

GS™ Series Catalysts

GS™ series catalysts are the iron oxide containing catalysts for ethylbenzene dehydrogenation to styrene. GS-01™, as a first one of GS™ series catalysts, reached excellent performance as compared to the counterparts worldwide in the 1980s. With further on-going efforts made by SRIPT for several years, the other GS™ catalysts, such as GS-05™, GS-06™, GS-07™ and GS-08™, have been developed with their good flexibilities for the different operating conditions. In 1994, GS-05™ was successfully used in a styrene plant of 60KMTA with a foreign company-licensed process and its commercial performance was as good as that of an imported counterpart ever used. GS-06B™ was also put into use in several different-scale styrene plants with foreign company-licensed processes. Since 1999, GS-08™ has commercially become available in China and exhibited very excellent performance as compared to its foreign counterparts. Since its successful application in a styrene plant of 84KMTA in 2003, GS-10™ has gradually been accepted by our customers. In addition to that they have been successfully used as a drop-in catalyst in many other company-licensed process units, GS™ series catalysts have also delivered excellent performance in several SRIPT's S-SMT™ process units.

Physical Properties

	GS-08™	GS-08M™	GS-10™
Pellet appearance	brown, cylinder	brown, cylinder	brown, cylinder
Pellet size, diameter, mm	3.0±0.1	3.0±0.1	3.0±0.1
length, mm	5~10	5~6	5~6
Specific surface area, m ² /g	3±1	3±1	3±1
Apparent bulk density, g/ml	1.20±0.05	1.20±0.05	1.35±0.05
Crush strength, N/mm	≥20.0	≥20.5	≥21.5

Typical Performance

Catalyst	Isothermal*			Adiabatic**		
	Conversion %	Selectivity %	Yield %	Conversion %	Selectivity %	Yield %
GS-08™	76.2	95.0	72.4	66.8	97.0	64.8
GS-08M™	76.3	95.4	72.7	67.1	97.3	65.3
GS-10™	77.4	94.6	73.2	68.5	96.6	66.2

* LHSV=1.0h⁻¹, S/O=2.0wt, T=620°C, under normal pressure.

** Inlet temperatures for the 1st and 2nd reactors: 615 and 620°C, outlet pressure for the 2nd reactor: 50 kPaA, LHSV=0.5h⁻¹, S/O=1.3wt.



Catalyst Service Life

Catalyst	Expected Service life, month	Commercial experience
GS-08™	24	Lowering reaction temperature by 2~5°C
GS-08M™	24~30	Service life > 30 months
GS-10™	30~36	LHSV increased by 5%~10%, service life reached 36 months

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