

QPAC®25 & QPAC®40

Product Overview:

Poly(alkylene carbonates) are synthesized through the polymerization of carbon dioxide and epoxides. The products of their combustion are carbon dioxide and water vapor, which are non-toxic, non-flammable, and environmentally safe. They burn cleanly in any environment, oxidizing or inert. They are colorless, amorphous thermoplastic polymers with low glass transition temperatures.



QPAC is ideally suited for use as a binder in glass applications, including glass preforms and joining carbon nanotubes and phosphors to glass substrates.

Here's why:

- QPAC is compatible with a variety of sealing glasses and metals.
- QPAC's viscosities and molecular weights can be custom-tailored for specific solution or paste requirements.
- Both grades of QPAC are naturally "tacky" and their degrees of plasticity can be adjusted as necessary.
- Decomposition is complete through three phases: solid, liquid, and vapor.
- Upon decomposition, QPAC leaves very low ash residue with the complete burn-out of carbon.
- QPAC decomposes completely between 250°C and 300°C, which can be as much as 100°C below the decomposition temperatures of other binders.

Properties of QPAC formulations:

QPAC® 25 - PEC - poly(ethylene carbonate)

Density	1.42
Chemical formula	$[\text{CH}_2\text{CH}_2\text{OCO}_2]_n$ or $\text{C}_3\text{H}_4\text{O}_3$
Tensile strength	500 - 1,500 psi
Solubility	Methylene chloride, Chloroform, & 1,2-Dichloroethane
Tg	25°C

QPAC® 40 - PPC - poly(propylene carbonate)

Density	1.26
Chemical formula	$[\text{CH}_3\text{CHCH}_2\text{OCO}_2]_n$ or $\text{C}_4\text{H}_6\text{O}_3$
Tensile strength	5,000 - 6,000 psi
Solubility	Methylene chloride, MEK, Acetone & Propylene carbonate
Tg	40°C

Other QPAC Binder Applications:

- Diamond Powder Bonding
- High Energy Capacitors
- Air Bag Inflator Propellants
- Thick Film Inks
- Die attach adhesives
- Ceramic Fiber Processing

100 Interchange Boulevard ♦ Newark, DE 19711 ♦ USA
 (302) 452-6607 ♦ Fax (302) 452-6610
 contact: Sugianto Hanggodo
 email: sugiantohanggodo@empowermaterials.com
 www.empowermaterials.com

 **EMPOWER**
MATERIALS
 a subsidiary of Axess Corporation