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 (72) Inventeurs/Inventors:  
WIERSMA, JACK G., US;  
CHRISTIAN, THEODORE G., US  
 (73) Propriétaire/Owner:  
NOUVEAU TECHNOLOGIES, INC., US  
 (74) Agent: FINLAYSON & SINGLEHURST

(54) Titre : DISSOLVANT POUR COLLE/PRODUIT D'ETANCHEITE AU POLYURETHANE  
 (54) Title: POLYURETHANE ADHESIVE/SEALANT REMOVER

(57) **Abrégé/Abstract:**

A composition for use in removing polyurethane adhesive/sealant. The composition consists of an effective amount of PMA Glycol Ether Acetate, Dipentene, and Nonylphenol Polyethylene Glycol Ether. Upon application of the composition to a polyurethane adhesive/sealant, the adhesive bond of the polyurethane is destroyed allowing for ease of removal without affecting materials previously bonded.

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<b>(21) International Application Number:</b> PCT/US98/23146 <b>(22) International Filing Date:</b> 29 October 1998 (29.10.98) <b>(30) Priority Data:</b> 08/962,108                      31 October 1997 (31.10.97)                      US <b>(71) Applicant:</b> NOUVEAU TECHNOLOGIES, INC. [US/US]; Suite 1, 221 Old Dixie Highway, Tequesta, FL 33469 (US). <b>(72) Inventors:</b> WIERSMA, Jack, G.; 627 6th Terrace, Palm Beach Gardens, FL 33418 (US). CHRISTIAN, Theodore, G.; 409 S.E. Atlantic Drive, Lantana, FL 33462 (US). <b>(74) Agent:</b> SLAVIN, Michael, A.; McHale & Slavin, P.A., Suite 402, 4440 PGA Boulevard, Palm Beach Gardens, FL 33410 (US).	<b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the</i> <i>claims and to be republished in the event of the receipt of</i> <i>amendments.</i>	
<b>(54) Title:</b> POLYURETHANE ADHESIVE/SEALANT REMOVER		
<b>(57) Abstract</b>		
<p>A composition for use in removing polyurethane adhesive/sealant. The composition consists of an effective amount of PMA Glycol Ether Acetate, Dipentene, and Nonylphenol Polyethylene Glycol Ether. Upon application of the composition to a polyurethane adhesive/sealant, the adhesive bond of the polyurethane is destroyed allowing for ease of removal without affecting materials previously bonded.</p>		

**POLYURETHANE ADHESIVE/SEALANT REMOVER**

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FIELD OF THE INVENTION

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4 This invention is directed to the field of adhesives, and in  
5 particular to a composition for removal of cured polyurethane  
6 adhesive/sealants.

7

BACKGROUND OF THE INVENTION

8

9 The ability to join two items together, without the need of  
10 a mechanical fastener, can be performed by use of an adhesive.  
11 The types of applications for adhesives are too numerous to list.  
12 In the marine industry, a product that provides a combination  
13 adhesive and sealant has been found to be particularly useful.  
14 Boat manufacturers and operators avoid using metal fasteners  
15 unless absolutely necessary due to the problem with electrolysis,  
16 which can be especially progressive in salt water. For this  
17 reason, the use of an extremely high tack polyurethane  
18 adhesive/sealant has become universally recommended for bonding  
19 and sealing of underwater thru-hull fittings, bonding of wood to  
20 fiberglass, rubrails to fiberglass, windows to fiberglass,  
21 fiberglass to fiberglass, hull-to-deck joints, electrical  
22 insulation, and so forth.

23 For instance, polyurethane adhesive/sealants can be used to  
24 accompany thru-hulls for raw water engine intake, air conditioner  
25 intakes, macerator in-take and out-take fittings, transducers and  
26 so on wherein placement of the material around the fitting during  
27 installation creates not only an impermeable seal, but the  
28 adhesive prevents the fitting from coming loose.

29 Polyurethane adhesive/sealant has incredible adhesion abilities,  
30 yet it maintains the ability to remain flexible after it cures.  
31 Unique to the polyurethane material is its ability to remain



1 workable for up to four hours, wherein it becomes tack-free in 48  
2 hours and completely cures within seven days. Polyurethane  
3 adhesives/sealant further remains flexible after it cures. This  
4 allows the fitting to move if need be without cracking of the  
5 fiberglass or gelcoat. One such manufacturer of adhesive, the 3M  
6 Corporation, markets the most popular brand known as 5200  
7 adhesive/sealant.

8 A problem with superior holding ability of the polyurethane  
9 adhesive occurs if the material needs to be removed. For  
10 example, metal fittings that are used on a boat, especially  
11 fittings placed below the water line, are subject to electrolysis  
12 or simply wear out. In any event, eventually such thru-hulls  
13 must be replaced or a structural integrity problem arises. For  
14 this reason, thru-hulls must be replaced routinely and the  
15 superior adhesion of the polyurethane adhesive/sealant dealt  
16 with. When the polyurethane adhesive is uncured, it can be  
17 removed with a solvent such as kerosene. Once cured, no known  
18 substance is marketed for removal of the polyurethane that can be  
19 used safely by the general consumer. Without chemical softening,  
20 the adhesive must be broken out of the seal by use of a  
21 screwdriver, sharp knife, grinder, or the like tool. If not  
22 performed expertly, the gelcoat and underlying fiberglass may be  
23 marred leading to additional problems. In those instances,  
24 removal of the fitting joined by use of the polyurethane  
25 adhesive/sealant can result in a tremendous amount of damage to  
26 a vessel wherein any attempt to place a new thru-hull into the  
27 damaged area will provide a latent failure condition which could  
28 lead to sinking of the vessel.

1 In many instances the item that is bonded remains in good  
2 condition and need only be moved. For example, table tops in  
3 boats are typically joined by use of polyurethane adhesive. If  
4 incorrectly joined, one item may be destroyed in an attempt to  
5 separate the items. Even if separated, the remaining adhesive  
6 may be difficult to remove requiring scraping or grinding to  
7 remove the old adhesive before the new adhesive is employed.

8 Thus, what is lacking is a convenient means of destroying  
9 the adhesive bond on cured polyurethane adhesive/sealant without  
10 affecting the items to which the adhesive is secured to.

11

#### 12 SUMMARY OF THE INVENTION

13 The instant invention is composition for use in removal of  
14 polyurethane adhesive. The composition is capable of destroying  
15 the adhesive bond of a polyurethane adhesive/sealant such as that  
16 adhesive bond produced in the well known 3M 5200. The  
17 composition consists of PMA glycol ether acetate (1-methoxy-2-  
18 acetoxyp propane, 2-methoxy-1-acetoxyp propane); Dipentene; and a  
19 nonylphenol polyethylene glycol ether. The composition is  
20 maintained as a liquid and liberally applied to a cured  
21 polyurethane adhesive. The acetate ether composition is capable  
22 of entering the structure of the adhesive wherein the composition  
23 propagates freely throughout the adhesive where it attacks the  
24 adhesive bond causing its immediate degradation. As the bond is  
25 destroyed, the adhesive/sealant can be easily removed from the  
26 item bonded too.

27 For example, if two items are bonded together incorrectly by  
28 use of the 3M 5200 polyurethane adhesive/sealant, the adhesive  
29 bond can be destroyed upon the liberal application of the acetate  
30 ether composition. The composition is preferably applied in a



1 liquid form, spray or brush, or as a paste wherein the  
2 composition is admixed with an inert material. After a  
3 contact time of approximately fifteen minutes, the composition  
4 will enter the adhesive causing immediate destruction. The  
5 longer the application contact period, the more complete the  
6 adhesive destruction which directly affects ease of removal.  
7 The acetate propagates quickly throughout the adhesive.

8 Thus, the instant invention seeks to disclose a  
9 polyurethane adhesive/sealant removal composition capable of  
10 destroying the adhesive bond in such a well know adhesive such  
11 as 3M 5200.

12 Further, the instant invention seeks to disclose a  
13 polyurethane adhesive/sealant removal composition that does  
14 not affect the items bonded such as gelcoat or the like.

15 Yet further, the instant invention seeks to disclose a  
16 polyurethane adhesive/sealant removal composition that is safe  
17 for use by the average consumer, does not require special  
18 storage or application procedures.

19 Still further, the instant invention seeks to disclose a  
20 polyurethane adhesive/sealant removal composition capable of  
21 effectively destroying the adhesive bond in most bonding  
22 applications in less than fifteen minutes.

23 The invention in a broad aspect comprehends a composition  
24 for use in the removal of a polyurethane composition  
25 comprising about 89% by weight of the composition of an  
26 acetate constituent, including 1-methoxy-2 acetoxyp propane and  
27 2-methoxy-1-acetoxyp propane admixed with about 8% by weight of  
28 the composition of dipentene and about 3% by weight of the  
29 composition of a nonylphenol polyethylene glycol ether,  
30 wherein the composition destroys the adhesive bond when  
31 applied to a polyurethane composition.

32 Other aspects and advantages of this invention will  
33 become apparent from the following description taken wherein  
34 are set forth, by way of example, certain embodiments of this  
35 invention.

1 DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

2       Although the invention will be described in terms of a  
3 specific embodiment, it will be readily apparent to those  
4 skilled in this art that various modifications, rearrangements  
5 and substitutions can be made without departing from the  
6 spirit of the invention. The scope of the invention is  
7 defined by the claims appended hereto.

8       The instant invention is a composition for use in  
9 removing polyurethane adhesive/sealant such as that  
10 manufactured by 3M Corporation and sold under the trademark  
11 5200. The adhesive/sealant cures to a tough, flexible,  
12 rubbery consistency. The polyurethane adhesive/sealant is the  
13 most recommended material for permanent bonding of materials  
14 because of its enormous adhesive strength. The sealant  
15 remains permanently flexible which allows some movement  
16 without cracking or losing adhesion.

17       The composition of the instant invention has the primary  
18 constituents of 1-methoxy-2-acetoxypropane, 2-methoxy-1-  
19 acetoxypropane; Dipentene; and nonylphenol polyethylene glycol  
20 ether. The 1-methoxy-2-acetoxypropane forms approximately 98%  
21 of the acetate and 2-methoxy-1-acetoxypropane forming the  
22 remaining 2% of the acetate, commercially known as PMA glycol  
23 ether acetate. PMA glycol ether acetate is sold under the  
24 trademark DOWANOL as manufactured by the Dow Chemical Company.  
25 The PMA glycol ether acetate is admixed with Dipentene and a  
26 nonylphenol polyethylene glycol. The nonylphenol polyethylene  
27 glycol being nonionic surfactant and sold under the trademark  
28 TERGITOL NP-9 as manufactured by the Union Carbide Chemical  
29 and Plastics Company.



1 The glycol ether acetate C10-H12-03 forms 89% of the weight of  
2 the composition; Dipentene C10-H16 approximately 8% by weight;  
3 and nonylphenol polyethylene glycol ether C33-H60-016 the  
4 remaining 2% of the composition. The composition can be  
5 stored over a period of time if evaporation is prevented. As  
6 with any ether acetate, exposure to vapors is not deemed  
7 hazardous although may cause slight eye irritation if used in  
8 a closed area. The composition is applied to fully cured  
9 polyurethane adhesive wherein the composition is capable of  
10 entering the adhesive causing the degradation of adhesive bond  
11 wherein the 5200 can be easily removed. When the adhesive  
12 bond is broken, the sealant maintains some resiliency allowing  
13 the material to be peeled off. If the composition has a  
14 prolonged contact, the adhesive and sealant begins to  
15 dissolve.

16 It should be noted that the composition of the instant  
17 invention also operates on other types of adhesive/sealant  
18 such as polysulfides and silicone bases adhesive/sealants.  
19 Polyurethane adhesive/sealant is the primary embodiment as it  
20 is recognized as one of the most commonly used materials for  
21 permanent bonding because of its adhesive strength; 5200 being  
22 the most popular and well established brands.

23 The mixtures stated above are approximate although the  
24 preferred mixture ratio at the time of patent submittal. It  
25 is to be understood that while we have described certain forms  
26 of our invention, it is not to be limited to a specific form  
27 or arrangement herein described. It will be apparent to those  
28 skilled in the art that various changes may be made without  
29 departing from the scope of the invention and the invention is  
30 not to be considered limited to what is described in the  
31 specification.



The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

Claim 1. A composition for use in the removal of a polyurethane composition comprising:

about 89% by weight of said composition of an acetate constituent including 1-methoxy-2 acetoxyp propane and 2-methoxy-1-acetoxyp propane admixed with about 8% by weight of said composition of dipentene and about 3% by weight of said composition of a nonylphenol polyethylene glycol ether, wherein said composition destroys the adhesive bond when applied to a polyurethane composition.

Claim 2. The composition according to claim 1 wherein said 1-methoxy-2 acetoxyp propane forms 98% by weight of said acetate constituent and said 2-methoxy-1-acetoxyp propane forms 2% by weight of acetate constituent.