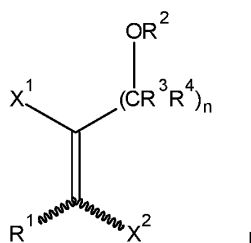


CLAIMS

We claim:

1. A polyurethane comprising a compound of Formula 1,



- 5 wherein

X¹ and X² are each independently H, Cl, or Br, and at least one of X¹ or X² is Br;

R¹ is H, Cl, Br, C₁-C₄ alkyl, or $-(\text{CR}^5\text{R}^6)_m-\text{OR}^7$;

R² is H or C₂-C₈ alkylhydroxyl;

R³, R⁴, R⁵ and R⁶ are each independently H, C₁-C₈ alkyl, C₂-C₈ alkenyl, C₁-C₈ haloalkyl or

- 10 C₂-C₈ haloalkenyl;

R⁷ is H, C₁-C₈ alkyl, C₂-C₈ alkenyl, C₁-C₈ haloalkyl, C₂-C₈ haloalkenyl or C₂-C₈ alkylhydroxyl;

n=1-4;

m=1-4; and

- 15 the compound of Formula 1 is chemically bonded in the polyurethane foam through at least one hydroxyl group on the compound;

with the provisos that

when R² is C₂-C₈ alkylhydroxyl, R⁷ cannot be C₂-C₈ alkylhydroxyl; or

when X¹ and X² are both Br and n=1, then the compound cannot be 2,3-dibromoallyl alcohol

- 20 or 2,3-dibromo-butene-1,4-diol.

2. The polyurethane of Claim 1, wherein R² is H.

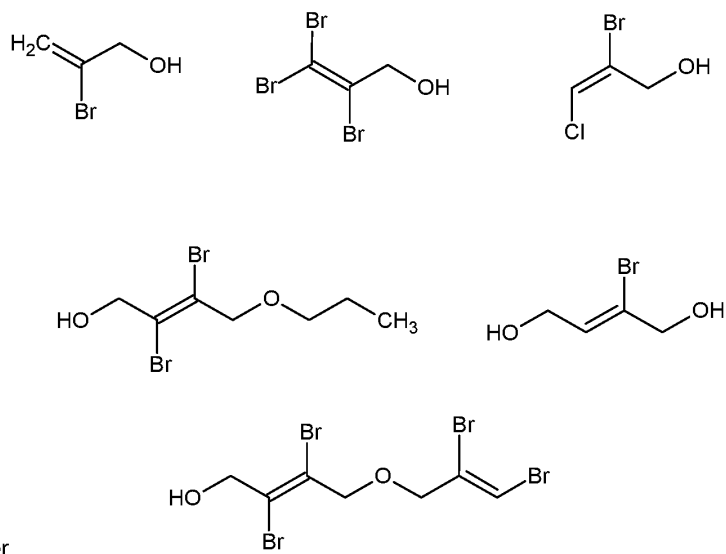
3. The polyurethane of Claim 1, wherein R¹ is H.

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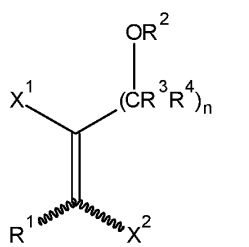
4. The polyurethane of Claim 1, wherein n is 1 and m, when present, is 1.

5. The polyurethane of Claim 1, wherein X¹ is Br and X² is Cl or H.

6. The polyurethane of Claim 1, wherein X^1 is Br, X^2 is H, and R^1 is H.
7. The polyurethane of Claim 1, wherein X^1 , X^2 and R^1 are each Br.
- 5 8. The polyurethane of Claim 1, wherein n is 2-4, and R^2 is H.
9. The polyurethane of Claim 1, wherein R^2 is a C_2 to C_8 alkylhydroxyl.
10. The polyurethane of Claim 1, wherein R^1 is H, and when one of X^1 and X^2 is Br,
- 10 then the other is Cl.
11. The polyurethane of Claim 1, wherein when one of X^1 and X^2 is Br, then the other is H.
- 15 12. The polyurethane of Claim 1, wherein the compound is:



13. A polyurethane formed from ingredients comprising a compound of Formula I,



wherein

X^1 and X^2 are each independently H, Cl, or Br, and at least one of X^1 or X^2 is Br;

5 R^1 is H, Cl, Br, C_1 - C_4 alkyl or $-(CR^5R^6)_m-OR^7$;

R^2 is H or C_2 - C_8 alkylhydroxyl;

R^3 , R^4 , R^5 and R^6 are each independently H, C_1 - C_8 alkyl, C_2 - C_8 alkenyl, C_1 - C_8 haloalkyl or C_2 - C_8 haloalkenyl;

10 R^7 is H, C_1 - C_8 alkyl, C_2 - C_8 alkenyl, C_1 - C_8 haloalkyl, C_2 - C_8 haloalkenyl or C_2 - C_8 alkylhydroxyl;

$n=1-4$; and

$m=1-4$;

with the provisos that

when R^2 is C_2 - C_8 alkylhydroxyl, R^7 cannot be C_2 - C_8 alkylhydroxyl; or

15 when X^1 and X^2 are both Br and $n=1$, then the compound cannot be 2,3-dibromoallyl alcohol or 2,3-dibromo-butene-1,4-diol.

14. The polyurethane of Claim 13, wherein R^2 is H.

20 15. The polyurethane of Claim 13, wherein R^1 is H.

16. The polyurethane of Claim 13, wherein n is 1 and m , when present, is 1.

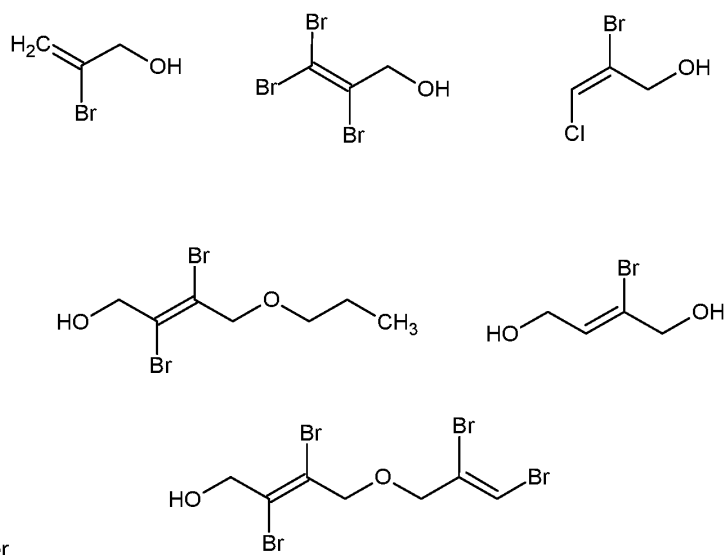
17. The polyurethane of Claim 13, wherein X^1 is Br and X^2 is Cl or H.

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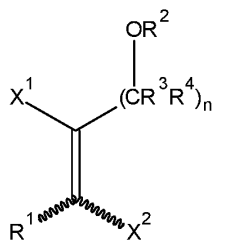
18. The polyurethane of Claim 13, wherein X^1 is Br, X^2 is H, and R^1 is H.

19. The polyurethane of Claim 13, wherein X^1 , X^2 and R^1 are each Br.

20. The polyurethane of Claim 13, wherein n is 2-4, and R² is H.
21. The polyurethane of Claim 13, wherein R² is a C₂ to C₄ hydroxyl.
22. The polyurethane of Claim 13, wherein R¹ is H, and when one of X¹ and X² is Br, then the other is Cl.
23. The polyurethane of Claim 13, wherein when one of X¹ and X² is Br, then the other is H.
24. The polyurethane of Claim 13, wherein the compound is:



25. The polyurethane of any of Claim 13-24, wherein the ingredients further comprise at least one polyol and at least one isocyanate or polyisocyanate.
26. A formulation comprising a compound of Formula I and at least one polyol,



wherein

X^1 and X^2 are each independently H, Cl, or Br, and at least one of X^1 or X^2 is Br;

5 R^1 is H, Cl, Br, C₁-C₄ alkyl, or $-(CR^5R^6)_m-OR^7$;

R^2 is H or C₂-C₈ alkylhydroxyl;

R^3 , R^4 , R^5 and R^6 are each independently H, C₁-C₈ alkyl, C₂-C₈ alkenyl, C₁-C₈ haloalkyl or C₂-C₈ haloalkenyl;

10 R^7 is H, C₁-C₈ alkyl, C₂-C₈ alkenyl, C₁-C₈ haloalkyl, C₂-C₈ haloalkenyl or C₂-C₈ alkylhydroxyl;

$n=1-4$; and

$m=1-4$;

with the provisos that

when R^2 is C₂-C₈ alkylhydroxyl, R^7 cannot be C₂-C₈ alkylhydroxyl; or

15 when X^1 and X^2 are both Br and $n=1$, then the compound cannot be 2,3-dibromoallyl alcohol or 2,3-dibromo-butene-1,4-diol.

27. The formulation of Claim 26, wherein R^2 is H.

20 28. The formulation of Claim 26, wherein R^1 is H.

29. The formulation of Claim 26, wherein n is 1 and m , when present, is 1.

30. The formulation of Claim 26, wherein X^1 is Br and X^2 is Cl or H.

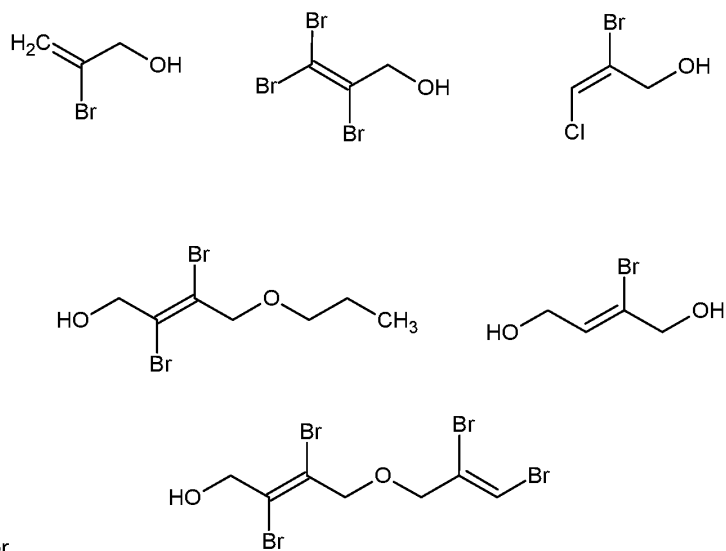
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31. The formulation of Claim 26, wherein X^1 is Br, X^2 is H, and R^1 is H.

32. The formulation of Claim 26, wherein X^1 , X^2 and R^1 are each Br.

33. The formulation of Claim 26, wherein R² is a C₂ to C₄ hydroxyl.

34. The formulation of Claim 26, wherein the compound is:



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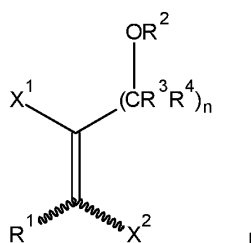
35. The formulation of Claim 26, further comprising a blowing agent.

36. A polyurethane foam formed from components comprising a least one isocyanate and/or polyisocyanate and a formulation as in any of Claims 26-35.

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37. A process for forming a polyurethane, the process comprising contacting A) at least one isocyanate and/or polyisocyanate and B) a formulation comprising a compound of Formula 1 and at least one polyol; and allowing the mixture to cure to form a polyurethane foam;

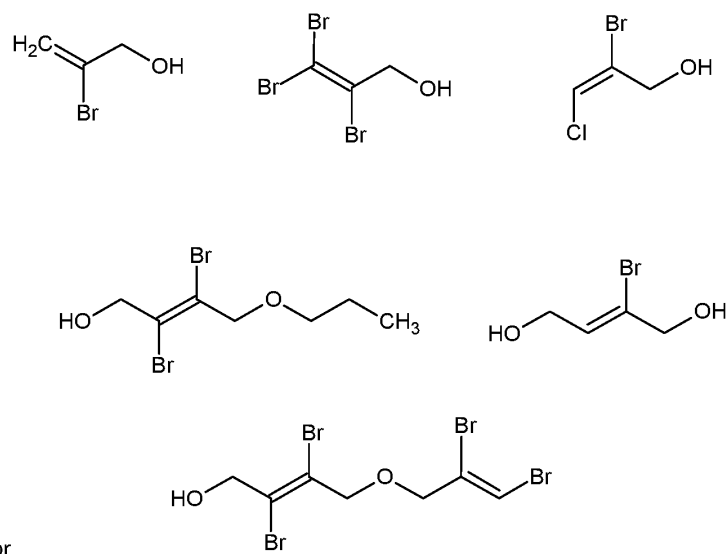
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wherein

X¹ and X² are each independently H, Cl, or Br, and at least one of X¹ or X² is Br;

- R^1 is H, Cl, Br, C₁-C₄ alkyl, or $-(CR^5R^6)_m-OR^7$;
 R^2 is H or C₂-C₈ alkylhydroxyl;
 R^3 , R^4 , R^5 and R^6 are each independently H, C₁-C₈ alkyl, C₂-C₈ alkenyl, C₁-C₈ haloalkyl or C₂-C₈ haloalkenyl;
5 R^7 is H, C₁-C₈ alkyl, C₂-C₈ alkenyl, C₁-C₈ haloalkyl, C₂-C₈ haloalkenyl or C₂-C₈ alkylhydroxyl;
 $n=1-4$; and
 $m=1-4$;
with the provisos that
10 when R^2 is C₂-C₈ alkylhydroxyl, R^7 cannot be C₂-C₈ alkylhydroxyl; or
when X^1 and X^2 are both Br and $n=1$, then the compound cannot be 2,3-dibromoallyl alcohol or 2,3-dibromo-butene-1,4-diol.
38. The formulation of Claim 37, wherein R^2 is H.
15
39. The formulation of Claim 37, wherein R^1 is H.
40. The formulation of Claim 37, wherein n is 1 and m , when present, is 1.
- 20 41. The formulation of Claim 37, wherein X^1 is Br and X^2 is Cl or H.
42. The formulation of Claim 37, wherein X^1 is Br, X^2 is H, and R^1 is H.
43. The formulation of Claim 37, wherein X^1 , X^2 and R^1 are each Br.
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44. The formulation of Claim 37, wherein R^2 is a C₂ to C₄ hydroxyl.
45. The formulation of Claim 37, wherein the compound is:



46. The process of any of Claims 37-45, wherein the process further comprises at least one blowing agent, at least one catalyst, and at least one surfactant in the (B) formulation with the compound of Formula 1 and the at least one polyol.