Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

AEROSPACE MATERIAL SPECIFICATION

AMS 3091A
Superseding AMS 3091
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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 (AMS) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods

2.2 Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120 except as specified in 2.2.2.

2.2.1 Military Standards:

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

2.2.2 U.S. Department of Labor, Occupational Safety and Health Administration Forms: Available from regional offices of U.S. Department of Labor, Bureau of Labor Standards.

OSHA Form 20 - Material Safety Data Sheet

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.

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:

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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 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 shall be a smooth, homogenous mixture, free from lumps, cakes, skins, and foreign material.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of the product shall supply all samples 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 perform such confirmatory testing as he deems necessary to ensure that the product conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to all technical requirements of this specification are classified as acceptance tests and shall be performed on each lot.

4.2.2 Preproduction Tests: Tests to determine conformance to all technical requirements of this specification are classified as preproduction tests and shall be performed on the initial shipment of the product to a purchaser, when a change in material or processing requires reapproval, or when purchaser deems confirmatory testing is required.

4.2.2.1 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 perform all required tests. The number of samples for each test 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.

4.4 Approval:

4.4.1 Material shall be approved by purchaser before material for production use is supplied, unless such approval be waived. 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 and 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 or in manufacturing procedures or processing, vendor shall submit for reapproval a statement of the proposed changes in material or processing 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 three copies of 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, material specification number and its revision letter, manufacturer's identification, batch number, and quantity.

4.5.1 Reports of preproduction test results shall include a copy of OSHA Form 20 Material Safety Data Sheet, or equivalent, covering product formulation. All requests for modification of formulation shall be accompanied by a similar form 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^3) aerosol cans, 1 gal (3.8 dm^3) cans, 5 gal (18.9 dm^3) cans, or 55 gal (208 dm^3) drums, as ordered.

5.1.2 Each container shall be legibly marked to show this specification number and its revision letter, manufacturer's identification, batch 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 authorized modifications will be subject to rejection.