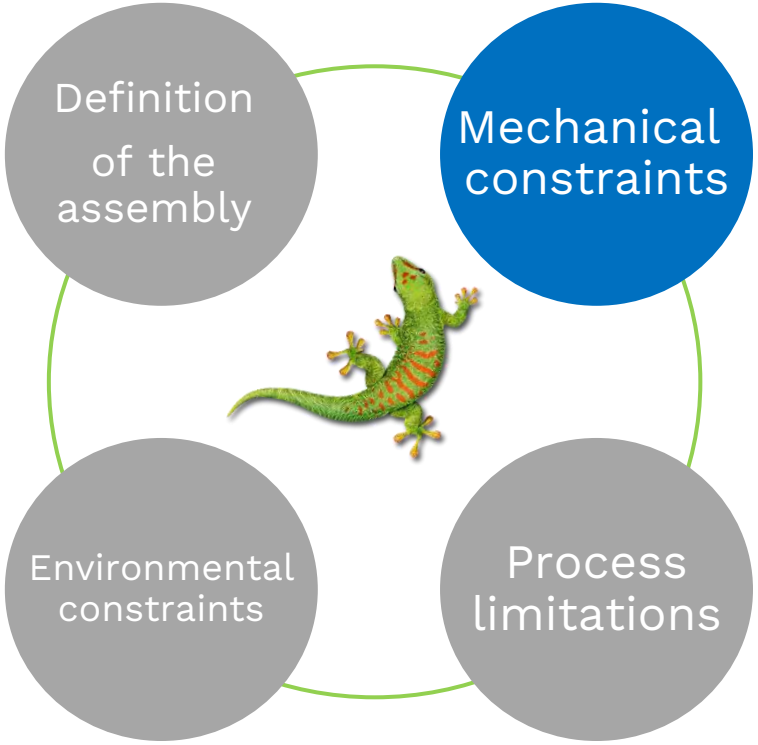


Elements to consider when writing a technical requirements document



Definition of the assembly

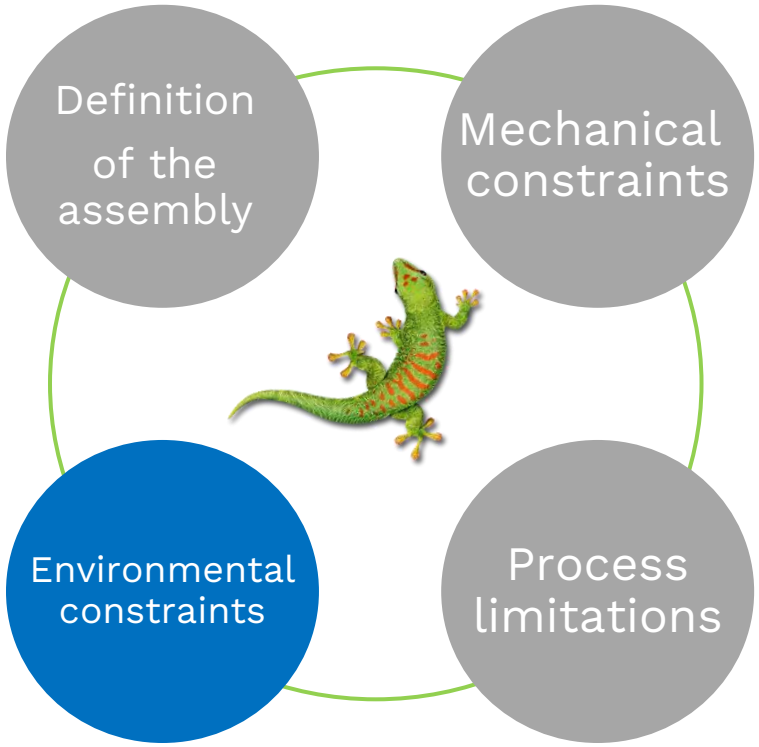
- Substrates
- Joint design / geometry
- Size of parts
- Gap
- Aesthetical constraints (color, transparency…)
- Regulatory (norms, certifications…)



Mechanical constraints

- Target strength
- Type of constraints (shear, tensile, peeling…)
- Thermal expansion issues ?
- Impacts, shock, vibrations ?

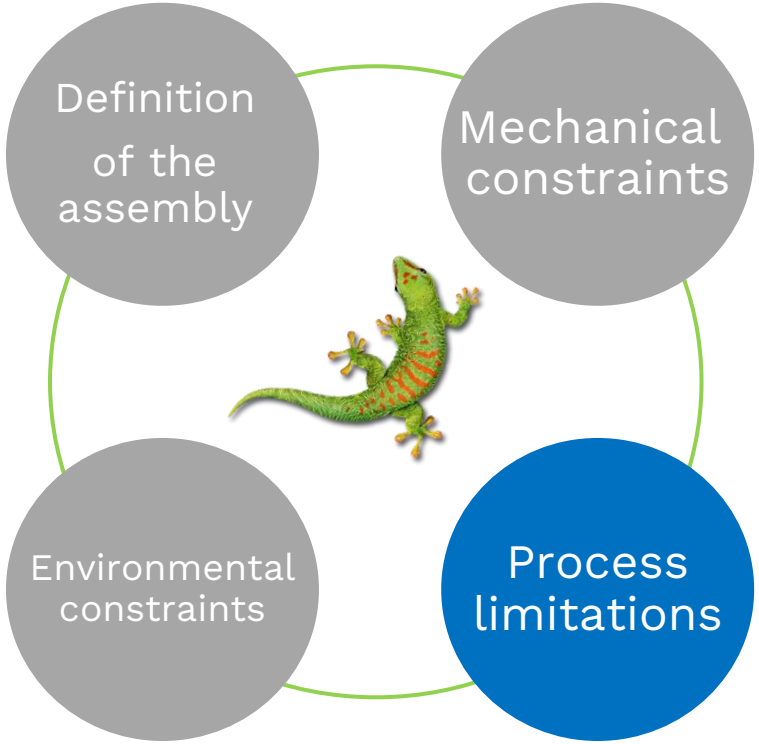
➔ Initial strength & flexibility



Environmentales constraints

- Operating temperature range
- Thermal shock / cycle
- Humidity exposure
- Chemical product exposure (which ones?)
- UV exposure

➔ Ageing resistance



Process limitations

- Viscosity
- Available dispensing equipment (manual, automated…)
- Cycle time (dispensing + open time = handling time…)
- Possibility of heat-cure or UV-cure…
- Health, Security and Environment considerations
- Packaging

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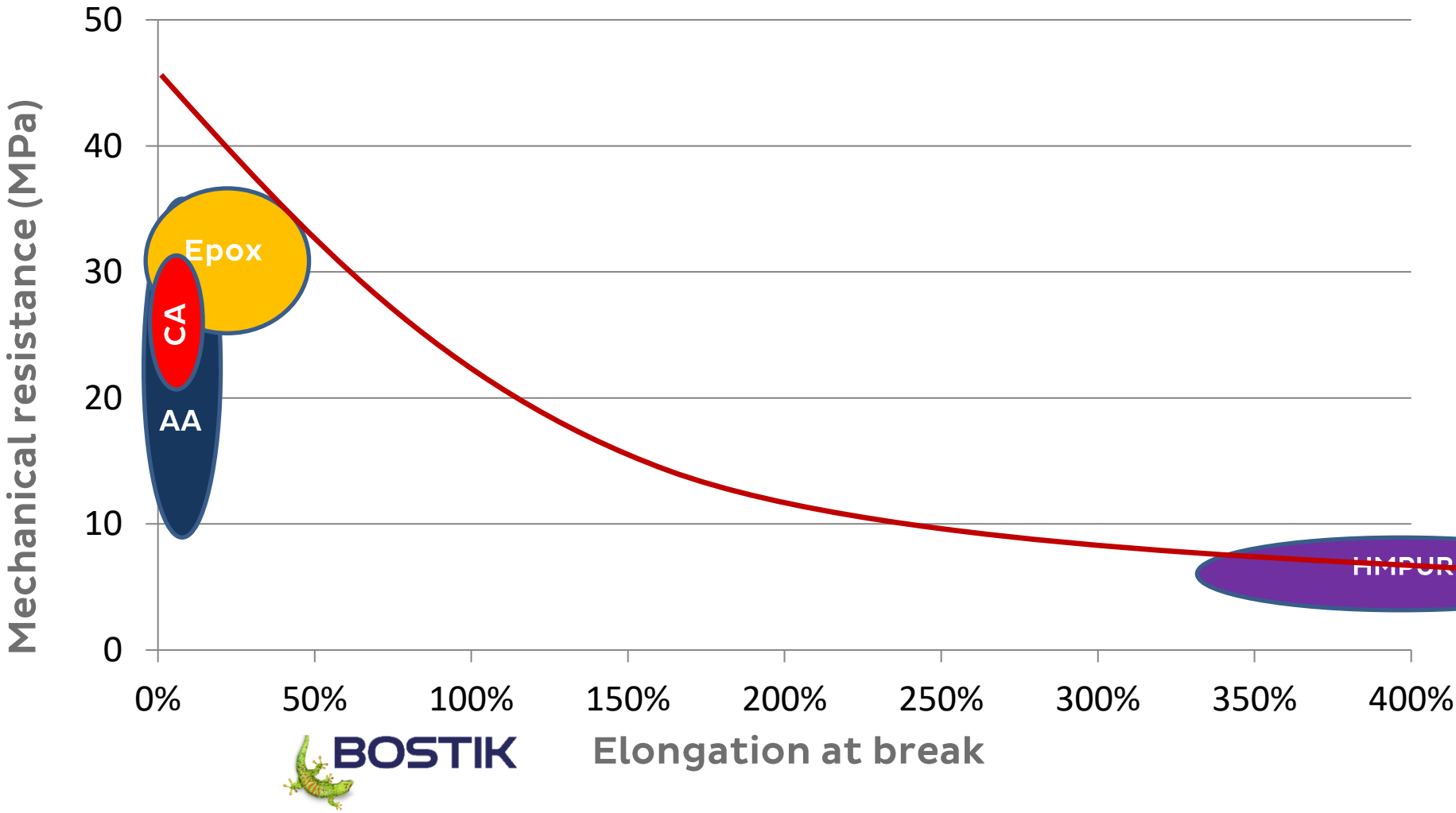
Mechanical constraints

The choice of an adhesive technology is a **balance** between **mechanical resistance** (= static load, force transmission) and **flexibility** (= resitance to shock, impacts, vibrations)



Cyanoacrylate

PROS

- Instant bonding (<1 min)
- Easy to use
- High mechanical strength
- Born2Bond = White label for most products
- Best MECA on the market
- Innovative and differenciating Born2Bond range

CONS

- Limited resistance to water and humidity (except AquaFast & K85)
- Limited resistance to high temperatures
- Small areas bonding
  Rigid = limited resistance to shock / impact / vibration
  No gap filling capability (except for LightLock & 2K)
  Generates blooming
  Automated dispensing systems need to be cleaned regularly

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Anaerobic

PROS

- Easy to use
- Excellent environmental resistance (temperature, humidity, chemicals, ageing…)
- Long open time & short handling time
- Widest White Label range on the market
- Best packaging on the market

CONS

- Only for 4 typical applications
- Only for metal/metal assembly

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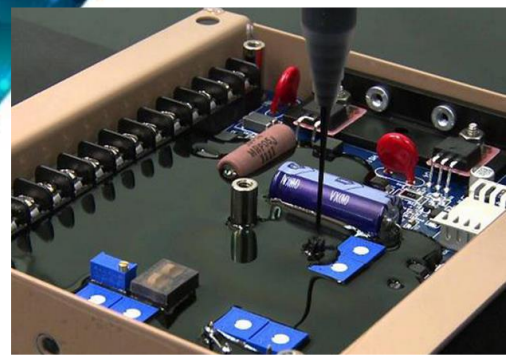
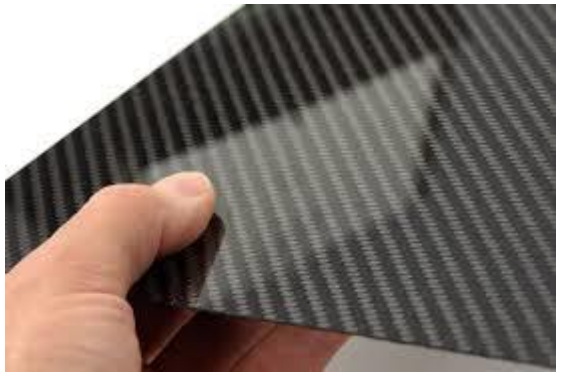
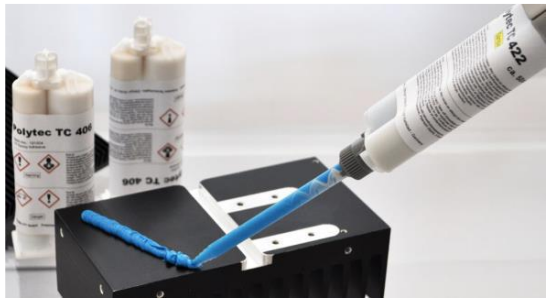
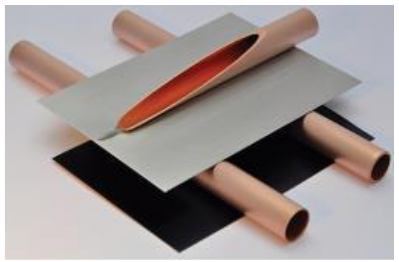
Epoxy









PROS

- Very high mechanical strength and toughness
- Very high temperature and chemical resistance
- Good gap filling properties
- Wide range of viscosity
- Excellent compatibility with fillers
- Possibility to cure at RT or at high temperature

CONS

- Labeling
- High exothermy
- Need for surface preparation prior to bonding
- Slower cure than other technologies

  Limited resistance to extreme shock/vibration

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HMPUR

PROS

- **Fast handling time**
- **Dismonteable at high temperatures**
- **High elongation**
- **High mechanical and vibration resistance**
- **High moisture, sebum & sweat resistance**

CONS

- **Difficult manual dispensing**
- **Labelling**
- **Requires special training for operators in some countries**
- **Limited UV stability**

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