

DMS-4-828 FROZEN SHEETS MOLDABLE SHIM MATERIAL

Technical Data Sheet

A product from DYNAMOLD

Approvals and conformities

DMS-4-828

AMS 3726 Class 2, MB 1733, MMM-A-1754

Pre-catalyzed frozen sheets for shimming gaps and offsets in metal and composite assemblies. Reduces time spent in assembly and production.

Originally developed for use in airframe assemblies, moldable shims are now used in a wide variety of equipment alignment applications as well as land, air, and sea applications.

Socomore's DMS-4-828 pre-catalyzed frozen sheets are moldable shim materials in which the curing process has been inhibited through freezing. The pre-mixed calendared sheets of material are easily stored frozen until ready for use at room temperature. After removal from the frozen state, the material progresses through the normal room temperature curing cycle.

Tedlar and release paper

These pre-calendared sheets can be adapted to meet varying requirements for thickness and can be die-cut into specific shapes:

- Socomore provides frozen sheets in premeasured thicknesses between 0.03" and 0.1" (0.5 - 2.5 mm). Standard dimensions for a conventional sheet are 7" x 18" (17 x 46 cm). Specific pre-cut sheets, strips, and die-cut shapes can be provided upon request.
- The thickness of the frozen sheet chosen should be at least 1/10" (0.25 mm) thicker than the maximum gap measured on the assembly to allow for squeeze-out.
- Drastically reduces recurring cost: material placement, pressure application, and cleanup
- Assists in LEAN MANUFACTURING TECHNOLOGY
- Eliminates mixing and associated errors
- Minimizes employee physical contact with uncured epoxy
- Can be die cut to shape to expedite production
- Shims of known thickness for each application

USES

- Shimming gaps and offsets at the assembly level (metal and composites)
- Cast in place shim, forming complex contours on parts machined undersize at detail level
- Close tolerance molding to produce accurate and identical parts
- Repair of dents, holes and fairing applications
- Economical correction of tooling
- Alignment of heavy machine or motor parts
- Alignment of propulsion systems (marine applications, chocking)

DIRECTIONS FOR USE

SURFACE PREPARATION

- Predetermine and layout (map-out) areas to be shimmed on the assembly.
- Measure all gaps to be filled (area to be covered and thickness of the gap) to determine the amount of frozen shim material required.
- Lightly scuff-sand bonding surfaces with a scotch brite pad.
- Wipe bonding surface areas with a pre-bonding approved cleaning solvent (DS-108 or Diestone DLS) to remove debris, organic contaminants, and prepare the surface for adhesion. Allow the wiped surface to dry completely.
- Treat all areas that are not to be bonded with liquid release agent.
- Ensure that the assembly to be shimmed is at room temperature prior to application of the shim.

APPLICATION OF DMS-4-828 PRE-CATALYZED FROZEN SHEET

- Transport frozen DMS-4-828 sheets from the storage freezer to the working area. The sheets must be transported frozen on dry ice and maintained frozen until application. Only transport the amount of material necessary for the work at hand, sheets cannot be refrozen.
 - Keep the frozen sheets contained on a dry ice box until ready to use.
 - Ideally a frozen flat surface on a cart or table should be placed near the application area. Place blocks of dry ice on a table or cart, then place a thin metal plate on top of the ice. This provides a frozen flat surface to work and prepare the sheets prior to application.
 - Frozen sheets can be cut with a blade or scissors to predetermined measures or complex shapes using a template.
- Remove the sheets from the dry ice carrier one at a time and immediately remove carrier/release paper from one side for Tedlar-backed, both sides if not Tedlar-backed. Lay sheets flat on the frozen working table, do not double-stack frozen sheets prior to application.
- Remove sheets one at a time and apply to the prepared surface using a rolling motion from one end to the other, sticky side to the bonding surface.
 - If Tedlar-backed material is used, the Tedlar side should be up and can be wiped with solvent to remove any residues.
 - If material has release paper on the outer side, the release paper can be removed by refreezing the surface with dry ice and carefully removing release paper.
- Do not overlap joints, butt joint pieces together.
- When the shim application is complete, joint complimentary section of the assembly into place and allow squeeze-out to occur. Applied pressure of 8 psi is recommended. Squeeze-out will occur when gap is fully filled.
 - If a predetermined thickness is needed, use a solid fin guide of the desired thickness to standardize the gap, making sure that enough space is left for the squeezed out material to flow out.
- Remove squeeze-out excess with a plastic scrapper, tongue blade or equivalent prior to the shim curing (usually within 2 hours after application).
- Allow material to cure for at least 4 hours at 75°F (24°C).
- Allow the DMS-4-828 material to cure at least 8-12 hours, preferably overnight, at 75°F (24°C) prior to bolt torque.
 - A test specimen can be placed near the work area and checked for Shore D hardness. When hardness of 80 Shore D is reached, bolts may be torqued to final values.

TECHNICAL CHARACTERISTICS

Product Name	Application Time at 75°F (23°C)	Assembly Time at 75°F (23°C)	Drill Time	Cure Time	Shelf-Life & Storage Pre-catalyzed Frozen Sheets
DMS-4-828	1h	2h	4-5h at 75°F (23°C)	8-9h at 75°F (23°C)	3 months at 0°F (-17.8°C) 6 months at -20°F (-30°C)

Property	Standard Method	Value
Block compression/ultimate (psi)	ASTM D695	75°F (23°C) – 21500 190°F (88°C) – 17500 350°F (177°C) – 14000
Flatwise compression (psi)	AMS 3726	75°F (23°C) > 60000
Lap shear Aluminum (psi)	ASTM D1002	75°F (23°C) – 2700 250°F (121°C) – 1700 350°F (177°C) – 1300
Hardness Shore D	ASTM D2240	92
Specific gravity		<1.50

PRECAUTIONS FOR USE AND STORAGE

For more information regarding the danger of the product, please consult the product safety data sheet according to local regulation. Please address any questions or comments to Socomore North America technical support (techsupport-na@socomore.com).

For professional use only.

This technical data sheet replaces and cancels the previous one.

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