SAE The Engineering Society For Advancing Mobility Land Sea Air and Space

400 COMMONWEALTH DRIVE, WARRENDALE, PA 15096

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

AMS 3091B

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Superseding AMS 3091A

MOLD RELEASE AGENT

1. SCOPE:

1.1 Form: This specification covers a mold release agent in the form of a liquid.

1.2 Application: Primarily for application to molds used in the fabrication of plastic and elastomeric components. Mold release agent will function up to 480°C (900°F) without deterioration or transferring to the part surface.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods
AMS 2825 - Material Safety Data Sheets

2.2 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.2.1 Military Standards:

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of

3. TECHNICAL REQUIREMENTS:

3.1 Material: Shall be a homogenous mixture of a consistency that can be readily applied to applicable surfaces by brush, dip, or spray. It shall be free of silicone oil, waxes, grease, and fluorocarbons.

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3.2 Properties: The mold release agent shall conform to the following requirements:

3.2.1 Wetting and Adherence: The product shall wet and adhere to both metallic and nonmetallic surfaces when applied directly to clean, dry surfaces in accordance with the manufacturer's recommendations.

3.2.2 Non-Transference: An applied film of the product shall be non-transferring and thermally stable up to 480°C (900°F), determined as in 3.2.2.1:

3.2.2.1 A smooth, continuous film shall be applied to a mold by spraying a thin coating, which is wet but not sagging or dripping, of the product by brushing with a clean brush or by wiping on with a clean cloth. The applied film shall be air dried for not less than 30 min. at room temperature or oven dried at 95°C + 15 (200°F + 10) for not less than 30 minutes. A properly applied coating will be colorless and uniform in thickness. Quality control samples of the identical surface finish and surface preparation which have been processed on molds coated with the product shall exhibit the same adhesion of paint, adhesives, and sealants, without additional cleaning, as components or samples which have not been in contact with the product.

3.2.3 Toxicity: The product shall contain no materials of known toxicity. The vapor shall not cause discomfort or injury to workmen engaged in application of the product.

3.2.4 Effect on Metals: The product shall not cause corrosion of metals, determined as in 3.2.4.1.

3.2.4.1 Panels of aluminum, magnesium, copper alloys, steel, and cadmium plated steel, or couples thereof coated with the product shall show no evidence of corrosion, as indicated by rusting or pitting, after being suspended vertically in a convection-current air oven at 100°C + 1 (212°F + 2) for 70 hr + 0.5. Slight darkening on comparison with freshly polished panels of the same materials will be acceptable.

3.2.5 Effect on Nonmetals: The product shall not react destructively with nonmetallic materials such as phenol-formaldehyde resins, ureaformaldehyde resins, rubber, synthetic rubber, epoxies, polyethylene, polyesters, urethane, or polyimides, determined as in 3.2.5.1.

3.2.5.1 Samples of the nonmetallic materials listed in 3.2.5 shall be suspended vertically in a convection-current air oven at 100°C + 1 (212°F + 2) for 70 hr + 0.5. Coated samples shall have the same physical condition as the uncoated samples within +5%.

3.3 Quality: The product, as received by purchaser, shall be a smooth, homogenous mixture, free from lumps, cakes, skins, and foreign material detrimental to usage of the product.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of the product shall supply all Ø samples for vendor's tests and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.5. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to the requirements of this specification.

4.2 Classification of Tests: Tests to determine conformance to all technical Ø requirements of this specification are classified as acceptance tests and as preproduction tests and shall be performed prior to or on the initial shipment of the product to a purchaser, on each lot, when a change in material processing, or both requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

4.2.1 For direct U.S. Military procurement, substantiating test data and, when requested, preproduction test material shall be submitted to the cognizant agency as directed by the procuring activity, the contracting officer, or the request for procurement.

4.3 Sampling: Sufficient product shall be taken at random from each lot to Ø perform all required tests. The number of determinations for each requirement shall be as specified in the applicable test procedure or, if not specified therein, not less than three. A lot shall be all product produced in a single production run from the same batch of raw materials and presented for vendor's inspection at one time. A lot may be packaged and delivered in small quantities under the basic lot approval provided lot identification is maintained.

4.3.1 When a statistical sampling plan and acceptance quality level (AQL) have Ø been agreed upon by purchaser and vendor, sampling shall be in accordance with such plan in lieu of sampling as in 4.3 and the report of 4.5 shall state that such plan was used.

4.4 Approval:

4.4.1 Material shall be approved by purchaser before material for production use is supplied, unless such approval be waived by purchaser. Results of tests on production material shall be essentially equivalent to those on the approved sample.

4.4.2 Vendor shall use ingredients, manufacturing procedures, processes, and methods of inspection on production material which are essentially the same as those used on the approved sample material. If necessary to make any change in ingredients, in type of equipment for processing, or in manufacturing procedures or processing, vendor shall submit for reapproval a statement of the proposed changes in material, processing, or both and, when requested, sample material. Production material made by the revised procedure shall not be shipped prior to receipt of reapproval.

4.5 Reports: The vendor of mold release agent shall furnish with each shipment a report showing the results of tests to determine conformance to the technical requirements of this specification. This report shall include the purchase order number, AMS 3091B, manufacturer's identification, batch number, and quantity.

4.5.1 Ø A material safety data sheet conforming to AMS 2825, or equivalent, shall be supplied to each purchaser prior to, or concurrent with, the report and preproduction test results or, if preproduction testing be waived by purchaser, concurrent with the first shipment of mold release agent for production use. Each request for modification of mold release agent formulation shall be accompanied by a revised data sheet for the proposed formulation.

4.6 Resampling and Retesting: If any sample used in the above tests fails to meet the specified requirements, disposition of the product may be based on the results of testing three additional samples for each original nonconforming sample. Failure of any retest sample to meet the specified requirements shall be cause for rejection of the product represented and no additional testing shall be permitted. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY:

5.1 Packaging and Identification:

5.1.1 The product shall be supplied in 16 oz (475 mL) aerosol cans, 1 gal (4 L) cans, 5 gal (19 L) cans, or 55 gal (208 L) drums, as ordered.

5.1.2 Each container shall be legibly marked with not less than AMS 3091B, manufacturer's identification, lot number, date of manufacture, and quantity.

5.1.3 Containers of the product shall be prepared for shipment in accordance with commercial practice and in compliance with applicable rules and regulations pertaining to the handling, packaging, and transportation of the product to ensure carrier acceptance and safe delivery. Packaging shall conform to carrier rules and regulations applicable to the mode of transportation.

5.1.4 For direct U.S. Military procurement, packaging shall be in accordance with MIL-STD-794, Level A or Level C, as specified in the request for procurement. Commercial packaging as in 5.1.1 and 5.1.3 will be acceptable if it meets the requirements of Level C.

6. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

7. REJECTIONS: Material not conforming to this specification or to modifications authorized by purchaser will be subject to rejection.