

Technical Datasheet

Ashland Specialty Ingredients



PLIOGRIP™ 7770 (7400 & 7654) Urethane Adhesive System

Description PLIOGRIP 7700 two-part systems are high-strength, structural adhesives which are resistant to exposure to elevated temperatures, moisture, fuel, most solvents and chemicals. The adhesive systems are tested using stringent performance specifications of all major automotive manufacturers and heavy truck producers.

PLIOGRIP	7722	7771	7773	7705	7779	7770
Open Time @ 73°F (23°C)	30sec	1.5min	3.5min	5min	10min	35min
Handling Time @ 73°F (23°C)	2.5min	5min	15min	20min	30min	1.5h
Sanding Time @ 73°F (23°C)	5min	10min	30min	45min	60min	2.5h

Color versions: Generally available in green, black (B) and/or tan (T). For other colors please contact your sales representative

PLIOGRIP 7770 is the long cure profile product in the series, composed of the single components Pliogrip 7400 and Pliogrip 7654. The 35 to 40 minute open time allows sufficient time for application and bonding of large areas, repositioning of the parts or joining in warm environments. With the long open time painting/sanding time are also extended, but can be shortened by using heat.

Features and benefits

- Excellent adhesion to thermoset composites (SMC, BMC, RTM), carbon fiber composites (CFRP), engineered thermoplastics (PUR-RIM, ABS-PC, PE/PA, PBT/PC, etc), coated metals, wood, concrete and many other materials.
- Structural bonding, sealing or repairing with one product
- Superior ambient cure response (heat acceleration optional)
- Cure response is NOT depending on the thickness of the applied adhesive bead as with most other Polyurethane systems
- Well balanced mechanical properties, proven fatigue performance and impact toughness
- Contains no chlorinated compounds
- Robust and easy application. Gravity feed possible with meter mix dispense

Nominal component properties

	PLIOGRIP 7400	PLIOGRIP 7654
Chemistry	Isocyanate Prepolymer	Polyol Curative
Color	Tan	Colored
Viscosity, cps or mPa s	15,000	20,500
Specific Gravity, g/ml	1.28	1.23
Ratio by Weight	1.06	1.00
Ratio by Volume	1.00	1.00
Odor	none	slight amine



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Typical cure characteristics of the mixed adhesive

	Temperature	Time
Open Time (Ashland PGDEV-022)	@ 73°F (23°C)	35 - 40 min
Handling time	@ 73°F (23°C)	1.5 - 2 h
Sanding Time	@ 73°F (23°C)	2.5 - 3 h

Open Time - also "wet time" or "pot life." The time the adhesive is wet enough to bond to a second substrate being mated in the bed of adhesive. The open time is temperature depending. All data given were measured at 73°F (23°C). Increasing the ambient temperature by 10°C will result in a reaction twice as fast (open time is cut in half).

Handling Time - Time when the adhesive is hard enough to hold on its own. The handling strength of freshly bonded parts depends on type and height of outside forces, that impact the bond. Typically, 100 psi (0.7 MPa) is needed. In all cases peel forces that effect the bond need to be reduced as far as possible.

Physical properties of the cured adhesive

	Value	Test Method
Tensile strength, psi @ 73°F (MPa @ 23°C)	4,200 (29)	ASTM D-638
Young's Modulus, psi @ 73°F (MPa @ 23°C)	171,700 (1,184)	ASTM D-638
Elongation, %	63	ASTM D-638
Poisson Ratio, @ 73°F (23°C)	0.429	ASTM E-132
Water Absorption, %	<1.5	ASTM D-570
Shore Hardness, D	69	ASTM D-2240
Shrinkage, %	<1.0	ASTM C-733
CLTE, 10-6/°C @ -30°C to 0°C	73.2	ISO MAT-2208
CLTE, 10-6/°C @ 100°C to 130°C	229.0	ISO MAT-2208
Glass Transition Temperature, °C		
G' Onset	21.3	ASTM E-1640
G'' Peak	25.3	ASTM E-1640
Tan Delta Peak	45.5	ASTM E-1640

Physical properties are values based on material tested in our laboratories, but are subject to a standard deviation from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot.



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Application Guide

Cure	Ambient or heat accelerated cure (max 250°F, 120°C)
Optimum Bondline Thickness	0.020 inches to 0.060 inches (0.5mm to 1.5mm)
Maximum Bondline Thickness	app 0.2 inches (5mm)
Paint Bake	max 300°F (150°C)
Gap Filling	Very Good
Sag Resistance	For vertical applications
Consumption, 1/4" Diameter Round Bead	app 40g / m
Consumption, 1/2" Diameter Round Bead	app 160g / m

Bonding Guide

Substrate	Surface preparation - Ambient Cure	Surface preparation - Heat Cure	General Adhesion*	Expected failure mode*
SMC, BMC, RTM, Gel Coat, Wood, HPL, PUR-RIM	Sanding	None	Excellent	Substrate failure
Carbon Fiber Reinforced Plastics (CFRP)	Sanding or peel ply	None	Excellent	Substrate failure
Coated or primed Metals and Matelalloys**	None	None	Excellent	Coating failure
HLU (Hand lay up) , HSU (Hand spray up)	Sanding	Mostly Sanding	Good	Mixed failures
Thermoplastics A (ABS, PA, PC/PBT, PPO/PA, PET)	Sanding or solvent wipe	Mostly none	Very Good	Substrate failure
Thermoplastics B (PPO, PC/ABS, PP/EPDM)	Solvent, detergent or primer	Solvent, detergent or primer	Good / Fair	Mixed failures
Thermoplastics C (PTFE, PP, PE, PVC, PPS, POM)	Physical pretreatment (flame, plasma, corona)	Physical pretreatment (flame, plasma, corona)	Limited	Adhesive failure

* General adhesion and expected failure mode WITHOUT adhesion enhancing surface preparation

** Metal surfaces should be protected with a primer or coating prior bonding with polyurethane adhesives. Even though the initial adhesion is very good, water migration can cause "bond line corrosion" and failure with progressing time.



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Handling	PLIOGRIP 7770 Adhesive System contains ingredients which could be harmful if improperly handled. Contact with skin and eyes should be avoided and necessary protective equipment and clothing should be worn. Ashland Performance Materials maintains Material Safety Data Sheets on all of its products. Material Safety Data Sheets contain health and safety information for your development of appropriate product handling procedures to protect your employees and customers.
Packaging	PLIOGRIP 7770 adhesive system is supplied in cartridges (50ml, 220ml) and in bulk for meter mix dispense (5-gallon pails and 55-gallon drums). Please contact your local sales representative for supply options.
Shelf Life and Storage	Pliogrip 7770 cartridges have a shelf life of 24 months from date of filling when stored indoors at temperatures between 60°F to 90°F (15°C to 32°C). After dispense the used mixer should be left attached to the cartridge to ensure sealing from humidity. Pliogrip 7770 bulk components (7400 & 7654) have a shelf life of 365 days from the date of shipment when stored indoors at temperatures between 60°F to 90°F (15°C to 32°C).
Notice	<p>All information presented herein is believed to be accurate and reliable, and is solely for the user's consideration, investigation and verification. The information is not to be taken as an express or implied representation or warranty for which Ashland assumes legal responsibility. Any warranties, including warranties of merchantability, fitness for use or non-infringement of intellectual property rights of third parties, are herewith expressly excluded.</p> <p>Since the user's product formulations, specific use applications and conditions of use are beyond the control of Ashland, Ashland makes no warranty or representation regarding the results which may be obtained by the user. It shall be the sole responsibility of the user to determine the suitability of any of the products mentioned for the user's specific application.</p> <p>Ashland requests that the user reads, understands and complies with the information contained herein and the current Material Safety Data Sheet.</p>



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