



Confirmation of Product Type Approval

Company Name: ITW PERFORMANCE POLYMERS

Address: 30 ENDICOTT ST. DANVERS MA 01923 United States

Product: Adhesives

Model(s): MA425 MA530 MA550 MA560-1 MA590 MA2045 MA2090 MA2245

Endorsements:

Certificate Type	Certificate Number	Issue Date	Expiry Date
Product Design Assessment (PDA)	22-2263207-PDA	16-JUN-2022	15-JUN-2027
Manufacturing Assessment (MA)	20-4300268	05-JUN-2020	04-JUN-2025
Product Quality Assurance (PQA)	NA	NA	NA

Tier

3 - Type Approved, unit certification not required

Intended Service

The Plexus methyl methacrylate adhesive is intended to be used to bond structural components on fiber reinforced plastic vessels.

Description

Two part structural methyl methacrylate adhesive designed for structural bonding of composite, thermoplastic, and metal assemblies.

Ratings

Typical Mechanical Properties:

MA425

Tensile Strength: 2,000 - 2,600 psi (13.8 - 17.9 MPa)

Modulus: 40,000 - 70,000 psi (276 - 482 MPa)

Stain to Failure: 110 - 150 %

Lap Shear Cohesive Strength: 1,700 - 2,600 psi (11.7 - 17.9 MPa)

MA530

Tensile Strength: 2,500 - 3,500 psi (17.2 - 24.1 MPa)

Modulus: 80,000 - 120,000 psi (552 - 827 MPa)

Stain to Failure: 90 - 160 %

Lap Shear Cohesive Strength: 1,700 - 2,500 psi (11.7 - 17.2 MPa)

MA550

Tensile Strength: 1,800 - 2,400 psi (12.4 - 16.5 MPa)

Modulus: 30,000 - 50,000 psi (206 - 345 MPa)

Stain to Failure: 40 - 80 %

MA560-1

Tensile Strength: 2,500 - 3,100 psi (17.2 - 21.3 MPa)

Modulus: 80,000 - 120,000 psi (552 - 827 MPa)

Stain to Failure: >130 %

Lap Shear Cohesive Strength: 1,700 - 2,500 psi (11.7 - 17.2 MPa)

MA590

Tensile Strength: 2,000 - 2,500 psi (13.8 - 17.2 MPa)

Modulus: 70,000 - 120,000 psi (482 - 827 MPa)

Stain to Failure: >130 %

Lap Shear Cohesive Strength: 1,500 - 2,500 psi (10.3 - 17.2 MPa)

MA2045

Tensile Strength: 2,200 - 2,900 psi (15.2 - 20.0 MPa)

Modulus: 60,000 - 100,000 psi (413 - 689 MPa)

Stain to Failure: 90 - 125 %

Lap Shear Cohesive Strength: 1,600 - 2,200 psi (11.0 - 15.2 MPa)

MA2090

Tensile Strength: 2,200 - 2,900 psi (15.9 - 20.0 MPa)

Modulus: 60,000 - 100,000 psi (413 - 689 MPa)

Stain to Failure: 90 - 120 %

Lap Shear Cohesive Strength: 1,600 - 2,200 psi (11.0 - 15.2 MPa)

MA2245

Tensile Strength: 1,800 - 2,800 psi (12.4 - 17.3 MPa)

Modulus: 60,000 - 100,000 psi (413 - 689 MPa)

Stain to Failure: >60 %

Lap Shear Cohesive Strength: 1,600 - 2,200 psi (11.0 - 15.2 MPa)

Please also refer to the attached technical data sheets.

Service Restrictions

Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

For the adhesive material to be acceptable for use in structural applications, it is to comply with the following requirements:

1. Material to be stored, handled, and used in accordance with the manufacturer's recommendations.
2. Particular attention is to be given to the surface preparation and cleanliness of the surfaces to be bonded.
3. Where excessive unevenness of the faying surfaces exists, suitable gap-filling adhesive is to be used or local undulations removed by the application of additional reinforcements.
4. Where the adhesive is used to bond structural stiffeners to the plating, the members are to be effectively bonded in place for a minimum distance of 1/10 the length of the member at each end by a conventional secondary bond.
5. The elastic modulus of the adhesive is to be considerably less than that of the FRP skin to which it is being adhered.
6. The strain of failure ratio of the adhesive is to be much larger than the surrounding structure.
7. The mechanical properties of the adhesive are to be achieved rapidly, such that the use of screws or bolts will not be necessary to hold the substrates together while the adhesive cures.
8. The adhesive is to be compatible with the lamination resin.
9. Special consideration is to be used when the adhesive is proposed to be used in areas where the average temperature is in excess of 110 degrees F.
10. Adhesive not to be used in areas exposed to petroleum based products, proposed use of adhesive in tanks containing other products will need to be specially considered.

Comments

The approval of this material is based on an equivalence to a conventional secondary bond between two fiber reinforced plastic substrates and the following comments:

1. The process for application of the adhesive is to be submitted for review and is to include the maximum bondline thickness, nondestructive testing methods and maximum creep, which are to be in accordance with manufacturer's recommendations.
2. Specific joints, extent of use, and substrates are to be reviewed on a case-by-case basis.
3. Details of the structural adhesive are to be specified on the Material Data Sheet and on the construction plans submitted.
4. Details concerning the handling, mixing and application of the adhesive are to form part of the Builders Process Instruction.
5. The Builders Process Description is to identify the level of training required for personnel involved in the application of structural adhesives

6. The manufacturer has provided a declaration about the control of, or lack of Asbestos in this product.

Notes, Drawings and Documentation

Drawing No. Correspondence, Request for Approval - Revalidation 17-HS1596959-PDA, Revision: -, Pages: 1

Drawing No. MA2045 Adhesive, Safety Data Sheet MA2045 Adhesive, Revision: -, Pages: -

Drawing No. MA2090 Adhesive, Safety Data Sheet MA2090 Adhesive, Revision: -, Pages: -

Drawing No. MA2245 Adhesive, Safety Data Sheet MA2245 Adhesive, Revision: -, Pages: -

Drawing No. MA2245-2045-2090 Black Activator, Safety Data Sheet MA2045, MA2090, MA2245 Activator Black, Revision: -, Pages: -

Drawing No. MA2245-2045-2090 Blue Activator, Safety Data Sheet MA2045, MA2090, MA2245 Activator Blue, Revision: -, Pages: -

Drawing No. MA2245-Data-Sheet-Rev07, Technical Data Sheet MA2245, Revision: -, Pages: -

Drawing No. MA422-425 Activator, Safety Data Sheet MA425 Activator, Revision: -, Pages: -

Drawing No. MA425 Adhesive, Safety Data Sheet MA 425 Adhesive, Revision: -, Pages: -

Drawing No. MA530 Activator, Safety Data Sheet MA530 Activator, Revision: -, Pages: -

Drawing No. MA530 Adhesive, Safety Data Sheet MA530 Adhesive, Revision: -, Pages: -

Drawing No. MA560-1 Activator, Safety Data Sheet MA560-1 Activator, Revision: -, Pages: -

Drawing No. MA560-1 Adhesive, Safety Data Sheet MA560-1 Adhesive, Revision: -, Pages: -

Drawing No. MA590 Activator, Safety Data Sheet MA 590 Activator, Revision: -, Pages: -

Drawing No. MA590 Adhesive, Safety Data Sheet MA590 Adhesive, Revision: -, Pages: -

Drawing No. No Change Confirmation - Revalidation 17-HS1596959-PDA, Client Letter, Revision: -, Pages: 1

Drawing No. PO 051922MB, Purchase Order, Revision: -, Pages: 1

Drawing No. ma2045-data-sheet_rev09, Technical Data Sheet MA2045, Revision: -, Pages: -

Drawing No. ma2090-data-sheet_rev10, Technical Data Sheet MA2090, Revision: -, Pages: -

Drawing No. ma425-data-sheet_rev07, Technical Data Sheet MA425, Revision: -, Pages: -

Drawing No. ma530-data-sheet_rev14, Technical Data Sheet MA530, Revision: -, Pages: -

Drawing No. ma550-data-sheet_rev09, Technical Data Sheet MA550, Revision: -, Pages: -

Drawing No. ma560-1-data-sheet_rev10, Technical Data Sheet MA560-1, Revision: -, Pages: -

Drawing No. ma590-data-sheet_rev11, Technical Data Sheet MA590, Revision: -, Pages: -

Term of Validity

This Product Design Assessment (PDA) Certificate remains valid until 15/Jun/2027 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per

applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

ABS Rules

2022 Marine Vessels Rules: 1-1-4/7.7, 1-1-A3; 1-1-A4

2022 Materials and Welding Rules: 2-6-1/9 and 2-6-2/3.7;

2022 Rules for Conditions of Classification - Light & High Speed Craft: 1-1-4/11.9, 1-1-A2, 1-1-A3

International Standards

NA

EU-MED Standards

NA

National Standards

ASTM D1002 (2019)

ASTM D638 (2014)

Government Standards

NA

Other Standards

NA



Corporate ABS Programs
American Bureau of Shipping
Print Date and Time: 23-Oct-2024 1:11

ABS has used due diligence in the preparation of this certificate, and it represents the information on the product in the ABS Records as of the date and time the certificate is printed.

If the Rules and/or standards used in the PDA evaluation are revised or if there is a design modification (whichever occurs first), a PDA revalidation may be necessary.

The continued validity of the MA is dependent on completion of satisfactory audits as required by the ABS Rules. The validity of both PDA and MA entitles the product to receive a **Confirmation of Product Type Approval**.

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or prior to the effective date of the ABS Rules and standards applied at the time of PDA issuance. ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. The manufacturer is responsible to maintain compliance with all specifications applicable to the product design assessment. Unless specifically indicated in the description of the product, certification under type approval does

not waive requirements for witnessed inspection or additional survey for product use on a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.