UltraFlex™ Radiant Return Bends for Delayed Coker Furnaces

Stay on-line longer with more confidence!

Decoking operations, such as on-line spalling, can have a significant impact on the life of radiant return bends in delayed coker furnaces. UltraFlex technology delivers a Stellite™ 720 cladding designed to significantly reduce the risk of return bend wall thinning and rupture.

The UltraFlex Cladding Process

1. UltraFlex cladding material is prepared in slurry form. Stellite 720 is used for return bend applications.

2. Proprietary flow-coating methods are used to apply an even "green" cladding, typically .020–.030" thick.

3. Cladding is fused to the substrate in a vacuum furnace, creating a dense, uniform, and metallurgically bonded coating.

Clad Return Bends Ready for Sintering

Return Bend Ready for Installation

Metallurgical Bond

- No flaking or spalling — even in extreme conditions.
- Thermal fatigue testing simulating 20 years of service confirms no defects or spallation.

A "Pure" Coating

- Small diffusion zone (<.010") compared to hard facing.
- Consistent wear properties from bond through to surface.
- Typical thickness is .020–.030"

Hard Facing vs. UltraFlex Cladding

High Surface Quality

- Smooth surface accommodates pigging operations.
- Crack-free coatings possible with many substrates.

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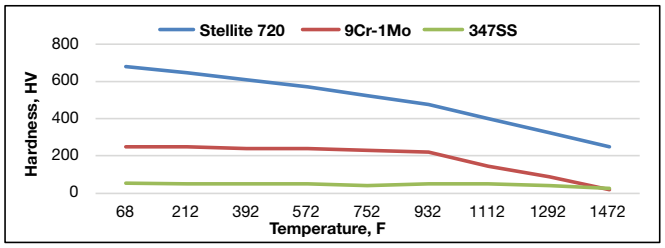
Stellite™ 720 • Cladding Material Designed for Radiant Return Bends

- The UltraFlex™ process delivers this very hard Stellite alloy for radiant return bends, which is not possible with casting or weld overlay.
- Excellent high-temperature erosion- and corrosion-resistance.
- Compatible with standard return bend substrates such as 347 and 9Cr1Mo.

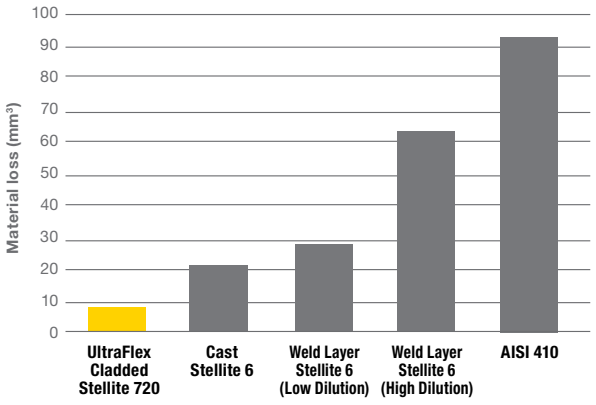
	Nominal Composition (mass %)							Hardness
	Co	Fe	Cr	Mo	Nb	Ni	C	HRC
Stellite 720	Bal.	3 Max	33	18	—	3 Max	2.5	55–60
9Cr-1Mo	—	Bal.	9	1	—	0.5	0.1	20–25
347	—	Bal.	18	1 Max	0.8 Min	11	0.08	<10

- High chrome and moly content in Stellite 720 offers significant corrosion resistance benefits.
- Higher bulk hardness offers considerable erosion benefits over unprotected return bends.



- Stellite 720 maintains better wear properties at high temperatures experienced during on-line spalling.

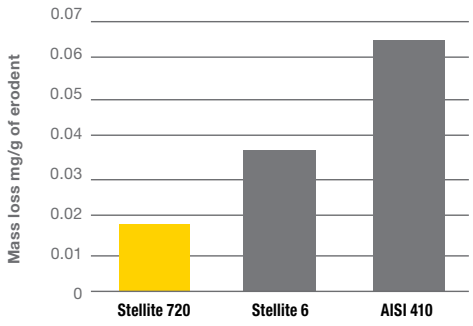
ASTM G65-B Abrasion Wear Resistance



Up to 6x Better
Abrasion Resistance versus Weld Overlay

Erosion at 700°C at 60° Angle

with an Al_2O_3 catalyst used for fluidized catalytic cracking



Stellite 720 Offers
Superior Erosion Resistance

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