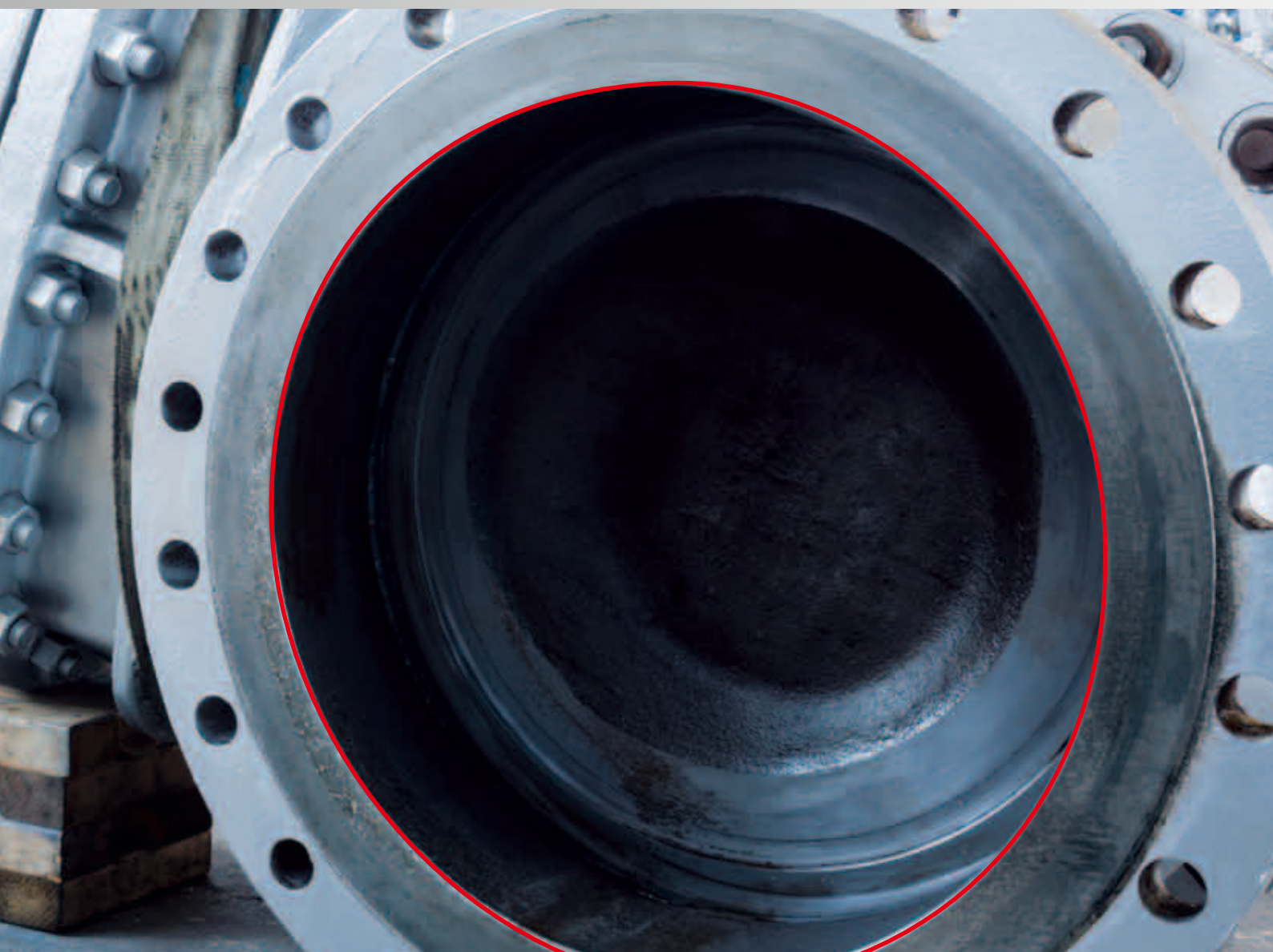




# LOCTITE® Wear Resistant Coatings Selector Guide



Excellence is our Passion

### Value-Added Partnership

Our large, experienced team of engineers provide documented design and application support.

### Cost Savings and Reliability

LOCTITE® solutions are more cost effective compared to conventional mechanical methods.

### Global Leadership

LOCTITE® is the global technology leader with wide product range sold through an extensive sales and distributor network.

### Superior Product Performance

LOCTITE® adhesives and sealants are recognized as the best performing products in the industry.

### End-User Training

We provide professional training programs to customers that help them identify opportunities for improving process efficiency, quality and costs.

## LOCTITE® is the world's #1 brand of engineering adhesives & sealants



### Achieving more with less

Our commitment to leadership in sustainability is deeply embedded in our values. With our revised Sustainability Strategy for 2030, we are building on our strong track record. At the same time, we are aiming to address one of the central future challenges: to decouple growth from resource consumption. At the heart of this strategy is therefore the simple, yet challenging, ambition: to achieve more with less. It aims to create more value for our customers, consumers, communities and the company alike, while simultaneously reducing the environmental footprint.

MEMBER OF  
**Dow Jones Sustainability Indices**  
In Collaboration with RobecoSAM

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Index by  
**ekom research**

**SUSTAINALYTICS**

Member: 2013/2014  
**STOXX**  
ESG LEADERS INDICES

Global  
Challenges  
Index

United Nations  
Sustainable  
Development  
Goals

**FTSE4Good**



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# Introduction

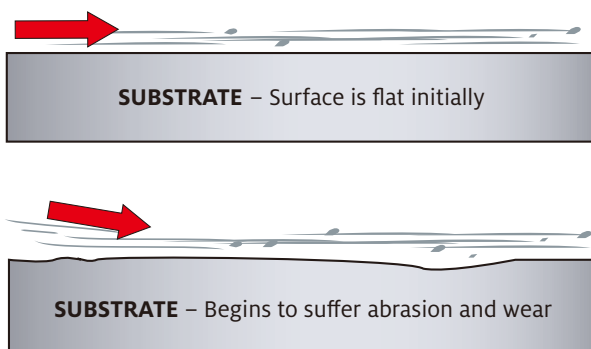
With extremely hard reinforcement fillers, Henkel's polymer composite products have excellent wear resistance and superior adhesion. They are designed to protect and extend the service life of a wide range of plant equipment. The composites act as a sacrificial and renewable working surface, protecting 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 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.

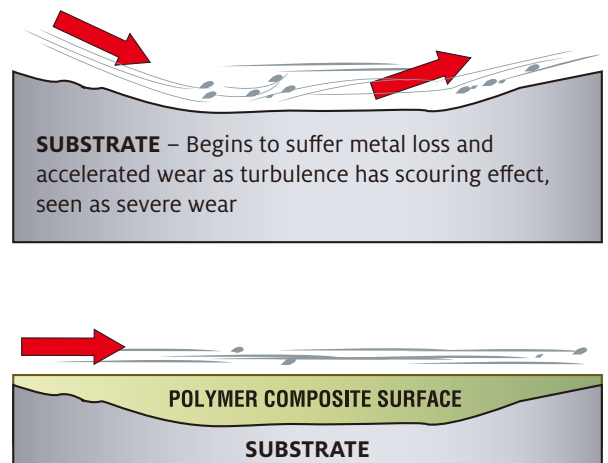
Wear and abrasion can be minimized and reduced by utilizing polymer composite materials. These act in a sacrificial capacity and, therefore, wear in place of the original substrate, often lasting significantly longer than the original surface, due to their highly wear-resistant formulations.

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!







## LOCTITE® Nordbak and Fixmaster composites

## REBUILD, REPAIR and PROTECT

industrial equipment and surfaces, extending equipment life, improving efficiency and minimizing downtime.

### CREATING PARTNERSHIPS

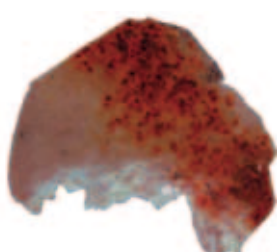
LOCTITE® branded products are foremost in the business of solving and preventing customer's problems. With Fixmaster and Nordbak composite technology providing the foundation, customers get more than a product – they get a partner who will work side-by-side with them to create and implement innovative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



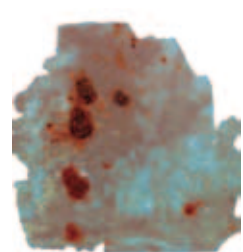
Coating delamination



Excessive corrosion causing  
delamination of the coating



Underfilm corrosion signs

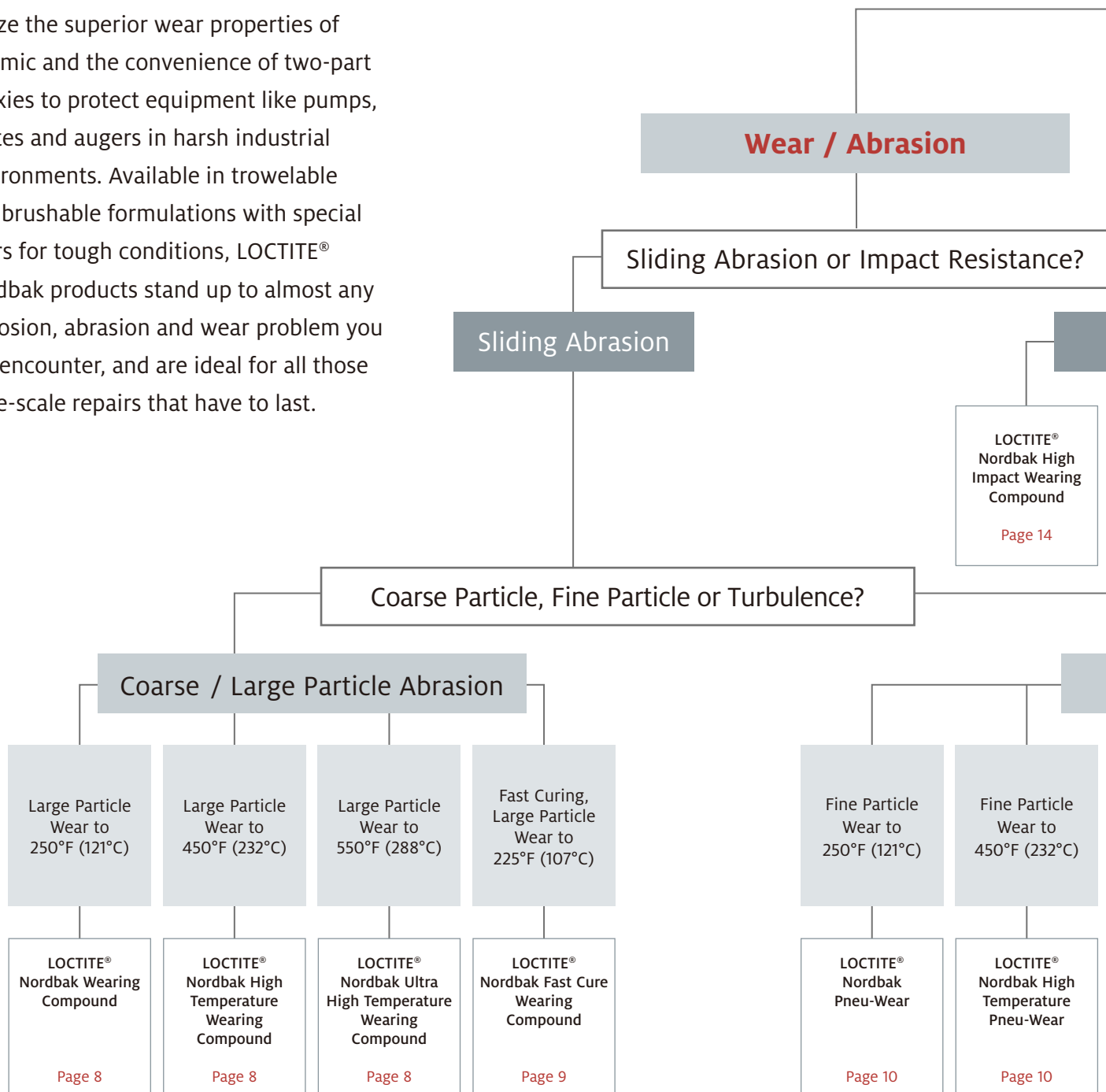


Active corrosion cells

# LOCTITE® Wear Resistant Coatings Selector Guide



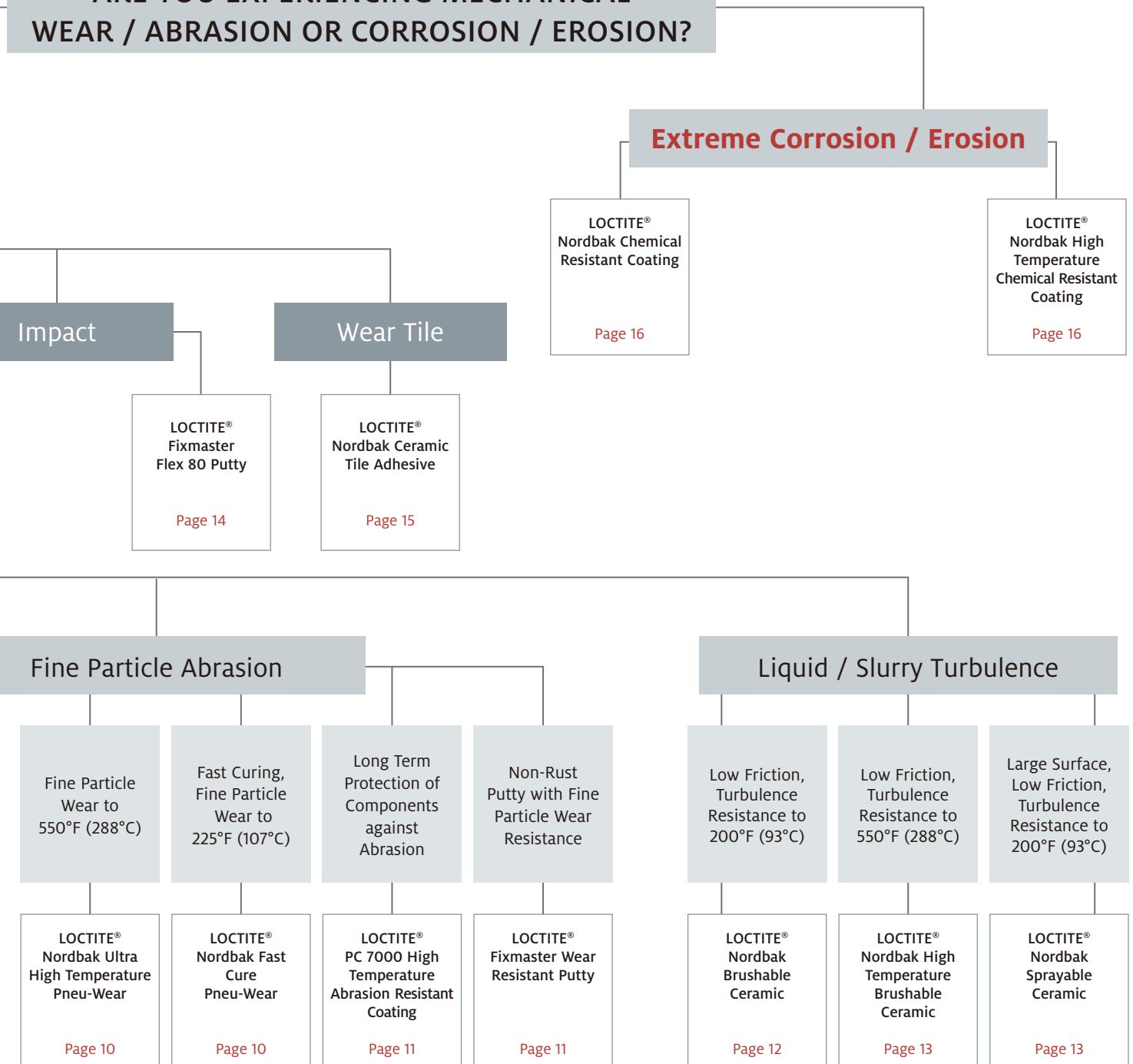
LOCTITE® Wear Resistant Coatings utilize the superior wear properties of ceramic and the convenience of two-part epoxies to protect equipment like pumps, chutes and augers in harsh industrial environments. Available in trowelable and brushable formulations with special fillers for tough conditions, LOCTITE® 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?



# Sliding Abrasion and Wear Resistance

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

## COARSE / LARGE PARTICLE ABRASION

### LOCTITE® NORDBAK WEARING COMPOUND

#### 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 (1.6 mm).



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

#### Typical Applications:

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

#### Advantages:

- Renews worn surfaces fast – reduces downtime
- Extends wear life – resists sliding abrasive wear and eliminates costly wear to part inventory
- Will not 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

#### 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.



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





## LOCTITE® NORDBAK FAST CURE WEARING COMPOUND

### 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 ten minutes and reducing total equipment downtime to as little as three hours.



6 lb. kit – 96373

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)

\*\* Requires post cure. See product description sheet.

## ► 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 cm<sup>2</sup> 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 percent.

**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



## LOCTITE® PC 7000 HIGH TEMPERATURE ABRASION RESISTANT COATING

### Long term protection of components against abrasion

LOCTITE® PC 7000 High Temperature Abrasion Resistant Coating is designed to protect industrial processing equipment, such as burner nozzles, coal-fired power plants and refractory brick structures against abrasion and harsh temperatures up to 1100°C.



10 kg kit - 1890656  
(IDH No.)

## LOCTITE® FIXMASTER WEAR RESISTANT PUTTY

### 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.



1 lb. kit - 98742  
3 lb. kit - 98743

### 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.

## ► Did You Know?

### 100% Solids

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

### TIPS & TRICKS

### LOCTITE® Fixmaster and 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 the touch

To slow the cure of composites at high temperature:

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

# Sliding Abrasion and Wear Resistance

## LIQUID / SLURRY TURBULENCE

### LOCTITE® NORDBAK BRUSHABLE CERAMIC

#### TIPS & 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® Fixmaster coatings such as Wear Resistant Putty or Superior Metal, which can be applied within minutes of the “hold coat”, or while still tacky.



#### 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.



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

#### 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
  - > Condensers
  - > Cooling pump impellers
  - > Heat exchangers – butterfly valves
  - > Cavitated pumps
- Used as topcoat over wearing compounds for a smooth, high-gloss finish

#### Advantages:

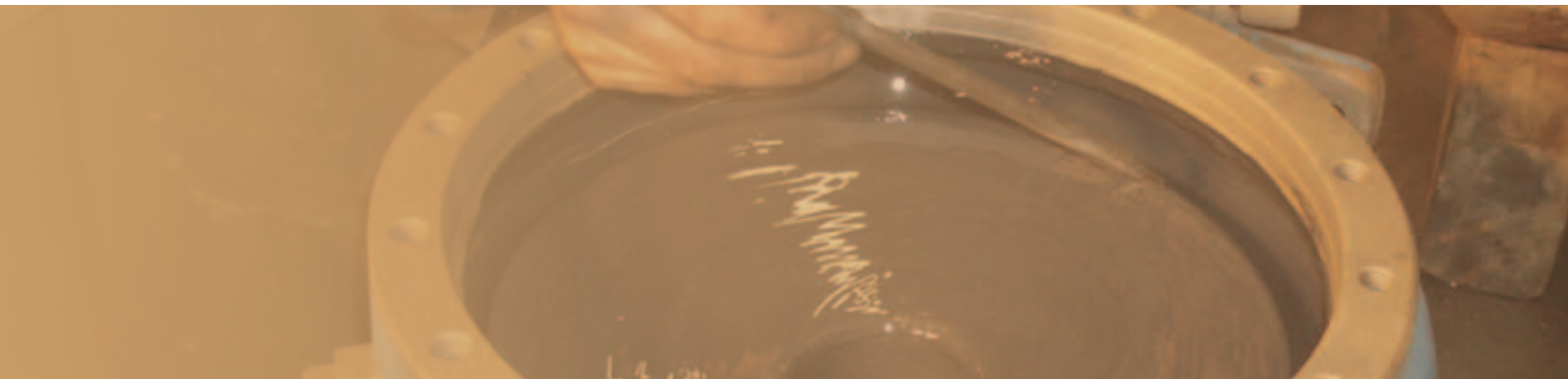
- Ceramic and silicon carbide filled – an industry first that provides maximum protection
- Easy to mix and use – ease of application reduces downtime
- Meets requirements of USDA for incidental food contact
- Ultra-smooth brushable consistency – high-gloss finish to fight friction, turbulence and protect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

+ Made-to-Order Item.

Type	Working Time	Functional Cure	Maximum Operating Temperature	Typical Application Thickness
LOCTITE® Nordbak Brushable Ceramic – Grey	30 minutes @ 77°F (25°C)	6 hours @ 77°F (25°C)	248°F (120°C)	1 mm
LOCTITE® Nordbak Brushable Ceramic – White	15 minutes @ 77°F (25°C)	6 hours @ 77°F (25°C)	200°F (93°C)	1 mm
LOCTITE® Nordbak High Temperature Brushable Ceramic	120 minutes @ 77°F (25°C)	**	550°F (288°C)	1 mm
LOCTITE® Nordbak Sprayable Ceramic	40 minutes @ 77°F (25°C)	6 hours @ 77°F (25°C)	200°F (93°C)	0.5 mm

\*\* Requires post cure. See product description sheet.

+ Made-to-Order Item



## LOCTITE® NORDBAK HIGH TEMPERATURE BRUSHABLE CERAMIC

### 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



2 lb. kit – 96433  
12 lb. kit (Grey) – 997369+

## LOCTITE® NORDBAK SPRAYABLE CERAMIC

### Wear and Chemical Protection Coating for Large Surfaces

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 and 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.



900 ml cartridge – 1389509

#### 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.

## ► Did You Know?

### Visual Wear Indicator

When applying two coats of NEW 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.





# Impact Wear Resistance

## LOCTITE® NORDBAK HIGH IMPACT WEARING COMPOUND

### 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).



25 lb. kit – 1327836

### Typical Applications:

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

### Advantages:

- Cures to ceramic hardness – resists sliding abrasive wear
- Will not 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

### Impact and Sliding Abrasion Resistance

This trowelable, two-part urethane putty 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 elbow
- 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



1 lb. kit – 97423  
25 lb. kit – 97422

# Wear Tile Adhesives

## LOCTITE® NORDBAK CERAMIC TILE ADHESIVE

### 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



20 lb. kit – 1324544

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)
LOCTITE® Nordbak Ceramic Tile Adhesive	60 minutes @ 77°F (25°C)	12 hours @ 77°F (25°C)	200°F (93°C)

# Extreme Corrosion and Erosion Resistance

## TIPS & 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 mm 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 the curing product.

## LOCTITE® NORDBAK CHEMICAL RESISTANT COATING

### 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.



12 lb. kit - 96092

### Typical Applications:

- Resurfacing tube sheets, condensers, cooling pump impellers, butterfly valves and cavitating 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

## LOCTITE® NORDBAK HIGH TEMPERATURE CHEMICAL RESISTANT COATING

### High Temperature Corrosion and Abrasion Resistant

LOCTITE® Nordbak High Temperature Chemical Resistant Coating is designed to protect equipment against extreme corrosion caused by high temperature chemical exposure. Typical service temperature range is -20°F (-29°C) to 320°F (+160°C).



5.5 kg kit - 1710655 (IDH No.)

# 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® Fixmaster Wear Resistant Putty. The ceramic beads provide superior wear resistance to ensure extended product life and greater pump efficiency. Once repaired, apply a coat of LOCTITE® Nordbak Brushable Ceramic for superior resistance to chemical environments.



Coating a pump volute with LOCTITE® Nordbak Brushable Ceramic



Repairing a pump impeller with LOCTITE® Fixmaster 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, dust and moisture. The combination of these elements will cause corrosion and the ultimate failure of equipment unless protected.

During a recent shutdown at a 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's are subjected to extreme heat, moisture and chemical attack



Applying LOCTITE® Nordbak High Temperature Brushable Ceramic

# Technical References



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

## PIPES AND DUCTS

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

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

## 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 downtime and improved availability of valuable labor, which could be reallocated to other problem areas.



The corroded butterfly valve before and after repair

## 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 one day.

### 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 and Degreaser or LOCTITE® Natural Blue Biodegradable Cleaner and 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, when casting parts or in tooling applications, coat the surface with LOCTITE® Silicone Lubricant 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 and Degreaser or LOCTITE® Natural Blue Biodegradable Cleaner and 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.

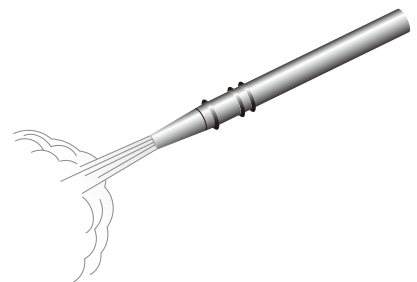
After cleaning, roughen the surface to produce a good profile. The following methods may be used, but in all cases the objective is to obtain an anchor profile of 0.003 to 0.005 inches (75 to 125 microns).

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

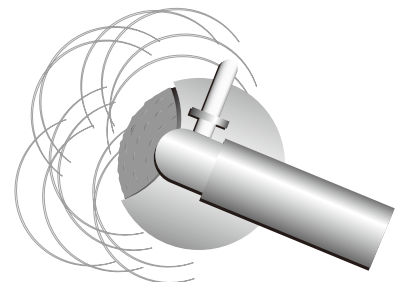
If grit blasting is not possible, roughen the surface using a coarse grinding wheel (60 grit or coarser) or a needle gun to achieve the desired profile. (See **Figure 2**)

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

After roughening, the surface must be thoroughly cleaned again with LOCTITE® ODC-Free Cleaner and Degreaser or LOCTITE® Natural Blue Biodegradable Cleaner and 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

# Technical References

## ► Did You Know?

### Surface Profile

Abrasive blasting not only removes visible surface rust and contaminants, 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 by providing a keyed anchor pattern.

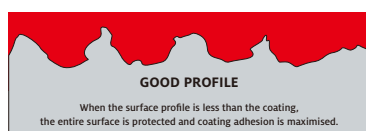
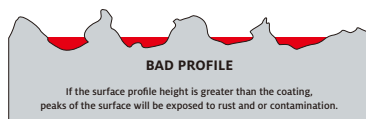
Surface Profiles will vary depending on the type of abrasive particles, equipment and technique utilized. It is critical to achieve the correct profile depth specified for a particular coating.

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.



LOCTITE® Composites applications require a minimum 75 micron surface profile.

## WET SURFACES

Exceptions to having a dry surface are when using LOCTITE® Fixmaster Wet Surface Repair Putty, Fixmaster Underwater Repair Epoxy or 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 information on page 19 about Surface Cleaning.

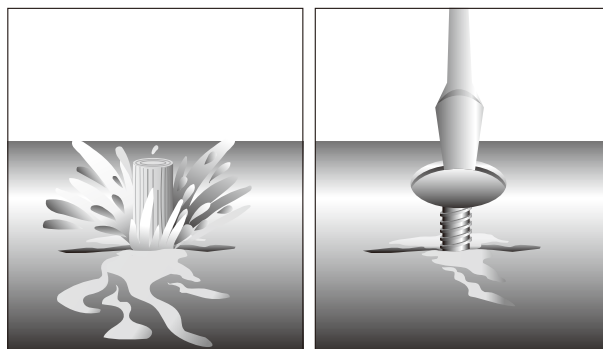


Figure 3. Stop leaks with a wooden plug or screw inserted in area of seepage

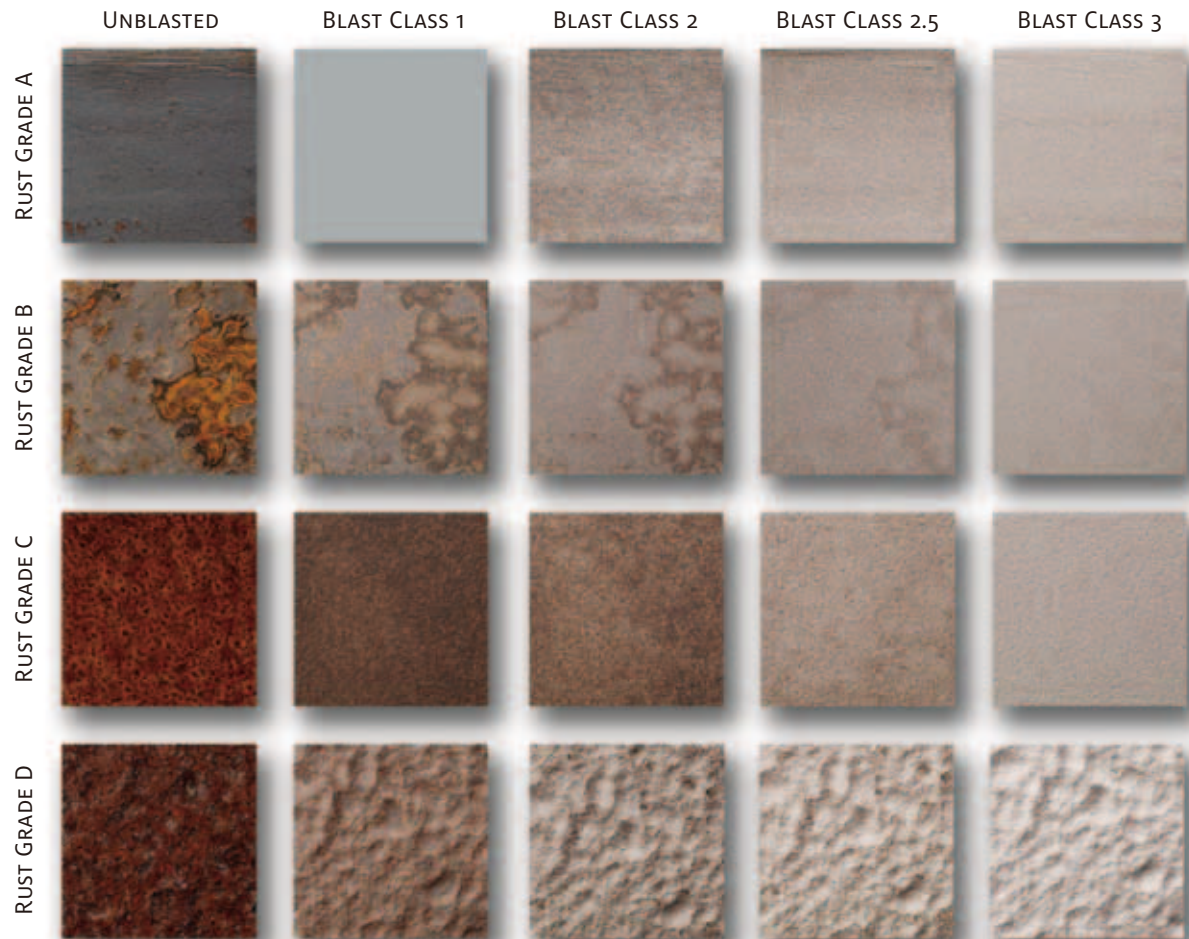
# Surface Preparation Grades of Blast

## 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 wide spread, 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.



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

## 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.

## 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 (13°C) and 80°F (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.



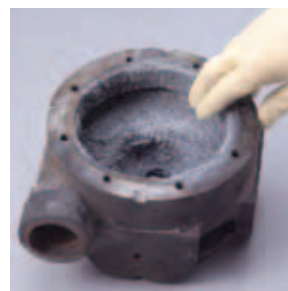
## POURING LIQUID COMPOSITES

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.



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



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

## 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 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 and Degreaser or LOCTITE® Natural Blue Biodegradable Cleaner and Degreaser.

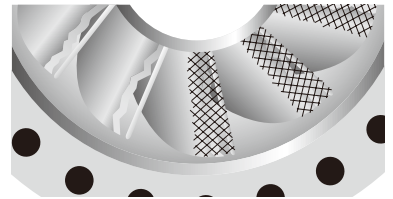
2. **Build Up:** Build up the gouges and worn areas on the inside of the body by applying a smooth coating of composite coating. To avoid air entrapment, use a suitably shaped, thin plastic or metal applicator to apply a thin coat of product to all faces of the cavities. (See Figure 1)
3. **Fill In:** 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 Brushable Ceramic Epoxy to increase pump efficiency. (See Figure 2)

# Application Tips

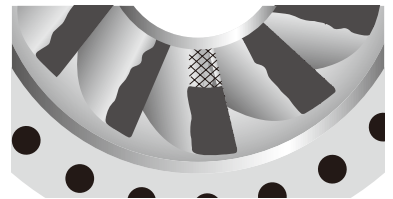
## REPAIRING IMPELLERS

1. **Surface Preparation:** Prepare the surface as in [Figure 1](#) on page 24. To aid the penetration of the composite coating into cavities, warm the impeller to 120°F to 140°F (50°C 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 on thinly a 15 to 20 ml coating of LOCTITE® Nordbak Brushable Ceramic to the 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](#))

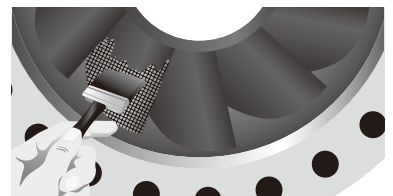
**Note:** After full cure, balance the impeller before returning to service



**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.** Apply two coats of LOCTITE® Nordbak Brushable Ceramic seal to the metal to create a low-friction surface.

# Frequently Asked Questions

**Q: What is a polymer composite?**

A: An epoxy or urethane (polymer) system that contains a reinforcement component 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.

**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: 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 in the exact ratio. Partial kits, however, can be mixed if measured precisely.

**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: 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 gasket remover may be used.

**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® Fixmaster Brushable Ceramic may be applied. Allow it to partially cure for approximately two hours; then apply the wearing compound over the brushable ceramic.

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

# Troubleshooting Guide

Problem	Possible Causes	Suggested Solution
Curing too fast	<ul style="list-style-type: none"> <li>• Air temperature too high</li> <li>• Application surface too hot</li> <li>• Composite temperature too hot</li> <li>• Too much material being mixed</li> </ul>	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"> <li>• Air temperature too cold</li> <li>• Composite temperature too cold</li> <li>• Application surface too cold</li> </ul>	To speed the cure at low temperatures (<60°F / <16°C), store at room temperature (70°F ± 5°F / <21°C ± 3°C) and / or pre-heat application surface until warm to the touch.
Loss of adhesion	<ul style="list-style-type: none"> <li>• Surface contamination</li> <li>• Surface too smooth</li> </ul>	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 and Degreaser or LOCTITE® Natural Blue Biodegradable Cleaner and 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"> <li>• Too much product being applied or poured resulting in high heat build-up</li> </ul>	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 each layer to cool before applying the next.

# LOCTITE® Fixmaster and Norbak Chemical Compatibility Chart

**RANGE SUMMARY ONLY.**  
For maximum chemical capability use LOCTITE® Fixmaster High Performance Quartz or LOCTITE® Norbak Chemical Resistant Coating.  
Please consult your Henkel application engineer if further product specific information is required.

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

Acetic Acid .....	✗
Acetone .....	✗
Alcohol, Amyl .....	✓
Alcohol, Benzyl .....	✓
Alcohol, Butyl .....	✓
Alcohol, Ethyl .....	✗
Alcohol, Methyl .....	✗
Alcohol, Propyl .....	✓
Alum, Ammonium .....	✓
Alum, Chrome .....	✓
Alum, Potassium .....	✓
Alum, Sodium .....	✓
Aluminum Chloride .....	✓
Aluminum Sulphate .....	✓
Ammonia Solutions .....	✓
Ammonium Carbonate .....	✓
Ammonium Chloride .....	✓
Ammonium Nitrate .....	✓
Ammonium Phosphate .....	✓
Ammonium Sulphate .....	✓
Amyl Acetate .....	✗
Aniline .....	✓
Aniline Dyes .....	✓
Asphalt, Emulsions .....	✓
Asphalt, Molten .....	✓
Barium Carbonate .....	✓
Barium Chloride .....	✓
Barium Hydroxide .....	✓
Barium Sulphate .....	✓
Benzene .....	✗
Brake Fluids .....	✓
Butyl Acetate .....	✗
Calcium Bisulphate .....	✓
Calcium Carbonate .....	✓
Calcium Chloride .....	✓
Calcium Hydroxide .....	✓
Calcium Sulphate .....	✓
Carbon Tetrachloride .....	✗
Carbonic Acid .....	✓
Carnauba Wax .....	✓
Chalk .....	✓
China Clay .....	✓
Chloroacetic Acid .....	✗
Chlorobenzene, Dry .....	✗
Chloroform, Dry .....	✗
Chlorosulfonic Acid .....	✗
Chromium Chloride .....	✓
Chromium Sulphate .....	✓
Clay .....	✓

Creosote .....	✗
Creosote, Cresylic Acid .....	✗
Cyclohexane .....	✓
Diacetone Alcohol .....	✗
Dibutyl Phthalate .....	✓
Drying Oil .....	✓
Ethyl Acetate .....	✗
Ethylene Glycol .....	✓
Ferric Chloride .....	✓
Ferric Nitrate .....	✓
Ferric .....	✓
Ferrous Chloride .....	✓
Ferrous Sulphate, 10% .....	✓
Ferrous Sulphate (Sat) .....	✓
Fertilizer Sol .....	✓
Freon ★ .....	✓
Fuel Oil .....	✓
Gasoline, Aviation .....	✓
Gasoline, Motor .....	✓
Glue, Animal Gelatine .....	✓
Glue, Plywood .....	✓
Glycerol .....	✓
Glycol Amine .....	✓
Grease, Lubricating .....	✓
Heptane .....	✓
Hexane .....	✓
Hydrogen Peroxide (Dil) .....	✓
Hydrogen Peroxide (Con) .....	✓
Ink .....	✓
Isocetane .....	✓
Isopropyl Alcohol .....	✓
Kerosene .....	✓
Lactic Acid .....	✓
Magnesium Bisulfite .....	✓
Magnesium Chloride .....	✓
Magnesium Hydroxide .....	✓
Magnesium Sulphate .....	✓
Maleic Acid .....	✓
Manganese Chloride .....	✓
Mercuric Chloride .....	✓
Mercury .....	✓
Mercury Dry .....	✓
Methyl Acetate .....	✗
Methyl Cellosolve .....	✗
Methyl Ethyl Ketone .....	✗
Methylene Chloride .....	✗
Mineral Spirits .....	✓
Mud .....	✓
Naphtha .....	✓
Naphthalene .....	✓
Nickel Ammonium Sulphate .....	✓
Nickel Chloride .....	✓
Nickel Sulphate .....	✓
Nitric Acid, 20% .....	✗
Oil, Creosote .....	✓
Oil, Emulsified .....	✓
Oil, Fuel .....	✓
Oil, Lubricating .....	✓
Ozone, Wet .....	✓

Paint Remover, Sol. Type .....	✓
Paraffin, Molten .....	✓
Paraffin, Oil .....	✓
Perchlorethylene (Dry) .....	✗
Petroleum Ether .....	✓
Petroleum Jelly .....	✓
Phosphoric Acid (10% Cold) .....	✓
Phosphoric Acid (10% Hot) .....	✓
Phthalic Acid .....	✓
Potash .....	✓
Potassium Bromide .....	✓
Potassium Carbonate .....	✓
Potassium Chlorate .....	✓
Potassium Chloride Sol .....	✓
Potassium Chromate .....	✓
Potassium Dichromate .....	✓
Potassium Ferricyanide .....	✓
Potassium Hydroxide .....	✓
Potassium Iodide .....	✓
Potassium Nitrate .....	✓
Potassium Permanganate .....	✓
Potassium Sulphate .....	✓
Propyl Alcohol .....	✓
Propylene Glycol .....	✓
Rosin, in Alcohol .....	✓
Rosin, Size .....	✓
Rosin, Wood .....	✓
Rubber, Latex .....	✓
Sewage .....	✓
Silicone Fluids .....	✓
Silver Nitrate .....	✓
Soap Solutions (Stearates) .....	✓
Sodium Acetate .....	✓
Sodium Aluminate .....	✓
Sodium Bisulfite .....	✓
Sodium Bromide .....	✓
Sodium Carbonate .....	✓
Sodium Chlorate .....	✓
Sodium Cyanide .....	✓
Sodium Hydroxide .....	✓
Sodium Hydroxide (20% Cold) .....	✓
Sodium Hydroxide (20% Hot) .....	✓
Sodium Hydroxide (50% Cold) .....	✓
Sodium Hydroxide (50% Hot) .....	✓
Sodium Hydroxide (70% Cold) .....	✓
Sodium Hydroxide (70% Hot) .....	✓
Sodium Metasilicate .....	✓
Sodium Nitrate .....	✓
Sodium Phosphate, Mono .....	✓
Sodium Phosphate, Tri .....	✓
Sodium Silicate .....	✓
Sodium Sulphide .....	✓
Stannic Chloride .....	✓
Starch .....	✓
Starch Base .....	✓
Stearic Acid .....	✓
Steep Water .....	✓
Sterilization Steam .....	✓
Styrene .....	✓

Sulphuric Acid (7 to 40%) .....	✗
Sulphuric Acid (40 to 75%) .....	✗
Sulphuric Acid (75 to 95%) .....	✗
Sulphuric Acid (95 to 100%) .....	✗
Tannic Acid (cold) .....	✓
Tamin .....	✓
Tar and Tar Oil .....	✓
Tartaric Acid .....	✓
Tetraethyl Lead .....	✓
Toluene .....	✗
Trichlorethylene .....	✗
Trichlorethylene, Dry .....	✗
Turpentine .....	✓
Water, Acid, Below pH 7 .....	✓
Water, Alkaline, Over pH 8 .....	✓
Water, De-Ionized .....	✓
Water, De-Ionized, Low Conductivity .....	✓
Water, Gritty .....	✓
Water, Mine Water .....	✓
Water, pH 7 to 8 .....	✓
Water, Potable .....	✓
Water, River .....	✓
Water, Sandy .....	✓
Water, "White", Low pH .....	✓
Water, "White", High pH .....	✓
Wax .....	✓
Wax, Emulsions .....	✓
Xylene .....	✗
Zinc Chloride .....	✓
Zinc Galvanizing .....	✓
Zinc Hydrosulphite .....	✓
Zinc Sulphate .....	✓

## GASES

Acetylene .....	✓
Air .....	✓
Butane .....	✓
Carbon Dioxide .....	✓
Carbon Monoxide .....	✓
Chlorine Dry .....	✓
Chlorine Wet .....	✓
Coke, Oven Gas (Cold) .....	✓
Coke, Oven Gas (Hot) .....	✓
Ethane .....	✓
Gas, Manufacturing .....	✓
Gas, Natural .....	✓
Hydrogen Gas (Cold) .....	✓
Methane .....	✓
Natural Gas, Dry .....	✓
Nitrogen Gas .....	✓
Nitrous Oxide .....	✓
Ozone .....	✓
Producer Gas, 50 PSI .....	✓
Propane .....	✓
Sulphur Dioxide .....	✓
Sulphur Dioxide (Dry) .....	✓
Sulphur Trioxide Gas .....	✓

**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 an adhesive's reaction with the multitude of chemicals in existence, therefore, compatibility has been estimated based on a wide variety of customer experiences.

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	✓
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
LOCTITE® PC 7000 High Temperature Abrasion Resistant Coating	✓	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 Ceramic Tile Adhesive			X					✓					
Extreme Corrosion / Erosion Resistance													
LOCTITE® Nordbak Chemical Resistant Coating				✓			✓						
LOCTITE® Nordbak High Temperature Chemical Resistant Coating				✓	✓								

✓ Preferred Choice

X Good Choice

# Wear Resistant Coatings Properties Chart

Product	Page	Item Number	Container	Coverage (ft² @ 1/4" Thickness)	Color	Maximum Operating Temperature (°C)	Comprehensive Strength (Mpa)	Hardness (Shore D)	Working Time (Minutes) 77°F / 25°C	Functional Cure (Hours) 77°F / 25°C	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	8	1324008	5 lb. kit	1.75	Grey	120	110	90	30	7	2 : 1	2 : 1	NEHC
		1323940	25 lb. kit	8.75									
LOCTITE® Nordbak Fast Cure Wearing Compound	9	96373	6 lb. kit	2.3	Blue	105	69	90	10	3	2 : 1	2 : 1	N / A
LOCTITE® Nordbak High Temperature Wearing Compound	8	99112	25 lb. kit	8.7	Grey	230	100	90	30	▼	4 : 1	3.9 : 1	N / A
LOCTITE® Nordbak Ultra High Temperature Wearing Compound	8	96392	25 lb. kit	8.7	Red	285	N / A	90	30	▼	2.5 : 1	2.85 : 1	N / A
Sliding Abrasion and Wear resistance (Fine Particle)													
LOCTITE® Nordbak Pneu-Wear	10	98383	3 lb. kit	1.1	Grey	120	100	85	30	6	4 : 1	4 : 1	ABS, CFIA, NEHC, LLOYDS
		98382	25 lb. kit	9									
LOCTITE® Nordbak Fast Cure Pneu-Wear	11	96363	6 lb. kit	2.3	Blue	105	82	90	10	3	2 : 1	2 : 1	CFIA
		1117828†	25 lb. kit	9.6									
LOCTITE® Nordbak High Temperature Pneu-Wear	10	98372	25 lb. kit	8.7	Grey	230	100	90	30	▼	4 : 1	4 : 1	N / A
LOCTITE® Nordbak Ultra High Temperature Pneu-Wear	10	96332	25 lb. kit	8.8	Red	285	N / A	90	30	▼	2 : 1	2.27 : 1	N / A
LOCTITE® Fixmaster Wear Resistant Putty	11	98742	1 lb. kit	0.37	Grey	105	80	89	30	6	2 : 1	2 : 1	ABS, CFIA, NEHC, LLOYDS
		98743	3 lb. kit	1.11									
LOCTITE® PC 7000 High Temperature Abrasion Resistant Coating	11	N / A	10 kg kit	8 <sup>i</sup>	Grey	1,000	80	35	25 - 30	▼	N / A	N / A	N / A
Liquid / Slurry Turbulence Resistance													
LOCTITE® Nordbak Brushable Ceramic	12	98733	2 lb. kit	12 <sup>ii</sup>	Grey	90	70	85	30	6	2.75 : 1	4.8 : 1	CFIA, NSF, LLOYDS
		98732	6 lb. kit	36 <sup>ii</sup>									
		96443	2 lb. kit	12 <sup>ii</sup>	White		75		15	5	2.8 : 1	4.5 : 1	CFIA
LOCTITE® Nordbak High Temperature Brushable Ceramic	13	96433	2 lb. kit	12 <sup>ii</sup>	Red	285	110	90	120	▼	2.6 : 1	4.25 : 1	N / A
		997369†	12 lb. kit	72 <sup>ii</sup>									
LOCTITE® Nordbak Sprayable Ceramic	13	1389509	900 ml	20 <sup>ii</sup>	Green	90	106	86	40	4	2 : 1	2 : 1	N / A
Impact Wear Resistance													
LOCTITE® Nordbak High Impact Wearing Compound	14	1327836	25 lb. kit	8.75	Grey	120	82	85	30	6	2 : 1	2 : 1	N / A
LOCTITE® Fixmaster Flex 80 Putty	14	97423	1 lb. kit	94 <sup>iii</sup>	Black	80	N / A	87 <sup>iii</sup>	10	8	2.5 : 1	2.6 : 1	ABS
		97422	6 lb. kit	560 <sup>iii</sup>									
Wear Tile Resistance													
LOCTITE® Nordbak Ceramic Tile Adhesive	15	1324544	20 lb. kit	12	Beige	90	96	88	60	12	1 : 1	1 : 1.25	N / A
Extreme Corrosion / Erosion Resistance													
LOCTITE® Nordbak Chemical Resistant Coating	16	96092	12 lb. kit	74 <sup>iv</sup>	Grey	65 wet / 3,980 dry	69	83	N / A	N / A	2.3 : 1	3.4 : 1	CFIA
LOCTITE® Nordbak High Temperature Chemical Resistant Coating	16	N / A	5.5 kg kit	74 <sup>iv</sup>	Grey	130 wet / 210 dry	18.2	85	50 - 90	▼	7.7 : 1	4.5 : 1	N / A

Properties based on mixing 1 lb. mass at 77°F, ultimate cure.

i 5 mm thickness.

ii 20 mil thickness.

iii inch² at ¼ inch thickness.

iv 0.5 mm thickness.

▼ Requires heat cure. See Technical Data Sheet.

NEHC = Navy Environmental Health Center.

† Made-to-order item.

ii Shore A

## Notes

[illegible]

# **LOCTITE® BONDERITE® TECHNOMELT® TEROSON® AQUENCE®**

Henkel products are designed to meet the specifications and testing standards of a variety of agencies. Because such standards change or may be modified, no warranty is given regarding such compliance. The information provided may be used as a quick reference tool to aid in design or application. For up-to-the-minute information on agency approvals, or to inquire about additional agency approvals, please contact Henkel Product Management team or local Technical Support team.

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