



# Industrial Chemicals and Synthetic Resins

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## Highlights

- Polyethylene production by Canadian manufactures decreased 13.8 % to 245,923 metric tonnes between November and December 2005. The annual production of polyethylene for 2005 also fell, slipping 6.2 % when compared with the record production of 3,586,575 metric tonnes in 2004. Plant shutdowns in 2005 contributed significantly to the year-over-year decline.
- Ammonia nitrate production for 2005 rose 10% over the previous year to a record high of 1,205,729 metric tonnes.
- Nitric acid production totalled 1,147,029 metric tonnes in 2005, a decrease of 5.9% from the record annual production posted in 2004 of 1,218,720 metric tonnes.

Data available on CANSIM, table 303-0014.

Manufacturing, Construction and Energy Division

February 2006

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Table 1

## Production of new virgin resin (excluding compounding or colouring ingredients), by product, monthly

Product	SCG <sup>+</sup> Code	December 2004	November 2005	December 2005	Change December 2005/ November 2005	Change December 2005/ December 2004
		metric tonnes			%	
<b>Synthetic resins</b>						
Polyethylene, low and linear low density	3901.10, 3901.90.10	x r	x	x	x	x
Polyethylene, high density	3901.20	130,320 r	x	x	x	x
<b>Polyethylene, total</b>		309,905 r	285,204	245,923	-13.8	-20.6
Polystyrene and acrylonitrile-butadiene-styrene (abs)	3903.1, 3903.30	16,392	15,671	15,857	1.2	-3.3
Polyvinyl chloride	3904.10	x	x	x	x	x
Polyesters, unsaturated	3907.91	6,609	7,745	6,159	-20.5	-6.8

Table 2

## Production of industrial chemicals, by product, monthly

Product	SCG <sup>+</sup> Code	December 2004	November 2005	December 2005	Change December 2005/ November 2005	Change December 2005/ December 2004
		metric tonnes			%	
<b>Acids</b>						
Hydrochloric (muriatic) acid, 100%	2806.10.20	9,922	12,401	13,412	8.2	35.2
Nitric acid, 100 %	2808.00.10	98,322	85,525	64,970	-24.0	-33.9
Phosphoric acid, wet process	2809.20	x	x	x	x	x
Sulphuric acid, all grades, including oleum, as 100%	2807	348,049	332,212	314,425	-5.4	-9.7
<b>Other Industrial Chemical Products</b>						
Aluminum sulphate (alum)	2833.22	15,222	13,072	12,900	-1.3	-15.3
Ammonia, anhydrous, 100%	2814.10	410,010	346,135	317,687	-8.2	-22.5
Ammonium nitrate, all grades	3102.30	94,773	89,109	74,259	-16.7	-21.6
Ammonium phosphate, all grades	3105.30	x	x	x	x	x
Butadiene	2901.24.10	24,941	14,423	16,119	11.8	-35.4
Butylene	2901.23	20,033	10,728	11,703	9.1	-41.6
Carbon black	2803	19,176	18,749	19,995	6.6	4.3
Chlorine	2801.10	83,584	81,749	85,297	4.3	2.0
Ethylene	2901.21	443,776	382,880	397,437	3.8	-10.4
Formaldehyde, 100% solids basis	2912.11	19,933	20,347	20,176	-0.8	1.2
Hydrogen peroxide, 100%	2847.00	21,854	18,377	21,571	17.4	-1.3
Methyl alcohol (methanol)	2905.11	x	x	x	x	x
Propylene, as propylene in all grades	2901.22	76,573	39,198	47,630	21.5	-37.8
Sodium chlorate	2829.11	107,329	97,335	100,582	3.3	-6.3
Sodium hydroxide (caustic soda), as 100% NaOH	2815.1	94,020	91,429	93,861	2.7	-0.2
Urea, all grades	3102.10	306,411	291,161	266,036	-8.6	-13.2
Benzene	2902.20	85,521	59,047	58,841	-0.3	-31.2
Toluene	2902.30	15,831	x	4,737	x	-70.1
Xylene	2902.4	25,542	16,429	x	x	x
Zinc oxide	2817.00.1	x	x	x	x	x

Table 3

## Production of new virgin resin (excluding compounding or colouring ingredients), by product, Year-to-date

Product	SCG <sup>*</sup> Code	Year-to-date December 2004	Year-to-date December 2005	Change year-to-date 2005/2004
		metric tonnes		%
<b>Synthetic resins</b>				
Polyethylene, low and linear low density	3901.10, 3901.90.10	x	x	x
Polyethylene, high density	3901.20	1,576,339	x	x
<b>Polyethylene, total</b>		3,586,575	3,365,636	-6.2
Polystyrene and acrylonitrile-butadiene-styrene (abs)	3903.1, 3903.30	207,028	197,761	-4.5
Polyvinyl chloride	3904.10	x	x	x
Polyesters, unsaturated	3907.91	99,981	90,029	-10.0

Table 4

## Production of industrial chemicals, by product, Year-to-date

Product	SCG <sup>*</sup> Code	Year-to-date December 2004	Year-to-date December 2005	Change year-to-date 2005/2004
		metric tonnes		%
<b>Acids</b>				
Hydrochloric (muriatic) acid, 100%	2806.10.20	148,783	141,586	-4.8
Nitric acid, 100 %	2808.00.10	1,218,720	1,147,029	-5.9
Phosphoric acid, wet process	2809.20	x	x	x
Sulphuric acid, all grades, including oleum, as 100%	2807	3,932,585	3,754,512	-4.5
<b>Other Industrial Chemical Products</b>				
Aluminum sulphate (alum)	2833.22	167,400	174,930	4.5
Ammonia, anhydrous, 100%	2814.10	4,995,907	4,607,013	-7.8
Ammonium nitrate, all grades	3102.30	1,095,960	1,205,729	10.0
Ammonium phosphate, all grades	3105.30	x	x	x
Butadiene	2901.24.10	289,012	245,019	-15.2
Butylene	2901.23	240,294	220,837	-8.1
Carbon black	2803	223,403	234,586	5.0
Chlorine	2801.10	1,056,807	1,003,777	-5.0
Ethylene	2901.21	5,095,422	x	x
Formaldehyde, 100% solids basis	2912.11	268,504	x	x
Hydrogen peroxide, 100%	2847.00	243,926	243,890	0.0
Methyl alcohol (methanol)	2905.11	x	x	x
Propylene, as propylene in all grades	2901.22	939,172	736,537	-21.6
Sodium chlorate	2829.11	1,183,198	1,169,092	-1.2
Sodium hydroxide (caustic soda), as 100% NaOH	2815.1	1,146,074	1,116,746	-2.6
Urea, all grades	3102.10	3,654,473	3,549,041	-2.9
Benzene	2902.20	914,988	798,091	-12.8
Toluene	2902.30	x	x	x
Xylene	2902.4	350,928	x	x
Zinc oxide	2817.00.1	x	x	x

## Explanatory Notes

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### Concepts, methodology and data quality

This publication presents the results of the survey, Industrial Chemicals and Synthetic Resins. This survey measures, on a monthly basis, the quantities of selected industrial chemicals and new virgin resins produced by Canadian manufacturers. The target population for this survey includes manufacturers in Canada of selected industrial chemicals and synthetic resins as defined in the Standard Classification of Goods (SCG) that report these products to the Annual Survey of Manufactures or ASM (Survey ID 2103). This means that estimates from this monthly survey do not cover the entire universe of industrial chemicals and synthetic resins' producers in Canada because the ASM does not survey all businesses. Instead, the ASM uses administrative data to cover the small and medium-sized establishments. These manufacturers are not part of this survey.

### General methodology

Data are collected monthly using a mail-out / mail-back process. Data capture and preliminary editing are performed simultaneously to ensure validity of the data. Businesses from whom no response has been received or whose data may contain errors are followed-up by telephone or fax.

Missing data for the current month are imputed automatically by applying to the previous month's value, the month-to-month change observed for the same period in the previous year, for the unit in question. However, an option exists for analysts to manually override this imputation with a better estimate based on pertinent knowledge about the industry or the business.

Various confidentiality rules are applied to all data before they are released to prevent the publication or disclosure of any information deemed confidential. If necessary, data are suppressed to prevent direct or residual disclosure of identifiable data.

Direct disclosure could occur when the value in a tabulation cell is composed of a few respondents or when the cell is dominated by a few companies. Residual disclosure could occur when confidential information can be derived indirectly by piecing together information from different sources or data series.

Under normal circumstances, data are collected, captured, edited, tabulated and published within 6 to 7 weeks after the reference month.

### Revisions

Data may be revised to include amended information or reports from respondents that are received after the end of a collection cycle. Revisions are disseminated in subsequent periods and reflected in the CANSIM series and in the tables of this publication.

### Data Accuracy

The methodology for this survey has been designed to promote data accuracy. Since data are collected from all Canadian producers of industrial chemicals and synthetic resins within the target population, the resulting estimates are not subject to sampling error. However, the results are still subject to non-sampling errors associated with coverage, non-response, inaccurate reporting, and processing. Errors relating to coverage and non-response can be measured and are presented below. All attempts are made to control/minimize inaccurate reporting and processing errors.

Moreover, the data are analyzed for consistency by comparing to historical series and economic conditions in the industry. Information available from other sources such as the media, other government organizations and industry associations are also used in the validation process.

### **Coverage error**

There is a degree of under coverage (referred to as coverage error) in the survey results as there is generally a lag between the time a new business comes into existence and when it is included in the universe of this sub-annual survey. This occurs because the list of businesses surveyed is derived from the latest available survey results for the ASM which are not available until 15 months after the reference period.

This error is kept at a minimum by also using advance information from the ASM, and other sources such as the Canadian Chemicals Producers' Association, trade journals and newspaper articles to identify new survey units.

Based on the ASM 2003 (latest available survey results), the coverage error for the Industrial Chemicals and Synthetic Resins survey was 2%.

### **Non-response error**

Some respondents may be unable to provide data for numerous reasons (i.e. fire, theft, strike, economic hardship, etc.), while others may be too late in responding. To minimize non-response, delinquent respondents are followed up rigorously by phone or FAX. Data for the non-responding units are imputed using industry trend and other related information. Data are revised at a later date, if completed questionnaires are received after the end of a collection cycle.

The average non-response error for the Industrial Chemicals and Synthetic Resins survey was estimated at 3% for 2004 (the last completed cycle).

### **Inaccurate response**

Inaccuracy may result from poor questionnaire design or an inability on the part of respondents to provide the requested information or from misinterpretation of the survey questions. To reduce such errors, the format and wording in the questionnaire are reviewed from time to time and modified based on feedback from survey respondents and data users. Respondents are also reminded of the importance of their contribution and of the need for accurate reporting.

### **Processing errors**

These errors may occur at various stages in the processing of survey data such as data entry, verification, editing and tabulation. Data are examined for such errors using automated edits along with an analytical review by subject matter experts. Several checks are performed on the collected data, to verify internal consistency and comparability over time.

## **Definitions**

### **Production**

Production refers to the quantity of products manufactured in Canada during a reference period including intermediate products. The final products may be shipped or retained in inventory.

More detailed data are available from the Annual Survey of Manufactures, CANSIM Table 301-0003. Specific enquiries should be directed to: The Marketing and Dissemination Section, Manufacturing, Construction and Energy Division, Statistics Canada, Ottawa, Ontario, K1A 0T6 (Telephone: 1-866-873-8789 or 613-951-9497; Fax line: 613-951-9499; Internet: [manufact@statcan.ca](mailto:manufact@statcan.ca)).