Market Overview and Progress of Radiation Curing in China

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As the increasingly concerning about the environment and energy issues, as well as the fast and steady development of the national economy, the radiation curing technology has been widely used as an alternative to traditional industries in China. The output and value of radiation curable products maintained a strong growth rate, reaching to doubling within last 5 years. The radiation curing industry in 2011 has gone through a year of rapid growth by more than 15 percent, which attracts great close attention of counterparts in global UV/EB industry. Within the next few years, China Government has put the energy saving and emission reduction as one of the most important industrial assessment indicators. No doubt, this is an opportunity for the development of radiation curing products, but also the challenge for enterprising men in radiation curing. Enhancing technological strength, extending new applications, and improving product quality have become top priorities for Chinese entrepreneurs in UV/EB industry. Until today, the strong growth is predominant in UV curing technology in China, whereas EB curing industry is almost blank.

This report summarizes the survey information on the output of around 120 leading companies, including producers for raw materials, UV coating and ink manufactures (Some of them supplied multiple products) since 2005. The detailed market information for 2011 will be presented further during RadTech UV/EB Technology Conference due to the collection delay reason.

The numbers of surveyed enterprises producing monomers and oligomers are listed in Table 1. It can be seen that less companies produced monomers in latest three years due to the prices and abnegation of small companies compared with from 2005 to 2007, whereas the output of monomers still increased. More companies started to produce oligomers, including some companies producing only monomers few years ago. The output data of monomers and oligomers from 2005 to 2010 are given in Figure 1. It can be found that the output of monomers increased from 49,213 tons in 2006 to 98,425 tons in 2010 with a doubling growth rate.

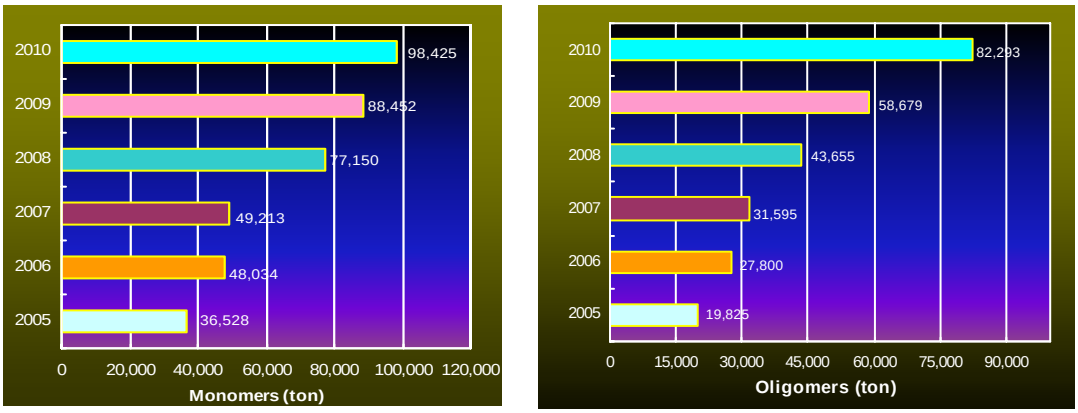

Figure 1. Outputs of UV monomers and oligomers (ton) (2005-2010).

Table 1. Number of surveyed enterprises producing monomers and oligomers.

year	2005	2006	2007	2008	2009	2010
Monomers	16	17	17	15	12	14
Oligomers	29	29	36	37	33	43

Table 2 lists the number of surveyed enterprises manufacturing coatings and inks. Figure 2 gives the consumption of UV coatings and inks consumed in China market from 2005 to 2010. The UV coatings and inks remain the largest application areas in China.

Table 2. Number of surveyed enterprises manufacturing coatings and inks.

year	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
Coatings	51	43	51	49	40	44
Inks	36	36	37	41	37	34

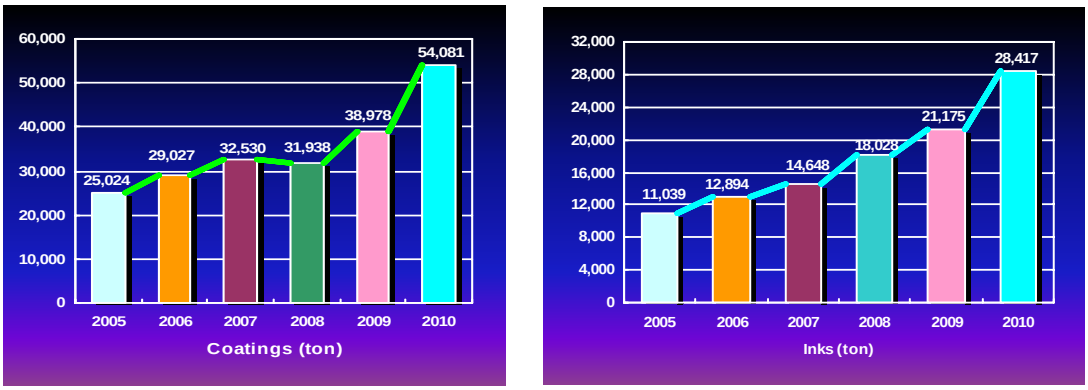

Figure 2. Consumption of UV coatings and inks (ton) (2005-2010).

Among the UV coatings, the application for wood products was the largest market with the consumption of 22,340 tons in 2010. And for plastic and mobile applications, 7,754 and 7,170 tons were consumed, respectively. The uses for packaging and PVC were secondary important markets with the consumption of 5,374 and 3,406 tons, respectively. The fast developing areas for UV coatings are listed in Table 3.

Table 3. Fast developing areas for UV coatings (2006-2010).

Year	Plastic	Home appliance	Metals	Cell phone	Construction
2005	2,342	322	71	281	30
2006	3,517	395	121	520	36
2007	4,042	770	490	1,150	120
2008	4,475	866	332	1,786	150
2009	5,482	1,180	610	5,230	420
2010	7,754	1,677	1,275	7,170	700

The fast developing areas for UV ink applications are optical imaging of solder, offset, sold Mask, and optical imaging resist, as listed in Table 4.

Table 4. Fast developing areas for UV inks (2006-2010).

Year	Offset	Optical imaging resist	Optical imaging of solder	Sold Mask
2006	2,655	1,222	1,190	2,090
2007	3,273	1,345	2,450	1,970
2008	3,963	1,779	2,320	2,960
2009	4,657	2,145	2,650	3,520
2010	5,815	3,596	6,814	4,800

The consumption for radiation curable adhesives increases very quickly in recent years by only few manufacturers, as listed in Table 5. The UV adhesives have been mostly used in LCD, DVD, glass, and medical devices (Table 6). The development of radiation curable adhesives is quite recently in comparison with industrial coatings and graphic arts. In addition to the environmental drive, other factors such as unique cure properties and the mushroom development of the automotive and DVD industry are strongly influencing the growth rate of radiation curable adhesives.

Table 5. Consumption of UV adhesives (ton) (2005-2010).

Year	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
Num. of Co.	14	13	16	19	13	13
Output (ton)	363	488	846	1,120	1,457	2,444

Table 6. Major application areas of UV adhesives (ton) (2010).

Area	*Medical devices*	*Optical*	*Glass*	*Equipment*	*LCD*	*DVD*	*Arts & Crafts*	*Fishing*	*others*
2010	132	59	343	108	312	1,350	78	45	40

This short overview of China market has shown that there are still many opportunities for growth in radiation curing. High growth will continue through the well-established areas, addressing technological shortcomings by developing new technologies and new raw materials. The financial crises around the world in recent years have had a great impact on the economic growth. However, the radiation curing industry has still been greatly expanded. The task before us is to carry out the real purpose, continuing to promote the development of UV/EB technology in the world. Continued education and cooperation among suppliers, users, academia, and government organizations will help us to ensure continued recognition and acceptance of UV/EB technology. Outlook to 2012 will be the colorful blossoming. RadTech China will be committed to further promote the internationalization of domestic industry, participate in international competition, and strengthen the cooperation and exchanges with global RadTech Organizations for achieving a great leap and the goal of radiation curing industry doubling again within next 5 years. The charm and benefits of radiation curing technology have brought us a great deal of market opportunities. The mature market segments will continue to maintain high growth trend, while new application areas are waiting to open up.