



Association of Modified Asphalt Producers

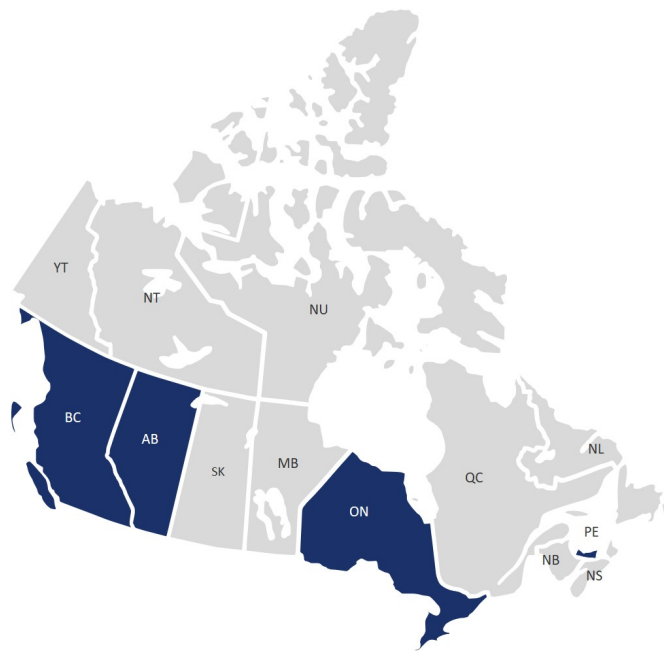
**2018 MARKET SURVEY RESULTS**

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[modifiedasphalt.org](http://modifiedasphalt.org)

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## Survey results

The **producers survey** discusses products, markets, and other topics that individual companies may be reluctant to discuss publicly. To promote broad participation, respondents to this survey were granted anonymity in their responses.

Therefore, the complete results of the producers survey will not be published. Instead, this publication provides an overview of responses and highlights key answers. Please see **Chapter 2: Producers Survey Results** and **Chapter 4: How Do Producers and State Compare**.

The **DOT survey** was conducted with the intention of publishing the complete survey data set. The data can be accessed from a [spreadsheet published on AMAP's website](#). In addition, highlights of the results are discussed in this report. Please see **Chapter 3: DOT Survey Results** and **Chapter 4: How Do Producers and State Compare**.

## CHAPTER 2: PRODUCER SURVEY RESULTS

Key responses and observations from the results of the producer survey are presented in this chapter. Among highlighted findings:

- The range of the polymer market use among respondents in 2018 was 210 to 340 million pounds.
- The most common application for modifiers was asphalt binders.
- The most commonly used polymer modifier (by tonnage used) was SBS linear, and the most commonly used nonpolymer modifiers were cross linkers and polyphosphoric acid.
- Producers saw on average a 5 to 6% market growth in 2018 and projected likewise for 2019. A change in demand was the most common reason for market growth.
- The most common reasons for modification are to meet specifications or road agency requirements.
- Producers have a generally positive opinion about their vendors regarding value of products and services, technical support, and offering of improved products.

Summaries of individual questions and numerical responses follow. Survey questions are presented in *italic lettering*.

### Polymer use

*Q: In pounds, how much polymer of any type will your company use in total in 2018 across all of your North American locations?*

Respondents could provide answers in bins of increasing size (less than one million, one to three million, etc.) as shown in the table below. To protect anonymity of respondents, the precise number of respondents per bin is not reported here. However, the most common response among the 47 respondents reported use in the range of one to three million pounds.

Moreover, we can establish a range by calculating each respondent at the bottom end of each bin (resulting in a total market size of 210 million pounds of polymer) and at the top end (resulting in a total market size of more than 340 million pounds).

Pounds (millions)	Respondents (n = 47)
Less than 1	
1 to 3	<b>Most common</b>
3 to 6	
6 to 9	
9 to 12	
12 to 15	
15 to 18	
18 to 21	
More than 21	

Bottom end  
**210 million pounds of polymer**

Top end  
**340+ million pounds of polymer**

## Market segments

*Q. Indicate the market segments where your company sells modified asphalt product.*

Respondents ranked a list of choices (binders, crack fillers, etc. as listed below) from 1 (largest market segment) to as high as 8 (smallest market segment). Respondents could leave unranked markets they did not serve.

The most common top-ranked market was binders. The most common second-ranked market was other preservation products.

The most common market given any ranking at all was binders.

Segment	Binders	Self-Stick Membrane	Other Pres. Products	Slurry Seals	Crack Fillers	Shingles	Coatings and Adhesives	Built-Up Roofing
<b>#1 Rankings</b>	<b>35</b>	4		1	2	3	2	4
<b>#2 Rankings</b>	1	3	<b>10</b>	6	2		5	2
<b>Any Ranking</b>	<b>38</b>	11	18	14	9	8	18	14

## Polymer modifiers

*Q. Rank by tonnage the types of polymer modifiers your company expects to use in 2018.*

Respondents ranked a list of choices (SBS linear, SBS radial, etc. as listed below) where 1 was the greatest tonnage expected in 2019. Respondents were asked to leave the answer blank on any modifiers the company does not use.

The most common highest-tonnage polymer modifier was SBS liner, noted by 28 respondents. The most common second-highest-tonnage polymer modifier was SBS radial, noted by 12 respondents.

The top market segments of the respondents (see the previous question) was considered, and respondents grouped them into two coarse categories: **pavement companies** and **roofing companies**. When this question was examined just for either of these two groups, the most common modifier by tonnage for pavement companies was SBS linear (24 responses) and the most common for roofing companies was SBS radial (6 responses).

Modifier	SBS Linear	SBS Radial	SBR Latex	Plastomers	SEBS	Acrylic Latex	Other
#1 Rankings	28	15	2	1	1	0	2
#2 Rankings	9	12	7	1	1	1	0
Any Ranking	44	31	20	9	7	10	8

**24 for Pavement Companies    6 for Roofing Companies**

## Nonpolymer modifiers

*Q. Rank by tonnage the types of nonpolymer modifiers your company expects to use in 2018.*

The same type of question was posed for nonpolymer modifier, with the choices as listed below.

The most common highest-tonnage nonpolymer modifier was a tie: cross linkers and polyphosphoric acid (PPA) each received 12 responses. The common second-highest-tonnage nonpolymer modifier was again a tie: cross linkers and warm mix each received 10 responses.

Again, responses were parsed for pavement companies and roofing companies. The most common modifier by tonnage for pavement companies was cross linkers (12 responses) and PPA (11 responses) and the most common for roofing companies was PPA (2 responses) and warm mix additives (2 responses)

Modifier	Cross Linkers	Polyphosphoric Acid	Warm Mix Additives	Ground Tire Rubber	Other	Waxes	Fibers
#1 Rankings	12	12	2	8	5	2	2
#2 Rankings	10	6	10	1	1	4	1
Any Ranking	33	25	23	14	8	18	11

**11 and 10 for Pavement Companies**

**2 and 2 for Roofing Companies**

## Market growth

*Q. How do you expect your company's sales of modified asphalt product to change from 2017 to 2018? From 2018 to 2019 (projected)?*

For both the current and follow year, respondents indicated a projected increase or decrease by percentage value, or indicated a projection of no change.

For both years (from 2017 to 2018 and from 2018 to 2019) about 55 to 60% of respondents expect sales of modified asphalt products to increase. An estimated 35 to 40% of respondents expect sales to remain the same. Overall, the data indicate a market growth of about 5 to 6%.

Period	2017 to 2018	2018 to 2019
Decrease	2 respondents	1 respondent
Stay the Same	16 respondents	19 respondents
Increase	<b>27 respondents</b>	<b>25 respondents</b>
Range	-10% to 50%	-10% to 43%
Average	<b>6.0%</b>	<b>5.0%</b>



## Market forces

*Q. What market forces are influencing these changes in 2018 and 2019? Select all that apply.*

Respondents indicated one or more market forces driving their companies' change in sales. Change in demand was the most commonly reported market force influencing market growth.

Market Force	Change in demand	Company change in emphasis re. selling modified products	Availability of new/improved modified products	Our company acquired one or more other companies	Our company was acquired
Respondents	30	12	8	2	1

Among other forces offered as free-responses were:

- Performance and accountability
- Changes in specifications (3 respondents)
- Change in supply/competition in marketplace

## Why modify

*Q. Why does your company (or why do your customers) choose to modify asphalt? Select all that apply.*

Respondents offered their opinions on why they (or their customers) choose to modify, selecting one or more of the options below. The most common responses were to meet bid specifications (27 respondents) and because modified asphalt was required by the road agency (26 respondents).

Reason	To meet bid specifications	Modified asphalt is required by road agency	To improve life-cycle cost	To meet performance guarantee
Respondents	27	26	15	14

Among other reasons offered as free-responses was:

- Improved pavement/binder performance (3 respondents)

## Thoughts about vendors

*Q. Indicate your agreement or disagreement with each of these statements about the vendors who supply modifiers to your company. (5 = Strongly Agree to 1 = Strongly Disagree)*

Respondents offered their opinions about vendors stating their agreement on a five-point scale (5 = strongly agree to 1 = strongly disagree). Respondents generally agreed, averaging between 3.8 and 4 points, with three positive statements about vendors regarding value, technical support, and offering of improved products.

Statement	Average Response
<b>Our vendors provide good value for products and services provided.</b>	4.0
<b>Our vendors provide excellent technical support.</b>	3.8
<b>Our vendors continue to provide improved products to meet our needs.</b>	3.8

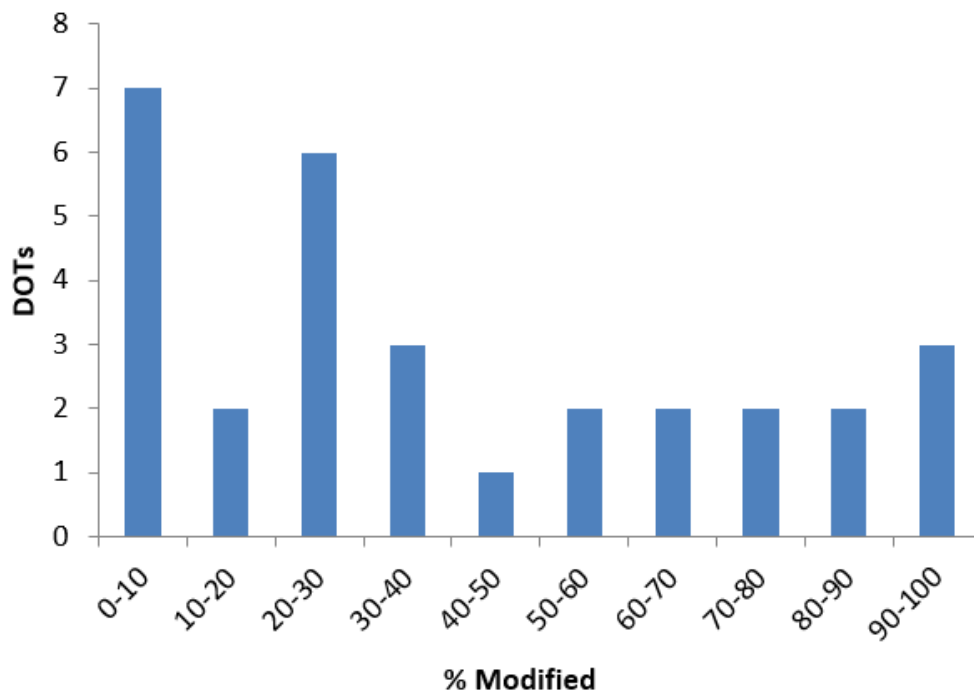
## CHAPTER 3: DOT SURVEY RESULTS

The DOT survey results are published in their entirety. Therefore, this report does not report numbers in as much detail as Chapter 2.

Full responses may be found at <http://modifiedasphalt.org/download/5499/>.

However, the following summary observations are offered:

- Responding agencies reported on asphalt use by tonnage in 2017, 2018 and (projected) 2019. On average, little change was reported from 2017 to 2018 (1%), but growth of 6% was anticipated from 2018 to 2019.
- Responding agencies similarly reported on liquid binder tonnages. Little change was reported from 2017 to 2018 (-1%) or projected from 2018 to 2019 (2%).
- There was a high variance among agencies on what percent of asphalt binder used is modified. The following graph from 2017 is typical. The average is in the low 40% range, but this statistic doesn't adequately capture the spread of values.



- SBS radial was the most commonly used polymer modifier.
- Warm-mix additives were the most commonly used nonpolymer modifier.

- Respondents listed the most common asphalt grades used by their agency. The first asphalt on most respondents' list was typically the recommended PG grade for their area. The second and third were typically modified and likely only used for specific situations or mix types, such as stone-matrix asphalt.
- 65% of responding agencies require modification always or sometimes. 57% specify the type of modifier to be used.
- 80% of respondents indicated the asphalt binder pricing changed their agency's paving plan in 2018. The most common subsequent actions were to increase pavement preservation projects (4 respondents), change suppliers (3), or change project size (3).
- 69% of respondents indicated that their agency includes, or plans to include, additional tests for PG Binder Specifications (typically referred to as PG Plus or SHRP Plus) to ensure that modifiers are used. The most common tests were DSR Multiple Stress Creep Recovery (MSCR) (17 respondents), elastic recovery (14), and DSR phase angle (10).
- A majority of respondents indicated that modified asphalt was "important" or "very important" to prevent rutting (94% of respondents), fatigue (91%) and low temperature thermal cracking (63%).
- A majority of respondents indicated that they were "satisfied" or "very satisfied" with respect to modified asphalt's life cycle cost (68% of respondents) and service (67%) and with respect to warm mix (53%).

## CHAPTER 4: HOW DO PRODUCERS AND DOTs COMPARE?

AMAP asked producers and DOTs questions about their five-year outlook on topics related to modified asphalt. These questions were worded nearly identically, in a few cases with phrasing changed as appropriate for either recipient group (e.g., "the products we sell" versus "the products we use").

In this manner, AMAP was able to conduct an apples-to-apples comparison between the outlook of the producers in the modified asphalt industry and the agencies that use modified asphalt. Questions were asked in the areas of **market trends** and **market drivers**.

### Market Trends Outlook

*Q. Looking at the next five years, indicate your agreement or disagreement with each of these statements about market trends. (5 = Strongly Agree to 1 = Strongly Disagree)*

For each of the five statements below, the percentages indicate the respondents who either "strongly agree" or "agree." The magnitude of the difference between the producer respondents and DOT respondents ( $|\delta|$ ) appears in the far right column.

- Responses show agreement between producers and DOTs in the areas of recycled material growth, warm mix binder growth, and displacement of concrete by asphalt.
- However, as noted in the green circles:
  - Producers were more likely to believe than DOT respondents that the use of polymer modified asphalt products will continue to grow (a difference of 14 percentage points).
  - Producers were even more likely to believe than DOT respondents that bio-based product will play a role (a different of 33 percentage points).

Statement	Producers	DOTs	$ \delta $
Use of <b>recycled materials</b> will continue to grow.	78%	76%	2%
Use of <b>polymer modified asphalt</b> products will continue to grow.	88%	74%	14%
<b>Warm mix binders</b> will continue to grow.	60%	58%	2%
<b>Bio-based products</b> will play a more important role in our products.	48%	15%	33%
For paving, <b>asphalt products</b> will <b>displace more concrete</b> .	27%	28%	1%

## Market Drivers Outlook

Q. Looking at the next five years, indicate your agreement or disagreement with each of these statements about market drivers. (5 = Strongly Agree to 1 = Strongly Disagree)

Again, for each of the four statements below, the percentages indicate the respondents who either "strongly agree" or "agree." The magnitude of the difference between the producer respondents and DOT respondents ( $|\delta|$ ) appears in the far right column.

- Responses show agreement between producers and DOTs about how new technologies will change products.
- However, as noted in the green circles:
  - There was a very wide difference regarding how government regulations will change how business is done. The disparity is logical: government regulations will impose a change on producers, whereas the DOTs are the ones who are imposing the changes.
  - DOTs were more likely than producers to believe that asphalt will be readily available.
  - Producers were more likely to believe that VTAE/REOB will continue to play a role in asphalt modification.
- In addition, a few additional statistics are called out in orange and blue text to denote appreciable instance of *strong disagreement* with certain statements:
  - 8% of producers strongly disagreed that asphalt will be readily available.
  - 18% of producers and 13% of DOTs strongly disagree about the role of VTAE/REOB.

Statement	Producers	DOTs	$ \delta $
<b>Government regulations</b> will change the way we do business. (Reverse wording for DOTs)	88%	28%	60%
Asphalt will be <b>readily available</b> .	42% 8% strongly disagree	72%	30%
<b>New technologies</b> will change the product we sell. (or "use" for DOTs)	76%	70%	6%
Vacuum tower asphalt extender (VTAE) / re-refined engine oil bottom (REOB) will continue to <b>play a role in asphalt modification</b> .	50% 18% strongly disagree	15% 13% strongly disagree	35%