Technical Data Sheet

DOWSIL™ 7091 Adhesive Sealant

High performance neutral cure silicone adhesive/sealant

Features & Benefits

- One-part adhesive/sealant
- Cures at room temperature when exposed to moisture in the air
- Alkoxy cure system
- Non-sag, paste consistency
- Easy to apply
- Cures to a tough, flexible rubber
- Excellent adhesion to many substrates
- Stable and flexible from -40°C (-40°F) to 180°C (356°F)
- Approved for railway standard EN 45545-2, HL1(R22), HL2(R23, HL3(R24)

Applications

- Designed for applications which demand a strong but flexible bond, such as when bonding materials with differing thermal expansion rates, e.g. glass to metal or glass to plastic.
- Unprimed adhesion to commonly used materials including enameled and painted steel, aluminum, ceramic and glass as well as to certain plastics used in engineering applications.
- Used as a Formed-in-Place Gasket (FIPG) material.

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

CTM[1]	ASTM[2]	Property	Unit	Result
		As supplied		
		Appearance		Non-slump paste
		Colors		Black, white, gray
0364	D2452	Extrusion rate[3]	g/minute	185
0098		Skin-over time	minutes	15
0095	MIL-S-8802E	Tack-free time[4]	minutes	28

1. CTM: Corporate Test Method, copies of CTMs are available on request.
2. ASTM: American Society for Testing and Materials.
3. Extrusion rate measured using 3.18 mm diameter nozzle at 0.62 MPa.
4. Tack-free time is the time required for the product to develop a non-tacky surface based on adhesion to a polyethylene film.

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Typical Properties (Cont.)

CTM	ASTM	Property	Unit	Result
		Mechanical properties, cured 7 days in air at 23°C (73°F) and 50% relative humidity		
0099	D2240	Durometer hardness, Shore A		32
0137A	D412	Tensile strength	MPa	2.5
0137A	D412	Elongation at break	%	680
0159A	D624	Tear strength - die B	kN/m	15
0022	D0792	Specific gravity at 22°C (72°F)		1.4
		Adhesion cured 7 days at 23°C (73°F) and 50% relative humidity		
		100% cohesive failure is obtained on metals and glass but also on ABS, polycarbonate, talc-filled polypropylene-corona treated, antiscratch coated plastic		

How to Use

Substrate Preparation

All surfaces must be clean and dry. Degrease and wash off any contaminants that could impair adhesion. Suitable solvents include isopropyl alcohol, acetone or methyl ethyl ketone.

Good unprimed adhesion may be obtained on a variety of substrates, including enameled and painted steel, aluminum, ceramic, glass and certain plastics. Substrates to which good adhesion is normally not obtained include PTFE, polyethylene, polypropylene and related materials.

For maximum adhesion, the use of DOWSIL™ 1200 OS Primer is recommended. After solvent cleaning apply a thin coat of DOWSIL™ 1200 OS Primer by dipping, brushing or spraying. Allow primer to dry for 15 to 90 minutes at room temperature and a relative humidity of 50% or higher.

How to Apply

Apply a bead of DOWSIL™ 7091 Adhesive Sealant (see Handling Precautions) to one of the prepared surfaces, then quickly cover with the other substrate to be bonded.

On exposure to moisture, the freshly applied material will "skin-over" in about 10–15 minutes at room temperature and 50% relative humidity. Any tooling should be completed before this skin forms. The surface is easily tooled with a spatula. The adhesive/sealant will be tack-free in approximately 30 minutes.

Cure Time

After skin formation, cure continues inward from the surface. In 24 hours (at room temperature and 50% relative humidity) DOWSIL™ 7091 Adhesive Sealant will cure to a depth of about 2 mm. Very deep sections, especially when access to atmospheric moisture is restricted, will take longer to cure completely. Cure time is extended at lower humidity levels. Before handling and packaging bonded components, users are advised to wait a sufficiently long time to ensure that the integrity of the adhesive seal is not affected. This will depend on many factors and should be determined by the user for each specific application.

Useful Temperature Ranges

For most uses, silicone elastomers should be operational over a temperature range of -45 to 200°C (-49 to 392°F) for long periods of time. However, at both the low- and high-temperature ends of the spectrum, behavior of the materials and performance in particular applications can become more complex and require additional considerations. For low-temperature performance, thermal cycling to conditions such as -55°C (-67°F) may be possible, but performance should be verified for your parts or assemblies. Factors that may influence performance are configuration and stress sensitivity of components, cooling rates and hold times, and prior temperature history. At the high-temperature end, the durability of the cured silicone elastomer is time and temperature dependent. As expected, the higher the temperature, the shorter the time the material will remain useable.

Handling Precautions

When using solvents avoid contact with skin and eyes, heat, sparks and open flames. Always provide adequate ventilation. Obtain and follow handling precautions from the solvent supplier.

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

Usable Life and Storage

When stored at or below 30°C (86°F) in the original unopened containers, this product has a usable life of 12 months from the date of production.

Packaging Information

This product is available in standard industrial container sizes.

Limitations

Adhesion may be less successful on low-energy plastics such as Polyethylene, Polypropylene and PTFE. Users should do preliminary tests in each specific application to ensure satisfactory results.

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

Health and Environmental Information

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, dow.com or consult your local Dow representative.

Disposal Considerations

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

How Can We Help You Today?

Tell us about your performance, design, and manufacturing challenges. Let us put our silicon-based materials experience, application knowledge, and processing experience to work for you.

For more information about our materials and capabilities, visit **dow.com**.

To discuss how we could work together to address your specific needs, go to **dow.com** for a contact close to your location. Dow has customer service teams, science and technology centers, application support teams, sales offices, and manufacturing sites around the globe.

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