

Solar Mirror Coatings

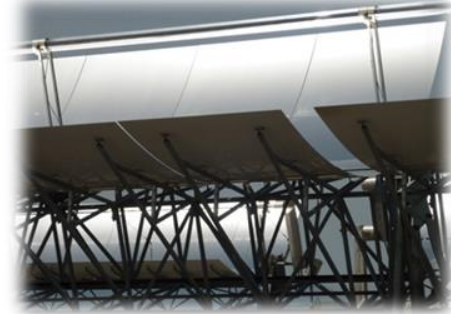
Solar Mirror Coatings

History

Valspar has a long history of supply of coatings and solution materials to the Solar Mirror Industry that spans over 12 years. The first solar mirrors manufactured with Valspar coatings and solutions were put into test fields in 2003 and Valspar coatings and solutions have been on exposure in controlled exposure fields since 2005. The first commercial parabolic trough mirror solar field was installed in 2007 and utilized mirrors manufactured with Valspar coatings and solutions

Track Record of Performance:

As the world's leading supplier of coatings and solutions chemicals to the Solar Mirror Industry, Valspar has a proven track record of coated mirrors that have been installed into solar fields all over the world. Valspar coatings and solutions have been utilized to manufacture both parabolic and flat mirrors that have been successfully installed into a variety of solar installations. The first commercial Valspar coated mirrors have been exposed in solar fields for almost 10 years. In the attached document you will find a listing of some of the installations in which mirrors coated with Valspar coatings and solutions have been installed. This is not a complete list as Valspar does not always know the exact locations of the installations of mirrors coated with our technologies. In working with Valspar, you can be certain that you are using the highest quality products, have access to a vast level of experience and will have the security and knowledge that working together with the industry leader provides



- **Proven Track Record of Performance**
- **12 Years Field Experience**
- **Outstanding Corrosion Resistance**
- **Outstanding Weather Durability**
- **High Surface Protection**
- **Technology Leader**
- **Security of Investment**



Reference list:

Project	Country	Size
Abhijeet	India	50,0 MW
Agua Prieta II	Mexico	14,0 MW
Andasol III	Spain	50,0 MW
Cameo	USA	2,0 MW
Helioenergy 1	Spain	50,0 MW
Helioenergy 2	Spain	50,0 MW
Helios I	Spain	50,0 MW
Helios II	Spain	50,0 MW
Ibersol Ciudad Real (50%)	Spain	50,0 MW
ISCC Ain Beni Mathar	Morocco	20,0 MW
ISCC Hassi R'mel	Algeria	25,0 MW
Ivanpah Solar Electric Generating System (ISEGS) (50%)	USA	392,0 MW
Jülich Solar Tower	Germany	1,5 MW
KaXu Solar One	South Africa	100,0 MW
La Dehesa	Spain	49,9 MW
La Florida	Spain	50,0 MW
Lebrija 1 (LE-1)	Spain	50,0 MW
Mojave Solar Project	USA	280,0 MW
National Solar Thermal Power Facility	India	1,0 MW
Olivenza 1 (50%)	Spain	50,0 MW
Solnova 1	Spain	50,0 MW
Solnova 3	Spain	50,0 MW
Solnova 4	Spain	50,0 MW
Thai Solar Energy 1 (TSE1)	Thailand	5,0 MW

These projects are all constructed with VALSPAR solar mirror coatings and partially with VALSPAR silver solutions. This information is taken from the publication of the different projects. A lot of projects don't mention the mirror supplier. Therefore the list is not complete. Some/many more projects are using VALSPAR solar mirror coatings and VALSPAR silver solutions

PT = Parabolic Trough

H = Heliostat

System for high corrosive environment:

GSB3-03730-00 + GST9-03720-00 3.3% Pb low lead – TCLP conformed

GSB3-03855-00 + GST9-03720-00 9.8% Pb full lead

Valspar's recommended 2-Coat System systems for high performance solar mirrors can reach up to 1000h CASS test with outstanding low edge corrosion even on cut edges.

With Valspar's 2-Coat System, solar mirror manufacturer have already produced more than 1MM m² of solar copper mirrors which are installed in fields around the world

More than 5 Years Florida outdoor exposure without any defect, even after direct sun light to the paint side

Test Results:

Test	Accelerated Weathering Tester ASTM G53							TSR	
Description	Investigation of the paint and mirror surface after 10000h mirror side faced the UV-A radiation							ASTM G173 Model SSR-ER	
	paint side				mirror side			before	after 10000h
	cracking	chalking	blister	flake off	msa	eco	spots	%	%
	GSB3-03730-00 + GST9-03720-00 4mm glass 10000h UV-A	OK	OK	OK	OK	C1	OK	OK	91,57
GSB3-03855-00 + GST9-03720-00 4mm glass 10000h UV-A	OK	OK	OK	OK	C0-1	OK	OK	90,77	90,68

msa . =mirror surface attack; msa.= OK best/ C(clouds) 6 worst; pbl.=number of paint blisters; eco.= edge corrosion

Results vary from line to line as they are in function of the metal plating process

European Solar Mirror Line	CASS					Humidity				Paint thickness	
	ISO 9227					DIN EN ISO 6270-2				DIN EN ISO	
	720 h / 1000h					960h - 40 °C				2808	
Description	eco. µm cut edges		spots/mm	msa.	pbl.	eco.	msa.	spots	pbl.	Base Coat	Top Coat
	left	right	>0,2<=3	OK-C6		µm	OK-C6			µm	µm
GSB3-03730-00 + GST9-03720-00 720h CASS	690	750	1	OK	0	OK	C0-1	0	0	31	30
GSB3-03855-00 + GST9-03720-00 1000h CASS	480	900	4	OK	0	OK	C0-1	0	0	33	31

msa.=mirror surface attack; msa.= OK best/ C(clouds) 6 worst; pbl.=number of paint blisters; eco.= edge corrosion

Results vary from line to line as they are in function of the metal plating process

In order to reduce the overall costs, Valspar offers an alternative hybrid solar mirror top coat **GST9-04300-01**

Test	Accelerated Weathering Tester ASTM G53							TSR	
Description	Investigation of the paint and mirror surface after 10000h mirror side faced the UV-A radiation							ASTM G173 Model SSR-ER	
	paint side				mirror side			before	after 10000h
	cracking	chalking	blisters	flake off	msa	eco	spots	%	%
	GSB3-03730-00 + GST9-04300-01 4mm glass 10000h UV-A	OK	OK	OK	OK	C1	OK	OK	91,47

msa.=mirror surface attack; msa.= OK best/ C(clouds) 6 worst; pbl.=number of paint blisters; eco.= edge corrosion

Results vary from line to line as they are in function of the metal plating process



The Valspar Advantage

As the leading global supplier of mirror coatings, Valspar helps develop, protect and advance the mirror design and heritage of many of the world's best-known brands. Whether your goal is to develop a new generation of mirror designs, meet ever-changing regulatory challenges or to enhance the sustainability of a final product, you can count on Valspar to deliver the solutions you need.