

Chemlok® 701 Adhesive

Technical Data Sheet

Chemlok® 701 adhesive is a one-coat urethane adhesive used to bond a wide variety of thermoplastic polyurethane (TPU) and castable urethane elastomers to metal. It is composed of a mixture of polymers, curatives and pigments dissolved in an organic solvent system.

Chemlok 701 adhesive provides bond strengths greater than the tear strength of the urethane substrate. In addition, this product bonds polyester-, polyether- and polycaprolactone-based TPU directly to aluminum or steel in an injection molding process without the need for primers.

Features and Benefits:

Versatile – bonds metal to a wide variety of polyether and polyester TPU and castable urethanes of varying hardness.

Economical – eliminates the need to inventory several products due to its versatility, no primer required.

Convenient – requires only a single coat for most applications, minimizing application costs.

Process Compatible – tolerates a wide range of processing conditions, including extended prebake in temperatures as high as 121°C (250°F).

Environmentally Resistant – provides increased resistance to a variety of environmental elements, including water and high temperature exposures up to 171°C (340°F).

Fast Drying – dries fast to allow rapid turnaround times, reducing the number of coated parts kept in inventory.

Elastomers:

- Polyether Castable Urethane
- Polyester Castable Urethane
- Thermoplastic Urethane (TPU)

Application:

Surface Preparation – Thoroughly clean metal surfaces prior to application. Remove protective oils, cutting oils and greases by solvent degreasing or alkaline cleaning. Remove rust, scale or oxide coatings by suitable chemical or mechanical cleaning methods.

For further detailed information on surface preparation of specific substrates, refer to Chemlok Adhesives application guide.

Mixing – Thoroughly mix adhesive before use. For spray application, Chemlok 701 adhesive generally achieves maximum performance with dilution. The optimal solvent for dilution is Chemlok 248 thinner. An adhesive dilution ratio with Chemlok 248 thinner of 15-20% by volume optimizes film uniformity and minimizes cobwebbing of the atomized product while maintaining efficiency of dry film thickness build. Higher dilutions can be utilized but may yield an adhesive film gradient and/or adhesive drips.

Alternative solvents to Chemlok 248 thinner can also be used to dilute Chemlok 701 adhesive. Cyclohexanone can be utilized as an effective diluent at 15-20% by volume, or MEK can be used at a dilution of 10% by volume or less.

Typical Properties*

Appearance	Blue Liquid
Viscosity, cps @ 25°C (77°F) Brookfield LVT Spindle 2, 30 rpm	50 - 200
Density kg/m ³ (lb/gal)	896 - 944 (7.48 - 7.88)
Solids Content by Weight, %	20 - 24
Flash Point (Seta), °C (°F)	-2 (28)
Solvents	MEK, Cyclohexanone

*Data is typical and not to be used for specification purposes.

Applying – Apply adhesive in a uniform thin coat by brush, spray or dip methods. To avoid film bubbling, do not apply Chemlok 701 adhesive to substrates hotter than 82°C (180°F).

Regardless of application method, dry film thickness of Chemlok 701 adhesive should be 20.3-30.5 microns (0.8-1.2 mil). Thicker films caused by repeated brushing or improper dipping drainage can compromise bond strength.

Drying/Curing – Allow coated parts to air-dry for 30-60 minutes at room temperature. Forced drying can speed the process at temperatures up to 93°C (200°F). Typical castable urethane cure and post-cure temperatures range from 100-150°C (212-302°F), dependent on the type of urethane.

For both castable urethanes and TPU, the additional heat introduced to the adhesive and elastomer during post cure is critical. Without the appropriate post-cure cycle, the elastomer may not achieve maximum physical properties and a rubber-to-cement failure mode may result. For castable urethanes, 8-24 hours is typical for post cure.

Similar temperatures and durations are utilized for TPU post-cure cycles, often referred to as “annealing” cycles. Annealing is suggested within one hour of TPU injection molding, and a 72-hour minimum layover prior to service introduction after annealing is generally optimal. Not only does the annealing cycle improve TPU physical properties (such as temperature resistance and compression set), it also maximizes adhesive diffusion into the bulk elastomer. The resulting polymeric entanglement of the Chemlok 701 adhesive and TPU yields thicker rubber tearing bonds and higher peel strength. A ramp-cool at the conclusion of the annealing cycle generally improves rubber retention. A temperature decrease of 28°C (50°F) in 30 minute increments is a general suggestion.

Cleanup – Remove uncured adhesive with solvents such as MEK and cyclohexanone. Remove cured adhesive by grit blasting, grinding or belt sanding.

Shelf Life/Storage:

Shelf life is one year from date of shipment when stored by the recipient at 21-27°C (70-80°F) in original, unopened container. Do not store or use near heat, sparks of open flame.

Adhesive is not prone to hard settling, but a soft gel may form at the bottom of the container after an extended inventory cycle. Manual scraping of the soft settling followed by manual stirring or low-speed mixing should be employed as needed to optimize homogeneity of the product prior to use.

Cautionary Information:

Before using this or any Parker Lord product, refer to the Safety Data Sheet (SDS) and label for safe use and handling instructions.

For industrial/commercial use only. Must be applied by trained personnel only. Not to be used in household applications. Not for consumer use.

Values stated in this document represent typical values as not all tests are run on each lot of material produced. For formalized product specifications for specific product end uses, contact the Customer Support Center.

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OD DS4451 05/23 Rev.0



Parker Lord
Engineered Materials Group

111 LORD Drive
Cary, NC 27511-7923
USA

phone +1 877 275 5673

www.Parker.com/EPM