

w h i t e p a p e r



**COATED
PUMPS**

A basic Gorman-Rupp pump is mainly constructed from Cast Iron, sometimes in various material grades. Cast Iron has multiple advantages for the manufacturing and use of pumps in a wide variety of applications, but it also has its limits.

One of the most common limitation is the corrosion resistance. Although Cast Iron (grey or ductile) has a unique natural process of corrosion resistance called Patination, it is not the preferred material of choice for pumping chemicals or chlorides. Patination is due to the chemical composition of the Cast Iron material and the reaction to atmospheric exposure of the environment. The effect is a thin layer of iron oxide that gives Cast Iron products often their typical rusty look. This forms a non-invasive layer that prevents deep rusting and slows down further corrosion in normal water applications.

For pumping liquids that have a corrosive effect beyond normal (lightly contaminated-) water, Gorman-Rupp offers different material options such as Stainless Steel AISI316 and even CD4MCU (often referred to as Duplex).

Not surprisingly, there is a noticeable price adder in choosing Stainless Steel or CD4MCU materials over regular Cast Iron. This is caused by the material costs themselves, manufacturing aspects and the lower quantities in which such pumps are produced.

In cases where a full SS or CD4MCU pump is not a financially viable option, Gorman-Rupp offers many of it's pump types with an internal ceramic coating.

The Coating itself is a Ceramic coating with a total film thickness of 0,5 – 0,6 mm, and applied in a single light blue color.

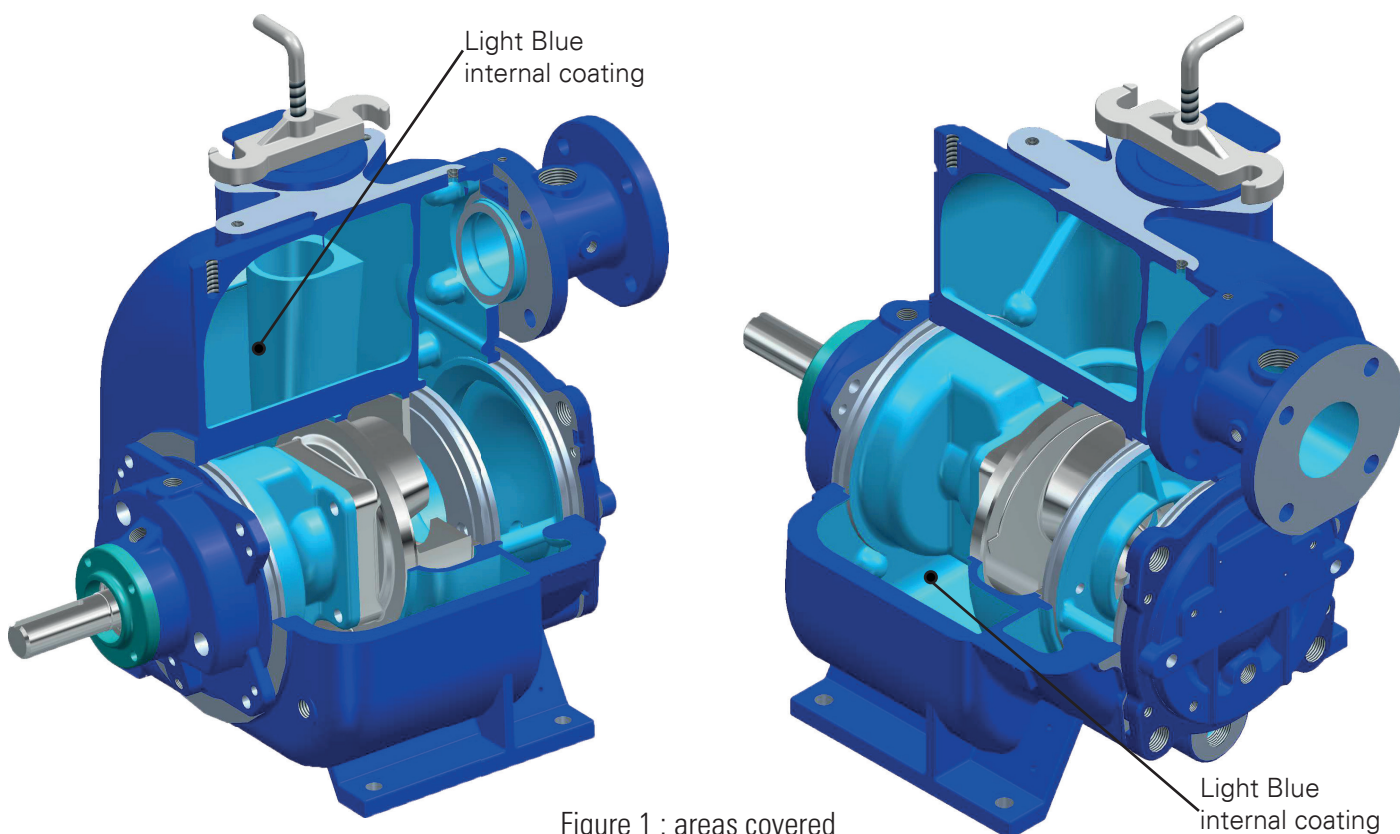
Figure 1 shows you all the areas where the coating is applied to.

For what application can a coated pump be used?

The ceramic coating is suitable for a wide variety of mild chemicals, such as (but not limited too):

- Ammonia
- Diluted Sodium Hydroxide
- Fuels
- Kerosene
- Potassium

When in doubt about the suitability with the liquid being pumped, always contact Gorman-Rupp for more technical advice.



Is a coated pump the ultimate solution?

Unfortunately, it is not. For corrosive applications, the choice of a suitable material to match with the liquid being pumped is the only solution to provide trouble free operation. However, in some cases, a full Stainless steel or CD4MCU pump is not feasible, and in such cases an internal coating could prove to be a worthwhile alternative.

Typical cases are those where the available budget is not sufficient for a full Stainless Steel or CD4MCU pump, or if the application means the pump sees the corrosive liquid only occasionally and can be rinsed afterwards with clean water.

What are the limitations of a coated pump?

One of the limitations of a coated pump is that the mating surfaces of the various components that make up a pump, cannot be coated due to the exact tolerances used in manufacturing. This means that the chemical fluid in the pump will work its way into the machined surfaces which may cause future corrosion problem.

Another aspect is that in a standard Cast Iron, coated pump, main components like the wearplate, impeller and shaft will be uncoated and when contacted by an aggressive fluid will start suffering from corrosion.

A further improvement on corrosion resistance of a internally coated pump can be found by fitting other wetted parts in Duplex CD4MCU components. Figure 2 shows you which parts are included in this option.

Does a coated pump offer increased wear resistance against abrasion?

Again, unfortunately not. Of course the added ceramic coating does help to prevent accelerated wear through abrasion but it is not the proposed function of the coating.

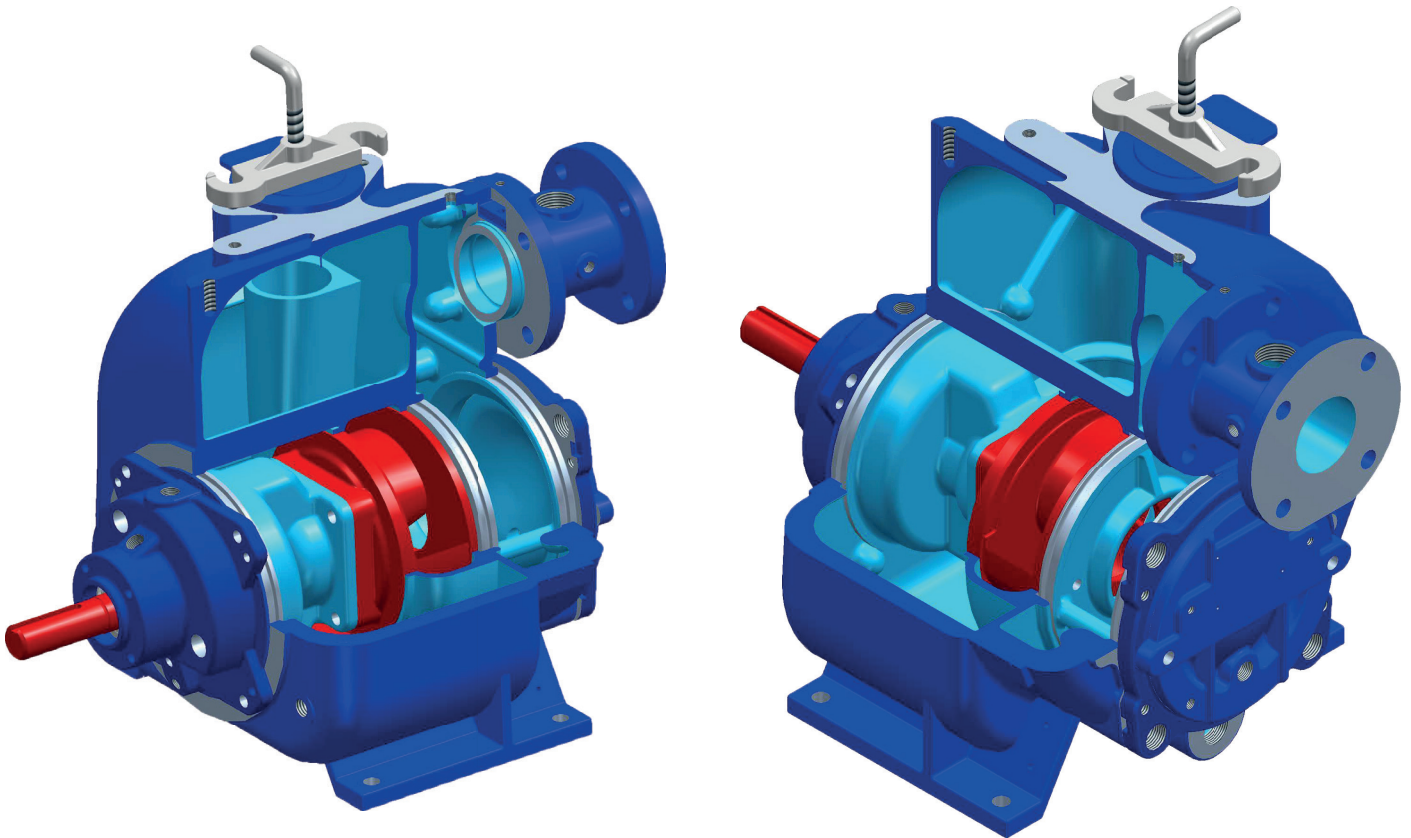


Figure 2 : additional CD4MCU parts (marked in RED (shaft is SS17-4 PH)

Which pump models are available with an internal coating?

Table 3 shows the pump models that Gorman-Rupp Europe BV offers as a standard, in many cases available from stock. Other models can be coated as well, please ask Gorman-Rupp or your local distributor for advice.

Model	Standard (see figure 1)	CD4MCU fitted (see figure 2)
T3A60S-B-FM~	✓	✓
T4A60S-B-FM~	✓	✓
T6A60S-B-FM~	✓	✓
T8A60S-B-FM~	✓	✓
T10A60S-B-FM~	✓	✓
V3A60-B~	✓	✓
V4A60-B~	✓	✓
V6A60-B~	✓	✓

Table 3



= Upon request



= From stock*

Summary

1. Coated with a 0.5 mm to 0.6 mm thick DEVCON EDR5420-CERAMIC COATING
2. An intermediate solution between standard Cast Iron and full Stainless Steel / CD4MCU pumps
3. For use with mild chemicals only
4. Not used for enhanced abrasion resistance

* Stock availability subject to change.