

# 全球工業用酵素市場分析

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## 一、工業酵素的市場應用

茲將常見之酵性依酵素別及應用別整理如下表。

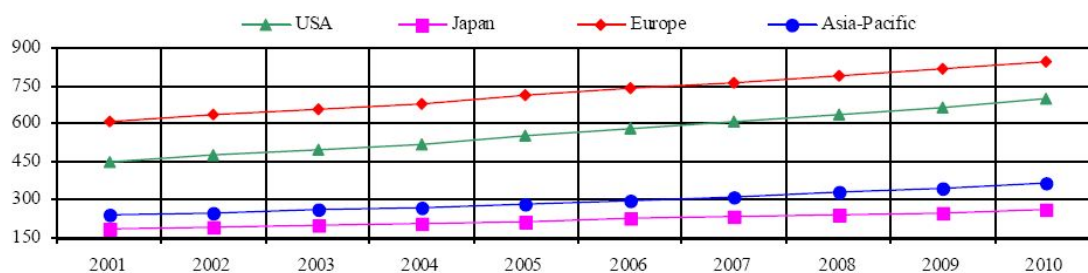
酵素別 應用	醣類水解酵素 Carbohydrases	脂類水解酵素 Lipases	蛋白水解酵素 Proteases	其它酵素
食品用	Glucoamylases, Amylases, Alpha-amylases, Xylanases, Cellulases, Invertases, Pectinases, Lactases, Glucose Isomerase Pullulanases, Beta-glucanase, Cellulases, Proteases, Xylanases, Alpha-acetolactate decarboxylases, Rennt, Lacase, Hemicellulases, Lipoxygenases, etc.			Amidases, Laccase, Lyases, Oxireductases, Transferase, etc.
飼料用	Amylase, Phytase, Beta-glucanases, Xylanases, Endo-xylanases, Alpha-amylases, etc.			
清潔用	Cellulases, Amylases, etc.			
紡織用	Hemicellulase, Amylases, Pectinase, Cellulase, Catalase, etc.			
製皮革用		Pancreatic trypsin, Bacterial protease, Alkaline bacterial protease, Proteolytic, Lipolytic, etc.		
造紙用	Xylanase, Cellulase, Hemicellulase, etc.			
其它	如能源用或化粧品用			

## 二、工業酵素之全球市場

### 1.全球區域別「總」銷售額

#### 1)全球區域別銷售額（單位：百萬美元）

Region/Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	% CAGR
USA	450.33	476.28	496.70	518.34	553.84	582.22	605.77	635.50	666.92	698.38	5.00
Canada	104.13	108.83	111.81	114.96	120.50	124.11	126.54	129.67	132.72	135.33	2.95
Japan	182.70	191.20	196.90	203.33	214.83	223.20	230.10	239.52	250.12	260.75	4.03
Europe	607.81	636.12	655.80	676.09	712.84	739.66	759.26	785.96	814.75	842.06	3.69
Asia-Pacific	238.04	249.43	257.65	266.95	283.62	297.75	310.44	327.41	346.15	366.83	4.92
Middle East	99.38	103.65	106.27	108.82	113.80	117.11	119.12	121.92	124.69	127.49	2.81
Latin America	144.51	150.40	153.76	157.10	163.98	168.25	170.67	174.56	178.48	181.84	2.59
<b>Total</b>	<b>1826.90</b>	<b>1915.91</b>	<b>1978.89</b>	<b>2045.59</b>	<b>2163.41</b>	<b>2252.30</b>	<b>2321.90</b>	<b>2414.54</b>	<b>2513.83</b>	<b>2612.68</b>	<b>4.06</b>



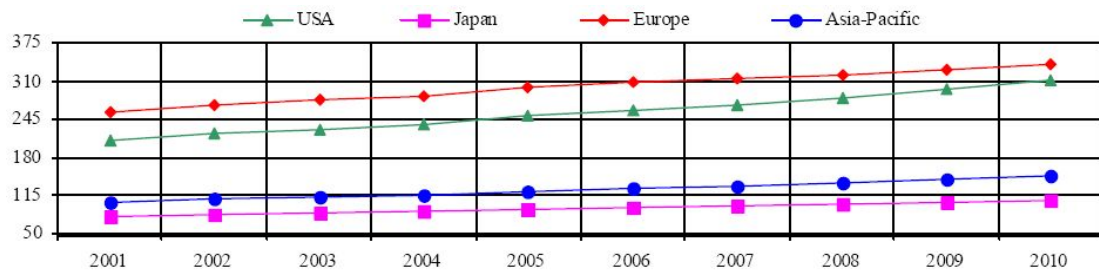
#### 2)全球區域別市佔比率

Region/Country	1991	1995	2005	2010
USA	21.78	23.10	25.60	26.73
Canada	6.36	6.03	5.57	5.18
Japan	9.97	10.03	9.93	9.98
Europe	34.38	33.83	32.95	32.23
Asia-Pacific	12.16	12.65	13.11	14.04
Middle East	6.14	5.78	5.26	4.88
Latin America	9.21	8.58	7.58	6.96
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

### 2.全球區域別「醣類水解酵素」銷售額

#### 1)全球區域別醣類水解酵素銷售額（單位：百萬美元）

Region/Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	% CAGR
USA	210.08	220.85	228.93	237.35	251.50	261.71	270.54	283.05	296.71	311.27	4.47
Canada	46.36	48.25	49.26	50.38	52.42	53.64	54.29	55.16	55.89	56.19	2.16
Japan	80.46	83.94	86.16	88.69	93.32	96.51	98.69	101.72	104.75	107.27	3.25
Europe	258.74	270.21	277.73	285.07	298.99	308.17	313.99	322.32	330.94	337.96	3.01
Asia-Pacific	104.69	109.35	112.64	116.20	123.06	128.39	132.62	138.46	144.07	149.48	4.04
Middle East	42.98	44.81	45.92	46.98	49.07	50.31	50.87	51.67	52.22	52.64	2.28
Latin America	62.01	64.48	65.87	67.22	70.12	71.76	74.02	75.22	76.12	76.52	2.36
<b>Total</b>	<b>805.32</b>	<b>841.89</b>	<b>866.51</b>	<b>891.89</b>	<b>938.48</b>	<b>970.49</b>	<b>995.02</b>	<b>1,027.60</b>	<b>1,060.70</b>	<b>1,091.33</b>	<b>3.43</b>



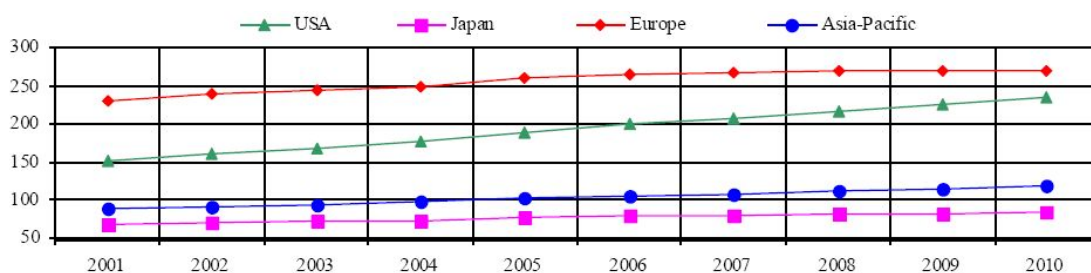
## 2) 全球區域別醣類水解酵素市佔比率

Region/Country	1991	1995	2005	2010
USA	23.20	24.48	26.80	28.52
Canada	6.38	6.11	5.59	5.15
Japan	10.01	10.07	9.94	9.83
Europe	33.28	32.68	31.86	30.97
Asia-Pacific	12.31	12.71	13.11	13.70
Middle East	6.00	5.65	5.23	4.82
Latin America	8.82	8.30	7.47	7.01
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

## 3. 全球區域別「脂類水解酵素」銷售額

### 1) 全球區域別脂類水解酵素銷售額（單位：百萬美元）

Region/Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	% CAGR
USA	152.35	161.46	168.63	176.34	189.08	199.76	207.84	217.47	226.82	234.38	4.90
Canada	38.86	40.29	40.98	41.60	42.91	43.30	43.05	42.83	42.35	41.56	0.75
Japan	68.44	71.05	72.52	74.03	77.19	79.01	80.03	81.63	83.09	84.07	2.31
Europe	229.68	238.85	244.31	249.48	260.02	265.83	267.59	269.88	270.77	269.28	1.78
Asia-Pacific	88.67	92.49	94.92	97.68	102.53	106.03	108.53	112.24	115.44	118.38	3.26
Middle East	37.19	38.45	39.02	39.46	40.55	40.86	40.49	40.22	39.76	39.05	0.54
Latin America	55.06	56.87	57.52	58.05	59.61	59.86	60.35	59.91	59.15	57.77	0.54
<b>Total</b>	<b>670.25</b>	<b>699.46</b>	<b>717.90</b>	<b>736.64</b>	<b>771.89</b>	<b>794.65</b>	<b>807.88</b>	<b>824.18</b>	<b>837.38</b>	<b>844.49</b>	<b>2.60</b>



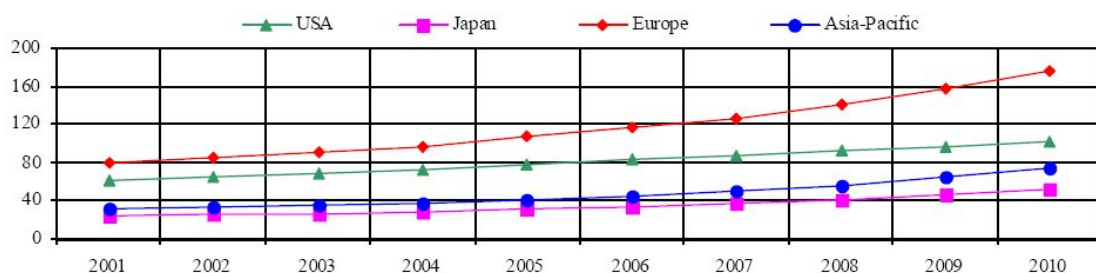
## 2) 全球區域別脂類水解酵素市佔比率

Region/Country	1991	1995	2005	2010
USA	18.49	20.53	24.50	27.75
Canada	6.84	6.29	5.56	4.92
Japan	10.48	10.40	10.00	9.96
Europe	35.31	34.79	33.69	31.89
Asia-Pacific	12.33	12.86	13.28	14.02
Middle East	6.61	6.06	5.25	4.62
Latin America	9.94	9.07	7.72	6.84
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

## 4. 全球區域別「蛋白水解酵素」銷售額

### 1) 全球區域別蛋白水解酵素銷售額 (單位：百萬美元)

Region/Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	% CAGR
USA	61.74	65.68	69.09	72.67	78.42	83.37	87.47	92.21	97.17	102.17	5.76
Canada	13.27	14.27	15.25	16.34	18.04	19.66	21.37	23.43	25.67	28.08	8.68
Japan	23.59	25.31	26.74	28.47	31.19	33.75	36.75	40.65	45.57	51.26	9.01
Europe	80.36	86.01	91.10	97.21	106.62	116.31	126.65	140.54	157.42	176.78	9.16
Asia-Pacific	30.56	32.75	34.71	37.05	40.93	45.20	50.04	55.82	63.90	73.84	10.30
Middle East	13.16	13.95	14.59	15.33	16.67	18.07	19.61	21.57	23.93	26.76	8.21
Latin America	18.67	19.91	21.02	22.26	24.25	26.33	25.67	28.52	31.98	36.04	7.58
<b>Total</b>	<b>241.35</b>	<b>257.88</b>	<b>272.50</b>	<b>289.33</b>	<b>316.12</b>	<b>342.69</b>	<b>367.56</b>	<b>402.74</b>	<b>445.64</b>	<b>494.93</b>	<b>8.31</b>



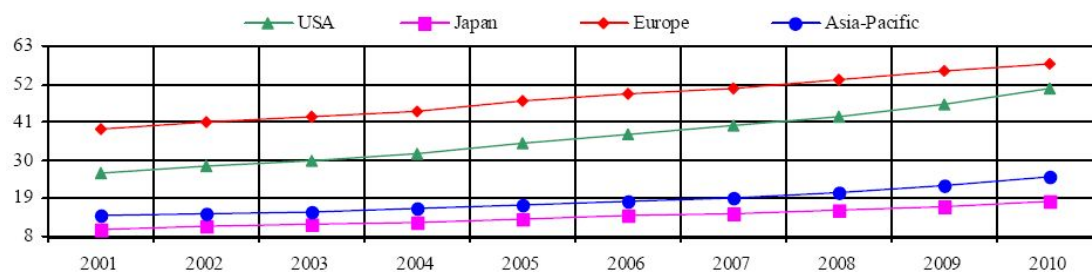
## 2)全球區域別蛋白水解酵素市佔比率

Region/Country	1991	1995	2005	2010
USA	29.38	27.04	24.80	20.64
Canada	5.02	5.31	5.71	5.67
Japan	8.51	9.13	9.87	10.36
Europe	33.71	33.65	33.73	35.72
Asia-Pacific	10.65	11.66	12.95	14.92
Middle East	4.96	5.35	5.27	5.41
Latin America	7.77	7.86	7.67	7.28
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

## 5.全球區域別「其它酵素」總銷售額

### 1)全球區域別其它酵素銷售額（單位：百萬美元）

Region/Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	% CAGR
USA	26.16	28.29	30.05	31.98	34.84	37.38	39.92	42.77	46.22	50.56	7.60
Canada	5.64	6.02	6.32	6.64	7.13	7.51	7.83	8.25	8.81	9.50	5.96
Japan	10.21	10.90	11.48	12.14	13.13	13.93	14.63	15.52	16.71	18.15	6.60
Europe	39.03	41.05	42.66	44.33	47.21	49.35	51.03	53.22	55.62	58.04	4.51
Asia-Pacific	14.12	14.84	15.38	16.02	17.10	18.13	19.25	20.89	22.74	25.13	6.61
Middle East	6.05	6.44	6.74	7.05	7.51	7.87	8.15	8.46	8.78	9.04	4.56
Latin America	8.77	9.14	9.35	9.57	10.00	10.30	10.63	10.91	11.23	11.51	3.07
<b>Total</b>	<b>109.98</b>	<b>116.68</b>	<b>121.98</b>	<b>127.73</b>	<b>136.92</b>	<b>144.47</b>	<b>151.44</b>	<b>160.02</b>	<b>170.11</b>	<b>181.93</b>	<b>5.75</b>



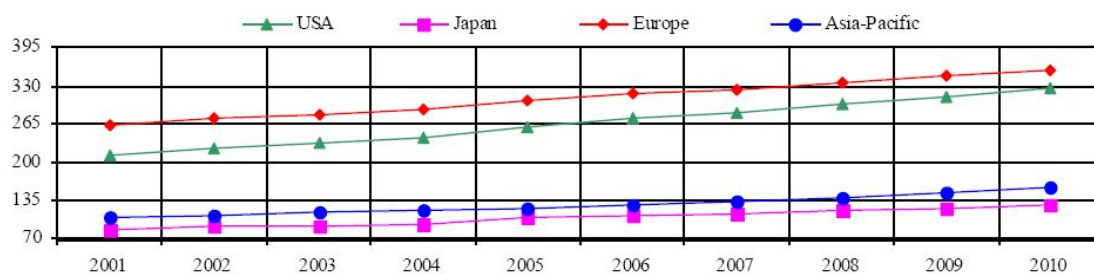
### 2)全球區域別其它酵素市佔比率

Region/Country	1991	1995	2005	2010
USA	20.70	21.73	25.45	27.79
Canada	4.96	5.07	5.21	5.22
Japan	8.41	8.95	9.59	9.98
Europe	37.96	36.80	34.48	31.90
Asia-Pacific	12.32	12.79	12.49	13.81
Middle East	5.96	5.72	5.48	4.97
Latin America	9.69	8.94	7.30	6.33
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

## 6.全球區域別「食品及飼料用酵素」總銷售額

### 1)全球區域別食品及飼料用銷售額（單位：百萬美元）

Region/Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	% CAGR
USA	212.61	224.29	233.35	242.79	260.98	273.93	284.29	297.41	311.26	325.09	4.83
Canada	48.86	50.95	52.23	53.55	55.99	57.53	58.56	59.86	61.17	62.25	2.73
Japan	86.37	90.13	92.51	95.26	105.88	109.71	112.73	116.94	121.71	126.40	4.32
Europe	262.60	274.26	282.07	290.17	305.12	316.56	324.11	334.69	346.07	356.75	3.46
Asia-Pacific	105.82	110.59	113.90	117.67	122.46	128.33	133.45	140.36	148.01	156.45	4.44
Middle East	42.90	44.37	45.33	46.24	49.35	49.64	50.29	51.26	52.18	53.11	2.40
Latin America	62.04	64.35	65.53	66.68	65.35	66.71	67.28	68.42	69.54	70.40	1.41
<b>Total</b>	<b>821.20</b>	<b>858.94</b>	<b>884.92</b>	<b>912.36</b>	<b>965.13</b>	<b>1002.41</b>	<b>1030.71</b>	<b>1068.94</b>	<b>1109.94</b>	<b>1150.45</b>	<b>3.82</b>



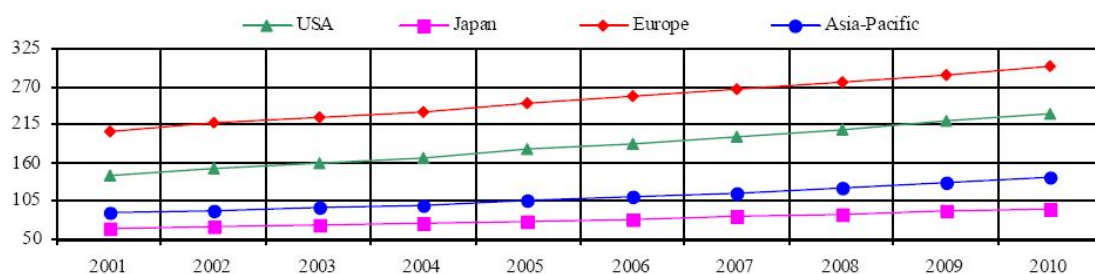
### 2)全球區域別食品及飼料用市佔比率

Region/Country	1991	1995	2005	2010
USA	22.84	24.20	27.05	28.25
Canada	6.63	6.30	5.80	5.41
Japan	10.65	10.66	10.97	10.99
Europe	32.79	32.34	31.61	31.01
Asia-Pacific	12.06	12.53	12.69	13.60
Middle East	6.07	5.68	5.11	4.62
Latin America	8.96	8.29	6.77	6.12
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

## 7.全球區域別「清潔用酵素」總銷售額

### 1)全球區域別清潔用銷售額（單位：百萬美元）

Region/Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	% CAGR
USA	142.62	151.74	159.19	167.16	178.83	188.76	197.54	208.51	220.08	231.79	5.54
Canada	35.76	37.54	38.75	40.03	42.15	43.62	44.66	45.96	47.25	48.37	3.41
Japan	64.56	67.86	70.18	72.77	75.81	79.10	81.87	85.58	89.72	93.92	4.25
Europe	206.44	217.19	225.11	233.20	247.14	257.41	265.54	276.29	287.79	298.88	4.20
Asia-Pacific	87.15	91.77	95.23	99.07	105.82	111.36	116.54	123.37	130.91	139.25	5.35
Middle East	38.72	40.36	41.60	42.85	43.80	46.12	47.22	48.67	50.16	51.68	3.26
Latin America	56.92	59.56	61.21	62.86	68.12	70.29	71.71	73.81	75.91	77.83	3.54
<b>Total</b>	<b>632.17</b>	<b>666.02</b>	<b>691.27</b>	<b>717.94</b>	<b>761.67</b>	<b>796.66</b>	<b>825.08</b>	<b>862.19</b>	<b>901.82</b>	<b>941.72</b>	<b>4.53</b>



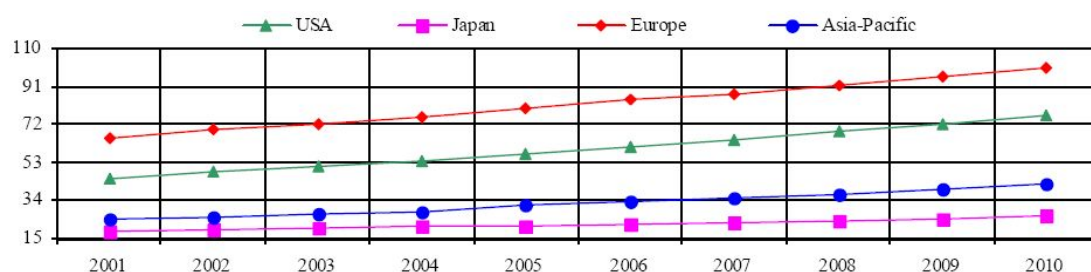
### 2)全球區域別清潔用市佔比率

Region/Country	1991	1995	2005	2010
USA	19.66	21.00	23.49	24.61
Canada	6.31	5.98	5.53	5.14
Japan	10.30	10.31	9.95	9.97
Europe	33.34	32.87	32.45	31.74
Asia-Pacific	12.96	13.44	13.89	14.79
Middle East	6.95	6.59	5.75	5.49
Latin America	10.48	9.81	8.94	8.26
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

## 8.全球區域別「紡織用酵素」總銷售額

### 1)全球區域別紡織用酵素銷售額（單位：百萬美元）

Region/Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	% CAGR
USA	45.03	48.20	50.86	53.70	57.54	61.13	64.33	68.25	72.43	76.68	6.09
Canada	10.27	10.84	11.25	11.69	12.39	12.88	13.25	13.71	14.16	14.58	3.97
Japan	18.73	19.79	20.60	21.47	20.73	21.76	22.64	23.81	25.11	26.44	3.90
Europe	65.46	69.35	72.29	75.36	80.36	84.18	87.34	91.43	95.82	100.09	4.83
Asia-Pacific	24.33	25.79	26.92	28.19	31.31	33.20	34.96	37.23	39.74	42.52	6.40
Middle East	8.78	9.18	9.50	9.80	9.84	10.25	10.47	10.75	11.02	11.28	2.82
Latin America	15.27	16.08	16.59	17.12	18.84	19.53	20.02	20.67	21.36	21.99	4.14
<b>Total</b>	<b>187.87</b>	<b>199.23</b>	<b>208.01</b>	<b>217.33</b>	<b>231.01</b>	<b>242.93</b>	<b>253.01</b>	<b>265.85</b>	<b>279.64</b>	<b>293.58</b>	<b>5.09</b>



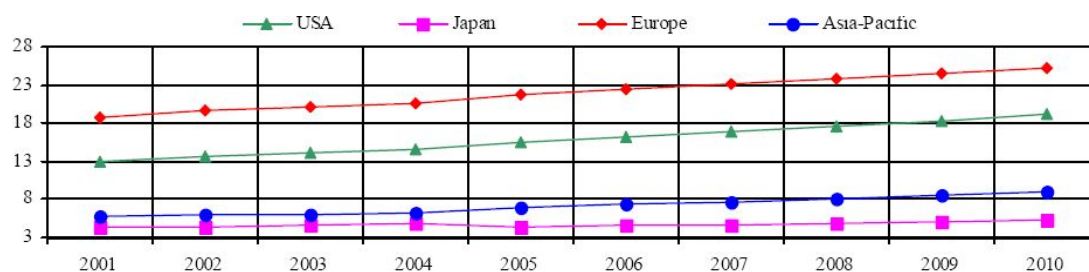
### 2)全球區域別紡織用酵素市佔比率

Region/Country	1991	1995	2005	2010
USA	21.04	22.41	24.91	26.12
Canada	6.15	5.81	5.36	4.97
Japan	10.08	10.10	8.97	9.01
Europe	35.84	35.40	34.79	34.09
Asia-Pacific	12.11	12.58	13.55	14.48
Middle East	5.33	4.91	4.26	3.84
Latin America	9.45	8.79	8.16	7.49
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

## 9.全球區域別製「皮革用酵素」總銷售額

### 1)全球區域別製皮革用酵素銷售額（單位：百萬美元）

Region/Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	% CAGR
USA	12.88	13.57	14.11	14.67	15.45	16.19	16.78	17.54	18.34	19.14	4.50
Canada	2.68	2.77	2.84	2.91	3.04	3.11	3.15	3.22	3.27	3.32	2.41
Japan	4.33	4.49	4.61	4.74	4.38	4.51	4.65	4.81	5.00	5.22	2.10
Europe	18.80	19.61	20.15	20.68	21.77	22.47	23.03	23.73	24.55	25.30	3.35
Asia-Pacific	5.69	5.94	6.11	6.30	6.98	7.32	7.61	8.02	8.45	8.91	5.11
Middle East	3.43	3.53	3.62	3.70	4.06	4.26	4.35	4.46	4.58	4.69	3.54
Latin America	3.53	3.64	3.69	3.75	4.13	4.21	4.25	4.31	4.39	4.44	2.58
<b>Total</b>	<b>51.34</b>	<b>53.55</b>	<b>55.13</b>	<b>56.75</b>	<b>59.81</b>	<b>62.07</b>	<b>63.82</b>	<b>66.09</b>	<b>68.58</b>	<b>71.02</b>	<b>3.67</b>



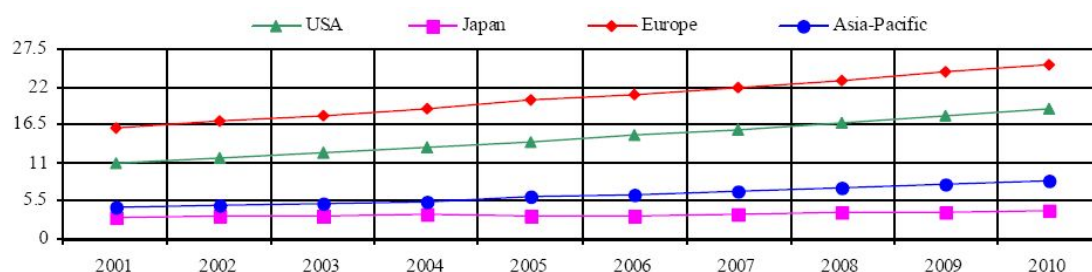
### 2)全球區域別製皮革用酵素市佔比率

Region/Country	1991	1995	2005	2010
USA	22.24	23.58	25.83	26.96
Canada	5.89	5.56	5.08	4.67
Japan	8.56	8.57	7.32	7.35
Europe	37.99	37.54	36.40	35.62
Asia-Pacific	10.21	10.68	11.67	12.55
Middle East	7.00	6.64	6.79	6.60
Latin America	8.11	7.43	6.91	6.25
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

## 10.全球區域別「造紙用酵素」總銷售額

### 1)全球區域別造紙用酵素銷售額（單位：百萬美元）

Region/Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	% CAGR
USA	11.03	11.81	12.47	13.22	14.07	15.02	15.81	16.78	17.87	18.93	6.19
Canada	2.08	2.21	2.28	2.38	2.52	2.63	2.71	2.80	2.89	2.98	4.08
Japan	3.01	3.19	3.33	3.48	3.22	3.37	3.52	3.71	3.93	4.15	3.63
Europe	16.15	17.13	17.91	18.73	20.01	20.98	21.86	22.89	24.07	25.21	5.07
Asia-Pacific	4.62	4.91	5.13	5.39	6.07	6.46	6.83	7.30	7.82	8.40	6.87
Middle East	2.15	2.25	2.33	2.42	2.71	2.86	2.94	3.05	3.15	3.26	4.73
Latin America	2.40	2.53	2.60	2.67	3.05	3.15	3.23	3.32	3.41	3.49	4.25
<b>Total</b>	<b>41.44</b>	<b>44.03</b>	<b>46.05</b>	<b>48.29</b>	<b>51.65</b>	<b>54.47</b>	<b>56.90</b>	<b>59.85</b>	<b>63.14</b>	<b>66.42</b>	<b>5.38</b>



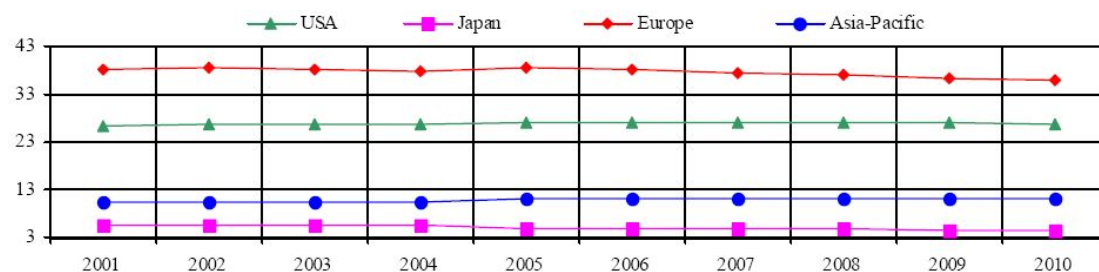
### 2)全球區域別造紙用酵素市佔比率

Region/Country	1991	1995	2005	2010
USA	23.72	25.08	27.24	28.49
Canada	5.77	5.44	4.88	4.49
Japan	7.13	7.16	6.23	6.25
Europe	40.61	40.20	38.74	37.96
Asia-Pacific	10.27	10.75	11.75	12.65
Middle East	5.49	5.07	5.25	4.91
Latin America	7.01	6.30	5.91	5.25
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

## 11.全球區域別「其它用酵素」總銷售額

### 1)全球區域別其它用酵素銷售額（單位：百萬美元）

Region/Country	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	% CAGR
USA	26.16	26.67	26.72	26.80	26.97	27.19	27.02	27.01	26.94	26.75	0.25
Canada	4.48	4.52	4.46	4.40	4.41	4.34	4.21	4.11	3.98	3.83	-1.73
Japan	5.70	5.74	5.67	5.61	4.81	4.75	4.69	4.67	4.65	4.62	-2.31
Europe	38.36	38.58	38.27	37.95	38.44	38.06	37.38	36.93	36.45	35.83	-0.76
Asia-Pacific	10.43	10.43	10.36	10.33	10.98	11.08	11.05	11.13	11.22	11.30	0.89
Middle East	3.40	3.96	3.89	3.81	4.04	3.98	3.85	3.73	3.60	3.47	0.23
Latin America	4.35	4.24	4.14	4.02	4.49	4.36	4.18	4.03	3.87	3.69	-1.81
<b>Total</b>	<b>92.88</b>	<b>94.14</b>	<b>93.51</b>	<b>92.92</b>	<b>94.14</b>	<b>93.76</b>	<b>92.38</b>	<b>91.61</b>	<b>90.71</b>	<b>89.49</b>	<b>-0.41</b>



### 2)全球區域別其它用酵素市佔比率

Region/Country	1991	1995	2005	2010
USA	25.22	26.61	28.66	29.89
Canada	5.61	5.24	4.68	4.28
Japan	5.66	5.73	5.11	5.16
Europe	43.36	42.95	40.83	40.04
Asia-Pacific	10.47	10.95	11.66	12.63
Middle East	3.96	3.49	4.29	3.88
Latin America	5.72	5.03	4.77	4.12
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

### 三、全球前三大廠商市佔率

Company	2004	2005(E)
Novozymes	43.9	44.5
Genencor	17.8	18.4
DSM	4.9	5.2
Others	33.4	31.9
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

