



City of Portland, Oregon - Bureau of Development Services

1900 SW Fourth Avenue • Portland, Oregon 97201 | 503-823-7300 | www.portland.gov/bds



Deferred Submittal Requirements and Application

Minimum Submittal Requirements (check all boxes and sign below):

Full list of [deferred submittal guidelines](#)

- ☒ A copy of this application
- ☒ Plans stamped and signed by a Design Engineer or Architect registered in Oregon. One PDF copy of plans for electronic submittals or three copies for paper submittals.
- ☒ Calculations and product information. One PDF copy for electronic submittals or two copies for paper submittals.
- ☒ Prior to submitting the deferred submittal, the Engineer of Record and/or Architect of Record responsible for the building shall review the deferred submittal plans and supporting materials and add a notation indicating that the deferred submittal documents have been reviewed and found to be in general conformance with the design of the building. The notation shall be made on the deferred submittal drawings. Review stamps on letters of transmission are not acceptable.
Exception: the notation is not required on deferred submittals for fire sprinklers or roof trusses in residential construction when an Engineer or Architect of Record is not involved with the design of the building.
- ☒ Plan views and elevations identifying the location(s) as approved by the Engineer and/or Architect of Record must be submitted as appropriate but are required when the deferred submittal items include exterior elements.

I certify this deferred submittal application meets the minimum submittal requirements as outlined above.

Applicant Signature: Dan Williams Date: 7/21/22

Applicant Submittal Information:

Applicant name: Dan Williams
Address: 2000 SW 1st Ave, Suite 420
City: Portland State: OR Zip Code: 97201
Phone: 503-819-7754 Email: dan@fastepermits.com
Value of deferred submittal: \$ \$5,000 Issued main building permit #: 19-244473-CO
Job Site Address: 1909 W Burnside St Portland, OR 97209
Description/Scope of work: Metal panel wall system and attachment
Contractor Name: Owner Doing Work, same as main permit CCB: Owner Doing Work, same as main permit

Engineer/Architect of Record for the building information (Not required for roof trusses in residential construction when an Engineer or Architect of Record is not involved with the design of the building)

Name: Rice Engineering Phone: 920-617-1093

Design Engineer for the deferred items

Name: BKE Engineering - Bruce Kenny Phone: 503-220-0668

Fees

An invoice with permit fees will be sent to the applicant once minimum submittal requirements have been verified. Deferred submittal (DFS) fees are collected in addition to the standard building review fee paid on the main building permit. DFS fees cover the cost of the additional processing and review time associated with the design build element. The DFS fee for processing and reviewing deferred plan submittals is 10 percent of the building permit fee calculated using the value of the deferred portion of the project with a minimum fee of \$450 for 1 & 2 family dwelling projects or \$720 for commercial and all other projects.

For deferred submittals on Commercial Permits (CO folders) and Major Projects (MG folders) that are for exterior building work, a fee of \$361.00 is added for review and approval by the Land Use Services (LUS) division. LUS reviews deferred submittals to ensure that the design of the work is consistent with the design approved in the approved original building permit. Please refer to the current year's [LUS fee schedule](#).

Helpful Information

Bureau of Development Services
1900 SW 4th Avenue, Portland, OR 97201

For Hours Call 503-823-7310 | Select option 1 or
visit www.portland.gov/bds

Important Telephone Numbers

BDS main number 503-823-7300
DSC automated information line 503-823-7310
Building code information 503-823-1456
BDS 24 hour inspection request line 503-823-7000
Residential information for
one and two family dwellings 503-823-7388
City of Portland TTY 503-823-6868

Information is subject to change.



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REQUEST FOR “APPLICANT PAID OVERTIME” *EFFECTIVE July 1, 2018*

The Bureau of Development Services (BDS) reviews plans based on project “due dates” that are determined by project type, scope and the date that the plans were taken in for review.

Some BDS permit plan review groups will accept requests for “Applicant Paid Overtime” (APOT) to review projects earlier than the projected due date. However, it is important to be aware that **ALL ASSIGNED REVIEWS MUST BE APPROVED BEFORE A PERMIT CAN BE ISSUED AND WORK CAN BEGIN**. This may mean that although APOT was paid to expedite the review done by a specific group, there may still be other reviews that must be completed before a permit can be issued. Applicant paid overtime for one section does **NOT** guarantee that a permit will receive priority processing by any other section, nor does it guarantee that the permit will be issued sooner than scheduled. **Email completed form to PermittingServices@portlandoregon.gov.**

The hourly rate for each group is noted below. Time is billed in 1/4 hr increments with a 1/2 hr minimum. Applicant paid overtime requests are currently accepted by the following groups:

- Engineering \$190.13/hr
- Life Safety \$155.36/hr
- Septic \$164.88/hr
- Site Development \$190.13/hr
- Permitting Services (Preissuance) \$125.03 - 151.95/hr

Please note that requesting APOT does not guarantee that an overtime review will be performed, as not all reviewers are available to work overtime hours. Overtime fees will only be billed for those reviews performed by staff working beyond their normally scheduled hours. You will be notified if the review time will exceed (5) hours by any of the groups marked below.

By signing below, the permit applicant or authorized representative agrees to pay additional plan review fees for the following sections: (Please mark below the groups you are requesting applicant paid overtime from)

- | | | |
|--|--|---|
| <input checked="" type="checkbox"/> Engineering <input checked="" type="checkbox"/> Call if over (5) hrs Date _____ | <input checked="" type="checkbox"/> Life Safety <input checked="" type="checkbox"/> Call if over (5) hrs Date _____ | <input type="checkbox"/> Septic <input type="checkbox"/> Call if over (5) hrs Date _____ |
| <input type="checkbox"/> Site Development <input type="checkbox"/> Call if over (5) hrs Date _____ | <input checked="" type="checkbox"/> Permitting Services (Preissuance) <input checked="" type="checkbox"/> Call if over (5) hrs Date _____ | |



Signature of Permit Applicant or Authorized Representative

7/21/22

Date

Dan Williams

Print Name

Permit Number: 19-244473-DFS-01-CO

Structural Checksheet Response

Permit #: 19-244473-DFS-01-CO

Date: 9-13-2022

Customer name and phone number: Charles Kaady Rev-TR

Note: Please number each change in the “#” column. Use as many lines as necessary to describe your changes. Indicate which reviewer’s checksheet you are responding to and the item your change addresses. If the item is not in response to a checksheet, write **customer** in the last column.

| # | Description of changes, revisions, additions, etc. | Checksheet and item # |
|---|---|-----------------------|
| | All responses for: Cheng-Min-Pao | |
| 1 | Horizontal panel joints behind recent tubing now shown on elevations. Tubing has been removed from plans due to cost & availability | 1A |
| 2 | MP-2 ribbed metal panels removed from plans | 1B |
| 3 | Detail 18/4.04 is referenced on elevations on sheets 2.01 + 2.03 | 2A |
| 4 | Test report for 3M UH13 included with this checksheet | 2B |
| 5 | Test report for Lord Maklok adhesive Included with this checksheet | 3 |

SUBMITTED
09/16/2022

(for office use only)



3M™ VHB™ Architectural Panel Tape G16F

Last Revision Date: May, 2022

SUBMITTED
09/16/2022

Product Description

Finite Element Analysis (FEA) data is available for this product at: [3m.com/FEA](https://www.3m.com/FEA)


3M™ VHB™ Architectural Panel Tapes are durable, high performance double-sided pressure sensitive acrylic foam tapes. These tapes have been used for many applications in the construction industry, including the manufacture of architectural panels for curtain walls, exterior building cladding and interior panel and trim attachment. In many situations, 3M™ VHB™ Architectural Panel Tapes can replace rivets, spot welds, liquid adhesives, sealants and other permanent fasteners and provide immediate handling strength during the fabrication process.

Technical Information Note








The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Typical Physical Properties

| Property | Values | Additional Information |
|----------------------------|----------------------------|------------------------|
| Adhesive Type | Multi-purpose | |
| Adhesive Carrier | Acrylic Foam (closed cell) | |
| Liner | Film | |
| Color | Gray | |
| Liner Color | Red (printed) | View ^ |
| Test Name: Primary | | |
| Total Tape Thickness (mil) | 62 mil | View ^ |
| Test Method: ASTM D3652 | | |
| Total Tape Thickness (mm) | 1.6 mm | View ^ |
| Test Method: ASTM D3652 | | |



| | | |
|---------------------------|-----------|--|
| Density | 720 kg/m³ | View  |
| Test Method: ASTM D3574 | | |
| Notes: Foam with adhesive | | |
| Density | 45 lb/ft³ | |

Typical Performance Characteristics

| | | |
|---|-----------|--|
| Property | Values | Additional Information |
| 90° Peel Adhesion Anodized Aluminum | 52.5 N/cm | View  |
| Test Method: ASTM D3330 | | |
| Test Name: 90° Peel Adhesion Substrate: Anodized Aluminum | | |
| 90° Peel Adhesion Anodized Aluminum | 30 lb/in | View  |
| Test Method: ASTM D3330 | | |
| Test Name: 90° Peel Adhesion Substrate: Anodized Aluminum | | |
| Normal Tensile | 550 kPa | View  |
| Test Method: ASTM D897 | | |
| Test Name: T-Block Substrate: Aluminum T-block | | |
| Normal Tensile | 80 lb/in² | View  |
| Test Method: ASTM D897 | | |
| Test Name: T-Block Substrate: Aluminum T-block | | |
| Overlap Shear Strength Anodized Aluminum | 480 kPa | View  |
| Test Method: ASTM D1002 | | |
| Test Name: Overlap Shear Strength Substrate: Anodized Aluminum | | |
| Overlap Shear Strength Anodized Aluminum | 70 lb/in² | View  |
| Test Method: ASTM D1002 | | |
| Test Name: Overlap Shear Strength Substrate: Anodized Aluminum | | |
| Short Term Temperature Resistance | 149 °C | View  |
| Notes: No change in room temperature dynamic shear properties following 4 hour conditioning at indicated temperature with 100 g/static load. (Represents minutes, hour in a process type temperature exposure). | | |
| Short Term Temperature Resistance | 300 °F | |


View 


Notes: No change in room temperature dynamic shear properties following 4 hour conditioning at indicated temperature with 100 g/static load. (Represents minutes, hour in a process type temperature exposure).


| | | |
|---|--------|--|
| Long Term Temp C | 93 °C | View  |
| Notes: Maximum temperature where tape supports at least 250 g load per 0.5 in² in static shear for 10,000 minutes. (Represents continuous exposure for day or weeks). | | |
| Long Term Temp F | 200 °F | View  |


Notes: Maximum temperature where tape supports at least 250 g load per 0.5 in² in static shear for 10,000 minutes. (Represents continuous exposure for day or weeks).


| | |
|---------------------------------|-------|
| Minimum Application Temperature | 15 °C |
| | |
| Minimum Application Temperature | 60 °F |

| | | |
|--------------------------|---------------|--|
| Static Shear 23C | 1000 g/3.2cm² | View  |
| Test Method: ASTM D3654 | | |
| Temp C: 23C | | |
| Temp F: 73F | | |
| Notes: Holds 10,000 min. | | |


| | | |
|--------------------------|----------------|--|
| Static Shear 23C | 2.2 lb/0.5 in² | View  |
| Test Method: ASTM D3654 | | |
| Temp C: 23C | | |
| Temp F: 73F | | |
| Notes: Holds 10,000 min. | | |

| | | |
|--------------------------|--------------|--|
| Static Shear 66C | 500 g/3.2cm² | View  |
| Test Method: ASTM D3654 | | |
| Temp C: 66C | | |
| Temp F: 150F | | |
| Notes: Holds 10,000 min. | | |

| | | |
|--------------------------|----------------|--|
| Static Shear 66C | 1.1 lb/0.5 in² | View  |
| Test Method: ASTM D3654 | | |
| Temp C: 66C | | |
| Temp F: 150F | | |
| Notes: Holds 10,000 min. | | |

| | | |
|-------------------------|--------------|--|
| Static Shear 93C | 500 g/3.2cm² | View  |
| Test Method: ASTM D3654 | | |
| Temp C: 93C | | |
| Temp F: 200F | | |

Notes: Holds 10,000 min.

| | | |
|-----------------------------|----------------|--|
| Static Shear 93C | 1.1 lb/0.5 in² | View  |
| Test Method: ASTM D3654 | | |
| Temp C: 93C Temp F: 200F | | |
| Notes: Holds 10,000 min. | | |

Available Sizes

| Property | Values | Additional Information |
|----------------------|--|------------------------|
| Standard Roll Length | 32.9 m | |
| | | |
| Standard Roll Length | 36 yd | |
| | | |
| Standard Width | 15, 20, 25, 30 mm | |
| | | |
| Standard Width | 1/2, 5/8, 3/4, 7/8, 1, 1-1/8, 1-1/4 in | |

| | |
|---------------------------|-----------|
| Normal Slitting Tolerance | ± 0.8 mm |
| | |
| Normal Slitting Tolerance | ± 1/32 in |

| | |
|----------------|---------|
| Core Size (ID) | 76.2 mm |
| | |
| Core Size (ID) | 3 in |

Design Considerations

Note: For tape area calculations the following guidelines can be used.

Dynamic Loads:

For dynamic tensile or shear loads, such as wind loads, a design strength of 12 lb/in² (85 kPa) is used for 3M™ VHB™ Architectural Panel Tapes. This design strength guideline provides a safety factor of at least 5 and was established based on material property testing as well as ASTM dynamic load testing for curtain wall applications.

Static Loads:

For static tensile or shear loads, such as dead weight loads with no mechanical support, snow loads and other long-term loads, a design strength of 0.25 lb/in² (1.7 kPa) is used for 3M™ VHB™ Architectural Panel Tapes. This means 4 in² of tape per 1 lb load (60 cm² of tape per 1 kg load) should be used to support constant stress loads. This guideline provides a safety factor of at least 5.

Differential Movement:

3M™ VHB™ Architectural Panel Tapes can tolerate shear movement up to 3 times its original thickness (300% shear strain). This means 0.090 in (2.3 mm) thick tapes can tolerate shear strain up to 0.27 in (6.9 mm), 0.062 in (1.6 mm) thick tapes can tolerate shear strain up to 0.19 in (4.8 mm), and 0.045 in (1.1 mm) thick tapes can tolerate shear strain up to 0.14 in (3.3 mm).

Force/Stress Types:



In general, when designing with 3M™ VHB™ Architectural Panel Tapes, forces acting on the tape should consist of either shear or tensile type stress loads. This allows the stress or force to be applied over the entire tape area. Applications placing cleavage or peel type stress on the tape should be avoided as this will place the stress on the leading edge of the peel or cleaving.

Application Guidelines

Application Examples:

Typical applications include stiffener bonding, architectural panel bonding in cladding or curtain wall systems, interior panel bonding, break-metal bonding and decorative trim bonding. These tapes are not to be used for structural glazing applications.

Application Testing:

Typical applications include stiffener bonding, architectural panel bonding in cladding or curtain wall systems, interior panel bonding, break-metal bonding and decorative trim bonding. These tapes are not to be used for structural glazing applications.

Fabrication Guidelines:

A shop work environment is appropriate for bonding applications with 3M™ VHB™ Architectural Panel Tape. Tape application temperature should be at least 60°F (15°C). Field bonding may be considered if the exterior temperature meets this guideline. It is also important to provide adequate pressure to the tape after it has been applied to the first prepared substrate surface and after the two parts are joined together. A pressure of 15 lb/in² (100 kPa) or greater should be applied over the whole tape area to facilitate good contact of the adhesive to both substrates. Rigid surfaces may require 2 or 3 times more pressure to achieve >15 lb/in² (100 kPa) at the tape bond line. 3M channel partners are available to provide training of operators for 3M™ VHB™ Architectural Panel Tape bonding applications.

Storage and Shelf Life

3M™ VHB™ Architectural Panel Tapes have a shelf life of 24 months from date of manufacture when stored at 40°F to 100°F (4°C to 38°C) and 0-95% relative humidity. The optimum storage conditions are 72°F (22°C) and 50% relative humidity.

Bottom Matter

3M
Industrial Adhesives and Tapes Division
3M Center, Building 225-3S-06
St. Paul, MN 55144-1000
800-362-3550

Trademarks

3M and VHB are trademarks of 3M.

Automotive Disclaimer

Automotive Applications: This product is an industrial product and has not been designed or tested for use in certain automotive applications, including, but not limited to, automotive electric powertrain battery or high voltage applications. This product does not fully adhere to typical automotive design or quality system requirements, such as IATF 16949 or VDA 6.3. This product may not be manufactured in an IATF certified facility and may not meet a Ppk of 1.33 for all properties. The product may not undergo an automotive production part approval process (PPAP). Customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer’s automotive application and for conducting incoming inspections before use of the product. Failure to do so may result in injury, death, and/or harm to property. No written or verbal statement, report, data or recommendation by 3M related to automotive use of the product shall have any force or effect unless in an agreement signed by the Technical Director of 3M’s Automotive Division. Customer assumes all responsibility and risk if customer chooses to use this product in an automotive electric powertrain battery or high voltage application, and 3M will not be liable for any loss or damage arising from or related to the 3M product or customer’s use of the product, whether direct, indirect, special, incidental, or consequential (including, but not limited to, lost profits or business opportunity or recall costs), regardless of the legal or equitable theory asserted, including, but not limited to, warranty, contract, negligence, or strict liability. In no event shall 3M be liable for any damages in excess of the purchase price paid for the product. NOTWITHSTANDING ANY OTHER STATEMENT TO THE CONTRARY, 3M MAKES NO REPRESENTATIONS, WARRANTIES OR CONDITIONS WHATSOEVER, EXPRESS OR IMPLIED, REGARDING THE PRODUCT IF USED IN AN AUTOMOTIVE ELECTRIC POWERTRAIN BATTERY OR HIGH VOLTAGE APPLICATION, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY ON PERFORMANCE, LONGEVITY, SUITABILITY, COMPATIBILITY, OR INTEROPERABILITY, OR ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE OF TRADE.

References

| Property | Values |
|-----------------------|---|
| 3m.com Product Page | https://www.3m.com/3M/en_US/p/d/b40065640/ |
| Safety Data Sheet SDS | https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=G16F |

ISO Statement



This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001 standards.

Information

Technical Information: The technical information, guidance, and other statements contained in this document or otherwise provided by 3M are based upon records, tests, or experience that 3M believes to be reliable, but the accuracy, completeness, and representative nature of such information is not guaranteed. Such information is intended for people with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license under any 3M or third party intellectual property rights is granted or implied with this information.

Product Selection and Use: Many factors beyond 3M’s control and uniquely within user’s knowledge and control can affect the use and performance of a 3M product in a particular application. As a result, customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer’s application, including conducting a workplace hazard assessment and reviewing all applicable regulations and standards (e.g., OSHA, ANSI, etc.). Failure to properly evaluate, select, and use a 3M product and appropriate safety products, or to meet all applicable safety regulations, may result in injury, sickness, death, and/or harm to property.

Warranty, Limited Remedy, and Disclaimer: 3M warrants for 24 months from the date of 3M manufacture that 3M™ VHB™ Tape will be free of defects in material and manufacture. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE OF TRADE. This warranty does not cover damage resulting from the use or inability to use 3M™ VHB™ Tape due to misuse, workmanship in application, or application or storage not in accordance with 3M recommended procedures (except to the extent 3M approves and issues a specific application warranty, for which the customer must apply, receive 3M approval, and meet all applicable warranty and process requirements, the additional details, terms, and conditions of which are available from 3M). If a 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M’s option, replacement of the 3M product or refund of the purchase price.

Limitation of Liability: Except for the limited remedy stated above, and except to the extent prohibited by law, 3M will not be liable for any loss or damage arising from or related to the 3M product, whether direct, indirect, special, incidental, or consequential (including, but not limited to, lost profits or business opportunity), regardless of the legal or equitable theory asserted, including, but not limited to, warranty, contract, negligence, or strict liability.

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LORD® Maxlok™ MX/T3, MX/T6 and MX/T18 Acrylic Adhesives

Technical Data Sheet

SUBMITTED
09/16/2022

LORD® Maxlok™ MX/T3, MX/T6 and MX/T18 acrylic adhesives replace welding, brazing, riveting and other mechanical fastening methods especially over a wide range of temperature environments subject to high impact or high peel loads.

LORD Maxlok acrylic adhesives are available in a range of working times to accommodate a wide variety of process requirements.

Features and Benefits:

Versatile – bonds a wide range of unprepared metals with minimal substrate preparation.

Temperature Resistant – performs at temperatures from -40°F to +300°F (-40°C to +149°C).

Note: Based on test results, LORD Maxlok MX/T6 adhesive system exhibits post bake/powder coating temperature resistance up to 400°F (204°C) for 90 minutes. Customer specific substrates should always be evaluated for specific application performance.

Environmentally Resistant – resists dilute acids, alkalis, solvents, greases, oils, moisture, salt spray and weathering; provides excellent resistance to indirect UV exposure.

UL Rated – Maxlok MX/T6 adhesive system is UL 746C certified.

Precise Bondline – allows precise control of adhesive bondline thickness due to its content of glass beads, 0.01" (0.025 cm) diameter.

Non-Sag – remains in position when applied on vertical or overhead surfaces, allowing for greater process flexibility.

Application:

Surface Preparation – Remove grease, loose contamination or poorly adhering oxides from metal surfaces. Normal amounts of mill oils and drawing compounds usually do not present a problem in adhesion. Most plastics require a simple cleaning before bonding. Some may require abrading for optimum performance.

Mixing – Mix LORD Maxlok T3, T6 or T18 adhesive with the proper amount of LORD Maxlok MX accelerator. Handheld cartridges will automatically dispense the correct volumetric ratio of each component. Even color distribution visually indicates a thorough mix. Once mixed, the adhesive cures rapidly.

Applying – Apply adhesive using handheld cartridges or automatic meter/mix/dispense equipment.

- Handheld Cartridges
 1. Load the cartridge into the applicator gun and remove the end caps.
 2. Level the plungers by expelling a small amount of adhesive to ensure both sides are level.
 3. Attach mixing tip and expel a mixer's length of adhesive.
 4. Apply adhesive to substrate and mate the parts within the working time of the adhesive. Clamp in position until adhesive reaches handling strength.Do not re-expose adhesive to air once parts are mated. Mated parts should be repositioned by sliding to achieve proper alignment.
- Meter/Mix/Dispense Equipment
Contact your LORD representative if assistance is needed using this equipment.

Typical Properties*

| | MX Accelerator | T3 Adhesive | T6 Adhesive | T18 Adhesive |
|---|--------------------------------|-----------------------------|----------------------------|----------------------------|
| Appearance | Grey Paste | Off-white to Tan Paste | Off-white to Tan Paste | Off-white to Tan Paste |
| Viscosity, cP @ 77°F (25°C) Brookfield | 100,000 - 500,000 | 70,000 - 200,000 | 70,000 - 200,000 | 70,000 - 200,000 |
| Density lb/gal (kg/m³) | 11.45 - 12.15 (1372 - 1456) | 8.25 - 8.75 (989 - 1048) | 8.4 - 8.9 (1007 - 1066) | 8.4 - 8.9 (1007 - 1066) |
| Flash Point, °F (°C) | 201 (94) | 59 (15) | 53 (11) | 59 (15) |

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



ENGINEERING YOUR SUCCESS.

Curing – Complete cure requires 24 hours at room temperature. Mating surfaces must be held in contact during the entire curing process. Cured adhesive is colored to visually indicate a full cure; cure color depends on the accelerator used.

Cure rate can be accelerated by applying modest heat [$<150^{\circ}\text{F}$ ($<66^{\circ}\text{C}$)]. Customer should evaluate adhesive strength and quality through a functional trial of their intended application process. Consult with Parker LORD application engineer for recommended maximum temperature dependent on chosen adhesive cure speed.

Cleanup – Clean equipment and tools prior to the adhesive cure with solvents such as isopropyl alcohol, acetone or methyl ethyl ketone (MEK). Once adhesive is cured, heat the adhesive to 400°F (204°C) or above to soften the adhesive. This allows the parts to be separated and the adhesive to be more easily removed.

Shelf Life/Storage:

Shelf life of each component is nine months when stored below 80°F (27°C) in original, unopened container. Storage temperatures of $40\text{--}50^{\circ}\text{F}$ ($4\text{--}10^{\circ}\text{C}$) are recommended. If stored cold, allow product to return to room temperature before using. Protect from exposure to direct sunlight.

LORD Maxlok MX/T3, MX/T6 and MX/T18 acrylic adhesives are flammable. Do not store or use near heat, sparks or open flame.

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.

Typical Properties* of Adhesive Mixed with Recommended Accelerator

| | MX/T3 | MX/T6 | MX/T18 |
|--|------------|------------|------------|
| Mix Ratio by Volume, Accelerator to Adhesive | 1:4 | 1:4 | 1:4 |
| Solids Content, % | 100 | 100 | 100 |
| Working Time, minutes @ 77°F (25°C) | 3-5 | 6-9 | 18-24 |
| Time to Handling Strength, minutes @ 77°F (25°C) 50 psi Shear | 6-8 | 20-24 | 48-72 |
| Mixed Appearance | Grey Paste | Grey Paste | Grey Paste |

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

Typical Cured Properties* - LORD Maxlok MX/T6 Adhesive

| | |
|---|---------------|
| Tensile Strength at Break, psi (MPa) | 2800 (19.3) |
| Elongation, % ASTM D638 | >10 |
| Young's Modulus, psi (MPa) | 108,778 (750) |
| Glass Transition Temperature (T_g), $^{\circ}\text{F}$ ($^{\circ}\text{C}$) | 194 (90) |

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

Plastic/Composite Bond Performance** – LORD Maxlok/T6 Adhesive

| Substrates | ABS to ABS | FRP to FRP |
|--|------------|------------|
| Lap Shear @ Room Temperature, psi (MPa) | 520 (3.6) | 1280 (8.8) |
| Failure Mode | SB | FT |
| Lap Shear @ after 1400 hours Salt Spray Exposure, psi (MPa) Test after 24 hours | 460 (3.2) | 520 (3.6) |
| Failure Mode | SB | FT |
| Lap Shear @ -40°F (-40°C), psi (MPa) | 920 (6.3) | 869 (5.99) |
| Failure Mode | SB | FT |

| Failure Mode Definition | Abbreviation |
|-------------------------|--------------|
| Fiber Tear | FT |
| Stock Break | SB |

**Bond performance data was obtained using LORD Maxlok MX/T6 adhesive. Please contact Parker LORD regarding the use and/or performance of using other adhesive/accelerator combinations (+1 877 ASK LORD).

Metal Bond Performance – LORD Maxlok/T6 Adhesive**

| Substrates | Aluminum to Aluminum | HDG to HDG | EZG to EZG |
|--|----------------------|-------------|-------------|
| Lap Shear @ Room Temperature, psi (MPa) | 2760 (19) | 2410 (16.6) | 2190 (15.1) |
| Failure Mode | C | C | C |
| Lap Shear @ Hot Strength [180°F (82°C)], psi (MPa) | 1030 (7.1) | 1150 (7.9) | 1000 (6.9) |
| Failure Mode | C | C | C |
| Lap Shear @ after 1400 hours Salt Spray Exposure, psi (MPa) Test after 24 hours | 2140 (14.8) | 1760 (12.1) | 1430 (9.9) |
| Failure Mode | C | C | C |
| Lap Shear @ -40°F (-40°C), psi (MPa) | 3150 (21.7) | 2400 (16.5) | 2550 (17.6) |
| Failure Mode | C/A | C/A | C |
| T-Peel, pli (N/mm) | 41 (7.2) | 53 (9.3) | 54 (9.5) |
| Failure Mode | C | C | C |

| Substrate | Surface Treatment |
|---|-------------------|
| Aluminum, 0.032" thick 6061T6 | Dry Rag Wipe |
| Electrogalvanized Steel (EZG), 0.032" thick | Dry Rag Wipe |
| Hot Dipped Galvanized Steel (HDG), 0.032" thick | Dry Rag Wipe |

| Bonded Parameters | Bond Area | Film Thickness | Cure | Mix Ratio |
|-------------------------------|-----------|----------------|------------|---------------|
| Metal Lap Shears (ASTM D1002) | 1.0"x0.5" | 0.010" | 24 hr @ RT | 4:1 by Volume |
| T-Peel (ASTM D1876 modified) | 1.0"x3.0" | 0.010" | 72 hr @ RT | 4:1 by Volume |

| Failure Mode Definition | Abbreviation |
|-------------------------|--------------|
| Adhesive Failure | A |
| Cohesive Failure | C |

**Bond performance data was obtained using LORD Maxlok MX/T6 adhesive. Please contact Parker LORD regarding the use and/or performance of using other adhesive/accelerator combinations (+1 877 ASK LORD).

Values stated in this technical data sheet 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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