

COR-Grip Bonding Guide

USER GUIDE

Interplastic bonding putties are formulated to be hand or machine mixed and applied. Consistent and uniform blending with the initiator at time of use is necessary for optimum performance. When using bonding putty to create a lasting high quality joint, it is important to clamp or push down firmly on the mating parts to facilitate removal of any air voids to maximize strength and adhesion. Avoid clamping so tight that the part flexes, as this may build internal stress that could compromise the design strength of the joint.

The strength, performance and durability of a putty bonded joint is determined by the type of joint, the properties of the putty, the materials being joined (including surface preparation and treatment), and how that joint is assembled.

Best Practices for Receiving and Storage:

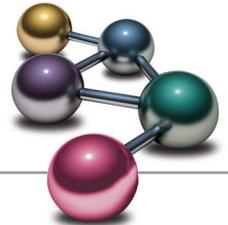
1. Verify expected product(s) and lot number(s) match received containers.
2. Review certificate of analysis quality control data against required specifications.
3. Rotate and use your putty stock, first in, first out. Storing material above 90°F or below 65°F may affect shelf life as well as viscosity and gel time stabilities of the putty.

NOTE: Refer to the Safety Data Sheets (SDS) for information regarding safe handling, storage, and personal protective equipment.

Read and understand the application equipments user manuals before operating.

Container Set-up:

1. Acclimate the materials to be used by placing them near the assembly area a few days before using. This will bring the putty to ambient operating temperatures.
2. Ensure the container's label identifies the correct putty and is the same as the container that is being replaced.
3. Check the container for leaks, cracks or dents that may prevent the plunger ram of the pump from lowering all the way to the bottom of the drum.
4. When the lid is removed, inspect for gelled particles, stalactites and separation at the surface of the putty. If there are issues, report them. It may be necessary to set the drum aside and use a different drum until any issues can be addressed.



Images 1 & 2: Properly placed drum on the putty pump

Pump Equipment Set-up:

Positive displacement pumps are used with putty application equipment.

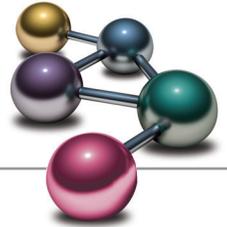
1. Remove and replace the empty container with a full container; ensuring the new drum is properly centered under the ram. If a plastic liner is in the drum, it is suggested the liner be taped to the outside of the drum to prevent the liner from being sucked into the drum as the ram lowers. Install the grounding/bonding clamps as needed. Secure the drum with the retention jigs/straps. The installed retention jig will keep the drum from rising as the ram is ascending when the drum is empty. Lower the ram into the drum and purge or bleed relief valves. Refer to relevant equipment operating instructions for details on performing these operations.
2. It is recommended to use a red-dyed initiator to better see the quality of the dispersion and mix throughout the putty bead. Verify there is enough initiator to complete the job in the slave container before proceeding. Maintain the level in the initiator container at least 1/3 full during operation; this will help prevent air being sucked into the initiator hoses during application process. Check initiator slave arm setting to verify required mix ratio setting. Initiator ratio should be maintained between 1.25% to 2.25% depending on desired gel time and operating conditions. Check with your Interplastic representative if different gel time is desired.



Image 3: Slave arm setting

3. The initiator pump may have to be primed. If so, remove attachment pin from arm setting device on the top of the pump and raise and lower the slave arm until pressure builds. Reset slave arm and reinstall the pin.
4. Check equipment for leaks - air, oil, putty and initiator.
5. Adjust the pump air pressure as needed. The lowest possible pressure should be used to develop an acceptable flow rate, initiator dispersion, and bead development.
6. Pull the dispensing gun trigger to pump material through the static mixer tube with the gun head valve handle completely in the full open position until a uniform initiator/putty mixture occurs. Prepare a sample of approximately 150 to 200 grams and check the gel time.
 - a. This gel time should be longer than the total time needed by the operator to apply the adhesive on the mold, fully clamp and compress the mold, and to flush and clean the static mixer.
 - b. The product gel time should be monitored routinely (each shift or daily) on a sample out of the static mixer. This check will verify the gel time and may detect issues with putty, initiator, pump equipment, mixer quality or ambient conditions - potentially minimizing issues with defective parts or gelled equipment.

Note: The standard QC gel and cure data can be found on the certificate of analysis and technical data sheets. Gel time charts are commonly available on the technical data sheet for the product showing gel times at various temperatures, levels of initiator and different initiators to allow the operator more options to adjust the gel time to their shop conditions.



7. After gel time is confirmed, the initiated putty can be applied to bonding points. Ensure smooth and consistent lines are being maintained. A trowel or other appropriate tool may need to be used to smooth the pumped putty beads, remove excess putty, or distribute the putty into hard to apply areas.
8. Once the putty has been applied where needed, the parts to be bonded can be joined. Avoid damaging the integrity of the putty lines by excessive repositioning of the parts, “set it and clamp it.” Clamping of all the edges where the initiated putty is applied is necessary for a robust bond. Fasteners and screws can be used in this process if desired.



Image 4: Properly mixed and applied putty being applied to a stringer assembly used as deck to hull bond point

9. Compression of the parts must not squeeze all the putty from the bond points. Use spacers as necessary to ensure even bond lines throughout the part per product design requirements.

Hand mixed / Hand Applied:

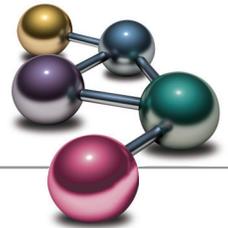
The putty can alternatively be hand mixed and hand applied with trowels or spreaders. A drill type apparatus with a paddle attachment used to mix viscous materials is recommended to incorporate initiator into putty. The mixer should be air driven - if an electric drill is being used, it should meet appropriate electrical requirements for working with flammable materials. Confirm your company's policies regarding the use of electric equipment in the assembly areas.

1. The putty and initiator should be weighed or measured. Mixing by weight is recommended, but volumetric measures may be used. Consult the TDS for recommended initiator to putty ratios.
2. It is important that the putty and initiator be completely and uniformly mixed. Under-mixed product may cause localized areas of excessive heat and shrink within the bond. This may cause the parts to distort or weaken the bond. An initiator with a dye (usually red) will help identify complete and uniform initiator mixing with the putty.
 - a. Combine the initiator with the putty and mix slowly to avoid initiator splashes. Initiator spills/splashes should be cleaned up immediately. Unprotected physical contact with the putty, initiator, or mixed product should be avoided. Consult safety data sheets for proper personal protective equipment.
 - b. Gradually increase mixing speed as the initiator incorporates into the adhesive. Mixing time will depend on the adhesive's viscosity, mass, mixing equipment, and type and size of the mixing paddle.
 - c. Check room temperature gel time and proceed with the process and applications section.
3. Using hand tools such as trowels, spreaders or spatulas apply the putty to substrates to be bonded. Apply even, smooth coats and keep the putty formation at an even depth.
4. Once the putty has been applied where needed, the parts to be bonded can be joined. Avoid damaging the integrity of the putty lines by excessive repositioning of the parts, "set it and clamp it." Clamping of all the edges where the initiated putty is applied is necessary for a robust bond. Fasteners and screws can be used in this process if desired.



Image 5: Putty being correctly hand applied

Check with Interplastic sales personnel or technical representatives on specific product limitations. It is the user's responsibility to make and be guided by testing in determining the suitability of the product for use in each application. Consult the SDS for additional handling, storing and safety information before using Interplastic putties.



COR-GRIP Structural Adhesive Products

COR-GRIP General Purpose Putty Products

Product	Application	Gel Time* (min:sec)	Viscosity	Density (lbs/gallon)
PA-150-PHHN	Reinforced Bonding/Adhesive Putty	20:00 - 30:00	1,000,000 - 1,400,000 RV T-F @ 5 rpm	10.0 - 11.5
PA-160-PMMN	General Purpose Bonding/Adhesive Putty - Mid Density	25:00 - 35:00 <i>Faster and slower gel time versions are available</i>	525,000 - 650,000 RV T-E @ 5 rpm	8.0 - 9.0
PA-805-PLML	General Purpose Bonding/Adhesive Putty - Low Density	50:00 - 65:00	375,000 - 600,000 RV T-E @ 5 rpm	6.9 - 7.4

COR-GRIP Corrosion Resistant Putty Products

PA-170-PMHN	Isophthalic Corrosion Bonding/Adhesive Putty	20:00 - 30:00	1,000,000 - 1,400,000 RV T-F @ 5 rpm	10.0 - 11.0
PA-180-VHMN	Vinyl Ester Corrosion Bonding/Adhesive Putty	20:00 - 30:00	275,000 - 400,000 RV T-E @ 5 rpm	10.3 - 10.6

COR-GRIP Fire Retardant Putty Products

PA-196-PHLN	Fire Retardant Bonding/Adhesive Putty	20:00 - 30:00	120,000 - 200,000 RV T-E @ 5 rpm	10.5 - 12.0
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*100-gram mass @ 77°F (25°C)



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All specifications and properties specified above are approximate. Specifications and properties of material delivered may vary slightly from those given. Interplastic Corporation makes no representations of fact regarding the material except those specified above. No person has any authority to bind Interplastic Corporation to any representation except those specified above. Final determination of the suitability of the material for the use contemplated is the sole responsibility of the Buyer. Interplastic Corporation's sales representatives are available to assist in developing procedures to fit individual requirements.



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