HTS IC

Die Casting

Shot Sleeve

Shot Sleeve - WX QUALITY

WX quality shot sleeve is developed to solve particular failure mechanisms resulting from extreme operating conditions. WX is fabricated using low-alloy steel housing and highest quality surfacing alloys and advanced weld-surfacing technology to provide best possible in-service life and production performance of each individual customer's application.

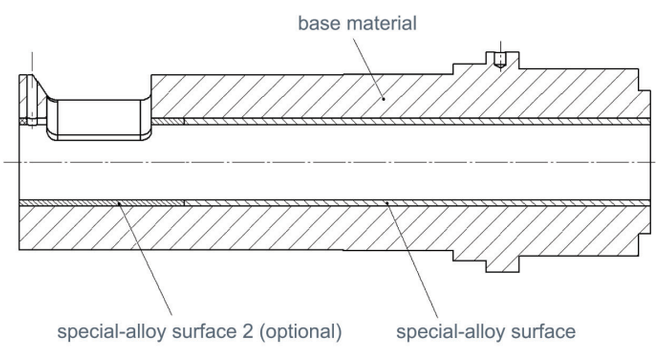

Figure 1: WX quality shot sleeve showing special alloy overlay of bore hole

Surfacing alloy selection

Table 1: Surfacing alloy selection based on failure mechanism

Prevalent Failure Mechanism/ Applicable Alloy	**High Temperature**	**Thermal Fatigue**	**Wear Abrasion**	**Wear Corrosion**
HTS-WA*	3	1	5	3
HTS-WX1	3	2	4	2
HTS-WX2	3	3	2	2
HTS-HT	5	4	3	4
HTS-TF	4	5	3	4

Number 1 indicates poor performance, whereas number 5 indicates excellent performance
*applicable only in limited exposed areas

High temperature

In cases with high working temperature and possible material overheating that results in tempering of steel, reduction of its hardness, and consequently development of conditions that assist premature failure.
APPLICABLE TO
Shot sleeves used for high weight castings; high volume shot sleeves (diameter and length); where molten material is applied into sleeve with pressure to one specific point, which result in local overheating; for thin wall shot sleeves; for core dies exposed to intense flow of molten metal causing overheating.

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Thermal fatigue

In cases where high temperature gradients occur in material in repetitive cycles, developing detrimental thermal fatigue conditions.
APPLICABLE TO
Shot sleeves with cooling circuits; thin cooled sections, as for example cooling of thin-wall shot sleeve underneath the pour zone; casting pistons front end; and generally for parts with high temperature difference in wall section.

Wear abrasion

In cases where hard particles or media penetrate the sleeve material and export material from the sleeve leaving a depression or groove.
APPLICABLE TO
Casting of highly abrasive aluminum alloys.

Wear corrosion

Degradation of shot sleeve material in which both corrosion and wear mechanisms are involved. The combined effects of wear and corrosion can result in total material losses much greater than the additive effects of each process taken alone.
APPLICABLE TO
Casting of abrasive aluminum alloys with particular chemical composition and application temperature, all in combination with shot sleeve material.