



## **LAMAL™ 408-40**

### **Laminating Adhesive**

#### **Description**

Lamal 408-40 adhesive is the polyether urethane component of a two-component laminating adhesive which requires the use of a coreactant. This polyether urethane, in conjunction with coreactant Lamal C or Lamal CR-1-80, functions as an adhesive for flexible packaging. Lamal 408-40 is a higher molecular weight version of Lamal HSA.

Lamal 408-40 adhesive is different from most conventional polyurethane adhesives in that it is not affected by alcohols or small amounts of water. The most commonly used diluents for Lamal 408-40 adhesive are denatured ethanol and isopropanol.

Lamal 408-40 adhesive adheres to a wide variety of substrates including cellophane, treated polyolefins, paper, polyester, polyamides, PVDC coated and metallized materials, vinyl and treated heat sealable layers of coextrusions. The optimum performance of the Lamal 408-40 adhesive is achieved when substrates are corona treated.

Lamal 408-40 adhesive provides optical clarity, high bond strength, high heat resistance and moderate chemical resistance.

The admixed Lamal 408-40 adhesive is unaffected by high humidity and temperature other than the normal loss of solvent by evaporation.

Lamal 408-40 adhesive should be admixed with Lamal C, preferably with a mechanical mixer, then the diluent solvent should be added with continued mixing until uniform.

Lamal 408-40 adhesive diluted with alcohol can be used for laminating heat sensitive substrates and where low levels of retained organic solvent are desirable.

Lamal 408-40 is not compatible with other conventional isocyanate curing polyurethanes and therefore all equipment has to be thoroughly cleaned before interchanging the different types of polyurethane.

#### **Typical Uses**

The principal uses for Lamal 408-40 adhesive with coreactant are in meat and cheese packaging, snack food packaging, bottle label stock, polyethylene bag laminations and coffee pouch laminations.

#### **Safety, Handling and Storage**

- Store in cool, dry, well ventilated area away from heat and ignition sources. Keep container tightly closed.
- Hot organic chemical vapors can suddenly and without warning combust when mixed with air. Ignition can occur at typical elevated temperature process conditions. Please evaluate such processes to assure safe handling conditions.
- Support and ground containers before opening, dispensing, mixing, pouring or emptying. Open with non-sparking tools. If container is warm, open bung slowly to release the internal pressure.

### Safety, Handling and Storage (Cont'd)

- Wash thoroughly after handling. Wash contaminated goggles, face shield, and gloves. Professionally launder contaminated clothing before re-use.
- ATTENTION! Container can be hazardous when empty. Follow label warnings even after container is empty. Do not use heat, sparks, open flames, torches or cigarettes on or near empty containers. Do not reuse empty container without professional cleaning.
- Refer to Material Safety Data Sheet for more information.

Do not use ketones, especially methyl isobutyl ketone (MIBK) or solvents denatured with MIBK in the printing ink or adhesive, because a delayed chemical interaction can take place which could cause an odor problem in the lamination.

### Typical Properties\*

	<u>Lamal 408-40</u>	<u>Lamal C</u>	<u>Lamal CR-1-80</u>
Solids	65%	100%	80%
Viscosity at 25°C	10,000 cps	14,000 cps	55 cps
Weight/Gallon	7.9 lb	9.7 lb	9.3 lb
Solvent	Denatured Ethanol	None	Ethyl Acetate
Mix Ratio	100 pbw	7.5 pbw	9.5 pbw
Diluents	Isopropanol, Denatured Ethanol		
Shelf Life (unopened containers)	180 days	360 days	180 days

\*These items are provided for general information only. They are approximate values and are not considered part of a product specification.

Lamal 408-40 adhesive may cause slight discoloration of PVDC coated substrates. Lamal 408-40 adhesive can react or interact with other components of laminations. Retained solvents, slip additives, anti-block agents and contaminated solvents are some of the components that may cause property changes of the film and/or the adhesive.

### Recommended Application Conditions

Application Method	Direct Gravure
Application Cylinder	110-150 line
Application Solids	20-30%
Dry Adhesive Weight	1.2 - 1.7 lb/ream
Drying Web Temperature	150-180°F
Lamination Temperature	120-150°F
Cure Time	5-7 days at 70°F
Slitting/Rewinding Time	12-24 hours at 70°F
Cleaning Solvent	Isopropyl Alcohol or Methyl Ethyl Ketone

### Dilution Table for 100 lb mix of Lamal 408-40/Lamal C

% Solids	Lamal 408-40	Lamal C	Thinner
30	41.4	3.1	55.5
25	34.5	2.6	62.9
20	27.6	2.1	70.3

### Dilution Table for 100 lb mix of Lamal 408-40/Lamal CR-1-80

% Solids	Lamal 408-40	Lamal CR-1-80	Thinner
30	41.3	3.9	54.8
25	34.4	3.3	62.3
20	27.6	2.6	69.8

# Rohm and Haas Food and Drug Opinion

Name: LAMAL (TM) 408-40

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Regulation	Complies	Opinion Date	Limitations
21CFR175.105	Y	11/02/2006	

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**Legend:**

- L Yes, this product is cleared with limitations noted
  - N No, this product is not cleared
  - Y Yes, this product is cleared.
  - A Affirmed as compliant based on migration studies.
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**Regulations:**

21CFR175.105      Adhesives

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**Disclaimer:**

This information relates specifically to this product. We believe this information to be accurate and reliable as of this date.

We recommend that our customers make their own determination on the suitability of this product for their particular application.

We cannot guarantee that the indirect food additives/food-contact status of this product will remain unchanged indefinitely; therefore we recommend that you periodically verify its status.

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Lamal is a registered trademark of Rohm and Haas Company.

These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and method of use of our products are beyond our control. We recommend that the prospective user determine the suitability of our materials and suggestions before adopting them on a commercial scale.

Suggestions for uses of our products or the inclusion of descriptive material from patents and the citation of specific patents in this publication should not be understood as recommending the use of our products in violation of any patent or as permission or license to use any patents of the Rohm and Haas Company.

Visit us at <http://www.rohmhaas.com/AdhesivesSealants>

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# Rohm and Haas Food and Drug Opinion

**Product Name:** LAMAL C

<b>Regulation Number</b>	<b>Complies</b>	<b>Limitations</b>	<b>Opinion Date</b>
21CFR175.105	Y		Dec 17, 2003
21CFR175.300	Y		Dec 17, 2003
21CFR176.170	L	1	Dec 17, 2003
21CFR176.180	Y		Dec 17, 2003

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**Legend:**

<b>L</b>	Yes, this product is cleared with limitations as noted.
<b>Y</b>	Yes, this product is cleared.

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**Limitations:**

<b>1</b>	PROVIDED THAT THE FOOD CONTACT SURFACE OF THE PAPER AND PAPERBOARD COMPLIES WITH THE EXTRACTIVES LIMITATIONS IN 21CFR176.170 PARAGRAPH (C).
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**Regulations:**

<b>21CFR175.105</b>	ADHESIVES
<b>21CFR175.300</b>	RESINOUS AND POLYMERIC COATINGS
<b>21CFR176.170</b>	COMPONENTS OF PAPER AND PAPERBOARD IN CONTACT WITH AQUEOUS AND FATTY FOODS
<b>21CFR176.180</b>	COMPONENTS OF PAPER AND PAPERBOARD IN CONTACT WITH DRY FOOD

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# Rohm and Haas Food and Drug Opinion

Name: LAMAL CR-1-80

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Regulation	Complies	Opinion Date	Limitations
21CFR175.105	Y	11/02/2006	

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**Legend:**

- L Yes, this product is cleared with limitations noted
  - N No, this product is not cleared
  - Y Yes, this product is cleared.
  - A Affirmed as compliant based on migration studies.
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**Regulations:**

21CFR175.105      Adhesives

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