

Silicone RTVs

For Aerospace & Defense



MOMENTIVE™
inventing possibilities



Custom Solutions for Today's Manufacturing Challenges

For more than 60 years, Momentive has helped power the aerospace journey. Momentive's silicone products are integral to the assembly and operation of aircraft, spacecraft and military platforms. Our silicones were in the boots of the first astronaut to walk on the moon and have been part of every US manned space flight since then. Momentive uses the experience from thousands of hours of flight and in-space time, to innovate new products that help our partners continue the aerospace legacy. Momentive is proud to work with many of today's pioneering aerospace and defense companies to provide solutions for the manufacturing challenges of today. Momentive employs a rapid development process and customizable chemistry platforms along with dedicated chemists and a global network of state-of-the-art application development centers to invent new products that solve customer challenges. Whether you need a customized solution or a tried and true product, Momentive has the people and the solutions to help you achieve your goals.

Momentive's Advantages

- Time-tested chemistries with over 60 years of flight time and in-space experience
- A comprehensive suite of vertically integrated products that can be adapted and customized for new applications
- Rapid development process led by teams of experienced Chemists and Application Development Engineers
- World-class application development centers equipped with state-of-the-art analytical and engineering tools
- Onsite customer process analysis and solution development
- Experience meeting stringent aerospace and military regulations
- Expert technical support from consultation to implementation and beyond

Why Silicone RTVs

- Long term stability over a broad range of extreme temperatures from -115°C (-175°F) to 260°C (500°F)
- Sustained flexibility, adhesion and sealing in extreme temperatures
- Outstanding weather resistance for use in rugged applications
- Ability to withstand fuels and solvents
- Excellent electrical insulation properties for use with sensitive circuits
- Available low outgassing solutions to protect optics, solar arrays, avionics and crew compartments
- Deep section cure over a broad range of temperatures and humidity levels
- Customizable curing that can match the assembly process
- Available in a wide range of viscosities - from non-flowable pastes to liquids to accommodate a broad range of application needs
- Available in a wide-range of colors that meet military and government specifications

Momentive's silicone materials were in the boots that took the first step on the moon.





One-Component, Room Temperature Cure Adhesives and Sealants

RTV 100 Series Ready-to-Use Adhesives

Momentive's premier line of adhesive sealants

- FDA, UL, NSF, and USDA recognition
- Meets MIL-A-46106 specifications
- Available in both paste and flowable grades
- Primerless adhesion to many substrates
- RTV102, RTV103, RTV108 and RTV109 can be applied to vertical and overhead surfaces
- RTV112 and RTV118 are self-leveling to flow into small crevices and hard-to-reach places
- RTV 106 and RTV 116 offer high temperature performance in paste or self-leveling products

RTV 133 Flame Resistant Adhesives

For applications requiring burn protection

- One-component adhesive
- High strength
- Primerless adhesion to many substrates
- Non-corrosive (alkoxy) cure
- UL94 V-0 component recognition

RTV 142 Paste Adhesives

Used for electronic gasketing or vertical/overhead applications

- Non-corrosive
- Low-outgassing

RTV 157 and RTV 159 High Strength Paste Adhesives

Acetoxy Cure, High Strength Adhesion

- RTV 157 and RTV 159 combine high strength and high temperature performance with an acetoxy cure

RTV 160 Series Non Corrosive Adhesives

- Non-corrosive to sensitive metals
- Available in multiple viscosities
- UL component recognition
- RTV 162 and RTV 167 paste adhesives comply with MIL-A-46146
- RTV 167 is a high strength paste
- RTV 160 is a flowable material

FRV 1106 and FRV 1109 Fluid Resistant Adhesive Sealants

Fluid resistance to many liquids

- For applications exposed to fuels, solvents and chemicals
- Primerless adhesion
- Acetoxy, room temperature cure
- Weathering resistance

SilCool® Thermally Conductive LTR Adhesives

Helps transfer heat in critical applications

- Available in both room temperature and heat cure
- One or two-component options
- Multiple viscosities available from flowable to paste-like
- Thermally conductive greases available for applications that require removability or reworkability

Two-Component, Room Temperature Cure Adhesives, Sealants and Potting Compounds/Encapsulants

SnapSil® Fast Cure Adhesives

Rapid curing to accommodate assembly lines, quick turnaround applications and maintenance and repair

- Fast, room temperature cure
- Two-component high strength adhesives
- Available in a convenient single caulker
- Easy to use with a standard caulking gun
- Adheres to most substrates with no primer

RTV 11, RTV 21 and RTV 41 Encapsulants

General-purpose encapsulants designed for aviation

- Two-part silicone
- Cures at room temperature
- Exceptional adhesion with primers

RTV 31, RTV 60 and RTV 88/88HB High Temperature Compounds

High temperature two-part silicone materials

- Effective at temperatures from -54C (-65F) to 260C (500F)
- Available in multiple uncured viscosities
- RTV 31 and RTV 60 are designed for potting and encapsulating applications
- RTV 88/88HB is suitable for vertical or overhead surfaces

RTV 560, RTV 566, RTV 567, RTV 511, and RTV 577 Extreme Low and High Temperature Compounds

Variable cure rate, low temperature adhesion

- Variable room temperature cure rates by adjusting the primer
- RTV 560 and RTV 566 offer a wide useful temperature range of -115°C (-175°F) to 260°C (500°F)
- RTV 566 and RTV 567 are designed for low outgassing applications
- RTV 511 is a flowable sealant
- RTV 577 is highly viscous for sealing and insulating on vertical and overhead surfaces

RTV 582 and RTV 583 Extreme Low and High temperature ESD Gap Fillers

Anti-static encapsulant for spark-resistant applications

- Effective at temperatures from -115°C (-175°F) to 205°C (401°F)
- Deep section cure at room temperature
- RTV 582 is a white ESD filler with extreme low temperature performance

RTV 6100 Dielectric gels

Liquid silicones that cure to a soft gel that can protect delicate electronic assemblies in harsh environments

- Preserves dielectric integrity
- Shock and vibration dampening
- Available in a variety of cure rates
- Primerless adhesion to most substrates
- RTV 6136 is a high strength gel
- RTV 6196 is a fast curing gel

RTF 7000 Low Density Foam

Generates a variable density foam when mixed

- Supplied as a two component liquid
- Generates foam when mixed

InvisiSil® Optically Clear Encapsulants

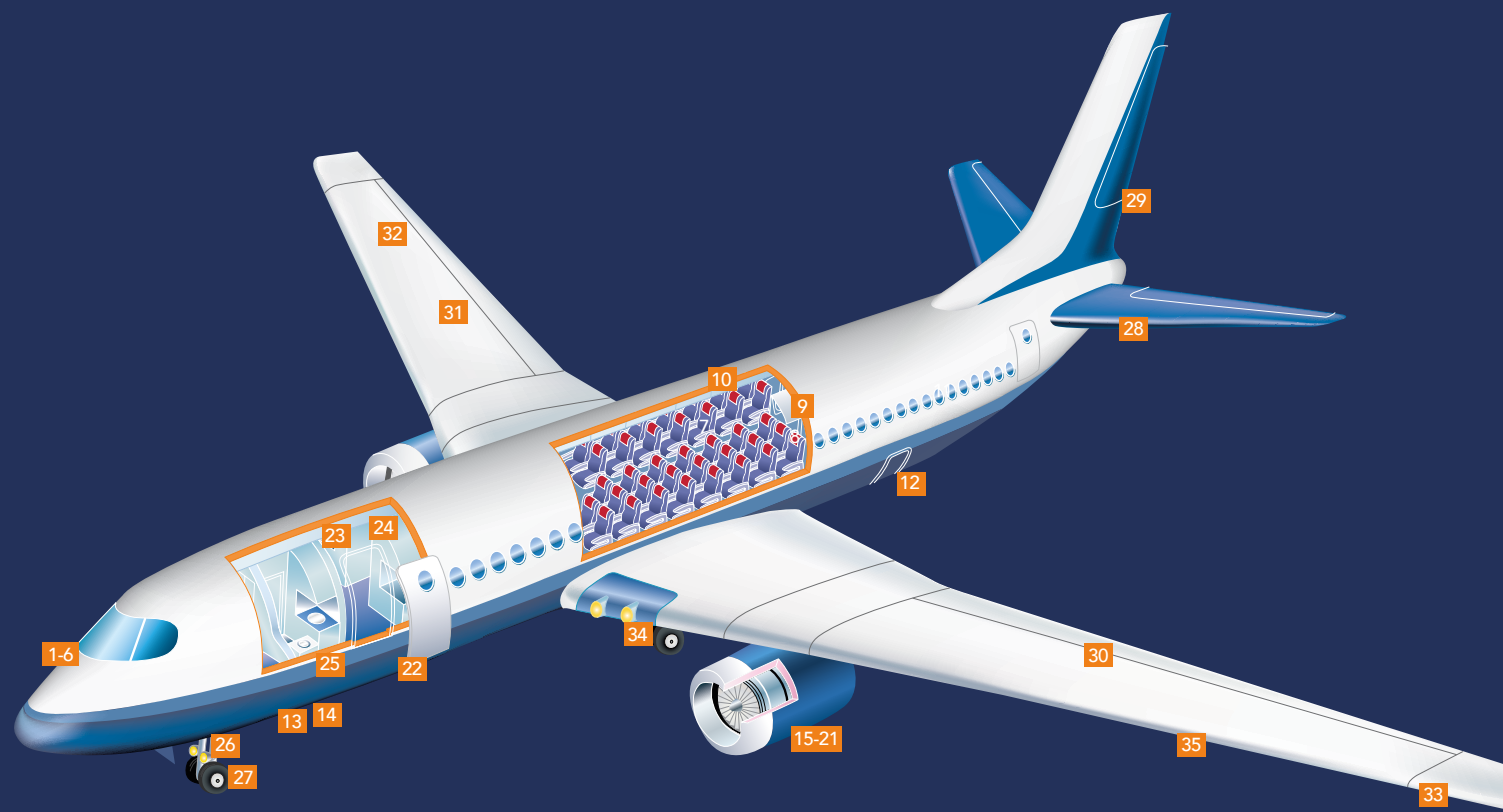
High light transmittance and high refractivity for LEDs, inner layer display materials and optical device coatings

- Two-part silicone
- Non-yellowing
- Heat curable gels and elastomers

RTV Primers

SS4004P, SS4044P, SS4179, SS4120 SS4155

Used to increase adhesion on difficult to bond substrates or with specific RTV Adhesives. Typically brushed on prior to RTV application. Available for various application needs. Please see the Adhesion and Primer Guide for more information.



Cockpit

- 1 Black Box Encapsulant
- 2 Cockpit Instrument Seal
- 3 Electrical Box Sealant
- 4 Radome Sealant
- 5 Sealant, Potting/Encapsulant for Computer Units
- 6 Weatherstrip Adhesive

Cabin

- 7 In-flight Entertainment System Sealant
- 8 Lighting Sealant
- 9 Overhead Bin Sealant
- 10 Vent Duct Sealant
- 11 Window Assembly Sealant

Cargo Area

- 12 Cargo Door Seal
- 13 Electrical Wire Sealant
- 14 Firewall Penetration Sealant

Engine

- 15 Engine Gasket
- 16 Engine Molded Seals
- 17 Engine Electronics Potting
- 18 Engine/Thermal Shield
- 19 Filleting Hardware Heads
- 20 Gas Turbine Bracket Adhesive
- 21 Joint Fill Compound

Galley

- 22 Door Gasket Seal
- 23 Formed Gaskets
- 24 Galley Sealant
- 25 Lavatory Sealant Landing Gear
- 26 Light Lens Sealant
- 27 Potting Landing Gear Electrical Devices

Tail

- 28 General Maintenance Sealant
- 29 Hydraulic Switch/ Control Sealant

Wing

- 30 Fuel Cell Coating
- 31 Fuel Tank Electrical Device

Sealant

- 32 Fuel Tank Sealant
- 33 Hydraulic Gear Box Sealant
- 34 Lighting Sealant
- 35 Edge Sealant



Heat shielding



Black box gel encapsulant



Electrical wire sealant



Heat insulators & thermal blankets



Cockpit instrument sealant

Avionics Applications

Long-term, reliable protection of sensitive electronic components is essential to many electronic applications today. Increasingly small systems and rising circuit densities have resulted in hotter operating temperatures, and driven demand for high-performance solutions for heat dissipation. Momentive has a wide range of products to address these challenges. SilCool® adhesives and compounds can deliver the high-thermal conductivity, thin bond lines, and low thermal resistance required for high performance components. For avionics applications requiring environmental or stress protection, Momentive's silicone adhesives, sealants, encapsulants, and potting materials can help you reduce costs and soar above the competition.

POTENTIAL APPLICATIONS

- Circuit and terminal Protection
- Cockpit instrument sealant
- Electrical wire sealant
- Sealing, potting and encapsulating computer units
- Electronics power equipment encapsulant
- Sensors and components
- Interlayers/displays/LEDs
- Heat dissipation
- Battery and charger sealants
- Black box gel encapsulant

Adhesives for Thermal Protection Systems

Thermal protection systems perform one of the most critical roles in electronics applications. From insulating sensitive electronic components to protecting spacecraft and crews, Momentive's RTV silicone products have been performing in the extreme temperatures of space for more than 60 years. Momentive's RTV Series and SilCool® adhesives and sealants can be used to adhere tiles in a spacecraft's heat shield stack-up, or protect critical engine components at temperatures up to 260° C (500° F). They are available in low outgassing versions and multiple viscosities to adapt to different applications and assembly methods. From launch to landing - wherever thermal protection silicones are needed, Momentive's advanced silicone products are enabling the next generation of space exploration.

POTENTIAL APPLICATIONS

- Gasketing
- Heat insulators and thermal blankets
- Heat shielding
- Molded seals
- Gas turbine bracket adhesive
- Thrust reversers heat shielding and insulators
- Launch and landing pad coatings





Low Outgassing Applications

Long-term, reliable protection of sensitive electronic components is essential to many electronic applications today. Increasingly small systems and rising circuit densities have resulted in hotter operating temperatures, and driven demand for high-performance solutions for heat dissipation. Momentive has a wide range of products to address these challenges. SilCool* adhesives and compounds can deliver the high-thermal conductivity, thin bond lines, and low thermal resistance required for high performance components. For avionics applications requiring environmental or stress protection, Momentive's silicone adhesives, sealants, encapsulants, and potting materials can help you reduce costs and soar above the competition.

POTENTIAL APPLICATIONS

- Cast in place heat shielding for solar array and optical equipment sealing
- Crew capsule applications
- Thermal insulation of sensitive components
- Protective coatings for critical equipment
- Encapsulants and potting for high heat locations
- Interior & exterior adhesives
- Flexible composite coatings

Defense Applications

At Momentive we understand the unique challenges of the defense industry. Equipment has to function in all conditions and in a wide variety of environments. Our sealants, adhesives, potting and encapsulating compounds, optical materials, and thermal management materials can maintain structural integrity, protect sensitive equipment and dampen shock no matter the weather and in even the most extreme temperatures. From aircraft to tracked vehicles and everything in between, count on Momentive's RTV silicones to perform in mission critical situations.

POTENTIAL APPLICATIONS

- Cockpit instrument adhesives and sealants
- Sealing, potting and encapsulating in high heat locations
- Heat dissipation and heat shielding
- Interlayers/displays/LEDs
- Weather protection and ruggedization
- Long term stability under extreme conditions

PRODUCT	DESCRIPTION	MILITARY SPECIFICATION
RTV 100 Series	High performance paste adhesive	MIL-A-46106B
RTV 106	Temperature resistant paste adhesive	MIL-A-46106B
RTV 112	High performance, self-leveling sealant	MIL-A-46106B
RTV 116	High performance, self-leveling sealant	MIL-A-46106B
RTV 118	Temperature resistant flowable sealant	MIL-A-46106B
RTV 120 Series	Paste adhesive	MIL-A-46146B
RTV162	High strength, non-corrosive adhesive	MIL-A-46146B
RTV167	High strength, non-corrosive adhesive	MIL-A-46146B
RTV8111	General purpose, potting sealant	MIL-PRF-23586F
RTV8112	General purpose, potting sealant.	MIL-PRF-23586F
RTV8262	High temperature resistant, flowable sealant	MIL-PRF-23586F

Main Launch Vehicle

- Fairing Sealant
- Silicone paints
- Gap filling
- Thermal Insulation attachment
- Protective Coatings
- General bonding
- Sealing openings
- Coatings and adhesives for stabilizers
- Thermal barriers
- Adhesion and protection for sensors and optics
- Engine Sealing

Satellites

- Thermal Shield Bonding
- Thermally Conductive Materials
- Heat Management
- Wire/Cable Sealing etc.
- PV Bonding
- Potting
- Avionics Coating

Crew Capsule

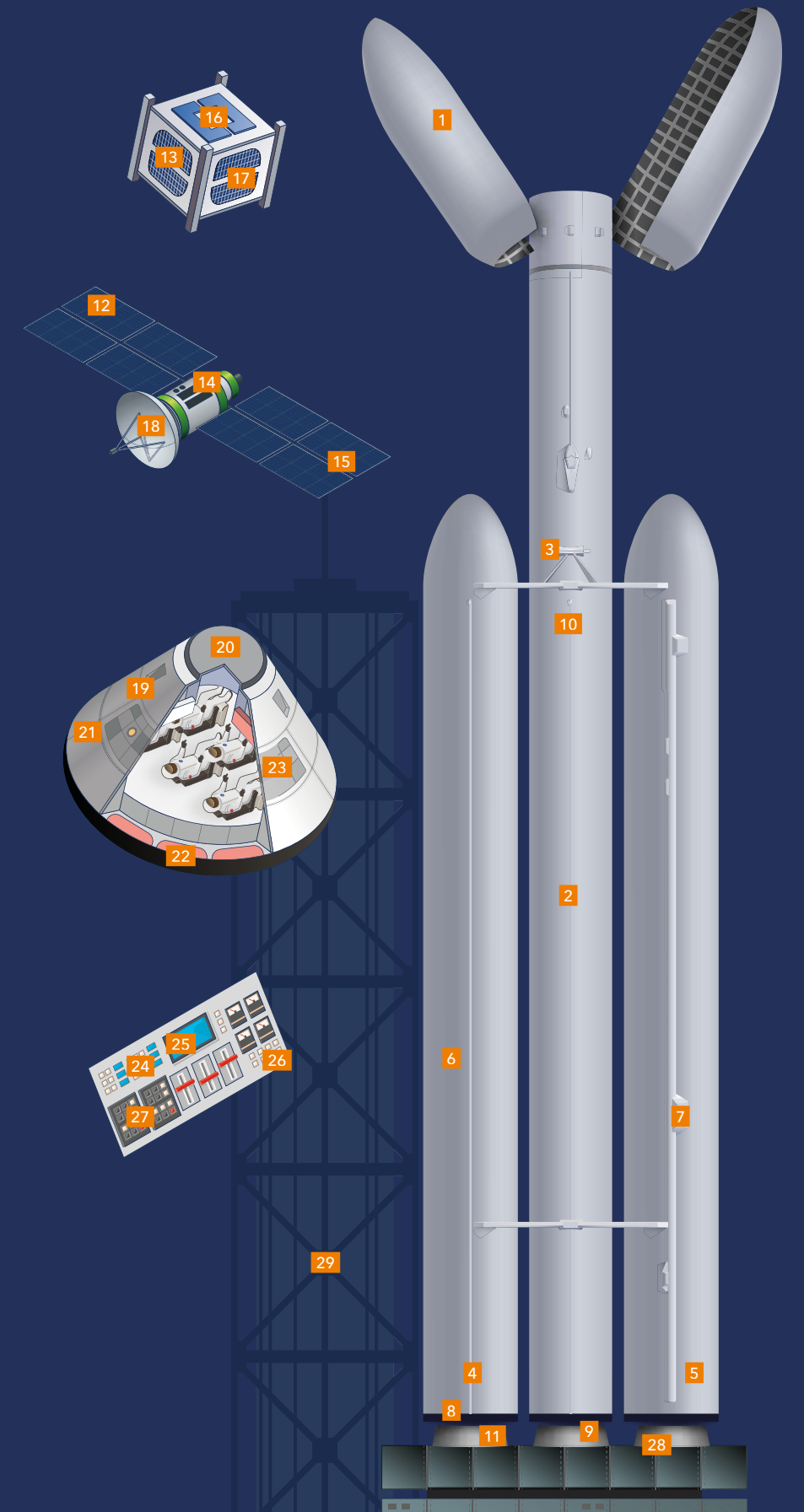
- Outer Thermal Protection Layer
- Docking hatch
- Panel Bonding
- Thrusters thermal protection
- Window lamination

Control Panels/Avionics

- Electrical boxes
- Computers
- Black boxes
- Cockpit instruments

Launch Pad

- Launch Pad Coatings
- Thermal Protection for Support Structures



Product / Application Selector Guide

Potential Products ⁽¹⁾	One-Component								
	RTV102 RTV103 RTV108 RTV109 RTV112 RTV118	RTV 106	RTV 116	RTV 133	RTV 142 RTV 142C	RTV 157 RTV 159	RTV 160 RTV 162 RTV 167	FRV 1106 FRV 1109 fluorosilicone	SilCool* thermal management materials LTR
Features	High performance adhesives.	High temperature, paste adhesive.	High temperature, flowable adhesive.	UL94 V-0 component recognized, neutral cure adhesive.	Low volatile adhesive.	High performance adhesives.	High performance adhesives.	High performance adhesives. Fuel and chemical resistance.	High performance adhesives.
Substrate Adhesion	Primerless adhesion to metals, plastics and composites.	Primerless adhesion to metals, plastics and composites.	Primerless adhesion to metals, plastics and composites.	Primerless adhesion to metals, plastics and composites. Non corrosive to sensitive metals in electronics.	Primerless adhesion to metals, plastics and composites. Non corrosive to sensitive metals in electronics.	Primerless adhesion to metals, plastics and composites.	Primerless adhesion to metals, plastics and composites. Non corrosive to sensitive metals in electronics.	Primerless adhesion to metals, plastics and composites.	Primerless adhesion to metals, plastics and composites. Non corrosive to sensitive metals in electronics.
Potential Applications									
EXTERIOR	Cargo Door Seals								
	Door Gasket Sealant							X	
	Lighting Sealant							X	
	Filleting Hardware Heads							X	
	Joint Fill Compound	X	X					X	
	Potting Landing Gear Electrical Devices								
	Sealant for Smooth Exterior Edge of Aircraft Wing							X	
	Weather Strip Adhesive							X	
	Radome Sealing						X	X	
	Circuit and Terminal Protection					X		X	X
ELECTRONICS	Cockpit Instrument Sealant				X		X		
	Electrical Wire Sealant		X	X			X		
	Sealing, Potting and Encapsulating Computer Units				X		X		X
	Electronics Power Equipment Encapsulant						X		X
	Sensors and Components								X
	Interlayers/Displays/LEDs								
	Heat Dissipation Layer								X
ENGINE	Gasketing		X	X	X	X		X	
	Heat Insulator/Thermal Blanket		X	X	X	X			
	Heat Shielding		X	X	X	X			
	Molded Seals		X	X	X	X			
	Electronics Potting		X	X	X	X	X		
	Gas Turbine Bracket Adhesive		X						
GENERAL	Extreme High Temperature Potting & Encapsulating								X
	Firewall Penetration Sealant				X				
	Light Lens Sealant and Adherent						X		
	Shock Absorber Between Metal Aircraft Parts							X	
	General Aircraft Maintenance Sealant	X					X		
WING/FUEL	Electrical Devices Within Fuel Tank							X	
	Fuel Cell Coating							X	
	Fuel Tank Sealant							X	
	Sealing Hydraulic Gear Boxes							X	
	Sealing Hydraulic Switches and Controls							X	
INTERIOR	Electrical Box Sealant						X		
	Pre-Formed Gaskets	X				X			
	Galley Sealant	X							
	In-Flight Entertainment System Sealant	X							
	Lavatory Sealant	X							
	Lighting Sealant			X					
MISCELLANEOUS	Battery Sealant						X		X
	Black Box Gel Encapsulant						X		
	Charger Sealant						X		
Heating and Cooling Tube Sealant							X		
Landing Gear Sealant							X		
Thrust Reversers Heat Shielding									
Thrust Reversers Insulator					X				
Thrust Reversers Vibration Dampening					X				
Launch/Landing Pad Coatings		X	X	X					

1. All products are room temperature cure systems, exceptions noted.
 2. MIL spec subject to further qualification.
 Please contact a Momentive representative to determine product availability in your region.

Potential Products ⁽¹⁾	Two-Component										
	RTV530_LV fast cure adhesive	RTV 11 RTV 21 RTV 41	RTV 31 RTV 60 RTV 88 RTV 88HB	RTV 560 RTV 566 (low outgassing)	RTV 567 (low outgassing)	RTV 577 RTV 577LV (low outgassing) RTV 577LV- BLK (black)	RTV 582 RTV 583	RTV 6136 RTV 6139	RTF 7000 foam	InvisiSil* optical encapsulants RTV 615 RTV 655 Low Temperature	SCM-3404- NASA
Features	Very fast cure adhesives.	General purpose potting compound/ encapsulant.	High temperature potting compounds/ encapsulants. Flowable or paste.	Extreme temperature performance potting compound/ encapsulants.	Low temperature potting compounds/ encapsulants.	Low temperature sealing.	Electric static dissipative, low temperature, sealing/gap filling.	Low modulus, gel potting compound/ encapsulants.	Variable density foam system.	Optically clear, high refractive index encapsulants. Heat cure.	
Substrate Adhesion	Primerless adhesion to many substrates.	May require a primer for bonding applications.	May require a primer for bonding applications.	May require a primer for bonding applications.	May require a primer for bonding applications.	May require a primer for bonding applications.	May require a primer for bonding applications.	Pressure sensitive adhesion to many substrates.	Primerless adhesion to many substrates.	Primerless adhesion to many substrates.	
Potential Applications											
EXTERIOR	X				X	X	X				
	X				X	X	X				
	X		X		X	X	X				
					X	X	X				
					X	X	X			X	
	X				X	X	X				
	X				X	X	X				
			X	X	X	X	X				
			X	X	X	X	X				
ENGINE			RTV 31/60	X							
			RTV 31/60	X					X		
			RTV 31/60	X					X		
			RTV 31/60	X							
			RTV 31/60							X	
GENERAL			X	X					X		
										X	
	X								X		
	X	X						X	X		
WING/FUEL											
INTERIOR	X										
									X		
	X								X		
	X										
	X	X							X		
	X				X						
MISCELLANEOUS	X		X	X							
	X		X	X					X		
	X		X	X							
	X			X							
	X			X							
			X	X							
			X	X							
			X	X							
			X	X					X		
			X	X							X
			X	X							



Defense and Government Expertise

Cage Code: 01139
DUNS: 789994014
NAICS Codes: 325199, 332812
ISO 9001:2015, ISO 14001, ISO 50001 Certified†

Customer Service Centers

Worldwide

Email: commercial.services@momentive.com

Americas

+1 800 295 2392 Toll free
+ 1 704 805 6946 Direct number

Europe, Middle East, Africa, India, Pakistan, Bangladesh & Sri Lanka

+40 213 044229 Direct number

Asia Pacific

China

800 820 0202 Toll free
+86 21 3860 4892 Direct number

Japan

0120-975-400 Toll Free
+81-27620-6182 Direct number

South Korea

+82 2 6201 4600 Direct number

South East Asia, Australia & New Zealand

+60 3 9206 1543 Direct number

DISCLAIMER: THE MATERIALS, PRODUCTS AND SERVICES OF MOMENTIVE PERFORMANCE MATERIALS INC., MOMENTIVE PERFORMANCE MATERIALS USA INC., MOMENTIVE PERFORMANCE MATERIALS ASIA PACIFIC PTE. LTD., MOMENTIVE PERFORMANCE MATERIALS WORLDWIDE INC., MOMENTIVE PERFORMANCE MATERIALS GmbH, THEIR SUBSIDIARIES AND AFFILIATES DOING BUSINESS IN LOCAL JURISDICTIONS (collectively "SUPPLIERS"), ARE SOLD BY THE RESPECTIVE LEGAL ENTITY OF THE SUPPLIER SUBJECT TO SUPPLIERS' STANDARD CONDITIONS OF SALE, WHICH ARE INCLUDED IN THE APPLICABLE DISTRIBUTOR OR OTHER SALES AGREEMENT, PRINTED ON THE BACK OF ORDER ACKNOWLEDGMENTS AND INVOICES, AND AVAILABLE UPON REQUEST. ALTHOUGH ANY INFORMATION, RECOMMENDATIONS, OR ADVICE CONTAINED HEREIN IS GIVEN IN GOOD FAITH, SUPPLIERS MAKE NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, (i) THAT THE RESULTS DESCRIBED HEREIN WILL BE OBTAINED UNDER END-USE CONDITIONS, OR (ii) AS TO THE EFFECTIVENESS OR SAFETY OF ANY DESIGN INCORPORATING SUPPLIERS' PRODUCTS, MATERIALS, SERVICES, RECOMMENDATIONS OR ADVICE. AFOREMENTIONED EXCLUSIONS OR LIMITATION OF LIABILITY ARE NOT APPLICABLE TO THE EXTENT THAT THE END-USE CONDITIONS AND/OR INCORPORATION CONDITIONS CORRESPOND TO THE RECOMMENDED CONDITIONS OF USE AND/OR OF INCORPORATION AS DESCRIBED BY SUPPLIER IN ITS PRODUCT DATA SHEET AND/OR PRODUCT SPECIFICATIONS. EXCEPT AS PROVIDED IN SUPPLIERS' STANDARD CONDITIONS OF SALE, SUPPLIERS AND THEIR REPRESENTATIVES SHALL IN NO EVENT BE RESPONSIBLE FOR ANY LOSS RESULTING FROM ANY USE OF ITS MATERIALS, PRODUCTS OR SERVICES DESCRIBED HEREIN. Each user bears full responsibility for making its own determination as to the suitability of Suppliers' materials, services, recommendations, or advice for its own particular use. Each user must identify and perform all tests and analyses necessary to assure that its finished parts incorporating Suppliers' products, materials, or services will be safe and suitable for use under end-use conditions. Nothing in this or any other document, nor any oral recommendation or advice, shall be deemed to alter, vary, supersede, or waive any provision of Suppliers' Standard Conditions of Sale or this Disclaimer, unless any such modification is specifically agreed to in a writing signed by Suppliers. No statement contained herein concerning a possible or suggested use of any material, product, service or design is intended, or should be construed, to grant any license under any patent or other intellectual property right of Suppliers or any of its subsidiaries or affiliates covering such use or design, or as a recommendation for the use of such material, product, service or design in the infringement of any patent or other intellectual property right.

*InvisiSil, SilCool and SnapSil are trademarks of Momentive Performance Materials Inc.
Momentive and the Momentive logo are trademarks of Momentive Performance Materials Inc.

† Momentive demonstrates its global commitment to quality and environmental, health and safety performance through multiple third party certification programs. Certifications may vary by product, country and region. For more information visit: <https://www.momentive.com/operational-excellence/accreditations>