



Getting Started with Lapol® Bioplasticizer

We appreciate your taking time to evaluate Lapol® bioplasticizer. Lapol resin is a patent pending bioplasticizer for PLA and other polymers. Lapol is designed to act as an internal plasticizer to promote greater elongation and improved impact resistance for polylactic acid (PLA) and other polymers. The documentation in the following pages is designed to help users get started using Lapol and to understand its attributes and processing methods. The package includes:

1. Lapol® 108 processing guideline and data sheet
2. Lapol® 108 Material Safety Data Sheet
3. Nordson® bench top, 5 and 55-gallon drum melter brochures

Lapol® Attributes:

- Biodegradability/Compostability (screening studies indicate ASTM D6400 compliance)
- Renewability/Sustainability (plant derived raw materials sources)
- Compatibility and miscibility (no need for additional compatibilizers or additives)
- Flexibility without sacrificing modulus at low concentrations of 5%-10%
- Good clarity (relatively low haze in PLA)
- Processability (Lapol is fully miscible with PLA, hence no die swell out of the compounder)

Lapol® Processing Method:

Lapol is supplied in 5 or 55-gallon open lid drums as a solid viscous resin. Lapol resin can be added to PLA in line as a molten resin by heating it to 140 ° C (284 ° F) and then metering it into a compounding extruder. This can be accomplished using a drum melter/pump, such as a [Nordson VersaDrum™ bulk melter](#) unit. After flow calibration, the drum melter's heated hose (140 ° C or 284 ° F) is fed directly into the compounding extruder in a zone after the feed throat or into a side feeder downstream from the PLA feed section. The PLA should be melted prior to adding Lapol. Lapol should be added usually in zone two through a vent, depending on the size of the extruder, or through a side feeder/stuffer as shown below.



The Nordson drum melter and pump shown to the left melts the Lapol resin in the 55-gallon drum and accurately meters it through a heated hose to the extruder.

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www.lapol.net



Prior to compounding, the flow of Lapol resin from the Nordson drum melter is calibrated to ensure accurate concentration.



The Lapol resin is metered through the heated black Nordson drum melter hose directly into the extruder vent port (down from the initial resin feed throat) or through a side feeder/stuffer as shown here.

The resin is compounded with polylactic acid at a 5%-10% loading and is extruded out the strand die. Note that there is no die swell when compounding PLA and Lapol. The Lapol resin is fully compatible and miscible with PLA.

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Lapol® Processing Guide for PLA Blends and Concentrates

This information is intended to serve as a guide to processing Lapol viscous resin. Compounding and extrusion requires a complex set of parameters and an experimental approach may be needed to achieve maximum results.

1.0 Description

Lapol resin is a patent pending bioplasticizer for PLA and other polymers. It is a soft solid resin with a yellow to slightly amber color and a slight surface tackiness. Lapol is designed to act as an internal plasticizing agent to “soften” polylactic acid (PLA). It is supplied in 5 or 55-gallon open lid drums as a solid viscous resin. The following guide can be used for compounding Lapol directly into PLA, making Lapol concentrates in PLA or other polymers.

Lapol® Attributes:

- Biodegradability/Compostability (screening studies indicate ASTM D6400 compliance)
- Renewability/Sustainability (predominantly plant derived raw materials sources)
- Compatibility and miscibility (no need for additional compatibilizers or additives)
- Flexibility without sacrificing modulus
- Good clarity (relatively low haze in PLA)
- Processability (Lapol is fully miscible with PLA, hence no die swell out of the compounder)

2.0 Applications

Lapol resin is used to enable PLA to perform in applications requiring flexibility and increased elongation. Lapol resin plasticizes PLA resin for applications including: injection molding, thermoforming, extrusion coating, blow molding, and cast and blown films.

3.0 Processing information

Lapol resin can be added to PLA in line as a molten resin by heating it to 140 °C (284 °F) and then pumping it into a compounding extruder. This can be accomplished using a drum melter/pump, such as a [Nordson VersaDrum™ bulk melter](#) unit. After flow calibration, the drum melter’s heated hose (140 °C or 284 °F) can be fed directly into the compounding extruder in a zone after the feed throat or into a side feeder downstream from the PLA feed section. The PLA should be melted prior to adding Lapol, usually in zone two depending on the size of the extruder.

It is imperative that there be good mixing of the Lapol and PLA to achieve a homogeneous compound.

ATTENTION: It is recommended that the heated portion of the Lapol resin be utilized when it is melted. Re-melting Lapol resin more than three times may result in gelling and compromise properties.

4.0 Safety and handling precautions

All safety precautions normally followed when handling and processing molten thermoplastics should be followed when handling Lapol resin. Consult the MSDS before processing.

Lapol resin is a true thermoplastic resin and is therefore, sensitive to processing temperature. Melt processing and the variability of those conditions may result in minor degradation. Lactide, a non-hazardous gaseous irritant, is a minor byproduct of Lapol melt processing. Normal polymer resin air handling systems should be in place and will handle this minor out-gassing during processing. In addition, Lapol should be processed below its decomposition temperature, which will occur at 210° C (410° F) and above. Avoid temperatures above 200° C (392° F).

5.0 Typical Resin Properties

Lapol® Resin Properties	Nominal Value
Melt viscosity (Brookfield spindle 6, 100°C / 50 rpm) poise	200–265
Flow temperature	130°–150° C
Glass transition temperature	-5° C to 10° C
Degradation temperature	210° C
Density	1.06/gcc
Molecular weight range	(Mn) 30,000– 40,000 (Mw) 80,000-112,000
Color (Gardner)	<6

6.0 Drying

Lapol resin is shipped in 5 and 55-gallon steel drums as a solid in a glassy state, much like a hot melt adhesive. It does not require drying prior to use, but care must be taken to ensure that the lid remains firmly fastened during storage. Repeated opening and closing of the drums is not recommended as it could allow moisture into the drum that can cause undesired degradation of the material.

PLA must be dried prior to use. PLA should be dried according to the manufacturer's processing recommendations. PLA should be dried to a maximum of 250 ppm moisture as measured by a Karl Fischer method. Processes that have unusually long residence time or result in a melt temperature greater than 200°C should dry PLA to less than 50 ppm moisture.

7.0 Extrusion

Lapol resin will process on conventional compounding extrusion equipment. A twin screw extruder is preferred with a mixing section is generally recommended along with static mixers in the process line prior to the die to ensure optimal product homogeneity and uniform temperatures of the melt. Addition ports are needed toward the front of the extruder in order to feed the Lapol resin into the extruder.

Processing Parameters	Settings (° C)
Feed Throat	15-25
Zone 1	165-175
Zone 2	165-180
Zone 3	165-180
Melt temperature	165-180
Die	165-180
Lapol Melt temperature	130-150
Screw speed (rpm)	50-100

Note 1: Temperatures are provided a guideline and may need to be adjusted. Temperatures above 200°C (392°F) should be avoided.

8.0 Startup and shutdown

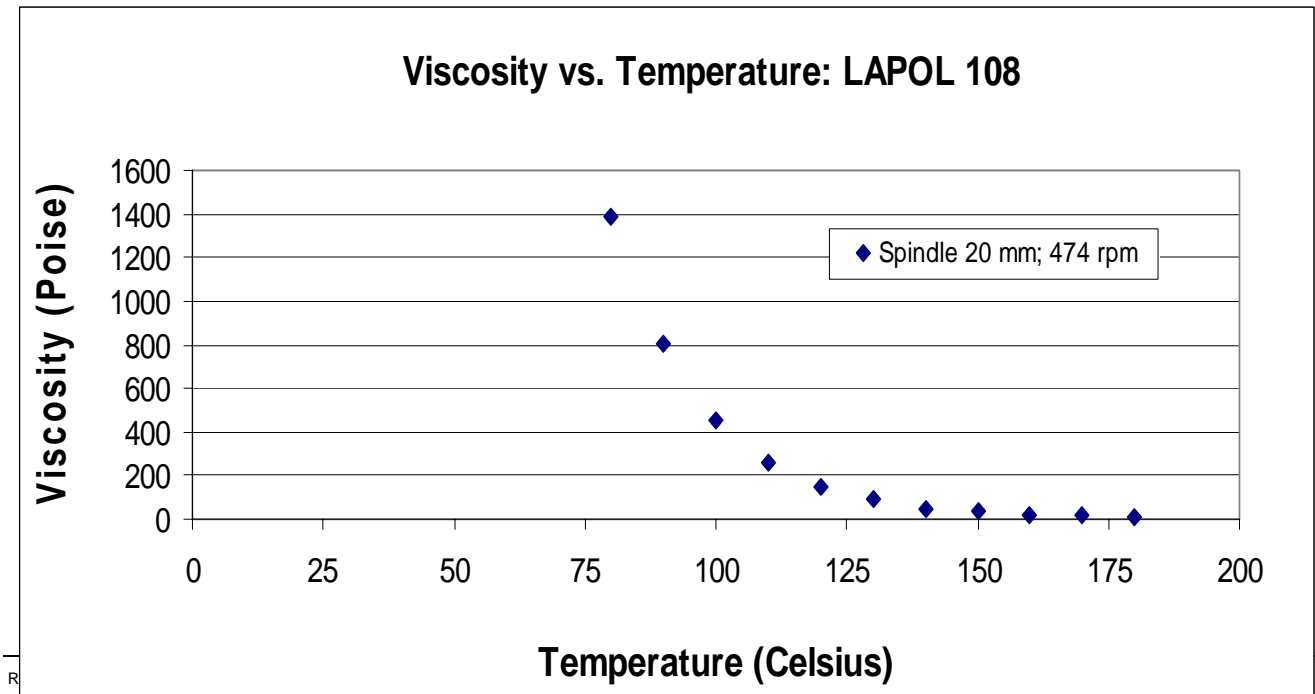
In running Lapol resins startup and shutdown procedures are the same as with any other polylactic

acid compound. The PLA manufacturer's procedures should be followed to ensure a quality product. Polylactic acid polymers are incompatible with most polyolefin resins and special purging sequences should be followed.

1. Purge extruder using a linear polypropylene or a purging compound and run at the manufacturer's recommended temperatures. Purge for at least 7x average residence time (~30 minutes).
2. If following PET, PA, HDPE in the system, start with a linear low viscosity polypropylene (MFI <1) for 30 minutes, then add a high viscosity polypropylene for an additional 30 minutes.
3. Reset temperatures to normal PLA temperature profile.
4. Transition to PLA and purge with PLA for a minimum of 7x average residence time.
5. Once it is apparent that PLA is running through the system, attach the Lapol melt line to the downstream port.
6. At the completion of the run, stop the heat pump, disconnect the Lapol melt line and allow PLA to purge the system.

9.0 Disposal

Lapol is not a RCRA hazardous waste. Disposal of this material is not regulated under RCRA. Consult federal, state and local regulations to ensure that this material and its containers, if discarded, is disposed of in compliance with all local regulatory requirements.



10.0 Typical Properties of Compounded PLA

Typical Physical Properties of Compounded Lapol® 108 in PLA

Lapol 108 viscous resin compounded into NatureWorks®, LLC 4042D (biaxially oriented film – general purpose grade) polylactic acid at 0.5 mm thick films.

Physical Property	ASTM Test	5% Lapol in PLA	10% Lapol in PLA
Elongation @ Break	D 638	160%-200%	180%-210%
Tensile Stress @ Yield MPa	D 638	77-84	57-59
Tensile Modulus MPa	D 638	2160-2313	1700-1786
Specific Gravity	D 1505	1.23 g/cc	1.22/g/cc
Melt Flow Index @ 190°C – 2.16kg	D 1238	3-4 g/10 min.	9-11 g/10 min.

Disclaimer: the aforementioned technical data and applications in this processing guide are believed to be reliable. The user may process the materials differently or use it in an otherwise modified way in which Lapol has no control; therefore, Lapol does not offer a guarantee, either expressed or implied, that similar results will be achieved as explained in this processing guide. The user should make its own evaluation of the material to determine the suitability of the material for its own intended use.

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Effective Date: 5/04/09

Material Safety Data Sheet

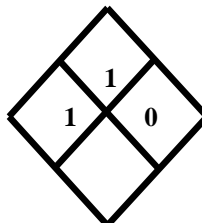
MSDS No: 8127

1. PRODUCT IDENTIFICATION

Trade Name: Lapol® 108

Material Code: 16305-00

Chemical Family: Polyester Resin



NFPA RATING

Health:	1
Flammability:	1
Reactivity:	0
Personal Protection:	

HMIS RATING

2. COMPOSITION / INFORMATION ON INGREDIENTS

O S H A	CAS No.	CHEMICAL IDENTITY	EXPOSURE LIMITS				CARCINOGEN STATUS			
			ACGIH		OSHA		MFR.	IARC	NTP	OSHA
			TWA	STEL	PEL	STEL				
	Proprietary Concentration	Polyester Resin 100.00% by wt	NE	NE	NE	NE	NE	NR	NR	NR

NE = Not Established NR = Not Reviewed

Reference Notes: Refer to Section 8, Subheading "Exposure Guidelines", for additional information concerning exposure limits.

3. HAZARDS IDENTIFICATION

Emergency Overview: Appearance: Light Yellow Solid, Odorless

Route(s) of Entry: Skin contact, Eye contact, Ingestion

Acute Exposure: INHALATION: Vapors and/ or aerosols may be formed at elevated temperatures. Inhalation of these may cause irritation to the respiratory tract (nose, throat, and lungs).

SKIN: Repeated or prolonged contact may dry and irritate the skin.

EYES: Direct contact with this material may cause eye irritation including tearing and redness.

INGESTION: Ingestion (swallowing) may irritate the mouth, throat, and stomach. Ingestion is not an anticipated route of exposure for this material in industrial use.

Carcinogenicity: This material does not contain 0.1% or more of any chemical listed by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or regulated by the Occupational Safety and Health Administration (OSHA) as a carcinogen.

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with large quantities of clean water for at least 15 minutes. Get immediate medical attention.

Skin Contact: Wash skin with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists. Wash contaminated clothing before reuse.

Ingestion: Give the victim one or two glasses of water or milk to drink. Never give anything by mouth to an unconscious person. IMMEDIATELY SEEK MEDICAL ATTENTION.

Inhalation: Remove affected individual(s) to fresh air. Seek medical attention if breathing difficulty develops.

5. FIRE FIGHTING MEASURES

Flash Point:	Not applicable
Flash Point Method Used:	Not applicable
Flammable Limits in Air (Lower):	Not applicable
Flammable Limits in Air (Upper):	Not applicable
Autoignition:	Not available

General Hazards: None Known.

Fire Fighting Extinguishing Media: Use carbon dioxide, foam, dry chemical or water fog to extinguish fire.

Fire Fighting Equipment: Wear self-contained breathing apparatus (SCBA) and full fire-fighting protective clothing. Thoroughly decontaminate all protective equipment after use.

Fire Fighting Instructions: Evacuate all persons from the fire area to a safe location. Move non-burning material, as feasible, to a safe location as soon as possible. Fire fighters should be protected from potential explosion hazard while extinguishing the blaze. Use water spray to cool fire-exposed containers.

Fire and Explosion Hazards: No special fire and explosion hazards are associated with this material.

Hazardous Combustion Products: Combustion may produce carbon monoxide, carbon dioxide and irritating or toxic vapors and gases.

6. ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: Collect material and place in a closed container.

7. HANDLING AND STORAGE

Signal Word: C A U T I O N

Handling Information: Avoid inhalation and contact with eyes, skin, and clothing. Wash hands thoroughly after handling and before eating or drinking. Use with adequate ventilation.

Storage Information: Keep container closed when not in use. Store in original containers. Store in a dry area.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines: There are no Occupational Safety and Health (OSHA) Permissible Exposure Limits (PEL) or American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV) or Short Term Exposure Limits (STEL) established for the component(s) of this product.

Engineering Controls: Good general ventilation should be sufficient to control airborne levels of irritating vapors.

Eye Protection: Wear safety glasses with side shields or goggles. Facilities storing or utilizing this material should be equipped with an eyewash station and safety shower.

Skin Protection: As required to prevent prolonged or repeated skin contact.

Respiratory Protection: If material generates fumes when heated, a NIOSH/MSHA approved air-purifying respirator with organic vapor cartridge or canister may be used to minimize exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Light yellow
Odor:	Odorless
Odor Threshold:	Not available
Physical State:	Solid
Solubility in Water:	Insoluble
Vapor Pressure:	Not applicable
Specific Gravity:	1.06 (Water = 1) at 25°C (77 °F)
Boiling Point:	°F @ 4mm Hg Not applicable
Melting Point:	Not available
Evaporation Rate:	Not applicable
Vapor Density:	Not applicable
% Volatile:	< 1 % by weight
VOC Content:	< 1 % by weight (calculated)product as supplied
pH:	Not applicable

10. STABILITY AND REACTIVITY

Stability: This material is stable during storage and during its intended use.

Incompatibility: No incompatibilities have been identified.

Hazardous Decomposition Products: Thermal decomposition may form at excessive temperatures: carbon monoxide, carbon dioxide, and various hydrocarbons.

Hazardous Polymerization: Hazardous polymerization will not occur.

Conditions to Avoid: None known.

11. TOXICOLOGICAL INFORMATION

Acute Eye Toxicity: No information is available.

Acute Skin Toxicity: No information is available.

Acute Inhalation Toxicity: No information is available.

Acute Oral Toxicity: No information is available.

Chronic/Carcinogenicity: This material does not contain 0.1% or more of any chemical listed by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or regulated by the United States Occupational Safety and Health Administration (OSHA) as a carcinogen.

Additional Information: No toxicological data is available for this product. Based on properties and similar polymers, the polyester resin is not hazardous.

12. ECOLOGICAL INFORMATION

Ecotoxicity: No information is available.

Environmental Fate: No information is available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method: Not a RCRA hazardous waste. Disposal of this material is not regulated under RCRA. Consult federal, state and local regulations to ensure that this material and its containers, if discarded, is disposed of in compliance with all regulatory requirements.

RCRA Hazard Class: NOT A RCRA HAZARDOUS WASTE: When discarded in its purchased form, this material would not be regulated as a RCRA Hazardous waste under 40 CFR 261.

14. TRANSPORT INFORMATION

DOT / IATA / IMDG / TDG: Bulk and Non-Bulk

Proper Shipping Name:

NOT REGULATED

15. REGULATORY INFORMATION

Occupational Safety and Health Act (OSHA): This material is not classified as hazardous under the criteria of the US Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III: Section 302 - Extremely Hazardous Substances (EHS): This product does not contain any chemicals regulated under Section 302 (40 CFR 355) as extremely hazardous substances.

SARA Title III: Section 304 - CERCLA: Reportable Quantities have not been established for any of this material's components.

SARA Title III: Section 311/312 - Hazard Communication Standard (HCS): This product is not regulated under Section 311-312 (40 CFR 370).

SARA Title III: Section 313 Toxic Chemical List (TCL): This product does not contain any chemicals for routine annual toxic chemical release reporting under Section 313 (40 CFR 372).

TSCA Section 8(b) - Inventory Status: All components of this material are listed on or are exempt from the US Toxic Substances Control Act (TSCA) inventory.

TSCA Section 12(b) - Export Notification: This material does not contain any components that are subject to the US Toxic Substances Control Act (TSCA) Section 12(b) Export Notification requirements.

Canadian Inventory Status: This material contains components that are NOT listed on the Canadian Domestic Substances List (DSL) or the Canadian Non-Domestic Substances List (NDSL).

Canadian WHMIS: This material is not classified as a controlled product under the Canadian Workplace Hazardous Material Information System.

Additional Canadian Regulatory Information: This product does not contain a substance present on the WHMIS Ingredient Disclosure List (IDL) which is at or above the specified concentration limit.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

16. OTHER INFORMATION

MSDS No:	8127
Reason Issued:	Updates to Section 9
Prepared By:	Product Safety & Compliance Department
Supersedes Date:	02/11/09

Disclaimer: This information is provided in good faith and is correct to the best of Lapol LLC knowledge as of the date hereof and is designed to assist our customers; however, Lapol LLC makes no representation as to its completeness or accuracy. Our products are intended for sale to industrial and commercial customers. We require customers to inspect and test our products before use and to satisfy themselves as to suitability for their specific applications. Any use which Lapol customers or third parties make of this information, or any reliance on, or decisions made based upon it, are the responsibility of such customer or third party. Lapol disclaims responsibility for damages, or liability, of any kind resulting from the use of this information. THERE ARE NO WARRANTIES OR REPRESENTATIONS, EXPRESS OR IMPLIED, INCLUDING THOSE OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THIS INFORMATION OR TO THE PRODUCT IT DESCRIBES. IN NO EVENT SHALL LAPOL BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

AltaBlue™ TT Adhesive Melters



4-, 10- and 16-liter melters

Nordson® AltaBlue TT melters feature variable speed AC motors with spur-gear pumps and key-to-line capability in a compact melter design. AltaBlue TT melters satisfy the need for an easy-to-operate, low-maintenance melter to precisely deliver a wide variety of hot melt adhesives. A tubular Teflon®-coated tank eliminates dead corners and minimizes adhesive degradation. The versatile, full-feature control panel offers a choice of programming methods using either the keypad or arrow keys and intuitively displays system status.

AltaBlue TT melters:

- Are easy to install
- Provide easy day-to-day operation
- Simplify routine maintenance



Status-at-a-glance indicators graphically display the status of the tank, hose and gun



Large, accessible tank opening allows easier filling and cleaning

Maintenance Indicator



Low Level Adhesive Indicator (Optional)

Service indicators simplify maintenance scheduling



Variable speed pump control and RPM display provides key-to-line capability



Easy-to-use controls eliminate complicated programming



AltaBlue™ TT Adhesive Melters

Specifications

Type of System	Tank with spur-gear pump
Filter Type	Saturn® basket-style filter
Maximum Working Hydraulic Pressure	75 bar/7.5 Mpa (1100 psi)
Operating Temperature Range	40 to 230°C (100 to 450°F)
Ambient Temperature Range	0 to 50°C (32 to 122°F)
Temperature Control Stability	±0.5°C (1°F)

	AltaBlue TT 4	AltaBlue TT 10	AltaBlue TT 16
Holding Capacity	4 L (244 in ³) 3.9 kg (8.6 lb)	10 L (610 in ³) 9.7 kg (21.4 lb)	16 L (976 in ³) 15.5 kg (34.1 lb)
Throughput (per hour)¹	6.3 kg (13.9 lb)	12.5 kg (27.5 lb)	20 kg (44 lb)
Melt Rate (per hour)¹	4.7 kg (10.3 lb)	7.7 kg (17 lb)	11.2 kg (24.7 lb)
Maximum Pump Rate (per hour)	35 kg (77 lb)	35 kg (77 lb) or 50 kg (110 lb)	35 kg (77 lb)
Number of Hoses/Guns	2	2 or 4	
Electrical Service²	200 VAC single phase 50/60 Hz 200 to 240 VAC single phase 50/60 Hz	200 VAC 1/3 phase 50/60 Hz 200 to 240 VAC 1/3 phase 50/60 Hz 380 to 415 VAC-Y (3 phase N/PE) 50/60 Hz	
Maximum System Power Capacity @ 240 VAC			
2 hoses/guns	3355 watts	3915 watts	4415 watts
4 hoses/guns	N/A	5915 watts	6415 watts
Approx. Weight (empty)	42 kg (92 lb)	76 kg (168 lb)	80 kg (175 lb)
Input/Output Capability Standard	Key-to-line	4 Std Inputs - programmable for function 3 Std Outputs-programmable for function Key-to-line	
Melter Dimensions			
Width	334 mm (13.1 in.)	441 mm (17.4 in.)	441 mm (17.4 in.)
Height	478 mm (18.8 in.)	649 mm (25.5 in.)	649 mm (25.5 in.)
Depth	552 mm (21.7 in.)	620mm (24.4 in.)	620 mm (24.4 in.)
Installation Dimensions			
Width	537 mm (21.1 in.)	644 mm (25.4 in.)	644 mm (25.4 in.)
Height	623 mm (24.5 in.)	861 mm (33.9 in.)	861 mm (33.9 in.)
Depth	908 mm (35.7 in.)	1126 mm (44.3 in.)	1126 mm (44.3 in.)



Quick plug-in hose/gun pairs



Disposable filter eliminates routine filter flushing

¹ Actual rates will vary depending on adhesive type, application parameters and input voltage.

² Permitted deviation from rated line voltage is ±10%.

Teflon is a registered trademark of E.I. DuPont de Nemours and Company



For more information, talk with your Nordson representative or contact your Nordson regional office.

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www.nordson.com



When you expect more.®

Nordson Corporation • 11475 Lakefield Drive • Duluth, Georgia 30097-1511



VersaDrum™ Bulk Melters

200-liter or 55-gallon drum melters

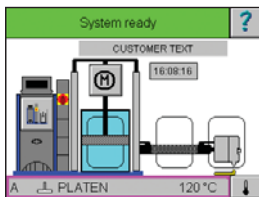
Nordson® VersaDrum bulk melters are designed for precise demanding hot melt adhesive application from 200-liter or 55-gallon drums. With a variety of pump types and sizes, VersaDrum melters are customizable to accommodate a wide variety of adhesives and meet specific manufacturing requirements. A powerful industrial PC provides full control of the adhesive system via a touch-screen interface and displays messages, warnings, and indicators for every operator activity and machine status condition.

VersaDrum bulk melters only melt the top surface of adhesive allowing the remaining material in the drum to stay solid to reduce thermal stress and protect bonding characteristics. Particularly well-suited for reactive adhesives, such as moisture-cure polyurethanes, the hydraulic passages are designed to eliminate dead spaces where undesired curing could result.

For applications that require continuous operation, Nordson's automatic changeover system links two bulk melters together to eliminate the downtime associated with drum changes.

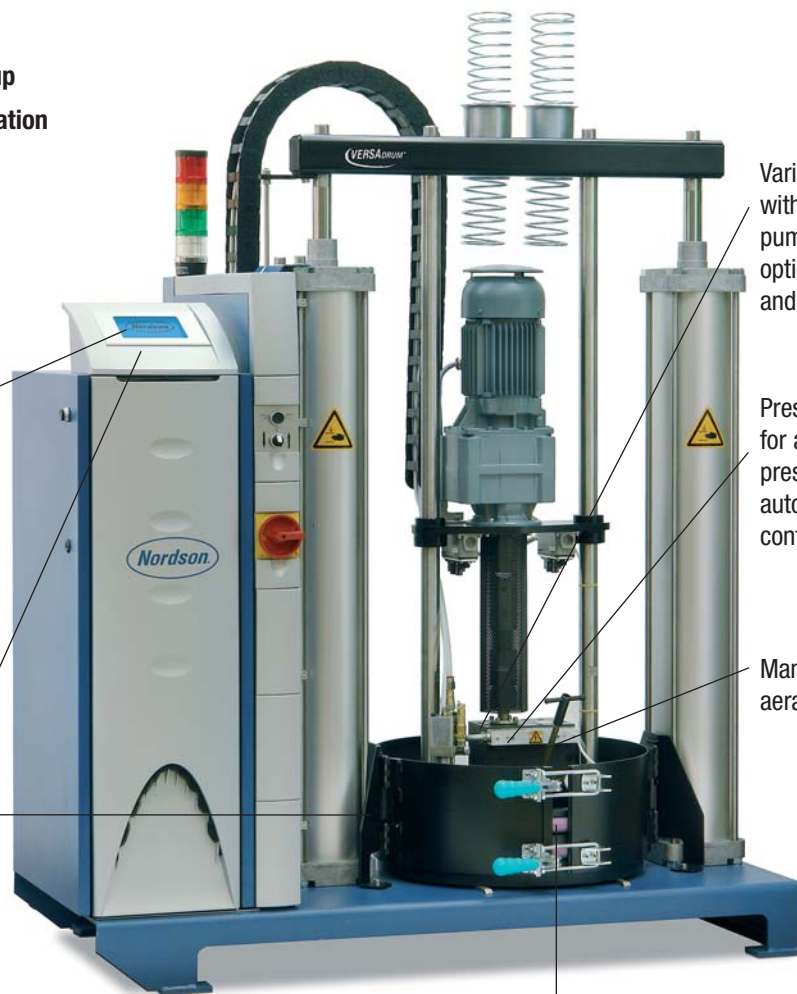
VersaDrum melters:

- Simplify installation and set-up
- Provide easy day-to-day operation
- Offer production flexibility
- Protect adhesive integrity



Graphical, touch-screen control system provides visibility and monitoring of all operations and status conditions

Single-side access for controls and drum changes



Variable speed motors with precision gear pumps including optional dual-stream and hardened versions

Pressure control valve for accurate, adjustable pressure and optional automatic pressure control systems

Manual or automatic aeration systems

Adjustable drum clamp for accurate positioning of metal or fiber drums



Modular, non-stick axial, finned and smooth melt platens for quick change and easy clean-up



Six additional temperature channels for control of spray guns, heaters, etc.

Specifications

Type of System	Gear pumps with variable speed AC motors
Drum Diameter	571 mm (22.5 in) or 567 mm (22.3 in)
Maximum Pump Rate¹	270 kg/hr (595 lb/hr)
Number of Hoses/Guns	2 standard (hydraulic & electrical) up to 6 additional (electrical only)
Maximum Working Hydraulic Pressure	100 bar (1500 psi)
Operating Temperature Range	40 to 230°C (100 to 450°F)
Ambient Temperature Range	-5 to 40°C (23 to 100°F)
Temperature Control Stability	±1°C (2°F)
Temperature Sensor	Ni 120 (or PT-100 optional)
Electrical Service²	200 VAC 3 phase delta 50/60 Hz 240 VAC 3 phase delta 50/60 Hz 400 VAC 3 phase Y 50/60 Hz 400 VAC 3 phase delta 50/60 Hz 480 VAC 3 phase delta 50/60 Hz 575 VAC 3 phase delta 50/60 Hz
Maximum System Power Capacity	39000 watts
Weight (empty)³	672 kg (1,482 lb)
Input/Output Capability Standard	6 Inputs 6 Outputs
Melter Dimensions (W x H x D)	1520 x 3010 x 740 mm (59.9 x 118.5 x 29.2 in)
Installation (service) Dimensions	2100 x 3010 x 1103 mm (82.7 x 118.5 x 43.5 in)
Protection	IP54



¹ Actual rates will vary depending on adhesive type, application parameters and input voltage.
² Permitted deviation from rated line voltage is ±10%.
³ Weight depends on melter configuration.

For more information, talk with your Nordson representative.



When you expect more.®

www.nordson.com



VersaPail™ Bulk Melters

20-liter or 5-gallon pail melters

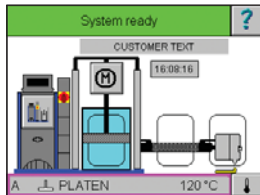
Nordson® VersaPail bulk melters are designed for precise demanding hot melt adhesive application from 20-liter or 5-gallon pails. With a variety of pump types and sizes, VersaPail melters are customizable to accommodate a wide variety of adhesives and meet specific manufacturing requirements. A powerful industrial PC provides full control of the adhesive system via a touch-screen interface and displays messages and indicators for each operator activity and every machine status condition.

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For applications that require continuous operation, Nordson's automatic changeover system links two bulk melters together to eliminate the downtime associated with pail changes.

VersaPail melters:

- Simplify installation and set-up
- Provide easy day-to-day operation
- Offer production flexibility
- Protect adhesive integrity



Graphical, touch-screen control system provides visibility and monitoring of all operations and status conditions

Single-side access for controls and pail changes

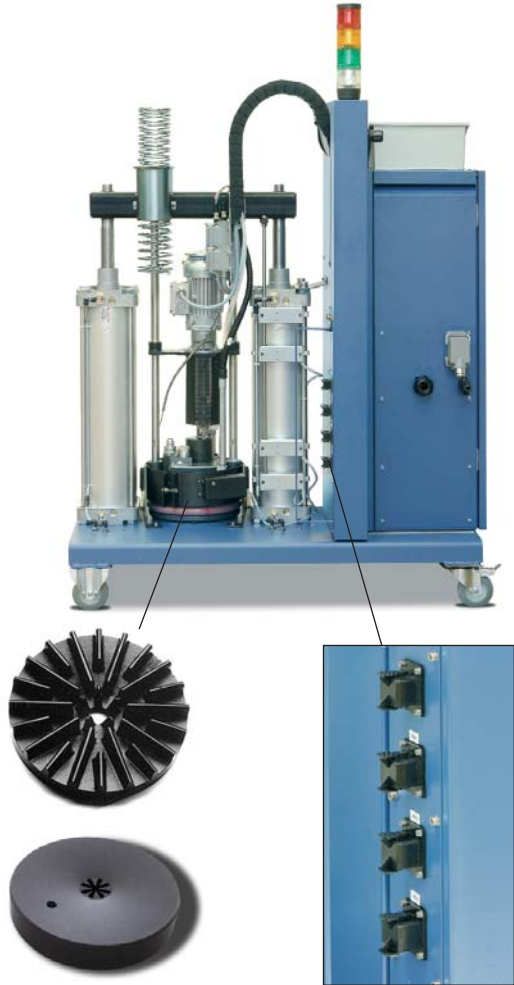


Automatic or manual aeration systems

Variable speed motors and precision gear pumps with optional dual-stream and hardened versions

Pressure control valve for accurate, adjustable pressure, and optional automatic pressure control systems

Pail centering and clamping for accurate pail positioning and control



Modular, non-stick axial and smooth melt platens for quick change and easy clean-up

Four additional temperature channels for control of spray guns, heaters, etc.

Specifications

Type of System	Gear pumps with variable speed AC motors
Pail Diameter	280 or 286 mm (11 or 11.3 in)
Maximum Pump Rate¹	92 kg/hr (203 lb/hr)
Number of Hoses/Guns	2 standard (hydraulic & electrical) up to 4 additional (electrical only)
Maximum Working Hydraulic Pressure	100 bar (1500 psi)
Operating Temperature Range	40 to 230°C (100 to 450°F)
Ambient Temperature Range	-5 to 40°C (23 to 100°F)
Temperature Control Stability	±1°C (2°F)
Temperature Sensor	Ni 120 (or PT-100 optional)
Electrical Service²	200 VAC 3 phase delta 50/60 Hz 240 VAC 3 phase delta 50/60 Hz 400 VAC 3 phase Y 50/60 Hz 400 VAC 3 phase delta 50/60 Hz 480 VAC 3 phase delta 50/60 Hz
Maximum System Power Capacity	21000 watts
Weight (empty)³	332 kg (732 lb)
Input/Output Capability Standard	6 Inputs 6 Outputs
Melter Dimensions (W x H x D)	1190 x 1920 x 540 mm (46.9 x 75.6 x 21.3 in)
Installation (service) Dimensions	1570 x 1920 x 903 mm (61.8 x 75.6 x 35.6 in)
Protection	IP54

¹ Actual rates will vary depending on adhesive type, application parameters and input voltage.
² Permitted deviation from rated line voltage is ±10%.
³ Weight depends on melter configuration.



For more information, talk with your Nordson representative.



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