DURMETAL®
COLDWELD®

DURMETAL®

Instruction Booklet

A SWISS PRODUCT
TESTED AND APPROVED
DURMETAL®
Coldwelding
Repair
Systems®
COLDWELD
DURMETAL
STANDARD
ACTIVATOR 1KG
SUPER CA-HD® RAPID
BASE 250GR
SUPER CA-HD® RAPID
ACTIVATOR 250GR

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General Information

DURMETAL® is manufactured according to the latest and most advanced developments in our patented Coldwelding® process. The use of DURMETAL® enables repairs on a great variety of materials without heat or energy applied.

A combination of specially selected titanium, steel and aluminum particles and several high quality raw materials produce a Molecular Coldweld® Metal with optimal physical properties of tensile strength, flexural strength and compression strength. DURMETAL® penetrates the molecular structure of any material, metallic or non-metallic, and therefore permanently combines any one material to another or a combination of the following materials: steel, cast iton, aluminum, brass, copper, lead, glass, wood, natural and artificial stone, concrete, synthetics, rubber, ceramics and numerous others.

DURMETAL® does not shrink or age. It produces a permanent and durable repair. Each of the DURMETAL® systems (Standard and Super CA-HD Rapid®) is divided into two parts: BASE and ACTIVATOR.

Numerous applications have shown that DURMETAL® Super CA-HD Rapid® can be used without having to shut down the system if the pressure does not exceed 90 PSI or where one could hold down the pressure with the force of the hand. One of the outstanding properties of DURMETAL® Super CA-HD Rapid® is that it adheres to oily, greasy or wet surfaces. **However, please pay close attention to instructions on proper surface preparation.** The surface must be roughened with a rotary tool or grinder (copper brush in areas involving fuels).

Please make sure to cover each DURMETAL® Super CA-HD Rapid® repair with a coating of DURMETAL® Standard to achieve a permanent, long-lasting repair. DURMETAL® Standard should be used only on dry, clean surfaces after proper surface preparation.

PHASE ONE: Step 1

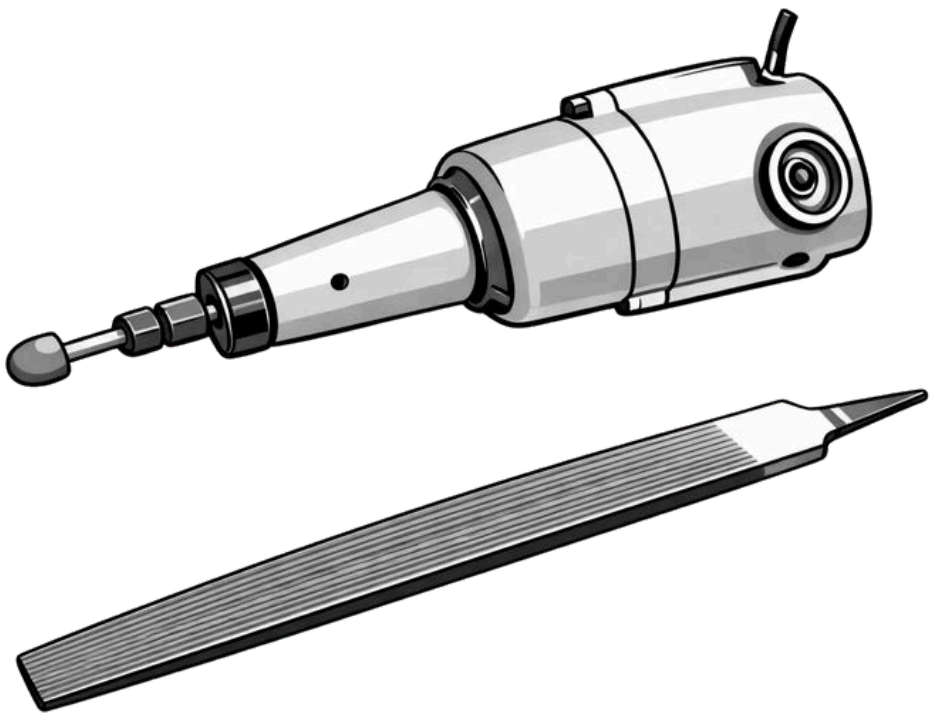
SURFACE PREPARATION

FOR DRY REPAIRS, REFER TO PAGE 13

Warning: Wear protective gloves and other personal protective equipment (PPE) when handling DURMETAL® products and always adhere to your own operational safety procedures, independent of DURMETAL recommendations.

Use a grinder or rotary tool to roughen a wide area around the repair surface.

If grinder cannot be used due to safety concerns, use a rough file or copper brush. Sandpaper, emery cloth, wire brush and other methods do not create a rough surface and are not sufficient for a successful DURMETAL® repair.



**DURMETAL® Special Cleaner is not a thinner and cannot be used for thinning DURMETAL® Super CA-HD Rapid® or DURMETAL® Standard.*

PHASE ONE: Step 1 (Cont.)

Clean the area with DURMETAL® Special Cleaner to remove excess material. If applying onto a wet or oily surface, clean the area as best as possible. For best results, wait 2 minutes for cleaner to dry. Please refer to your surface preparation sample plate included in your kit.

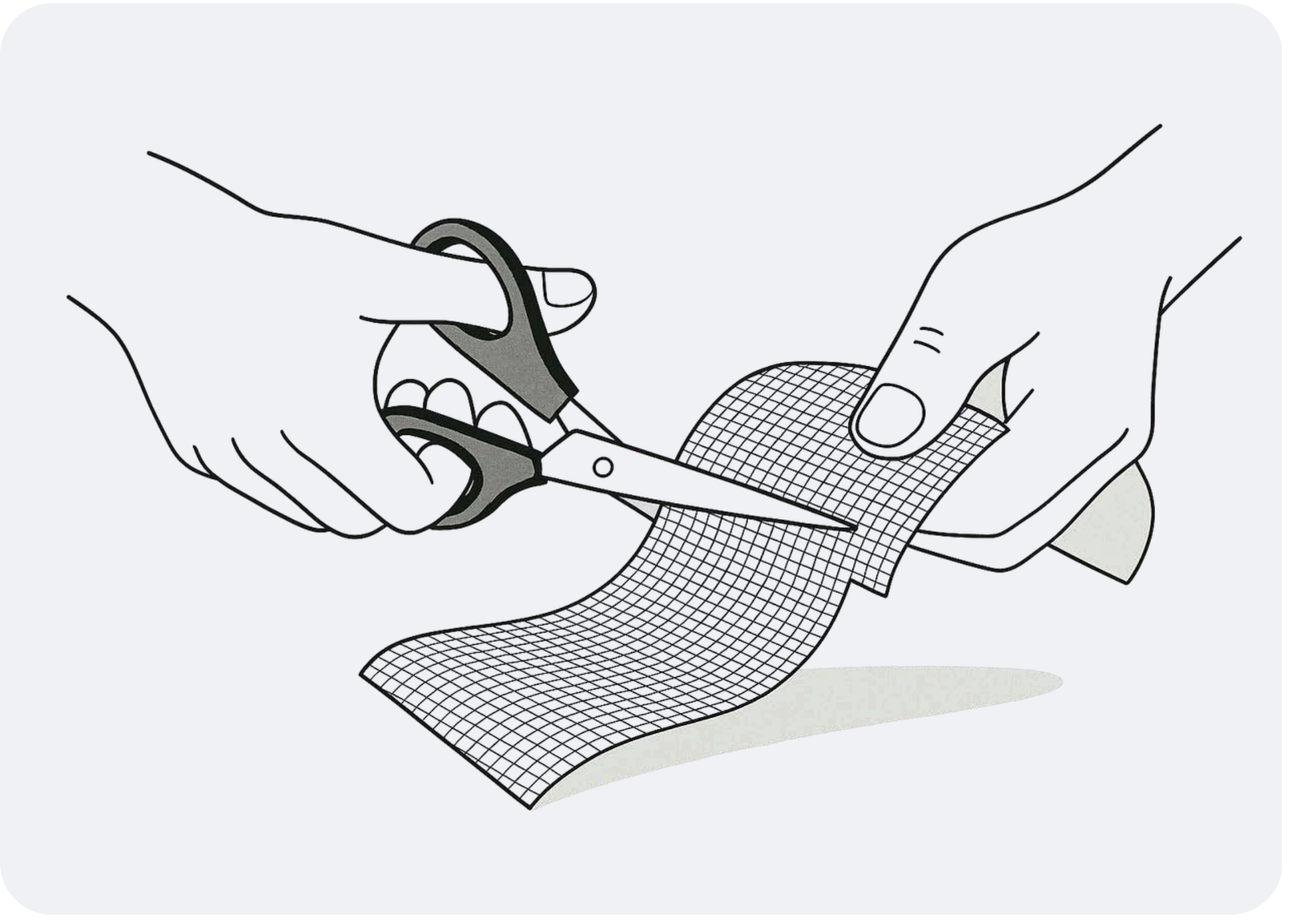
For areas to which DURMETAL® should not adhere or for lining molds inside, apply a coating of DURMETAL® Release agent to the surface. Contact us for more information

**DURMETAL® Special Cleaner is not a thinner and cannot be used for thinning DURMETAL® Super CA-HD Rapid® or DURMETAL® Standard.*

PHASE ONE: Step 2

USING YOUR KEVLAR® TAPE

Cut the Kevlar® Reinforcement Tape to your desired size, according to your repair. For best results, use Kevlar® or ceramic scissors to cut tape. The Kevlar® will assist in holding DURMETAL® Super CA-HD Rapid® in place while it sets and cures.



PHASE ONE: Step 3

MIXING DURMETAL® SUPER CA-HD RAPID®

DURMETAL® Super CA-HD Rapid® does not require a totally clean and dry surface. It adheres to oily, greasy and wet surfaces.

Follow these simple steps:

1. Stir the entire contents of your DURMETAL® Super CA-HD Rapid® Activator container with a clean spatula thoroughly.

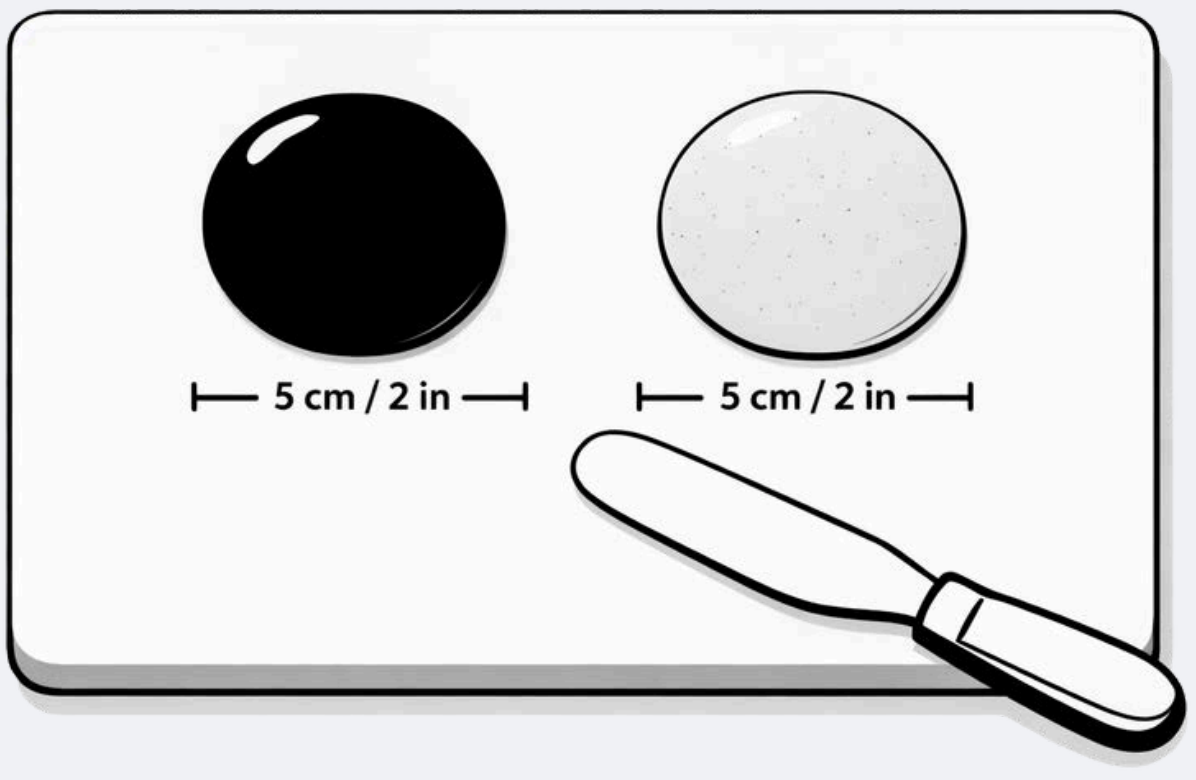
2. Once mixed, place an amount of 5 cm / 2 inches wide minimum on your DURMETAL® mixing plate. Do not place entire contents of containers onto the mixing plate. Clean spatula with DURMETAL® Special Cleaner. Use a rag or a paper towel to wipe all contents off the spatula.

3. Next, stir the entire contents of your DURMETAL® Super CA-HD Rapid® Base container with a clean spatula thoroughly. Once mixed, place an amount of 5 cm / 2 inches wide minimum on your DURMETAL® mixing plate. **The height of your Base portion must be equal to the height of your Activator portion. Both portions of Activator and Base must be of a 1:1 ratio.**
Do not place entire contents of containers onto the mixing plate. Clean spatula as in previous step.

PHASE ONE: Step 3 (Cont.)

4 Make sure that the amounts of your Activator and Base are equal. Both must have a 1:1 ratio on your mixing plate and match in width, length and height, as demonstrated below.

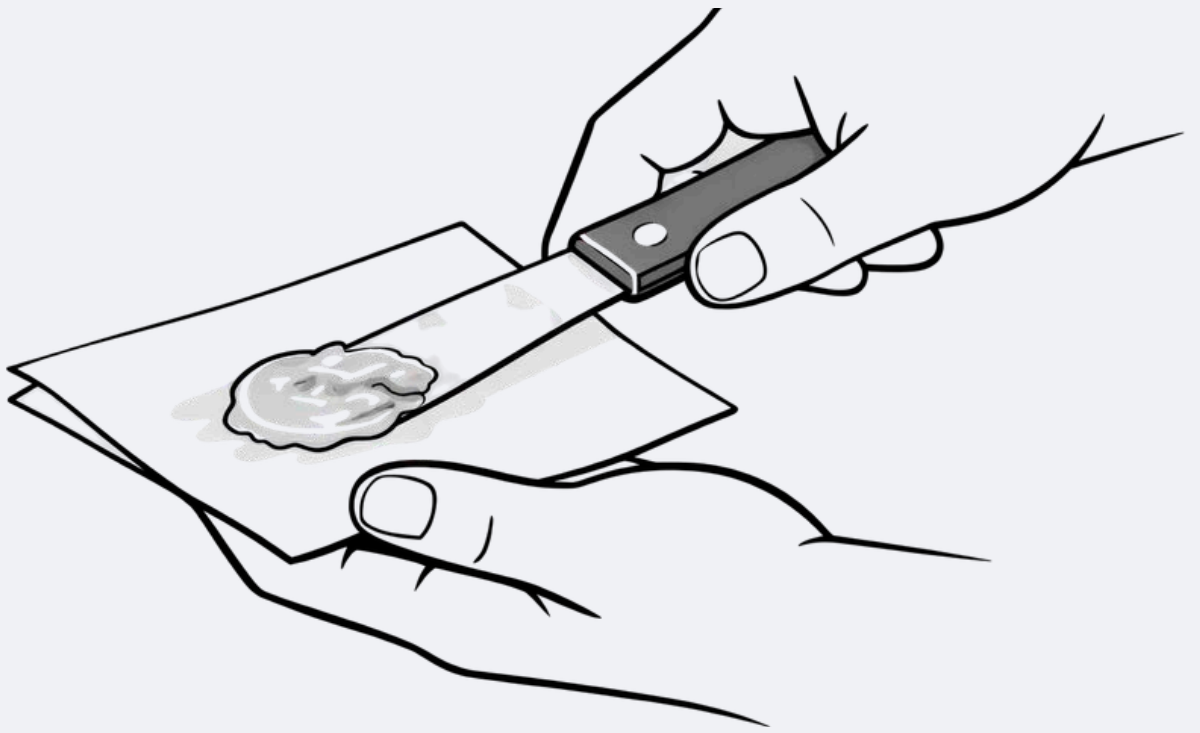
5 When prepared, mix both Activator and Base vigorously for 60 seconds. Use a stopwatch or timer for greater accuracy. The color of the mixture should be uniform when the mixing is complete. No spots of Activator or Base should be visible. Intensive mixing ensures that the molecular reaction will begin on the mixing plate.



PHASE ONE: Step 4

APPLYING DURMETAL® SUPER CA-HD RAPID® TO KEVLAR® TAPE

Take your fully mixed Super CA-HD Rapid® and apply it to the center of the Kevlar® Tape with at least a 0.6 cm / ¼ inches height. Use enough Super CA-HD Rapid® to ensure there is a 3 cm / 1 inch border of product around the repair area.



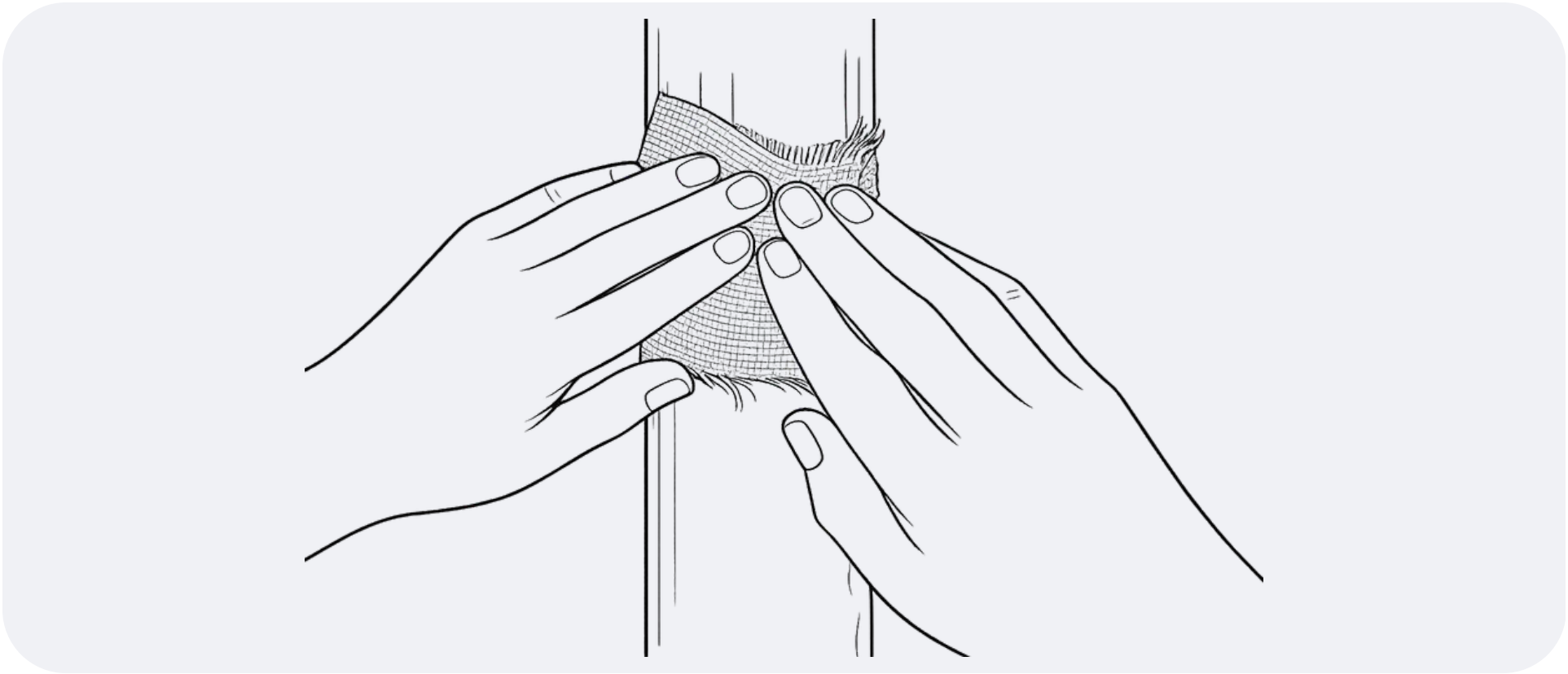
Hold the Super CA-HD Rapid® covered Kevlar® Tape in your hand for 60 seconds or until you feel the mixture starting to get warm. With an active leak, if Super CA-HD Rapid® is applied too soon, there is a chance the molecular reaction will not occur properly. Please contact us for further assistance on active leaks.

PHASE ONE: Step 4 (Cont.)

Apply the coated Kevlar® Tape to the repair spot. Hold the area with light pressure against the leak or crack, holding off the flow of media (water, oil, gas, etc...). Hold lightly until Super CA-HD Rapid begins to harden. Do not press the Super CA-HD Rapid® against the surface. The thickness of the Super CA-HD Rapid® should remain 0.6 cm / ¼ inches thick while pressing against the surface. Make sure it is not flat or thin.

Do not remove the Kevlar® Tape after curing is complete. Kevlar® Tape is to remain on the application. You may carefully cut the loose Kevlar® Tape around the edges of your Super CA-HD Rapid® application area.

Repeat this step for all repair areas.



Note: If repairing an active leak, the pressure must not exceed 90 PSI in order to have a successful DURMETAL® application

PHASE TWO: Step 5

APPLYING DURMETAL® STANDARD

DURMETAL® Standard does not contain any solvents and can be applied in any thickness with a minimum application of 0.6 cm / ¼ inches thick.

For any combination of materials, always apply DURMETAL® Standard to both materials, then put them together. No pressure or clamps are necessary.

When using DURMETAL® Standard on vertical surfaces or overhead, wait approximately 15 minutes after mixing. The consistency of DURMETAL® Standard is more solid after this period of time and it can be applied easily. For additional support in some cases, masking tapes can be used until DURMETAL® Standard has cured.

Once DURMETAL® Super CA-HD Rapid® has cured and hardened, use DURMETAL® Standard to coat over the Super CA-HD Rapid® repair area.

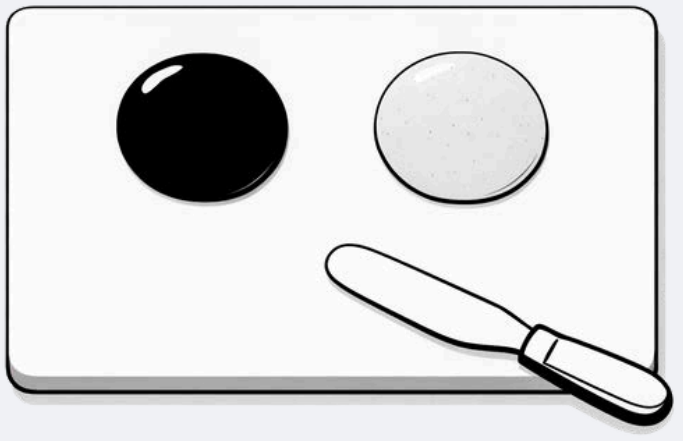
PHASE TWO: Step 5 (Cont.)

Follow these simple steps:

1. With your DURMETAL® Standard Activator container, place an amount of 8 cm/3 inches wide minimum on your DURMETAL® mixing plate. Do not place entire contents of containers onto the mixing plate. Clean spatula with DURMETAL® Special Cleaner. Use a rag or a paper towel to wipe all contents off the spatula.

2. Next, use your DURMETAL® Standard Base container and place an amount of 8 cm/3 inches wide minimum on your DURMETAL® mixing plate. **The height of your Base portion must be equal with the height of your Activator portion.** Do not place entire contents of containers onto the mixing plate. Clean spatula as in previous step.

3. Make sure that the amounts of your Activator and Base are equal.
   Both must have a 1:1 ratio on your mixing plate and match in width, length and height, as demonstrated below.



PHASE TWO: Step 5 (Cont.)

4 When prepared, mix both Activator and Base for 60-120 seconds. Use a stopwatch or timer for greater accuracy. The color of the mixture should be uniform when the mixing is complete. No spots of Activator or Base should be visible. Intensive mixing ensures that the molecular reaction will begin on the mixing plate.

EXCEPTIONS TO NORMAL MIXING RATIO

Depending on the application, the properties of DURMETAL® Standard can be influenced by different mixing ratios. To get more flexibility, i.e., for high vibration, better impact capacity or elastic combinations, use more DURMETAL® Standard Activator. **Do not exceed a mixing ratio of 1 part DURMETAL® Standard Base and 3 parts DURMETAL® Standard Activator.**

Please contact us at info@durmetalinternational.com if you would like a personalized ratio based on your specific repair needs.

PHASE TWO: Step 6

FINISH APPLYING DURMETAL® STANDARD

Once mixed, use your spatula to apply DURMETAL® Standard on top of and approximately 2.5 cm / 1 inch around your DURMETAL® Super CA-HD Rapid® application area. This layer should be a minimum of 0.6 cm / ¼ inches thick. A thicker coating of DURMETAL® Standard can aid in the longevity of any repair. Multiple coats of DURMETAL® Standard may be applied if desired.

DURMETAL® Standard will cure in 60-90 minutes. It can be sanded and painted after curing is complete.

FOR DRY REPAIRS ONLY: Apply DURMETAL Standard onto repair area with a minimum thickness of 0.6 cm/ 1/4 inches.

USING DURMETAL® SPECIAL FLUIDIZER

DURMETAL® Fluidizer has been successfully used for anti-corrosive coatings and for making molds, patterns, models and repairing stripped threads.

Only DURMETAL® Standard base can be used with DURMETAL® Fluidizer. DO NOT ADD DURMETAL® FLUIDIZER TO A MIXTURE OF DURMETAL® STANDARD (BASE AND ACTIVATOR) OR DURMETAL® SUPER CA-HD RAPID®.

See Page 19 for Fluidizer Instructions.

USING DURMETAL® SPECIAL FLUIDIZER (cont.)

For making molds	Use DURMETAL® Release Agent to line molds inside to prevent adherence of DURMETAL® Standard.
For corrosion preventions	Use a brush to paint liquified DURMETAL® Standard Base onto cleaned surface. The minimum coating should be 1mm (1/24”) thick.
For repairing stripped threads	Apply a coating of DURMETAL® Release Agent onto thread/screw. Set aside. Follow instructions for mixing a small portion of DURMETAL® Standard. Insert a dollop of DURMETAL® Standard into the stripped area. Wait 10-15 minutes until DURMETAL® Standard has begun to thicken. Slowly twist and insert thread/screw into stripped area, creating a new groove with each twist. Leave thread/screw inserted until DURMETAL® Standard has completely cured in 60-90 minutes. A subtantial coating of DURMETAL® Release Agent will ensure that thread/screw can be removed and create a new thread.

USING DURMETAL® SPECIAL FLUIDIZER (cont.)

To produce negatives

Apply the first coat with a stiff brush to prevent air from being trapped. After that, wait 2 minutes until air can elude. Then fill up remaining fluid DURMETAL®.

With the use of DURMETAL® Special Fluidizer, only DURMETAL® Standard Base can be fluidized to a consistency of honey by using the following mixing ratio. Please contact us at info@durmetalinternational.com to fluidize larger quantities of DURMETAL®.

100 g (3.5 ounces) DURMETAL® Standard Base and 20 grams (3/4 ounce) Fluidizer (Fluid Activator) by weight.

Follow these simple steps:

1. Put measuring cup on scale and weigh 100 g (3.5 ounces) Standard Base
2. Add 20 grams (3/4 ounce) of DURMETAL Fluidizer to cup
3. Mix contents vigorously in the cup with your spatula

Continue mixing until a homogenous, honey-like consistency is achieved.

TROUBLESHOOTING

1. Activator and Base containers have not been mixed thoroughly enough.

2. DURMETAL® was applied in too small of an amount. At least 0.6 CM (1/4”) thickness is necessary, including on your Kevlar® Tape.

3. DURMETAL® Super CA-HD Rapid® was applied without Kevlar® Tape on an active leak.

4. DURMETAL® Super CA-HD Rapid® was applied onto repair area before mixture heated up in hand. If DURMETAL® Super CA-HD Rapid® is pressed onto repair spot too early, there is a chance that the escaping medium (oil, water, gas, etc…) might interfere with DURMETAL® Super CA-HD Rapid®’s molecular reaction.

5. Surface area of repair spot was not roughened up thoroughly. Please revert to sample in your kit.

6. Spatulas were not cleaned properly in between using Activator and Base containers. If spatulas are not cleaned properly before mixing your next container, the container will be contaminated and can no longer be used for future repairs.

7. The ratio of Activator and Base (1:1) was uneven. Length, width and height of the dollops on the mixing plate must be equal.

STORAGE INSTRUCTIONS

DURMETAL® has a 5-year shelf life guarantee.

The quality of DURMETAL® is not affected and it is easily workable if the Activator and Base containers are warmed up in a warm water bath until a pasty consistency is reached again.

In cold environments, a warm water bath (water does not reach above container lid), hair dryer or an electric heater/radiator can be used to soften the Base and Activator in your containers. Once warmed, stir contents of both containers individually before mixing together.

In warm environments, placing containers in a refrigerator before use can slow down the curing time if desired. Warmer temperatures will make consistency of the product softer and speed up cure time.

SHELF LIFE GUARANTEE

The contents of this DURMETAL® Coldwelding Rrepairs Systems® Kit are protected by our five year shelf life storage guarantee
when stored according to our recommended storage conditions:

Room remperature 20-22° C/68-72° F in a dry and dark environment

The production number on each DURMETAL® container corresponds to our factory batch number which is rigorously tested before shipment and will be used in case your DURMETAL® product is defective. Should we encounter similar errors with our batch, we will replace that DURMETAL® product free of charge.

Please note that any consequences resulting from any work carried out with DURMETAL® is the responsibility of the user and not the manufacturer. Our technical recommendations are based on laboratory data as well as years of customer feedback and may vary due to individual repair site conditions and circumstances.

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