

PRODUCT DESCRIPTION

APP 820 is a high-performance structural epoxy adhesive. It has very high strength and is impact-toughened. APP 820 is ideal for applications that require a very high-strength structural adhesive to withstand light impact and small vibrations.

KEY FEATURES

Key Features

- Fast strength build up
- High Lap Shear Strength
- Toughened formulation
- Good adhesion profile to prepared metals and plastics



APPLICATIONS

Any structural application that requires a very high-strength structural adhesive with good chemical and weathering resistance.

Any structural application that requires a very high-strength structural epoxy adhesive with fast strength build-up and full strength in 24 hours.

VOLUMES AVAILABLE

Cartridges
50ml
200ml
400ml



Bulk



TYPICAL PHYSICAL PROPERTIES

Uncured

Properties	Part A	Part B
Chemistry	Epoxy	Hardener
Colour	White	Black
Viscosity@ 5 s ⁻¹	36,000	87,000
Density [g/ml]	1.3	1.4
Mix ratio by volume	2	1

Mixed

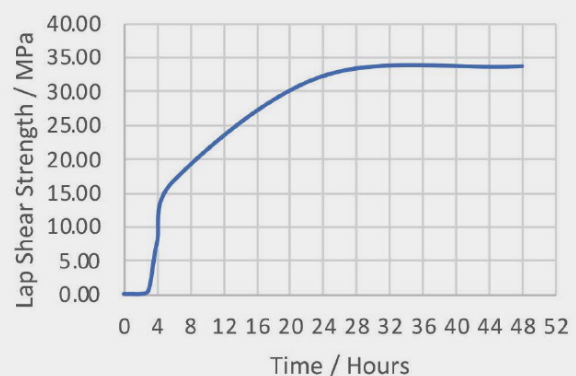
Properties	Aerok 8020
Colour	Grey
Working Time	15 - 20 minutes
Handling Time (Minumin time to acheive >0.3 MPa overlap shear strength)	3 -4 Hours
Time to rech Full Strength	7 Days

Mixed Viscosity

Shear Rate / s ⁻¹	Mixed Viscosity
0.6	730,000
10	140,000
25	81,000

RATE OF STRENGTH BUILD UP

Overlap shear specimens of grit blasted aluminium were bonded with overlap dimensions of 12.5 x 25 x 0.5 mm (Length x width x thickness). Test specimens were pulled apart at different times after the adhesive was mixed to determine the rate of strength build up as the product cured.



TENSILE PROPERTIES

In accordance with ASTM D638

Properties	Value
Tensile Strength at Break [MPa]	35.0
Percentage Elongation at Break [%]	8.0
E-Modulus [MPa]	950

Tensile properties measured on 3mm thick dumbbell specimens at a rate of 5mm/ min. Tensile specimens were allowed to cure for 7 days under ambient conditions before being tested

TENSILE PROPERTIES

In accordance with ASTM D638

Properties	Value
Shore D Hardness	B5

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

TYPICAL PERFORMANCE CHARACTERISTICS

Overlap Shear Strength In accordance with ISO4587

Overlap shear specimens were bonded with overlap dimensions of 12.5 x 25 x 0.5 mm (length X width X thickness). Each specimen was allowed to cure for 3 days @ 20°C 50% RH before being pulled apart at a rate of 6mm/ min - for metals and 50mm/ min for plastics and composites.

Substrate	Surface Prep	Overlap Shear Strength	Failure Mode
Aluminium	IPA wiped Abraded (120g) * Grit Blasted*	10.5 28.5 35.0	AF CF CF
Anodised Aluminium	IPA wiped Grit Blasted*	13.4 19.6	AF CF
Stainless Steel	IPA wiped Grit Blasted*	30 38	CF CF
Mild Steel	IPA wiped Grit Blasted*	5.5 26	AF CF
E-Galvanised Steel	IPA wiped Grit Blasted*	17.6 17.7	AF CF
GRP-EPOXY	IPA wiped Abraded (120g)*	17.0 18.0	SF SF
GRP - POLYESTER	IPA wiped Abraded (120g) *	7.6 7.6	SF SF
PMMA	IPA wiped Abraded (120g)*	1.4 3.8	AF SF
POLYCARBONATE	IPA wiped Abraded (120g)*	3.0 5.7	AF SF
ABS	IPA wiped Abraded (120g)*	2.7 6.0	AF SF

IPA: Isopropyl alcohol, * = IPA wipe, abrade with 120 grit pad or Grit blast, IPA wipe.
AF - Adhesive Failure
CF - Cohesive Failure
SF - Substrate Failure

TEMPERATURE PERFORMANCE

Overlap Shear Strength In accordance with ISO4587

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.

Overlap shear specimens were bonded with overlap dimensions of 12.5 x 25 x 0.5 mm (length x width x thickness). Each specimen was allowed to cure for 7 days @ 20°C 50% RH before being subjected to various temperature exposures

Substrates	Surface Prep	Test Temp [°C]	Shear Strength	% Strength Retention (% against 25°C strength)
Aluminium	Grit Blasted	-50	20.4	58
Aluminium	Grit Blasted	-16	27.7	80
Aluminium	Grit Blasted	25	35.0	100
Aluminium	Grit Blasted	50	22.1	63
Aluminium	Grit Blasted	75	9.2	26
ALUMINIUM	Grit Blasted	100	6.0	17
ALUMINIUM	Grit Blasted	120	4.3	12
ALUMINIUM	Grit Blasted	150	4.2	12
ALUMINIUM	Grit Blasted	200	0.03	0.1

All substrates used to create a lap shear specimen were 3mm in thickness