

High Temperature Ceramics

Properties and Part Selection

Overview



Selection Table - Ceramic-Based Adhesive Properties

Features	Elec. Resistant		Therm. Conductive		Single Component		Silica
Properties	919	920	908	906	989	907GF	905
Properties	High Elec. Resistance	Thermally Conductive	Elec. Resistant & Therm. Conductive	High expansion	General purpose	Fire proof sealant	Low Expansion
Service Temperature	1540°C	1650°C	1650°C	1650°C	1650°C	1260°C	1370°C
Base	MgO-ZrO ₂	Al ₂ O ₃	Al ₂ O ₃	MgO	Al ₂ O ₃	MICA	SiO ₂
Compression Strength psi	4500	4500	3000	3000	3000	3500	3200
Flexural Strength psi	450	450	1100	1500	1100	1250	2100
Thermal Expansion (x 10 ⁻⁵ / °C)	4.7	8.1	8.1	12.6	8.1	8.1	0.5
Thermal Conductivity W/m°C	0.6	2.2	2.2	5.7	2.2	0.9	1.9
Dielectric Strength volt/mil	270	270	200	250	200	300	200
Volume Resistivity ohm-cm	10 ¹¹	10 ¹¹	10 ¹⁰	10 ⁹	10 ⁸	10 ⁹	10 ¹¹
Components	2	2	2	2	1	1	2
Mix Ratio (by weight)	100:13	100:14	100:33	100:42	N/A	N/A	100:60
Colour	Tan	White	White	White	White	Grey	White
Consistency	Paste	Paste	Paste	Paste	Paint	Paste	Paste

Resbond™ 970 Kit Ceramic Adhesive Selector Kit

This selector kit contains seven 4 oz. samples of Cotronics Speciality Adhesives (901 fibre based, 919 Electrically Resistant, 940 Fast Setting Ceramic, 950 Metallic Aluminium, 989 General Purpose, 7030 High Strength and 907GF Adhesive and Putty). Please contact us for additional information. The 970N Selector Kit is the ideal choice for simplifying product evaluation and selection.

Resbond 970N Selection Kit



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Selection Table - Ceramic-Based Adhesive Properties (Continued)

Features	Fast Set	Ultra Temperature			Metallic	
Properties	940	904	931	950	952	954
Properties	Fast setting, Zircon	Ultra temperature, Zirconia	Ultra temperature, Graphite	Aluminium base	Nickel base	Stainless base
Service Temperature	1100°C	2200°C	2980°C	950°C	1100°C	1100°C
Base	Zircon	ZrO ₂	Carbon	Aluminium	Nickel	Stainless
Compression Strength psi	4000	6000	3000	4000	5000	4500
Flexural Strength psi	1800	3000	1500	3000	3000	2500
Thermal Expansion (x 10 ⁻⁵ / °C)	8.1	7.4	7.2	18	7.2	18
Thermal Conductivity W/m°C	1.2	1.4	8.6	6.3	2.0	1.4
Dielectric Strength volt/mil	125	250	Cond.	Cond.	Cond.	Cond.
Volume Resistivity ohm-cm	10 ⁸	10 ⁸	Cond.	Cond.	Cond.	Cond.
Components	2	1	2	2	2	2
Mix Ratio (by weight)	100:28	N/A	100:35	100:100	100:72	100:46
Colour	Tan*	Tan	Black	Grey	Grey	Grey
Consistency	Paste	Paint	Paste	Paste	Paste	Paste

CERAMIC compounds and materials, operating temperatures up to **2,980°C**

High Temperature Ceramics

Resbond®

Adhesives and Fillers

Resbond® 919

1530°C Electrically Resistant

Provides exceptionally high electrical resistance and dielectric strength even when exposed to extreme temperatures. Just mix to a creamy paste, apply and cure at room temperature. Commonly used for electrical insulation when potting, sealing, or coating igniters, thermocouples, heating coils and instrumentation.

Resbond 919-1 Quart kit

Resbond 919-2 Gallon kit



Resbond® 920

1650°C Thermally Conductive

An Alumina-based ceramic, 920 should be used whenever rapid dissipation of heat is required. A room temperature curing system, can be accelerated with mild heat if required. Applications include bonding high temperature resistors, pyrometers, heating elements etc.

Resbond 920-1 Quart kit

Resbond 920-2 Gallon kit



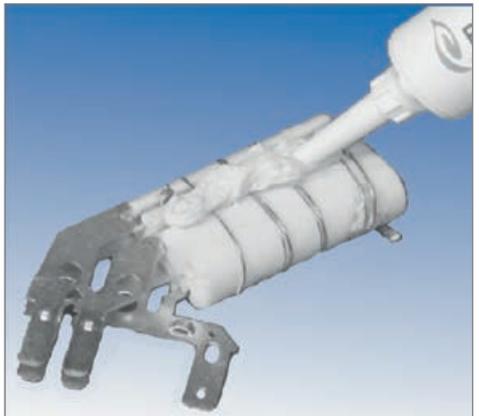
Resbond™ 908

1650°C Electrically Resistant & Thermally Conductive

A high purity, Alumina-based adhesive, with excellent electrical and moisture resistance, plus good thermal conductivity. Just mix the resin and it's activator for a readily dispensable smooth creamy paste. Ideal for bonding, potting and encapsulating delicate electronic assemblies, sensors and instrumentation, and any general purpose high temperature application.

Resbond 908-1 Pint kit

Resbond 908-2 Quart kit





High Temperature Ceramics

Resbond®

Adhesives and Fillers



Resbond™ 906

1650°C High Expansion Adhesive

Formulated for bonding high expansion materials including steel, stainless, aluminium, brass, copper, silver and nickel amongst others. Will cure at room temperature to form a highly thermally conductive bond. Resistant to flame impingement and most liquid metals. Electrically insulating, 906 also has excellent resistance to most chemicals and solvents.

Resbond 906-1	Pint kit
Resbond 906-2	Quart kit
Resbond 906T-1	Thinner (pint)



Resbond® 989

1650°C Single Component

A high purity, Alumina based adhesive, 989 has a creamy consistency and cures at room temperature to form strong bonds to ceramics, graphite, metals and glass. Applications include bonding electrical components, thermocouples, heat sensors and critical electronic components. Also available in Fast Set (FS) and Fine Particle variants (F).

Resbond 989-1	Quart kit
Resbond 989-2	Gallon kit



Resbond® 903HP

1780°C Single Component

Developed for high strength bonding of any combination of dense non-porous ceramic, glass and non-reactive metals. Just re-mix and apply, can be brushed, trowelled or sprayed on. Thermal cure cycle required. Has excellent electrical properties and is resistant to liquid metals, oxidising and reducing atmospheres and most chemicals and solvents.

Resbond 903HP-1	Pint kit
Resbond 903HP-2	Quart kit
Resbond 903HP-3	Thinner (pint)

High Temperature Ceramics

Resbond®

Adhesives and sealants

Resbond™ 907GF

1260°C Fireproof Adhesive, Sealant & Putty

A moist, fireproof adhesive sealant, applied via a standard caulking cartridge, 907GF has excellent adhesion to clean steel, stainless, iron and most metals, plus ceramics, ceramic cloth, tape and gaskets. Applications include repair and sealing of exhaust systems, pipe joints, stacks, flues, fire bricks, mortar etc

Resbond 907GF-1	1/2 pint
Resbond 907GF-2	Quart
Resbond 907GF-5	3 x 4oz dispenser tubes
Resbond 907GF-6	11 oz cartridge
Resbond 907GF-7	Smooth fine grade 11 oz

Resbond™ 905

1370°C Low Expansion Adhesive

Specifically formulated for bonding low expansion and thermal shock resistant ceramics. The thermal expansion closely matches that of Quartz, Fused Silica, Corderlite and Glass. Used as a replacement for standard ceramic adhesives that may crack or weaken on thermal cycling.

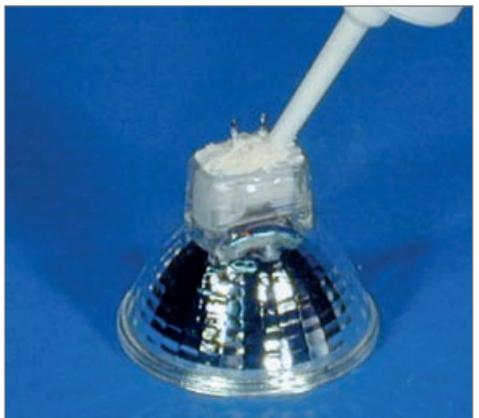
Resbond 905-1	Pint kit
Resbond 905-2	Quart kit
Resbond 905T-1	Thinner (pint)

Resbond™ 940 Range

1100°C Fast Setting Adhesives

Fast setting, customisable adhesives are designed to eliminate costly errors caused by bonding adhesive and substrate with mismatched physical properties. Choose from Standard, High Temperature, Low Expansion, High Expansion and Stainless Steel.

Resbond 940-1	Quart kit
Resbond 940-2	Gallon kit
Resbond 940-3	Thinner (pint)
Resbond 940HT	High Temperature, 1530°C
Resbond 940LE	Low Expansion, 1370°C
Resbond 940HE	High Expansion, 980°C
Resbond 940SS	Stainless Steel, 1100°C



High Temperature Ceramics

Resbond®

Adhesives and fillers



Resbond™ 904

2200°C Zirconia Adhesive and Coating

Designed as a smooth creamy paste that is easily brushed on to ceramics, graphite, metals, etc. to form adhesive bonds and coatings that will provide continuous protection.

- Resbond 904-1 Pint kit
- Resbond 904-2 Quart kit
- Resbond 904-4 Thinner (pint)

Resbond™ 931

2980°C Electrically Conductive Adhesive

Bonds graphite or carbon components for use to 3000°C with 99% pure graphite. Simply mix the 931 Graphite powder with its activator to a creamy paste, apply and cure at 120°C.

- Resbond 931-1 Pint kit
- Resbond 931-2 Quart kit
- Resbond 931-3 Gallon kit
- Resbond 931-4 Thinner (pint)

- Resbond 931S Graphite sealer (pint)
- Resbond 931C-1 Ceramic Bonded Graphite, Pint kit

Resbond™ 950 Range up to 1100°C Metallic Adhesives

These three metallic composite adhesives offer some of the ductility and impact resistance associated with soldering and welding. Just mix, apply and cure at room temperature with no odours or VOC's.

- Resbond 950 Aluminium based
- Resbond 952 Nickel based
- Resbond 954 Stainless Steel based
- Resbond 954OD Minimised porosity

Available as an adhesive or putty in various sizes. Please contact us for further details

Ceramic Putties

Durabond®

Overview

Durabond™ 7025

530°C Aluminium Putty

Formulated with active aluminium particles to provide resistance to corrosion, erosion, chemicals and solvents. This creamy paste is easily applied to form a smooth surface that is ideal for any high temperature repair of cracks and voids, rebuild worn or eroded areas, sealing and protection. 7025 cures in 24 hours or 2 hours at 120°C, to form a highly machinable sealant.

Available in 0.5Kg and 1 Kg containers.

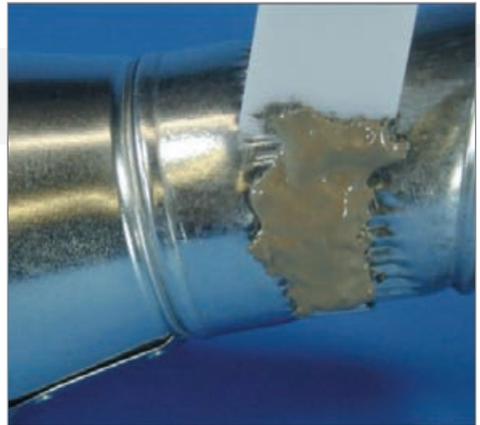


Durabond™ 7032

1100°C Stainless Steel Putty

A single part, smooth creamy paste is easy to use. Just mix and apply. User friendly, does not contain flammable solvents. 7032 has excellent adhesion and is resistant to most chemicals, solvents and elevated heat. Ideal for high temperature repairs, rebuilding, filling holes, plugging leaks in automotive, maintenance and industrial applications. 7032 does not run, drip or sag while applying and hardening starts in just 60 minutes and cures in 24 hours at room temperature.

Available in 0.5Kg and 1 Kg containers.



Ceramic Putties Features Table

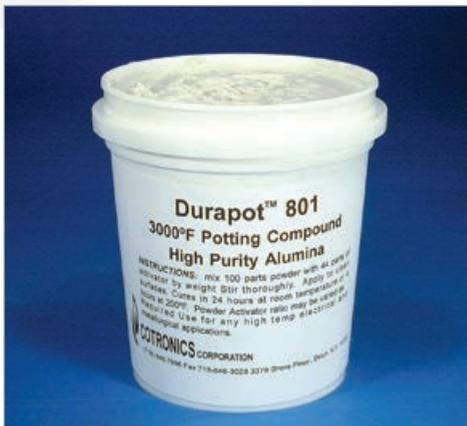
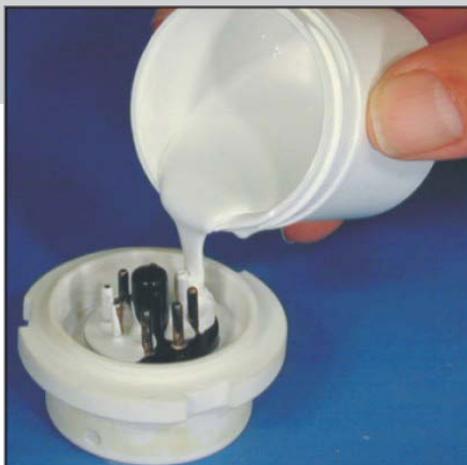
Product	7025	7032
Service Temperature °C	530	1100
Base	Al	SS
Compression Strength psi	4,800	5,400
Bond Strength (psi @ room temperature)	1,400 @ 540°C	1,200 @ 540°C
Thermal Expansion (10 ⁻⁶ / °C)	10	10
Thermal Conductivity (W/m°C)	4.32	1.44
Components	2	1
Mix Ratio	100:55	N/A
Viscosity	Paste	Paste
Density (g/cc)	2.2	3.5
Working Time (minutes)	N/A	N/A
Cure @ room temperature (hours)	16	16

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Ceramic Potting Compounds

Durapot®

Overview



Durapot™ 801

1840°C Pure Alumina Ceramic

Room temperature curing, 99% pure Alumina ceramic. Does not contain binders to contaminate even the most delicate systems.

Durapot™ 804 and 805

1650°C Alumina Potting Compounds

Formulated to provide a high strength, commercial, Alumina potting and casting material.

Durapot™ 809

1540°C Electrically resistant Cement

Based on Magnesium Oxide it is electrically resistant and offers excellent chemical resistance.

Durapot™ 810

1650°C Thermally Conductive Compound

Alumina based, thermally conductive potting compound and adhesive.

Durapot™ 814

1100°C High Speed Potting Cement

Will cure in 5 minutes at 80°C to 110°C or overnight at room temperature.

Durapot™ 821

1370°C Low Expansion Cement

Quartz based fast curing adhesive and potting compound, perfect for any low expansion material.

Ceramic Potting Compounds Features Table

Product	801	804	805	809	810	814	821
Special Feature	Pure Alumina	Small Parts	Large Castings	High Dielectric	Therm. Cond.	Fast Cure	Low Expansion
Base	99% Alumina	96% Alumina	96% Alumina	MgO	Alumina	Zirconia Silicate	Fused Silica
Temperature Limit °C	1800	1650	1650	1530	1650	1100	1370
Volume Resistivity (ohm-cm)	10 ¹⁵	10 ¹⁰	10 ¹⁰	10 ¹¹	10 ¹¹	10 ⁸	10 ⁸
Dielectric Strength (v/mil)	350	175	175	270	270	125	125
Thermal Expansion (10 ⁻⁶ / °C)	7.74	7.20	7.20	4.68	8.10	8.10	0.54
Thermal Conductivity (W/m°C)	1.152	1.152	1.44	0.576	2.16	1.152	0.72
Pot Life	15 min	30 min	30 min	20 min	20 min	20 min	20 min
Cure Time @ room temp.	24 hrs	24 hrs					
Mix Ratio	100:44	100:19	100:12	100:13	100:13	100:14	100:44

Machinable & Castable

Rescor®

Overview

Rescor™ 902 Series

600°C-1150°C Machinable Alumina Silicate

Provides excellent electrical, mechanical & thermal properties, is resistant to most acids, chemicals, solvents and has excellent thermal shock resistance. Can be turned, drilled & shaped to produce sharp, detailed parts. 600°C or 1150°C after heat treatment.

Rescor™ 914

425°C Machinable Glass Ceramic

A dense and vacuum tight material that is easily machinable with standard workshop cutting tools, **914** combines high impact and mechanical strength, low thermal conductivity and superior electrical resistance.

Macor™ 915

980°C Glass Ceramic

A dense and vacuum tight glass ceramic composite with zero porosity, **915** can be readily ground, sawn, turned, tapped, milled and drilled, offering excellent electrical properties even at high frequencies. No heat treatment required.

Rescor™ 960 & 961

1650°C Machinable Alumina

Provides the chemical, thermal and electrical properties of standard high purity alumina ceramics. **960** offers excellent chemical, thermal & electrical properties and can be machined with conventional workshop tooling. **961** offers high strength, zero porosity material with extreme wear resistance (requires special tooling for machining).

Rescor™ 310M & 311

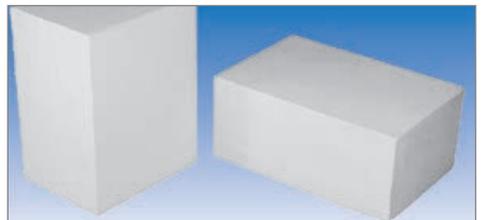
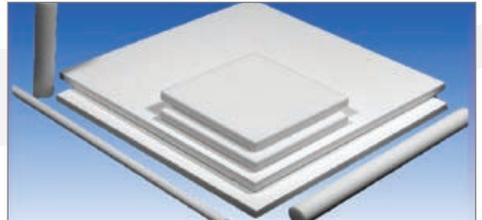
1650°C Machinable Ceramic Blocks

310M Ceramic foam is composed of over 99% pure Fused Silica ceramic and offers low thermal expansion and conductivity, high thermal shock resistance and high thermal reflectance. It is easily cut, sawn and drilled. **311** is a lower cost version where the fine grain structure of **310M** is not required.

Rescor™ 7XX Range

to 2200°C Castable Ceramic

Choice of Alumina **740**, Silicone Carbide **750**, Zirconium Oxide **760**, Fused Silica **770** and Low density ceramic foam **780**. Offering resistance to high temperature, thermal shock, molten metals, oxidising, erosion, most acids and alkalis. Just mix and pour into any non-absorbent mould, leave to harden to produce highly detailed ceramics.



Flexible Ceramics

Tapes, Cloth & Blankets

Overview



Thermeez™ 395 & 397

to 815°C Ceramic Woven Fibre

Woven from industrial grade, asbestos free ceramic fibres, **395** usable to 595°C & **397** usable to 815°C. User-friendly and non-irritating to the skin, non-toxic, meets OSHA requirements and will not burn. High strength, flexible, durable, dimensionally & chemically stable and provides excellent electrical resistance.

Thermeez™ 399

1100°C Silica Fibre

Woven from 96% pure silica fibre, totally inorganic and will not smoke when exposed to high heat. **399** is ideal for thermal and electrical insulation, handling molten metals and is available in a wide variety of forms including Sleeving, Rope, Cloths, Seals and Pads etc.

Ultra Temp 390

1260°C Ceramic Paper

Made from non-woven, Alumina Oxide based, high purity, refractory fibres, available in 25mm, 50mm and 75mm wide ready to use rolls. Resistant to molten metal sparks and splashes, most chemicals and solvents. Can be cut with ordinary scissors, and be formed into complex shapes.

Thermeez™ 391

1425°C Fibre Products

Non-hydroscopic, non-porous, continuous filament, high alumina, ceramic fibres. These filaments are woven into a flexible, high strength, abrasion resistant material, offering excellent chemical and electrical resistance. Available as tapes, adhesive backed tapes, cloth, thread and rope

Rescor™ 370

to 1650°C Ceramic Fibre Blankets

Offers outstanding thermal insulation, low thermal conductivity and heat storage, good dielectric strength, high resiliency, mechanical & thermal shock resistance plus sound absorption. Non-combustible and will not smoke or spread flame. Available in four specifications offering 1260°C - 1650°C performance.

Thermal Stop 375

1260°C Super Efficient Insulation

High purity, aluminium oxide based, ceramic fibres uniquely bonded to a layer of aluminium foil. These resilient fibre strips can be used for pipe duct wrap, expansion joints and repairs. Use band clamps or high temperature tapes to secure.