



HIGH TEMPERATURE CERAMIC-METALLIC PASTES

Technical Bulletin A3

Pyro-Putty® High Temperature Pastes are used to seal joints and repair defects in cast aluminum, cast iron, steel and stainless steel. Formulated using the most advanced organic and inorganic-ceramic technologies, these materials resist temperatures to over 2000 °F. Applications for Pyro-Putty® are widespread and found typically in the aerospace, automotive, foundry, heat-treating, incineration, and power generation industries.



Pyro-Putty® 653 seals corroded burner manifold.



Pyro-Putty® 950 seals turbo.

Ceramic-Metallic Filled Inorganic Pastes

Pyro-Putty® 653

- Ceramic & Stainless Filled, One-Part, Water-Based Paste
- For Vertical Surfaces to 1/2" Thick
- Repairs Cast Iron, Steel & Stainless Parts to 2000 °F

Pyro-Putty® 1000

- Ceramic & Aluminum Filled, Two-Part, Water-Based System
- For Vertical Surfaces to 1/2" Thick
- Repairs Cast Iron, Steel & Stainless Parts to 1400 °F

Pyro-Putty® 2400

- Ceramic & Stainless Filled, One-Part, Water-Based Paste
- For Applications to 3/8" Thick
- Repairs Cast Iron, Steel & Stainless Parts to 2000 °F

Ceramic-Filled Resinous Pastes

Pyro-Putty® 950

- Ceramic Fiber Filled, Organic-Resinous Gasket Seal
- For sealing High Temperature Joints to 950 °F, 750 psi
- Cures to a Tough, Pliable, Chemically Resistant Material

Pyro-Putty® 1500

- Ceramic Fiber Filled, Organic-Resinous Gasket Seal
- Seals Boiler Doors & Molten Metal Systems
- Easy to Apply & Remove, For Uses to 2300 °F

TYPICAL APPLICATIONS

- Afterburners
- Boilers
- Castings
- Exhaust Stacks
- Headers
- Incinerators
- Manifolds
- Molds and Dies
- Heat Exchangers

TYPICAL APPLICATIONS

- Turbines
- Boilers
- Heat Exchangers
- Compressors
- Pumps
- Blowers
- Piping
- Ducting
- Furnaces
- Ovens
- Steam Valves
- Foundry Molds

PYRO-PUTTY® PROPERTIES

Type	Ceramic-Metallic Filled Inorganic Pastes			Ceramic-Filled Resinous Pastes	
Part Number	653	1000	2400	950	1500
Filler	Stainless	Aluminum	Stainless	Ceramic Fiber	Ceramic Fiber
Color	Metallic Gray	Light Gray	Metallic Gray	Silver Gray	Gray Brown
Temperature Limit, °F (°C)	2000 (1093)	1400 (760)	2000 (1093)	950 (510)	2300 (1260)
Specific Gravity, g/cc	1.90	1.80	1.50	1.09	1.27
Viscosity, cP	Paste	Paste	Paste	Paste	Paste
No. Components	1	2	1	1	1
Mix Ratio, Powder:Liquid	NA	2:1	NA	NA	NA
Curing	Air Set, hrs	2-4	5-7	NA	1-2
	Heat Cure, °F/hrs	200 / 3-4	160 / 1-2	200 / 2-4	400 / 1 or 225 / 6
Shelf Life, months	6	6	6	6	6
Storage, °F	40-90	40-90	40-90	40-90	40-90
Packaging	Pint, Quart, Gallon, 5-Gallon	Pint, Quart, Gallon, 5-Gallon	Pint, Quart, Gallon, 5-Gallon	11 oz. Tube	11 oz. Tube, Pint, Quart, Gallon, 5-Gallon





APPLICATION PROCEDURES

Surface Preparation

All surfaces must be free of oil, grease, dirt, corrosives or other contaminants before application. Porous metal castings should be baked at high temperature to burn off embedded oils. Smooth metal surfaces should be abrasive blasted with a coarse media to a minimum SP-10 near white blast (0.001" minimum profile) for best results.

Mixing

All products should be mixed thoroughly to a uniform consistency prior to use. Product viscosities may be reduced by adding a maximum of 5–10% by weight of the appropriate thinner. Thinner may be ordered by adding a "T" to the product number (eg. 653-T). The mix ratio for Pyro-Putty® 1000 is 2.0 parts powder to 1.0–1.5 parts liquid by weight. This ratio will produce the consistency of a thick paste. Pyro-Putty® 1000 will outgas slightly after mixing and it is recommended that the mixture be limited to the amount required for a specific application. Store mixed material at room temperature in a plastic container that is approximately twice the mixture volume. Allow to outgas for 24 hours. Remix contents thoroughly prior to use. Note that mixture will not begin to harden in a closed container for over 24 hours. Hardening will initiate when mixture is removed from container and exposed to air.

Application

Pyro-Putty® products may be applied using a spatula, putty knife or caulk gun. For cross-sections greater than 1/8"–1/4" multiple applications should be made to avoid blistering. Cross-sections for all products should not exceed 1/2"–3/4" (3/8" maximum for Pyro-Putty® 2400).

Curing

The following instructions are guidelines for curing. Alternative cure times may be appropriate depending on the size of the application.

Pyro-Putty® 653

1. Air dry for 2 hours at room temperature and up to 4 hours for thick cross-sections.
2. Heat cure at 200 °F for 3 hours.
3. For multiple applications, air set for 1–2 hours between coats, then heat cure at 200 °F for 3–4 hours after the last coat.

Pyro-Putty® 950

1. This product can be cured in service at the operating temperature of the equipment.
2. For curing before service, heat cure the joint without pressure at 400 °F for 30–60 minutes or 225 °F for 4–6 hours.

Pyro-Putty® 1000

1. A heat cure is not required for cross-sections less than 1/8" thick. Air dry at room temperature for a minimum of 2–4 hours prior to use.
2. A heat cure is recommended for cross-sections greater than 1/8" thick. Air dry at room temperature for a minimum of 2–4 hours, then heat cure at 160 °F for 1–2 hours.
3. After curing, this product can be sanded to achieve a bright aluminum appearance.



Pyro-Putty® 1000 bonds heater.



Pyro-Putty® 2400 seals high temp ducting.



Pyro-Putty® 2400 seals high temp threads.

Pyro-Putty® 1500

1. This product dries at room temperature and cures in service at the operating temperature of the equipment.

Pyro-Putty® 2400

1. Air dry at room temperature for a minimum of 5–7 hours, longer for thick cross-sections.
2. A heat cure is not required if the use temperature exceeds 400 °F. Otherwise, heat cure at 200 °F for 2–4 hours.

Storage

Unopened containers have a six month shelf life when stored at room temperature. Make sure opened containers are capped securely to prevent evaporation. Place a plastic film in between the cap and container to prevent air leakage. The container may be inverted periodically to minimize settling. Store container between 40 °F and 90 °F.

Safety

Read Material Safety Data Sheet carefully before using any of the above products. Prolonged skin contact should be avoided due to possible irritation. In the uncured state, materials can be washed from the skin with a mild soap and water. If any material contacts eyes, flush continuously with water or neutralizing solutions, then consult a physician immediately.

