Rayfast

July 2017

Cotronics®

Adhesives, Tapes, Fillers Coatings and Cloth

Ultra High Temperature Adhesives

- **Epoxy** Compounds
- **Ceramic** Compounds
- **Flexible** Tapes, Cloths
- **Machinable** Castable
- **Miscellaneous**

Introduction

Extensive range of speciality compounds for electrical, structural and industrial applications

We provide a range of high performance adhesives, fillers, coatings, tapes and cloths designed for operation under the harshest environmental conditions.

The products are ideally suited for insulating and bonding to an extensive range of materials, including metals, ceramics, plastics and glass, with the majority offering the advantage of curing at room temperature.

The products can be found across many industries including Aerospace, Automotive, OEM Electronics, Fabrication and Foundries, with an extensive range of applications covering bonding, potting, sealing, casting, moulding and coating.

For whatever the application demands, be it sustained high temperature operation, thermal shock stability, corrosion, abrasion and/or chemical resistance while maintaining excellent electrical and mechanical performance characteristics, we have a solution.

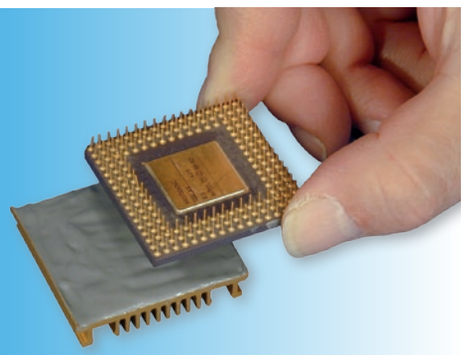
Duralco® High Temperature Epoxies Bonding and Filling to 340°C

Resbond® High Temperature Ceramics, Adhesives, Fillers and Coatings to 3,000°C

Information on the two above product ranges can be found in this section. Please note that not all product is supplied in syringes (dispensing tubes) as shown, these are available as an option on request. Please contact us for details.

EPOXY Compounds

A comprehensive range of products offering both ambient and heat cure compounds, plus two part or single component.



Operating temperatures up to

340°C

CERAMIC Compounds

Selection of ceramic compounds of various base materials, offering broad range of operational applications.

Operating temperatures up to

2980°C

FLEXIBLE Ceramics

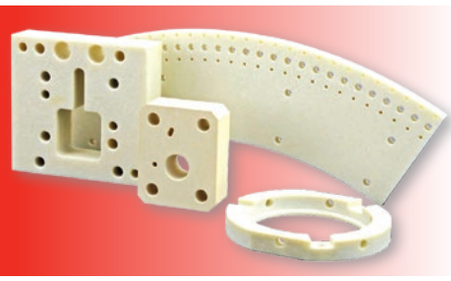
Fire and temperature protection.

Operating temperatures up to

1650°C

MACHINABLE Ceramics

Including; High strength alumina and glass ceramic.



Operating temperatures up to

3000°C

Miscellaneous

Including; Thread locker and pipe sealant, installation instructions.

Please note that the weights and volumes used in this product guide are American and NOT standard Imperial.
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Epoxies

Introduction and Selection Table

Bonding Adhesives, Potting Compounds and Conductive Epoxies

A comprehensive range of products offering the ability to choose the material that most closely matches the specific details of your application. The details would include the temperature range, electrical and thermal properties, thermal expansion, viscosity, hardness and any process limitation that you may have (eg. cure procedures). The table below represents the most popular compounds with additional details and choices outlined within this guide.

EPOXY compounds offering operating temperatures of up to **340ºC**

Features	Conductive		Room Temperature Cure				Thermal Cure			Machinable		Single
Product Ref	120	132IP	4461IP	4525IP	4538	7050	4460	4700	4703	4540	454B	4420
Properties	Super electrically conductive	Highly thermally conductive	Low viscosity adhesive	Electrically resistant, general purpose	Super flexible stress free adhesive	Nylon bonder, bonds most plastics	High temp. low viscosity	High temp. adhesive and casting	Ultra temp, tooling repairs	Liquid metal, casting and repairs	Non-sag putty, adhesive	One component structural
Maximum Temp	260ºC	260ºC	260ºC	260ºC	230ºC	205ºC	315ºC	315ºC	340ºC	260ºC	230ºC	230ºC
Components Colour	Silver	Silver	Amber	Black	Tan	Black	Amber	Black	Black	Silver	Silver	Grey
Viscosity cps	25,000	36,500	600	25,000	10,000	20,000	600	40,000	50,000	30,000	100,000	Paste
Density gm/cc	3.8	1.8	1.1	1.7	1.0	1.3	1.1	1.8	1.8	1.9	1.9	1.2
Hardness Shore 'D'	70	75	90	90	60 - 80	70	90	94	95	80	80	75
Tensile Strength psi	6,500	7,200	9,500	10,000	6,000	5,000	10,300	11,100	11,800	10,000	10,000	7,000
Thermal Conductivity (W/mºC)	7.2	5.7	0.57	1.9	1.0	0.65	0.57	1.9	2.6	5.0	5.0	1.2
Thermal Expansion(x 10^{-5} / ºC)	5.4	8.0	5.4	3.3	6.0	4.8	6.4	6.4	6.8	8.0	8.0	4.5
Dielectric Strength kV/mm	N/A	3.9	17.55	17.55	17.55	15.6	19.5	21.45	17.55	3.9	3.9	15.6
Volume Resistivity ohm-cm	0.00008	106	10^{13}	10^{15}	10^{14}	10^{14}	10^{14}	10^{14}	10^{10}	10^{8}	10^{10}	10^{10}
Heat Distortion ºC	210	210	210	210	75	75	260	300	320	225	200	175
Elongation %	0.2	0.2	5.0	2.0	12 - 100	3.0	5.0	2.0	2.0	1.2	1.2	1.5
Thermal Stability % (1000hr @ 200ºC)	0.2	0.2	0.2	0.05	0.5	0.5	0.1	0.1	0.02	0.5	0.5	0.6
Shrinkage % max	0.2	0.8	0.8	0.2	0.8	0.8	0.5	0.2	0.1	0.1	0.2	0.3
Moisture Absorption % 30 Days	0.2	0.2	0.15	0.1	0.5	0.2	0.1	0.02	0.15	0.2	0.2	0.5
Mix Ratio (by weight)	100:3.4	100:8	100:17	100:8	100:120	100:10	100:80	100:28	100:22	100:9	100:11	n/a
Working Time 25gms (mins. @ 24ºC)	30	30	30	30	90	30	n/a	n/a	n/a	30	30	n/a
Cure (hrs. @ 24ºC)	16-24	16-24	16-24	16-24	16-24	4-16	n/a	n/a	n/a	16-24	16-24	n/a
Cure (mins. @ 120ºC)	7	5	5	5	60	1-2 hrs*	4 hrs	4 hrs	4-6 hrs	8	10	30

* Temperature @ 93ºC

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Epoxies Electrically Conductive

Duralco® 12x Series

Duralco® Conductive adhesives and potting compounds provide the conductivity required for many high temperature electronic and industrial applications.

These ultra temperature adhesives combine unique resins and hardeners with specialty conductive fillers to provide continuous service up to 340°C

They will bond to glass, ceramics, metals and plastics, offering excellent resistance to most chemicals and solvents.

Applications include solder replacement, semi-conductor bonding, shielding, electronics, circuit board repair, etc.

Duralco 120 - 260°C High Conductivity, Silver Based

Epoxy that cures at room temperature to form electrically conductive bond lines for use up to 260°C. Contains over 70% ultra fine active silver to provide the ultimate in electrical conductivity. Ideal for forming electrically conductive bonds, attaching heat sensitive components and as a solder replacement.

Duralco 120-1	2oz kit
EE 120-2	Pre-Measured kit - Set of 3 units
EE 120-3	Pre-Measured kit - Set of 6 units
EE 120-10	Pre-Measured kit - Set of 10 units

Each unit of pre-measured kit includes 10g jar of resin, syringe of hardener and mixing stick.

Duralco 122 - 260°C Nickel Based

Nickel filled adhesive and casting epoxy is specially formulated to provide an economical alternative to silver filled conductive epoxies. Ideal for use in applications where the ultimate in electrical conductivity is not required.

Duralco 124 - 340°C Ultra Temp, Silver Based

Two component, silver filled adhesive for High Power applications. Just mix and cure with mild heat.

Duralco 125 - 230°C Flexible, Silver Based

Easy to use, “one to one”, applicator kit. Just dispense, mix and apply this smooth creamy paste and cure at room temperature. Bonds to most metals, ceramics and plastics to form stress free, electrically conductive bonds.

Duralco 126 - 230°C Single Part, Silver Filled

A single component highly conductive epoxy specifically designed for production applications. Will bond glass, ceramics, metals and plastics. Applications include solder replacement, semi-conductor bonding, circuit board repair and more.

Duralco 127 - 200°C Graphite Based

Easy to use, “one to one”, applicator kit. Just dispense, mix and apply. This smooth creamy paste cures at room temperature and is ideal for low cost production applications. Can be used in automatic dispensing equipment.

Product Ref	120	122	124	125	126	127
Maximum Temperature	260°C	260°C	340°C	230°C	232°C	204°C
Volume Resistivity (ohm-cm)	0.00008	0.7	0.002	0.002	0.002	0.02
Thermal Conductivity (W/m°C)	7.2	2.16	7.2	5.76	7.2	3.6
Viscosity (cps)	25,000	25,000	20,000	50,000	15,000	50,000
Cure Cycle (hours @ 25°C)	16 - 24	16 - 24	4 @ 120°C	16 - 24	30 mins. @ 135°C	16 - 24
Cure Cycle (@ 95°C)	10 mins.	10 mins.	n/a	20 mins.	10 mins. @ 160°C	20 mins.
Colour	Silver	Silver	Silver	Silver	Silver	Black
Number of Components	2	2	2	2	1	2
Size (ounces)	2 oz	4 oz	2 oz	1 oz	2 oz	2.5 oz

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Epoxies Thermally Conductive

Duralco® 128 and 13x Series

Duralco® Thermally Conductive Adhesives and potting compounds provide the heat dissipation required for many high temperature electronic and industrial applications.

These high temperature adhesives combine unique polymer systems and special thermally conductive fillers to provide continuous service up to 315ºC.

Duralco conductive adhesives have excellent adhesion to glass, ceramics, metals and plastics.

Duralco 128 • 260ºC Electrically Resistant, Ceramic Based

A highly thermally conductive, electrically resistant adhesive and potting compound. The ceramic fillers are carefully chosen to provide high thermal conductivity and high dielectric strength. Just mix the resin and hardener, apply and cure at room temperature. Curing may be accelerated with mild heat.

Duralco 132IP • 260ºC High Conductivity, Aluminium Based

An Aluminium metal filled epoxy that cures at room temperature, to form machinable, thermally conductive bond lines. Provides the maximum heat transfer available in a 260ºC epoxy system. Can also be supplied as a non-sag putty, Duralco 132IP-P, for heat tracing applications.

132IP-1	16oz kit
132IP-2	32oz kit
132IP-P	32oz putty
EE 132IP-10	Pre-Measured kit - Set of 10 units
EE 132IP-25	Pre-Measured kit - Set of 25 units

Each unit of pre-measured kit includes 10g jar of resin, syringe of hardener and mixing stick.

Duralco 133 • 315ºC High Temperature, Aluminium Based

A two component, heat curing, Aluminium filled, conductive epoxy. Cures with mild heat to form thermally conductive bond lines and heat transfer medium. It is readily machinable and ideal for all kinds of repairs and as a construction material.

Duralco 134 • 260ºC Electrically Resistant, Grease

Non-hardening, electrically insulating and thermally conductive ceramic grease. Ideal for use between components and heat sinks. Retains its paste like consistency, enabling parts to be easily removed and replaced and will not dry out even after extended periods of time.

Duralco 135 • 260ºC Thermally Conductive,Grease

Filled with an ultra fine, aluminium metal powder to provide the maximum possible heat transfer rate in a non-hardening grease. Commonly used in many industrial applications where electrical resistance is not critical.

Product Ref	128	132IP	133	134	135
Max Temp. (ºC)	260	260	315	260	260
Volume Resistivity (ohm-cm)	10^{16}	10^{5}	10^{5}	10^{16}	n/a
Thermal Conductivity (W/mºC)	4.32	5.76	5.76	5.04	5.76
Viscosity (cps)	15,000	36,500	36,500	Grease	Grease
Colour	Tan	Silver	Silver	Tan	Grey
Number of Components	2	2	2	1	1
Mix Ratio	100:21	100:8	100:30	n/a	n/a
Cure Cycle (hrs. @ 25ºC)	16 - 24	16 - 24	4 hours @ 120ºC	n/a	n/a
Cure Cycle (minutes @ 120ºC)	20	5	240	n/a	n/a
Size (ounces)	8	16	16	8	4 or 8

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Epoxies Ambient Cure

Duralco® 4525IP, 4538, 4461IP and Bond-IT 7050

Duralco 4525IP • 260°C Electrically Resistant

Cures at room temperature, or in 5 minutes at 120°C, to provide high temperature stability, high bond strength, low shrinkage, low moisture absorption and excellent chemical and electrical resistance. Ideal for high performance bonding, potting, sealing, repairs and casting.

4525IP-1 Pint kit
4525IP-2 Gallon kit

Also available in pre-measured kits.

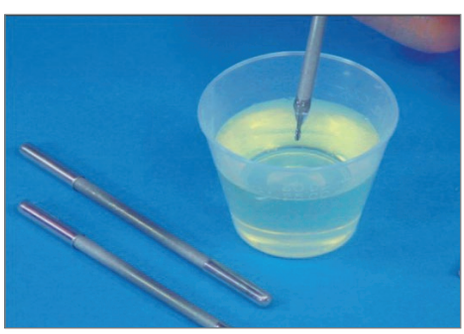
Duralco 4538 • 230°C Super Flexible

Provides a high level of thermal shock and vibration resistance, sound absorption and excellent adhesion to dissimilar substrates.

Offers the flexibility of silicones and chemical stability of epoxies. Can be tailored by varying the mix ratio of resin to hardener, resulting in the flexibility required.

4538-1 Pint kit
4538-2 Gallon kit

Also available in pre-measured kits.



Duralco 4461IP • 260°C Low Viscosity

A free flowing liquid adhesive, ideal for ultra thin bond lines, impregnating, coating and encapsulation. Cures at room temperature.

4461IP-1 Pint kit
4461IP-2 Gallon kit

Slow setting version
4461SS-1 Pint kit
4461SS-2 Gallon kit

Also available in pre-measured kits,.

Bond-IT 7050 • 205°C Nylon Bonder

An activated epoxy that incorporates adhesion promoters. Adheres to most plastic surfaces producing bonds that are, in many cases, stronger than the plastic substrates themselves.

Bonds combinations of dissimilar materials such as metals, ceramics, plastics and glass.

7050-1 Dispenser kit
7050-2 Pint kit

Product Ref	4525IP	4538	4461IP	7050
Max Temp. (°C)	260	230	260	205
Volume Resistivity (ohm-cm)	10^{15}	10^{14}	10^{13}	10^{14}
Thermal Conductivity (W/m°C)	1.9	1.0	0.57	0.65
Viscosity (cps)	25,000	10,000	600	20,000
Colour	Black	Tan	Amber	Black
Number of Components	2	2	2	2
Mix Ratio	100:8	100:120	100:17	100:10
Cure Cycle (hrs. @ 25°C)	16 - 24	16 - 24	16 - 24	4 - 16
Cure Cycle (minutes @ 120°C)	5	60	5	1 - 2 hrs
Tensile Strength (psi)	10,000	6,000	9,500	5,000

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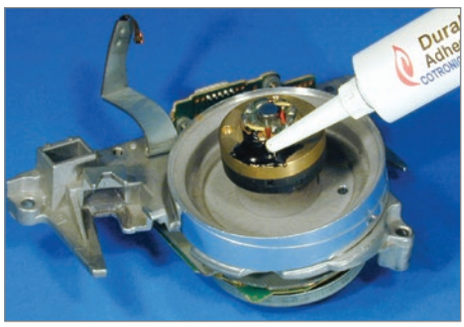
Epoxies Thermal Cure

Duralco® 4460, 4700 and 4703



Low viscosity 4460 has been used on tightly wound wire coils for an electronic high temperature applications.

Duralco 4460 - 315°C Low Viscosity

For encapsulating and impregnation with a superior temperature rating, forms a protective coating, seals and protects against moisture, chemicals and corrosion. Provides high bond strength, high temperature stability and low moisture absorption. Commonly found in aerospace, electronic, appliance, instrumentation and equipment applications.

4460-1	Pint kit
4460-2	Gallon kit
EE 4460-10	Pre-Measured kit - Set of 10, 10g units
EE 4460-25	Pre-Measured kit - Set of 10, 25g units

Each unit of a pre-measured kit includes a jar of resin, syringe of hardener and mixing stick.

Duralco 4700 - 315°C Bonding Adhesive

An exceptionally durable epoxy, 4700 has excellent adhesion to metals, glass, ceramics and most plastics. This superior adhesive has high electrical resistance, low moisture absorption, high temperature stability and excellent chemical resistance. Requires thermal cure cycle.

4700-1	Pint kit
4700-2	Gallon kit

Duralco 4703 - 340°C Adhesive Tooling Compound

A composite of unique high temperature resins, metallic and ceramic particles, 4703 provides the ultimate in stability and strength in high temperature environments. It has excellent resistance to most chemicals, solvents and acids and is easily machined to close tolerances. Requires a thermal cure cycle.

4703-1	Pint kit
4703-2	Gallon kit
EE 4703-10	Pre-Measured kit - Set of 10, 10g units
EE 4703-25	Pre-Measured kit - Set of 10, 25g units

Each unit of a pre-measured kit includes a jar of resin, syringe of hardener and mixing stick.

Properties	4460	4700	4703
Volume Resistivity (ohm-cm)	10^{14}	10^{14}	10^{10}
Thermal Conductivity (W/m°C)	0.57	1.87	2.60
Thermal Expansion (10^{-5} / °C)	5.4	3.7	3.9
Viscosity (cps)	600	40,000	50,000
Tensile Strength (psi)	10,300	11,100	11,800
Thermal Stability (1000 hrs)	0.10% @ 200°C	0.1% @ 200°C	0.02% @ 200°C
Hardness (Shore D)	90	94	95
Dielectric Strength (kV/mm)	19.50	21.45	17.55
Moisture Absorption (30 days %)	0.10	0.02	0.15
Components / Colour / Mix Ratio	Two / Amber / 100:80	Two / Black / 100:28	Two / Black / 100:22
Cure Cycle (hrs. @ 120°C)	4	4	4 - 6

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Epoxies Machinable

Duralco® 4540, Durabond® 454, 456 and Bond-IT® 7056AL

Duralco 4540 - 260°C Liquid Metal

4540 is a pourable Aluminium metal filled epoxy that offers outstanding adhesion, ductility, thermal conductivity and shock resistance. Just mix and apply. No solvents. No out gassing. Either room temperature or thermal cure cycle. Has excellent resistance to chemicals and solvents.

4540-1	Pint kit
4540-2	Gallon kit

Also available in pre-measured kits, please contact us for details.

Durabond 454B and RK454 - 260°C Machinable Non-Sag Putty

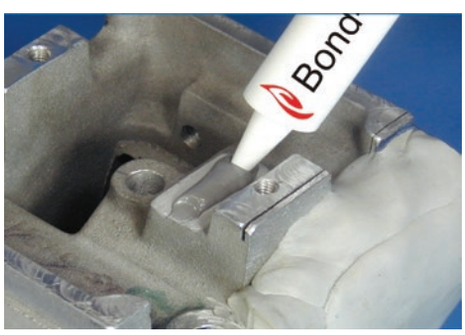
A smooth aluminium based creamy putty that cures at room temperature to form a highly machinable, composite. Ideal for patching leaking pipes, valves and fittings, repairing pumps.

RK456 is a stainless steel based version of 454.

454B-1	0.5Kg bulk pack
454B-2	2.0Kg bulk pack
RK454	Repair kit; 2.5oz Resin, 0.6oz Hardener, plus sandpaper, mixing sticks and reinforcement screen.

Plus a stainless steel based version

RK456	Repair kit; 2.5oz Resin, 0.6oz Hardener, plus sandpaper, mixing sticks and reinforcement screen



Duralco 4540 has been used to cast integrally heated moulds for injection moulded plastic parts, 4540's high thermal conductivity and durability resulted in highly detailed parts with exceptional wear resistance.

Bond-IT® 7056AL - 230°C Instant Metal

A unique super fast setting, machinable repair epoxy. Dispensed via a hand held, side by side dispenser tube, it will not drip or sag when applied and will cure in 4-8 minutes at room temperature. Bond-IT has excellent adhesion to smooth, rough or porous surfaces, most plastics, metals, ceramics, glass, wood and cures to form a hard, durable, machinable epoxy that can be machined, tapped or drilled.

7056AL-1	2 oz Applicator kit
7056AL-2	8 oz Applicator kit

Properties	4540	454B & RK454	RK456	7056AL
Volume Resistivity (ohm-cm)	10^8	10^{10}	10^{10}	10^8
Thermal Conductivity (W/m°C)	5.0	5.0	1.73	2.88
Thermal Expansion (10^{-5} / °C)	8.0	8.0	8.0	6.12
Viscosity (cps)	30,000	100,000	Paste	40,000
Tensile Strength (psi)	10,000	10,000	12,000	10,000
Thermal Stability (1000 hrs)	0.5% @ 200°C	0.5% @ 200°C	-	0.3% @ 200°C
Hardness (Shore D)	80	80	-	65
Dielectric Strength (kV/mm)	3.9	3.9	-	3.9
Moisture Absorption % (30 days)	0.2	0.2	-	0.5
Colour	Silver	Silver	Silver	Silver
Components / Mix Ratio	2 / 100:9	2 / 100:11	2 / 100:6	2 / n/a
Cure Cycle (hrs. @ 25°C)	16 - 24	16-24	16 - 24	4-8 minutes

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Epoxies Single Component

Duralco® 126, 4420, and 4701 plus Durabond® 455

No Mixing, Measuring or Mess, Just Apply and Heat Cure.

Duralco® 126 - 230°C Electrically Conductive Adhesive

Highly conductive epoxy specifically designed for production applications. No mixing, no mess, just dispense and heat cure. Unique resins and hardeners with speciality conductive fillers provide continuous service up to 230°C.

Will bond to glass, ceramics, metals and plastics. Applications include solder replacement, semi-conductor bonding, electronics, circuit board repair etc.

126-1 2 oz Jar

Duralco® 4420 - 230°C Electrically Resistant Adhesive

Ceramic filled adhesive that bonds materials such as ceramics, glass, metals, plastics and mica. Has excellent resistance to solvents, fuels, lubricants and most common chemicals. Provides low moisture absorption required for many electronic applications. Offers the convenience and economy that only a single component adhesive can offer.

4420-3 4 oz Dispenser tubes, 3 off
4420-4 11 oz Caulking cartridge

Duralco® 4701 - 315°C Adhesive and Casting Compound

Excellent adhesion to metals, glass, ceramics and most plastics. Offering high electrical resistance, high bond strength, low shrinkage and excellent chemical, solvent and radiation resistance. Single component, toughened adhesive and casting compound offering no mixing, no mess, saves both time and money, user friendly and with no volatiles, solvents or outgassing.

4701-1 1/2 Pint kit
4701-2 Pint kit

Durabond® 455 - 230°C Thermally Conductive Adhesive

Filled with ultra fine active aluminium for high temperature stability, thermal conductivity and thermal shock resistance. Bonds to most metals, plastics, high performance composites, glass and ceramics. No measuring, no mess, no odours or solvents and faster cures at moderate temperatures.

Typical applications include high performance bonding and assembling in appliances, aerospace and automotive. Bonds dissimilar metals and eliminates the need for brazing.

455-1 11 oz Dispenser tube

Properties	126	455	4420	4701
Volume Resistivity (ohm-cm)	0.002	10^{10}	10^{10}	10^{16}
Thermal Conductivity (W/m°C)	7.2	1.73	1.15	1.87
Thermal Expansion (10^5 / °C)	6.4	6.4	4.5	6.4
Viscosity (cps)	100,000	100,000	Paste	40,000
Tensile Strength (psi)	10,000	10,000	7,000	11,100
Thermal Stability (1000 hrs)	0.8	0.8	0.6	-
Hardness (Shore D)	75	80	75	90
Dielectric Strength (kV/mm)	19.5	15.6	15.6	-
Moisture Absorption % (30 days)	0.5	0.4	0.5	0.4
Colour	Silver	Grey	Grey	Black
Cure Cycle (Mins. @ 120°C)	30-60	30-60	30-60	60 @ 135°C

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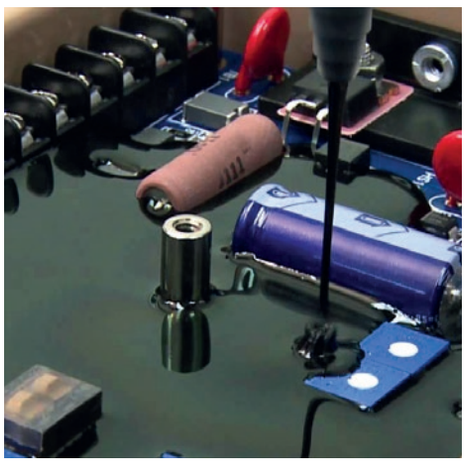
Epoxies Potting Compounds

Durapot® 86x Series



High Performance Casting, Embedding and Encapsulating Compounds.

These high temperature epoxy potting compounds offer temperature stability, plus excellent chemical, solvent and electrical resistance.

The ideal choice for the most demanding electronic, industrial and instrumentation applications.

Technologically advanced potting and encapsulation materials are designed to resist exposure to hostile environmental conditions.

They offer the following advantages:

- High voltage insulation
- Enhanced thermal management properties

Durapot 861IP - 260°C Low Viscosity

A 100% reactive compound that provides excellent penetration, even in tightly wound coils. Just mix and cure at room temperature to provide excellent electrical, moisture and chemical resistance.

Durapot 862 - 315°C High Temperature Low Viscosity

A 100% reactive high temperature compound with low viscosity provides excellent penetration. Excellent electrical, moisture and chemical resistance.

Durapot 863 - 340°C Ultra High Temperature

Offers unique properties stemming from a cross-linked, inorganic-organic polymer system. It is a 100% reactive and can be used to 340°C after curing at 175°C. Offers excellent dielectric properties, heat stability, moisture and solvent resistance.

Durapot 864 - 230°C Flexible, Cures at Room Temperature

Provides the flexibility required for severe thermal shock applications. Bonds to dissimilar materials, including treated Teflon® and other difficult to bond plastics. Has the ability to impregnate and bond fibre optical bundles.

Durapot 865IP - 260°C Thermally Conductive Compound

For applications requiring high heat flows and rapid thermal dissipation, excellent chemical resistance and high temperature stability. Used for thermally conductive casting, embedding, impregnating and encapsulation.

Durapot 866 - 260°C Thermally Insulating Compound

Convenient two part, room temperature curing system. Offers a low density, non-porous foam for high temperature applications.

Durapot 868 - 260°C High Temperature & Flexible

Ideal for thermal shock applications, stress free potting and bonding. Offers high electrical resistance, at high temperatures

Properties	861IP	862	863	864	865IP	866	868
Volume Resistivity (ohm-cm)	10^{13}	10^{14}	10^{14}	10^{14}	10^{15}	10^{15}	10^{14}
Thermal Conductivity (W/m°C)	0.57	0.57	1.30	1.00	2.88	0.22	0.57
Thermal Expansion (10^{-5} / °C)	5.2	5.4	3.4	n/a	3.8	4.5	5.2
Viscosity (cps)	600	600	2,000	10,000	10,000	10,000	800
Dielectric Strength (kV/mm)	17.55	19.5	21.45	17.55	27.3	19.5	19.5
Dielectric Constant	4.15	4.15	3.50	3.50	3.50	3.50	4.10
Hardness (Shore D)	80	80	90	60-80(A)	95	60	60-80(A)
Components / Mix Ratio	2 / 100:17	2 / 100:80	2 / 100:71	2 / 100:120	2 / 100:21	2 / 100:12	2 / 100:40
Colour	Amber	Amber	Amber	Tan	Grey	Tan	Amber
Accelerated Cure Cycle (°C)	5 mins @ 120	60 mins @ 175	1-2 hrs @ 175	1-2 hrs @ 120	10 mins @ 120	10 mins @ 120	60 mins @ 175
Standard Cure (hrs) room temp.	16-24	4 @ 120°C	4 @ 120°C	24	4-16	24	2-4 @ 120°C

Post cures at 120°C will improve moisture resistance for Durapot 861, 864, 865 and 866.

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Epoxies Twin Packs

Epox-EEZ® 4525, 4461, 4537 and 4540

Odour Free - Room Temperature Curing Adhesive and Moulding Compounds.

Instant mixing and dispensing system, offering convenient, economical and foolproof application.

EPOX-EEZ® - Ambient Curing Adhesives

High performance, high temperature epoxies are available in easy to use EPOX-EEZ twin pack cartridges. Just place the cartridge into the applicator gun, snap on a mixer tube and squeeze to apply.

The completely measured and fully mixed adhesive will cure at room temperature to provide up to 260ºC service. No more time consuming weighing and measuring. Ideal for use in any high temperature application.

ETSK4525, ETSK4461, ETSK4537 and ETSK4540
Starter pack with re-usable applicator gun and one cartridge of epoxy indicated.

EETP4525, EETP4461, EETP4537 and EETP4540
Refills package of 4 x 2oz cartridges, plus mixer nozzles.

Accessory Kits

DK104	1:1 Applicator gun and plunger, suits 4537 and 4538.
DK106	4:1 Applicator gun and plunger, suits 4525, 4461 and 4540.
190-620	Disposable mixer tube nozzles. Pack of 10, suits all above adhesives.

Duralco 4525 • 260ºC Electrically Resistant
Duralco 4461 • 260ºC Low Viscosity
Duralco 4537 • 230ºC Fast Set
Duralco 4540 • 260ºC Machinable

Properties	4525	4461	4537	4540
Hardness (Shore D)	80	75	60	80
Viscosity (cps)	40,000	800	10,000	30,000
Tensile Strength (psi)	10,000	9,500	6,000	10,000
Thermal Cond. (W/mºC)	1.87	0.58	1.01	4.32
Dielectric Strength (kV/mm)	17.5	17.5	17.5	9.75
Vol. Resistivity (ohm-cm)	10^{15}	10^{13}	10^{11}	10^{8}
Shrinkage (% max.)	0.2	1	0.2	0.1
Absorption (30 days %)	0.05	0.15	0.2	0.2
Therm. Stab. (1000hrs 90ºC)	0.05	0.2	0.6	0.5
Colour	Black	Amber	Blue	Grey
Cure Cycle - hours @ 25ºC	16	16	1-4	16
- minutes @ 120ºC	5	5	3	8

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Epoxy Pre Measured Kits

Epox-EEZ® for Selected Adhesives

Job Sized Kits - Save Time and Money, Just Dispense, Mix and Apply.

Simplifies field assembly and promotes reliable full performance bonds.

Dispense hardener into resin prior to mixing.

Mixing epoxy before dispensing

High temperature epoxy formulations are packaged in convenient, easy to use pre-measured kits, with no measuring, mess or waste.

EPOX-EEZ resins are supplied in specially designed rigid mixing cups and the hardeners supplied in pre-measured disposable syringes.

Just inject one syringe of hardener into one jar of resin, mix, use and discard. Consistent results are always obtainable.

Job sized EPOX-EEZ pre-measured kits are the most economical, easy to use epoxy system available. The ideal choice for production bonding, potting and sealing.

EE xxxx -10 Pre-Measured Kit @ 10 units x 10g
EE xxxx -25 Pre-Measured Kit @ 10 units x 25g

Each pre-measured kit contains 10 units, with each unit consisting of one jar of resin, one syringe of hardener and mixing stick.

Where 'xxxx' is the Duralco system number, for example... EE-4461-10.

EE 128 • Thermally Conductive 4.32 W/m°C
EE 132 • Thermally Conductive 5.76 W/m°C
EE 861 • Potting Compound
EE 4460 • Thermal Cure, Low Viscosity
EE 4461 • Ambient Cure, Low Viscosity
EE 4540 • Machinable
EE 4525 • Ambient Cure, Electrically Resistant
EE 4538 • Ambient Cure, Super Flexible
EE 4700 • Thermal Cure, Bonder
EE 4703 • Thermal Cure, 340°C

Properties	128	132	861	4460	4461	4540	4525	4538	4700	4703
Cure Room Temp.	●	●	●		●	●	●	●		
Cure 4hrs @ 120°C				●					●	●
Operating Temp.	260°C	260°C	260°C	315°C	260°C	260°C	260°C	230°C	315°C	340°C
Colour	Grey	Silver	Amber	Amber	Amber	Silver	Black	Amber	Black	Black
Characteristic	Ceramic based thermally conductive	Aluminium based thermally conductive	Low viscosity potting compound	Low viscosity encapsulant adhesive	Low viscosity encapsulant adhesive	Aluminium filled machinable and repair	Electrically resistant adhesive	Flexible epoxy bonds dissimilar materials	High temperature adhesive	Ultra high temperature adhesive
Further Information	page 6	page 6	page 11	page 8	page 7	page 9	page 7	page 7	page 8	page 8

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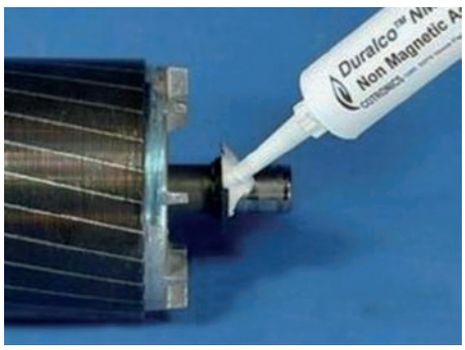
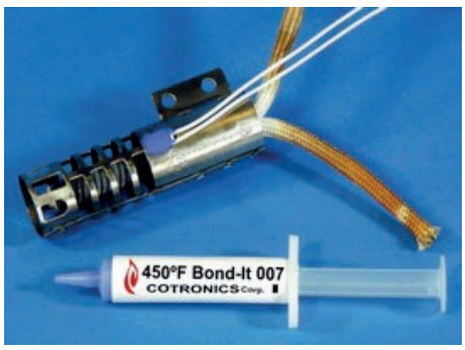


Duralco® NM25 - 260°C Magnet Bonding Adhesive

Ideal for bonding magnets while withstanding the high temperatures encountered in high performance applications. It is free of magnetic particles or conductive fillers which would interfere with magnetic fields while in use.

Just mix and apply. NM25 cures at room temperature to provide excellent chemical, solvent and moisture resistance.

NM25-1	Pint kit - medium viscosity for thin bond lines
NM25HV-1	Pint kit - non sag putty
NM25HT-1	Pint kit - can be used up to 315°C



Bond-IT® 007 - 230°C Quick Set Superbonder

No measuring, no mess. Just mix equal parts of resin and hardener and apply. Hardener sets in just 5 minutes. Bond strengths measuring 3,000 psi are reached in just a few hours.

Bond-IT 007 has excellent adhesion to most materials such as metals, ceramics, glass, plastics and composites. Ideal for attaching thermocouples, strain gauges, instruments and other difficult assemblies.

Users Report: Repairs a heater assembly in a chemical plant eliminating any downtime. The assembly operated successfully at 150°C.

Range of special purpose compounds for specific uses, where a standard ceramic compound will not do.

Duralco® 4400 - 200°C Transmits Heat - Electrically Resistant

High strength, thermally conductive and electrically resistant bonds. Cures at room temperature without any objectionable odours. Provides the thermal shock resistance and flexibility required to accommodate differences in thermal expansion which occurs during high heat flows.

Users Report: A glass feedthrough was bonded to a brass housing and repeatedly cycled from liquid Nitrogen temperatures to 120°C, while maintaining its vacuum integrity.

4400-1	Pint kit - medium viscosity for thin bond lines
4400-2	Gallon kit - non sag putty

Resbond® S5H13 - 260°C Hot Sterilizable

A unique epoxy that after a simple room temperature cure can assemble, bond and insulate stainless steel, metals, glass and ceramic components. Formulated to resist severe conditions that are encountered during repeated hot sterilization as required for various medical applications.

S5H13-1	Pint kit
S5H13-2	Gallon kit

Properties	NM25	NM25HT	007	4400	S5H13
Volume Resistivity (ohm-cm)	10^{15}	10^{16}	10^{13}	10^{14}	10^{15}
Thermal Conductivity (W/m°C)	1.87	1.87	1.01	2.88	1.87
Thermal Expansion (10^{-5} / °C)	3.3	3.7	4.8	3.5	3.3
Viscosity (cps)	20,000	20,000	100,000	100,000	20,000
Tensile Strength (psi)	10,000	11,100	3,000	7,000	10,000
Thermal Stability (1000 hrs)	0.5% @ 200°C	0.1% @ 200°C	0.5% @ 200°C	0.6% @ 200°C	0.5% @ 200°C
Hardness (Shore D)	80	94	70	80	85
Dielectric Strength (kV/mm)	19.5	21.65	17.55	24.38	19.5
Moisture Absorption % (30 days)	0.2	0.02	0.8	0.28	0.2
Colour	Tan	Tan	Tan	Tan	Black
Components / Mix Ratio	2 / 100:8	2 / 100:28	2 / 100:100	2 / 100:21	2 / 100:6
Cure Cycle (hrs. @ 25°C)	4 - 16	4 @ 120°C	4 - 16	4 - 16	4 - 16

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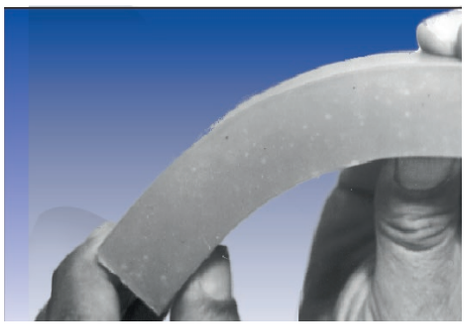
Epoxy Application Aids

Resbond® 105 Series



Resbond 105RF • Flexibilizer and Adhesion Promoter

Improves the bond strength, thermal shock resistance and impact strength of cured epoxies. 105RF may be added to any of Cotronics' epoxies or epoxy based compounds to increase the adhesion of the cured system.

Add up to 30% by weight to the pre-mixed resin and hardener.

Note: The use of high concentration of flexibilizer may reduce the maximum temperature capacity of the epoxy system.

105RF-1 Pint

Resbond 105RT • Resbond Thinners

Reduce the viscosity and improve the flow characteristics that are required for special applications.

These reactive, low viscosity liquids may be added directly to our epoxy based adhesives and potting compounds in amounts that vary from 3% to 20% by weight.

Note: The use of high concentration of thinner may reduce the maximum temperature capacity of the epoxy system.

105RT-1 Pint

Resbond 105RS • Resbond Solvent

Makes clean up for uncured epoxies, resins and hardeners quick and safe. A high purity cleaner for a wide range of stubborn contaminants benefits from moderately fast drying characteristics, allowing a 'soak time' to dissolve residue. No harsh odours, does not contain aromatics, chlorinated solvents, or caustics to minimise risk of irritation.

105RS-1 12oz Spray Can

Please note that this product may have shipping restrictions, contact us.

Resbond 106RP • Resbond Surface Prep

Resbond surface preparation and cleaner safely removes greases, oils etc., with a completely bio-degradeable and environmentally safe solvent. Special additives act as adhesion promoters to prepare the surface for improved bond strength.
It is ideal for bonding applications with difficult to clean surfaces.

106RP-1 2 Pints

Please note that this product may have shipping restrictions, contact us.

Syringes, Caulking Tubes and Mixers

A selection of application equipment are also available, please contact us for further details.

Durapot®
Durabond®
Bond-IT®
Duralco®
Resbond®
Epox-EEZ®

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Ceramic Compounds

Introduction and Selection Table

The characteristics selection chart below is useful in helping the user to choose the optimum ceramic adhesive and is offered as a general guide and should be followed in the approximate order listed.

A final manufacturing selection is then based on the results obtained. If several adhesives are indicated for a specific application, we would recommend a physical comparative evaluation be made.

Selection Criteria:

1. Choose maximum temperature required.
2. Match thermal expansion of materials to be bonded.
3. Select the required electrical properties.
4. Select the bond strength requirements
5. Check for porous surfaces (is primer/pre-coat required).
6. Check moisture or humidity requirements.
7. Choose from the following manufacturing requirements:
   - One component, cures by evaporation
   - Two component, chemical set
   - Viscosity and Dispensable
   - Cure time for handling strength

Features	Elec. Resistant		Therm. Conduct		Single Part			
Product Ref	919	920	908	906	989	903HP	907GF	
Properties	Electrically Resistant	Thermal Conductive	Dual Cond.	High Expansion	General Purpose	Hi-Bond Strength	Fire Proof	
Service Temp	1540°C	1650°C	1650°C	1650°C	1650°C	1790°C	1260°C	
Base	MgO	Al_2O_3	Al_2O_3	MgO	Al_2O_3	Al_2O_3	MICA	
Colour	Tan	White	White	White	White	White	Grey	
Compressive Strength (psi)	4,500	4,500	3,000	3,000	3,000	7,000	1,500	
Flexural Strength (psi)	450	450	1,100	1,500	1,100	3,500	1,250	
Thermal Expansion ($x10^{-5}$/°C)	4.7	8.1	8.1	12.6	8.1	7.2	8.1	
Thermal Conductivity (W/m°C)	0.58	2.16	2.16	5.76	2.16	5.76	0.86	
Dielectric Strength (kV/mm)	10.53	10.53	7.8	9.75	7.8	9.75	5.65	
Volume Resistivity (ohm-cm)	10^{11}	10^{11}	10^{10}	10^{9}	10^{8}	10^{10}	10^{9}	
Components	2	2	2	2	1	1	1	
Mix Ratio (by weight)	100:13	100:14	100:33	100:42	n/a	n/a	n/a	
Consistency	Paste	Paste	Paste	Paste	Paint	Paint	Paste	

Resbond Ceramic Adhesives are based on high purity, ceramic binders and selected reinforcing fillers. Being designed to satisfy the most difficult, high temperature application requirements.

These adhesives have excellent adhesion to ceramics, metals, glass and plastics, offering excellent high temperature stability, dielectric strength, mechanical properties and thermal shock resistance.

They are also resistant to molten metals, oxidising and reducing atmospheres, most chemicals and solvents.

Just mix and cure at room temperature, no objectionable odours, VOC's or outgassing.

Resbond adhesives are available in a wide range of temperature capabilities, viscosities, expansion rates, conductivities and dielectric strengths.

The ideal choice for research, electronics, metallurgical, nuclear and industrial applications.

CERAMIC compounds operating temperatures up to **2980°C**

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Ceramic Compounds

Introduction and Selection Table

Durabond® 7025, 7032 and Thermeez® 7020 - Putties

In addition to the standard ceramic compounds listed in the table below, a carefully selected group of non sagging 'Putty' style compounds has been added to this collection, details of which can be found on page 25.

Resbond® 800 Series - Potting Compounds

An additional set of ceramic compounds that has been specifically designed for potting applications can be found on page 26.

	Silica	Fast Set	Ultra Temp.		Metallic			High Strength
	905	940	904	931	950	952	954	7030
	Low Expansion	Zircon	Zirconia	Graphite	Alumina	Nickel	Stainless	High Expansion
	1370°C	1100°C	2200°C	2980°C	650°C	1100°C	1100°C	980°C
	SiO_2	Zircon	ZrO_2	Carbon	Al	Nickel	316SS	SiO_2
	White	Tan	Tan	Black	Grey	Grey	Grey	White
	3,200	4,000	6,000	3,000	4,000	5,000	4,500	5,000
	2,100	1,800	3,000	1,500	3,000	3,000	2,500	1,450
	0.54	8.10	7.38	7.38	18.0	7.2	18.0	13.5
	1.44	1.15	1.44	8.64	6.34	2.02	1.44	1.20
	7.8	4.87	9.75	Cond.	Cond.	Cond.	Cond.	3.90
	10^{11}	10^8	10^8	Cond.	Cond.	Cond.	Cond.	10^8
	2	2	1	2	2	2	2	2
	100:60	100:28	n/a	100:35	100:60	100:120	100:25	100:20
	Paste	Paste	Paint	Paste	Paste	Paste	Paste	Paste

Not sure which Ceramic is best for you, then try our selector kit...

Resbond® 970N - Product Evaluation Selector Kit

To assist users with their product selection and further evaluation, a carefully chosen group of high temperature adhesives in convenient 4 oz. bottles has been combined into a single kit. For kit contents see below.

901	1,260°C hardener used for bonding and coating porous materials.
907GF	1,260°C gasket former/adhesive for sealing, bonding and filling.
919	1,540°C electrically resistant for encapsulating and bonding.
989	1,650°C general purpose Alumina, for coating and bonding.
940	1,090°C Fast setting ceramic, used for strong bonds.
950	650°C Alumina, high thermal conductivity and machine-ability.
7030	980°C Strong epoxy like ceramic adhesive, used for high expansion applications.

For specific product specification data please refer to the relevant pages of this product guide.

Ceramics Electrically Resistant

Resbond® 919, 920 and 903HP

Resbond® 919 - 1530ºC Electrically Resistant

Formulated with proprietary ceramic binders to offer an adhesive with exceptionally high electrical resistance. These binders maintain their high electrical resistance and dielectric strength even when exposed to temperatures up to 1530ºC. Commonly used for electrical insulation when potting, sealing or coating igniters, thermocouples, heating coils, instrumentation etc.

Users Report: Bonds electrode rods into electrically insulating ceramic tubes and protects them from voltage breakdown and corrosive atmospheres.

919-1	2 pints
919-2	Gallon

Resbond® 920 - 1650ºC Thermally Conductive

Offers both high thermal conductivity and the superior electrical resistance of Resbond 919. It is based on conductive Alumina ceramic and should be used whenever rapid dissipation of heat is required. Resbond 920 has a dielectric strength of 10.53 kV/mm, volume resistivity of 10^{11} ohm-cm (at room temperature) and a thermal conductivity of 2.16 Watts/mºC.

Users Report: Replaced 7 different adhesives and potting compounds, at a heating element plant for use in various applications from -60ºC to 1,500ºC.

920-1	2 pints
920-2	Gallon

Resbond® 903HP - 1790ºC Single Component

An ultra high temperature Alumina adhesive, developed for high strength bonding of any combination of dense, non porous ceramics, glass or non-reactive metals. 903HP is a smooth, creamy paste that can be brushed, troweled or sprayed on. Just re-mix and apply.

Handling strength is obtained, after an initial cure at 120ºC. A complete cure occurs in 1 hour at 315ºC to 370ºC.

It has an excellent resistance to liquid metals, oxidising and reducing atmospheres, most chemicals and solvents.

Users Report: Was easily sprayed onto stainless steel to form a dielectric layer for an industrial heater, used at 760ºC.

903HP-1	Pint
903HP-2	2 pints
903HP-3	Thinner - pint

Properties	Resbond 919	Resbond 920	Resbond 903HP
Base	$MgO\text{-}ZrO_2$	Al_2O_3	Al_2O_3
Volume Resistivity (ohm-cm)	10^{11}	10^{11}	10^{10}
Thermal Conductivity (W/mºC)	0.58	2.16	5.76
Thermal Expansion (10^{-5} / °C)	4.68	8.10	7.20
Compressive Strength (psi)	4,500	4,500	7,000
Flexural Strength (psi)	450	450	3,500
Dielectric Strength (kV/mm)	10.53	10.53	9.75
Components	2	2	1
Mix Ratio	100:13	100:14	n/a
Colour	Tan	White	White
Consistency	Paste	Paste	Paint
Cure Temperature	R/T	R/T	315ºC, 1hr

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Ceramic Thermally Conductive

Resbond® 906 and 908

Resbond® 906 - 1650°C High Expansion Adhesive

Magnesia based adhesive was formulated for bonding high expansion materials for use to 1650°C. Bonds to steel, stainless, aluminium, brass, copper, silver, nickel and other high expansion materials.

It will cure at room temperature to form a highly thermally conductive bond, although strength and moisture resistance will be improved by a post cure at 315°C to 370°C.

Has excellent resistance to oxidising and reducing atmospheres, most chemicals and solvents. Also resistant to flame impingement and most liquid metals.

Users Report: Forms a thermally conductive and electrically insulating bond for High Watt Density Heater.

Users report: Bonded re-crystallised alumina tubes to PTFE insulated cable for use at 370°C.

906-1	Pint
906-2	2 pints
906T-1	Thinner - pint

Applications include: Bonding high expansion materials, forms highly thermally conductive bonds, potting and encapsulating heating assemblies.

Resbond® 908 - 1650°C Electrically Resistant

A high purity, Alumina-based adhesive that incorporates a unique catalytic curing system. It will not clog delicate dispensing needles and is suitable for any application requiring micro drops or several ounces of material.

908 has excellent thermal conductivity, electrical resistance and moisture resistance. Will become water insoluble after use (or post cure) at temperatures of 120°C to 150°C, 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.

Users report: 908 successfully filled a long tubular probe, providing long term electrical isolation and moisture proofing for an electronic sensor.

908-1	Pint
908-2	2 pints

Properties	Resbond 906	Resbond 908
Base	MgO	Al_2O_3
Volume Resistivity (ohm-cm)	10^9	10^{10}
Thermal Conductivity (W/m°C)	5.76	2.16
Thermal Expansion (10^{-6} / °C)	12.6	8.10
Compressive Strength (psi)	3,000	3,000
Flexural Strength (psi)	1,500	1,100
Dielectric Strength kV/mm)	9.75	7.8
Components	2	2
Mix Ratio	100:42	n/a
Colour	White	White
Consistency	Paste	Paste
Cure Temperature	R/T	R/T

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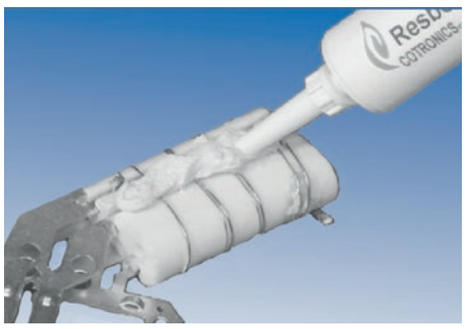
Ceramics Single Component

Resbond® 989 Series and 907GF



Resbond® 989 - 1650ºC General Purpose Adhesive

A single component 1650ºC Alumina based general purpose adhesive. It has a smooth creamy consistency and cures at room temperature to form strong bonds to ceramics, graphite, metals and glass. It is resistant to oxidisation, electricity, molten metals, most chemicals and solvents. It easy to use, just apply and air dry for between 2 to 4 hours. Curing may be accelerated with the application of mild heat (90ºC for 1 hour).

989-1	Two Pints
989-2	Gallon
989T-1	Thinner - Pint

Resbond® 989F - 1650ºC Ultra Fine Adhesive

The Alumina used in 989F has a reduced particle size of 600nms. This compound combines this ultra-fine Alumina with special high temperature colloidal ceramic binders to create an adhesive ideal for a new generation of applications. Can be used in the finest dispensers and offers the ability to bond super fine electronic components, bundles of fibre optic filaments etc.

989F-1	Pint
989F-2	2 Pints

Resbond® 989FS - 1650ºC Fast Set Adhesive

989 Fast Set is specially formulated for applications requiring a fast setting, single component Alumina adhesive. 989FS is a free flowing formulation that is ideal for use in automatic dispensing equipment. It can be precisely dispensed through fine needles without clogging or mess. Cures at room temperature in 1/2 to 2 hours, or in 5 minutes at 90ºC, it is an ideal choice for high speed applications where automation is required.

989FS-1	Pint
989FS-2	2 Pints

Resbond® 907GF - 1260ºC Fireproof Adhesive and Sealant

A moist and creamy putty that is easily applied from a standard caulking cartridge. Just apply directly to clean steel, stainless steel, iron and most metals, ceramics, ceramic cloths, tapes, gaskets etc. It air drys in 4 to 12 hours at room temperature, but curing may be accelerated with mild heat.

907GF-1	1/2 Pint
907GF-2	2 Pints
907GF-5	3 x 4oz dispenser tubes
907GF-6	11oz caulking cartridge

Properties	Resbond 989	Resbond 989F	Resbond 989FS	Resbond 907GF
Base	Al_2O_3	Al_2O_3	Al_2O_3	Mica
Volume Resistivity (ohm-cm)	10^8	10^8	10^8	10^9
Thermal Conductivity (W/mºC)	2.16	1.73	2.16	0.86
Thermal Expansion (10^{-6} / ºC)	8.1	8.1	8.1	8.1
Compressive Strength (psi)	3,000	2,800	3,500	1,500
Flexural Strength (psi)	1,100	950	1,250	1,250
Dielectric Strength (kV/mm)	7.8	7.8	7.80	5.65
Components	1	1	1	1
Mix Ratio	n/a	n/a	n/a	n/a
Colour	White	White	White	Grey
Consistency	Paint	Cream	Paint	Creamy Putty
Cure Temperature	R/T 2-4 hrs	R/T 2-4 hrs	R/T 1/2-2 hrs	R/T 4-12 hrs

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Ceramic Specialist Adhesives

Resbond® 905, 907, Thermeez® 7030 and Rescor® 901

Resbond® 905 - 1370°C Low Expansion Adhesive

Resbond® 905 Quartz (fused silica) adhesive was specially formulated for bonding low expansion and thermal shock resistant ceramics. The thermal expansion closely matches the extremely low expansion of quartz, fused silica, corderite and lithium-alumina ceramics. Just apply and let dry. Resbond 905 is resistant to most chemicals and solvents.

905-1	Pint
905-2	2 Pints
905T-1	Thinner - Pint

Resbond® 907 - 1260°C Fireproof Adhesive

A single component composite based on Mica platelets and proprietary ceramic binders. All purpose adhesive offering high bond strength, solvent and electrical resistance. Developed to provide a fireproof adhesive for applications in production, development, repair and maintenance.

907-1	1/2 Pint
907-2	2 Pints
907-3	1/2 Gallon
907T-1	Thinner - 2 Pints

Thermeez® 7030 - 980°C Epoxy Like Adhesive

High expansion adhesive that can be applied to most metals, ceramics, door gaskets and ceramic cloths. It is fireproof and resistant to most acids, alkalis, solvents, corrosives and electricity.

Thermeez is fireproof and has resistance to most acids, alkalies, solvents, corrosives and electricity. Commonly used in high temperature exhaust systems, diesel engines, gas turbines, heating plants etc.

7030-1	2 Pints
7030-2	Gallon
7030-3	5 Gallon

Rescor® 901- 260°C Adhesive/Protective Coating

High purity, Alumina Oxide based ceramic composite that combines the refractory properties of Alumina with ceramic fibre reinforcement. Provides excellent resistance to oxidising and reducing atmospheres, molten non-ferrous metals, steam, most chemicals and solvents. Easily applied by brushing, spraying or dipping.

901-1	2 Pints
901-2	Gallon

Properties	Resbond 905	Resbond 907	Thermeez 7030	Resbond 901
Base	SiO_2	Mica	SiO_2	Al_2O_3
Volume Resistivity (ohm-cm)	10^{11}	10^{9}	10^{9}	10^{12}
Thermal Conductivity (W/m°C)	1.9	0.86	1.20	0.29
Thermal Expansion (10^{-5}/°C)	0.50	8.1	13.5	7.2
Compressive Strength (psi)	3,200	3,500	5,000	1,200
Flexural Strength (psi)	2,100	1,250	1,450	600
Dielectric Strength (kV/mm)	7.80	11.70	3.90	7.8
Components	2	1	2	1
Mix Ratio	100:60	n/a	100:20	n/a
Colour	White	Grey	White	White
Consistency	Paste	Paste	Paste	Paint
Cure Temperature	R/T 2-4 hrs	R/T 24-48 hrs	R/T 24-48 hrs	R/T

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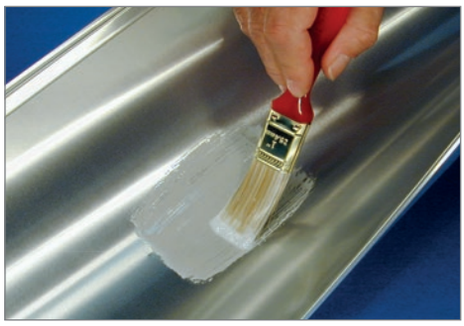
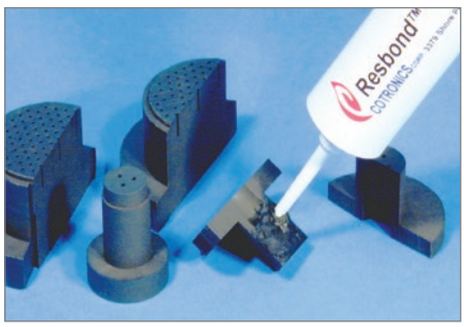
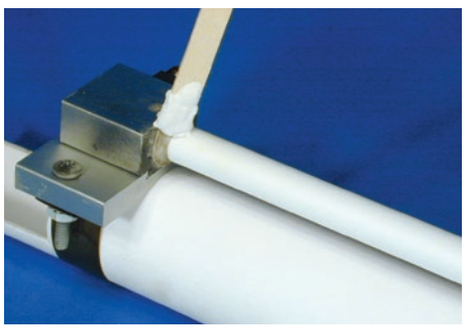
Ceramics Ultra High Temperature

Resbond® 904, 931 and 931C







Resbond® 904 - 2200°C Zirconia Adhesive and Coating

Extreme temperature adhesive. Resbond 904 is a smooth, creamy paste that is easily applied and air dried to form a hard surface.

Resistant to molten metals, most chemicals, solvents, oxidisation and reducing atmospheres. Ideal for bonding and forming electrical, oxidisation erosion and liquid metal resistant coatings for ceramics, graphite and thermocouple tubes.

904-1	Pint
904-2	2 Pints
904-4	Thinner - Pint

Users Report: Bonded exhaust lines to a Thermogravimetric Analyser's reaction chamber and was used at 1870°C under a vacuum.

Resbond® 931 - 3000°C Graphite Adhesive

Bonds graphite or carbon components for use to 3000°C with 99% pure graphite. Just apply and cure at 120°C. Resbond 931 has excellent adhesion to graphite and other porous surfaces, forming graphite bonds with strengths measuring in excess of 2,500 psi. It is electrically conductive and resistant to reducing atmospheres, most chemicals and solvents.

Ideal for repairing broken or cracked graphite trays, components, fixtures or dies, filling and rebuilding crevices, cracks, worn areas and bonding graphite cloths, boards. Sealer is also available to reduce the porosity and increase wear resistance.

931-1	Pint
931-2	2 Pints
931-3	Gallon
931-4	Thinner - Pint
931S-1	Sealer - Pint

Resbond® 931C - 1370°C Single Component, Reduced Temp

Similar properties to the standard Resbond 931, but in a single mix and apply formula, cures at room temperature. Sealer also available to reduce the porosity and increase wear resistance.

931C-1	Pint
931C-2	2 Pints
931C-3	Thinner - Pint
931S-1	Sealer - Pint

Properties	Resbond 904	Resbond 931	Resbond 931C
Base	ZrO_2	Carbon	Carbon
Purity (%)	95	99	90
Thermal Conductivity (W/m°C)	1.44	8.64	5.76
Thermal Expansion (10^{-6} / °C)	7.38	7.38	7.38
Compressive Strength (psi)	6,000	3,000	4,200
Flexural Strength (psi)	3,000	1,500	1,800
Dielectric Strength (kV/mm)	9.75	Conductive	Conductive
Components	1	2	1
Mix Ratio	n/a	100:35	n/a
Colour	Tan	Black	Black
Consistency	Paint	Paste	Paste
Cure Temperature	R/T 2-4 hrs	120°C 1-2 hrs	R/T 2-4 hrs

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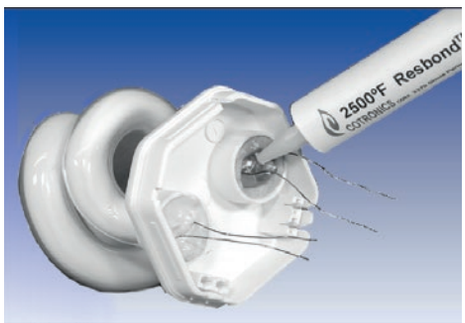
Ceramics Fast Setting

Resbond® 940 Series

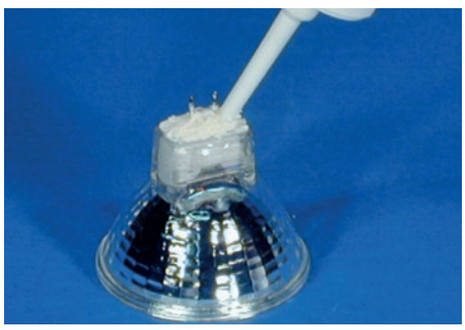


Resbond 940 • 1100°C Standard

Has excellent adhesion to ceramics, glass, metals etc. Offers excellent electrical, chemical and thermal shock resistance.

Users Report: Encapsulates industrial heating elements and high temperature sensors. Outperformed all of the other adhesive and materials tested.

940-1	2 Pints
940-2	Gallon
940-3	Thinner - Pint



Resbond 940HT • 1530°C High Temperature

High temperature Alumina adhesive resistant to liquid metals, most chemicals, solvents, oxidising and reducing atmospheres.

940HT-1	Pint
940HT-2	2 Pints

Resbond 940LE • 1370°C Low Expansion

A low expansion, Quartz based, fast curing adhesive. The perfect adhesive for bonding and potting Quartz lamps, Glassware, Fibre cables or any other low expansion materials.

940LE-1	Pint
940LE-2	2 Pints

Resbond 940HE • 980°C High Expansion

A Silica filled adhesive for bonding and encapsulating high expansion materials.

User Report: Provided an insulating end seal for a heating element.

940HE-1	Pint
940HE-2	2 Pints

Resbond 940SS • 1100°C Stainless Steel

A 316 Stainless Steel based, fast curing, adhesive with excellent heat resistance. Machinable and resistant to chemicals & solvents. Machinable and resistant to most chemicals and solvents

940SS-1	Pint
940SS-2	2 Pints

The 940 range of fast setting, customisable adhesives are designed to eliminate costly errors caused by bonding adhesives and substrates with mismatched physical properties.

Just match the grade of Resbond 940 Series with the physical properties of the substrate. Mix and apply. Cures in five minutes at 80°C or in 16 hours at room temperature.

Properties	Resbond 940	Resbond 940HT	Resbond 940LE	Resbond 940HE	Resbond 940SS
Base	Zircon	Al_2O_3	SiO_2	SiO_2	Stainless Steel
Volume Resistivity (ohm-cm)	10^8	10^8	10^8	10^9	Conductive
Thermal Conductivity (W/m°C)	1.15	2.16	0.72	1.20	1.44
Thermal Expansion (10^{-6} / °C)	8.1	7.2	0.72	13.5	18.0
Compressive Strength (psi)	4,000	4,200	3,500	4,200	4,500
Flexural Strength (psi)	1,800	1,900	2,100	1,450	2,500
Dielectric Strength (kV/mm)	4.87	4.87	4.87	3.9	Conductive
Components	2	2	2	2	2
Colour	Tan	White	White	Tan	Grey
Consistency	Paste	Paste	Paste	Paste	Paste
Cure Temperature	R/T	R/T	R/T	R/T	R/T

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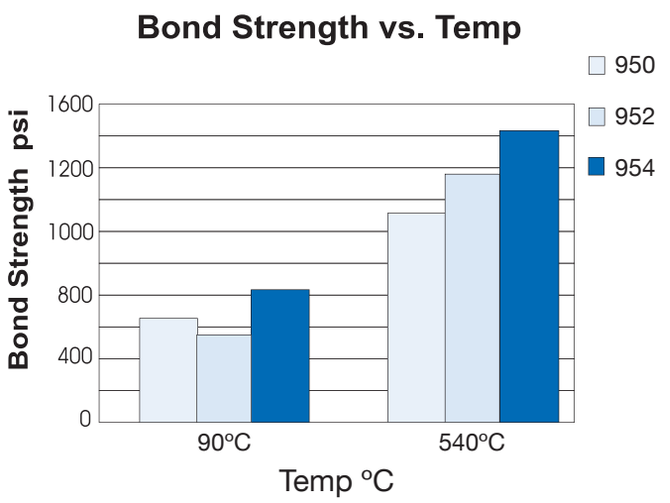
Ceramic Metallic Adhesives

Resbond® 950, 952 and 954

These metallic composites adhesives offer a more ductile alternative to other ceramic compounds, offering some of the pliability and impact resistance associated with soldering and welding.

Durabond 950 series adhesives can be drilled, tapped and machined. They do not contain Epoxies or Silicones which would limit their use to 315°C.

Just mix, apply and cure at room temperature. With fast setting (FS) composites also available across the range.



High Bond Strength, Thermal Shock and Impact Resistance.

Durabond 950 • 650°C Aluminium

Developed for high strength and high temperature bonding and is easy to apply. It cures at ambient temperature and can be used with steel, cast iron, aluminium and copper. It's easily machinable and can be ground, sanded or polished.

950-1	Pint
950-2	2 Pints
950FS-1	Putty - Pint

Durabond 952 • 1100°C Nickel

Specially formulated as a low expansion, metallic adhesive for bonding 400 series Stainless Steel, low expansion high temperature alloys, metals and ceramics etc.

952-1	Pint
952-2	2 Pints
952FS-1	Putty - Pint

Durabond 954 • 1100°C Stainless Steel (SS)

A high expansion adhesive for high temperature bonding of 300 series Stainless Steels, high expansion metals and ceramics.

954-1	Pint
954-2	2 Pints
954FS-1	Putty - Pint

Durabond 954OD • 1100°C SS Sealing

Bonds and seals high expansion materials. Ideal for applications requiring the minimum porosity from a ceramic adhesive. Commonly used to prevent leaks from equipment.

954OD-1	Pint
954OD-2	2 Pints

Properties	Resbond 950	Resbond 952	Resbond 954
Base	Aluminium	Nickel	Stainless
Bond Strength @ 650°C (psi)	1,000	1,200	1,400
Bond Strength @ 95°C (psi)	500	400	600
Thermal Conductivity (W/m°C)	6.3	2.0	1.4
Compressive Strength (psi)	4,000	5,000	4,500
Flexural Strength (psi)	3,000	3,000	2,500
Density (kg/m^3)	1,922	2,884	2,884
Thermal Expansion (10^{-6} / °C)	18.0	7.2	18
Dielectric Strength (kV/mm)	Conductive	Conductive	Conductive
Cure Time (hours @ room temp.)	24	24	24
Components	2	2	2
Mix Ratio	100:60	100:120	100:25
Colour	Grey	Grey	Grey

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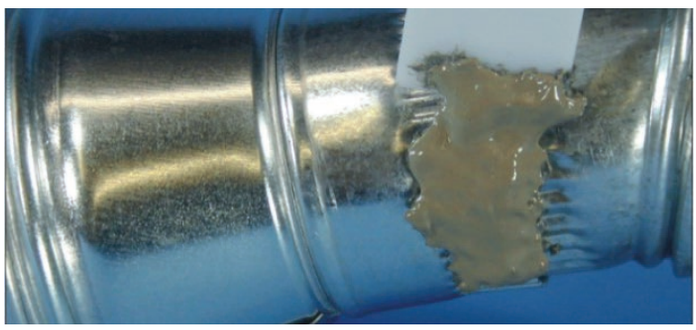
Ceramic Putties

Durabond® 7020, 7025 and 7032 Series



Properties	7025	7032
Base	Aluminium	Stainless Steel
Thermal Conductivity (W/m°C)	4.32	1.44
Thermal Expansion (10^{-6} / °C)	18	18
Compressive Strength (psi)	4,800	5,400
Bond Strength (psi)	1,400 @ 530°C	1,200 @ 530°C
Density (g/cc)	2.2	3.5
Components	2	1
Mix Ratio	100:55	n/a
Cure Time (hrs @ room temp.)	16	16

Properties	Thermeez 7020
Density (kg/m^3)	640
Compressive Strength (psi)	1,500
Elongation (%)	5
Specific Heat (BTU / # °F)	0.25
Dielectric Constant @ 10^8 cps	1.61
Volume Resistivity (ohm - cm)	10^9
Dielectric Strength (kV/mm)	3.9
Thermal Conductivity (W/m°C)	0.09
Modulus of Rupture (psi)	800
Colour	White

These smooth, creamy putties combine the high temperature performance of Cotronics' speciality formulations with easy to use dispensing systems ideal for most applications.

Non sag putties are ideal for use where the flow of an adhesive or repair material would limit their use. No need for clamps. Just trowel on and cure at room temperature to repair, rebuild and assemble components.

These self measuring and dispensing systems are ideal for small jobs, field use, in-house repairs and even production applications.

Durabond® 7025 - 530°C Aluminium Putty

A corrosion resistant putty with active Aluminium that provides excellent resistance to most chemicals and solvents. Can form a smooth surface that is ideal for any high temperature repair, rebuilding, production, manufacturing, industrial, automotive or equipment application.

Cures in 24 hours at room temperature or in 2 hours at 120°C to form a highly machinable, Aluminium based composite.

7025-1 1 lb kit
7025-2 2 lb kit

Durabond® 7032 - 100°C Stainless Steel Putty

Repairs and seals high temperature equipment with the ease of Cotronics' high performance systems. Hardening starts in just 60 minutes.

Durabond 7032 is machinable and resistant to most chemicals and solvents, ideal for high temperature repairs, rebuilding, filling holes, plugging leaks in a variety of maintenance and industrial applications.

7032-1 1 lb kit
7032-2 2 lb kit

Thermeez® 7020 - 1760°C Ceramic Putty

Provides the refractory properties of "Space Age Aluminium Oxide Ceramics" with the economy and convenience of a ready to use caulking compound. Formulated with unique ceramic binders and Aluminium Oxide based ceramics, just apply and let dry to form a thermally and electrically insulating ceramic.

Use for instant repairs to brick, mortar, burner blocks, insulation, furnace holders and thermocouples

7020-3 11 oz caulking cartridge
7020-5 3 x 4 oz. tubes
7020-6 1 Gallon bucket

Please note that the weights and volumes used in this product guide are American and NOT standard Imperial.
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Ceramics Potting Compounds

Durapot® 800 Series

These high temperature potting compounds offer temperature stability plus excellent chemical, solvent and electrical resistance. Durapot 800 series is available packaged in either Quart (US), or Gallon (US) packs, with the exception of 821 which is packaged as either Pint or Quart.

Cure times can be accelerated by mild heat 65°C to 95°C, whilst post cures @ 120°C will improve moisture resistance for 801, 808, 809, 814 and 821.

Durapot 801 • 1800°C Pure Alumina Ceramic

Specially formulated, room temperature curing, 99% pure alumina ceramic that offers the ultimate properties of pure Alumina. No binders to contaminate even the most delicate systems. Offers high electrical resistance even at high temperatures.

Durapot 804 & 805 • 1650°C 96% Pure Alumina Ceramic

Formulated to provide a high strength, low cost alumina potting and casting material. Electrical and metallurgical properties are excellent. Simply mix, pour and cure at room temperature.

Durapot 809 • 1530°C Electrically Resistant Cement

The best general purpose ceramic potting compound. Highly electrically resistant ceramic that can be used for potting, sealing and bonding. Just mix, apply and cure at room temperature. Used in ignitions, heating coils, electronics and many production applications.

Durapot 810 • 1650°C Therm. Conductive & Elec. Resistant

Highly thermal conductive, electrically resistant Alumina based potting compound and adhesive that was developed to provide excellent electrical resistance at high temperatures and improved thermal conductivity for high power applications.

Durapot 814 • 1100°C High Speed Potting Cement

Formulated for use where a fast cure is required. Just mix and apply. Will cure in 5 minutes at 80°C - 110°C or overnight at room temperature. It is an excellent choice for production applications.

Durapot 820 • 1420°C Electrically Resistant Coating

A single component paint and coating, just brush on and air dry to form a highly resistant 1420°C coating containing over 85% Alumina. Used to coat wires, coils etc.

Durapot 821 • 1370°C Low Expansion Cement

Quartz based, fast curing adhesive and potting compound. The perfect material for bonding and potting quartz lamps, glassware, fibre cables or any low expansion material.

Properties	801	804	805	809	810	814	820	821
Base	99% Alumina	96% Alumina	96% Alumina	MgO Base	Alumina	Zirconia	Alumina Oxide	Fused Silica
Volume Resistivity (ohm-cm)	10^{15}	10^{10}	10^{10}	10^{11}	10^{11}	10^{8}	10^{12}	10^{8}
Dielectric Strength (kV/mm)	13.65	6.82	6.82	10.53	10.53	4.88	7.80	4.88
Thermal Expansion (10^{-6}/°C)	7.74	7.20	7.20	4.68	8.10	8.10	7.20	0.54
Thermal Conductivity (w/m °C)	1.15	1.15	1.44	0.57	2.16	1.15	0.29	0.72
Chemical Resistance	Good	Good	Good	Good	Good	Good	Good	Excellent
Solvent Resistance	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Pot Life	15 min	30 min	30 min	20 min	20 min	20 min	10 min	20 min
Components / Colour	2 / White	2 / White	2 / White	2 / Tan	2 / Tan	2 / White	1 / Red	2 / White
Mix Ratio	100:44	100:19	100:12	100:13	100:13	100:30	n/a	100:44
Cure Cycle Time at R/T	24 hrs	24 hrs	24 hrs	24 hrs	24 hrs	24 hrs	24 hrs	24 hrs

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Ceramic High Temp. Coatings

Duralco® 201, 215, 230N and 254

Duralco 201 • 650ºC Liquid Aluminium Coating

A water based coating filled with ultra fine aluminium for maximum corrosion resistance. Having excellent resistance to high humidity and saline atmospheres, fuel gas exhaust, corrosive environments and organic solvents.

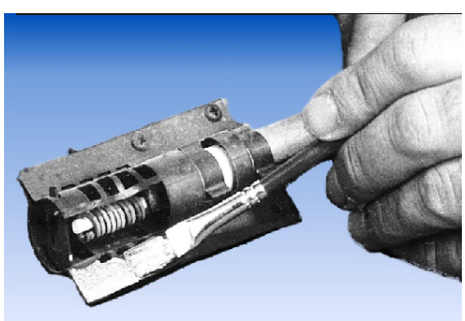
It's easy to use just apply and cure, post cure at 120ºC for additional resistance.

Applications include: Protecting exhausts, mufflers, boilers, jet engines, heat exchanges, chemical processing equipment, outdoor electrical equipment and other assemblies.

Duralco 215 • 1370ºC Impregnate and Coating

A ceramic based high temperature coating that has ultra fine ceramic particles that will impregnate even into pre-wound electric windings. Readily applied by brushing, dipping, coating and air dries to provide excellent electrical, chemical and solvent resistance.

Applications include: Coating and impregnating high temperature coils, motors, transformers, resistors, heating elements etc.

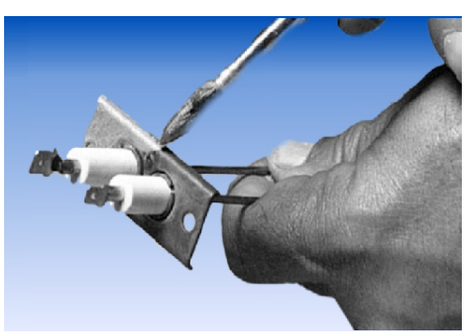


Duralco 230N • 815ºC Liquid Stainless Coating

Liquid stainless is formulated from specially processed stainless steel platelets and ceramic binders creating a safe, water based system. It is applied to clean surfaces by brushing, spraying or dipping.

Air drying or mild heat will provide corrosion resistance to 700ºC to 815ºC.

User Report: Parts coated with this Duralco 230N passed 2,000 hour tests and thousands of thermal tests to 700ºC.



Duralco 254 • 980ºC Porcelain Like Stainless Coating

Duralco 254 is a unique silicone bonded, porcelain like' highly protective, stainless steel, composite coating. Just apply and dry at room temperature. Post cure at approximately 590ºC to 760ºC. Ideal for providing protection for all types of metallic surfaces .

Applications include: Corrosion protection for burners, heating elements, exhaust stacks, equipment etc.

Flexible Ceramics Board and Blanket

Rescor® 360 and 370 Series

Rescor® 360 - 1480ºC Ceramic Board

Rescor ceramic board is made from asbestos-free, high purity, refractory fibres, that have a melting point of between 1760ºC to 1980ºC. They are thoroughly interlaced in the production process and bonded with an inorganic binder.

Strong, rigid, free standing shapes and parts are easily constructed. Just cut, saw or drill. Parts can be bonded together (if needed) with Resbond 901 adhesive, 7020 putty or 907GF sealant.

Use Resbond 901A for surface hardener where required.

Use Rescor 360 for general purpose applications, 360HS for construction, 360EHS for gaskets and high strength applications, 360H for high temperature and 3360UHT for ultra high temperature applications up to 1700ºC.

General purpose rated @ 1260ºC

360-1	1/4” thick, size 12” x 18”, 4 off
360-2	1/2” thick, size 18” x 24”, 2 off
360-5	1” thick, size 18” x 24”, 2 off

High strength construction

360-1EHS	1/8” thick, size 12” x 24”, 2 off
360-2HS	1/2” thick, size 18” x 24”, 2 off
360-5HS	1” thick, size 18” x 24”, 2 off

Ultra High Temperature, rated from 1480ºC

360H-5	1/2” thick, size 18” x 24”, 2 off
3360UHT	1/2” thick, size 18” x 24”, 2 off

Rescor® 370 - 1650ºC Ceramic Blanket

Rescor ceramic fibre blanket insulation is a strong, lightweight, flexible blanket made from asbestos-free, extra long ceramic fibres, which are cross linked to produce excellent handling strength.

Provides outstanding thermal insulation, low heat storage, high resiliency, high mechanical and thermal shock resistance and sound absorption.

General purpose rated @ 1260ºC

370-1	1/8” thick, roll size 24” x 25’
370-2	1/4” thick, roll size 24” x 25’
370-3	1/2” thick, roll size 24” x 12’
370-4	1/2” thick, roll size 24” x 25’
370-5	1” thick, roll size 24” x 12’

High Temperature, rated @ 1370ºC

370H-6	1/2” thick, roll size 24” x 12’

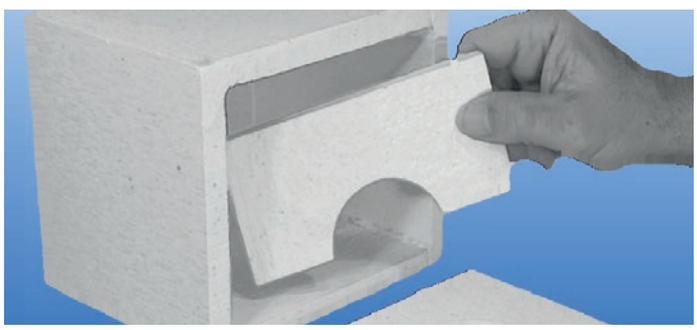
Ultra High Temperature, rated @ 1650ºC

370UHT-1	1-1/2” thick, roll size 24” x 24’

Specialist foil backed, rated @ 1260ºC

370FT	1/2” thick, roll size 24” x 12’

Special sizes, custom fabricated parts and quantity prices on request.



Properties	360	360HS	360H
Melting Point (ºC)	1,760	1,760	1,815
Service Temp. (ºC)	1,260	1,260	1,480
Density (kg/m³)	256	528	240
Modulus of Rupture (psi)	55	350	60
Dielectric Constant (@ 10^8 cps)	1.61	1.61	1.61
Dielectric Strength (kV/mm)	3.9	3.9	3.9
Thermal Conductivity (W/m ºC) @ 260ºC	0.065	0.079	0.065
Thermal Conductivity (W/m ºC) @ 537ºC	0.101	0.115	0.101
Thermal Conductivity (W/m ºC) @ 815ºC	0.137	0.151	0.137
Thermal Conductivity (W/m ºC) @ 1090ºC	0.223	0.252	0.223

Properties	370
Melting Point (ºC)	1,760
Service Temp. (ºC)	1,260 to 1,650
Density (kg/m³)	96 to 192
Dielectric Constant (@ 10^8cps)	1.61
Dielectric Strength (kV/mm)	3.9
Loss Factor	0.017
Thermal Conductivity (W/m ºC) @ 260ºC	0.055
Thermal Conductivity (W/m ºC) @ 537ºC	0.086
Thermal Conductivity (W/m ºC) @ 815ºC	0.130
Thermal Conductivity (W/m ºC) @ 1100ºC	0.192

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Flexible Ceramics Wrap-IT and Tape

Rescor® 372 and 375FT Series

Rescor® 372 - 1650ºC Wrap-It, Mouldable

Wrap-It mouldable sheets combine high purity fibres with proprietary, inorganic binders in a new and economical wet felt form.

Wrap-It is cut to shape, moulded and dried to form a light-weight, resilient, highly efficient, thermal insulation that is also resistant to most chemicals and solvents.

Just air dry to form strong free standing shapes.

Wrap-It will not crack or flake, has excellent thermal shock resistance and is not wet by molten metals.

Applications include insulation, furnace linings, expansion joint packing, fire protection, sound absorption.

Wrap-It can be bonded with 7020 Thermeez ceramic putty, or 901 Resbond fibre based ceramic adhesive.

General purpose rated @ 1260ºC

372-0	1/8” thick, roll size 2’ x 12.5’
372-1	1/4” thick, roll size 2’ x 12.5’
372-2	1/2” thick, roll size 2’ x 12.5’
372-3	1” thick, roll size 2’ x 8’

High Temperature, rated at 1480ºC

372HT-3	1/2” thick, roll size 2’ x 6’

Ultra High Temperature, rated @ 1650ºC

372UHT-2	1/2” thick, roll size 2’ x 2’

Rescor® 375FT - 1260ºC Thermal Stop Tape

375FT Thermal Stop is a high purity, aluminium oxide based ceramic fibre, uniquely bonded to a 0.05mm thick layer of aluminium foil.

The ceramic fibres have a melting point of 1760ºC and will provide up to 1260ºC continuous service.

These resilient ceramic fibre strips are used for pipe duct wrap, expansion joints and repairs, insulation equipment, plastic moulds, pilot plant, lab units etc. Use band clamps or Type 600 high temperature tape to secure pipe wraps.

Use Resbond 901A for rigidising where required.

375FT-2	1/2” thick, roll size 2” x 12’
375FT-3	1/2” thick, roll size 3” x 12’
375FT-4	1/2” thick, roll size 6” x 12’
375FT-1	1/2” thick, roll size 24” x 12’
375FT-5	1” thick, roll size 2” x 8’
375FT-6	1” thick, roll size 3” x 8’
375FT-8	1” thick, roll size 6” x 8’
375FT-7	1” thick, roll size 24” x 12’

The table below gives an indication of insulating properties of Thermal Stop Tape installation.

Properties	372	372HT	372UHT
Melting Point (ºC)	1,760	1,815	1,980
Service Temp. (ºC)	1,260	1,480	1,650
Density (kg/m^3)	288	288	192
Al_2O_3 %	35	65	98
SiO_2 %	65	35	2
Shrinkage (%) after 24 hrs @ 700ºC	0.2	0.1	0.1
Shrinkage (%) after 24 hrs @ 1200ºC	2.0	0.7	0.5
Thermal Conductivity (W/m ºC) @ 537ºC	0.10	0.08	0.07
Thermal Conductivity (W/m ºC) @ 815ºC	0.13	0.11	0.07

Hot Surface Temperature	375FT -1 to -4	375FT -5 to -8
	Insulated Surface Temperature	
537ºC	150ºC	105ºC
760ºC	200ºC	150ºC
870ºC	235ºC	195ºC
980ºC	275ºC	215ºC
1200ºC	375ºC	260ºC

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Flexible Ceramics Tape

Thermeez® 390 and 391 Series

Thermeez® 390 - 1260ºC Ceramic Tape

390 Ceramic Tape is made from asbestos-free aluminium oxide based, high purity refractory fibres.

Can be used to temperatures exceeding 1260ºC and offers outstanding high temperature stability.

Designed to replace asbestos based products which were limited in use at 650ºC.

Ultra-Temp tapes can be cut with ordinary scissors and formed into complex shapes.

The tapes have low specific heat, low thermal conductivity, resistance to thermal shock, electrical insulation, good dielectric strength and excellent corrosion resistance.

390-21	1” x 50’, 1/32” thick
390-22	2” x 50’, 1/32” thick
390-23	3” x 50’, 1/32” thick
390-41	1” x 50’, 1/16” thick
390-42	2” x 50’, 1/16” thick
390-43	3” x 50’, 1/16” thick
390-81	1” x 25’, 1/8” thick
390-82	2” x 25’, 1/8” thick
390-83	3” x 25’, 1/8” thick

Thermeez® 391 - 1430ºC Tape and Cloth

Woven from continuous filament, high alumina, ceramic fibres. These uniquely woven ceramic fibre cloths, tapes and sleeving, form materials with flexibility and strength. Excellent chemical and electrical resistance.

391W-1A	Tape	1” x 0.020” x 10’
391W-1	Tape	1” x 0.020” x 20’
391W-2A	Tape	2” x 0.020” x 10’
391W-2	Tape	2” x 0.020” x 20’
391W-1APS	Adhesive Tape	1” x 0.020” x 10’
391W-1PS	Adhesive Tape	1” x 0.020” x 20’
391W-2APS	Adhesive Tape	2” x 0.020” x 10’
391W-2PS	Adhesive Tape	2” x 0.020” x 20’
391C-1	Cloth	12” x 0.060” x 5’
391C-2	Cloth	12” x 0.060” x 10’
391C-3	Cloth	30” x 0.030” x 25’
391T-10	Thread	0.020” Dia. x 250’
391T-11	Thread	0.020” Dia. x 500’
391T-12	Lacing Rope	0.060” Dia. x 50’
391T-0	Sleeving	1/16” ID. x 1/32” x 25’
391T-1	Sleeving	1/8” ID. x 1/32” x 25’
391T-2	Sleeving	1/4” ID. x 1/32” x 15’
391T-3	Sleeving	1/2” ID. x 1/32” x 10’
391T-5	Sleeving	1” ID. x 1/32” x 10’
391T-6	Sleeving	1.5” ID. x 1/32” x 5’
391T-7	Sleeving	2” ID. x 1/32” x 5’

Properties	Thermeez 390
Melting Point (ºC)	1,760
Service Temp. (ºC)	1,260
Density (kg/m^3)	192
Loss Factor	0.017
Dielectric Constant (@ 10^8 cps)	1.61
Dielectric Strength (kV/mm)	3.9
Thermal Conductivity (W/m ºC) @ 260ºC	0.055
Thermal Conductivity (W/m ºC) @ 537ºC	0.086
Thermal Conductivity (W/m ºC) @ 815ºC	0.130
Thermal Conductivity (W/m ºC) @ 1100ºC	0.192

Properties	Thermeez 391
Melting Point (ºC)	1,815
Service Temp. (ºC)	1,430
Dielectric Constant (@ 10^8 cps)	1.61
Dielectric Strength kVv/mm)	19.5
Thermal Conductivity (W/m ºC) @ 260ºC	0.065
Thermal Conductivity (W/m ºC) @ 537ºC	0.130
Thermal Conductivity (W/m ºC) @ 1100ºC	0.230
Tensile Strength (psi), base fibre	250,000
Modulus of Elasticity (psi), base fibre	22 x 10^6

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Flexible Ceramics Fabrics

Thermeez® 398 and 399 Series

Thermeez® 398 - 340ºC Aramid Fabrics

398 fabrics, tapes or sleeving are woven from Nomex® or Kevlar® brand of Aramid fibres. They are exceptionally strong, temperature resistant, flame retardant and will remain flexible while in use from -40ºC to 340ºC. Provides short term service to 450ºC.

Aramid fabrics are resistant to fungi, bacteria, mildew and abrasion. 398 is non-allergenic and lightweight.

Use for pipe wrap, heat seal covers, pressure fabrics, gaskets and packing.

Can be impregnated with epoxies or silicones for electrical applications, personal protection, flexible equipment curtains and hose coverings etc.

398C-1	Fabric	5/64” x 40” 24’
398T-2	Sleeving	3/8” ID x 100’
398T-3	Sleeving	1/2” ID x 100’
398-41	Tape	1” x 1/16” x 50’
398-42	Tape	2” x 1/16” x 50’
398-43	Tape	3” x 1/16” x 50’
398-81	Tape	1” x 1/8” x 50’
398-82	Tape	2” x 1/8” x 50’
398-83	Tape	3” x 1/8” x 50’

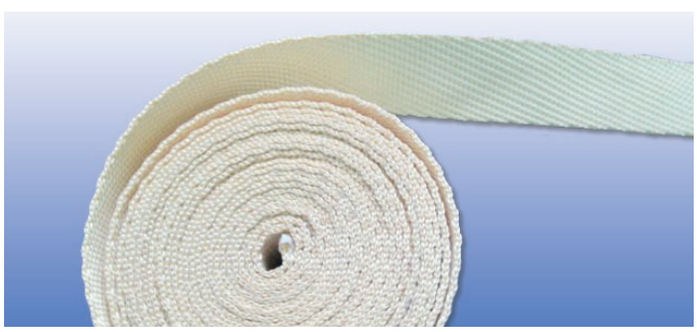
Additional sizes and pressure sensitive tapes are available on request.

Thermeez® 399 - 1100ºC Fabrics and Tapes

Thermeez 399 Silica products are woven from 96% pure Silica fibre are inorganic and will not smoke when exposed to heat.

Ideal for thermal and electrical insulation, handling molten metals, hose or wire covers, gaskets, expansion joints etc.

399T-41	Tape	1” x 0.060” 25’
399T-42	Tape	2” x 0.060” 25’
399T-81	Tape	1” x 0.125” 25’
399T-82	Tape	2” x 0.125” 25’
399C-1	Woven Fabric	0.030” x 36” x 10’
399C-2	Woven Fabric	0.054” x 36” x 10’
399T-41PS	Adhesive Tape	1” x 0.060” x 25’
399T-42PS	Adhesive Tape	2” x 0.060” x 25’
399T-81PS	Adhesive Tape	1” x 0.125” x 25’
399T-82PS	Adhesive Tape	2” x 0.125” x 25’
399S-1	Sleeving	1/64” ID x 0.008” x 25’
399S-2	Sleeving	1/32” ID x 0.010” x 25’
399S-7	Sleeving	1/8” ID x 0.035” x 25’
399S-4	Sleeving	1/4” ID x 0.020” x 25’
399S-5	Sleeving	1/2” ID x 0.035” x 25’
399S-6	Sleeving	1” ID x 0.035” x 25’
399R-1	Braided Rope	1/8” x 25’
399R-2	Braided Rope	1/4” x 25’
399R-3	Braided Rope	1/2” x 15’
399R-4	Braided Rope	3/4” x 10’
399R-5	Braided Rope	1” x 10’



Properties	Thermeez 398
Melting Point (ºC)	427
Service Temp. (ºC)	340
Aramid %	100
Dielectric Constant (10^8 cps)	4.0
Dielectric Strength (kV/mm)	5.85
Thermal Conductivity (W/m ºC)	0.050
Tensile Strength (psi x 10^5)	80
Modulus of Elasticity (psi x 10^6)	12.0
Porosity %	0

Properties	Thermeez 399
Melting Point (ºC)	1,700
Service Temp. (ºC)	1,100
Silica %	98
Dielectric Constant (10^8 cps)	3.8
Dielectric Strength (kV/mm)	19.5
Thermal Conductivity (W/m ºC)	0.065
Tensile Strength (psi x 10^5)	5
Modulus of Elasticity (psi x 10^6)	10.5
Porosity %	1

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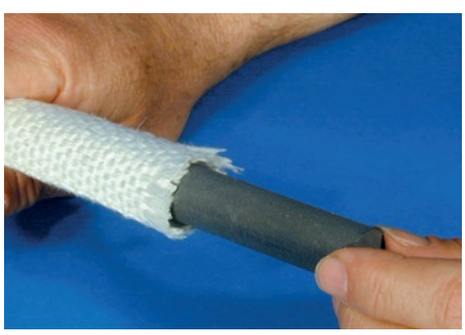
Flexible Ceramics Tape

Thermeez® 395 and 397 Series



Woven Tapes: Pipes, hoses, cables, exhaust systems, equipment wrapping, door gaskets, strip curtains etc.

Adhesive Tapes: Wrapping around complex objects for fast economical insulation of pipes, cables etc.

Woven Cloths: Furnaces, fire and splash curtains, fabrication of insulation blankets, pillows, clothing etc.

Sleeving: Hi-temp tubing, hose and wire insulation protection, resilient gasketing etc.

Rope: Gaskets, packing, seals, doors, access ports, fabrication etc.

Thermeez® 395 or 397 - 595ºC or 815ºC Woven Ceramic

Ceramic fibre products are ideal for thermal insulators, padding, gaskets, flexible curtains, liquid metal splash protection, expansion joints, sleeving for flexible wire insulation, hoses, thermocouples and induction coils.

Both Thermeez 395 and 397 fabrics are high strength, flexible, durable, dimensionally and chemically stable and offer excellent electrical resistance. User friendly and unlike fibreglass, non-irritating to the skin. They are also non-toxic, meet OSHA requirements, will not burn and are resistant to molten metal sparks and splashes, most chemicals and solvents.

395/7-21	Tape	1” x 1/32” x 100’
395/7-22	Tape	2” x 1/32” x 100’
395/7-23	Tape	3” x 1/32” x 100’
395/7-41	Tape	1” x 1/16” x 100’
395/7-42	Tape	2” x 1/16” x 100’
395/7-43	Tape	3” x 1/16” x 100’
395/7-81	Tape	1” x 1/8” x 100’
395/7-82	Tape	2” x 1/8” x 100’
395/7-83	Tape	3” x 1/8” x 100’
395/7-21PS	Adhesive Tape	1” x 1/32” x 50’
395/7-22PS	Adhesive Tape	2” x 1/32” x 50’
395/7-23PS	Adhesive Tape	3” x 1/32” x 50’
395/7-41PS	Adhesive Tape	1” x 1/16” x 50’
395/7-42PS	Adhesive Tape	2” x 1/16” x 50’
395/7-43PS	Adhesive Tape	3” x 1/16” x 50’
395/7-81PS	Adhesive Tape	1” x 1/8” x 50’
395/7-82PS	Adhesive Tape	2” x 1/8” x 50’
395/7-83PS	Adhesive Tape	3” x 1/8” x 50’
395C/7C-1	Woven Cloth	40” x 1/16” x 5’
395C/7C-2	Woven Cloth	40” x 1/16” x 15’
395C/7C-3	Woven Cloth	40” x 1/16” x 50’
395C/7C-5	Woven Cloth	40” x 1/8” x 25’
395T/7T-0	Sleeving	1/8” ID. x 100’
395T/7T-1	Sleeving	1/4” ID. x 100’
395T/7T-2	Sleeving	3/8” ID. x 100’
395T/7T-3	Sleeving	1/2” ID. x 100’
395T/7T-4	Sleeving	3/4” ID. x 100’
395T/7T-5	Sleeving	1” ID. x 100’
395T/7T-6	Sleeving	1.5” ID. x 50’
395T/7T-7	Sleeving	2” ID. x 50’
395R-1	Braided Rope	3/8” DIA. x 100’
395R-2	Braided Rope	1/2” DIA. x 100’
395R-3	Braided Rope	1” DIA. x 50’

Properties	395	397
Melting Point (ºC)	1,540	1,540
Service Temp. (ºC)	595	815
Density (kg/m³)	480	560
Dielectric Strength kV/mm)	17.55	17.55
Thermal Conductivity (W/m ºC) @ 260ºC	0.069	0.072
Thermal Conductivity (W/m ºC) @ 537ºC	0.130	0.137

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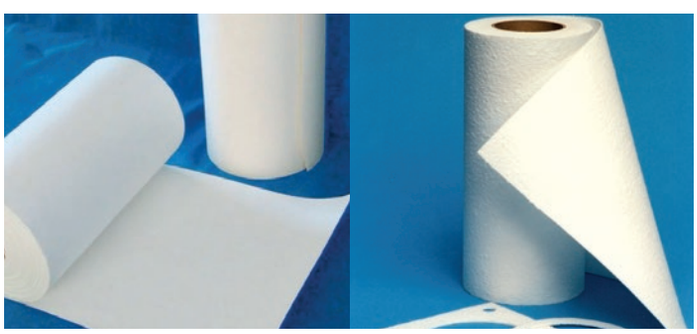
Rescor® 300 - 1650ºC Ceramic paper

Cotronics' ceramic papers are made from asbestos-free high purity Alumina based refractory fibres, with a melting point between 1760ºC to 1980ºC, offering outstanding high temperature stability. Resistant to thermal shock and corrosion, having excellent electrical resistance, low specific heat and low thermal conductivity.

Can be cut with normal scissors, folded, wrapped, rolled and will mould around sharp corners. Strong free-standing shapes are easily produced. Ideal for high temperature gaskets, combustion furnaces, induction linings, electrical insulators, handling of molten metals, brazing, heat treatment and metal forming operations.

Rescor 300BL is a binder-less paper for use in air, vacuum or atmosphere furnaces. Will not burn off organic binders and no fumes associated with initial heat up.

300-20-1	1/32" x 12" x 300'
300-20-2	1/32" x 24" x 150'
300-20-3	1/32" x 24" x 50'
300-40-2	1/16" x 24" x 100'
300-40-3	1/16" x 24" x 25'
300-80-1	1/8" x 12" x 100'
300-80-2	1/8" x 24" x 50'
300-80-3	1/8" x 24" x 25'
300BL-1	1/8" x 24" 25'
300BL-2	1/16" x 24" 25'
300A	Trial Kit - Contains 6 ft^2 each of Rescor 300 1/32", 1/16", 1/8" and 2 ft^2 of Rescor 300BL.



Properties	Rescor 300
Melting Point (ºC)	1,760
Service Temp. (ºC)	1,650
Density (kg/m^3)	192
Dielectric Constant (@ 10^8 cps)	1.61
Dielectric Strength (kV/mm)	3.9
Loss Factor	0.017
Thermal Conductivity (W/m ºC) @ 260ºC	0.055
Thermal Conductivity (W/m ºC) @ 537ºC	0.086
Thermal Conductivity (W/m ºC) @ 815ºC	0.130
Thermal Conductivity (W/m ºC) @ 1100ºC	0.192

Rescor® 901A - 1260ºC Liquid Hardener

Rescor 901A ceramic hardener is a clear liquid which penetrates into the surface of porous ceramics to form a strong ceramic bond and harden the surface.

No organics or solvents.

Just brush on and let dry.

Use 901A to prime surfaces before bonding and extend the life and wear resistance of insulation materials. Can be applied directly to transite, marinate, calcium silicate, rock wool, mineral wool and ceramic fibre insulation.

Hardens and extends the life and wear resistance of all porous ceramics.

Melting point is 1760ºC.

901A-1	2 Pints
901A-2	Gallon
901A-3	5 Gallons

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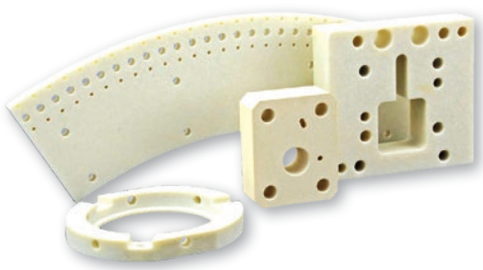
Machinable Ceramics

Introduction and Selection Table



The range of machinable ceramics outlined here allows design engineers to produce a host of new ceramic parts in-house, without the need of specialist providers. Rescor ceramics are easy to machine with conventional shop equipment and standard cutting tools. They can be turned, drilled, milled, sawn and even ground. No more delays, costly time consuming processes or problems with part revisions or modifications.

They offer high temperature stability, excellent electrical characteristics, corrosion, abrasion and chemical resistance. Can be used up to 1650ºC in all oxidising, reducing or vacuum atmospheres.

Select from Alumina Silicate, Non-porous glass ceramic, Macor®, 96% Alumina, High strength non-porous Alumina, Silica, Graphite and Boron Nitride (on request). Cotronics' Rescor machinable ceramics are readily available in a wide range of rods and plates.

Features	Standard	Impact	Vacuum	High Temp	Hi Strength	Low Exp.	Insulating		Ultra Temp
Product Ref	902	914	915	960	961	962	310M	311	56L
Properties	Alumina	Glass	Macor®	Alumina	Alumina	Borosilicate Glass	Silica Foam	Alumina	Graphite
Temperature Limit ºC	1,150	540	980	1,650	1,705	260	1,650	1,430	3,000
Compressive Strength (psi)	38,000	40,000	50,000	60,000	380,000	n/a	1,200	500	16,000
Flexural Strength (psi)	14,000	26,000	15,000	38,000	40,500	6,900	520	250	6,500
Thermal Expansion ($x10^{-5}$/ºC)	3.24	9.36	9.36	7.74	6.66	3.24	0.54	5.22	5.58
Volume Resistivity (ohm-cm)	10^{14}	10^{14}	10^{14}	10^{14}	10^{15}	10^{8}	10^{9}	10^{8}	n/a
Dielectric Strength (kV/mm)	3.9	18.7	39	7.8	19.5	3.9	3.9	3.9	n/a
Loss Factor @ 1Mhz	0.04	0.01	0.003	0.0016	0.001	n/a	0.002	0.02	n/a
Dielectric Constant @ 1 Mhz	5.3	7.5	6.0	9	9	4.6	3.17	2.17	n/a
Thermal Conductivity (W/mºC)	1.296	0.403	1.728	4.608	6.048	1.152	0.187	0.346	7.2+
Porosity %	2.9	0	0	10	0	0	63	52	10
Density kg/mm^3	2,322	2,600	2520	3,000	3,820	2,230	800	800	1,630
Hardness Mohs Scale	6	5	5	5	8	4	4	4	3
For Bonding use Resbond	919	940	940	989	989	940LE	940LE	940LE	931

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Machinable Ceramics

Rescor® 902 and 914 Series

Rescor® 902 - 1150ºC Alumina Silicate

Fine grained ceramic that is readily machinable, providing excellent electronic, mechanical and thermal properties. It is inert to oxidising and reducing atmospheres, resistant to most acids, chemicals, solvents and has excellent thermal shock resistance.

Usable as supplied to 590ºC. After a simple heat treatment, after machining at 1040ºC, hardens and extends the temperature capability up to 1150ºC.

Ideal for rapid prototypes, fabrication of electrical insulators, furnace components, brazing, soldering, welding fixtures etc.

Sheet Sizes

902-1	1/4” x 6” x 6”
902-1A	1/4” x 4” x 9.5”
902-3	1/2” x 4” x 9.5”
902-4	1/2” x 6” x 6”
902-6	3/4” x 4” x 9.5”
902-7	3/4” x 6” x 6”
902-9	1” x 4” x 9.5”
902-10	1” x 6” x 6”
902-12	2” x 4” x 9.5”
902-13	2” x 6” x 6”
902-22	1.5” x 6” x 6”
902-23	1.5” x 4” x 9.5”
902-25	1/4” x 9.5” x 9.5”
902-26	1/2” x 9.5” x 9.5”
902-27	1” x 9.5” x 9.5”

Rod Sizes

902-14	1/4” x 6”
902-15	1/2” x 9.5”
902-16	3/4” x 9.5”
902-17	1” x 9.5”
902-18	1.5” x 9.5”
902-19	2” x 9.5”
902-19A	2.5” x 9.5”
902-20	3” x 9.5”
902-50	3.5” x 9.5”
902-24	4” x 9.5”
902-Kit	Trial Kit

Rescor® 914 - 430ºC Glass Ceramic

A dense and vacuum tight, glass ceramic composite that is readily machinable, with no post machining heat treatment required.

Inert to oxidising and reducing atmospheres and usable to 540ºC maximum. Offers excellent mechanical and electrical properties and has a dielectric strength of 18kV/mm. Can be metalised and soldered.

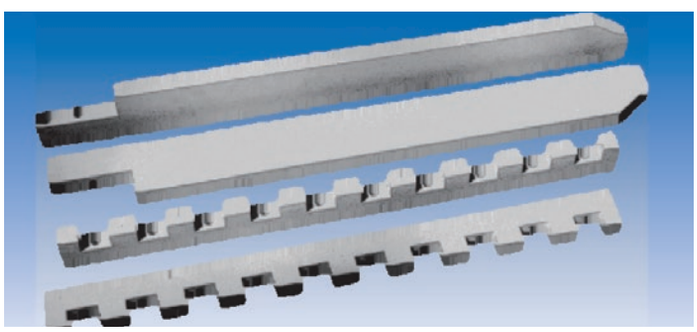
Low thermal conductivity, high impact and mechanical strength make it an ideal high temperature material. A budget alternative to Macor® if temperatures do not exceed 540ºC.

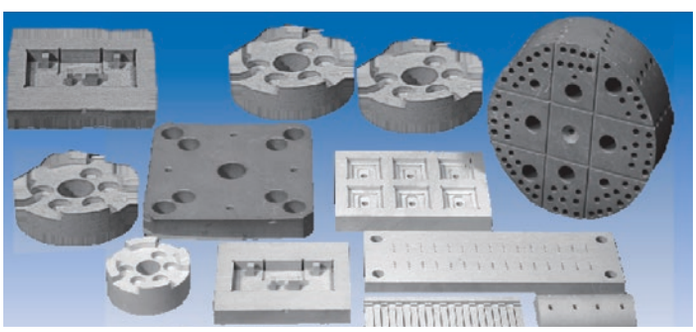
Sheet Sizes

914-1	1/16” x 12” x 18”
914-4	1/8” x 9” x 12”
914-5	1/8” x 12” x 18”
914-9	1/4” x 9” x 12”
914-10	1/4” x 12” x 18”
914-15	1/2” x 12” x 18”
914-15A	1/2” x 9” x 12”
914-17	3/4” x 12” x 18”
914-17A	3/4” x 9” x 12”
914-19	1” x 12” x 18”
914-19A	1” x 9” x 12”

Rod Sizes

914-22	1/4” x 12”
914-25	1/2” x 12”
914-28	3/4” x 12”
914-31	1” x 12”
914-32	1.25” x 12”
914-TK	Trial Kit





Properties	Rescor 902
Melting Point (ºC)	1,760
Service Temp. (ºC)	1,150
Compressive Strength (psi)	38,000
Flexural Strength (psi)	14,000
Thermal Conductivity (W/m ºC)	1.296
Dielectric Strength (kV/mm)	3.9
Volume Resistivity (ohm-cm)	10^{14}
Dielectric Constant (@ 1 Mhz)	5.3
Density (kg/m^3)	2,322
Loss Factor (@ 1 Mhz)	0.04

Properties	Rescor 914
Maximum Service Temp. (ºC)	540
Continuous Service Temp. (ºC)	430
Compressive Strength (psi)	40,000
Flexural Strength (psi)	26,000
Thermal Conductivity (W/m ºC)	0.403
Dielectric Strength (kV/mm)	18.72
Volume Resistivity (ohm-cm)	10^{14}
Dielectric Constant (@ 1 Mhz)	7.5
Density (kg/m^3)	2,600
Loss Factor (@ 1 Mhz)	0.01

Please note that the weights and volumes used in this product guide are American and NOT standard Imperial.
Not all products are supplied in dispensing tubes as shown, these are available as an option on request.

Machinable Ceramics

Rescor® 915 and 960 Series

Rescor® 915 - 980ºC MACOR® Glass Ceramic

A dense vacuum tight, glass ceramic composite that is readily machinable. Can be ground, sawn, turned, milled, drilled etc. Will provide dense zero porosity parts in-house. Has excellent electrical properties even at high frequencies. Use in critical medical and high vacuum applications.

No post machining heat treatments required.

MACOR is a registered trademark of Corning Glass.

Sheet Sizes

915-1	1/4” x 3” x 3”
915-2	1/4” x 6” x 6”
915-3	1/2” x 3” x 3”
915-4	1/2” x 6” x 6”
915-5	3/4” x 3” x 3”
915-6	3/4” x 6” x 6”
915-7	1” x 3” x 3”
915-8	1” x 6” x 6”
915-17	1” x 1” x 3”
915-16	2” x 2” x 3”
915-TK	Trial Kit

Rod Sizes

915-9	1/4” x 12”
915-10	1/2” x 6”
915-11	1/2” x 12”
915-11A	3/4” x 12”
915-12	1” x 6”
915-13	1” x 12”
915-18	2” x 3”

Rescor® 960 - 1,650ºC Ultra High Temperature

A 96% Alumina, ceramic that is usable continuously to 1,650ºC, offering the convenience and economy of an in-house capability for Alumina parts. The chemical, thermal and electrical properties are equivalent to standard high performance Alumina ceramics.

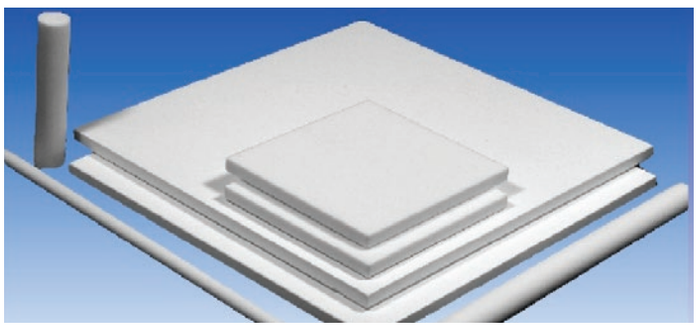
Use Rescor 960 hardener (a clear ceramic impregnant) to harden and increase the wear resistance of the 960 surface. Just apply and cure at 315ºC.

Sheet Sizes

960-14	1/4” x 6” x 6”
960-15	1/2” x 6” x 6”
960-16	3/4” x 6” x 6”
960-18	5/8” x 6” x 6”
960-K	Trial Kit
960-H	Hardener-Pint

Rod Sizes

960-1	1/4” x 6”
960-3	1/2” x 12”
960-4	5/8” x 12”
960-5	3/4” x 12”
960-7	1” x 12”
960-12	1.5” x 12”
960-9	2” x 12”
960-10	2.5” x 12”
960-11	3” x 12”
960-13	3.5” x 12”
960-13A	3.5” x 6”



Properties	Rescor 915
Maximum Service Temp. (ºC)	980
Compressive Strength (psi)	50,000
Flexural Strength (psi)	15,000
Thermal Conductivity (W/m ºC)	1.728
Dielectric Strength (Kv/mm)	39
Volume Resistivity (ohm-cm)	10^{14}
Dielectric Constant (@ 1 Mhz)	6.0
Density (kg/m^3)	2,520
Loss Factor (@ 1 Mhz)	0.003
Modulus of Elasticity (x10^6)	9.3

Properties	Rescor 960
Maximum Service Temp. (ºC)	1,650
Compressive Strength (psi)	60,000
Flexural Strength (psi)	38,000
Thermal Conductivity (W/m ºC)	4.608
Dielectric Strength (Kv/mm)	7.8
Volume Resistivity (ohm-cm)	10^{14}
Dielectric Constant (@ 1 Mhz)	9.0
Density (kg/m^3)	3,000
Loss Factor (@ 1 Mhz)	0.0016
Thermal Expansion (x10^{-6}/ºC)	7.74

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Machinable Ceramics

Rescor® 961 and 962 Series

Rescor® 961 - 1,705ºC High Strength, Alumina

Rescor 961 is a high strength, zero porosity, extremely wear resistant ceramic, that can be machined only with special tooling. No additional heat treatment required.

This grade of Alumina has the chemical, thermal and electrical resistance required for applications in the electrical, electronic, metallurgical, fixture and vacuum industries.

Can be bonded with Resbond 989 or 903HP.

Rod Sizes

961-10 1/8”x12”
961-11 1/4”x12”
961-12 5/16”x12”
961-13 3/8”x12”
961-14 1/2”x12”
961-9 3/4”x12”

Bar Sizes

961-15 1/8”x1/8”x12”
961-16 1/4”x1/4”x12”

Tube Sizes (OD x ID x L)

961-1 1/8”x1/16”x 2”
961-2 3/16”x1/8”x12”
961-3 1/4”x1/8”x12”
961-4 1/2”x3/8”x12”
961-5 3/4”x1/2”x12”

Twin Tube Sizes (OD x ID)

961-6 0.125”x.040”
961-7 0.188”x.063”
(two holes within diameter, both tubes 18” long)

Square Sizes

961-20 0.025”x4.5”x4.5”
961-22 0.040”x4.5”x4.5”
961-21 0.060”x4.5”x4.5”

Disc Sizes (Thick x Dia.)

961-17 0.094”x2”
961-18 0.156”x4”
961-19 0.188”x6”

Rescor® 962 - 260ºC Borosilicate Glass

Rescor 962 is a high strength, zero porosity, Borosilicate Glass. It is extremely resistant to most chemicals and solvents, it can be machined with glass cutting tools and used continuously up to 260ºC.

It is clear and transparent making it ideal for use in many applications. Easily bonded with Duralco 4463 or Resbond 940LE adhesives.

Rod Sizes

962-10 0.157”x12”
962-11 0.236”x12”
962-12 0.321”x12”
962-13 0.5” x 12”

Tube Sizes (OD x ID x L)

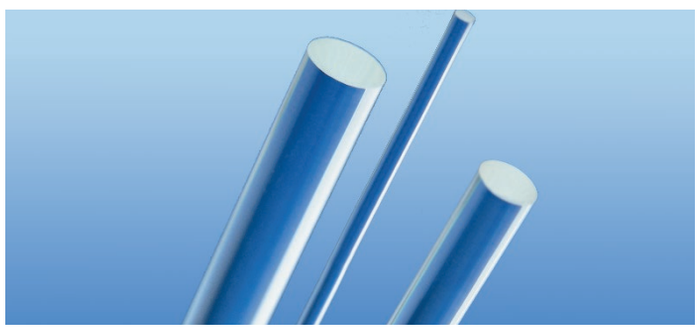
962-1 0.25”x0.16”x12”
962-2 0.50”x0.31”x12”
962-3 0.75”x0.50”x12”

Square Sizes (T x W x L)

962-20 0.12”x4”x4”
962-22 0.25”x4”x4”
962-21 0.37”x4”x4”

Disc Sizes (T x Dia.)

962-17 0.25”x2”
962-18 0.25”x4”
962-19 0.25”x6”



Properties	Rescor 961
Maximum Service Temp. (ºC)	1,705
Compressive Strength (psi)	380,000
Flexural Strength (psi)	40,500
Thermal Conductivity (W/m ºC)	6.048
Dielectric Strength (Kv/mm)	19.5
Volume Resistivity (ohm-cm)	10^{15}
Dielectric Constant (@ 1 Mhz)	9
Density (kg/m^3)	3,820
Loss Factor (@ 1 Mhz)	0.001
Modulus of Elasticity (x10^6)	50

Properties	Rescor 962
Maximum Service Temp. (ºC)	260
Compressive Strength (psi)	n/a
Flexural Strength (psi)	6,900
Thermal Conductivity (W/m ºC)	1.152
Dielectric Strength (Kv/mm)	3.9
Volume Resistivity (ohm-cm)	10^8
Dielectric Constant (@ 1 Mhz)	4.6
Density (kg/m^3)	2,230
Loss Factor (@ 1 Mhz)	n/a
Modulus of Elasticity (x10^6)	64

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Machinable Ceramics

Rescor® 915 and 960 Series

Rescor® 310M - 1,650ºC Ceramic Foam Blocks

Composed of over 99% pure fused Silica ceramic with a temperature withstand of 1650ºC. Features low thermal expansion, high thermal shock resistance, low thermal conductivity and high thermal reflectance.

White hot 1,100ºC ceramic foam parts can be immersed in water without cracking. Easily cut, sawn and drilled.

Rescor 310M-1	4.5” x 6” x 9”
Rescor 310M-2	4.5” x 9” x 12”
Rescor 310M-3	4.5” x 12” x 18”
Rescor 310-4	Trial Kit (misc. pieces)

Rescor® 311 - 1430ºC Ceramic Blocks

Alumina Silica ceramic, withstands temperatures to 1430ºC. Used for applications where the strength and fine grain structure of Rescor 310M foam is not required.

Larger shapes can be produced by bonding blocks together using 901A hardener and 7020 ceramic bonding putty. These assemblies can then be machined to final sizes and shapes.

Also available as a castable ceramic foam Rescor 740.

Rescor 311-1	2.5” x 4.5” x 9”
Rescor 311-2	2 pack
Rescor 311-3	4 pack

Rescor® 56L - 3,000ºC Ultra High Temperature

Rescor 56L Graphite is a fine grain graphite. Easily machined to close tolerances and will not warp, shrink or crack due to thermal stress. Will not wet by glass or metal oxides.

Has high strength and its unique grain structure makes it ideal for all purposes. Can be used to 315ºC to 430ºC in air atmospheres and up to 3,000ºC in inert atmospheres.

Ideal for semi conductors, fixtures, hot pressing dies, glass to metal, seals, heating elements, crucibles, casting precious metals, forming and handling glass, etc.

Custom sizes are available upon request.

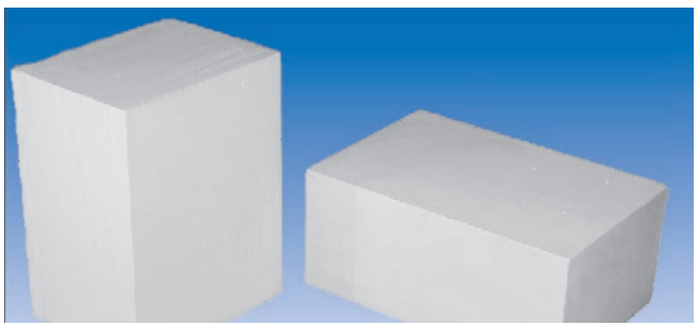
For bonding use Resbond 931 graphite adhesive.

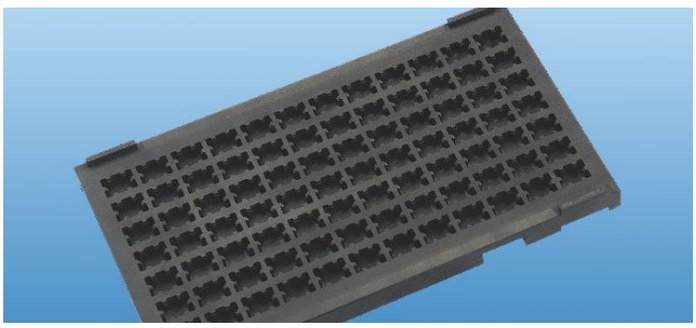
Sheet Sizes

56L-1	1/4” x 6” x 6”
56L-2	1/2” x 6” x 6”
56L-3	1” x 6” x 6”
56L-4	1” x 12” x 12”

Rod Sizes

56L-5	1/4” x 12”
56L-6	1/2” x 12”
56L-7	1” x 12”
56L-8	2” x 12”





Properties	Rescor 310M	Rescor 311
Maximum Service Temp. (ºC)	1,650	1,430
Compressive Strength (psi)	1,200	500
Flexural Strength (psi)	520	250
Thermal Conductivity (W/m ºC)	0.187	0.346
Dielectric Strength (kV/mm)	3.9	3.9
Volume Resistivity (ohm-cm)	10^9	10^8
Dielectric Constant (@ 1 Mhz)	3.17	2.17
Density (kg/m³)	800	800
Loss Factor (@ 1 Mhz)	0.002	.002
Porosity (%)	63	52

Properties	Rescor 56L
Maximum Service Temp. (ºC)	3,000
Compressive Strength (psi)	16,000
Flexural Strength (psi)	6,500
Thermal Conductivity (W/m ºC)	>7.2
Dielectric Strength (kV/mm)	n/a
Volume Resistivity (ohm-cm)	n/a
Dielectric Constant (@ 1 Mhz)	n/a
Density (kg/m³)	1630
Loss Factor (@ 1 Mhz)	n/a
Thermal Expansion (x10^{-6}/ºC)	5.58

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Machinable Ceramics - Castable

Rescor® 700 Series

Rescor castable ceramics are available in six refractory compositions offering engineers a broad selection of properties and performance characteristics. Select from Fused Silica, Zirconium Oxide, Silicon Carbide, Alumina and low density Ceramic Foam.

Just mix the ceramic powders with their activators and pour into any non-absorbent moulds.

Rescor castable ceramics harden overnight to produce highly detailed ceramics, usable to 2,200ºC

They offer excellent resistance to high temperature, thermal shock, molten metals, oxidising and reducing atmospheres, erosion, most acids and alkalies.

Features	Insulating Foam	Shock Resistant	Ultra Temp.	Corrosion Resistance	General Purpose	High Purity
Product Ref	**740**	**750**	**760**	**770**	**780**	**RTC-60**
Properties	Al_2O_3-SiO_2	SiO_2	ZrO_2	SiC	Al_2O_3	Al_2O_3
Maximum Temperature (ºC)	1,260	1,480	2,200	1,480	1,650	1,790
Density (kg/m³)	641	1762	4005	2,322	2,884	2,804
Shrinkage (as cast) %	0.50	0	0	0	0	0
Shrinkage (@ 540ºC) %	1.00	1.30	1.00	1.50	1.00	1.25
Compressive Strength (psi)	1,500	6,000	4,000	6,000	6,000	2,500
Modulus of Rupture (psi)	900	1,500	1,200	1,500	1,800	1,000
Thermal Expansion ($x10^{-6}$/ºC)	8.1	0.54	10.08	8.1	7.2	7.2
Thermal Conductivity (W/mºC)	0.144	0.576	0.936	4.32	1.44	1.44
Dielectric Strength (kV/mm)	3.9	3.9	n/a	n/a	7.8	6.8
Volume Resistance (ohm-cm)	10^9	10^9	n/a	n/a	10^9	10^{10}
Mix Ratio (Base:Activator)	100:62	100:28	100:18	100:24	100:24	100:10
Working Time (mins)	20	20	20	20	20	25
Colour	Tan	White	Tan	Black	White	White
Shelf Life (months)	6	6	6	6	6	6
Moisture Resistance	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Insulating Foam Al_2O_3-SiO_2

740-1 4.5kg
740-2 22.7kg
740-3 45.4kg

Shock Resistant SiO_2

750-1 4.5kg
750-2 22.7kg
750-3 45.4kg

Ultra Temperature ZrO_2

760-1 4.5kg
760-2 22.7kg
760-3 45.4kg

Corrosion Resistance SiC

770-1 4.5kg
770-2 22.7kg
770-3 45.4kg

General Purpose Al_2O_3

780-1 4.5kg
780-2 22.7kg
780-3 45.4kg

High Purity Al_2O_3

RTC-60-2R 4.5kg regular
RTC-60-2F 4.5kg fine
RTC-60-3R 2.3kg regular
RTC-60-3F 2.3kg fine

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Miscellaneous Sealants

Resbond® 907TS Series and 507TS GEL

Resbond® 907TS Series - 1150°C Thread Locker & Pipe Sealant

Viscosities and strengths to meet your toughest sealant needs for use from -150°C to 1150°C. Being easy to use with no measuring, or mess and will not run or drip while applying. Economical as just one bottle provides up to 2000 applications. Room temperature cures save time and money with no costly treatments - just apply and let dry.

High temperature stability, will not soften or decompose at elevated temperatures. High bond strength offers excellent adhesion, sealing most metals and ceramic parts.

Penetrates fine openings to provide electrical and corrosion resistance.

Packaged in convenient 4 oz applicator bottles, making it ideal for use on set screws, fasteners, bolts and pipe threads.

Removable with hand tools (under most conditions).

Resbond® 507TS GEL - 260°C Thread Locker & Pipe Sealant

The perfect alternative to traditional anaerobic sealants that are limited to 150°C. Easy to use and thermally stable, prevents vibration loosening and seals pipes and threads.

All purpose two part epoxy Teflon® sealant, just mix (100 parts resin to 15 parts hardener) and apply. Cures in 4 hours at room temperature to form thermally stable, electrically insulating and chemically resistant bonds.

Features	Low Viscosity	Standard	High Strength	High Viscosity	Epoxy Teflon
Properties	**907TS Green**	**907TS Blue**	**907TS Red**	**907TS Gold**	**507TS GEL**
Typical Uses	Penetrates fine openings	General purpose	Prevents vibration and loosening	Fills large gaps and grooves	General purpose
Viscosity (cps)	2,000	5,000	7,000	15,000	35,000
Shear Strength (psi)	370	400	450	500	1,200
Breaking Torque (inch/lbs)	80	180	250	300	500
Gap Fill (mm)	0.076	0.127	0.254	0.762	0.254
Typical Applications Include	Small set screws, adjustment screws, fasteners and instrumentation	Medium screws, nuts, bolts, pipe threads and fittings.	Large fasteners and set screws, pipe threads, studs and bearings.	For difficult applications, flanges, bolts, pipe threads and large nuts.	All purpose two component epoxy Teflon for difficult applications.

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Adhesive Instructions

Epoxy Adhesives

Outlined below are some key points to follow during the application of our epoxy adhesives and compounds.

Preparation

Clean surfaces of all grease, oil, dirt, old coatings, rust etc. Roughen surface to improve adhesion. For best results use Resbond 105RS solvent or 105RP surface preparation. Re-stir all resins and hardeners to ensure a uniform, homogeneous product. Warming resins to 35ºC - 50ºC will reduce the viscosity and ease mixing.

Mix Ratio

All measurements are by weight. Follow instructions supplied on the product label for the exact mix ratios. Weight = (total weight) - (weight of container). Weigh out the resin and hardener into separate clean containers. Combine the resin and hardener. Mix slowly and thoroughly, making sure to scrape the sides of the container to ensure complete mix. Do not whip air into mix! Apply and heat cure as directed, if applicable.

Vacuum Degassing

Special additives have been incorporated into these Epoxy systems to eliminate the need for vacuum degassing. Warming resin and letting the mixture stand for several minutes before use normally removes most of any remaining trapped air. Vacuum degassing need only be employed for critical applications. NOTE: The use of warmed resin may reduce working time.

Adhesive Applications

Apply with a trowel or dispensing syringe. Use bond lines from 0.13mm to 0.25mm. Disposable syringes are available, please contact us.

Potting and Casting Applications

Pour slowly, in a thin continuous stream, to allow the air to escape. The material should be allowed to flow around and under components. A fast pour may trap air pockets.

Curing

Follow the curing procedures listed on product labels for these systems. Optimum high temperature properties are only obtained when following the recommended cure cycles. Post cure for 4 hours at 90ºC to 120ºC to enhance any room temperature curing system's properties.

Ceramic Adhesives

Outlined below are some key points to follow during the application of our ceramic adhesives and compounds.

Preparation of Non-Porous Materials

Clean surfaces of all grease, oil, dirt, old coatings, rust etc. Roughen surface to improve adhesion. For best results degrease with Resbond 105RS solvent and dry thoroughly.

Preparation of Porous Materials

Clean surfaces of all grease, oil, dirt, old coatings, rust etc. Roughen surface to improve adhesion. For best results use Resbond 105RS solvent or 105RP surface preparation. Moisten the surface to be bonded with a solution of 50% ceramic thinner and 50% clear water (Use the thinner for the specific adhesive system selected).

Mix Ratio

Pre-mix adhesive thoroughly prior to use, following instructions on the label. DO NOT whip air into the mix. For two component systems, mix the powder and activator according to weight ratio on the label.

Apply Adhesive

Use a spatula, brush or by dipping, completely wetting surfaces, IMMEDIATELY press the surfaces together. If necessary clamp or fix to maintain uniform distances while curing. Typically a joint gap of between is 0.25mm to 0.50mm is recommended. Excess adhesive can be removed with a damp cloth. Bond testing with sample pieces for your specific application is recommended.

Curing

Let joint air set 1 to 4 hours. Cure a minimum of 2 hours at 90ºC. Avoid excessively fast heating. It may cause adhesive to bubble and form a weak bond. Always follow the product's specific instructions as shown on the product label. These products will not out-gas after a complete cure.

Post Cure

To develop maximum strength, solvent and moisture resistance, post cure for 1 hour at 120ºC followed by 1 hour at 315ºC to 370ºC. A second cure will provide maximum strength, solvent and moisture resistance.

Potting Applications

For potting applications request instructions for our ceramic potting materials.

Hints and Tips

Mixing and Measuring Adhesives

Re-stir all products before weighing or dispensing. Carefully weigh out resins and hardeners or powders and binders into separate containers before mixing. (Use a minimum mix of 25 grams to insure a homogeneous mixture). Mix both parts of the adhesive system thoroughly before using.

Improper measuring or mixing can cause: materials not to cure, soft spots, air voids on the surface, sticky surfaces, softening at elevated temperatures, changes in chemical or electrical resistance.

Bonding Dissimilar Materials

Select an adhesive with a thermal expansion coefficient that closely matches the materials to be bonded. When possible select a flexible epoxy. Clean dirt, oils, greases and mechanically roughen the surfaces prior to bonding. Cure the materials at room temperature for 4-16 hours and at 250ºF for two hours.

Recommended Bond Line Thickness

For standard epoxy and ceramic adhesives a bond line thickness of 5-8 mils (0.005" - 0.008") will produce excellent results. Non-sag putties (epoxy or ceramic) bonds of 0.020" or more can be used. To form a thick layer, or section, apply putty in several layers curing between each application.

Joint Design and Bond Strength

Butt joints are usually the weakest, inserted joints (tongue and groove, rod in a tube) are considered to be mechanically reinforced and the strongest type of joint design. For repairing difficult applications use a metal or ceramic cloth buried in the glue line for additional reinforcing.

Bonding to Teflon, Nylon, Polyolefin etc...

Specific surface treatments and/or etching are required for bonding these plastics. Solution is flexible (4538) and activated epoxies (7050) that form strong adhesive bonds to many of these difficult-to-bond materials.

Preventing Flow of an Adhesive From a Joint

Select an adhesive with high viscosity or with thixotropic properties and use just enough adhesive to completely fill the gap between the two surfaces to be bonded.

Thinning Adhesives for Application

Adhesives sometimes require thinning in order to ease flow, create a thinner bond line or facilitate encapsulation. Epoxy formulations can be thinned with mild heat or epoxy thinner 105RT. Ceramic adhesives can be thinned with the corresponding thinner for the particular adhesive. Thinning ceramic adhesives should be done at a minimum to prevent cracking or weakening of the material.

Removing Bubbles in Potting Materials

You can reduce the amount of entrapped air by warming epoxies prior to application or by vacuum degassing. (Apply pressure of 29 in Hg for 2 minutes, repeat 2 more times if needed).

Working with Electrically or Thermally Conductive Adhesives

Electrically and Thermally conductive adhesives will provide optimum results after a post cure for 2 hours at 120ºC. Electrically conductive materials are also available in flexible versions to accommodate bonding substrates with different thermal expansions.

Cracking in Ceramic Adhesives and Castable Ceramics

Cracked and weak castings, encapsulations, or adhesive bonds can occur when using ceramic materials if excess activator or additional water has been added to the uncured mixtures. Check the mix ratio that was used when mixing the materials. Castable Ceramics will achieve optimum strength after heat treating.

Accelerating Cure Times

The best way to shorten the cure cycle is to raise the temperature. Typically most systems can be cured at 120ºC. Check the data sheet or product label for specific curing directions for the material you wish to use.

Modifying Existing Formulations

The manufacturer can adjust formulations to provide variables as viscosity, gel times, curing characteristics as well as lap shear strength, peel strength, flexibility, chemical stability, heat resistance, impact strength, colour, etc.

Special Packaging for Production Applications

Manufacturer can supply materials in pre-measured units and in bulk quantities to facilitate the use of these systems in any production facility or field application.

Formulas and Constants

Viscosity Comparison

Approx. Viscosity	Material
1	Water
10	Kerosene
100	Corn Oil
200	Maple Syrup
500	Castor Oil
1,000	Glycerin
3,000	Honey
10,000	Molasses
50,000	Ketchup
250,000	Peanut Butter
1,000,000	Shortening

Comparative Particle Size

Mesh	Microns	mm	Inches
4	4760	4.76	0.185
8	2380	2.38	0.093
16	1190	1.19	0.046
20	840	0.84	0.033
40	420	0.42	0.017
50	297	0.29	0.012
80	177	0.17	0.007
100	149	0.14	0.006
140	105	0.10	0.004
200	74	0.07	0.003
270	53	0.05	0.002
325	44	0.04	0.0017
400	37	0.03	0.0015

Hardness Durometer

Material	Shore A	Shore D
Gum Eraser	30	-
Pink Eraser	40	-
Rubber Stamp	50	15
Pencil Eraser	60	-
Rubber Heel	70	30
Rubber Sole	80	-
Printer Roller	90	-
PVC	100	55
Fir Plywood	-	78
Hardwood	-	86
Glass	-	90

Typical Coverage Putties | Adhesives | Coatings

Coverage (F^2/Qt.)	Film Thickness (inches)
300	0.001
150	0.002
100	0.003
60	0.005
45	0.007
30	0.010

Bead Length - Half Round Bead dispensed from a 11 oz Caulking Cartridge

Bead Width	Approx Length
1/4”	80 ft
3/8”	37 ft
1/2”	21 ft
5/8”	13 ft

Conversion Table

Multiplication Factors
Area
$in^2 \times 6.45 = cm^2$
$ft^2 \times 0.093 = m^2$
Density
$lb / ft^3 \times 16.02 = kg/m^3$
$lb / in^3 \times 0.016 = g/cm^3$
Heat Loss
$Btu / hr\ ft^2 \times 3.155 = W/m^2$
$Btu / hr\ ft^2 \times 0.271 = g\ cal/hr\ cm^2$
Length
in x 2.54 = cm
in x 25.4 = mm
ft x 0.3048 = m
Thermal Conductivity
$Btu\ in / ft^2\ °F \times 0.144 = W/m\ °C$
$W / m°C \times 6.93 = Btu\ in/hr\ ft^2\ °F$
Thermal Expansion
$x10^{-8} / °F \times 1.8 = x10^{-8} / °C$
Dielectric Strength
Volts/mil x 0.039 = kV/mm
Volume
$in^3 \times 16.39 = cm^3$
$in^3 \times 0.0283 = m^3$
Temperature
°C = (5/9) (°F -32)
°F = (9/5) (°C +32)
Weight
lbs x 454 = gm
lbs x 0.454 = kg

Please note that the weights and volumes used in this product guide are American and NOT standard Imperial.
Not all products are supplied in dispensing tubes as shown, these are available as an option on request.

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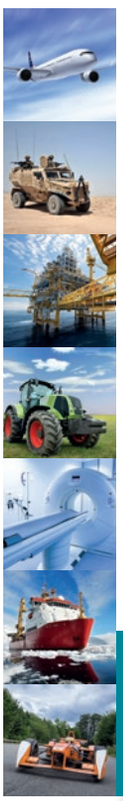

Distribution partners for...

TO DO BUSINESS WITH US...

Key Account Managers
Technical Support
Internal Sales team
Online Chat
Online Enquiries

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