



World Leader in Catalyst Services

Reasons to Regenerate Catalysts Before Metals Reclamation

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TRICAT PRE-METAL RECLAMATION REGENERATIVE PROCESSING

Spent precious metal catalyst is most always routed to metal recovery facilities to capture the high value contained in platinum, palladium, and rhenium. In many instances, catalyst deemed hazardous must be processed by a catalyst services provider like TRICAT in advance of shipments to the recovery facilities. Other times, there is economic rationale to performing a staged regenerative process in advance of precious metal recovery. So how can the refiner know if a staged regeneration adds value to the precious metal recovery process?

POTENTIAL RECLAMATION SURCHARGES:

<u>Carbon, wt%</u>	<u>Pt Recovery</u>	<u>Surcharge \$/Lb</u>
0 - 4	99.5%	0.00
4 - 6	99.5%	0.55
6 - 9	99.5%	0.75
10+	98.0%	1.25

First, metal recovery firms charge a penalty or surcharge for carbon content in spent reforming or isomerization catalyst. The penalty is minor for carbon deposits of up to 5 wt.% but can be significant at carbon content greater than 10 wt.%. As shown, catalyst having elevated carbon may be assessed higher charges for processing *and*, most important, a lower platinum recovery value.

Next, look carefully at an economic comparison of how carbon affects the *real* cost of metal recovery. The carbon surcharge and lost metal can be substantial.

In this case, the excessive carbon penalties and reduced recovery cost the refiner **\$322,250!** Even as little as 6-8 wt.% carbon on spent catalyst deserves careful attention to evaluating the economic recovery options.

ECONOMIC COMPARISON:

Basis: Fresh catalyst, as loaded = 100,000 pounds
 Spent catalyst (support removed) = 115,000 pounds
 Platinum on Catalyst = 0.30 weight percent
 Platinum Value = \$1,500 per troy ounce

<u>SPENT CATALYST CARBON Weight %</u>	<u>POTENTIAL PLATINUM RECOVERED Troy Ounces</u>	<u>ADDITIONAL RECOVERY SURCHARGE \$</u>	<u>POTENTIAL RECOVERED METAL LOSS \$</u>	<u>ACTUAL CARBON COST \$</u>
2	4,354	BASE \$	BASE \$	---
5	4,344	+\$63,250	(\$15,000)	\$78,650
8	4,334	+\$86,250	(\$30,000)	\$116,250
12	4,235	+\$143,750	(\$178,500)	\$322,250

TRICAT Staged Pre-metal Reclamation Processing, Using Example Above:

Regenerative Process Service Charge = ~\$0.60 / pound
 Material loss from TRICAT processing = <0.05 weight %
 Metal Reclamation service costs = ~\$1.25 / pound
 Carbon content, basis = 10 weight %

	<u>Sent Direct For Metals Recovery</u>	<u>Sent to TRICAT, Then Routed for Metals Recovery</u>	<u>Realized Savings</u>
Platinum, troy ounces	4,290	4,352	+62
Reclamation Costs, \$	(\$143,750)	(\$124,940)	(\$18,810)
Carbon Cost, \$	(\$143,750)	---	+\$143,750
TRICAT Services, \$	---	(\$69,000)	(\$69,000)
Platinum Recovery, \$	---	+\$93,000	+\$93,000
TOTAL, \$	(\$287,500)	(\$18,000)	+\$269,500

TRICAT's staged process services have potentially saved an impressive **\$269,500!** Costly carbon penalties and associated precious metal losses have been avoided. And, TRICAT has firmly established itself as a leader in this value-added service through expert processing know-how, thorough material capture, and experience from having processed millions and millions of pounds of precious metal catalyst.



ADDITIONAL CONSIDERATIONS:

- ▶ Exposing precious metal catalyst to excessive temperature can cause alumina phase changes which can spell disaster for most PM recovery processes. The TRICAT Regeneration Process (TRP) controls *particle* temperature, ensuring alumina phase changes will never occur.
- ▶ TRICAT catalyst and material retention is *the best* in the catalyst services industry. We use bag filters, enabling material recovery in excess of 99.95%.
- ▶ Using TRICAT's service can reduce charges from metal recovery firms for screening, disposing, and unnecessary transport of oversize and support materials.
- ▶ Rhenium recovery can be significantly diminished by as little as 2% carbon on catalyst, with almost no rhenium recovery on catalyst having >5% carbon on catalyst. Platinum-Rhenium containing catalyst economics further accentuate the need for pre-metal reclamation processing at TRICAT. TRICAT's expertise and close working relationships with precious metals recovery businesses ensure you obtain maximum recovered value.

CONCLUSIONS:

- ✓ *TRICAT Pre-reclamation Burns can provide favorable economics for metals recovery.*
- ✓ *TRICAT is the recognized industry leader in Pre-metal Reclamation Burn services.*
- ✓ *Look to TRICAT, Inc. for the very best in catalyst services!*

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