Purok VX 61

Technical Data Sheet

App International Pty Ltd · 3 Wulbanga Street, Prestons NSW 2170, Australia · Ph 1300 571 757
App International Asia · Jakarta, Indonesia · www.appinternational.com.au

Technical Data Sheet: PUROK VX 61

Product Description

Purok VX61 is an acrylic structural adhesive that has increased flexibility. It is designed for applications that require a very high-strength adhesive to withstand light impact and vibrations.

Key Features

- High lap shear strength
- High peel strength
- Impact toughened
- Medium flexibility
- Excellent chemical resistance
- Varied cure speed available
- Minimal surface preparation required

Applications

- Effective for bonding dissimilar substrates with minimal surface preparation e.g. metals, plastics, and composites.
- Perfect for bonding joints that will experience movement and light impact as the increased flexibility will absorb the stress.

Cure Times Available.

VX 61-05 (Fixture Time is ~5 minutes)
VX 61-20 (Fixture time is ~20 minutes)
VX 61-40 (Fixture time is ~40 minutes)
VX 61-90 (Fixture time is ~90 minutes)

Volumes Available.

Cartridges	Bulk
50ml	
200ml	
490ml	

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Typical Physical Properties

Uncured

Properties	Part A	Part B
Chemistry	Acrylic	Peroxide
Colour	Cream	Black
Viscosity @ 10 s -1	95,000	32,000
Density [g/ml -1]	1	1.15
Mix ratio by volume	10	1
Mix ratio by weight	10	1.15

Cured

Properties	VX 61-05	VX 61-20	VX 61-40	VX 61-70
Colour	Black	Black	Black	Black
Working Time	2 mins	8 mins	25 mins	40 mins
Handling Time (Minumin time to acheive >0.3 MPa overlap shear strength)	5 mins	15 mins	40 mins	60 mins
Time to rech peak exothermic reaction temperature (10g mass)*	5 mins	15 mins	35 mins	70 mins

Typical Performance Characteristics

Overlap Shear Strength
In accordance with ISO4587

Disclaimer

We bonded overlap shear specimens with overlap dimensions of 12.5 (length) x 25 (width) x 0.5 (thickness) mm.

We allowed each specimen to cure for 3 days at 20°C and 50% relative humidity. We then pulled the test pieces apart at a rate of 6mm/ min for metals. And 50mm/min for composites and plastics.

Substrate	Surface Prep	Overlap Shear Strength	Failure Mode
Aluminium	- IPA wiped - Abraded (120g) *	20 19	CF CF
Anodised Aluminium	- IPA wiped - Abraded (120g) *	18 19	CF CF
Stainless Steel	- IPA wiped - Abraded (120g) *	20 18	CF CF
Mild Steel	- Abraded (120g)*	20	CF
E-galvanised Steel	- IPA wiped	18	CF
Hot-Dip Galvanised Steel	- IPA wiped	14	CF
GRP - Epoxy	- IPA wiped	10	SF
GRP - Polyster	- IPA wiped	9	SF
PMMA	- IPA wiped	8	SF
ABS	- IPA wiped	6	SF
Polycarbonate	- IPA wiped	8	SF
PVC	- IPA wiped	7	SF

IPA = Isopropyl alcohol, CF = Cohesive Failure, AF = Adhesive Failure, SF = Substrate Failure
*Abraded (120g) = Abrade with 120 grit pad then clean with IPA
All substrates used to create a lap shear specimen were 2mm in thickness

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Tensile Properties

In accordance with ASTM D638

Properties	Value
Tensile Strength at Break[MPa]	14
Percentage Elongation at Break [%]	20-25

Tensile properties measured on 3mm thick dumbbell specimens at a rate of 5mm/min

Hardness

Tested in accordance with ASTM D2240

Properties	Value
Shore D Hardness	70

Shore A hardness measured on a 7mm thick sample of cured adhesive

Adhesive Performance | Temperature Resistance

Overlap Shear Strength

In accordance with ISO4587

We bonded overlap shear specimens with overlap dimensions of 12.5 (length) x 25 (width) x 0.5 (thickness) mm. We allowed each specimen to cure for 3 days at 20°C and 50% relative humidity. We then pulled the test pieces apart at a rate of 6mm/ min for metals. And 50mm/min for composites and plastics.

Short Term Exposure at Temperature

Test specimens exposed to the test temperature for 5 minutes and pulled apart at the test temperature. Pull rate 6mm/min.

Substrates	Surface Prep	Test Temp [°C]	Shear Strength	Failure Mode	% Strength Retention (% against 25°C strength)
Aluminium	Abraded (120g)*	-16	21	CF	122
Aluminium	Abraded (120g)*	25	17	CF	100
Aluminium	Abraded (120g)*	50	12	CF	70
Aluminium	Abraded (120g)*	75	9	CF	49
Aluminium	Abraded (120g)*	100	5	CF	29
Aluminium	Abraded (120g)*	120	3	CF	17
Aluminium	Abraded (120g)*	150	2	CF	9
Aluminium	Abraded (120g)*	200	0.5	CF	1

IPA = Isopropyl alcohol, CF = Cohesive failure, AF = Adhesive Failure, SF = Substrate Failure
*Abraded (120g) = Abrade with 120 grit pad then clean with IPA
All substrates used to create a lap shear specimen were 3mm in thickness

Long Term Exposure - 7 days

Test specimens exposed to the test temperature for 7 days, allowed to condition back to (20°C 50%RH) and pulled apart at a rate of 6mm/min.

Substrates	Surface Prep	Test Temp [°C]	Shear Strength	Failure Mode	% Strength Retention (% against 25°C strength)
Aluminium	Abraded (120g)*	-16	18	CF	100
Aluminium	Abraded (120g)*	50	17	CF	97
Aluminium	Abraded (120g)*	100	20	CF	100

IPA = Isopropyl alcohol, CF = Cohesive failure, AF = Adhesive Failure, SF = Substrate Failure
*Abraded (120g) = Abrade with 120 grit pad then clean with IPA
All substrates used to create a lap shear specimen were 3mm in thickness

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Adhesive Performance

Chemical and Environmental Testing

In accordance with ISO4587

Lap shears of stainless steel were made in accordance with ISO4587 with the following dimensions 25 x 12.5× 1mm and allowed to cure for 14 days under ambient conditions (20°C 50% RH). Lap shear specimens were fully immersed in chemical solution for 24 hours and 14 days, before being tested for strength retention.

Chemical	Surface Prep	Days Immersed	Strength Retention %
Water	IPA	1 14	95 97
5% Salt Solution	IPA	1 14	95 94
1.5M Hydrochloric Acid	IPA	1 14	94 36
Conc. Bleach Solution	IPA	1 14	100 87
Polar Protic Solvent - IPA	IPA	1 14	99 99
Polar Aprotic Solvent - Acetone	IPA	1 14	3 0
Non-polar Solvent - Diesel / Hydrocarbons	IPA	1 14	69 89

IPA = Isopropyl alcohol, CF = Cohesive failure, AF = Adhesive Failure, SF = Substrate Failure
*Abraded (120g) = Abrade with 120 grit pad then clean with IPA
All substrates used to create a lap shear specimen were 3mm in thickness

Floating Roller Peel

In accordance with BS EN 2243-2:2005

Floating roller peel specimens configured using abraded 3mm and 1.2mm Aluminium with a bondline thickness of 0.3mm. Test specimens left to cure for 3 days @ 20°C 50% RH. Pull rate 152mm/min.

Substrate	Surface Prep	Test Temp [°C]	Average Peel Force [N/cm]	Failure Mode
Aluminium	Abraded (120g)*	20	91	CF

IPA = Isopropyl alcohol, CF = Cohesive failure, AF = Adhesive Failure, SF = Substrate Failure
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Adhesive Performance

Cataplasma Accelerated Weathering

Lap Shears of stainless steel were made in accordance with ISO4587 with the following dimensions 25.0 × 12.5 x 1.0mm and allowed to cure for 14 days under ambient conditions (20°C 50% RH). Lap shears are subjected to 100%RH at 70 +2 °C for 168 hours. On removal from the oven, the samples are immediately placed into a freezer at -20+2 °C for 16 hours. Samples are removed from freezer and allowed to thaw. Lap shears are allowed to re-condition under ambient conditions (20 °C @ 50% RH) for 4 hours before being tested.

Substrate	Surface Prep	Strength Retention %
Stainless Steel	IPA Wiped	84

IPA:Isopropyl alcohol, CF: Cohesive failure, AF: Adhesive Failure, SF: Substrate Failure

Heat and Humidity Ageing

Lap Shears of Aluminium (6082) were made in accordance with ISO4587 with the following dimensions 25.0 × 12.5 x 1.0 mm and allowed to cure for 14 days under ambient conditions (20 °C @ 50% RH). Lap shears are subjected to 95%RH at 70 +2°C for up t o 1000 hours

Substrate	Exposure Time (hours)	Strength Retention %
Aluminium 60	500	95
Aluminium	1000	92

Salt Spray Ageing (ASTM B117)

Lap Shears of Aluminium (6082) were made in accordance with ISO4587 with the following dimensions 25.0 × 12.5 x 1.0 mm and allowed to cure for 14 days under ambient conditions (20 °C @ 50% RH). Lap shears are subjected to salt spray conditions in accordance with ASTM B117 for up to 1000 hours

Substrate	Exposure Time (hours)	Strength Retention %
Aluminium 60	500	95
Aluminium	1000	92

Remarks, Disclaimer & Health and Safety

Disclaimer - The variability of materials, substrates and conditions of use is such that no warranty of their functionality for a specific application can be deducted from this information, written recommendation or any other type of suggestion offered. Each user has the responsibility to complete adequate evaluations on the efficacy of the materials offered by us, of its products, services, recommendations and suggestions for the specific application need, and must accomplish sufficient testing to ascertain that the final product will be safe and sound for the final intent of the end user.

Health and safety - Refer to Safety Data Sheet (SDS) for further information. Apply the usual industrial hygiene.

Reviewed June 2023