



# TECHNICAL DATA

## Combo Wear FC

### *Fast Cure Ceramic Bead Filled Epoxy*

#### Description

Devcon Combo Wear FC is an epoxy-based high performance wearing compound that combines the abrasion resistance of high alumina ceramic beads with silicon carbide for quickly repairing process equipment.

#### Areas of application

- Protects pipe elbows, exhausters fans and housings
- Repairs large cracks in coal fuel lines
- Repairs chippers, bins and hoppers

#### Features

- Bonds to damp surfaces
- Service temperatures to 150°C
- Excellent adhesion to metal, ceramic and concrete
- Fast curing, back in service in 90 minutes

#### Chemical Resistance

(Chemical resistance is calculated with a 7 day, room temperature cure (30 days immersion) @ 24°C)

1,1,1 Trichloroethane	Very good	Nitric Acid 10%	Fair
Acetic (Dilute) Acid 10%	Poor	Phosphoric Acid 10%	Fair
Benzene	Very good	Potassium Hydroxide 40%	Excellent
Petrol (Unleaded)	Fair	Sodium Hydroxide 50%	Excellent
Hydrochloric Acid 10%	Very good	Sodium Hypochlorite	Very good
Methanol	Poor	Sulphuric Acid 10%	Very good
Methyl Ethyl Ketone	Very good	Toluene	Excellent
Methylene Chloride	Poor	Trisodium Phosphate	Very Good

The information contained in this Technical Bulletin is as up to date and correct as possible as at the time of issue. The data provided should be used as a guide only as the performance of the product will vary depending on differing operating conditions and application methods.

The sale of any product described in this Technical Bulletin will be in accordance with ITW Polymers & Fluids Conditions Of Sale, a copy of which is available on request. To the extent permitted by law, ITW Polymers & Fluids excludes all other warranties in relation to this product.

## Technical Data

### Typical Physical Properties: Cured 7 days @ 24°C

		Test Method
Colour	Grey	
Mix Ratio (Resin to Hardener)	Weight 2:1 Volume 2:1	
Mixed Viscosity	Non-sag putty	
Work Time of 500gms minutes @ 24°C	7	
Cure Time	8 hours	
Recoat Time	1 - 3 hours	
% Solids by Volume	100	
Specific Volume	465cm <sup>3</sup> /kg	
Specific Gravity	2.2 gm/cm <sup>3</sup>	
Cure Shrinkage	0.0006 cm/cm	ASTM D2566
Hardness Shore D	87	ASTM D2240
Adhesive Tensile Shear	9.48 MPa	ASTM D1002
Compressive Strength	75.8 MPa	ASTM D695
Modulus of Elasticity	5860 MPa	ASTM D638
Co-efficient of Thermal Expansion	59 x 10 <sup>-6</sup> °C <sup>-1</sup>	ASTM D696
Thermal Conductivity	1.75 x 10 <sup>-3</sup> cal.cm/sec/cm <sup>2</sup> .°C	ASTM C177
Dielectric Strength	13385 volts/mm	ASTM D149
Dielectric Constant	41	ASTM D150
Flexural Strength	49 MPa	ASTM D790
Maximum Operating Temperature	Wet: 60°C, Dry: 150°C	
Coverage	752cm <sup>2</sup> /kg @ 6mm	

## Directions for use

### Surface Preparation

Proper surface preparation is essential to the success of any epoxy application. In all cases the surface should be clean, dry, free from oils, and rough.

1. Remove all oils, dirt and grease by means of a strong cleaner/degreaser (**Devcon® Surface Cleaner/Cleaner Blend 300** is suitable for this process).
2. Roughen the surface by grit blasting (8-40 mesh grit) or grinding. A 75-125 micron profile is desired for most applications, including defined edges (do not 'feather edge' epoxy).

Note: For metals exposed to sea water or other salt solution, grit blast and high pressure water blast the area, then leave overnight to allow any salts in the metal to 'sweat' to the surface. Repeat blasting to 'sweat out' all soluble salts. Perform chloride contamination test to determine soluble salt content (should be no more than 40ppm)

3. All abrasive preparation should be followed by another cleaning to remove any remnants from that process.
4. Repair surface as soon as possible to eliminate any changes or surface contaminants.
5. Note: Large surface areas or equipment subjected to thermal shock, impact or constant vibration should have expanded metal tack welded to the surface. The expanded metal should be solvent wiped, grit blasted, solvent wiped again to remove oil, grease and dust. The expanded metal should be raised at least 1.6mm off the surface to ensure that Wear Guard will get in between and under the expanded metal.

## Mixing

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Ideal application temperature is 13°C - 32°C. Under cold conditions, heating the repair area to 38°C - 43°C is recommended to dry off any moisture, contamination, or solvents, as well as to assist epoxy in achieving maximum adhesion properties.

### Mix Ratio – Resin to hardener: Weight 2:1, Volume 2:1

----- It is strongly recommended that full units be mixed, as ratios are pre-measured. -----

1. Add hardener to resin.
2. Mix thoroughly with a putty knife or similar tool (continuously scrape material away from sides and bottom of container) until a uniform, streak free consistency is obtained.

INTERMEDIATE SIZES (4kg Units): Place resin and hardener on a flat, disposable surface such as cardboard, plywood, or a plastic sheet). Use a trowel or wide blade tool to mix in the material as in Step 2 above.

### Application

If grit blasting is not possible, and expanded metal cannot be used, apply **Devcon® Brushable Ceramic** at 280 - 460 microns to prime the metal surface. Allow to cure for approximately 2 hours, or until a fingernail can almost depress the primed surface. Immediately apply Combo **Wear FC** to the surface. DO NOT let the "prime coat" fully cure before applying Combo **Wear FC**.

Using a putty knife, trowel or spatula, a very light coat should be applied to "wet out" the surface, allowing for 100% contact and further thickness build up. Then continue to build up a desired thickness. **Combo Wear FC** can be trowelled to a smooth finish with water or by warming the trowel with a torch and lightly trowelling over the uncured wear system.

### Cure

**Combo Wear FC** fully cures in 8 hours at 21°C at 12.5mm, at which time it can be machined, drilled, or painted. Working time is 7 minutes.

### For Bridging Large Gaps or Holes

Place fibreglass sheet, expanded metal or mechanical fasteners between repair area and **Combo Wear FC** prior to application.

### For Vertical Surface Applications

**Combo Wear FC** can be troweled up to 19mm thick without sagging.

### For Maximum Physical Properties

Cure at room temperature for 2 ½ hours, then heat cure for 4 hours @ 65°C. This can be done with a hot box, heat lamps or other heat source. Never expose this system to a direct flame.

### For ±24°C Applications

Applying epoxy at temperatures below 24°C lengthens functional cure and pot life times. Conversely, applying above 24°C shortens functional cure and pot life.

### Storage and Shelf Life

Store in dry conditions between 10°C and 40°C, away from sources of heat and naked flames. Protect from frost. When stored in original sealed containers, the minimum shelf life is five (5) years.

**Packaging** Combo Wear FC is available in 4 kg kits.

**Ordering Information:** 4 Kg Kit #D11450

### Health & Safety Information

The product is hazardous. A Material Safety Data Sheet is available from the ITW Polymers & Fluids Technical Department upon request or available on our website [www.itw-devcon.com.au](http://www.itw-devcon.com.au).

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