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A Guide to Slurry Pump Materials of Construction



In industrial processes involving slurry pumps, a range of options for materials of construction (MOC) is critical to ensure an acceptable wear life with abrasive and often corrosive fluids.

Manufacturers typically offer rubber (SlurryPro 360) or high chrome hardened steel (SlurryPro 331) wear parts as standard, with other materials available for more corrosive applications.

Both rubber and metal have a part to play in slurry pump applications and an experienced pump supplier will work with the customer to determine what material is the most appropriate for their application.

However, there is often confusion over what material is the better choice and a change in duty point can have a negative impact on the life of the wear parts and pump reliability.



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Some broad guidelines to consider when selecting or reviewing wear part materials for slurry pumps are:

Fluid / application property	Rubber	High chrome - HC (hardened metal alloy)	Exotic alloys
Temperatures above 100°C	Not appropriate	Recommended	When required (ie no rubber/HC alternative)
Large coarse/sharp particles	Not appropriate	Recommended	With care, typically softer than HC
Fines, silica sand, sand etc	Recommended	High wear	High wear, rarely recommended
Hydrocarbon/oils content	With care, review compatibility	High wear	When required (ie no rubber/HC alternative)
Corrosive media	Recommended, review compatibility chart	With care – often not compatible	Recommended, review compatibility chart
High speeds/high impeller tip speed (larger pumps)	Not appropriate	Recommended	When required (ie no rubber/HC alternative)
High head applications (>70m head)	Not appropriate	Recommended	When required (ie no rubber/HC alternative)

SlurryPro pumps are available in metal (high chrome) or with a rubber liner and rubber impeller.

There are applications that justify a hybrid approach such as a metal impeller and rubber liners. One example is for applications where the discharge head required demands that the pump operate at a speed too fast for a rubber impeller. For these applications, a metal impeller is used with rubber liners.

SlurryPro pumps have interchangeable rubber/metal liners allowing for ultimate flexibility at site level if a change in duty or fluid properties require a change in impeller or liner material.

In summary, rubber wear parts as a lower cost and lighter option are first choice for pump slurries with small, smooth and light weight particles that “bounce” off the rubber wear parts. However, for applications where higher temperatures, pump speed or slurry characteristics such as sharp mineral solids are present, the recommendation is generally to use high chrome metal wear parts.