

3MS.018
970N Test Kit

High Temperature Specialty Materials Since 1971

Summary

Overview

OVERVIEW

SAFETY

Resbond™ 901
Resbond™ 907GF
Resbond™ 919
Resbond™ 989
Resbond™ 940HT
Durabond™ 950
Thermeez™ 7030

TECHNICAL DATA

Physical variables included in this documentation are provided by way of indication only and do not, under any circumstances, constitute a contractual undertaking. Please contact our technical service if you require any additional information.

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The Cotronics 970N test kit includes all the basic and general use products of the 900 range. Some variants of the same adhesive of are not shown. This set of product samples allows you to gain the skills and experience needed for this bonding solution. In terms of testing, you can calmly select the product that is best suited to your application.

The seven high-temperature adhesives have different physical and chemical properties. For example: viscosity, compressive strength, dielectric constant, breakdown voltage, thermal conductivity and expansion.

The kit contains the following Cotronics ceramic adhesives:

- 901
- 907GF
- 919
- 989
- 940
- 950
- 7030

The Cotronics 970N test kit allows you to try small amounts of the products so you can compare the performances relevant to your application. The user guides explain simply how to handle the products to ensure your safety.

Safety

Do not inhale the powders! Wear a mask when handling in large quantities.

Avoid all contact with the eyes or skin.

In the event of an accident, quickly clean skin and eyes with water and consult a doctor.

We will provide you with the material safety data sheets.

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The refractory adhesive, Resbond™ 901, is a creamy adhesive composed of a pure alumina powder suspended in an inorganic liquid hardening binder (Resbond™901A). These products do not contain asbestos, organic solvents or volatile organic compounds. They are used to harden, coat or impregnate porous surfaces while retaining a certain flexibility.

Properties

- Maximum operating temperature: 1,700 °C
- Peak temperature: 1,780 °C (Resbond™ 901)
- Resistance to thermal shocks, corrosion, oxidation and erosion
- Insulation against electricity and heat
- Can be used in reducing or oxidising atmospheres
- Resistant to molten non-ferrous metals, steam and most chemicals and solvents
- Increases the resistance, hardness and reflective capacity of mouldable and malleable ceramics.

Applications

- Hard protective coating
- Creation of moulds, potting, electronic or mechanical components
- Coatings for graphite, aluminium, galvanised pipes and tools, induction coils, electrical resistors, heat sensors and thermocouples
- Manufacture of infra-red reflectors for heating resistors
- Assembly and laminating of biosoluble paper, ceramic felt and Rescor™ 360 boards.

Implementation

- Easy application using a brush, spraying or dipping
- Curing at room temperature
- No toxic or unpleasant odour
- Ideal for bonding two flexible materials
- To obtain a compact and rigid mass: add the 901 hardener binder



Resbond™ 907GF

Resbond™ 907GF – High temperature sealant, 1,650 °C

The Resbond™ 907GF adhesive forms a mica-based creamy putty. It is packaged in a cartridge for simple and cost-effective application.

Applications

- Production of very thin and waterproof seals at high temperatures
- Construction of engines, turbines, boilers
- Application without preparation on steel, iron, lead, ceramics and metals in general.

Implementation

- Application in cartridge

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Resbond™ 919

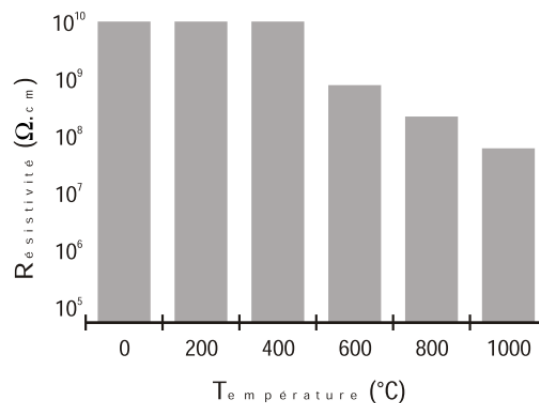
Resbond™ 919 – High dielectric strength, 1,530 °C

Specially formulated with magnesium, the Resbond™ 919 adhesive is the best moulding and bonding material for electrical applications with a dielectric constant of 10.5 kV/mm.

Properties

- Dielectric strength of 270 V/mm
- High mechanical strength
- High and stable dielectric properties even when exposed to cold or hot temperatures

The table opposite shows its electrical resistance according to the temperature.



Applications

- Manufacture of insulators for electrical resistors.

Implementation

- Gradually mix the powder with distilled water.

Note: The optimal ratio of water is 13 to 15 % depending on the ambient humidity and possible degassing conditions.

- Curing in 24 hours at room temperature
- Post-curing at 120 °C for 4 hours for optimal properties

**Resbond™ 989****Resbond™ 989 – High purity adhesive, 1,650 °C**

The Resbond™ 989 adhesive is the one-component product with the greatest number of applications in this range. It is composed of two types of alumina particles: the biggest measure between 50 and 120 microns and represent approximately 15 % of the weight of the product, and the smallest measure between 1 and 25 microns.

Applications

- Bonding metals, ceramics, graphites and glass
- Bonding silicon carbide nozzles into a ceramic sleeving
- Bonding nickel pins with a diameter of 0.5 mm into an alumina nitride sleeve during a heat treatment at 900 °C
- Production of heating elements with Kanthal® heating elements and a mullite substrate

Implementation

- Easy to apply with a brush in thin layers
- Can be applied by serigraphy.

Advice for use:

- Mix the paste with a mechanical mixer until it hardens. Mixing should not be less than 3 minutes.
- The smooth, creamy paste should be used within 20 minutes of its preparation, especially if the atmosphere in the workshop is dry.
- If waiting before use, the paste should be stored in a hermetic or humid chamber.
- Good adhesion after curing for a minimum of 4 hours at room temperature, can withstand curing for 4 hours at 370 °C to improve its waterproofing.
- This product is the ideal choice for production applications where automation is required.



Resbond™ 940HT

Resbond™ 940HT – General purpose adhesive

The Resbond™940HT adhesive is the general purpose product in this range.

Properties

- Maximum operating temperature: 1,540 °C

Applications

- Resistant to molten metals and most chemicals and solvents
- Can be used in reducing or oxidising atmospheres



Durabond™ 950

Durabond™ 950 - Aluminium-based adhesive, 650 °C

The Durabond™ 950 ceramic adhesive is filled with aluminium powder. It provides high-strength bonding even at high temperatures. This product is easy to apply and cures at room temperature with a catalyser.

Properties

- Maximum operating temperature: 650 °C
- No porosity
- Ductile
- Resistant to thermal shocks

Applications

- Safe alternative to welding

Implementation

- Supplied as a powder with a specific non-organic binder
 - The mixture forms a creamy paste
- Curing at room temperature with a catalyser
- An accelerated curing version is available under the reference **Durabond™ 950FS**.



Thermeez™ 7030

Thermeez™ 7030 – “Epoxy-like” adhesive and sealing putty, 950 °C

The Thermeez™ 7030 adhesive brings the ease of use of epoxides into the field of ceramic adhesives.

Properties

- Fireproof and resistant to acids, alkalis, solvents and corrosion
- Operating temperature up to 950 °C
- Guarantees a gas-tight seal even at high temperatures

Applications

- Pipe and pump seals, flanges, diesel engines, heating plants and bonding sensors or ceramic textiles
- Repairing cracked pipes
- Can be used on steel, lead, ceramics and most metals

Implementation

- Mix the products with water, then apply the creamy paste to the intended surface
- Curing in 24 to 36 hours at room temperature
- Fast curing in 4 hours at 65 °C

Technical Data

Property	Unit	901	907GF	919	989	940	950	7030
Max. Operating Temperature	°C	1,650	1,650	1,530	1,650	1,093	650	980
Components		1	1	2	1	2	2	2
Appearance		Paint	Patty	Paste	Paint	Paste	Paste	Paste
Filler		Al ₂ O ₃	Mica	MgO	Al ₂ O ₃	ZrO ₂	Al	SiO ₂
Compressive Strength at 20 °C	MPa	8.3	10.3	31	20.7	27.6	27.6	34.5
Flexural Strength at 20 °C	MPa	4.1	-	3.1	7.6	12.4	20.7	10
Thermal Conductivity	W.m ⁻¹ .K ⁻¹	0.29	0.86	0.57	2.16	1.15	6.34	1.2
Thermal Expansion	10 ⁻⁶ .K ⁻¹	7.2	-	4.7	8.1	8.1	18	13.5
Dielectric Strength	kV/mm	7.8	5.6	0.27	7.8	4.9	Conductor*	3.9
Resistivity	Ω.m	10 ¹⁰	10 ⁷	10 ⁹	10 ⁶	10 ⁶	Conductor*	10 ⁷
Mix Ratio	Powder - Binder	-	-	100 -13	-	100-28	100 - 160	100 - 20
Cure at Room Temperature	Hrs	24 hrs	24 - 48 hrs	24 hrs	4 hrs	24 hrs	24 hrs	24 at 36 hrs
Fast Cure		2 hrs at 65 °C	1 hrs at 120-175 °C	4 hrs at 120 °C	4 hrs at 65 °C	5-15 min at 93 °C	-	4 hrs at 65 °C
Post-Cure		-	-	-	4 hrs at 200 °C (moisture-proof)	4 hrs at 120 °C	2 hrs at 93 °C + 2 hrs at 204-315 °C	-

*The presence of small amounts of graphite compromises its insulating properties but is not sufficient for an electrical current to pass through

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