

CATALYST DEACTIVATION & POISONING AGENTS

The following partial list of poisoning agents and inhibitors has been found to have a detrimental effect on the activity of the noble metal catalyst. Aggregate loading of such agents exceeding twenty (20) grams per cubic foot of the Catalyst. Catalyst exposure to these substances **must** be avoided.

SUBSTANCE	EFFECT	REMEDIAL ACTION
<p>1. <i>Coating Agents</i></p> <ul style="list-style-type: none"> a. rust b. dirt c. inorganic oxide 	Covers catalyst active site.	<p>Non-phosphate detergent washing is usually effective for removal.</p> <p>Factory reactivation or replacement is typically required. Non-phosphate detergent washing may be effective.</p>
<p>2. <i>Coating Agents - "Glass" Forming Materials</i></p> <ul style="list-style-type: none"> a. organic silicates (esters) b. silicones c. phosphorus-containing materials 	Covers the catalyst active site.	<p>Factory reactivation or replacement is usually required. Non-phosphate detergent washing may be effective.</p>
<p>3. <i>Poisons</i></p> <p>Heavy metal complexes (mercury, lead, zinc, tin, arsenic, antimony, etc.)</p>	Permanent catalyst deactivation	<p>Factory reactivation or replacement required.</p>
<p>4. <i>Sulfides</i></p>	Permanent catalyst deactivation	<p>Depending on exposure and sulfide concentration, factory reactivation, non-phosphate detergent washing, or replacement is required.</p>
<p>5. <i>Halogens</i></p> <ul style="list-style-type: none"> a. fluorine b. chlorine c. bromine d. iodine e. halogenated hydrocarbons <p>Note: This does not apply to HD or t-HD catalysts; these have been specifically designed to tolerate and/or destroy halogenated hydrocarbons (except fluorine).</p>	Covers the active site - resulting in temporary or permanent deactivation.	<p>Activity usually returns if exposed to low concentrations and upon removal of the halogen source. Prolonged exposure to water (or protons) can corrode, dissolve the catalyst substrate and require repair or replacement.</p>





SUBSTANCE	EFFECT	REMEDIAL ACTION
6. <i>Organic Droplets and Aerosols</i>	a. Covers active site b. Possible cause of catalyst hot spot	Such materials may carburize on the catalyst forming a refractory material or becoming a hot spot source causing substrate deterioration. Factory reactivation or replacement is required.

