Addendum No. 1

Golf Course Well Pump Installation and Building

City of Port Townsend

Prepared by:

City of Port Townsend
Department of Public Works
250 Madison Street, Suite 2R
Port Townsend, WA 98368

The above mentioned CONTRACT PROVISIONS AND PLANS has been reviewed and approved for advertisement. Such review includes all plans, specifications, and permits associated with the project.

Prepared by: Sarah Tiffany

Checked by: Steve King

Approved by: _____

ADDENDUM NO. 1
TO THE CONTRACT PROVISIONS AND PLANS

Golf Course Well Pump Installation and Building

City of Port Townsend

ISSUED: July 29, 2021

BID OPENING: 2:00 PM
August 4, 2021

Acknowledge receipt of this Addendum on the Bid Proposal (Exhibit A), Page 1.

_____

_____

TO PROSPECTIVE BIDDERS:

The attention of all prospective bidders on the above project is directed to the following modifications and additions to the Contract Documents, which are hereby made a part of the Contract Provisions and Plans.

MANUAL COVER, BID SUBMITTAL COVER SHEET AND TABLE OF CONTENTS

Add EXHIBIT I – Approved Submittal for the Golf Course Well Pump to the Table of Contents

PART 1– BID FORMS

No Change

PART I2– CONTRACT FORMS

No Change

PART 3- SPECIFICATIONS

Add EXHIBIT I - Approved Submittal for the Golf Course Well Pump

Bidders shall furnish the City of Port Townsend with evidence of receipt of the Addendum. This Addendum will be incorporated in the contract when awarded and when formally executed.

Any questions please contact Steve King, Public Works Director at sking@cityofpt.us.

Steve King
Public Works Director
City of Port Townsend

Attachments:
Approved Submittal for the Golf Course Well Pump

Attachment

Add EXHIBIT I - Approved Submittal for the Golf Course Well Pump

WASTEWATER SOLUTIONS LLC

102 NE 2nd Street
Suite 510
Boca Raton FL 33432
Arturo Garcia, President
(561) 200 5717 Office
(954) 483 9269 Cell
arturo@wws-llc.com
meredith@wws-llc.com
wws-llc.com

SUBMITTALS-REV2

Date: April 27, 2021

Ian Jablonski
Water Resources Operation Manager
250 Madison Street, Suite 2R
Port Townsend, WA 98368

PROJECT: GOLF COURSE WELL PUMP

Dear Mr. Jablonski,

Please find attached the second revised submittal package for the Golf Course Well Pump.

If you approve, please return the second revised submittal package signed so we can release the order to production.

Thank you,

Arturo Garcia
Wastewater Solutions LLC

PLACE APPROVAL STAMP/SIGNATURE HERE

Wastewater Solutions LLC
102 NE 2nd Street Suite 510
Boca Raton, FL 33432 US
(954) 483-9269
arturo@wws-llc.com
wws-llc.com

Scope and Submittals-REV2

ADDRESS

Ian Jablonski
Water Resources
Operation Manager
250 Madison Street,
Suite 2R
Port Townsend, WA
98368
ijablonski@cityofpt.us

DATE 04/27/2021

GOLF COURSE WELL PUMP
CITY OF PORT TOWNSEND

DELIVERY:
10 - 12 WEEKS

DESCRIPTION	QTY
BID ALTERNATIVE #1 (LINESHAFT VERTICAL TURBINE)	1

BOESCH VERTICAL TURBINE PUMP MODEL 7WL-1C (11 STAGES)

INCLUDES:

20 HP 3/60/460V US ELECTRICAL MOTORS VHS WP1 NRR 1800 RPM,
PREMIUM EFFICIENT, INVERTED DUTY, SPACE HEATERS
4 X 6 X 10" FABRICATED STEEL DISCH HEAD / WATER LUB
PROD LUB STUFFING BOX ASSY MEDIAN
UPP SHAFT TO DRIVE W/ NUT & KEY WAY-SS416 1"
W LUB SHAFT AND CPLG 1" - X 10 FT (7)
W LUB SHAFT AND CPLG 1" - X 5 FT (3)
SS304 SLEEVES FOR SHAFT 1-3/16" (10)
SPIDER WITH INSERT 4 X 1-3/4 X 1-3/16" (9)
PIPE FLANGE-THREADED 4" 10 FT SCH- 0.237
COLUMN PIPE W/COUPLING 4" 5 FT SCH- 0.237 (2)
COLUMN PIPE W/COUPLING 4" 10 FT SCH- 0.237 (7)
7WL-1C (11 STAGES) BOWL ASSEMBLY
6" ADAPTER
6" COLUMN COUPLING
CONIC STRAINER 6

ALL INTERIOR AND EXTERIOR BOWL ASSEMBLY SURFACES WITH 3M SCOTCHKOTE 134 NSF 61 CERTIFIED

ALL INTERIOR AND EXTERIOR DISCHARGE HEAD AND COLUMN SURFACES WITH TNEMEC EPOXOLINE 141 SERIES NSF 61 CERTIFIED

TEST INCLUDED:
NON-WITNESSED PERFORMANCE TEST

STARTUP AND TRAINING INCLUDED AS PER SPECIFICATIONS.

WARRANTY: 24 MONTHS FROM THE DATE OF STARTUP OR 30 MONTHS FROM THE DATE OF SHIPMENT. WHICHEVER OCCURS FIRST.

DELIVERY INCLUDED AS PER SPECIFICATIONS

GOLF COURSE WELL PUMP CITY OF PORT TOWNSEND

WASTEWATER SOLUTIONS LLC
CAGE CODE: 7TWY1
DUNS NUMBER: 079918568
EIN: 47-1877641

Accepted By Steve King

Accepted Date 4-22-21

BID ALTERNATIVE #1 (LINESHAFT VERTICAL TURBINE)

WASTEWATER SOLUTIONS LLC

Arturo Garcia
102 NE 2nd Street, Suite 510
Boca Raton FL 33432
(954) 483 9269
arturo@wws-llc.com

BID ALTERNATIVE #1 (LINESHAFT VERTICAL TURBINE)

BOESCH

BoeschPumps.com

Pump:

Size:	7WL-1C (stages: 11)	Dimensions:	
Type:	LINE W_60 Hz	Suction:	---
Synch Speed:	1800 rpm	Discharge:	---
Dia:	5.2 in	Vertical Turbine:	
Curve:	ETWBAEC-18	Eye Area:	7.6 in²
Impeller:	7WL-1C	Bowl Size:	7.5 in
Specific Speeds:	Ns: 2147	Max Lateral:	0.445 in
	Nss: 2147	Thrust K Factor:	3.8 lb/ft

Search Criteria:

Flow:	150 US gpm	Near Miss:	---
Head:	280 ft	Static Head:	0 ft

Fluid:

Name:	Water		
SG:	1	Vapor Pressure:	0.256 psi a
Density:	62.4 lb/ft³	Atm Pressure:	14.7 psi a
Viscosity:	1.1 cP		
Temperature:	60 °F	Margin Ratio:	1

Pump Limits:

Temperature:	167 °F	Sphere Size:	0.38 in
Wkg Pressure:	415 psi g		

Motor:

Standard:	NEMA	Size:	20 hp
Enclosure:	WPI	Speed:	1800 rpm
Frame:	256TPH		
Sizing Criteria:	Max Power on Design Curve		

Pump Selection Warnings:

None

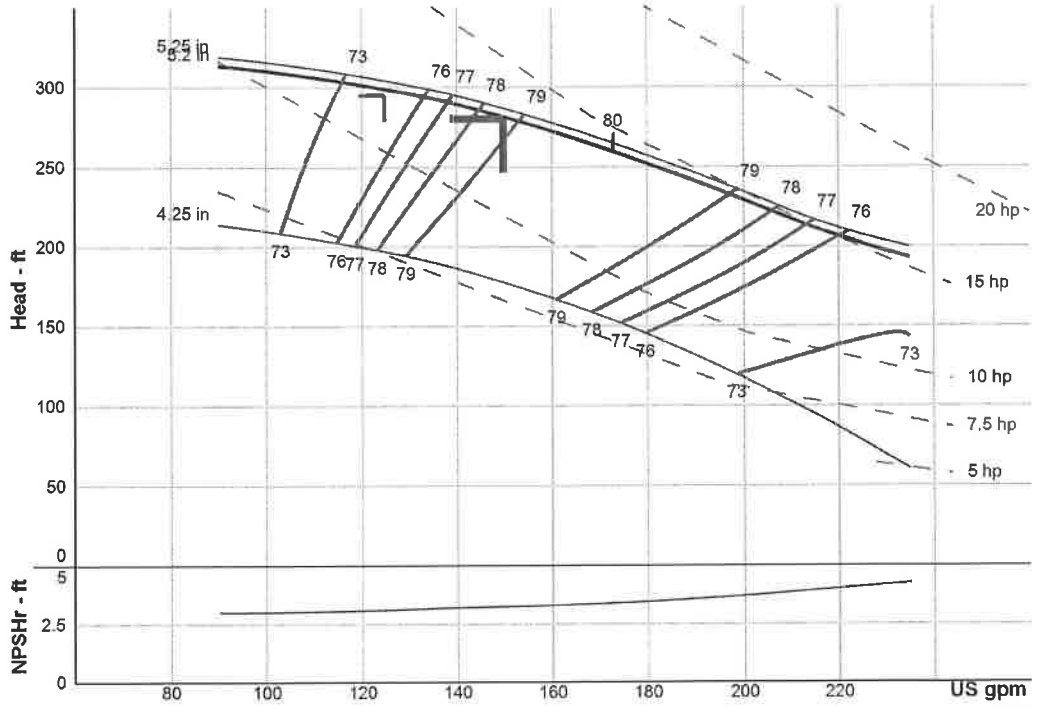
--- Duty Point ---

Flow:	150 US gpm
Head:	281 ft
Eff:	78.7%
Power:	13.6 hp
NPSHr:	3.24 ft
Speed:	1760 rpm

--- Design Curve ---

Shutoff Head:	359 ft
Shutoff dP:	155 psi
Min Flow:	35 US gpm

BEP: 80% @ 173 US gpm



Operating Points:

Data Point	Speed	Flow	Head	NPSHr	Efficiency	Power	Min Flow
	rpm	US gpm	ft	ft	%	hp	US gpm
Primary	1760	150	281	3.24	78.7	13.6	35
1	1760	126	298	3.11	74.5	12.7	35

BOESCH

WELL PUMP

BID ALTERNATIVE #1 (LINESHAFT VERTICAL TURBINE)

PUMP BRAND: BOESCH
DUTY POINT: 150 GPM AT 280 FT TDH
PUMP MODEL: 7WL-1C (11 STAGES)
EFFICIENCY: 78.70%

MOTOR SPECIFICATIONS	
BRAND	US MOTORS (NIDEC)
HP RATING	20 HP
SPEED	1800 RPM
TYPE	VHS
ENCLOSURE	WP1
COUPLING TYPE	NRR
INSULATION CLASS	F
SF	1.15
VOLTAGE	3/60/460V
EFFICIENCY	PREMIUM EFFICIENT
OPERATION	INVERTED DUTY
ANTICONDENSATION DEVICE	120V SPACE HEATERS

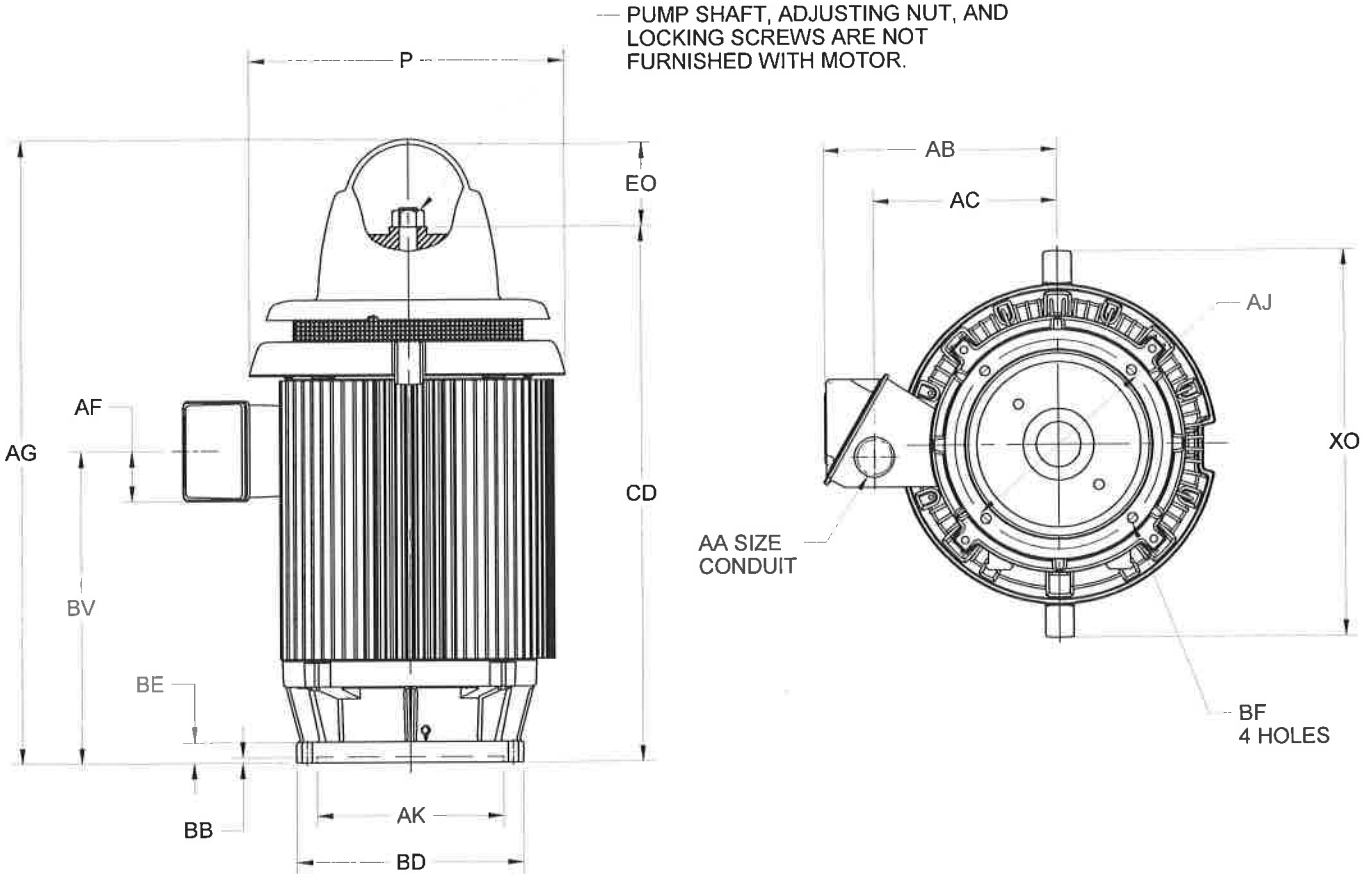
DISCHARGE HEAD SPECIFICATIONS	
HEAD TYPE	4 X 6 X 10" FABRICATED DISCHARGE HEAD / WATER LUB
DISCHARGE FLANGE SIZE	6" 150#
GUARD TYPE	OSHA GUARD
SEAL TYPE	PACKED STUFFING BOX W / 316 SS GLAND
INTERNAL AND EXTERNAL COATING	TNEMEC EPOXOLINE 141 SERIES NSF 61 CERTIFIED

COLUMN SPECIFICATIONS	
TYPE	THREADED / ASTM A 53 / WATER LUB
LINESHAFT	C1045 / 1" W / 304 SS SLEEVES
MAX FRICTION LOSS	5 FEET / 100 FT
DIAMETER	4"
BEARING SPACING	AT 10 FEET INTERVALS
SPIDERS	316 SS
BUSHINGS	VESCONITE
TOTAL PUMP LENGTH (TPL)	88.1 FT
INTERNAL AND EXTERNAL COATING	TNEMEC EPOXOLINE 141 SERIES NSF 61 CERTIFIED

BOWL ASSEMBLY SPECIFICATIONS	
BOWL CASTING	ASTM A 48 CLASS 30
IMPELLERS	Ni Al Bz
BUSHINGS	VESCONITE
BOLTING	316 SS
PUMP SHAFT	416 SS
PIPE EXTENSION	2 FT
STRAINER	316 SS
INTERNAL AND EXTERNAL COATING	EPOXY SCOTCH KOTE 134 COATING NSF 61 CERTIFIED

EXTRAS
PERFORMANCE TEST
STARTUP AND TRAINING INCLUDED

EFFECTIVE: 07-JUL-16	DIMENSION PRINT WEATHER PROTECTED TYPE I FRAME: 250TP, TPA, TPH BASIC TYPE: AU	PRINT: 09-2289
SUPERSEDES: 25-APR-11		SHEET: 1 OF 1



ALL DIMENSIONS ARE IN INCHES AND MILLIMETERS

UNITS	P [2]	AA	AB	AC	AF	AG [5]	BB MIN	BE	BV	CD [5]	EO	XO
IN	14.00	1.25	10.25	7.88	2.03	26.75	.25	.94	11.50	23.38	3.25	16.88
MM	356		260	200	52	679	6	24	292	594	83	429

FRAME	UNITS	AJ	AK	BD MAX	BF
254, 256TP	IN	9.125	8.250	10.00	.44
	MM	231.78	209.55	254	11
254, 256TPA	IN	14.750	13.500	16.50	.69
	MM	374.65	342.90	419	18
254, 256TPH	IN	9.125	8.250	12.00	.44
	MM	231.78	209.55	305	11

1. ALL ROUGH DIMENSIONS MAY VARY BY .25" DUE TO CASTING AND/OR FABRICATION VARIATIONS.
2. LARGEST MOTOR WIDTH.
3. TOLERANCES SHOWN ARE IN INCHES ONLY.
4. CONDUIT OPENINGS MAY BE LOCATED IN STEPS OF 180 DEGREES REGARDLESS OF LOCATION. STANDARD AS SHOWN.
5. DIMENSIONS SHOWN ARE FOR ALL RATINGS EXCEPT 20 HP, 4 POLE, TYPE AUE AND AUI. FOR THIS RATING THE DIMENSIONS ARE: AG=28.13 (715 MM)
   CD=24.75 (629 MM)

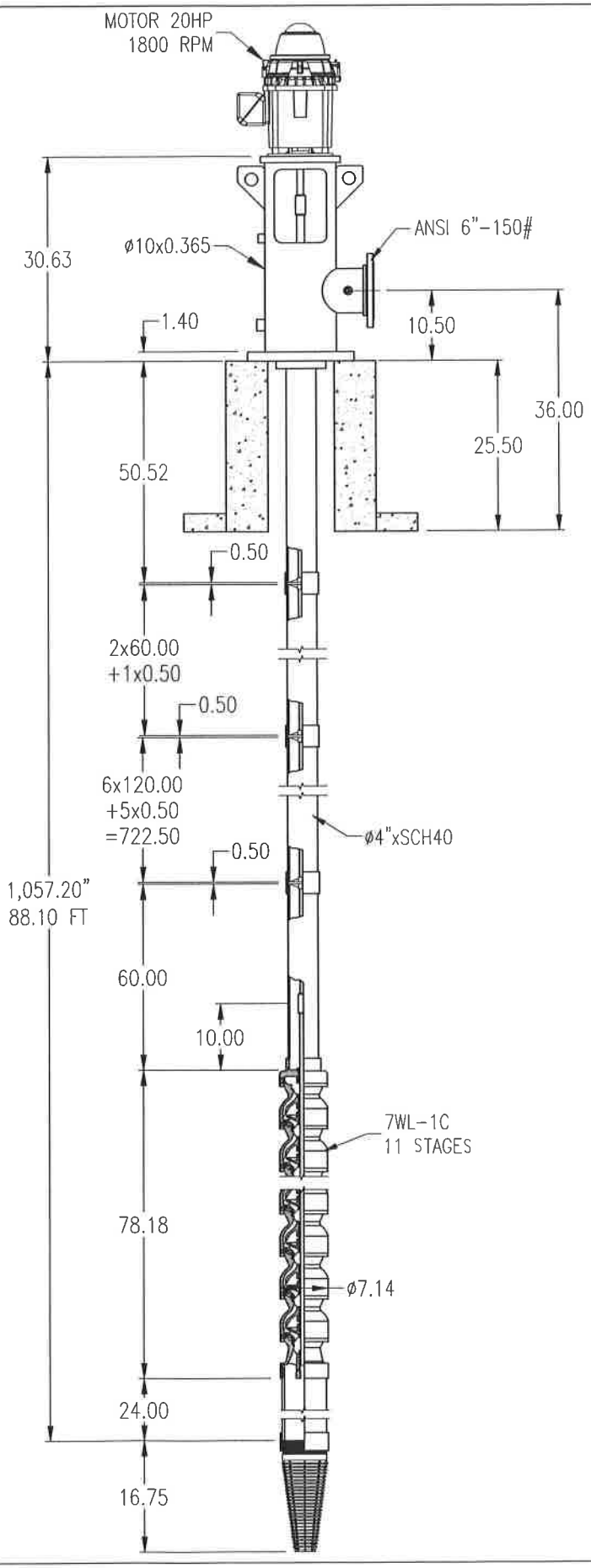
09-2289/E

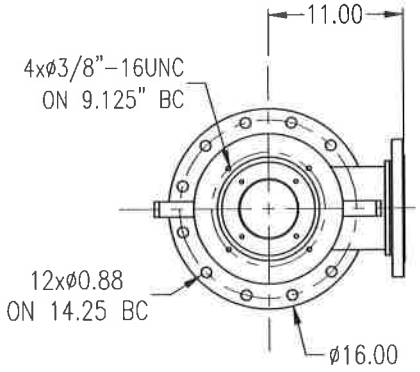
Nidec Motor Corporation
St. Louis, Missouri

US MOTORS

ISSUED BY: R. MARTINEZ
APPROVED BY: R. ALVAREZ

IHP_DP_NMCA (MAR-2011) SOLIDEDGE





TECHNICAL DATA	
FLOW:	150.00 GPM
T D H:	280.00 FT
No STAGES:	11
LUBRICATION:	WATER
SPEED RPM:	1770
POWER HP:	13.60
EFFICIENCY %:	78.70
COLUMN:	85.00 FT

BOESCH

	NAME
DRAW	A. MEDINA
APROB. ING	R. SUAREZ
APROB. COM	G. GONZALEZ

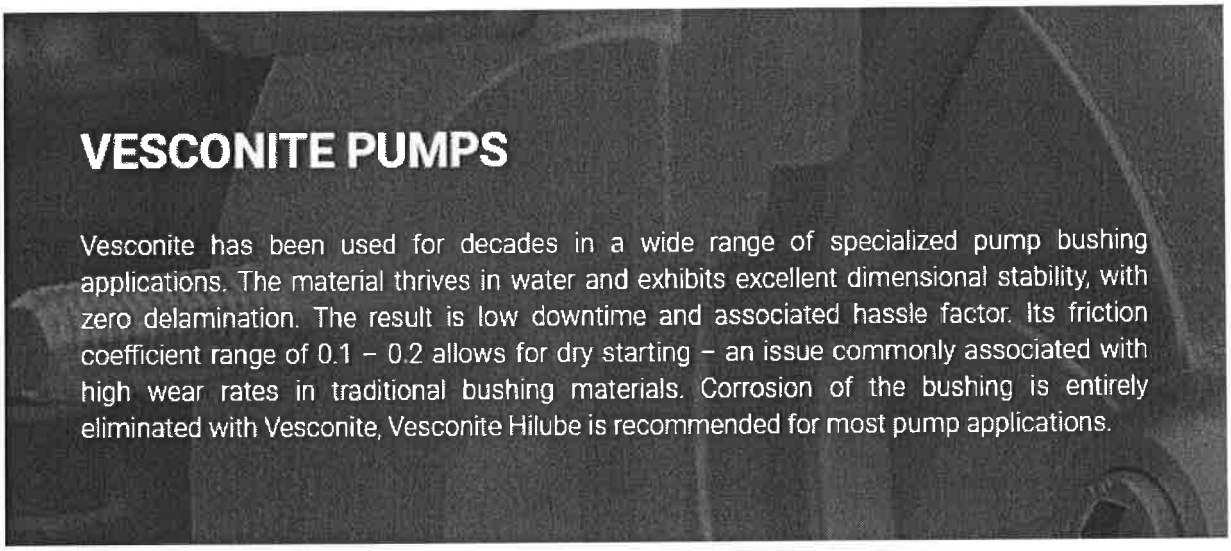
DIMENSIONS ONLY ILLUSTRATIVE, NOT TO MANUFACTURING

CLIENT: WASTEWATER SOLUTIONS
QUOTE: 8-26519
MODEL: 7WL-1C

RC-06-PSG-7.2 | INCH | DATE: 04/27/2021 | REV: 2

VESCONITE
BEARINGS

1958 - 2018
60 YEARS
OF VESCONITE



VESCONITE PUMPS

Vesconite has been used for decades in a wide range of specialized pump bushing applications. The material thrives in water and exhibits excellent dimensional stability, with zero delamination. The result is low downtime and associated hassle factor. Its friction coefficient range of 0.1 – 0.2 allows for dry starting – an issue commonly associated with high wear rates in traditional bushing materials. Corrosion of the bushing is entirely eliminated with Vesconite, Vesconite Hilube is recommended for most pump applications.

BENEFITS FOR PUMPS

Vesconite does not swell or distort in water.
Vesconite does not delaminate.
Vesconite does not corrode.
Vesconite requires no lubrication.
Vesconite is resistant to oils and fuels.
Vesconite bushings are easy to fit and remove.
Vesconite prolongs shaft life

COMMON PUMP APPLICATIONS

Lineshaft bushings in vertical turbine pumps.

Support bushings and wear rings in pumps.

Stuffing box bushings in vertical turbine pumps.

Impeller support bushings in sump pumps.

MATERIAL COMPARISON

In the case of pump impeller and case wear rings, tight clearances are required. Swelling and distortion can be an issue with traditional bushing materials. This is not the case with Vesconite due to its virtually zero water absorption rate and dimensional stability.

Unlike bronze or rubber bushings, fresh and saltwater serves as an effective lubricant for Vesconite. This makes it an ideal material for pump bowl bushings and stuffing box bushings.

VESCONITE
SELF-LUBRICATING BEARINGS AND BUSHINGS

2 Watkins Street
Denver
Johannesburg
2094

Tel: +27 11 616 1111
Fax: +27 11 616 2222
USA: +1 866 635 7596
vesconite@vesconite.com

VESCONITE TYPICAL PROPERTIES

	METRIC	IMPERIAL
Density	1.38 $g.ml^{-1}$	1.38
Melting point	260°C	500°F
Hardness (Shore D)	84	84
Tensile strength at yield (ASTM D-638)	65 MPa	9,400 psi
Tensile strength at break	62 MPa	9,000 psi
Tangent modulus of elasticity (ASTM D-790)	3400 MPa	493,000 psi
Flexural yield strength	120 MPa	17,400 psi
Deflection temperature at 1.85MPa / 268 psi	93°C	200°F
Modulus of elasticity under compression	2290 MPa	332,000 psi
Compression strength at yield	92 MPa	13,300 psi
Shear strength	49 MPa	7,100 psi
Notched impact strength charpy (ASTM D-256)	33 $J.m^{-1}$	0.6 ft-lb/in
Notched impact strength IZOD	16 $J.m^{-1}$	0.3 ft-lb/in
Heat conductivity	0.3 $WK^{-1}.m^{-1}$	2 Btu-in/ft^{2}/$hr^{/0}$ F
Coefficient of linear thermal expansion	$6x10^{-1}mm.mm^{-1.o}C^{-1}$	$3.3x10^{-5}$ in/in/ ^{0} F
Maximum moisture absorption in water at 20°C / 68°F	0.5%	0.5%
Equilibrium moisture absorption in air (50% RH, 23°C / 73°F)	0.2%	0.2%
Dynamic unlubricated friction coefficient on steel	0.12 - 0.20	0.12 -0.20
Dielectric strength	14kV.mm^{-1}	360kV.in^{-1}
Gamma ray resistance 50% loss of properties	100 Mrads	

The above data should be taken for indicative purposes. Physical properties may be altered to some extent by processing conditions.

TNEMEC

PRODUCT DATA SHEET

EPOXOLINE® SERIES 141

PRODUCT PROFILE

GENERIC DESCRIPTION Modified Polyamine Epoxy

COMMON USAGE High solids coating offering high-build edge protection and excellent corrosion resistance. For use on the interior and exterior of steel or concrete tanks, reservoirs, pipes, valves, pumps, and equipment, as well as other steel and concrete substrates. It provides excellent resistance to abrasion and is suitable for immersion service in potable water, crude oil, and finished fuels.

COLORS Available in the following standard industrial colors: 1211 Red, 1253 Gray, 1255 Beige, 1256 Blue and 35GR Black. **Note:** Epoxies chalk with extended exposure to sunlight. Lack of ventilation, incomplete mixing, miscatalyzation or the use of heaters that emit carbon dioxide and carbon monoxide during application and initial stages of curing may cause yellowing to occur. **Important: Due to the product's curing agent chemistry, color variations can be pronounced. However, these changes in color are aesthetic only and will not affect performance or certifications. Contact your Tnemec representative for more information.**

SPECIAL QUALIFICATIONS Certified by **NSF International** in accordance with **NSF/ANSI Std. 61.** Seven day ambient air cured Series 141 is qualified for use on tanks and reservoirs of 500 gallons (1893 L) capacity and greater, pipes 22 inches (56 cm) in diameter and greater, fittings 1 inch (2.54 cm) in diameter and greater, valves 4 inches (10 cm) in diameter and greater, and pumps 4 inches (10 cm) in diameter and greater. When cured for 30 days at ambient air temperature, Series 141 is qualified for use on pipes 10 inches (25.4 cm) in diameter and greater, fittings 3/4 inch (1.9 cm) in diameter and greater, valves 2 1/2 inches (6.35 cm) in diameter and greater, and pumps 4 inches (10 cm) in diameter and greater. Reference the "Search Listings" section of the NSF website at www.nsf.org for details on the maximum allowable DFT, certified colors, and primer and topcoat compatibility for use in potable water.

Series 141 conforms to API 652 for lining above ground storage tanks. Contact your Tnemec representative for additional information.

PERFORMANCE CRITERIA Extensive test data available. Contact your Tnemec representative for specific test results.

COATING SYSTEM

PRIMERS **Steel:** Self-priming, 1, 20, FC20, 27, 27WB, 37H, L69, L69F, N69, N69F, V69, V69F, 90E-92, 90G-1K97, 90-97, H90-97, 90G-98, 91-H_2O, H91-H_2O, 94-H_2O, 135, L140, L140F, N140, N140F, V140, V140F, 394, 530
Concrete: Self-priming, 20, FC20, 27, 27WB, L69, L69F, N69, N69F, V69, V69F, L140, L140F, N140, N140F, V140, V140F, 215, 217, 218
CMU: Self-priming or Series 130, 215, 218, 1254

TOPCOATS **Exterior:** Series 73, 180, 1028, 1029, 1074, 1074U, 1075, 1075U. **Note:** The following maximum recoat time applies when using Series 73, 180, 1074, 1074U, 1075, or 1075U: fourteen (14) days. If this time limit is exceeded, Series 141 must be uniformly scarified prior to topcoating.

SURFACE PREPARATION

PRIMED STEEL **Immersion Service:** Scarify the Series 20, FC20, L69, L69F, N69, N69F, V69, V69F, L140, L140F, N140, N140F, V140 or V140F prime coat surface by brush-blasting with fine abrasive before topcoating if it has been exterior exposed for 30 days or longer and 141 is the specified topcoat.

STEEL **Immersion Service:** SSPC-SP10/NACE 2 Near-White Blast Cleaning with a minimum angular anchor profile of 2.0 mils **Non-Immersion Service:** SSPC-SP6/NACE 3 Commercial Blast Cleaning with a minimum angular anchor profile of 2.0 mils. **Note:** Abrasive blast cleaning generally produces the best coating performance. If conditions will not permit this, Series 141 may be applied to SSPC-SP2 or SP3 Hand or Power Tool Cleaned surfaces.

CONCRETE Allow new cast-in-place concrete to cure a minimum of 28 days at 75°F (24°C). Verify concrete dryness in accordance with ASTM F 1869 "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride" (moisture vapor transmission should not exceed three pounds per 1,000 square feet in a 24 hour period), F 2170 "Standard Test Method for Determining Relative Humidity in Concrete using in situ Probes" (relative humidity should not exceed 80%), or D 4263 "Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method" (no moisture present). Prepare concrete surfaces in accordance with NACE No. 6/SSPC-SP13 Joint Surface Preparation Standards and ICRI Technical Guidelines. Abrasive blast, shot-blast, water jet or mechanically abrade concrete surfaces to remove laitance, curing compounds, hardeners, sealers and other contaminants and to provide a minimum ICRI-CSP 3 surface profile. Large cracks, voids and other surface imperfections should be filled with a recommended filler or surfacer.

ALL SURFACES Must be clean, dry and free of oil, grease, chalk and other contaminants.

TECHNICAL DATA

VOLUME SOLIDS 82% ± 2.0% (mixed) †

RECOMMENDED DFT 4.0 to 18.0 mils (100 to 455 microns) in a one coat application. **Note:** Thickness requirements will vary with substrate, application method and exposure. Contact your Tnemec representative. Maximum dry film thickness for NSF exposure is 18.0 mils.

EPOXOLINE® | SERIES 141

CURING TIME AT 5 MILS DFT

Potable Water Applications:

Temperature	To Handle	To Topcoat	Immersion
90°F (32°C)	3 hours	4 hours ‡	7 days
75°F (24°C)	4 hours	5 hours ‡	7 days
65°F (18°C)	7 hours	9 hours ‡	8 days
55°F (13°C)	13 hours	18 hours ‡	9 days
45°F (7°C)	20 hours	24 hours ‡	13 days
40°F (4°C)	22 hours	28 hours ‡	18 days
35°F (0°C)	64 hours	72 hours ‡	30 days

Curing time varies with surface temperature, air movement, humidity and film thickness.
‡ **Note:** Specific application requirements, including cure schedules and environmental conditions, must be followed when topcoating Series 141. Contact Tnemec Technical Service for detailed instructions. **Note:** Maximum recoat time with itself is seven days. **Note:** For one-coat pipe and valve applications, allow 30 days cure at 75°F (24°C) prior to immersion. Refer to product listing on www.NSF.org for specific potable water return to service information.

Non-Potable Water Applications:

Temperature	To Handle	To Topcoat	Immersion
75°F (24°C)	3 hours	4 hours ‡	5 days
40°F (4°C)	4 hours	5 hours ‡	14 days

Cure time varies with surface temperature, air movement, humidity and film thickness.
‡ **Note:** Specific application requirements, including cure schedules and environmental conditions, must be followed when topcoating Series 141. Contact Tnemec Technical Service for detailed instructions. **Note:** Maximum recoat time with itself is seven days.

VOLATILE ORGANIC COMPOUNDS

EPA Method 24
Unthinned: 0.90 lbs/gallon (107 grams/litre)
Thinned 5% (No. 60 Thinner): 1.21 lbs/gallon (145 grams/litre)
Thinned 10% (No. 4 Thinner): 1.45 lbs/gallon (173 grams/litre) †

HAPS

Unthinned: 1.27 lbs/gal solids **Thinned 5% (No. 60):** 1.28 lbs/gal solids **Thinned 10% (No. 4):** 1.95 lbs/gal solids

THEORETICAL COVERAGE

1,315 mil sq ft/gal (32.2 m²/L at 25 microns). See APPLICATION for coverage rates. †

NUMBER OF COMPONENTS

Two: Part A (amine) and Part B (epoxy)

MIXING RATIO

By volume: Two (Part A) to one (Part B)

PACKAGING

	PART A (Partially Filled)	PART B (Partially Filled)	When Mixed
Large Kit	1-6 gallon pail	1-3 gallon pail	5 gallons
Small Kit	1-1 gallon can	1-1 gallon can	1 gallon

NET WEIGHT PER GALLON

13.33 ± 0.25 lbs (6.05 ± .11 kg) †

STORAGE TEMPERATURE

Minimum 20°F (-7°C) Maximum 110°F (43°C)
Prior to application, the material temperature should be above 60°F (16°C). It is suggested the material be stored at this temperature at least 48 hours prior to use.

TEMPERATURE RESISTANCE

(Dry) Continuous 250°F (121°C) Intermittent 275°F (135°C)

SHELF LIFE

12 months at recommended storage temperature.

FLASH POINT - SETA

Part A: 91°F (33°C) Part B: 111°F (44°C)

HEALTH & SAFETY

This product contains chemical ingredients which are considered hazardous. Read container label warning and Material Safety Data Sheet for important health and safety information prior to the use of this product.
Keep out of the reach of children.

APPLICATION

COVERAGE RATES

	Dry Mils (Microns)	Wet Mils (Microns)	Sq Ft/Gal (m²/Gal)
Minimum	4.0 (100)	5.0 (125)	329 (30.5)
Maximum	18.0 (455)	22.0 (560)	73 (6.8)

Note: Maximum of 18.0 mils DFT in one coat. **Maximum total dry film thickness for NSF exposure is 18.0 mils.** Allow for overspray and surface irregularities. Wet film thickness is rounded to the nearest 0.5 mil or 5 microns. Application of coating below minimum or above maximum recommended dry film thicknesses may adversely affect coating performance. Reference the "Search Listings" section of the NSF website at www.nsf.org for details on the maximum allowable DFT. †

MIXING

Mix the entire contents of Part A and Part B separately. Scrape all of the Part B into the Part A pail by using a flexible spatula. Use a variable speed drill with a PS Jiffy blade and mix the blended components for a minimum of two minutes. Apply the mixed material within pot life limits after agitation. Both components must be above 50°F (10°C) prior to mixing. For optimum application properties, the material temperature should be above 60°F (16°C). For applications to surfaces between 35°F to 50°F (2°C to 10°C) allow mixed material to stand 30 minutes and restir before use. **Note:** A large volume of material will set up quickly if not applied or lessened in mass. **Caution: Do not reseal mixed material. An explosion hazard may be created.**

THINNING

Caution: Do not add thinner to Part A prior to mixing with Part B. For airless spray, brush or roller, thin up to 5% per gallon with No. 4 Thinner or No. 60 Thinner. For air spray, thin up to 10% per gallon with No. 4 or No. 60 Thinner.

POT LIFE

2 hours at 77°F (21°C) 1 hour at 90°F (32°C)

SPRAY LIFE

1 hour at 77°F (21°C) 30 minutes at 90°F (32°C)

EPOXOLINE® | SERIES 141

APPLICATION EQUIPMENT

Air Spray

Gun	Fluid Tip	Air Cap	Air Hose ID	Mat'l Hose ID	Atomizing Pressure	Pot Pressure
DeVilbiss JGA	E	765 or 704	5/16" or 3/8" (7.9 or 9.5 mm)	3/8" or 1/2" (9.5 or 12.7 mm)	75-100 psi (5.2-6.9 bar)	10-20 psi (0.7-1.4 bar)

Low temperatures or longer hoses require higher pot pressure.

Airless Spray

Tip Orifice	Atomizing Pressure	Mat'l Hose ID	Manifold Filter
0.017"-0.021" (430-535 microns)	3000-3800 psi (207-262 bar)	1/4" or 3/8" (6.4 or 9.5 mm)	60 mesh (250 microns)

Use appropriate tip/atomizing pressure for equipment, applicator technique and weather conditions.
Roller: Roller application optional when environmental restrictions do not allow spraying. Use 3/8" or 1/2" (9.5 mm to 12.7 mm) synthetic woven nap covers.
Brush: Recommended for small areas only. Use high quality natural or synthetic bristle brushes.

SURFACE TEMPERATURE

Minimum 35°F (2°C) Maximum 135°F (57°C).
The surface should be dry and at least 5°F (3°C) above the dew point. Coating will not cure below minimum surface temperature.

CLEANUP

Flush and clean all equipment immediately after use with the recommended thinner or MEK.
† Values may vary with color.

3M™ Scotchkote™ Fusion-Bonded Epoxy Coating 134

Data Sheet and Application Guide **February 2016**

Handling and Safety Precautions: Read all Health Hazard, Precautionary and First Aid, Material Safety Data Sheet, and product label prior to handling or use.

Product Description

3M Scotchkote Fusion-Bonded Epoxy Coating 134 is a one-part, heat curable, thermosetting epoxy coating designed for corrosion protection of metal. The epoxy is applied to preheated steel as a dry powder which melts and cures to a uniform coating thickness when properly applied. This bonding process provides excellent adhesion and coverage on applications such as valves, pumps, pipe drains, hydrants, pipes, tanks and porous castings. Scotchkote coating 134 is NSF/ANSI 61 certified for potable water applications and is also resistant to wastewater, corrosive soils, hydrocarbons, harsh chemicals, and sea water. Powder properties allow easy manual or automatic application by electrostatic or air-spray equipment.

Product Features

- No primer required for most applications.
- For electrostatic or air-spray application on preheated metal articles.
- Can be electrostatically applied to unheated metal parts and subsequently cured by baking.
- Long gel time allows application on large or complex articles, minimizing fear of runs, sags, laminations, or unsightly overspray.
- Especially useful for coating the inside of pipe or other fabrications where a smooth, corrosion resistant coating is required.
- Can be machined by grinding or cutting to meet close tolerance requirements.
- Allows easy visual inspection of coated articles.
- Can be painted with alkyd paint, acrylic lacquer, polyurethane, or acrylic enamel for color coding.
- Applied coating will not sag cold flow.
- Lightweight for lower shipping costs.
- Protects over wide temperature range.
- Resists direct burial soil stress.
- Resists cavitation and cathodic disbondment.
- Can be used for elevated temperature service in presence of H_2S, CO_2, CH_4, crude oil and brine when applied over phenolic primer such as 3M Scotchkote Liquid Phenolic Primer 345.
- Long-term performance history in water, sewage, and other service environments.
- Scotchkote coating 134 has been tested and certified to NSF /ANSI Standard 61, Drinking Water System Components. For NSF certified applications, the max approved thickness is 60 mil (1.5 mm) and the maximum approved operating temperature is 140°F/60°C. Primers may not be used for potable water applications.
- Scotchkote coating 134 meets the requirements of AWWA Standard C213 and C550.

Temperature Operating Range

For non-potable water applications Scotchkote coating 134, when properly applied to a nominal thickness of 15 mils, should perform on pipelines operating between -100°F/-73°C to 203°F/95°C. For temperatures reaching 230°F/110°C thicker coatings, greater than 30 mils, may improve the service capability. However, it is difficult to accurately predict field performance from the laboratory data due to the wide variations in actual field conditions. Soil types, moisture content, temperatures, coating thickness, and other factors specific to the area all influence the coating performance and upper temperature operating limits.

General Application Information

1. Remove oil, grease and loosely adhering deposits.
2. Abrasive blast clean the surface to NACE No. 2/SSPC-SP10 ISO 8501:1, Grade SA 2 ½ near-white metal.
3. Apply mechanical masks or mask with materials such as 3M Scotch® Glass Cloth Tape 361 or 3M Aluminum Foil Tape 425 as required.
4. Preheat article to the desired application temperature per cure specifications.
5. Deposit Scotchkote coating 134 by powder spray to the specified thickness.
6. Cure according to cure specifications.
7. Visually and electrically inspect for coating flaws after the coating has cooled.
8. Repair all defects.

Cure Specifications

Scotchkote coating 134 may be applied to metal articles which have been preheated to a temperature of 300°F/149°C to 475°F/246°C. After application, Scotchkote coating 134 must be cured according to the cure guide to achieve maximum performance properties.

If Scotchkote coating 134 is electrostatically applied to unheated parts, the cure time should be measured from the time the coated part reaches the cure temperature. After cure, the coating may be force cooled using air or water to facilitate inspection and handling.

Product - Physical and Chemical Properties

3M™ Scotchkote™ Fusion-Bonded Epoxy Coating 134 Cure Guide

Temperature of Article at Time of Powder Application	Typical Gel Time	Cure Time
475°F/246°C	40 seconds	7 minutes
450°F/232°C	60 seconds	10 minutes
400°F/204°C	120 seconds	15 minutes
350°F/177°C	330 seconds	25 minutes
425°F/218°C	90 seconds	25 minutes for NSF/ANSI 61 approved applications

Typical Properties

Proerty	Value
Color Forest Green	Color Forest Green
Specific Gravity – Powder (Air Pycnometer)	1.51
Coverage	127 ft^2/lb/mil (066 m^2/kg/mm)
Fluid Bed Density 33 lbs/ft^3 (530 kg/m3)	33 lbs/ft^3 (530 kg/m^3)
Shelf Life at 80°F/27°C 18 months	Shelf Life at 80°F/27°C 18 months
Average Gel Time (400°F/204°C)	120 seconds
Edge Coverage	12% to 18%
Minimum Explosive Concentration	0.03 oz/ft^3 (30,6 g/m^3)
Ignition Temperature	986°F/530°C
V.O.C. (As Supplied)	0 g/L, as calculated

Chemical/Pressure/Temperature Resistance

Test Conditions	Gas Phase	Results
Autoclave, 120°F/49°C 48 hours, 1500 psi/10.3 MPa	99.5% CO_2 0.5% H_2S	Excellent adhesion, no coating loss or blisters in aqueous, hydrocarbon, or gas phase
Autoclave, 150°F/66°C 48 hours, 2200 psi/15.2 MPa	80% CH_4 12% CO_2 8% H_2S	Excellent adhesion, no coating loss or blisters in aqueous, hydrocarbon, or gas phase
Autoclave, 200°F/93°C 24 hours, 3300 psi/22.8 MPa	86% CH_4 8% CO_2 6% H_2S	Excellent adhesion, no coating loss or blisters in aqueous, hydrocarbon, or gas phase
Autoclave, 300°F/149°C 24 hours, 3000 psi/20.7 MPa	90% CH 10% CO_2 Trace H_2S	Excellent adhesion, no coating loss or blisters in aqueous, hydrocarbon, or gas phase

All tests performed on 3M™ Scotchkote™ Fusion Bonded Epoxy Coating 134 applied over a 1 mil/25,4 µm phenolic primer. Liquid phase for all test conditions: 33% kerosene, 33% toluene, 34% brine solution of 5% NaCl.

Continued Product - Physical and Chemical Properties

Chemical Resistance Testing

ASTM G20-10 Immersion Testing at 20°C

Solution	30 days	60 days	90 days
Acetic Acid (5%)	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Acetone	No blistering or disbondment, coating is slightly rubbery	No blistering or disbondment, coating is slightly rubbery	No blistering or disbondment, coating is slightly rubbery
Carbon Disulfide	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Gasoline	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Hydrochloric Acid (10%)	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Kerosene	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Lime Water, Saturated	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Methyl Alcohol	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Methyl Ethyl Ketone	No blistering or disbondment, coating is slightly rubbery	No blistering or disbondment, coating is slightly rubbery	No blistering or disbondment, coating is slightly rubbery
Nitric Acid (10%)	Discoloration; No blistering or disbondment	Discoloration; No blistering or disbondment	Discoloration; No blistering or disbondment
Sodium Carbonate Solution (20%)	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Sodium Chloride Solution (10%)	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Sodium Hydroxide Solution (10%)	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Sulfuric Acid (30%)	No blistering or disbondment	No blistering or disbondment	Slight discoloration; No blistering or disbondment
Toluene	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Trichloroethylene	No blistering or disbondment, coating is slightly rubbery	No blistering or disbondment, coating is slightly rubbery	No blistering or disbondment, coating is slightly rubbery

Continued Product - Physical and Chemical Properties

3M internal – Historical Chemical Resistance testing based on similar, but not identical products.**
Testing Temperature 73°F (23°C*)

Acetic Acid up to 25%	Ferric Nitrate	Potassium Borate
	Ferric Sulfate	Potassium Carbonate
Aluminum Chloride	Ferrous Nitrate	Potassium Chloride
Aluminum Hydroxide	Ferrous Sulfate	Potassium Dichromate up to 10%
Aluminum Nitrate	Formaldehyde up to 100%	Potassium Hydroxide
Aluminum Sulfate	Formic Acid up to 10%	Potassium Nitrate
Ammonium Carbonate	Freon: gas and liquid	Potassium Sulfate
Ammonium Chloride	Gas (Mfg)	Propylene Glycol
Ammonium Hydroxide up to 100%	Gas (Natural)	Sewage
Ammonium Nitrate	Gasoline Leaded	Silver Nitrate
Ammonium Phosphate	Gasoline Unleaded	Soap Solution
Ammonium Sulfate	Glycerine	Soaps
Amyl Alcohol	Heptane	Sodium Bicarbonate
Barium Carbonate	Hexane	Sodium Bisulfate
Barium Chloride	Hexylene Glycol	Sodium Carbonate
Barium Hydroxide	Hydrochloric Acid up to 25%	Sodium Chlorate
Barium Nitrate	Hydrofluoric Acid up to 40%	Sodium Chloride
Barium Sulfate	Hydrogen Sulfide	Sodium Hydroxide
Benzene	Isopropyl Alcohol	Sodium Meta Silicate up to 5%
Boric Acid	Jet Fuel	Sodium Nitrate
Borax		Sodium Sulfate
Butyl Alcohol	Linseed Oil	Sodium Thiosulfate up to 5%
Cadmium Chloride	Lubricating Oil	Stannic Chloride
Cadmium Nitrate	Magnesium Carbonate	Sulfur
Cadmium Sulfate	Magnesium Chloride	Sulfuric Acid up to 60%
Calcium Carbonate	Magnesium Hydroxide	Synthetic Sea Fuel (60% Naphtha,
Calcium Chloride	Magnesium Nitrate	20% Toluene, 15% Xylene,
Calcium Hydroxide	Magnesium Sulfate	5% Benzene)
Calcium Nitrate		Synthetic Silage
Calcium Sulfate	Mercuric Chloride	Tetrapropylene
Calcium Disulfide	Methanol (softened)	Toluene
Carbon Tetrachloride	MIBK (Methyl Isobutyl Ketone)	
Caustic Potash	Mineral Oil	Triethylene Glycol
Caustic Soda	Mineral Spirits	Trisodium Phosphate
Chlorine 2%	Molasses	Turpentine
Citric Acid up to 25%	Motor Oil	Undecanol
Copper Chloride	Muriatic Acid	Urea
Copper Nitrate	Naphtha	Urine
Copper Sulfate	Nickel Chloride	Vinegar
Crude Oil	Nickel Nitrate	Water
Cyclohexane	Nickel Sulfate	Chlorinated
Cyclohexene	Nitric Acid up to 30%	Demineralized
Cyclopentane	Nonane	Distilled
Detergent	Octane	Salt
Diesel Fuel	Oxalic Acid	Sea
Diethylene Glycol	Pentane	Xylol
Dipropylene Glycol	Perchloroethylene	Zinc Chloride
Ethanol (softened)	Phosphoric Acid up to 50%	Zinc Nitrate
Ethylbenzene	Phosphorous Trichloride	Zinc Sulfate
Ethylene Glycol	Potassium Aluminum Sulfate	10-10-10 Fertilizer, Saturated
Ferric Chloride up to 50%	Potassium Bicarbonate	

**Tests conducted for two years. No effect unless otherwise stated.

3M™ Scotchkote™ Fusion-Bonded Epoxy Coating 134

Storage	In a cool dry location less than 80°F (27°C)
Shelf-Life	18 months from date of manufacture
Availability	For ordering, technical, product information, or the Safety Data Sheet, call: Phone: 800-722-6721 Fax: 877-601-1305

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