

LOCTITE®

Loctite® Nordbak® Wear Resistant Coatings

Rebuild, Repair and Protect
Industrial Equipment Catalog and Technical Guide



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Introduction

Loctite® Nordbak® and Fixmaster® composites
REBUILD, REPAIR and PROTECT
industrial equipment and surfaces, extending equipment life,
improving efficiency and minimizing down time.

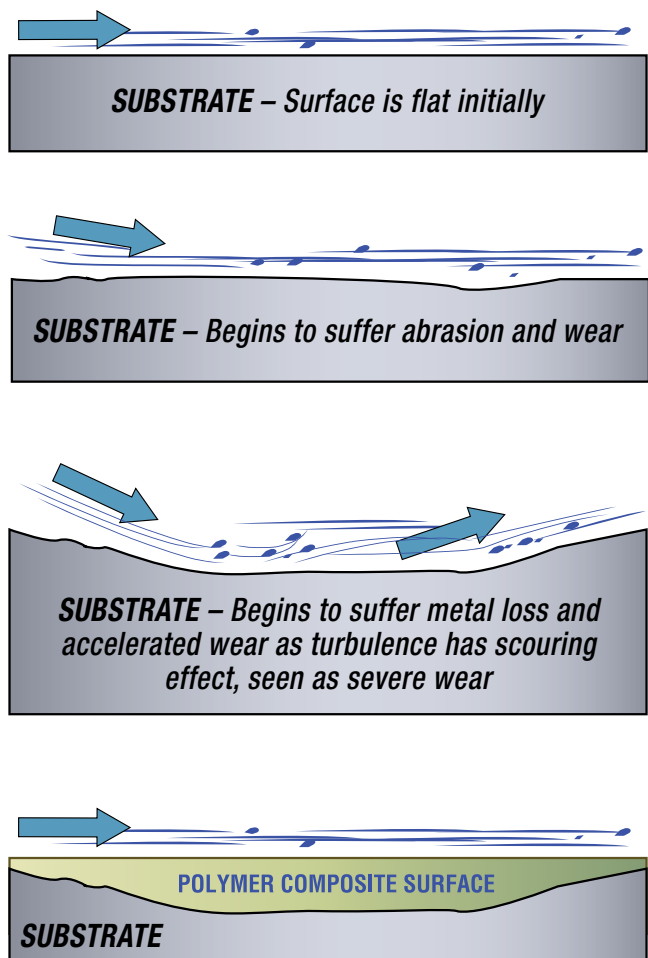
With extremely hard reinforcement fillers, Henkel's polymer composite products have excellent wear resistance and superior adhesion. They are designed to protect and extend the service life of a wide range of plant equipment. The composites act as a sacrificial and renewable working surface, protecting the structural integrity of the original substrate. Henkel offers a complete selection of Loctite® Nordbak® and Fixmaster® polymer composite products to treat and protect your assets against the harshest industrial environments.

Wear/Abrasion

Over time, even a softer solid material in flow will eventually abrade and wear the hardest alloys. As the surface becomes weak it is then subject to being stripped from the parent substrate, therefore gradually reducing the thickness and structural integrity of the substrate.

Wear and abrasion can be minimized and reduced by utilizing polymer composite materials. These act in a sacrificial capacity and therefore wear in place of the original substrate, often times lasting significantly longer than the original surface due to their highly wear resistant formulations.

Henkel has developed specific formulations for a wide variety of applications. These formulations can be selected to match the environment for which they are suited, such as heavy wear/abrasion, corrosive fluids or high temperature service.



Corrosion/Erosion

As corrosion takes place, it leaves a very weak and loose layer of oxide. As this oxide layer is continually stripped from the parent substrate, the thickness and structural integrity are gradually reduced, often described as the Corrosion/Erosion cycle. Underfilm corrosion can remain active below the surface of a high build coating, making the substrate weak and ultimately leading to a failure of the coating system. Henkel's polymer composites, when applied to a correctly prepared surface, will protect against corrosive agents and lengthen the life of your substrate – Asset Protection!

Creating Partnerships

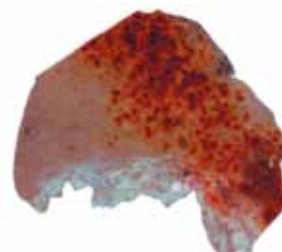
Loctite® branded products are foremost in the business of solving and preventing customer's problems. With Fixmaster® and Nordbak® composite technology providing the foundation, customers get more than a product – they get a partner who will work side-by-side with them to create and implement innovative solutions.

Focusing on Customer Support

Our highly experienced Fixmaster® and Nordbak® composite Application Engineers are committed to providing the highest level of technical support and assistance in the industry. Working closely with local industrial suppliers, our Application Engineers provide full process support, from maintenance assessment to implementation of solutions.



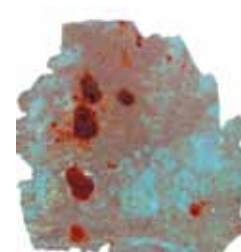
Coating Delamination



Excessive corrosion causing delamination of the coating



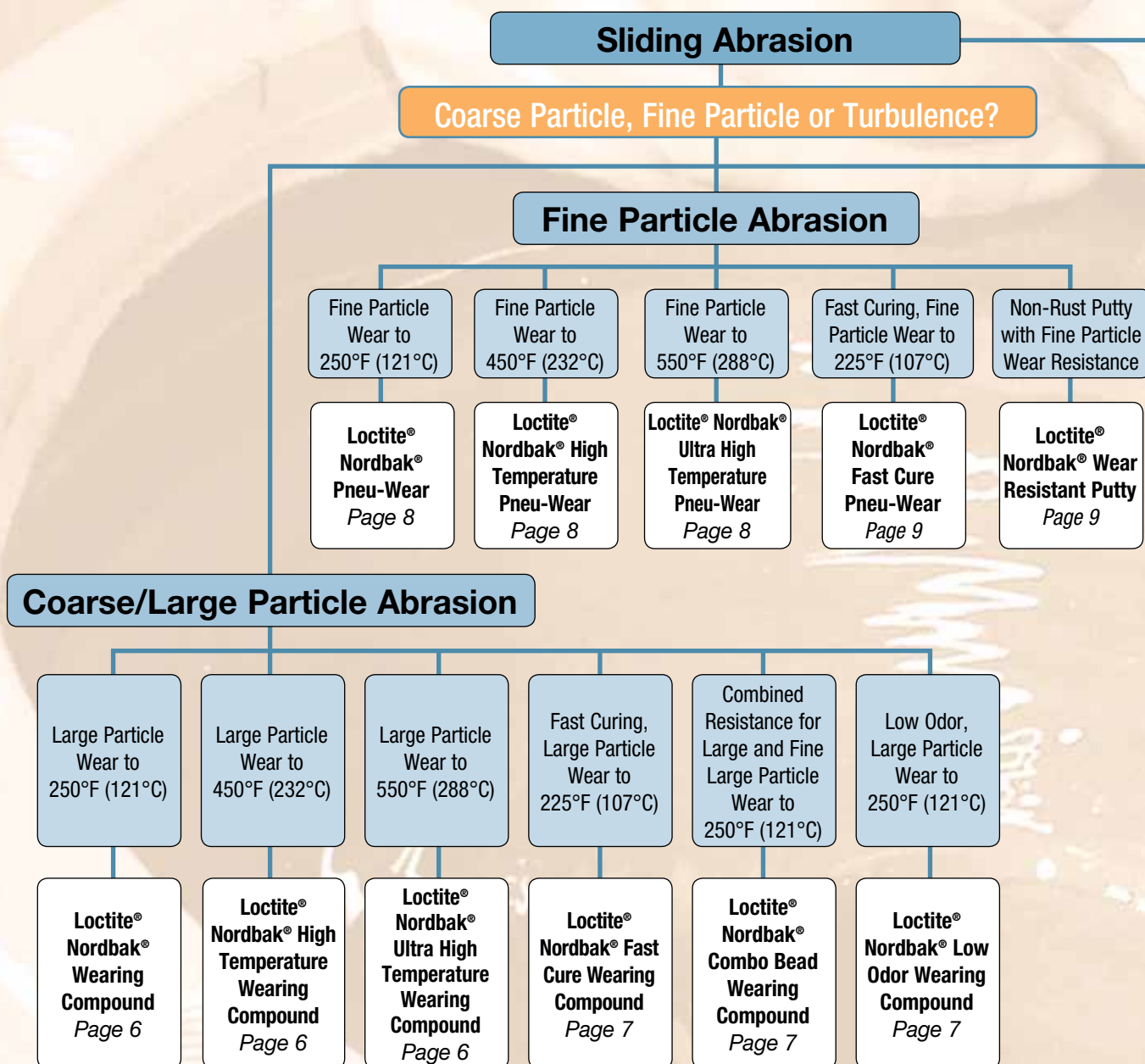
Underfilm Corrosion Signs



Active Corrosion Cells

1.0 Loctite® Nordbak® Wear Resistant Coatings Selector Guide

Loctite® Nordbak® Wear Resistant Coatings utilize the superior wear properties of ceramic and the convenience of two-part epoxies to protect equipment like pumps, chutes and augers in harsh industrial environments. Available in trowelable and brushable formulations with special fillers for tough conditions, Loctite® Nordbak® products stand up to almost any corrosion, abrasion and wear problem you can encounter, and are ideal for all those large-scale repairs that have to last.



- ✓ Provide superior protection from environmental impact
- ✓ Eliminate and break corrosion/erosion cycle
- ✓ Non-shrink and non-sag formulations
- ✓ High compression strength
- ✓ Broad chemical resistance
- ✓ Broad range tailored to specific applications

ARE YOU EXPERIENCING MECHANICAL WEAR/ABRASION OR CORROSION/EROSION?

Wear/Abrasion

Extreme Corrosion/Erosion

Sliding Abrasion or Impact Resistance?

**Loctite® Nordbak®
Chemical Resistant Coating**
Page 14

Liquid/Slurry Turbulence

Impact

Specialty

Low Friction,
Turbulence
Resistance to
200°F (93°C)

Low Friction,
Turbulence
Resistance to
550°F (288°C)

Thin Mil,
Low Friction,
Turbulence
Resistance to
200°F (93°C)

**Loctite®
Nordbak®
High Impact
Wearing
Compound**
Page 12

**Loctite®
Fixmaster®
Flex 80™ Putty**
Page 12

**Loctite®
Nordbak®
Castable
Wearing
Compound**
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**Loctite®
Nordbak®
Ceramic Tile
Adhesive**
Page 13

**Loctite®
Nordbak®
Brushable
Ceramic**
Page 10

**Loctite®
Nordbak® High
Temperature
Brushable
Ceramic**
Page 11

**Loctite®
Nordbak®
Brushable
Ceramic –
Thin Mil**
Page 11



2.0 Sliding Abrasion and Wear Resistance

Nordbak® Wear Resistant Coatings for repair and protection against mechanical wear and sliding abrasion.

*Protecting vital operating equipment with
Loctite® Nordbak® Wearing Compounds*



COARSE / LARGE PARTICLE ABRASION

LOCTITE® NORDBAK® WEARING COMPOUND



5 lb. kit – 1324008
25 lb. kit – 1323940

Coarse Abrasion and Corrosion Resistance

A two-part epoxy designed to protect, rebuild and repair high wear areas of processing equipment under typical service temperatures up to +250°F (+121°C). Ceramic-filled for outstanding resistance to abrasion and corrosion. This compound is trowelable and non-sagging and therefore suitable for overhead and irregular surfaces. It is used to resist sliding abrasion when large particles are present (1/16").

Typical Applications:

- Relining pump housings
- Reclaiming, protecting and sealing against corrosion of:
 - ✓ Handling equipment
 - ✓ Worn elbows
 - ✓ Cyclone and separator bodies
 - ✓ Dust collectors and exhausters
 - ✓ Pump liners and impellers
 - ✓ Fan blades and housings
 - ✓ Chute linings and hoppers

Advantages:

- Renews worn surfaces fast – reduces downtime
- Extends wear life – resists sliding abrasive wear and eliminates costly wear part inventory
- Won't sag or shrink – provides abrasion resistance on overhead and irregular surfaces
- Easy to mix and use

LOCTITE® NORDBAK® HIGH AND ULTRA HIGH TEMPERATURE WEARING COMPOUNDS



25 lb. kit – 99112 - High Temperature
25 lb. kit – 96392 - Ultra High Temperature

Coarse Particle Abrasion and Corrosion Resistance at High Temperatures

These epoxy compounds perform like Loctite® Nordbak® Wearing Compound, while protecting equipment in high heat environments up to 450°F and 550°F (232°C and 288°C), where conventional repair systems fail.



LOCTITE® NORDBAK® FAST CURE WEARING COMPOUND



6 lb. kit – 96373

Coarse Abrasion and Corrosion Resistance while Curing Faster

This faster curing version performs like standard Loctite® Nordbak® Wearing Compound, while offering a working time of 10 minutes and reducing total equipment downtime to as little as three hours.

LOCTITE® NORDBAK® COMBO BEAD WEARING COMPOUND



6 lb. kit – 1324571

Both Coarse and Fine Particle Abrasion and Corrosion Resistance

Loctite® Nordbak® Combo Bead Wearing Compound contains both large and small ceramic beads, offering better wear properties when both coarse/large and fine particles are present.

LOCTITE® NORDBAK® LOW ODOR WEARING COMPOUND



25 lb. kit – 41343

Coarse Abrasion and Corrosion Resistance with Low Odor

Loctite® Nordbak® Low Odor Wearing Compound offers the same protection against coarse/large particle abrasion as Loctite® Nordbak® Wearing Compound, while offering a low odor. This coating is particularly suited for applications in areas where ventilation may be limited.

Did You Know?

Traditional vs. Modern

Traditional repair methods, such as hard face welding, are time consuming and expensive.

Alternatively, Loctite® Nordbak® composite products are easily applied and offer superior compressive strength and protection qualities.

Consider the following comparison of the process required to repair a 600 cm² surface area:

HARD FACE WELD

- Step 1: Prepare surface.
 - Step 2: Preheat rods and substrate.
 - Step 3: Lay (6 mm x 3 mm beads) x 210 mm long. Overlap each bead by 50%.
 - Step 4: Lay second pass of beads to achieve 6 mm thickness. Total of 176 passes.
 - Step 5: Relieve stress caused by application of heat.
- TOTAL LABOR = 8 HOURS**

LOCTITE® NORDBAK® WEARING COMPOUND

- Step 1: Prepare surface.
 - Step 2: Mix resin and hardener.
 - Step 3: Apply to surface with trowel.
- TOTAL LABOR = 1 HOUR**

Additional Benefits:

- NO specialized labor required
- NO heat distortion of the substrate
- NO equipment required

Type	Working Time	Functional Cure	Maximum Operating Temperature
Loctite® Nordbak® Wearing Compound	30 minutes @ 77°F (25°C)	7 hours @ 77°F (25°C)	250°F (121°C)
Loctite® Nordbak® High Temperature Wearing Compound	30 minutes @ 77°F (25°C)	**	450°F (232°C)
Loctite® Nordbak® Ultra High Temperature Wearing Compound	30 minutes @ 77°F (25°C)	**	550°F (288°C)
Loctite® Nordbak® Fast Cure Wearing Compound	10 minutes @ 77°F (25°C)	3 hours @ 77°F (25°C)	225°F (107°C)
Loctite® Nordbak® Combo Bead Wearing Compound	25 minutes @ 77°F (25°C)	8 hours @ 77°F (25°C)	250°F (121°C)
Loctite® Nordbak® Low Odor Wearing Compound	30 minutes @ 77°F (25°C)	7 hours @ 77°F (25°C)	250°F (121°C)

** Requires post cure. See product description sheet.

Tips and Tricks

Loctite® Nordbak® Curing Times

Working time and cure depends on temperature and mass.

- *The higher the temperature, the faster the cure*
- *The larger the mass of material mixed, the faster the cure*

To speed the cure of composites at low temperature:

- *Store composite at room temperature*
- *Pre-heat repair surface until warm to touch*

To slow the cure of composites at high temperature:

- *Mix composites in small masses to prevent rapid curing*
- *Cool resin/hardener components*

FINE PARTICLE ABRASION

LOCTITE® NORDBAK® PNEU-WEAR



3 lb. kit – 98383
25 lb. kit – 98382

Fine Particle Abrasion Resistance

A two-component epoxy, filled with small ceramic beads and silicon carbide, for protecting processing equipment from fine particle abrasion. This trowelable and non-sag epoxy is recommended for rebuilding, repairing and protecting high wear areas under typical dry service temperatures of up to 250°F (121°C). It won't sag or shrink, so it is also suitable for providing abrasion resistance on overhead and vertical surfaces. It is used to resist sliding abrasion when small particles are present (< 1/16").

Typical Applications:

- Providing protective lining in pneumatic conveying systems
- Repairing and providing abrasion resistance of:
 - ✓ Elbows
 - ✓ Slurry pumps
 - ✓ Cyclones
 - ✓ Chutes
 - ✓ Dust collectors
 - ✓ Hoppers
 - ✓ Pump housing
- Installation in new equipment prior to placement in service

Advantages:

- Won't sag or shrink – provides abrasion resistance on overhead and vertical surfaces, and conforms to odd shapes
- Easy to mix and use – renews worn surfaces fast, reduces downtime
- Small ceramic bead filled – resists fine particle sliding abrasion, prolongs equipment life

LOCTITE® NORDBAK® HIGH AND ULTRA HIGH TEMPERATURE PNEU-WEAR



25 lb. kit – 98372 - High Temperature
25 lb. kit – 96332 - Ultra High Temperature

Fine Particle Abrasion Resistance at High Temperatures

High temperature versions of Loctite® Nordbak® Pneu-Wear designed for hot environments. These trowelable and non-sag, two-part epoxies resist fine particle abrasion under typical dry service temperatures up to 450°F (232°C) and 550°F (288°C).



Loctite® Nordbak® Pneu-Wear protects equipment from fine particle abrasion



Repairing a pump impeller with
Loctite® Nordbak® Wear Resistant Putty

LOCTITE® NORDBAK® FAST CURE PNEU-WEAR



6 lb. kit – 96363
25 lb. kit – 1117828†

Fine Particle Abrasion Resistance While Curing Faster.

Loctite® Nordbak® Fast Cure Pneu-Wear performs like standard Loctite® Nordbak® Pneu-Wear, while offering a working time of 10 minutes and reducing total equipment downtime to as little as three hours.

Did You Know?

100% Solids

Loctite® Fixmaster® and Nordbak® composites are formulated with 100% solids. This means that unlike solvent-based systems, Loctite® Fixmaster® and Nordbak® composites will not shrink when cured.

LOCTITE® FIXMASTER® WEAR RESISTANT PUTTY



1 lb. kit – 98742
3 lb. kit – 98743

Resistance to Non-Sagging and Abrasion.

Ceramic fibers give this trowelable, corrosion-resistant putty excellent wear and abrasion resistance properties under typical service temperatures up to 225°F (107°C). It cures to a smooth, low-friction finish for equipment exposed to wear, erosion and cavitation.


Typical Applications:

- Re-profiling pitting caused by cavitation or corrosion
- Providing protective coating in or on: pipes, pump elbows, transitions, butterfly valves, deflection plates and tanks

Type	Working Time	Functional Cure	Maximum Operating Temperature
Loctite® Nordbak® Pneu-Wear	30 minutes @ 77°F (25°C)	6 hours @ 77°F (25°C)	250°F (121°C)
Loctite® Nordbak® High Temperature Pneu-Wear	30 minutes @ 77°F (25°C)	**	450°F (232°C)
Loctite® Nordbak® Ultra High Temperature Pneu-Wear	30 minutes @ 77°F (25°C)	**	550°F (288°C)
Loctite® Nordbak® Fast Cure Pneu-Wear	10 minutes @ 77°F (25°C)	3 hours @ 77°F (25°C)	225°F (107°C)
Loctite® Nordbak® Wear Resistant Putty	30 minutes @ 77°F (25°C)	6 hours @ 77°F (25°C)	225°F (107°C)

** Requires post cure. See product description sheet.

† Made-to-order item.



Coating a pump volute with
Loctite® Nordbak® Brushable Ceramic

LIQUID / SLURRY TURBULENCE

LOCTITE® NORDBAK® BRUSHABLE CERAMIC



2 lb. kit (White) – 96443
2 lb. kit (Grey) – 98733
6 lb. kit (Grey) – 98732
12 lb. kit (Grey) – 997367†

Brushable Protective Coating against Liquid/Slurry Turbulence and Cavitation

An ultra-smooth, ceramic reinforced epoxy that provides a high gloss, low-friction coating to protect against turbulence, abrasion and cavitation under typical dry service temperatures up to 200°F (93°C). Used by itself, it is recommended for sealing and protecting equipment from corrosion and wear. It also works as a topcoat over Loctite® Nordbak® Wearing Compound or Loctite® Nordbak® Pneu-Wear for applications requiring surface rebuilding and lasting protection. Alternative coat colors can be used to indicate wear.

Typical Applications:

- Installation in new equipment prior to placement in service
- Providing a smooth, protective, abrasion-resistant coating
- Lining tanks and chutes
- Resurfacing and repairing:
 - ✓ Rudders and pintel housings
 - ✓ Heat exchangers – butterfly valves
 - ✓ Condensers
 - ✓ Cavitated pumps
 - ✓ Cooling pump impellers
- Used as topcoat over wearing compounds for a smooth, high gloss finish

Advantages:

- Ceramic and silicon carbide filled – an industry first that provides maximum protection
- Easy to mix and use – ease of application reduces downtime
- Meets requirements of USDA for incidental food contact
- Ultra-smooth brushable consistency – high gloss finish to fight friction, turbulence and protect against cavitation
- Superior adhesion – forms a solid bond

Did You Know?

Wear Indicator

When applying two coats of Loctite® Nordbak® Brushable Ceramic, a different color can be used for each: grey and white. When the first coat begins to wear, the second color coat will show through, providing an accurate visual indicator of wear.



** Requires post cure. See product description sheet.
† Made-to-order item.

Tips and Tricks

Preventing Flash Rusting

In high humidity conditions, flash rusting of a newly prepared metal surface can develop within minutes, causing contamination which will need to be removed again before a coating is applied.

Application of a "hold coat", which is simply a thin coat of Loctite® Nordbak® Brushable Ceramic applied as soon as possible after preparing a metal surface, will prevent flash rusting.

The applicator should concentrate on edges, corners and hard to reach areas first and then "fill in" the remaining areas until totally covered.

This process will also ensure optimal adhesion of subsequent Loctite® coatings such as Loctite® Fixmaster® Wear Resistant Putty or Loctite® Fixmaster® Superior Metal which can be applied within minutes of the "hold coat", or while still tacky.



Preventing flash rusting and recontamination

LOCTITE® NORDBAK® HIGH TEMPERATURE BRUSHABLE CERAMIC



2 lb. kit – 96433
12 lb. kit – 997369†

Brushable Protective Coating against Liquid/Slurry Turbulence and Cavitation at High Temperatures

A brushable two-part epoxy designed to protect against turbulence, abrasion and cavitation under extreme heat. Typical dry service temperatures up to 550°F (288°C).

Typical Applications:

- Protecting exhausters from cyclic heat and corrosion
- Repairing heat exchangers and condensers
- Lining tanks and chutes
- Repairing butterfly valves

LOCTITE® NORDBAK® SPRAYABLE CERAMIC



900 ml cartridge – 1389509

A two-component sprayable epoxy product that creates a smooth, low-friction coating combating turbulence and cavitation on components such as pump housings and impellers, improving equipment efficiency. Designed to protect and extend the service life of a wide range of plant equipment, Nordbak® Sprayable Ceramic provides excellent wear resistance and superior adhesion.

Typical Applications:

- Wear and chemical protection coating on larger surfaces such as tank linings, mixing vessels, pump housings and centrifuge components, both internal and external.
- Corrosion protection on plant equipment.
- Corrosion protection on smaller or more intricate areas that are difficult to reach with a brush.



** Requires post cure. See product description sheet.
† Made-to-order item.

3.0 Impact Wear Resistance

LOCTITE® NORDBAK® HIGH IMPACT WEARING COMPOUND



25 lb. kit – 1327836

Impact and Sliding Abrasion Resistance

A rubber-modified, two-part epoxy that offers wear and impact resistance properties not usually found in epoxy formulations. With impact resistance superior to ceramic tile, this product is for applications where both sliding abrasion and impact are present, under typical dry service temperatures up to 250°F (121°C).

Typical Applications:

- Protecting and sealing against corrosion of:
 - ✓ Screen decks
 - ✓ Dredge pump liners
 - ✓ Chutes and troughs
 - Drop boxes
 - Pump impellers
 - Hoppers
 - Vibrating feeder
- Installation in new equipment prior to placement in service

Advantages:

- Cures to ceramic hardness – resists sliding abrasive wear
- Won't sag or shrink – conforms to overhead and irregular surfaces, application versatility
- Renews worn surfaces fast – reduces downtime
- Impact resistant – resists mild impact at 45° angles

LOCTITE® FIXMASTER® FLEX 80™ PUTTY



1 lb. kit – 97423
6 lb. kit – 97422

Impact and Sliding Abrasion Resistance

This trowelable, two-part urethane rebuilds and repairs rubber parts and linings. It provides impact, abrasion and corrosion resistant protection to processing and pneumatic conveying equipment. Recommended for applications where speed of cure is not critical under typical dry service temperatures up to 180°F (82°C).

Typical Applications:

- Lining pipe elbows
- Repairing rubber couplings
- Repairing rubber and urethane components
- Re-profiling pump liners
- Adhering overlapping sheeting
- Patching and repairing conveyor belts

Advantages:

- Resists abrasion and impact – for durable repairs
- Easy to mix and use – speeds repair time, reduces downtime
- Combines properties of rubber and urethane – remains resilient
- Urethane – resists abrasion, impact and corrosion
- Unaffected by oil, grease or water

Type	Working Time	Functional Cure	Maximum Operating Temperature
Loctite® Nordbak® High Impact Wearing Compound	30 minutes @ 77°F (25°C)	6 hours @ 77°F (25°C)	250°F (121°C)
Loctite® Fixmaster® Flex 80™ Putty	20 minutes @ 77°F (25°C)	8 hours @ 77°F (25°C)	180°F (82°C)

4.0 Specialty Wear Resistance



LOCTITE® NORDBAK® CASTABLE WEARING COMPOUND



25 lb. kit – 98992

For Casting Wear Resistant parts

A three-part epoxy that can be cast into a mold or formed to make ceramic replacement parts. This pourable compound has ceramic beads, giving parts excellent resistance to wear and abrasion.

Typical Applications:

- Installation in new equipment prior to placement in service
- Cast in place wear plates
- Lining cyclone apexes
- Filling flat back elbows

Advantages:

- Cures to ceramic hardness that resists sliding abrasive wear
- Easy to mix and use – has application versatility
- Pourable consistency for molding cast parts
- Replaces removable parts and reduces costly inventories

LOCTITE® NORDBAK® CERAMIC TILE ADHESIVE



20 lb. kit – 1324544

For Securing Ceramic Tiles

A two-component, high strength epoxy for securing ceramic wear tiles to vertical, horizontal or overhead surfaces. This trowelable compound offers excellent shock and impact resistance.

Typical Applications:

- Bonds ceramic wear tiles
- Patches holes in pressure systems
- Secures vertical anchor bolts
- General purpose bonding

Advantages:

- Non-sag paste – can be applied vertically, horizontally and overhead
- Easy to mix and use – saves time
- Will not break or chip – withstands shock and impact
- Adheres to most clean surfaces – versatile

5.0 Extreme Corrosion and Erosion Resistance



Loctite® Nordbak® Chemical Resistant Coating on a Pump Casing

LOCTITE® NORDBAK® CHEMICAL RESISTANT COATING



12 lb. kit – 96092

Chemical Resistant Brushable Coating

This advanced, two - part epoxy is designed to protect equipment against extreme chemical attack and corrosion under typical dry service temperatures up to 150°F (65°C). It forms a smooth, glossy, low-friction finish that protects against turbulence and cavitation. Its low viscosity means it can be applied by brush or pressure sprayed.

Typical Applications:

- Resurfacing tube sheets, condensers, cooling pump impellers, butterfly valves and cavitated pumps
- Resurfacing and repairing rudders and pintel housings
- Lining tanks and chutes
- Lining chemical containment areas
- Protects the exterior surfaces of equipment exposed to chemical fumes
- Installation in new equipment prior to placement in service

Advantages:

- Protects surfaces from extreme chemical attack
- Easy to mix and use
- Brush applied
- Smooth finish protects against friction, turbulence and cavitation
- Superior adhesion – bonds well to all metal substrates

Tips and Tricks

Pressure Spraying Loctite® Nordbak® Products

Loctite® Nordbak® Chemical Resistant Coating is suitable for brush, roller and pressure spray application.

Pressure spraying Loctite® Nordbak® Chemical Resistant Coating can be achieved with standard pressure pot or airless systems with a tungsten

tip orifice size of 0.19 to 0.21 and a maximum hose length of 3 to 5 meters. Depending on climate conditions and technique, up to four of the 5.43 kg kits can be sprayed through the line before cleaning is required, which will cover approximately 20 square meters.

A solvent, such as industrial paint thinners or acetone, should be used to clean equipment. Cleaning may be required more frequently if the product and ambient temperatures are higher, to prevent the line being clogged by curing product.

6.0 Technical References

Application Case Histories

PUMP CASINGS AND IMPELLERS

Pump casings and impellers are subject to wear from abrasive slurries and solids, cavitation and chemical attack. Each of these can wear down internal sections of pump casings.

Some of the common wear areas include the cutwater, wear ring seats, impeller vane tips and inside the volute.

Repair heavy surface wear to pump casings and components using Loctite® Nordbak® Wear Resistant Coatings. The ceramic beads provide superior wear resistance to ensure extended product life and greater pump efficiency. Once repaired, overcoat with Loctite® Nordbak® Chemical Resistant Coating for superior resistance to chemical environments.



Coating a pump volute with Loctite® Nordbak® Brushable Ceramic



Repairing a pump impeller with Loctite® Nordbak® Wear Resistant Putty

SMELTER BAG HOUSE

A smelter bag house operates at high temperatures and, in this case, was subjected to extreme chemical attack by sulphur, paragoethite dust and moisture. The combination of these elements will cause corrosion and ultimate failure of equipment unless protected.

During a recent shut down at this smelter, the metal surfaces of the dryer in their bag house were coated with Loctite® Nordbak® High Temperature Brushable Ceramic.

Loctite® Nordbak® High Temperature Brushable Ceramic is highly resistant to chemical attack under typical service temperatures up to 550°F (288°C).

Two coats were applied with trowels and brushes, which were then cured before returning to service.



Bag house is subjected to extreme heat, moisture, and chemical attack



Applying Loctite® Nordbak® High Temperature Brushable Ceramic

PIPES AND DUCTS

Pipes and ducts are a common wear point in almost every industrial plant. The plant pictured below was forced to repair or replace duct elbows every 3 months at significant cost of labor and material.

After application of Loctite® Nordbak® Pneu-Wear, the same pipe elbows remained in service for 3 years without need for further repair.



Plant pipe elbow, repaired with Loctite® Nordbak® Pneu-Wear

IRON ORE RECLAIMING BUCKET

A major iron ore miner had severe abrasion problems with their reclaimer buckets due to the continuous sliding abrasion caused by the digging and reclaiming action.

The problem was fixed and repairs to the reclaimer were reduced by the application of a Loctite® Nordbak® Wearing Compound. The result was less costly down time and improved availability of valuable labor which could be reallocated to other problem areas.

BUTTERFLY VALVES

A butterfly control valve at a waste water treatment plant was corroded and therefore unable to seal effectively.

The components were abrasive blasted and a “hold coat” of Loctite® Nordbak® Brushable Ceramic (White) was applied to seal the newly cleaned surface.

The rough and corroded edges of the valve were then re-profiled with Loctite® Fixmaster® Wear Resistant Putty before a final coat of Loctite® Nordbak® Brushable Ceramic (Grey) was applied. The two coat colors can be utilized as a wear indicator for any future repairs or maintenance.

The butterfly valve was returned to service within 1 day.



The corroded butterfly valve before and after repair

Surface Preparation Tips

The successful application of any Loctite® Fixmaster® or Nordbak® polymer composite product is largely dependent on correct surface preparation. For this reason, it is critical that all applications begin with a thorough preparation of the repair surface in keeping with the instructions in this section.

GENERAL SURFACE PREPARATION

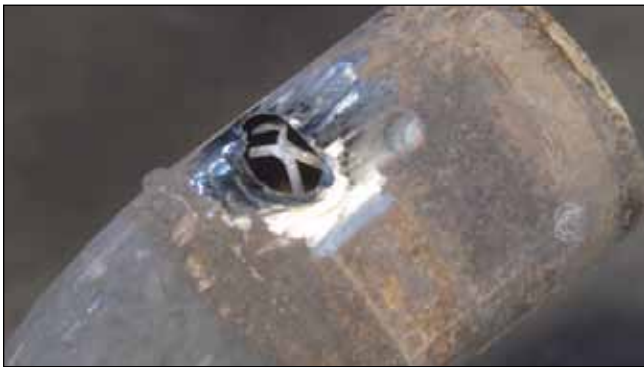
Ensure that the surface is dry and stop all liquid leakage. Remove all dirt, paint, rust, and other contaminants by abrasive blasting or other suitable mechanical techniques.

Degrease thoroughly using Loctite® ODC-Free Cleaner & Degreaser or Loctite® Natural Blue® Biodegradable Cleaner & Degreaser.

Provide a profile by abrasive blasting or other mechanical means.

To bond a composite to a badly degraded surface or to fill large voids, first tack weld wire mesh over the damaged area, then fill the prepared area with the composite.

To prevent adhesion to a surface, as when casting parts or in tooling applications, coat the surface with Loctite® Silicone Lubricant (Product No. 51360) or other release agent.



The wire mesh reinforces the repair area and forms a mechanical backing for the epoxy

CLEANING THE SURFACE

Clean the surface with Loctite® ODC-Free Cleaner & Degreaser or Loctite® Natural Blue® Biodegradable Cleaner & Degreaser.

Areas immersed in oil must be cleaned repeatedly to draw the oil out of the surface. Use a heat gun to force oil out of the pores. Allow the surface to cool, then degrease again.

After cleaning, roughen the surface to produce a good profile. The following methods may be used, but in all cases the objective is to obtain an anchor profile of 0.003 to 0.005 inches (75 to 125 microns).

Abrasive blast using an angular grit such as aluminum oxide, silicon carbide, or Black Beauty 1240 medium grade. Round abrasive grit should not be used. High velocity water blasting with an abrasive medium is also recommended. (See [Figure 1](#))

If grit blasting is not possible, roughen the surface using a coarse grinding wheel (60 grit or coarser) or a needle gun to achieve the desired profile. (See [Figure 2](#))

Using coarse sandpaper or a file is acceptable only if the first two methods cannot be utilized.

After roughening, the surface must again be thoroughly cleaned with Loctite® ODC-Free Cleaner & Degreaser or Loctite® Natural Blue® Biodegradable Cleaner & Degreaser. Repairs should be made as soon as possible to avoid rusting.

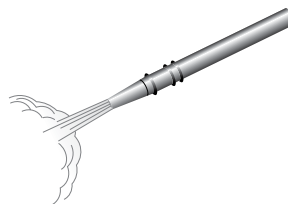


Figure 1. For best results, abrasive blast the application surface

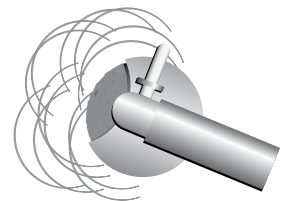


Figure 2. Coarse grinding of the surface is also recommended for surface preparation

WET SURFACES

Exceptions to having a dry surface are when using Loctite® Fixmaster® Wet Surface Repair Putty, Loctite® Fixmaster® Underwater Repair Epoxy or Loctite® Fixmaster® Metal Magic Steel™. These products will cure in the presence of water.

Stop all leakage or seepage by:

- ✓ Turning off the water flow.
- ✓ Fitting a wooden peg or sheet metal screw.
- ✓ Stuffing with cork, wax, rags or any other suitable material.
(See [Figure 3](#))

If the leak is caused by corrosion, the side wall may be weak. Open the hole to a point where the wall is close to its original thickness. Then plug the opening using a suitable material.

All surface condensation, wetness or dampness must be wiped clean and dried off using a hot air gun or similar device.

Continue surface preparation in accordance with the preceding section on Surface Cleaning.

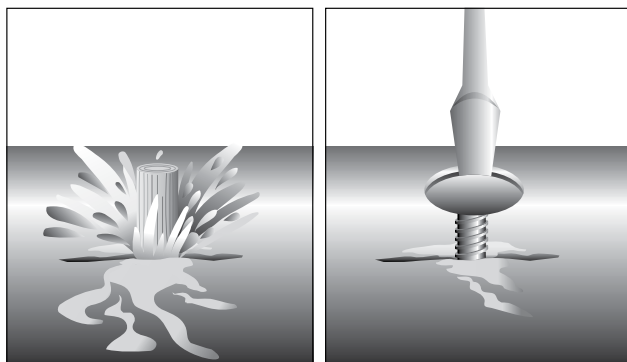


Figure 3. Stop leaks with a wooden plug or screw inserted in area of seepage

Did You Know?

Surface Profile

Abrasive blasting not only removes visible surface rust and contaminates, but also creates a rugged, miniature mountain and valley finish. This surface roughness is known as Surface Profile.

Surface Profile is critical to coating performance as it improves adhesion by increasing surface area and providing a keyed anchor pattern.

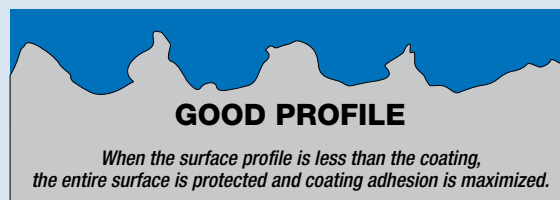
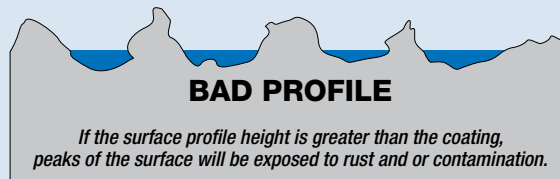
Surface Profiles will vary depending on the type of abrasive particles, equipment and technique utilized. It is critical to achieve the correct profile depth specified for a particular coating.

Inadequate quality control and lack of restriction of large abrasive particle sizes for thin coats can lead to peaks of the surface not being adequately covered. In addition more profile means using more product to cover the surface!

The diagrams below illustrate how profile must be matched to the product specification.

Surface Profile

Chemical contaminants that are not readily visible, such as chlorides and sulphates, attract moisture through coating systems resulting in premature failure. Therefore it is fundamentally important to chemically clean all substrates with an industrial strength cleaner and degreaser such as Loctite® Natural Blue® Biodegradable Cleaner & Degreaser.



Loctite® Composite applications require a minimum 75 micron surface profile.

Surface Preparation Grades of Blast

RUST GRADE

- A Steel with mill scale layer intact and very minor or no rusting
- B Steel with spreading surface rust and the mill scale commenced flaking
- C Rusty steel with mill scale layer flaked and loose or lost but only minor occurrence of pitting
- D Very rusty steel with mill scale layer all rusted and extensive occurrence of pitting

BLAST CLASS

- 1 (SP-7/N4) Very light over clean with removal of loose surface contaminants
- 2 (SP-6/N3) Substantial blast clean with widespread, visible contaminate removal and base metal color appearing
- 2.5 (SP-10/N2) Intensive blast clean leaving shading grey metal with only contaminates
- 3 (SP-5/N1) Complete blast clean with consistent metal color all over and no visible contaminates



Mixing Tips

The following tips are designed to facilitate the process of working with Loctite® polymer composite products under a variety of conditions.

MIXING

Thorough mixing, in proper ratio, is critical to the performance of the material. Whenever possible, the complete container should be mixed at one time. If the material is to be mixed in separate batches, the user must be careful to adhere to the mix ratios which appear on the product label.

The material is mixed by adding hardener to resin. The mixing process is complete when the product is free from streaks or other variances. Failure to thoroughly mix the material will cause soft spots or overall failure of the product. Mixing should take 3 to 5 minutes.

Large masses (over one pound) can be mixed more easily by turning out the resin and hardener onto a clean, disposable surface. Mix and knead material with a putty knife or other flat tool until the product is thoroughly mixed. Do not fold material into the mix as this process can cause air entrapment that will weaken the cured product.



Composite is turned out onto a disposable surface to ensure proper mixing

CURE

Polymer composite compounds begin to cure, or harden, when the hardener is added to the resin. Curing is by a chemical reaction that causes exotherming, or the process of giving off heat. There are some basic principles of working with composite compounds that every user should understand:

Cure times are mass dependent. The larger the mass mixed, the faster it will cure. If the mixed material cannot be applied during the working time specified on the product label, mix it in smaller batches.

Cure times are temperature dependent. The higher the temperature, the faster the product will cure. Ideal mixing temperature is between 55°F and 80°F (12°C and 26°C).

If the application is to occur at higher temperatures, the product should be stored at room temperature or slightly below to slow down the chemical reaction between resin and hardener.

At lower temperatures, the epoxy will cure very slowly or may fail to cure at all. To speed up the cure at low temperatures, store product at room temperature and heat parts to be repaired prior to application. The repaired area can also be heated with a heat gun upon completion of the application.

Most polymer composite compounds are skin and eye irritants, and many hardeners are corrosive. Always wear appropriate gloves and goggles or face shield during mixing and handling. Observe good industrial safety practices and review product Material Safety Data Sheet (MSDS) prior to use for complete precautionary information.

Application Tips

FOR MAXIMUM BOND

Pre-coat the application surface by rubbing the mixed composite into the substrate. This technique, called “wetting out the surface,” helps the repair material fill all the crevices in the application surface, creating a superior bond between the composite and substrate. The rest of the mixed product can then be applied over the pre-coat to finish the application.



ELIMINATING AIR ENTRAPMENT

Use a heat gun (do not use an open flame) to pull air bubbles out of cast composite. Heat will cause bubbles to rise to the top and dissipate.



POURING LIQUID COMPOSITES

Avoid air entrapment in cured composite by pouring close to the mold in a steady, even stream.



CREATING A SMOOTH FINISH

Smooth out the uncured product with a warm trowel for a smooth, glossy finish. A heat gun can also be used to create a smooth finish.



Typical Wear Resistant Coating Repair

Pump Repairs: Pump castings, impellers and volutes wear due to corrosion, erosion, cavitation and mechanical damage. All these forms of damage can be effectively and economically repaired with Loctite® polymer composite products. The two main areas subject to wear are the volute and the impeller.

REPAIRING VOLUTES

- 1. Surface Preparation:** To prepare the surface, remove all rust, old paint and other debris from the area to be repaired. For best results, abrasive blast large areas or use a needle gun or grinder. Prepare the area at least $\frac{1}{2}$ " (12 mm) greater than the repair area on all sides.

Where the equipment has been pumping salt solutions, abrasive blast all areas to be treated and leave for 24 hours, after which time the entire area should be given a brush blast to remove all salts which may have sweated to the surface.

Sandblast to sound metal and clean with Loctite® ODC-Free Cleaner & Degreaser or Loctite® Natural Blue® Biodegradable Cleaner & Degreaser.

- 2. Build Up:** Build up the gouges and worn areas on the inside of the body by applying a smooth coating of composite coating. To avoid air entrapment, use a suitably shaped thin plastic or metal applicator to apply a thin coat of product to all faces of the cavities. (See [Figure 1](#))
- 3. Fill In:** To fill the cavities, press composite into the repair area. Use the applicator to smooth and shape the repair area to the original contour. Alternatively, the composite can be used to build up the repair area slightly larger than the required contour. After the composite has cured, it can be ground down to the original contour using a combination of grinding wheel and sanding disc attachments.
- 4. Top Coat:** Top coat the entire volute area with Loctite® Nordbak® Brushable Ceramic epoxy to increase pump efficiency. (See [Figure 3](#))

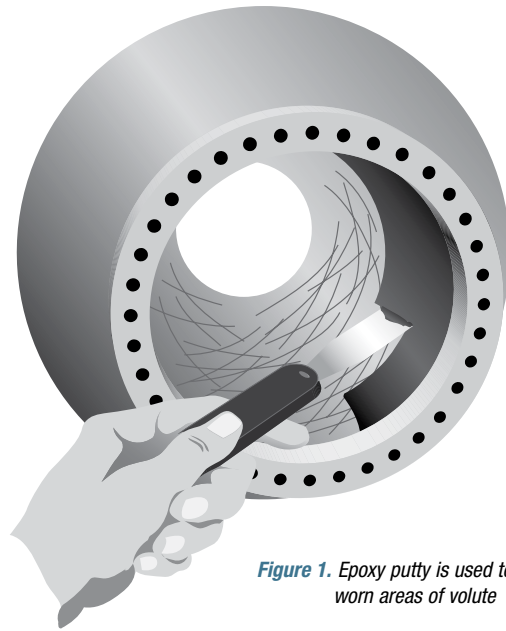


Figure 1. Epoxy putty is used to rebuild worn areas of volute



Figure 2. Loctite® Nordbak® Brushable Ceramic applied over the epoxy putty repair provides a low-friction finish that extends the operating life and efficiency of the pump

REPAIRING IMPELLERS

- 1. Surface Preparation:** Prepare the surface as in Step 1 on the previous page. To aid in penetration of the composite coating into cavities, warm the impeller to 120 to 140°F (50 to 60°C) before applying product.
- 2. Severe Erosion:** For severely eroded blades, tack weld expanded metal from the edge to be rebuilt to the existing metal surface. (See [Figure 3](#))
- 3. Apply:** Apply the composite over the expanded metal, forcing the epoxy through the mesh, being careful to avoid air entrapment. Smooth the finish with a thin plastic or metal applicator. (See [Figure 4](#))
- 4. Finish:** To finish the repair, brush apply a 15 to 20 mil coating of Loctite® Nordbak® Brushable Ceramic to entire impeller area, filling in porous spots in the casting. Once the first coat has cured, apply a second coat of Loctite® Nordbak® Brushable Ceramic. (See [Figure 5](#))

Note: After full cure, balance the impeller before returning to service.

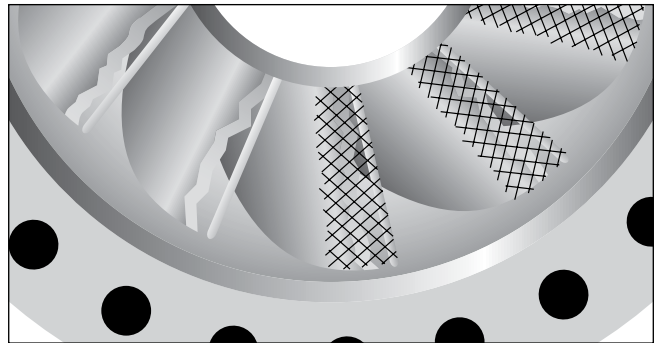


Figure 3. Expanded metal, used over damaged blades, rebuilds and reinforces the repair area

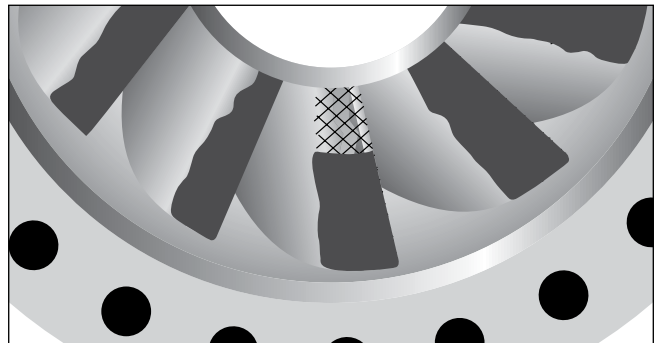


Figure 4. Coat expanded metal with epoxy and smooth out finish

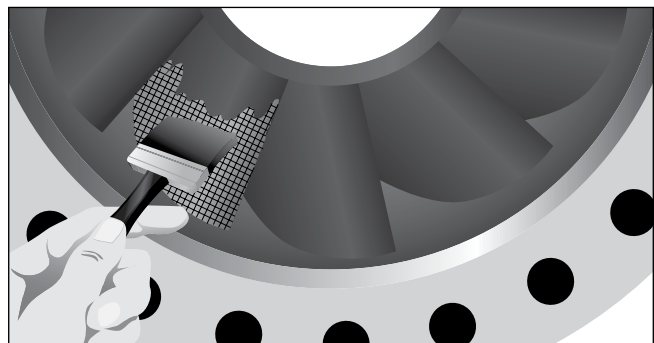


Figure 5. Two coats of Loctite® Nordbak® Brushable Ceramic seal the metal and provide a low-friction surface

Frequently Asked Questions

Q: What is a polymer composite?

A: An epoxy or urethane (polymer) system that contains enforcement components such as fibers, beads, powders, etc. These added composites increase performance.

Q: Why would I use a polymer composite to protect components from wear and abrasion over a urethane?

A: Polymer composites are used where sliding abrasion or wear is a problem. Urethanes are better suited when impact abrasion is a problem.

Q: Why is surface preparation so important?

A: A successful application is largely dependent on surface preparation. The application surface must be free from all contamination. Removal of oil, grease, dust, rust and for most products, moisture*, will greatly enhance application success. For more detailed surface preparation techniques, refer to Product Description Sheets.

** NOTE: Products such as Loctite® Fixmaster® Metal Magic Steel™ and Fixmaster® Wet Surface Repair Putty contain hardener systems that can be applied to damp and underwater surfaces.*

Q: Can I add solvents to make them thinner (easier to work with)?

A: The use of solvent is not recommended due to the possibility of trapping the solvent in the cured systems causing voids or soft spots.

Q: Can I mix just the amount I need instead of the entire amount of the composite?

A: Yes, polymer composites are packaged as kits with exact ratios, however, partial kits can be mixed if measured precisely.

Q: Can I remove a polymer composite after it has cured?

A: Polymer composites have great adhesive properties and are designed not to be removed. If removal is necessary, Loctite® Chisel® Paint Stripper may be used.

Q: Will my cure time be affected if I bring in a cold part from outdoors into a warm room?

A: If a part is cold and the ambient air is warm, cure time will be extended. Both the air and the part should be room temperature to get the prescribed cure time and strength.

Q: If I add more hardener will that make it cure faster?

A: No, epoxy systems have been formulated to contain an exact amount of resin to react with an exact amount of hardener. If excess hardener is added, it will remain unreacted and the physical properties will be negatively affected.

Q: When can I put my equipment back in service?

A: Functional cure time varies with product type and application temperature; refer to the Product Description Sheets for individual product information.

Q: How long will the products last?

A: Durability of a product will depend on the surface preparation, applicator skill, environmental conditions, chemical exposure, etc.

Q: Do I have to use expanded metal when applying Loctite® Wear Resistant Coatings?

A: Expanded metal is recommended for vertical or overhead surfaces. On applications where it is difficult or impossible to tack weld expanded metal, a coating of Loctite® Nordbak® Brushable Ceramic may be applied. Allow to partially cure for approximately two hours, and then apply the wearing compound over the Loctite® Nordbak® Brushable Ceramic.

Troubleshooting Guide

PROBLEM	POSSIBLE CAUSES	SUGGESTED SOLUTION
Curing too fast	<ul style="list-style-type: none"> · Air temperature too high · Application surface too hot · Composite temperature too hot · Too much material being mixed 	<ul style="list-style-type: none"> · Working time and cure time depend on temperature and the amount of material being mixed; the higher the temperature, the faster the cure. The larger the amount of material mixed, the faster the cure. · To slow the cure at high temperatures, mix in smaller amounts to prevent rapid curing and/or cool resin/hardener components and application surface.
Curing too slow	<ul style="list-style-type: none"> · Air temperature too cold · Composite temperature too cold · Application surface too cold 	<ul style="list-style-type: none"> · To speed the cure at low temperatures (<60°F), store at room temperature (70°F ± 5°F) and/or pre-heat application surface until warm to the touch.
Loss of adhesion	<ul style="list-style-type: none"> · Surface contamination · Surface too smooth 	<ul style="list-style-type: none"> · Prepare surface by grit blasting, if possible. For less severe applications, roughening the surface with hand tools is suitable. Solvent clean with a residue-free cleaner such as Loctite® ODC-Free Cleaner & Degreaser or Loctite® Natural Blue® Biodegradable Cleaner & Degreaser. Product should be applied as soon as possible after surface preparation to avoid surface rust or contamination.
Excessive shrinking and cracking	<ul style="list-style-type: none"> · Too much product being applied or poured resulting in high heat build-up 	<ul style="list-style-type: none"> · Applying too much material at one time will cause excessive heat build-up, which will cause shrinking and cracking. Apply material in layers of one inch at a time, allowing the layer to cool before applying the next layer.

Loctite® Fixmaster® and Nordbak® Chemical Compatibility Chart

RANGE SUMMARY ONLY.

For maximum chemical capability use Loctite® Fixmaster® High Performance Quartz or Loctite® Nordbak® Chemical Resistant Coating.

Please consult your Henkel Application Engineer if further product specific information is required.

COMPATIBLE.....	✓
NOT COMPATIBLE.....	✗

Acetic Acid	✗	Diacetone Alcohol	✗	Perchloroethylene (Dry)	✗	Tamin.....	✓
Acetic Acid	✗	Dibutyl Phthalate	✓	Petroleum Ether.....	✓	Tar and Tar Oil.....	✓
Acetone	✗	Drying Oil	✓	Petroleum Jelly.....	✓	Tartaric Acid.....	✓
Alcohol, Amyl.....	✓	Ethyl Acetate	✗	Phosphoric Acid (10% cold).....	✓	Tetraethyl Lead.....	✓
Alcohol, Benzyl.....	✓	Ethylene Glycol.....	✓	Phosphoric Acid (10% hot).....	✓	Toluene	✗
Alcohol, Butyl.....	✓	Ferric Chloride.....	✓	Phthalic Acid.....	✓	Trichloroethylene.....	✗
Alcohol, Ethyl.....	✗	Ferric Nitrate	✓	Potash.....	✓	Trichloroethylene, Dry.....	✗
Alcohol, Methyl.....	✗	Ferric.....	✓	Potassium Bromide.....	✓	Turpentine.....	✓
Alcohol, Propyl.....	✓	Ferrous Chloride	✓	Potassium Carbonate.....	✓	Water, Acid, Below pH 7.....	✓
Alum, Ammonium.....	✓	Ferrous Sulphate (Sat).....	✓	Potassium Chlorate.....	✓	Water, pH 7 to 8.....	✓
Alum, Chrome.....	✓	Ferrous Sulphate, 10%.....	✓	Potassium Chloride Sol.....	✓	Water, Alkaline, Over pH 8.....	✓
Alum, Potassium.....	✓	Fertilizer Sol.....	✓	Potassium Chromate.....	✓	Water, De-Ionized.....	✓
Alum, Sodium.....	✓	Freon ★.....	✓	Potassium Dichromate.....	✓	Water, De-Ionized, Low Conductivity.....	✓
Aluminum Chloride.....	✓	Fuel Oil.....	✓	Potassium Ferricyanide.....	✓	Water, Gritty.....	✓
Aluminum Sulphate.....	✓	Gasoline, Aviation.....	✓	Potassium Hydroxide.....	✓	Water, Mine Water.....	✓
Ammonia Solutions.....	✓	Gasoline, Motor.....	✓	Potassium Iodide.....	✓	Water, Potable.....	✓
Ammonium Carbonate.....	✓	Glue, Animal Gelatin.....	✓	Potassium Nitrate.....	✓	Water, River.....	✓
Ammonium Chloride.....	✓	Glue, Plywood.....	✓	Potassium Permanganate.....	✓	Water, Sandy.....	✓
Ammonium Nitrate.....	✓	Glycerol.....	✓	Potassium Sulphate.....	✓	Water, "White", low pH.....	✓
Ammonium Phosphate.....	✓	Glycol Amine.....	✓	Propyl Alcohol.....	✓	Water, "White", high pH.....	✓
Ammonium Sulphate.....	✓	Grease, Lubricating.....	✓	Propylene Glycol.....	✓	Wax.....	✓
Amyl Acetate.....	✗	Heptane.....	✓	Rosin, Wood.....	✓	Wax, Emulsions.....	✓
Aniline.....	✓	Hexane.....	✓	Rosin, in Alcohol.....	✓	Xylene.....	✗
Aniline Dyes.....	✓	Hydrogen Peroxide (dil).....	✓	Rubber, Latex.....	✓	Zinc Chloride.....	✓
Asphalt, Emulsions.....	✓	Hydrogen Peroxide (con).....	✓	Sewage.....	✓	Zinc Galvanizing.....	✓
Asphalt, Molten.....	✓	Ink.....	✓	Silicone Fluids.....	✓	Zinc Hydrosulphite.....	✓
Barium Carbonate.....	✓	Isooctane.....	✓	Silver Nitrate.....	✓	Zinc Sulphate.....	✓
Barium Chloride.....	✓	Isopropyl Alcohol.....	✓	Soap Solutions (Stearates).....	✓		
Barium Hydroxide.....	✓	Kerosene.....	✓	Sodium Acetate.....	✓	GASES	
Barium Sulphate.....	✓	Lactic Acid.....	✓	Sodium Aluminate.....	✓	Acetylene.....	✓
Benzene.....	✗	Magnesium Bisulfite.....	✓	Sodium Bisulfite.....	✓	Air.....	✓
Brake Fluids.....	✓	Magnesium Chloride.....	✓	Sodium Bromide.....	✓	Butane.....	✓
Butyl Acetate.....	✗	Magnesium Hydroxide.....	✓	Sodium Carbonate.....	✓	Carbon Dioxide.....	✓
Calcium Bisulphate.....	✓	Magnesium Sulphate.....	✓	Sodium Chlorate.....	✓	Carbon Monoxide.....	✓
Calcium Carbonate.....	✓	Maleic Acid.....	✓	Sodium Chloride.....	✓	Chlorine Dry.....	✓
Calcium Chloride.....	✓	Manganese Chloride.....	✓	Sodium Cyanide.....	✓	Chlorine Wet.....	✓
Calcium Hydroxide.....	✓	Mercuric Chloride.....	✓	Sodium Hydroxide.....	✓	Chlorine Wet.....	✓
Calcium Sulphate.....	✓	Mercury.....	✓	Sodium Hydroxide (20% Cold).....	✓	Coke, Oven Gas (Cold).....	✓
Carbon Tetrachloride.....	✗	Mercury Dry.....	✓	Sodium Hydroxide (20% Hot).....	✓	Coke, Oven Gas (Hot).....	✓
Carbonic Acid.....	✓	Methyl Acetate.....	✗	Sodium Hydroxide (50% Cold).....	✓	Ethane.....	✓
Carnauba Wax.....	✓	Methyl Cellosolve H.....	✗	Sodium Hydroxide (50% Hot).....	✓	Gas, Manufacturing.....	✓
Chalk.....	✓	Methyl Ethyl Ketone.....	✗	Sodium Hydroxide (70% Cold).....	✓	Gas, Natural.....	✓
China Clay.....	✓	Methylene Chloride.....	✗	Sodium Hydroxide (70% Hot).....	✓	Hydrogen Gas (Cold).....	✓
Chloroacetic Acid.....	✗	Mineral Spirits.....	✓	Sodium Metasilicate.....	✓	Methane.....	✓
Chlorobenzene, Dry.....	✗	Mud.....	✓	Sodium Nitrate.....	✓	Natural Gas, Dry.....	✓
Chloroform, Dry.....	✗	Naphtha.....	✓	Sodium, Nitrite – Nitrate.....	✓	Nitrogen Gas.....	✓
Chlorosulfonic Acid.....	✗	Naphthalene.....	✓	Sodium Phosphate, Mono.....	✓	Nitrous Oxide.....	✓
Chromium Chloride.....	✓	Nickel Ammonium Sulphate.....	✓	Sodium Phosphate, Tri.....	✓	Ozone.....	✓
Chromium Sulphate.....	✓	Nickel Chloride.....	✓	Sodium Silicate.....	✓	Producer Gas, 50 PSI.....	✓
Clay.....	✓	Nickel Sulphate.....	✓	Sodium Sulphide.....	✓	Propane.....	✓
Creosote.....	✗	Nitric Acid, 20%.....	✗	Stannic Chloride.....	✓	Sulphur Dioxide.....	✓
Creosote, Cresylic Acid.....	✗	Oil, Creosote.....	✓	Starch.....	✓	Sulphur Dioxide (Dry).....	✓
Cyclohexane.....	✓	Oil, Emulsified.....	✓	Starch Base.....	✓	Sulphur Trioxide Gas.....	✓
		Oil, Fuel.....	✓	Stearic Acid.....	✓		
		Oil, Lubricating.....	✓	Steep Wate.....	✓		
		Ozone, Wet.....	✓	Sterilization Steam.....	✓		
		Paint Remover, Sol. Type.....	✓	Styrene.....	✓		
		Paraffin, Molten.....	✓	Sulphuric Acid (7 to 40%).....	✗		
		Paraffin, Oil.....	✓	Sulphuric Acid (40 to 75%).....	✗		
				Sulphuric Acid (75 to 95%).....	✗		
				Sulphuric Acid (95 to 100%).....	✗		
				Tannic Acid (cold).....	✓		

NOTE: 1. The above information does not constitute a recommendation of adhesive use. It is intended only as a guide for consideration by the purchaser with the expectation of favorable confirming test results. It is impossible to test adhesive's reaction with the multitude of chemicals in existence, therefore compatibility has been estimated based on a wide variety of customer experience.

2. With the stringent action of such chemicals as Freon, strong cold acids and caustics, thorough evaluation is suggested. Sealing of hot corrosive chemicals is not recommended.

3. Refer to Technical Data Sheet or contact Henkel Technical Services for use with chemicals not covered by this information.

★ Listing(s) may be brand name(s) or trademarks for chemicals of corporations other than Henkel.

(This is a list of chemical stability only. It does not constitute approval for use in the processing of foods, drugs, cosmetics, pharmaceuticals and ingestible chemicals.)

Loctite® brand adhesives are not recommended for use in pure oxygen or chlorine environments, or in conjunction with strong oxidizing agents, as explosive reaction can result.

Application Selector Guide

PRODUCT	FINE PARTICLE ABRASION	MULTIPLE PARTICLE ABRASION	IMPACT RESISTANCE	CHEMICAL CORROSION PROTECTION	HIGH TEMPERATURE RESISTANCE	FAST CURE	CORROSION PROTECTION	TILE INSTALLATION	PUMP REPAIR	ELBOWS	FAN HOUSINGS	CYCLONES	CHUTES
SLIDING ABRASION AND WEAR RESISTANCE (Coarse/Large Particle)													
Loctite® Nordbak® Wearing Compound									X	X	✓	X	✓
Loctite® Nordbak® Fast Cure Wearing Compound						✓			X	X	✓	X	✓
Loctite® Nordbak® High Temperature Wearing Compound					✓				X	X	✓	X	✓
Loctite® Nordbak® Ultra High Temperature Wearing Compound					✓				X	X	✓	X	✓
Loctite® Nordbak® Combo Bead Wearing Compound	X	✓								X	X	X	X
Loctite® Nordbak® Low Odor Wearing Compound									X	X	✓	X	✓
SLIDING ABRASION AND WEAR RESISTANCE (Fine Particle)													
Loctite® Nordbak® Pneu-Wear	✓	X							✓	✓	X	✓	X
Loctite® Nordbak® Fast Cure Pneu-Wear	✓	X				✓			✓	✓	X	✓	X
Loctite® Nordbak® High Temperature Pneu-Wear	✓	X			✓				✓	✓	X	✓	X
Loctite® Nordbak® Ultra High Temperature Pneu-Wear	✓	X			✓				✓	✓	X	✓	X
Loctite® Fixmaster® Wear Resistant Putty	✓	X							✓	✓	X	✓	X
LIQUID/SLURRY TURBULENCE RESISTANCE													
Loctite® Nordbak® Brushable Ceramic – Grey and White				X			✓		X				
Loctite® Nordbak® High Temperature Brushable Ceramic				X	✓		✓		X				
Loctite® Nordbak® Sprayable Ceramic				X			✓		X	X	X	X	X
IMPACT WEAR RESISTANCE													
Loctite® Nordbak® High Impact Wearing Compound			✓										
Loctite® Fixmaster® Flex 80™ Putty			✓										
SPECIALTY WEAR RESISTANCE													
Loctite® Nordbak® Castable Wearing Compound										✓		✓	
Loctite® Nordbak® Ceramic Tile Adhesive			X					✓					
EXTREME CORROSION/EROSION RESISTANCE													
Loctite® Nordbak® Chemical Resistant Coating				✓			✓						

✓ Preferred Choice

X Good Choice

Wear Resistant Coatings Properties Chart

PRODUCT	Page #	Item Number	Container	COVERAGE (FT.2 @ 1/4" THICKNESS)	COLOR	MAXIMUM OPERATING TEMPERATURE (°F)	COMPRESSIVE STRENGTH (PSI)	HARDNESS (SHORE D)	WORKING TIME (MINUTES) 77°F	FUNCTIONAL CURE (HOURS) 77°F	MIX RATIO BY VOLUME (R:H)	MIX RATIO BY WEIGHT (R:H)	AGENCY APPROVALS
SLIDING ABRASION AND WEAR RESISTANCE (Coarse/Large Particle)													
Loctite® Nordbak® Wearing Compound	6	1324008	5 lb. kit	1.75	Grey	250	16,000	90	30	7	2:1	2:1	NAVSEA
		1323940	25 lb. kit	8.75									
Loctite® Nordbak® Fast Cure Wearing Compound	7	96373	6 lb. kit	2.3	Blue	225	10,000	90	10	3	2:1	2:1	N/A
Loctite® Nordbak® High Temperature Wearing Compound	6	99112	25 lb. kit	8.7	Grey	450	15,000	90	30	t	4:1	3.9:1	N/A
Loctite® Nordbak® Ultra High Temperature Wearing Compound	6	96392	25 lb. kit	8.7	Red	550	N/A	90	30	t	2.5:1	2.85:1	N/A
Loctite® Nordbak® Combo Bead Wearing Compound	7	1324571	6 lb. kit	2.3	Grey	250	13,000	90	25	8	2:1	2:1	N/A
Loctite® Nordbak® Low Odor Wearing Compound	7	41343	25 lb. kit	8.75	Grey	250	16,000	90	30	7	2:1	2:1	N/A
SLIDING ABRASION AND WEAR RESISTANCE (Fine Particle)													
Loctite® Nordbak® Pneu-Wear	8	98383	3 lb. kit	1.1	Grey	250	15,000	85	30	6	4:1	4:1	ABS, CFIA, NEHC, Lloyds
		98382	25 lb. kit	9									
Loctite® Nordbak® Fast Cure Pneu-Wear	9	96363	6 lb. kit	2.3	Blue	225	12,000	90	10	3	2:1	2:1	CFIA
		1117828†	25 lb. kit	9.6									
Loctite® Nordbak® High Temperature Pneu-Wear	8	98372	25 lb. kit	8.7	Grey	450	15,000	90	30	▼	4:1	4:1	N/A
Loctite® Nordbak® Ultra High Temperature Pneu-Wear	8	96332	25 lb. kit	8.8	Red	550	N/A	90	30	▼	2:1	2.27:1	N/A
Loctite® Fixmaster® Wear Resistant Putty	9	98742	1 lb. kit	0.37	Grey	225	11,600	89	30	6	2:1	2:1	N/A
		98743	3 lb. kit	1.11									
LIQUID/SLURRY TURBULENCE RESISTANCE													
Loctite® Nordbak® Brushable Ceramic	10	98733	2 lb. kit	12*	Grey	200	10,180	85	30	6	2.75:1	4.8:1	ABS, CFIA, NSF® pending
		98732	6 lb. kit	36*									
		96443	2 lb. kit	12*	White		10,866		15	5	2.8:1	4.5:1	CFIA
Loctite® Nordbak® High Temperature Brushable Ceramic	11	96433	2 lb. kit	12*	Red	550	16,000	90	120	▼	2.6:1	4.25:1	N/A
		997369†	12 lb. kit	72*									
Loctite® Nordbak® Sprayable Ceramic	11	1389509	900 ml	20*	Green	200	15,400	86	40	4	2:1	2:1	N/A
IMPACT WEAR RESISTANCE													
Loctite® Nordbak® High Impact Wearing Compound	12	1327836	25 lb. kit	8.75	Grey	250	12,000	85	30	6	2:1	2:1	N/A
Loctite® Fixmaster® Flex 80™ Putty	12	97423	1 lb. kit	94**	Black	180	N/A	87 ⁿ	10	8	2.5:1	2.6:1	ABS
		97422	6 lb. kit	560**									
SPECIALTY WEAR RESISTANCE													
Loctite® Nordbak® Castable Wearing Compound	13	98992	25 lb. kit	277 in. ³	Grey	225	18,500	90	30	6	2:1	6.8:1	N/A
Loctite® Nordbak® Ceramic Tile Adhesive	13	1324544	20 lb. kit	12	Beige	200	14,000	88	60	12	1:1	1:1.25	N/A
EXTREME CORROSION/EROSION RESISTANCE													
Loctite® Nordbak® Chemical Resistant Coating	14	96092	12 lb. kit	74*	Grey	150 wet/ 7,200 dry	10,000	83	N/A	N/A	2.3:1	3.4:1	CFIA

Properties based on mixing 1 lb. mass at 77°F, ultimate cure. * 20 mil thickness. ** inch² at 1/4 inch thickness. ▼ Requires heat cure. See Technical Data Sheet.
 NEHC = Navy Environmental Health Center. † Made-to-order item. ‡ Shore A.

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