

ADHESIVES FOR URBAN AIR MOBILITY & DRONES

Permabond offers a wide range of high-performance industrial adhesives for use throughout urban air mobility, drone systems, & Vertical Take-Off and Landing.

The rapid growth of drones, Urban Air Mobility (UAM) aircraft and Vertical Take-Off and Landing (VTOL) is reshaping transportation, logistics, and emergency response. As these platforms become lighter and more energy efficient, advanced adhesive technologies are essential to their design and manufacture. High-performance adhesives bond composites, metals, and engineered plastics while reducing weight, improving fatigue resistance, and enhancing structural integrity. They also support battery assembly, thermal management, electronics protection, vibration resistance, and environmental sealing - critical for safe, reliable operation. Permabond's advanced adhesive solutions deliver the strength, durability, and manufacturing efficiency required for next-generation flight.



KEY FEATURES:

- ▶ Lightweighting
- ▶ Structural bonding and sealing
- ▶ Environmental resistance
- ▶ Lifetime reliability
- ▶ Ability to bond a wide range of materials
- ▶ Fire retardant
- ▶ Thermal conductivity
- ▶ RoHS compliance
- ▶ Variety of cure speeds & curing methods
- ▶ Impact & vibration resistance
- ▶ Improve stress distribution

IDEAL FOR BONDING:

- | | | |
|----------------|--------------|-----------------|
| • ABS | • HDPE/ LDPE | • Polypropylene |
| • Acrylic | • Honeycomb | • 3D Printed |
| • Aluminum | • Laminate | Plastics |
| • Carbon Fibre | • Magnets | • Rubber |
| • Composite | • Nylon | • Steel |
| • FRP/GRP | • PCB | • Titanium |
| • Ferrite | • Phenolic | • Zinc |

...and many more!



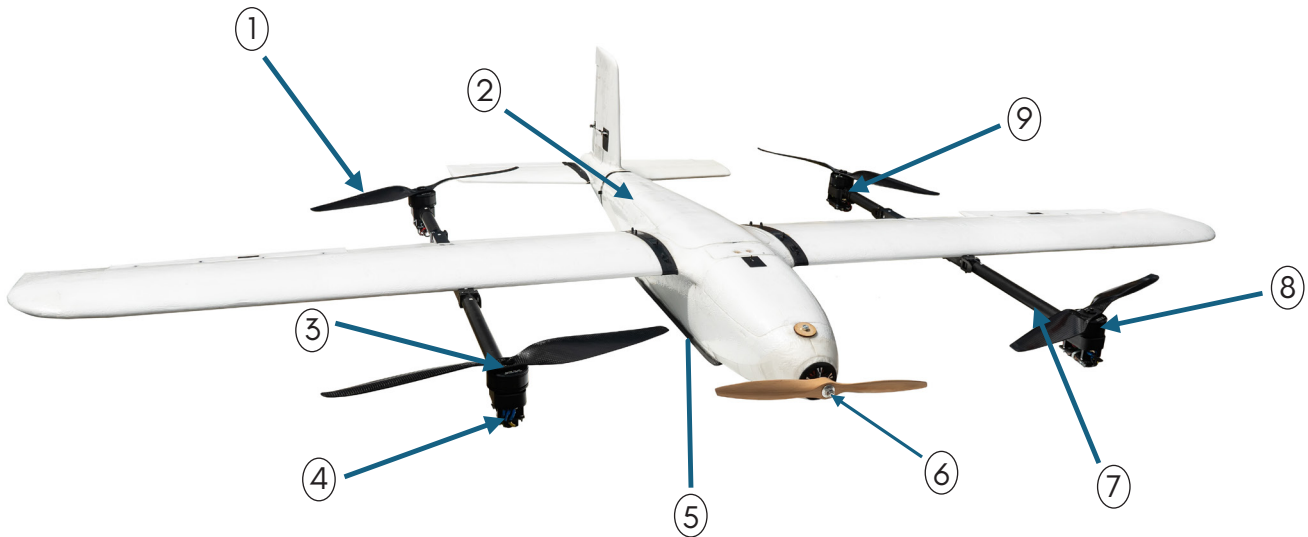
ADHESIVES FOR URBAN AIR MOBILITY & DRONES

Product	Technology	Description	Typical application	Color	Viscosity	Gap	Handling Time	Shear strength (Steel)	Temp. Range	Packaging*
A1042 (Europe, Middle East, & Australia)	Anaerobic (cures between close fitting metal parts)	Dismantlable threadlocker & prevents vibration loosening	Locking nuts & bolts	Blue	2rpm: 8000 (mPa.s) cP 20rpm: 1700 (mPa.s) cP	(0.12) mm 0.005 in	5 mins	(12 N/mm ²) 1700 psi	(-55 to 150)°C -65 to 300°F	10 x 50ml 5 x 200ml bottles
MM115 (Americas & Asia)	Anaerobic (cures between close fitting metal parts)	Prevents loosening, controlled torque, & non-drip formula	Locking nuts & bolts	Blue	1300 (mPa.s) cP	(0.15) mm 0.006 in	10 mins	(10N/mm ²) 1450 psi	(-55 to 150)°C -65 to 300°F	10 x 10ml 10 x 50ml 4 x 250ml bottles
HM129 (Worldwide)	Anaerobic (cures between close fitting metal parts)	High-strength threadlocker, resists tampering & vibration	Locking nuts & bolts permanently	Red	500 (mPa.s) cP	(0.15) mm 0.006 in	10 mins	(17 N/mm ²) 2500 psi	(-55 to 150)°C -65 to 300°F	10 x 50ml 5 x 200ml bottles
HM162 (Worldwide)	Anaerobic (cures between close fitting metal parts)	Permanent high-strength bond & high-temp resistance	Retaining compounds for bonding bearings into housings or onto shafts	Green	1000 (mPa.s) cP	(0.2) mm 0.008 in	5 mins	(30 N/mm ²) 4400 psi	(-55 to 200)°C -65 to 390°F	10 x 10ml 10 x 50ml 4 x 250ml bottles
712 (Worldwide)	Cyanoacrylate	Instant bond & excellent environmental resistance	Bonding of plastic & 3D printed components	Transparent	100 (mPa.s) cP	(0.15) mm 0.006 in	25 secs	(19-24 N/mm ²) 2755-3480 psi	(-55 to 120)°C -65 to 250°F	15 x 20g 10 x 1 oz 10 x 1 lb 1 x 500g bottles
ES566 (Worldwide)	Heat cure single part epoxy	No-mix & high bond strength even at high temperatures	Magnet bonding in electric motors	Grey	20 rpm: 90,000 (mPa.s) cP 2 rpm: 225,000 (mPa.s) cP	(2.0) mm 0.08 in	90°C (175°F): 75 mins 100°C (210°F): 40 mins 120°C (250°F): 25 mins 150°C (300°F): 10 mins	(5-10 N/mm ²) - cured at 90°C (18-22 psi) - cured at >100°C	(-40 to 180)°C -40 to 355°F	10 x 320ml cartridges
ET503 (Worldwide)	Two component epoxy	High strength, tough, enhanced environmental resistance	Composite repair & electronics ruggedization	A: White B: Light Grey	Mixed: 15,000 (mPa.s) cP	(1.0) mm 0.04 in	6 mins	(20-26 N/mm ²) 2900 - 3770 psi	(-40 to 100)°C -40 to 215°F	10 x 50ml - dual cartridges 6 x 400ml - dual cartridges
ET5422 (Worldwide)	Two component epoxy	Toughened epoxy & ultra-high peel strength	Structural composite assembly & magnet bonding for e-motors	Blue	Thixotropic Paste	(5.0) mm 0.2 in	(23°C) 73°F : 16 hrs	(30-38 N/mm ²) 4350-5510 psi	(-55 to 120)°C -65 to 250°F	10 x 50ml - dual cartridges 6 x 400ml - dual cartridges
ET5424 (Worldwide)	Two component epoxy	High temperature resistance following low temperature cure	Structural composite assembly	A: Grey B: Black	A: 245,000 (mPa.s) cP B: 1700 (mPa.s) cP	(3) mm 0.12 in	4 hrs	(20-25 N/mm ²) 2900-3630 psi	(-55 to 230)°C -65 to 445°F	6 x 400ml - dual cartridges
ET5428 (Worldwide)	Two component epoxy	Toughened epoxy, high peel strength & rapid cure	Structural composite assembly	Cream/Off White (Black version available)	Thixotropic Paste	(5.0) mm 0.2 in	30 - 45 mins	(28-34 N/mm ²) 4060-4930 psi	(-55 to 120)°C -65 to 250°F	10 x 50ml - dual cartridges 6 x 400ml - dual cartridges
ET5429 (Worldwide)	Two component epoxy	Composite bonding grade with longer pot life	Structural composite assembly	A: Black B: Yellow	Thixotropic Paste	(5.0) mm 0.2 in	6 - 10 hrs	(23-28 N/mm ²) 3335-4060 psi	(-55 to 120)°C -65 to 250°F	10 x 50ml - dual cartridges 6 x 400ml - dual cartridges
ET5441 (Worldwide)	Two component epoxy	High temperature resistance, thermally conductive	Electronics bonding & thermal management	A: White B: Dark Grey	Thixotropic Paste	(2.0) mm 0.08 in	8 hrs	(20-25 N/mm ²) 2900-3630 psi	(-55 to 200)°C -65 to 390°F	10 x 50ml - dual cartridges 6 x 400ml - dual cartridges
MT382 (Worldwide)	Two component hybrid	Flexible, absorbs impact & vibration	Sealing, potting electronic components & encapsulating	A: Black B: Yellow	Mixed: 22,000 (mPa.s) cP	(0.5) mm 0.02 in	105 - 120 mins	(4-7 N/mm ²) 600-1000 psi	(-40 to 120)°C -40 to 250°F	10 x 50ml - dual cartridges 6 x 400ml - dual cartridges
MT3836 (Worldwide)	Two component hybrid	Flexible, absorbs impact, thermally conductive & fire-retardant	Electronics bonding & thermal sealing	A: White B: Yellow	Thixotropic Paste	(5.0) mm 0.2 in	2 - 3 hrs	(2-2.5 N/mm ²) 290-360 psi	(-40 to 120)°C -40 to 250°F	6 x 400ml - dual cartridges
TA437 + Initiator 41M (Worldwide)	Structural acrylic	High-temp resistance & high bond strength	Bonding electric motor magnets	Orange	20rpm: 40,000 (mPa.s) cP 2.5rpm: 130,000 (mPa.s) cP	(0.5) mm 0.02 in	15-20 mins (no initiator) 1-3 mins (with Initiator 41)	(14-20 N/mm ²) 2000-3000 psi	(-55 to 200)°C -65 to 390°F	2 x 65ml kits 10 x 300ml cartridges
TA4590 + Initiator 44 (Worldwide)	Two component no-mix acrylic	Rapid cure, acid-free & high-temp resistance	Bonding electric motor magnets	Blue	20rpm: 20,000 (mPa.s) cP 2.5rpm: 80,000 (mPa.s) cP	(0.5) mm 0.02 in	30 - 60 secs	(20-25 N/mm ²) 2900-3600 psi	(-55 to 165)°C -65 to 330°F	10 x 250ml tubes 1 Liter
TA4208 Black (Europe)	Two component methyl methacrylate	Toughened acrylic, strong peel strength & impact resistance	Structural composite assembly	Black	Mixed: 100,000 (mPa.s) cP	(3.0) mm 0.12 in	10 - 15 mins	(27-31 N/mm ²) 3920-4500 psi	(-40 to 150)°C -40 to 300°F	10 x 50ml - dual cartridges 6 x 400ml - dual cartridges
TA4550 (Worldwide)	Two component acrylic	Multipurpose bonder, excellent adhesion to nylon, plastics, metals & composites	3D printed plastic bonding & sealing	A: Transparent B: Green	Mixed: 100,000 (mPa.s) cP	(5.0) mm 0.2 in	5 - 6 mins	(27-30 N/mm ²) 3920-4350 psi	(-55 to 100)°C -65 to 210°F	10 x 50ml - dual cartridges 6 x 400ml - dual cartridges
TA4551 (Worldwide)	Two component acrylic	Similar to TA4550 but with a longer open time & nozzle life	3D printed plastic bonding & sealing	A: Red/Violet B: Transparent	Mixed: 150,000 (mPa.s) cP	(5.0) mm 0.2 in	10 - 15 mins	(30 N/mm ²) 4350 psi	(-55 to 100)°C -65 to 210°F	10 x 50ml - dual cartridges 6 x 400ml - dual cartridges
UV639 (Worldwide)	UV curable	UV cure, fast & forms a hard surface	Camera lens bonding	Transparent	1300 (mPa.s) cP	-	70 W lamp: 5 secs (Plexi) 10 secs (PC)	PETG to PETG (>7 N/mm ²) >1020 psi	(-55 to 120)°C -65 to 250°F	10 x 50ml 10 x 300ml cartridges
UV643 (Worldwide)	UV curable	UV cure, ultra-fast, & bonds many plastics	Clear plastic bonding & composite repair	Pale Yellow Clear (Cured)	20rpm: 2000 (mPa.s) cP 2rpm: 17,600 (mPa.s) cP	-	Short-arc: <1 sec LED 150 mW: <1 sec LED 0.1 mW: 19 secs	PC to PC (>13 N/mm ²) >1890 psi	(-55 to 120)°C -65 to 250°F	10 x 50ml 10 x 250ml bottles

*Larger packaging available on request

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DRONE COMPONENT APPLICATIONS



1. 3D printed component bonding

- TA4550, TA4551, 712

2. Composite frame / structure bonding

- ET5428, ET5429, ET5424, ET5422,
TA4208 Black (EUR only)

3. Bearings

- HM162

**4. Electronics potting, encapsulation &
ruggedisation**

- MT382

5. Camera lens bonding

- UV639

6. Threadlocking nuts and bolts

- HM129

7. Composite repair

- UV643, ET503

8. E-motor magnet bonding

- TA437, TA4590, ES566

**9. Thermal management, impact absorption
& fire resistance**

- ET5441, MT3836

Permabond adhesives and sealants are available worldwide through authorized distributors.
Contact us or your local distributor for support!

PERMABOND.COM

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