KITUNDU
STUDIO

RUUPAYWA: SONGS OF THE WATERSHED

Final Design Package

San Francisco Arts Commission

Site	**Alameda Creek Watershed Center**
Artist	**Walter Kitundu - Kitundu Studio** **in partnership with the Muwekma Ohlone Tribe**
Fabricator	**Vector Custom Fabrication**
Engineering	**Tipping Structural Engineers**
Sound Consulting	**ARUP**

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Ruupaywa: Songs of the Watershed

SCULPTURE AND SEATING OVERVIEW

Fig.1 Top down view of plaza

- The sculpture depicts a Golden Eagle that represents a significant figure in the Muwekma Ohlone creation story.
- The work is 10 feet 4 inches high,18 feet wide from wing to wing. It is 17 feet from wingtips to tail.
- It is fabricated with 2 inch square steel tubing, sandblasted and finished to withstand the elements.
- The design is largely open framed allowing visibility to the surrounding garden and decreasing wind loads.
- In 23 of the approx 140 openings in the sculpture there are 9/16” laminated tempered glass panels mounted with glass clamps. The glass is printed with transparent images from the watershed.
- There are 3 curved benches below the bird oriented to the east, west, and south. Each bench consists of a poured concrete base and a 2 inch thick redwood slab top, mounted on leveling bolts in the concrete.

SCULPTURE RENDERINGS

Fig. 2 Environmental view with Watershed Center visitor

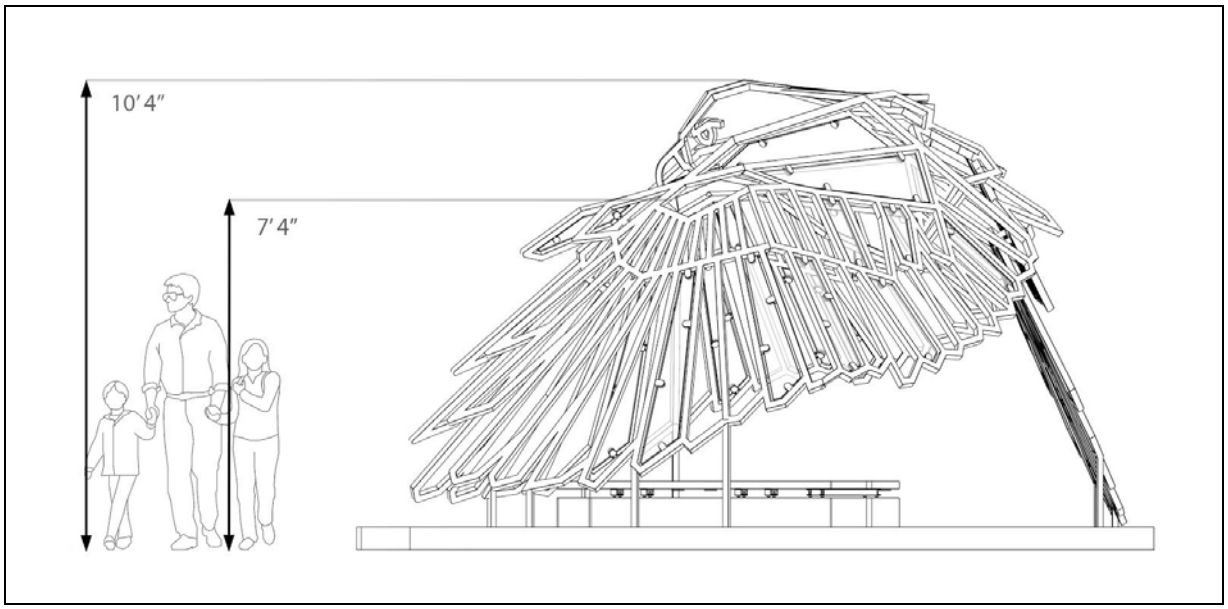
Fig. 3 Glass panels will cast color-filled shadows on sunny days

Fig. 4 Detail of glass panels and clamps on the wing.

Fig. 5 Three redwood and concrete benches allow a visitor to easily face the cardinal directions, recognizing this as an important element of some Ohlone prayer practice.

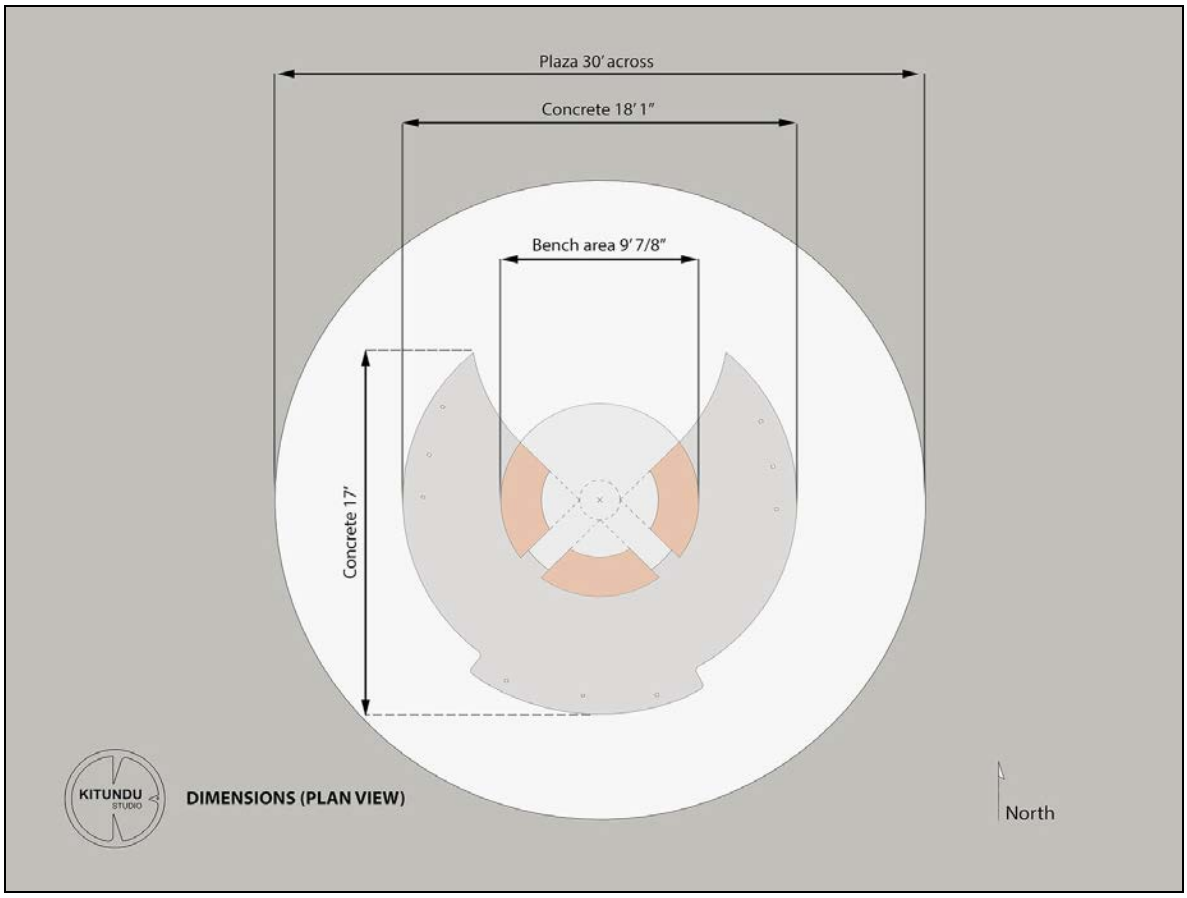
SCALE AND DIMENSIONS

Fig. 6 (elevation)



Sculpture height is 10 feet 4 inches with overhead clearance in the seating area of 7 feet 4 inches.

Fig. 7 Dimensions (plan view)



(See Fig. 7)

- The plaza is 30 feet in diameter and composed of GraniteCrete.
- The area labeled concrete encompasses the footprint of the sculpture at 18 feet wide east to west, and 17’ across north to south.
- The seating area is approximately 9 feet in diameter and accommodates 3 benches.

Fig. 8 Seating area layout (plan view)

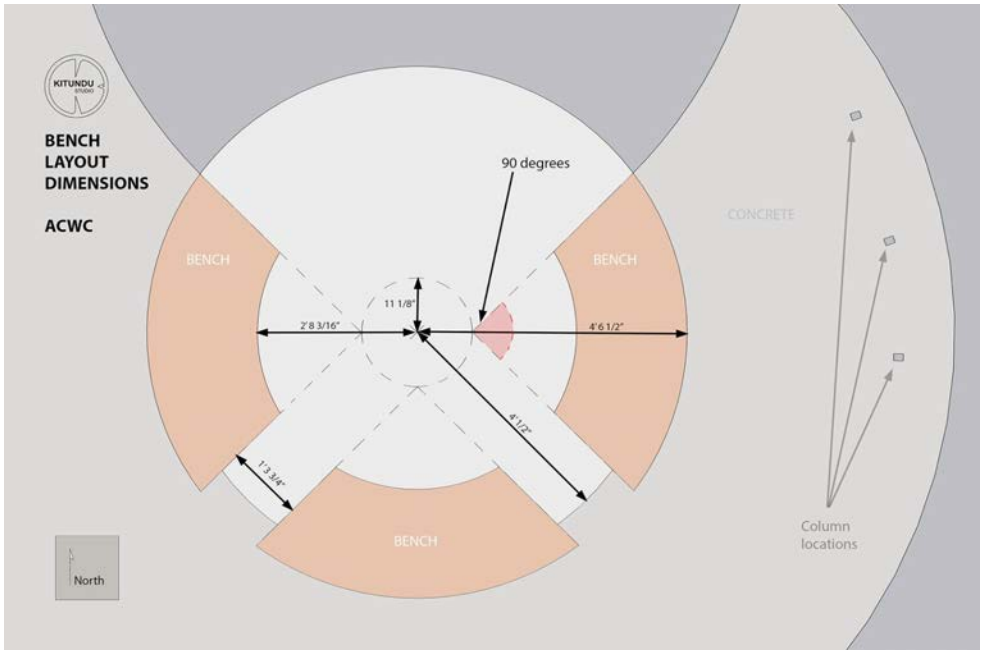


Fig. 9 Bench dimensions

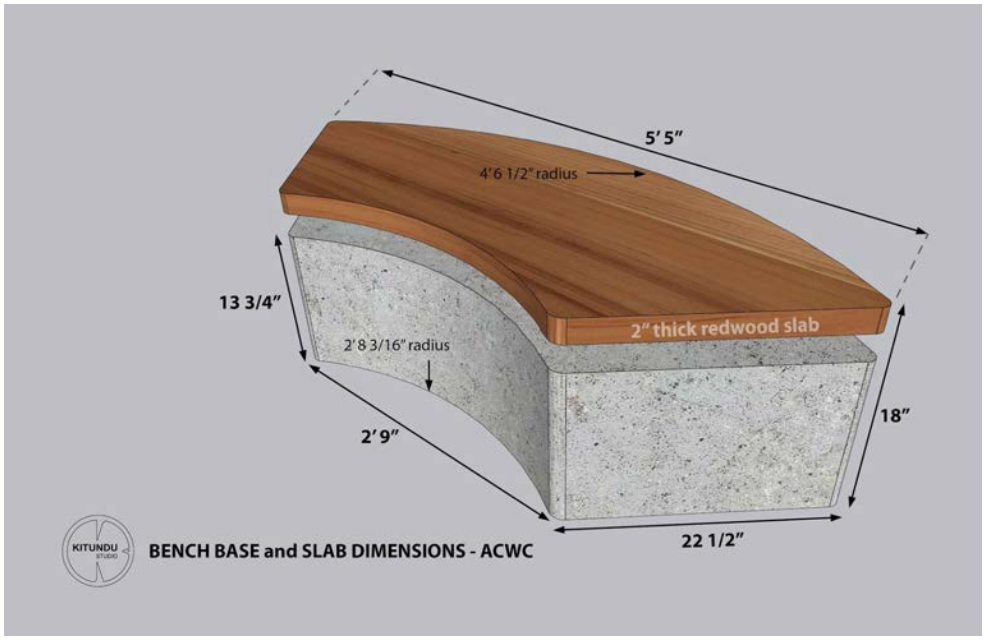
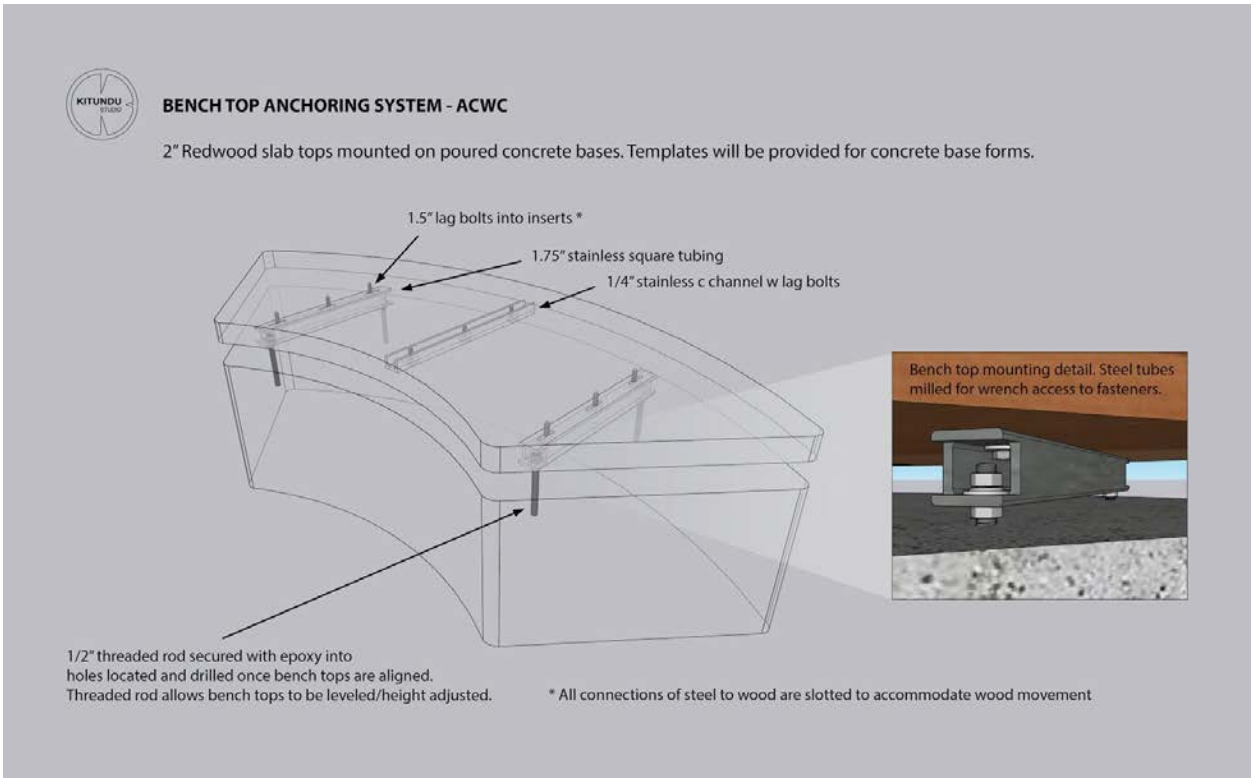


Fig. 10 Benchtop anchoring system



- The redwood is sourced sustainably and is naturally resistant to rot and the elements.
- Wood movement is accounted for by the mounting system which serves three purposes.
    1. It allows the wood to expand and contract with changes in relative humidity and temperature
    2. It keeps the wood flat by restricting any vertical movement
    3. It keeps the wood dry by elevating it above the concrete and allowing the slab to be inclined slightly to shed water
- Square tube, “C” channel, and fasteners are stainless steel.
- This design allows for flexibility and precise placement of the wood slab during installation as the anchor fittings are located, drilled, and epoxied just prior to installation instead of using concrete embedded hardware.

MATERIALS AND FINISHES

Fig. 11 Welded steel sample parts prior to finishing

- The eagle sculpture is fabricated from 2” square, ⅛” wall, steel tubing, welded, sandblasted, and painted to withstand the elements (pictured prior to finishing). All elements that protrude into the public sphere will be rounded and smooth.

- Paint: Tnemec “Blue Bell” (see *Fig. 12*). Surface finish: Satin. Description: Advanced Thermoset Solution Fluoropolymer. A low VOC, fluoropolymer coating that provides an ultra-durable finish with user friendly brush, roll and conventional spray application. It has outstanding color and gloss retention even in the most severe exposures.

Fig. 12 Paint color chosen to integrate well with garden setting while still reading clearly against background vegetation. (computer monitors, screens, and printers may not reproduce color accurately)

BENCHTOP MATERIAL

Fig. 13 Redwood

- Sustainably sourced redwood
- Benchtops will be glue-ups, panels made up of 3-5 smaller boards assembled with floating tenons and waterproof exterior glue (long grain connections). This allows us to use sustainably sourced wood which comes in smaller dimensions.

GLASS SPECIFICATIONS

- 23 Panels, approx. 40 square feet, of Skyline custom digital ceramic frit on surface #2 or #3 of 9/16” laminated glass.
- Make-up: ¼” Starphire, tempered, 0.060 clear interlayer ¼” Starphire, heat strengthened.
- Glass to be pattern cut with polished perimeter, inside corners will have small radius (TBD).
- 83 Glass Clamps, figured as SADEV 62 x 45 mm round, ¾” perimeter gap required. No glass prep; Alloy 316 stainless steel, suitable for aggressive environments (seaside, chorine)

Fig. 14 Glass printing example - Nick Cave, Garfield Park Station, Chicago

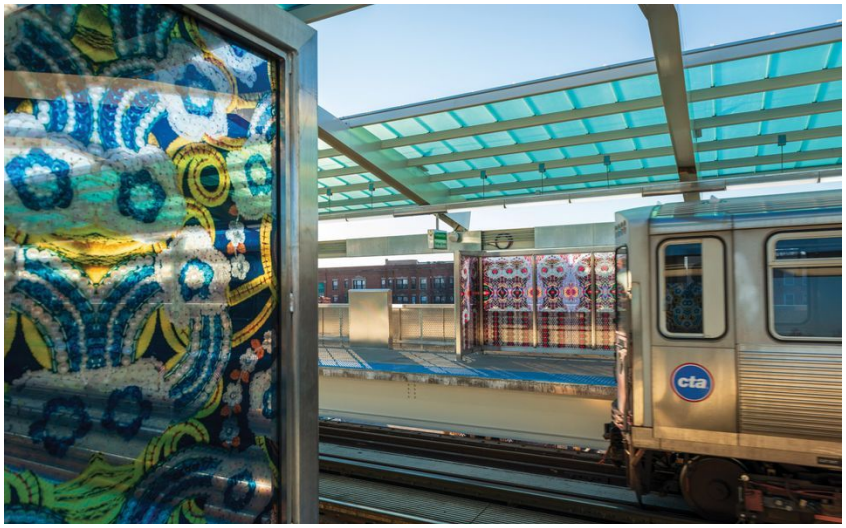


Photo: Patrick Pyszka

SOUND INSTALLATION OVERVIEW

Nine in-ground speakers around the garden will play recordings that appear to be local bird song and animal calls.They will be in conversation with the natural sounds already present on site. The sounds will actually be the voices of Muwekma Ohlone participants speaking/singing phrases in Chochenyo and translated/transformed into sounds from the natural world.

Fig. 15 Speaker Locations - audio cables are below ground in conduit. Control panel in building.

Figure 16 In-ground speaker examples

FreeSpace® 360P Series II loudspeaker

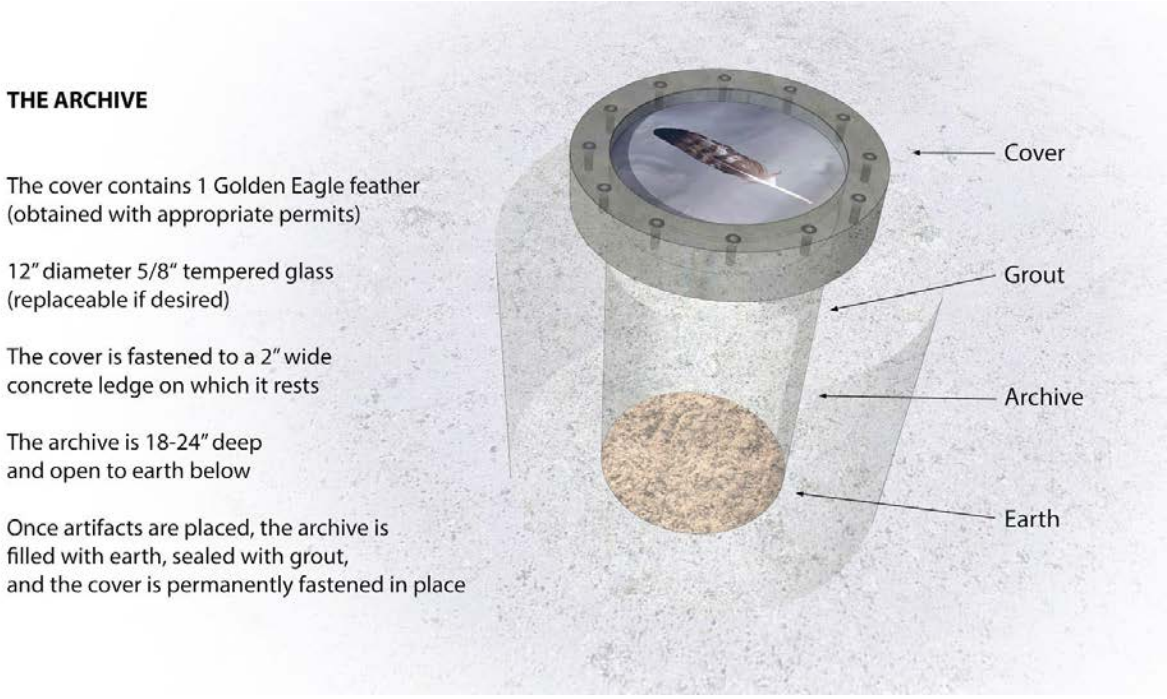
• Full-range environmental loudspeaker with one downward firing 4.5" (114 mm) advance composite environmental full-range driver for in- ground or above-ground mounting
• Domed port grille reflects sound into the listening area for clear, consistent performance
• Cabinet shape acts as acoustic diffuser directing mid- and high- frequency energy out towards listeners. Base of loudspeaker acts as a tuned, multi-chambered ported enclosure
• Multi-tap line transformer provides easy-to-change tap settings
• Tamper-resistant design
• Internal speaker protection circuit safeguards drivers

Note: Additional equipment specs at end of document

ARCHIVE and CONCRETE OVERVIEW

The archive is the very center of the plaza installation, integrated into the concrete slab below the seating area. It is open to the earth below and serves as a place of return for any artifacts the tribe wishes to use it for. Once filled, it is sealed permanently with a cover that holds a single Golden Eagle feather, representing the eagle in the Ohlone creation story.

Fig. 17 Archive



CONCRETE OVERVIEW

- The slab/curb acts as a low pedestal, framing the installation while safely providing an indication to those navigating with canes that the sculpture is present.
- It covers the footings for the sculpture so support posts can emerge cleanly through the surface with no visible fasteners
- The curb meets the bases of the benches which are poured monolithically with the ground level, central, seating area slab which contains the archive.
- Please see *Fig. 18,19* on the following page

Fig. 18 Concrete work from above (shaded areas represent sections below ground)

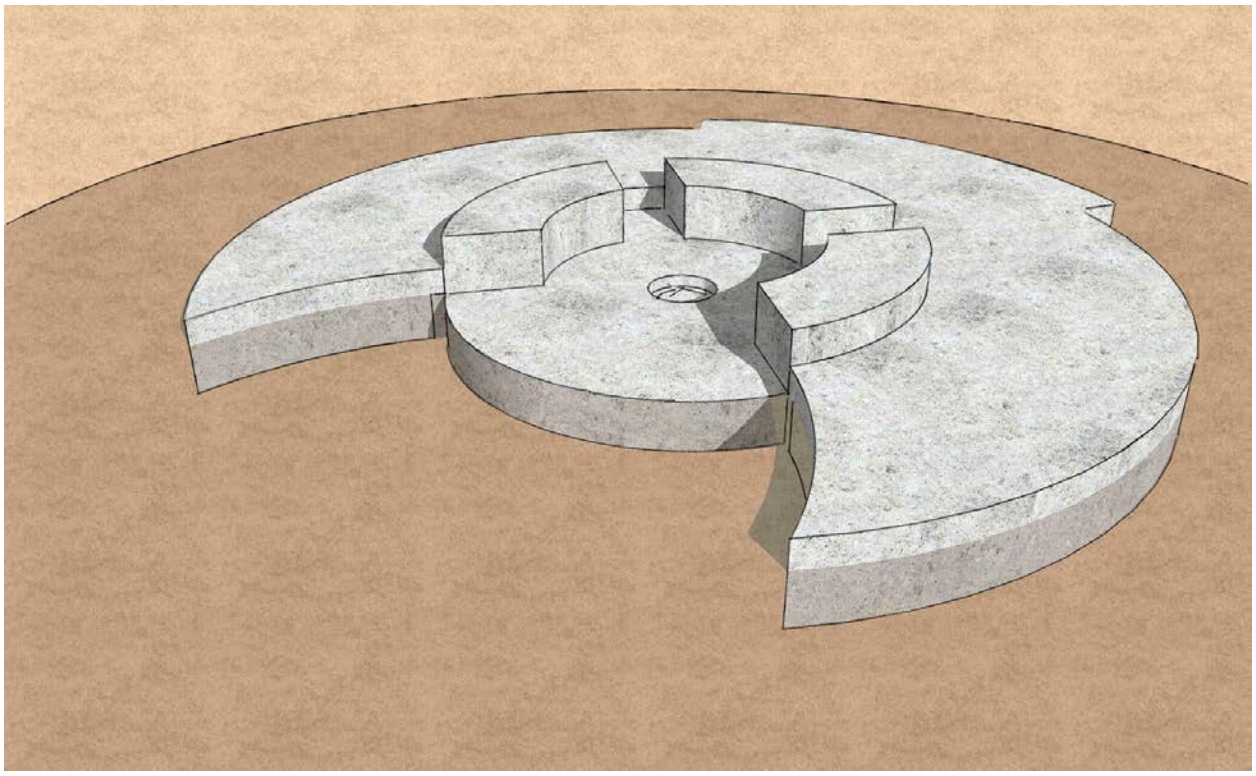
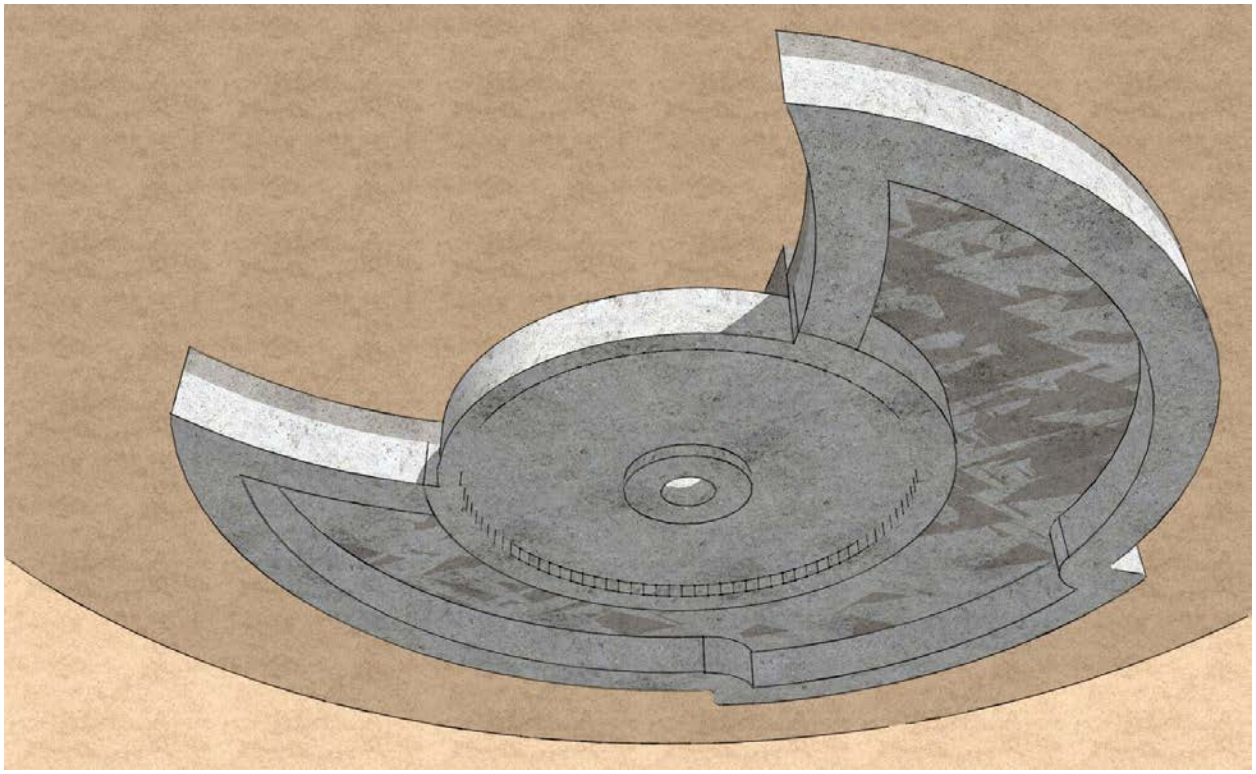


Fig. 19 Concrete from below showing reinforced thickened edges of slabs and opening for archive.



ADA COMPLIANCE and CONSIDERATIONS

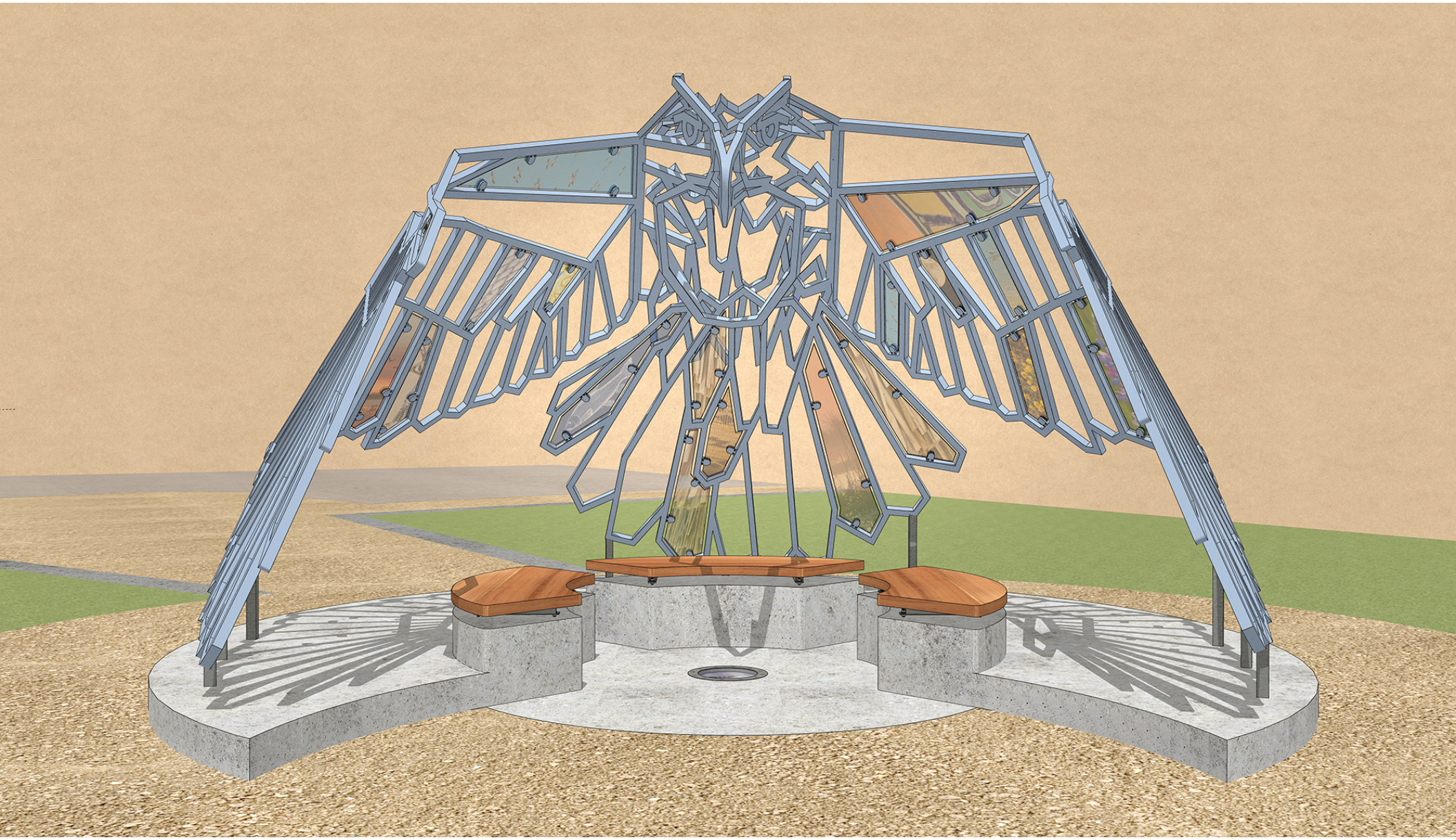
Fig. 20

Kitundu Studio consulted with the San Francisco Mayor's Office on Disability regarding our initial design and made adjustments to the sculptural scale and position to ensure a thoughtful, safe, and accessible installation.

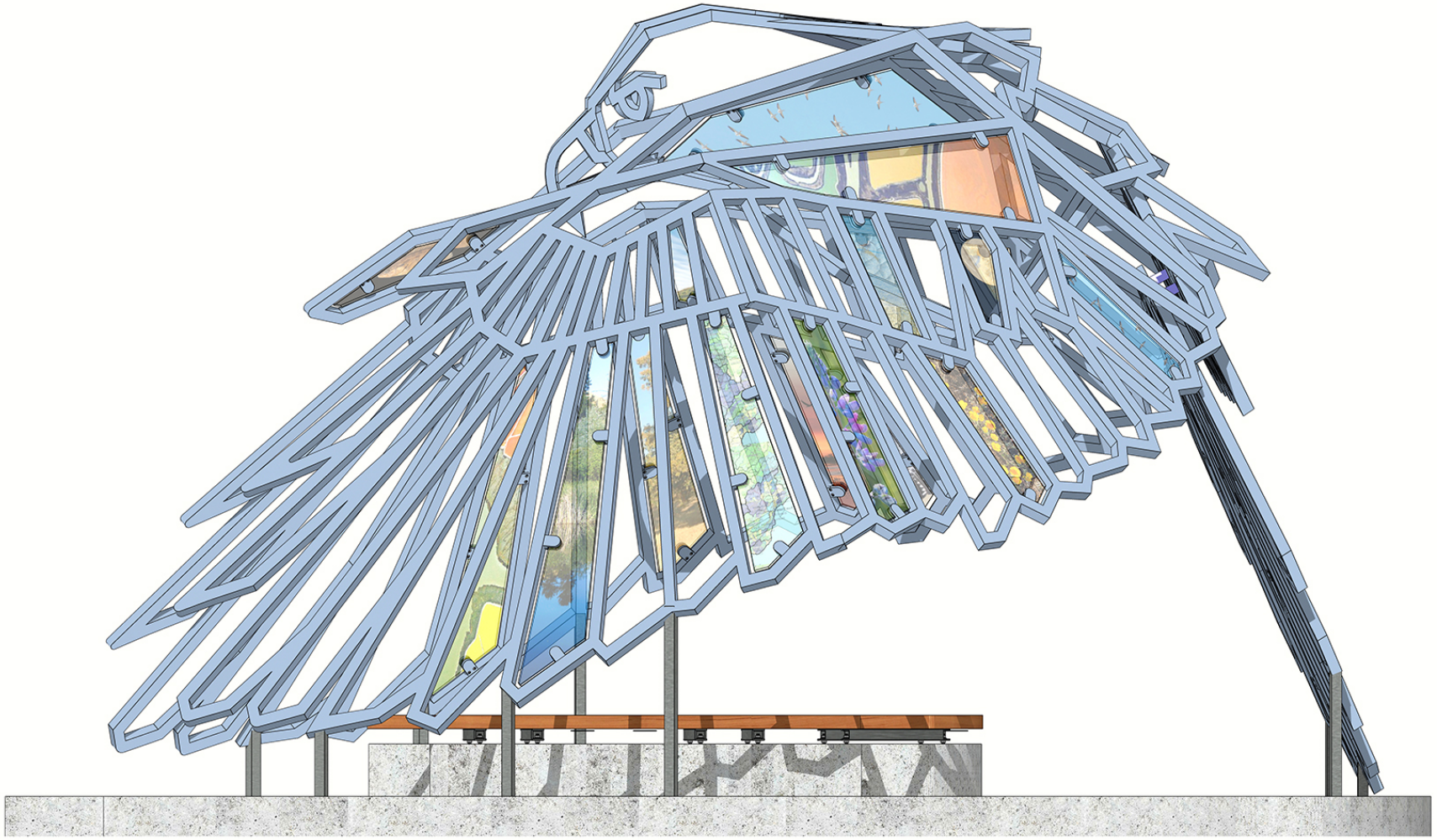
- 72" (6 ft) walkway allows for 2-way wheelchair traffic
- Overhead clearance greater than 80" in seating area (88")
- Wheelchair transfer space alongside benches
- Painted steel surfaces will be smooth to the touch.
- Any projecting elements are rounded over for safety
- 18" standard bench height
- 6" elevated curb provides guidance to visually impaired people navigating with canes
- 6" elevated curb encloses sculptural footprint minimizing trip hazards.
- Glass is 9/16" tempered and laminated for safety and strength.
- Sculpture is engineered for minimal deflection under wind seismic or other loads.

Kitundu Studio requests signage be produced in braille and multiple languages, especially Chochenyo, wherever possible.

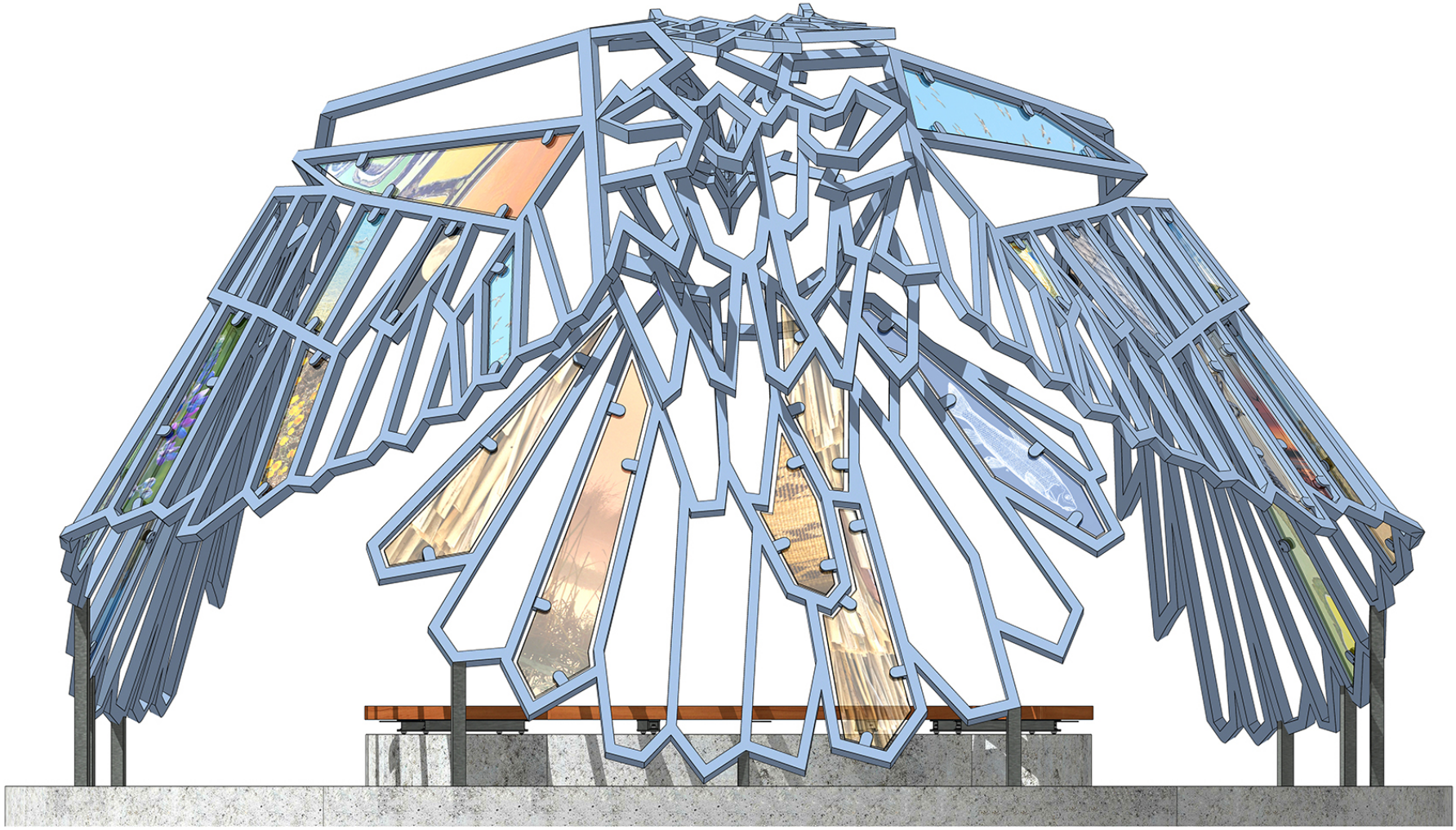
Looking South



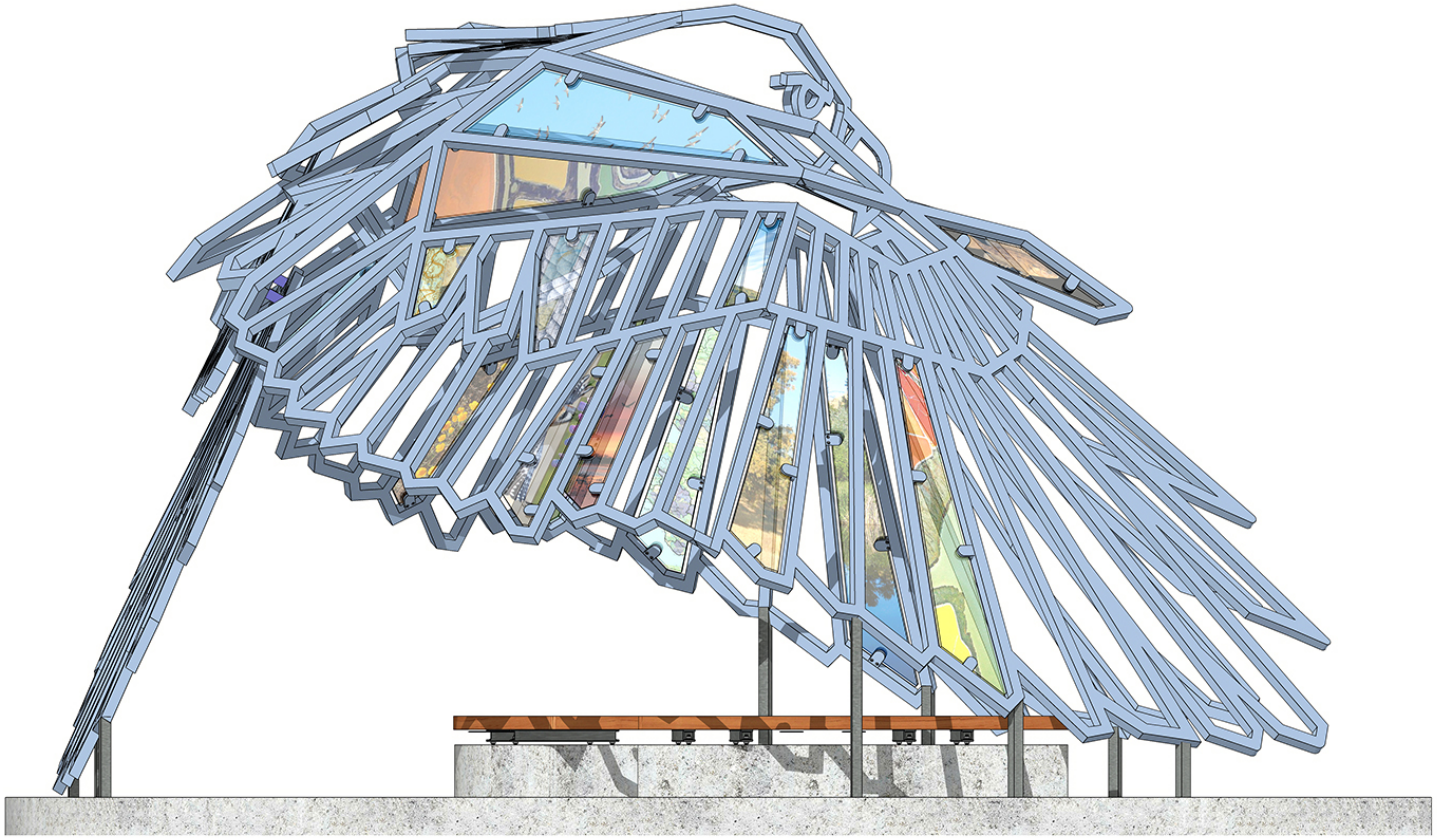
Looking East

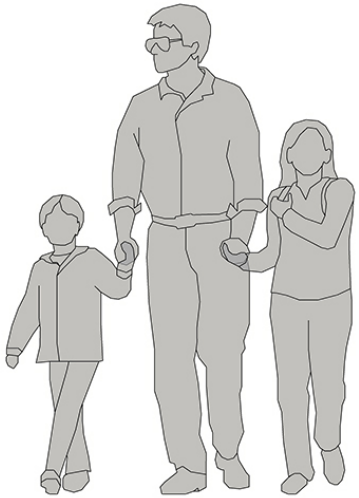


Looking North



Looking West





APPENDIX

	1	Audio equipment equipment list
	2-5	Bose Freespace 360P Series II speakers
	6	Micca Speck media player
AUDIO	7-8	QSC 8-channel amplifier
	9-11	Extron 2-channel amplifier
	12-13	Rack mounted cooling fan
	14	SurgeX Defender power conditioner
GLASS	15-16	Sadev round glass clamps
	17-18	Endura-Shield® Product Data Sheet SERIES 73
	19-29	Endura-Shield® Safety Data Sheet SERIES 73 PART A
	30-38	Endura-Shield® Safety Data Sheet SERIES 73 PART B
	39-40	Tneme-Zinc Product Data Sheet SERIES 90-97
PAINT &	41-51	Tneme-Zinc Safety Data Sheet SERIES 90-97 PART A
FINISHES	52-59	Tneme-Zinc Safety Data Sheet SERIES 90-97 PART B
	60-68	Tnemec-White Safety Data Sheet SERIES 1071V PART A
	70-76	Hydroflon Converter Safety Data Sheet SERIES 1071V PART B
	77-78	Fluoronar® Product Data Sheet SERIES 1071V
	79-81	Sample Warranty Tnemec Fuoronar®

ACWC - Kitundu Audio Installation BOM
AV Bill of Materials
11/9/2020
Equipment List

ARUP

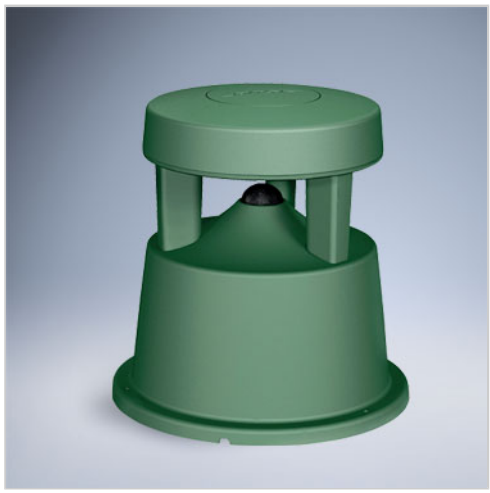
System	Sub-System	Equipment Location	Qty	Description	Make	Model	Procurement	Extended Price	Total RU	Exten. Power (W)	Heat, BTU/hr
ACWC	1 General	Community Room	1	Equipment Rack	Middle Atlantic	SRSR-2-12	Artist	$810	0	0	0
ACWC	1 General	Community Room	1	Rack-mount power conditioner	SurgeX	Defender	Artist	$200	1	0	0
ACWC	1 General	Community Room	1	Rack-mount fan	Middle Atlantic	UQFP-2	Artist	$450	3	2000	0
ACWC	2 Audio	Community Room	8	Audio file player	Micca	Speck G2	Artist	$320	2	96	328
ACWC	2 Audio	Community Room	2	Amplifier	QSC	CX108V	Artist	$4,490	4	2256	3202
ACWC	2 Audio	Community Room	8	Local Audio cables	Belden	TBD	Artist	$200	0	0	0
ACWC	2 Audio	Exterior	12	Loudspeakers	Bose	FreeSpace 360P	Artist	$5,040	0	0	0
							TOTAL	**$11,510**	**10**	**4352**	**3530**
Electrical Equipment for Reference Only											
ACWC	5 Infrastructure	Storage Room	1	Raceway	TBD		EC				
ACWC	5 Infrastructure	Storage Room	1	AV Isolated Power Panel	TBD		EC				
ACWC	5 Infrastructure	Exterior	1	Conduit (800')	TBD	PVC Schedule 40	EC				
ACWC	5 Infrastructure	Exterior	1	Conduit (7')	TBD	PVC Schedule 80	EC				
ACWC	2 Audio	Exterior	1	Loudspeaker Cabling (1790')	Belden	1308A	EC				
ACWC	5 Infrastructure	Exterior	11	Pullboxes	OldCastle	Fibrelyte (size TBD)	EC				

FreeSpace® 360P Series II
loudspeaker

TECHNICAL DATA SHEET

Key Features

- **Full-range** environmental loudspeaker with one downward firing 4.5" (114 mm) advance composite environmental full-range driver for in-ground or above-ground mounting
- **Domed port grille** reflects sound into the listening area for clear, consistent performance
- **Cabinet shape** acts as acoustic diffuser directing mid- and high-frequency energy out towards listeners. Base of loudspeaker acts as a tuned, multi-chambered ported enclosure
- **Multi-tap line transformer** provides easy-to-change tap settings
- **Tamper**-resistant design
- **Internal speaker** protection circuit safeguards drivers



Product Overview

The Bose® FreeSpace 360P Series II is a full-range environmental loudspeaker designed to blend with landscaping for in-ground or above-ground applications, such as shopping malls, outdoor restaurants, resorts and theme parks. It features 360° of horizontal coverage and frequency range down to 60 Hz.

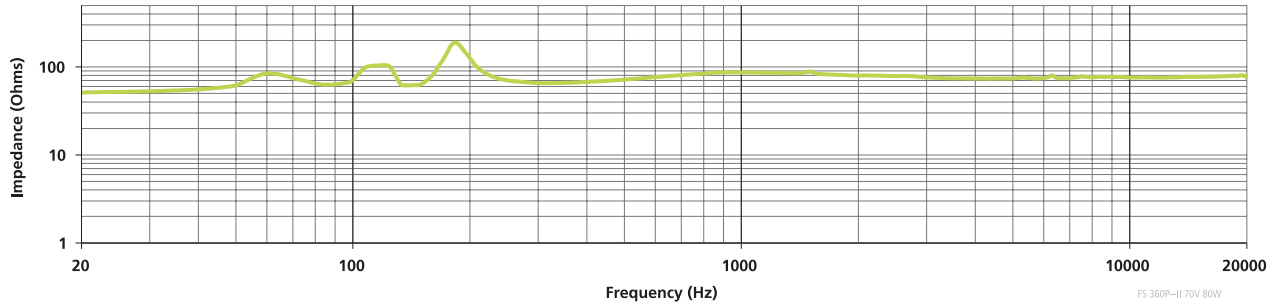
Technical Specifications

System Performance	
Frequency Response (+/-3 dB)[1]	70 Hz - 10 kHz
Frequency Range (-10 dB)[1]	60 Hz - 15 kHz
Nominal Dispersion	360° H x 50° V
Recommended High-Pass Filter	60 Hz high-pass filter
Loudspeaker EQ	Recommended
Overload Protection	PTC
Long-Term Power Handling[2]	80 W (320 W peak)
Sensitivity (SPL / 1 W @ 1 m)[3]	87 dB SPL
Maximum SPL @ 1 m[4]	100 dB SPL (106 dB SPL peak)
Nominal Impedance	4 Ω (transformer bypassed)
Transformer Taps (70/100 V)	10 W, 20 W, 40 W, 80 W
Transducers	
Driver Compliment	4.5" (114 mm) Bose® environmental driver
Physical	
Enclosure	Glass-reinforced polypropylene, textured
Environmental	Outdoor per IEC 529 IP35
Connectors	External multi-wire cable with wire nuts included
Suspension / Mounting	Three (3) #10 (M4) holes in base. Three #10 M4 screws required
Dimensions	Diameter: 14.5" (368 mm) Height: 14.9" (379 mm)
Net Weight	14.5 lb (6.6 kg)
Shipping Weight	14.9 lb (6.8 kg)
Product Code	
Green	040151

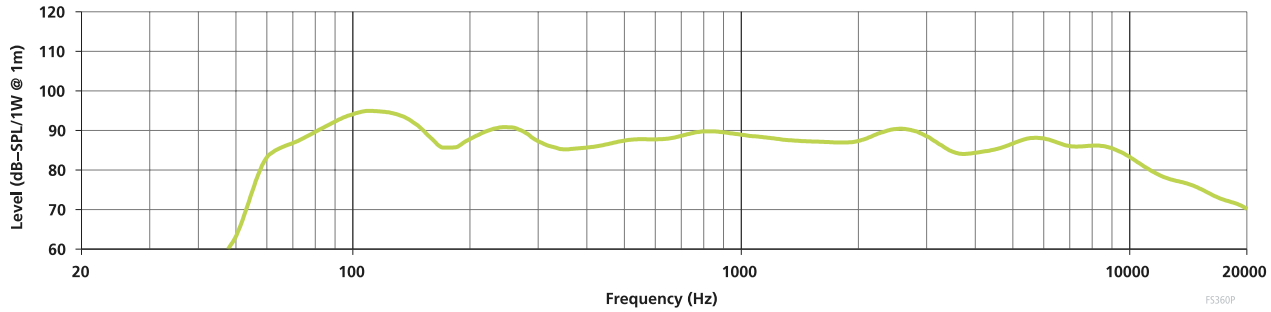
Footnotes:

1. Frequency response measured 30° above the ground plane (per recommended installation) in an anechoic environment.
2. Power handling tested using pink noise filtered to meet IEC 268-5, 6 dB crest factor, 100 hours, with recommended EQ.
3. Sensitivity. 70Hz-15kHz pink noise is applied to the speaker and amplified to a level at the loudspeaker terminals corresponding to 1 watt as referenced to the nominal impedance. The average sound pressure level is measured at 1 meter, 30° above the ground plane.
4. Max SPL. Calculated level for sine wave is obtained by adding 10*log(W tap) to the measured sensitivity of the speaker.

Impedance



On-Axis Response

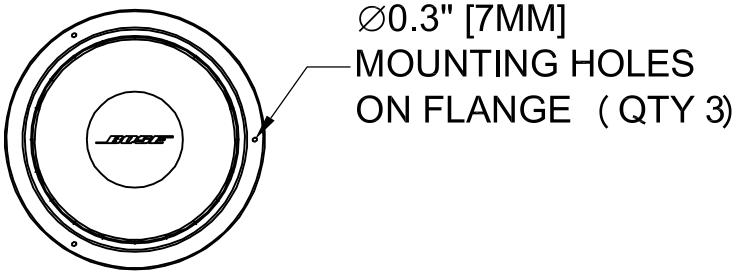


Tap Chart

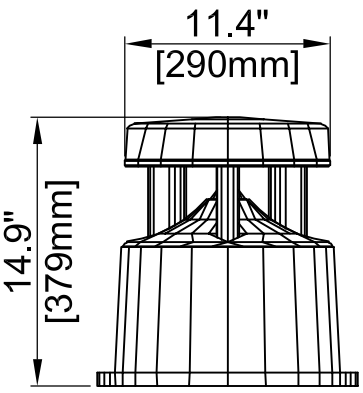
FreeSpace 360-II Tap Chart

Listener Distance		3	4.5	6	
	m	3	4.5	6	
	ft	10	15	20	
TAP	10	87	84	81	dB_{SPL}
	20	90	87	84	
	40	93	90	87	
	80	96	93	90	

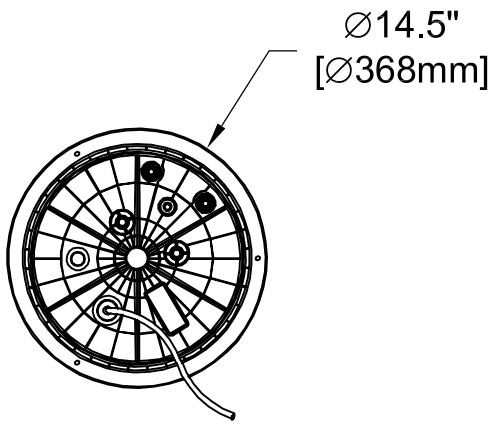
Mechanical Diagrams



Top View



Side View



Bottom View

Architects' and Engineers' Specifications

The loudspeaker shall be a ported loudspeaker system utilizing one 4.5" (114 mm) HVC environmental full-range driver mounted in the underside of the top of the loudspeaker enclosure. The driver shall have a rated impedance of 4 Ω and shall be wired in parallel with a line voltage-matching (stepdown) transformer with taps at 10, 20, 40, or 80 watts.

The loudspeaker shall have a single-port vented system, with a maximum continuous acoustic output of 100 dB SPL from 70 Hz to 10 kHz, with measurements referenced with full-bandwidth pink noise at 1 meter at the loudspeaker's rated power.

The input connection shall consist of wires with wire nuts on a cable attached to the base of the loudspeaker. The nominal dispersion of the loudspeaker shall be 360° horizontal and 50° vertical.

The loudspeaker shall be the Bose® FreeSpace® 360P Series II loudspeaker.

Safety and Regulatory Compliance

The FreeSpace® 360P Series II loudspeaker is suitable for general purpose use. It complies with EMC Directive 89/336/EEC and Article 10 (1) of the Directive in compliance with EN50081-1, EN50082-1, as signified by the CE mark.

II. Features and Specifications

The Micca Speck is a powerful digital media player, with the ability to decode high quality 1080p Full-HD videos. While actual performance can vary depending on the media file, this table of specifications is a summary of the Micca Speck's capabilities.

<table>
<tr><td rowspan="10">Video</td><td>Codec</td><td>Max resolution</td><td>Max stream</td><td>Max frames</td></tr>
<tr><td>MPEG1</td><td rowspan="8">1920x1080</td><td rowspan="9">10mbps</td><td rowspan="9">30fps</td></tr>
<tr><td>MPEG2</td></tr>
<tr><td>MPEG4-XVID</td></tr>
<tr><td>DIVX</td></tr>
<tr><td>H.264</td></tr>
<tr><td>H.263</td></tr>
<tr><td>WMV9/VC1</td></tr>
<tr><td>RMVB</td><td>1280x720</td></tr>
<tr><td colspan="4">Files: MKV, AVI, TS/TP, MP4/M4V, MOV, VOB, PMP, RM/RMVB, MPG, M2TS, WMV</td></tr>
<tr><td rowspan="2">Music</td><td colspan="4">Bit rate: 32kbps – 320kbps</td></tr>
<tr><td colspan="4">Formats: MP3, WMA, OGG, FLAC, APE, AAC</td></tr>
<tr><td>Photo</td><td colspan="4">Formats: JPG, JPEG, BMP, GIF, PNG</td></tr>
<tr><td rowspan="2">Video Output</td><td colspan="4">Analog AV: 720x576 (PAL), 720x480 (NTSC)</td></tr>
<tr><td colspan="4">HDMI: 720p (50Hz/60Hz), 1080i (50Hz/60Hz), 1080p (50Hz/60Hz)</td></tr>
<tr><td rowspan="2">Audio Output</td><td colspan="4">Analog Stereo audio output level: 2.0V ± 0.2Vp
Frequency Range: 20Hz-20KHz ±2dB
SNR: >80dB (1kHz 0dB)
Dynamic range: >80dB (1kHz 0dB)
THD: ≤0.04%</td></tr>
<tr><td colspan="4">HDMI PCM Digital Stereo</td></tr>
<tr><td rowspan="2">External Storage</td><td colspan="4">Supports USB2.0 drives up to 2TB with MBR partition table and NTFS or FAT32 file system, including USB hard drives and USB flash drives.</td></tr>
<tr><td colspan="4">Supports all SD and SDHC flash memory cards with NTFS or FAT32 file system</td></tr>
<tr><td>Product Size</td><td colspan="4">2.5”(W) x 3”(L) x 0.6”(H)</td></tr>
<tr><td>Weight</td><td colspan="4">3 ounce</td></tr>
<tr><td>Power</td><td colspan="4">AC 90-230V, 50/60Hz, DC 5.0-5.2V 2A</td></tr>
<tr><td>Packing List</td><td colspan="4">AC Power Adapter, Remote Control, AV Cable, User’s Manual</td></tr>
</table>

CX 8-channel
Professional Power Amplifiers

CX168 | CX108V

Designed for permanently installed sound systems where rackspace is at a premium, QSC's CX108V and CX168 provide unprecedented levels of channel density for multi-channel amplifiers. The CX108V and CX168 provide 100 watts per channel at 70 volts and 90 watts per channel at 8 ohms respectively. With both models, each pair of channels may be bridged to configure these amplifiers as 4, 5, 6 or 7 channel units. Like the entire CX Series, the 8 channel models feature DataPorts for remote amplifier management or signal processing, incorporate QSC's legendary PowerLight™ technology, and deliver our unmatched reputation for quality and reliability.

QSC's PowerLight technology takes your audio to an entirely new level. Delivering tighter bass and clean, transparent highs, PowerLight also cuts waste heat, boosts reliability, and eliminates unwanted noise and hum. PowerLight is a revolutionary switching power supply technology that provides ample current to the audio power circuitry by charging the supply rails over 200,000 times per second through an ultra-low noise impedance circuit. Unlike amplifiers that use conventional supplies, the audio signal is never starved prematurely and remains crisp and clean.

CX 8-channel Amplifiers

	Watts per channel		
Model	70V*	8Ω	4Ω**
CX168	–	8 x 90	8 x 130
CX108V	8 x 100	–	–

20 Hz – 20 kHz, 0.05%THD
** 20 Hz – 20 kHz, 0.2%THD*
***20 Hz – 20 kHz, 0.1%THD*

Features

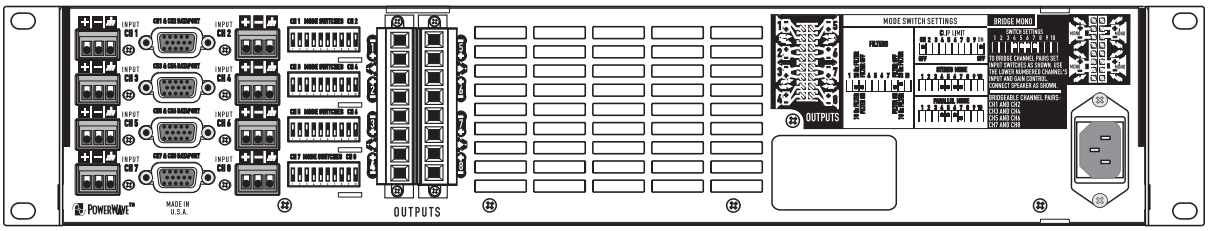
- 100 watts per channel at 70 volts (CX108V)
- 90 watts per channel at 8 ohms and 130 watts per channel at 4 ohms (CX168)
- Compact size — only two rack spaces and 14" deep for reduced rack space
- Channel pairs bridgeable for maximum flexibility
- Exclusive PowerLight switch-mode power supply technology for high performance and compact size
- Active inrush limiting eliminates AC inrush current, removing the need for expensive power sequencers
- Four HD15 DataPorts (one per channel pair) for QSControl computer control or QSC's signal processing accessories
- Custom integrated gain control security cover for tamper proof installations
- 1 dB recessed detented gain controls for fast and accurate settings
- Detachable Euro-style input and output connectors
- DIP switch control for clip limiters, high-pass filters, bridge-mono and parallel operation
- Selectable high-pass filters protect speakers and prevent speaker transformer saturation with minimal effect on program material (50 Hz or 75 Hz; CX108V) (33 Hz or 70 Hz; CX168)
- Comprehensive front panel indicators including signal, clip, bridge mono and parallel-input LEDs
- Fully protected — including DC, infrasonic and ultrasonic, thermal overload and short circuit protection
- High-performance Class AB+B complementary bipolar output circuitry
- Lightweight — only 21 pounds (9.5 kg) for easier racking and shipping
- 3-year warranty plus optional 3-year extended service contract

CX 8-Channel

Specifications

		CX168		CX108V
Stereo Mode (all channels driven)		Continuous average output power per channel		
8Ω / 20 Hz – 20 kHz / 0.05% THD		90 W		–
4Ω / 20 Hz – 20 kHz / 0.1% THD		130 W		–
Midband Ratings		All channels driven	Single channel	
8Ω / 1 kHz / 0.1% THD		100 W	120 W	–
4Ω / 1 kHz / 0.1% THD		140 W	180 W	–
70V / 20 Hz – 20 kHz / 0.2% THD		–		100 W
Bridge-Mono Mode		Bridge-mono mode operation		
16Ω / 20 Hz – 20 kHz / 0.1% THD		180 W		–
8Ω / 20 Hz – 20 kHz / 0.1% THD		260 W		
140V / 20 Hz – 20 kHz / 0.2% THD		–		200 W
Signal to Noise (20 Hz – 20 kHz)		-107 dB		-100 dB
Input Sensitivity		1.35 Vrms at 8Ω		1.26 Vrms at 70V
Voltage Gain		20x (26 dB)		56x (35 dB)
Input Clipping		6 Vrms (+18 dBu)		6 Vrms (+18 dBu)
Output Circuitry		Class AB+B		Class AB+B
Frequency Response		20 Hz – 20 kHz, + 0.2 dB | 8 Hz – 50 kHz, +0/-3 dB		20 Hz – 20 kHz, + 0.4 dB | 8 Hz – 70 kHz, +0/-3 dB
Damping Factor		> 200 (5 kHz and below)		> 500 (5 kHz and below)
Input Impedance		6k ohms unbalanced, 22k ohms balanced		6k ohms unbalanced, 22k ohms balanced
Distortion (SMPTE-IM)		< 0.02%		
Distortion (typical)				
20 Hz – 20 kHz: 10 dB below rated power		< 0.1% THD		
1.0 kHz and below: full rated power		< 0.03% THD		
Cooling		Variable-speed fan / rear-to-front air flow through tunnel heat sink		
Connectors		Input: 3-pin Euro-style detachable terminal blocks (one per channel) DataPort: HD-15 connector (Ch. 1+2, 3+4, 5+6, 7+8) Output: two 8-pin Euro-style detachable terminal blocks		
Controls		Front: AC switch, Ch. 1, 2, 3, 4, 5, 6, 7 & 8 gain knobs Rear: DIP switches for Ch. 1 - 8, clip limiter on/off, LF filter on/off, LF filter freq select 33 or 70 Hz for CX168 LF filter freq select 50 or 75 Hz for CX108V, inputs parallel or stereo; bridge mode		
Indicators		Power-On: Green LED / Parallel inputs: Orange LED (1 per channel pair) / Signal -35 dB: Green LED (1 per channel) Bridged: Yellow LED (1 per channel pair) / Clip: Red LED (1 per channel)		
Amplifier Protection		Full short circuit, open circuit, thermal, ultrasonic, and RF protection. Stable into reactive or mismatched loads		
Load Protection		On/off muting, individual channel DC fault blocking		
Dimensions (HWD)		3.5" (8.9 cm) 2 RU x 19" (48.3 cm) rack mounting x 14" (35.6 cm) from front mounting rails		
Weight - Net / Shipping		21 lb (9.5 kg) / 27 lb (12.3 kg)		
Power Requirements		100, 120, 230 VAC, 50 – 60 Hz (configured at factory)		
120V Current Consumption*	Idle	0.6 A		0.6A
1/8 power pink noise (typical of program material at maximum unclipped power)	8Ω	6.2 A		–
	4Ω	9.2 A		–
	70V	–		6.3 A
1/3 power pink noise (typical of program material with severe clipping)	8Ω	9.2 A		–
	4Ω	14.2 A		–
	70V	–		9.4 A

** Multiply currents by 0.5 for 230V units*



Specifications subject to change without notice.

1675 MacArthur Boulevard • Costa Mesa, CA 92626 • Ph: 800/854-4079 or 714/957-7100 • Fax: 714/754-6174

qscaudio.com

Extron

Specifications

XPA U 1002 Series

Audio

Voltage gain

XPA U 1002	23x (27 dB)
XPA U 1002-70V	57x (35 dB)
XPA U 1002-100V	81x (38 dB)
CMRR	75 dB @ 1 kHz (typical)

Audio input

Number/signal type	2 balanced/unbalanced
Connectors	(1) 3.5 mm captive screw connector, 5 pole
Impedance	>10k ohms balanced/unbalanced, DC coupled
Nominal level	+4 dBu, balanced
Maximum level	+20 dBu (7.75 Vrms), balanced
Input sensitivity	+4 dBu
Input signal detection threshold	-65 dBu ±3 dB, balanced

NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

Audio output

Number/signal type

XPA U 1002	2 channels, 4 or 8 ohms
XPA U 1002-70V	2 channels, 70V
XPA U 1002-100V	2 channels, 100V
Connectors	(1) 5 mm screw lock captive screw connector, 4-pole

NOTE: These connectors accept wires of 22 AWG to 12 AWG.

Load impedance

XPA U 1002	4 ohms minimum
XPA U 1002-70V	50 ohms minimum
XPA U 1002-100V	100 ohms minimum
Amplifier type	Class D

Output power

XPA U 1002	100 Watts per channel, 8 ohms, 1 kHz, 0.1% THD 100 Watts per channel, 4 ohms, 1 kHz, 0.1% THD
XPA U 1002-70V	100 watts per channel, 70V, 1 kHz, 0.1% THD
XPA U 1002-100V	100 watts per channel, 100V, 1 kHz, 0.1% THD
Frequency response	20 Hz to 20 kHz, ±1 dB
THD + Noise	0.1% @ 1 kHz, at 3 dB below clipping
S/N	100 dB, 20 Hz - 20 kHz, unweighted

Damping factor

XPA U 1002	>100 @ 8 ohms
XPA U 1002-70V	>100 @ 50 ohms
XPA U 1002-100V	>100 @ 100 ohms

Control/remote

Control port

XPA U 1002 ..... (1) 3.5 mm captive screw connector, 2-pole

XPA U 1002-70V ..... (2) 3.5 mm captive screw connector, 2-pole

XPA U 1002-100V ..... (2) 3.5 mm captive screw connector, 2-pole

Pin configurations

Standby power control (contact closure) ..... Pin 1 = GND, pin 2 = Standby

High pass filter (contact closure) ..... Pin 1 = GND, pin 2 = OFF

General

Power supply ..... Internal
Input: 100-240 VAC, 50-60 Hz

Power consumption and thermal dissipation

XPA U 1002.....

		115 VAC, 60Hz				230 VAC, 50Hz			
		AC Line Current	AC Power Consumed	Thermal Dissipation		AC Line Current	AC Power Consumed	Thermal Dissipation	
Condition		A	W	W	BTU/hr	A	W	W	BTU/hr
Active (1/8 power), all channels driven	**8Ω**	0.4	34.2	9.2	31	0.2	33.5	8.5	29
	4Ω	0.4	35.9	10.9	37	0.2	35.0	10.0	34
Quiescent (idle)		0.1	5.3	5.3	18	0.1	5.1	5.3	18
Standby		<0.1	<1	<1	<3	<0.1	<1	<1	<3

XPA U 1002-70V .....

		115 VAC, 60Hz				230 VAC, 50Hz			
		AC Line Current	AC Power Consumed	Thermal Dissipation		AC Line Current	AC Power Consumed	Thermal Dissipation	
Condition		A	W	W	BTU/hr	A	W	W	BTU/hr
Active (1/8 power), all channels driven	**70V**	0.4	36.1	11.1	38	0.2	35.4	10.4	35
Quiescent (idle)		0.1	5.5	5.5	19	0.1	5.4	5.4	18
Standby		<0.1	<1	<1	<3	<0.1	<1	<1	<3

XPA U 1002-100V .....

		115 VAC, 60Hz				230 VAC, 50Hz			
		AC Line Current	AC Power Consumed	Thermal Dissipation		AC Line Current	AC Power Consumed	Thermal Dissipation	
Condition		A	W	W	BTU/hr	A	W	W	BTU/hr
Active (1/8 power), all channels driven	**100V**	0.4	35.6	10.6	36	0.2	34.9	9.9	34
Quiescent (idle)		0.1	5.4	5.4	18	0.1	5.2	5.2	18
Standby		<0.1	<1	<1	<3	<0.1	<1	<1	<3

Specifications • XPA U 1002 Series (Continued)

Temperature/humidity	
Storage	–40 to +158 °F (–40 to +70 °C) / 10% to 90%, non-condensing
Operating	+32 to +122 °F (0 to +50 °C) / 10% to 90%, non-condensing
Cooling	Convection, no vents
Protection	Clip limiting, thermal, short circuit, DC output
Indication	Limiter/Protect LED indicates the onset of clip limiting, thermal cycling, or a short circuit. Over Temp LED indicates when the amplifier exceeds the recommended operating temperature for optimal unit longevity. Power LED indicates power state, DC output protection (see XPA Ultra Series User Guide for details).
Rack mount	Yes, with included mounting brackets or optional rack shelf
Enclosure	Metal
Enclosure dimensions	1.7" H x 8.7" W x 10.5" D (1U high, half rack wide) 43 mm H x 220 mm W x 267 mm D
Product weight	3.4 lbs (1.5 kg)
Regulatory compliance	CE, CEC, CISPR 22 Class B, C-tick, CUL, ENERGY STAR®, European Code of Conduct, FCC Class B, ICES, RoHS, UL, UL 2043, VCCI Class B
Product warranty	3 years parts and labor
Everlast power supply warranty	7 years parts and labor

NOTE: All nominal levels are at ±10%.

NOTE: Specifications are subject to change without notice.

NOTE: Shipping weights and dimensions are available at **www.extron.com**.

D2-4586

FAN PANEL, 50 CFM, 24DB

UQFP-2 |

FEATURES & BENEFITS

The two rackspace Ultra Quiet Fan Panel System provides smart cooling and monitoring to ensure a reliable installation in areas where fan noise is not an option, including boardrooms, classrooms, offices, houses of worship, etc. Thermostatic, proportional speed DC fan control ensures ultra quiet operation by varying fan speed based on enclosure temperature. Overtemp notification, local and remote, offers additional operation monitoring. A unique feature of the system provides notification in the event of fan failure via a local display or remote signal to an external alarm device. • 50 CFM cooling capacity • Digital processor varies fan speed based on enclosure temperature for ultra quiet operation • On-board digital processor monitors rack temperature via external sensor • Local and remote notification of over temperature and fan fault can be sent to a control system

RoHS

- Cooling panel rated 50 CFM at 24 dB
- Intelligent thermostatic proportional control
- Local and remote overtemp notification
- 110V input voltage

SPECIFICATIONS

GENERAL INFO

Finish: Black Powder Coat
Component Type: active

ASSEMBLY/INSTALLATION INFORMATION

Mounting Points: 2

LISTING AGENCIES/THIRD PARTY CERTIFICATIONS

RoHS: Yes
Greenguard: Yes

DIMENSIONS

CFM: 50
Depth (US): 3.4
Height (US): 3.5
Width (US): 19
Rack Units: 2

TECHNICAL INFORMATION

Material: Steel
Volts: 120

DEFENDER SERIES

Comprehensive protection for everyday applications

Never go unprotected at any level. Even in smaller, cost-conscious applications, power protection is a critical element of an AV system's foundation. With the new SurgeX Defender Series line of products, power protection doesn't have to be sacrificed regardless of the budget or size of the system. Developed specifically for everyday applications, the Defender Series provides cost-effective comprehensive power protection and conditioning to increase uptime and ensure equipment functions properly.

Designed with patented non-sacrificial Multi-Stage surge suppression technology, the Defender Series line protects AV equipment from electrical transients that can cause disruption to the system. Its three stages of protection ensure equipment is safeguarded from the harmful effects of surge energy and its advanced filtering virtually eliminates normal and common mode electrical noise interference that can cause reboots and downtime.

The SurgeX Defender Series is the perfect choice to safeguard non-critical applications at an affordable price.

Features:

- Lowest amount of let-through energy
- Over voltage shutdown protection (SX-DS-158/208)

MULTI-STAGE POWER PROTECTION

EMI / RFI IMPEDANCE TOLERANT EMI / RFI FILTER

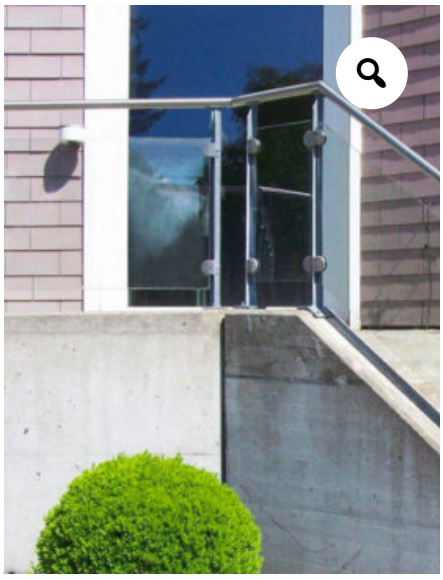
Model	Plug Config.	Outlet Config.
SX-DS-158	15A / 120V	8 Outlets
SX-DS-208	20A / 120V	8 Outlets
SX-DS-151	15A / 120V	1 Outlet

SURGEX® | AMETEK® ELECTRONIC SYSTEMS PROTECTION

Redefining Power Quality

Round glass clamp

ROUND GLASS CLAMP STAINLESS STEEL AISI 316 - ADAPTER FOR SQUARE OR ROUND BALUSTRADE POSTS



AVANTAGES

Most economical and minimalist guardrail solution

Features

→ 3 models of glass tongs

→ For installation on flat or tubular supports

→ Stainless steel 316

→ Suitable for aggressive environments (seaside, chlorine...)

→ Suitable for the installation of French balconies

→ Optional adapter (for tube mounting)

→ Optional locking pins

→ Black chrome plating possible

Product code

N/A

Dimensions / Type

(* Tailored products and solutions on demand)

- 62 x 45 mm
- 67 x 50 mm
- 72 x 55 mm

Materials

- Stainless steel AISI 316

Finishing

Adaptator ø 25 mm

Adaptator ø 42,4 mm

Adaptator ø 48,3 mm

Without adaptator

Glasses

08 -> 12 mm

13,52 -> 17,52 mm

21,52 -> 25,52 mm **Tailor-made**

TNEMEC

PRODUCT DATA SHEET

ENDURA-SHIELD® SERIES 73

PRODUCT PROFILE

GENERIC DESCRIPTION Aliphatic Acrylic Polyurethane

COMMON USAGE A coating highly resistant to abrasion, wet conditions, corrosive fumes, chemical contact and exterior weathering. Direct-to-Metal capability allows for a labor-saving, high-build, single coat application. NOT FOR IMMERSION SERVICE.

COLORS Refer to Tnemec Color Guide. **Note:** Certain colors may require multiple coats depending on method of application and finish coat color. When feasible, the preceding coat should be in the same color family (blue, gray, etc.), but noticeably different.

FINISH Semi-gloss

SPECIAL QUALIFICATIONS Series 73 meets the accelerated weathering requirements of SSPC Paint Standard 36.

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

COATING SYSTEM

PRIMERS

Steel: Self-priming or Series 1, 20, FC20, 27, 37H, 66, L69, L69F, N69, N69F, V69, V69F, 90-97, H90-97, 90G-1K97, 91-H_2O, H91-H_2O, 94-H_2O, 135, L140, L140F, N140, N140F, V140, V140F, 141, 161, 394, 530
Galvanized Steel & Non-Ferrous Metal: Series 66, L69, L69F, N69, N69F, V69, V69F, 161
Concrete: Series 66, L69, L69F, N69, N69F, V69, V69F, 141, 161, 1254
CMU: Series 1254
Note: Series 530 exterior exposed more than 24 hours, Series L69, N69, V69, 135, L140, N140, or V140 exterior exposed more than 60 days, Series L69F, N69F, V69F, L140F, N140F or V140F exterior exposed more than 30 days, or Series 141 exterior exposed more than 14 days must first be scarified or reprimed with themselves. Brush blasting with fine abrasive is the preferred method of scarification. Recoat windows for other primers may apply. See those data sheets for additional information.

TOPCOATS Series 700, 701, 740, 750, 1070, 1070V, 1071, 1071V, 1072, 1072V, 1074, 1074U, 1075, 1075U, 1077, 1078

SURFACE PREPARATION

STEEL SSPC-SP6/NACE 3 Commercial Blast Cleaning or ISO Sa 2 Thorough Blast Cleaning with a minimum angular anchor profile of 2.0 mils.

ALL SURFACES Must be clean, dry and free of oil, grease and other contaminants.
See primer product data sheet for surface preparation recommendation.

TECHNICAL DATA

VOLUME SOLIDS 58.0 ± 2.0% (mixed) †

RECOMMENDED DFT

Topcoat Service: 2.0 to 5.0 mils (50 to 125 microns) per coat.
Direct-to-Metal Service: 3.5 to 5.0 mils (89 to 125 microns).
Note: Number of coats and thickness requirements will vary with substrate, application method and exposure. Contact your Tnemec representative.

CURING TIME

Temperature	To Touch	To Handle	To Recoat
75°F (24°C)	1 hour	5-8 hours	12 hours

Curing time varies with surface temperature, air movement, humidity and film thickness. **Note:** For faster curing and low-temperature applications, add No. 44-710 Urethane Accelerator; see separate product data sheet.

VOLATILE ORGANIC COMPOUNDS

Unthinned	Thinned 10% (Max) (No. 39 Thinner)	Thinned 10% (Max) (No. 42 Thinner)	Thinned 10% (Max) (No. 48 Thinner)	Thinned 10% (Max) (No. 56 Thinner)	Thinned 10% (Max) (No. 63 Thinner)
2.70 lbs/gallon (324 grams/litre)	3.05 lbs/gallon (366 grams/litre)	3.10 lbs/gallon (371 grams/litre)	3.15 lbs/gallon (378 grams/litre)	2.76 lbs/gallon (331 grams/litre)	3.07 lbs/gallon (368 grams/litre)

HAPS

Unthinned	Thinned 10% (Max) (No. 39 Thinner)	Thinned 10% (Max) (No. 42 Thinner)	Thinned 10% (Max) (No. 48 Thinner)	Thinned 10% (Max) (No. 56 Thinner)	Thinned 10% (Max) (No. 63 Thinner)
0.27 lbs/gal solids	0.27 lbs/gal solids	0.27 lbs/gal solids	0.27 lbs/gal solids	0.27 lbs/gal solids	0.32 lbs/gal solids

THEORETICAL COVERAGE 930 mil sq ft/gal (22.8 m²/L at 25 microns). †

NUMBER OF COMPONENTS Two: Part A and Part B

MIXING RATIO By volume: Four (Part A) to one (Part B)

PACKAGING

	PART A	PART B	When Mixed
5 Gallon Kit	5 gallon pail (partial fill)	1 gallon can	5 gallons (18.9L)
1 Gallon Kit	1 gallon pail (partial fill)	1 quart can (partial fill)	1 gallon (3.79L)

NET WEIGHT PER GALLON 12.13 ± 0.25 lbs (5.50 ± .11 kg) †

STORAGE TEMPERATURE Minimum 20°F (-7°C) Maximum 110°F (43°C)

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

SHELF LIFE Part A: 24 months at recommended storage temperature.
Part B: 12 months at recommended storage temperature.

FLASH POINT - SETA Part A: 55°F (13°C) Part B: 112°F (43°C)

ENDURA-SHIELD® | SERIES 73

HEALTH & SAFETY

Paint products contain 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

Topcoat Service

	Dry Mils (Microns)	Wet Mils (Microns)	Sq Ft/Gal (m²/Gal)
Suggested	2.5 (65)	4.5 (115)	372 (34.6)
Minimum	2.0 (50)	3.5 (90)	465 (43.2)
Maximum	3.0 (75)	5.0 (155)	310 (28.8)

Direct to Metal Service

	Dry Mils (Microns)	Wet Mils (Microns)	Sq Ft/Gal (m²/Gal)
Suggested	4.0 (100)	7.0 (180)	233 (21.6)
Minimum	3.5 (90)	6.0 (150)	266 (24.7)
Maximum	5.0 (125)	8.5 (215)	186 (17.3)

(1) Can be spray applied at 3.0 to 5.0 mils (75 to 125 microns) DFT per coat when extra protection or the elimination of a coat is desired.
(2) Can be sprayed, brushed or rolled at 2.0 to 3.0 mils (50 to 75 microns) DFT per coat for use in systems requiring a conventional build topcoat.
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. †

MIXING

Stir contents of the container marked Part A, making sure no pigment remains on the bottom. Add the contents of the can marked Part B to Part A while under agitation. Continue agitation until the two components are thoroughly mixed. When used with 44-710 Urethane Accelerator, first blend 44-710 into Part A under agitation; continue as above. Do not use mixed material beyond pot life limits. **Caution: Part B is moisture-sensitive and will react with atmospheric moisture. Keep unused material tightly closed at all times.**

THINNING

For air spray, thin up to 10% or 3/4 pint (380 mL) per gallon by volume with No. 42 Thinner if temperatures are below 80°F (27°C), use No. 48 Thinner for temperatures above 80°F (27°C). Thin up to 5% or 1/4 pint (190 mL) per gallon for airless spray. For brush or roller, thin 5% to 10% or 1/4 to 3/4 pint (190 to 380 mL) per gallon with No. 39 or No. 63 Thinner. Thinning is required for proper brush or roller application. **Note:** A maximum of 10% of No. 56 Thinner may be used to comply with VOC regulations. **Caution: Do not add thinner if more than thirty (30) minutes have elapsed after mixing.**

POT LIFE

8 hours at 40°F (4°C) 4 hours at 77°F (25°C) 2 hours at 100°F (38°C)

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)	75-90 psi (5.2-6.2 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
0.013"-0.017" (330-430 microns)	2700-3300 psi (186-228 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: Use 1/4" to 3/8" (6.4 mm to 9.5 mm) synthetic woven nap roller cover. Do not use long nap roller covers. **Note:** Two coats are required to obtain dry film thickness above 3.0 mils (75 microns).
Brush: Recommended for small areas only. Use high quality natural or synthetic bristle brushes. **Note:** Two or more coats may be required to obtain recommended film thicknesses.

SURFACE TEMPERATURE

Minimum 35°F (2°C) Maximum 120°F (49°C)
The surface should be dry and at least 5°F (3°C) above the dew point.
Cure time necessary to resist direct contact with moisture at surface temperature:
40°F (4°C): 24 to 40 hours 50°F (10°C): 18 to 26 hours 60°F (16°C): 12 to 16 hours
70°F (21°C): 4 to 8 hours 90°F (32°C): 2 to 4 hours 100°F (38°C): 2 to 3 hours
If the coating is exposed to moisture before the preceding cure parameters are met, dull, flat or spotty appearing areas may develop. Actual times will vary with air movement, film thickness and humidity.

CLEANUP

Flush and clean all equipment immediately after use with the recommended thinner or MEK.

† Values may vary with color.

Safety Data Sheet

Issue Date 25-Jan-2019 **Revision Date** 25-Jan-2019 **Revision Number** 15

1. IDENTIFICATION

Product identifier

Product Code F073-00WHA
Product Name ENDURA-SHIELD TNEMEC WHITE

Other means of identification

Common Name SERIES 73, PART A
UN/ID no. 1263
Synonyms None

Recommended use of the chemical and restrictions on use

Recommended Use industrial paint.
Uses advised against Consumer use, For professional use only. Not for residential use.

Details of the supplier of the safety data sheet

Manufacturer Address
Tnemec Company, Inc. 6800 Corporate Drive, Kansas City, MO 64120-1372 816-474-3400

Distributor
Tnemec Company, Inc. 86 Boul, des Entreprises, Ste. 203, Boisbriand, Quebec Canada J7G 2T3

Emergency telephone number

Company Phone Number Tnemec Regulatory Dept: 816-474-3400
24 Hour Emergency Phone Number 800-535-5053 (Infotrac)

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Oral	Category 4
Serious eye damage/eye irritation	Category 2
Carcinogenicity	Category 2
Reproductive Toxicity	Category 1B
Flammable Liquids	Category 2

Label elements

EMERGENCY OVERVIEW

Danger

Hazard statements
Harmful if swallowed
Causes serious eye irritation
Suspected of causing cancer
May damage fertility or the unborn child
Highly flammable liquid and vapor

Appearance opaque **Physical state** liquid **Odor** aromatic Petroleum distillates

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Use explosion-proof electrical/ventilating/lighting/mixing/equipment

Response
IF exposed or concerned: Get medical advice/attention
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
In case of fire: Use CO2, dry chemical, or foam for extinction

Storage
Store locked up
Store in a well-ventilated place. Keep cool

Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)
Other information
Harmful to aquatic life with long lasting effects
Acute Toxicity 40.55653 % of the mixture consists of ingredient(s) of unknown toxicity.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS No	Weight-%
TITANIUM DIOXIDE (TOTAL DUST)	13463-67-7	10 - <30%
PROPYLENE GLYCOL MONOMETHYL ETHER ACETATE	108-65-6	10 - <30%
CRYSTALLINE SILICA (QUARTZ)	14808-60-7	10 - <30%
METHYL ETHYL KETONE	78-93-3	1 - <10%
AMORPHOUS SILICA	7631-86-9	1 - <10%
PROPRIETARY	-	1 - <10%
BENZENE, 1,4-DIMETHYL	106-42-3	0.1 - <1%
BENZENE, 1,3-DIMETHYL	108-38-3	0.1 - <1%
ETHYL BENZENE	100-41-4	0.1 - <1%

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of first aid measures

General advice If symptoms persist, call a physician.

Eye contact Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. If symptoms persist, call a physician.

Skin contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. If symptoms persist, call a physician.

Inhalation If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion If swallowed, do not induce vomiting. Get medical attention immediately. Rinse mouth.

Self-protection of the first aider Use personal protective equipment. Avoid contact with eyes, skin and clothing.

Most important symptoms and effects, both acute and delayed

Notes to physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Carbon dioxide. Foam. Dry chemical.

Unsuitable extinguishing media No information available.

Specific hazards arising from the chemical
Thermal decomposition can lead to release of irritating gases and vapours In the event of fire and/or explosion do not breathe fumes

Hazardous combustion products Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds. Carbon oxides. Hydrocarbons. Oxides of nitrogen. Chlorine. Fluorine.

Protective equipment and precautions for firefighters
Use water spray to cool unopened containers. In the event of fire, wear self-contained breathing apparatus. Keep away from heat/sparks/open flames/hot surfaces. MAY CAUSE HEAT AND PRESSURE BUILD-UP IN CLOSED CONTAINERS. Solvent vapors are heavier than air and may spread along floors. Flash back possible over considerable distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with eyes, skin and clothing. Use personal protective equipment. Remove all sources of ignition.

Environmental Precautions

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system.

Methods and material for containment and cleaning up

Methods for containment Remove all sources of ignition. Spills may be collected with inert, absorbent material for proper disposal. Use non-sparking tools, protective gloves, goggles and clothing, adequate

ventilation, avoid the breathing of vapors and use respiratory protective devices. Transfer absorbent material to suitable containers for proper disposal.

Methods for cleaning up If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling Close container after each use. Avoid contact with eyes, skin and clothing. Do not eat, drink or smoke when using this product. If splashes are likely to occur, wear goggles. Wear protective gloves/clothing. Do not burn, or use a cutting torch on, the empty drum. When used in a mixture, read the labels and safety data sheets of all components. Wash thoroughly after handling. Handle in accordance with good industrial hygiene and safety practice. Wear personal protective equipment. Remove and wash contaminated clothing before re-use. Keep away from open flames, hot surfaces and sources of ignition. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Do not breathe vapours or spray mist. Ensure adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment.

Conditions for safe storage, including any incompatibilities

Storage Keep away from heat, sparks and flame. Keep container tightly closed in a dry and well-ventilated place. Keep out of the reach of children.

Incompatible products Acids. Bases. Strong oxidizing agents. Caustics.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure guidelines .

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
TITANIUM DIOXIDE (TOTAL DUST) 13463-67-7	TWA: 10 mg/m³	TWA: 10 mg/m³ TWA: 15 mg/m³	5000 mg/m³
CRYSTALLINE SILICA (QUARTZ) 14808-60-7	TWA: 0.025 mg/m³	TWA: 0.1 mg/m³ TWA: 50 µg/m³	50 mg/m³
METHYL ETHYL KETONE 78-93-3	TWA: 200 ppm STEL: 300 ppm	TWA: 200 ppm TWA: 590 mg/m³ STEL: 300 ppm STEL: 885 mg/m³	3000 ppm
AMORPHOUS SILICA 7631-86-9	-	TWA: 6 mg/m³	3000 mg/m³
BENZENE, 1,4-DIMETHYL 106-42-3	TWA: 100 ppm STEL: 150 ppm	-	900 ppm
BENZENE, 1,3-DIMETHYL 108-38-3	TWA: 100 ppm STEL: 150 ppm	-	900 ppm
ETHYL BENZENE 100-41-4	TWA: 20 ppm	TWA: 100 ppm TWA: 435 mg/m³ STEL: 125 ppm STEL: 545 mg/m³	800 ppm

Appropriate engineering controls

Engineering measures Sufficient ventilation, in volume and pattern, should be provided through both local and general exhaust to keep the air contaminant concentration below current applicable OSHA Permissible Exposure Limits (PEL) and ACGIH"s Threshold Limit Values (TLV). Appropriate ventilation should be employed to remove hazardous decomposition products

formed during welding or flame cutting operations of surfaces coated with this product.

Individual protection measures, such as personal protective equipment

Eye/face protection Use chemical resistant splash type goggles. If splashes are likely to occur, wear face-shield.

Skin and body protection Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Respiratory protection Use only with adequate ventilation. Do not breathe vapors, spray mist, or dust. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates vapor/mist or dust levels are above applicable limits, wear an appropriate, properly fitted respirator (NIOSH/MSHA approved) during and after application. Follow respirator manufacturer's directions for respirator use.

General hygiene considerations Do not eat, drink or smoke when using this product. This product contains crystalline silica (quartz) in a non-respirable form. Inhalation of crystalline silica is unlikely to occur from exposure to this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	liquid		
Appearance	opaque	**Odor**	aromatic Petroleum distillates
Color	No information available	**Odor threshold**	No information available

Property	**Values**	**Remarks**
pH		
Melting point / freezing point	No data available	
Boiling point / boiling range	78 °C / 172.0 °F	
Flash point	13 °C / 55.0 °F	Pensky Martens - Closed Cup
Evaporation rate		
Flammability (solid, gas)	No data available	
Flammability Limit in Air		
Upper flammability limit	11.5	
Lower flammability limit	1.1	
Vapor pressure		
Vapor density		
Specific gravity	1.54077	g/cm3
Water solubility	Insoluble in cold water	
Solubility in other solvents		
Partition coefficient: n-octanol/water		
Autoignition temperature	No data available	
Decomposition temperature		
Kinematic viscosity		
Dynamic viscosity	2000 centipoises	approx
Explosive properties	No information available	

Other Information

Density	12.85005 lbs/gal
Volatile organic compounds (VOC) content	3.09943 lbs/gal
Total volatiles weight percent	24.12 %
Total volatiles volume percent	40.59 %
Bulk density	No information available

10. STABILITY AND REACTIVITY

Reactivity
No data available

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
None under normal processing.

Conditions to avoid
Heat, flames and sparks.

Incompatible materials
Acids, Bases, Strong oxidizing agents, Caustics

Hazardous decomposition products
Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds. Carbon oxides. Hydrocarbons. Oxides of nitrogen. Chlorine. Fluorine.

11. TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination.

Eye contact Causes serious eye irritation.

Skin contact Irritating to skin.

Ingestion Harmful if swallowed.

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
TITANIUM DIOXIDE (TOTAL DUST) 13463-67-7	> 10000 mg/kg (Rat)	-	-
PROPYLENE GLYCOL MONOMETHYL ETHER ACETATE 108-65-6	= 8532 mg/kg (Rat)	> 5 g/kg (Rabbit)	-
METHYL ETHYL KETONE 78-93-3	= 2483 mg/kg (Rat) = 2737 mg/kg (Rat)	= 5000 mg/kg (Rabbit) = 6480 mg/kg (Rabbit)	= 11700 ppm (Rat) 4 h
AMORPHOUS SILICA 7631-86-9	= 7900 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 2.2 mg/L (Rat) 1 h
BENZENE, 1,4-DIMETHYL 106-42-3	= 4029 mg/kg (Rat)	-	= 4550 ppm (Rat) 4 h = 4740 ppm (Rat) 4 h
BENZENE, 1,3-DIMETHYL 108-38-3	= 5 g/kg (Rat)	= 12.18 g/kg (Rabbit) = 14100 µL/kg (Rabbit)	= 5984 ppm (Rat) 6 h
ETHYL BENZENE 100-41-4	= 3500 mg/kg (Rat)	= 15400 mg/kg (Rabbit)	= 17.4 mg/L (Rat) 4 h

Information on toxicological effects

Symptoms Irritating to eyes and skin.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. Prolonged exposure may cause chronic effects. Substances known to impair fertility. Cancer hazard. Contains crystalline silica which can cause cancer. (Risk of cancer depends on duration and level of exposure).

Sensitization No information available.
Mutagenicity No information available.
Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical name	ACGIH	IARC	NTP	OSHA
TITANIUM DIOXIDE (TOTAL DUST) 13463-67-7		Group 2B	-	X
CRYSTALLINE SILICA (QUARTZ) 14808-60-7	A2	Group 1	Known	X
AMORPHOUS SILICA 7631-86-9		Group 1 Group 3	Known	
BENZENE, 1,4-DIMETHYL 106-42-3		Group 3	-	
BENZENE, 1,3-DIMETHYL 108-38-3		Group 3	-	
ETHYL BENZENE 100-41-4	A3	Group 2B	-	X

Reproductive effects May damage fertility or the unborn child.
STOT - single exposure No information available
STOT - repeated exposure No information available
Target organ effects blood, Central nervous system, Gastrointestinal tract, Eyes, kidney, liver, Lungs, respiratory system, Skin.
Aspiration hazard No information available.

Acute Toxicity 40.55653 % of the mixture consists of ingredient(s) of unknown toxicity.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Harmful to aquatic life with long lasting effects

45.870935719 % of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia
PROPYLENE GLYCOL MONOMETHYL ETHER ACETATE 108-65-6		161: 96 h Pimephales promelas mg/L LC50 static	500: 48 h Daphnia magna mg/L EC50
METHYL ETHYL KETONE 78-93-3		3130 - 3320: 96 h Pimephales promelas mg/L LC50 flow-through	5091: 48 h Daphnia magna mg/L EC50 4025 - 6440: 48 h Daphnia magna mg/L EC50 Static 520: 48 h Daphnia magna mg/L EC50
AMORPHOUS SILICA 7631-86-9	440: 72 h Pseudokirchneriella subcapitata mg/L EC50	5000: 96 h Brachydanio rerio mg/L LC50 static	7600: 48 h Ceriodaphnia dubia mg/L EC50
BENZENE, 1,4-DIMETHYL 106-42-3	3.2: 72 h Pseudokirchneriella subcapitata mg/L EC50 static 105.1: 3 h Chlorella vulgaris mg/L EC50	2.6: 96 h Oncorhynchus mykiss mg/L LC50 7.2 - 9.9: 96 h Pimephales promelas mg/L LC50 static 2.6: 96 h Oncorhynchus mykiss mg/L LC50 static 8.8: 96 h Poecilia reticulata mg/L LC50 semi-static	3.55 - 6.31: 48 h Daphnia magna mg/L EC50 Static
BENZENE, 1,3-DIMETHYL 108-38-3	4.9: 72 h Pseudokirchneriella subcapitata mg/L EC50 static	14.3 - 18: 96 h Pimephales promelas mg/L LC50 flow-through 8.4: 96 h Oncorhynchus mykiss mg/L LC50 semi-static 12.9: 96 h Poecilia reticulata mg/L LC50 semi-static	2.81 - 5.0: 48 h Daphnia magna mg/L EC50 Static
ETHYL BENZENE 100-41-4	1.7 - 7.6: 96 h Pseudokirchneriella subcapitata mg/L EC50 static 4.6: 72 h Pseudokirchneriella subcapitata mg/L EC50 438: 96 h Pseudokirchneriella subcapitata mg/L EC50 2.6 - 11.3: 72 h Pseudokirchneriella subcapitata mg/L EC50 static	11.0 - 18.0: 96 h Oncorhynchus mykiss mg/L LC50 static 4.2: 96 h Oncorhynchus mykiss mg/L LC50 semi-static 7.55 - 11: 96 h Pimephales promelas mg/L LC50 flow-through 9.1 - 15.6: 96 h Pimephales promelas mg/L LC50 static 32: 96 h Lepomis macrochirus mg/L LC50 static 9.6: 96 h Poecilia	1.8 - 2.4: 48 h Daphnia magna mg/L EC50

		reticulata mg/L LC50 static	

Persistence and degradability
No information available.

Bioaccumulation
No information available.

Mobility in Environmental Media

Chemical name	log Pow
PROPYLENE GLYCOL MONOMETHYL ETHER ACETATE 108-65-6	0.43
METHYL ETHYL KETONE 78-93-3	0.29
BENZENE, 1,4-DIMETHYL 106-42-3	3.15
BENZENE, 1,3-DIMETHYL 108-38-3	3.2
ETHYL BENZENE 100-41-4	3.118

Other Adverse Effects No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal Methods Keep container tightly closed. If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

US EPA Waste Number

Chemical name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
METHYL ETHYL KETONE 78-93-3	U159	Included in waste streams: F005, F039	200.0 mg/L regulatory level	U159
ETHYL BENZENE 100-41-4		Included in waste stream: F039		
XYLENE 1330-20-7		Included in waste stream: F039		U239
ISOBUTYL ALCOHOL 78-83-1	U140	Included in waste streams: F005, F039		U140

California Hazardous Waste Status

Chemical name	CAWAST
METHYL ETHYL KETONE 78-93-3	Toxic Ignitable
ETHYL BENZENE 100-41-4	Toxic Ignitable

14. TRANSPORT INFORMATION

DOT

UN/ID no.	1263
Proper Shipping Name	PAINT
Hazard Class	3
Packing Group	II

Emergency Response Guide Number 128

Additional information Call TNEMEC Traffic Department - 816-474-3400 for additional information or other modes of Transportation.

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Does Not Comply
ENCS	Does Not Comply
IECSC	Complies
KECL	Complies
PICCS	Does Not Comply
AICS	Complies

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

Chemical name	HAPS Data
BENZENE, 1,4-DIMETHYL	
BENZENE, 1,3-DIMETHYL	
ETHYL BENZENE	

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and and Title 40n of the Code of Federal Regulations, Part 372:

Chemical name	SARA 313 - Threshold Values
METHYL ETHYL KETONE - 78-93-3	1.0
BENZENE, 1,4-DIMETHYL - 106-42-3	1.0
BENZENE, 1,3-DIMETHYL - 108-38-3	1.0
ETHYL BENZENE - 100-41-4	0.1

SARA 311/312 Hazardous Categorization

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act

Chemical name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
BENZENE, 1,4-DIMETHYL 106-42-3				X
BENZENE, 1,3-DIMETHYL 108-38-3				X
ETHYL BENZENE 100-41-4	1000 lb	X	X	X

CERCLA

Chemical name	Hazardous Substances RQs	CERCLA EHS RQs	RQ
METHYL ETHYL KETONE 78-93-3	5000 lb		RQ 5000 lb final RQ RQ 2270 kg final RQ
BENZENE, 1,4-DIMETHYL 106-42-3	100 lb		RQ 100 lb final RQ RQ 45.4 kg final RQ
BENZENE, 1,3-DIMETHYL 108-38-3	1000 lb		RQ 1000 lb final RQ RQ 454 kg final RQ
ETHYL BENZENE 100-41-4	1000 lb		RQ 1000 lb final RQ RQ 454 kg final RQ

California Prop. 65

WARNING: This product can expose you to the following chemicals which are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

Chemical name	California Prop. 65
TITANIUM DIOXIDE (TOTAL DUST) - 13463-67-7	Carcinogen
CRYSTALLINE SILICA (QUARTZ) - 14808-60-7	Carcinogen
AMORPHOUS SILICA - 7631-86-9	Carcinogen
ETHYL BENZENE - 100-41-4	Carcinogen
STYRENE - 100-42-5	Carcinogen
CRYSTALLINE SILICA (QUARTZ) - 14808-60-7	Carcinogen

California SCAQMD Rule 443
Contains Photochemically Reactive Solvent

State Right-to-Know

Chemical name	New Jersey	Massachusetts	Pennsylvania
TITANIUM DIOXIDE (TOTAL DUST) 13463-67-7	X	X	X
CRYSTALLINE SILICA (QUARTZ) 14808-60-7	X	X	X
METHYL ETHYL KETONE 78-93-3	X	X	X
AMORPHOUS SILICA 7631-86-9		X	X
BENZENE, 1,4-DIMETHYL 106-42-3	X	X	X
BENZENE, 1,3-DIMETHYL 108-38-3	X	X	X
ETHYL BENZENE 100-41-4	X	X	X

16. OTHER INFORMATION

NFPA	**Health** 2	**Flammability** 3	**Instability** 1	**Physical hazard** *
HMIS (Hazardous Material Information System)	**Health** 2*	**Flammability** 3	**Reactivity** 1	

Prepared By Tnemec Regulatory Dept: 816-474-3400
Revision Date 25-Jan-2019
Revision Summary
4 5 7 10 8 9 11 14 1 2

Disclaimer

For specific information regarding occupational safety and health standards, please refer to the Code of Federal Regulations, Title 29, Part 1910.
To the best of our knowledge, the information contained herein is accurate. However, neither the Tnemec Company or any of its subsidiaries assume any liability whatsoever for the accuracy of completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot

guarantee that these are the only hazards which exist.

End of SDS

Safety Data Sheet

Issue Date 12-Dec-2017 **Revision Date** 11-Jan-2017 **Revision Number** 14

1. IDENTIFICATION

Product identifier

Product Code F073-0073B
Product Name ENDURA-SHIELD CONVERTER

Other means of identification

Common Name SERIES 73, PART B
Synonyms None

Recommended use of the chemical and restrictions on use

Recommended Use industrial paint.
Uses advised against Consumer use, For professional use only. Not for residential use.

Details of the supplier of the safety data sheet

Manufacturer Address
Tnemec Company, Inc. 6800 Corporate Drive, Kansas City, MO 64120-1372 816-474-3400

Distributor
Tnemec Company, Inc. 86 Boul, des Entreprises, Ste. 203, Boisbriand, Quebec Canada J7G 2T3

Emergency telephone number

Company Phone Number Tnemec Regulatory Dept: 816-474-3400
24 Hour Emergency Phone Number 800-535-5053 (Infotrac)

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Specific target organ toxicity (single exposure)	Category 3
Flammable Liquids	Category 3

Label elements

EMERGENCY OVERVIEW

WARNING

Hazard statements
Harmful if inhaled
Causes skin irritation
Causes serious eye irritation
May cause respiratory irritation. May cause drowsiness or dizziness
Flammable liquid and vapor

Appearance clear **Physical state** liquid **Odor** aromatic

Precautionary Statements
Prevention
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Keep cool
Use explosion-proof electrical/ventilating/lighting/equipment

Response
specific treatment
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
If skin irritation occurs: Get medical advice/attention
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
In case of fire: Use CO2, dry chemical, or foam for extinction

Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up
Keep away from children

Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)
Other information
May be harmful in contact with skin
Toxic to aquatic life with long lasting effects
SEE SAFETY DATA SHEET
Acute Toxicity 1E-06 % of the mixture consists of ingredient(s) of unknown toxicity.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS No	Weight-%
HEXAMETHYLENE DIISOCYANATE (HDI) POLYMER	28182-81-2	30 - <60%
P-CHLOROBENZOTRIFLUORIDE	98-56-6	30 - <60%
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER	822-06-0	0.1 - <1%

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of first aid measures

General advice Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If symptoms persist, call a physician.

Skin contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. If skin irritation persists, call a physician.

Inhalation Remove affected individual to fresh air. Treat symptomatically. If breathing is difficult, administer oxygen. If breathing has stopped give artificial respiration. Consult a physician.

Ingestion If swallowed, do not induce vomiting. Get medical attention immediately.

Self-protection of the first aider Use personal protective equipment. Avoid contact with eyes, skin and clothing.

Most important symptoms and effects, both acute and delayed

Most important symptoms and effects Breathing difficulties. Asthma-like and/ or skin allergy-like symptoms.

Notes to physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Foam, carbon dioxide, and dry chemical.

Unsuitable extinguishing media Water.

Specific hazards arising from the chemical
Thermal decomposition can lead to release of irritating gases and vapours In the event of fire and/or explosion do not breathe fumes

Hazardous combustion products Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with eyes, skin and clothing. Use personal protective equipment. Remove all sources of ignition. Keep people away from and upwind of spill/leak. Ensure adequate ventilation.

Environmental Precautions

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system.

Methods and material for containment and cleaning up

Methods for containment Remove all sources of ignition. Spills may be collected with inert, absorbent material for proper disposal. Use non-sparking tools, protective gloves, goggles and clothing, adequate ventilation, avoid the breathing of vapors and use respiratory protective devices. Transfer absorbent material to suitable containers for proper disposal.

Methods for cleaning up If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling **Use only with adequate ventilation.**Avoid contact with eyes, skin and clothing. Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Do not eat, drink or smoke when using this product. When used in a mixture, read the labels and safety data sheets of all components. Wash thoroughly after handling. Do not breathe vapours or spray mist.

Conditions for safe storage, including any incompatibilities

Storage Close container after each use. Keep away from heat, sparks and flame. Use only in an area containing flame proof equipment. Prevent build-up of vapors by opening all windows and doors to achieve cross ventilation. Keep out of the reach of children.

Incompatible products Incompatible with strong acids and bases. Water. Alcohols. Amines. Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure guidelines .

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
P-CHLOROBENZOTRIFLUORIDE 98-56-6	TWA: 2.5 mg/m³	-	250 mg/m³
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER 822-06-0	TWA: 0.005 ppm	-	

Appropriate engineering controls

Engineering measures Sufficient ventilation, in volume and pattern, should be provided through both local and general exhaust to keep the air contaminant concentration below current applicable OSHA Permissible Exposure Limits (PEL) and ACGIH"s Threshold Limit Values (TLV). Appropriate ventilation should be employed to remove hazardous decomposition products formed during welding or flame cutting operations of surfaces coated with this product.

Individual protection measures, such as personal protective equipment

Eye/face protection Use chemical resistant splash type goggles. If splashes are likely to occur, wear face-shield.

Skin and body protection Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Respiratory protection INDIVIDUALS WITH LUNG OR BREATHING PROBLEMS OR PRIOR REACTION TO ISOCYANATES MUST NOT BE EXPOSED TO VAPOR OR SPRAY MIST. Do not breathe vapor or spray mist. Wear an appropriate, properly fitted respirator (NIOSH/MSHA approved) during and after application unless air monitoring demonstrates vapor/mist levels are below applicable limits. An airline respirator (TC 19C NIOSH/MSHA) is recommended. A vapor-particulate respirator (TC 23C NIOSH/MSHA) may be appropriate where air

monitoring demonstrates vapors are less than ten times the applicable exposure limits and the isocyanate concentration is less than its applicable exposure limit. The use of an air-supplied respirator is mandatory whenever the airborne concentration of isocyanate monomer is unknown.

General hygiene considerations Remove and wash contaminated clothing before re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	liquid		
Appearance	clear	**Odor**	aromatic
Color	No information available	**Odor threshold**	No information available

Property	**Values**	**Remarks**
pH		
Melting point / freezing point	No data available	
Boiling point / boiling range	139 °C / 282.0 °F	
Flash point	40 °C / 104.0 °F	Pensky Martens - Closed Cup
Evaporation rate		
Flammability (solid, gas)	No data available	
Flammability Limit in Air		approximate
Upper flammability limit	10.5	
Lower flammability limit	0.9	
Vapor pressure		
Vapor density		
Specific gravity	1.23059	g/cm3
Water solubility	Insoluble in cold water	
Solubility in other solvents		
Partition coefficient: n-octanol/water		
Autoignition temperature	No data available	
Decomposition temperature		
Kinematic viscosity	No data available	
Dynamic viscosity	60 centipoises	approx
Explosive properties	No information available	
Oxidizing properties	No information available	

Other Information

Density	10.26311 lbs/gal
Volatile organic compounds (VOC) content	0 lbs/gal
Total volatiles weight percent	49 %
Total volatiles volume percent	44.9 %
Bulk density	No information available

10. STABILITY AND REACTIVITY

Reactivity
Water reactive, Amines, Alcohols

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
None under normal processing.

Conditions to avoid
Protect from water. Heat, flames and sparks.

Incompatible materials
Incompatible with strong acids and bases, Water, Alcohols, Amines, Strong oxidizing agents

Hazardous decomposition products
Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds.

11. TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination. Contains isocyanate monomer. If subject to spray application, engineering and administrative controls must be instituted to maintain an exposure level below .005ppm. If these controls are not adequate, the use of an air-supplied respirator is mandatory. May cause sensitization by inhalation.

Eye contact Causes eye irritation.

Skin contact Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. Irritating to skin.

Ingestion Harmful if swallowed.

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
HEXAMETHYLENE DIISOCYANATE (HDI) POLYMER 28182-81-2	-	-	= 18500 mg/m³ (Rat) 1 h
P-CHLOROBENZOTRIFLUORIDE 98-56-6	= 13 g/kg (Rat)	> 2 mL/kg (Rabbit)	= 33 mg/L (Rat) 4 h
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER 822-06-0	= 710 µL/kg (Rat)	= 593 mg/kg (Rabbit)	= 0.06 mg/L (Rat) 4 h

Information on toxicological effects

Symptoms Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain, or flushing. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Irritating to skin.
Eye damage/irritation Irritating to eyes.
Chronic Toxicity Avoid repeated exposure. Contains isocyanates. May produce an allergic reaction.
Sensitization May cause sensitization of susceptible persons.
Mutagenicity No information available.
Carcinogenicity There are no known carcinogenic chemicals in this product.
Reproductive effects No information available.
STOT - single exposure Causes damage to organs
STOT - repeated exposure No information available
Target organ effects Eyes, kidney, liver, Skin, respiratory system.
Aspiration hazard No information available.

Acute Toxicity 1E-06 % of the mixture consists of ingredient(s) of unknown toxicity.
The following values are calculated based on chapter 3.1 of the GHS document .

12. ECOLOGICAL INFORMATION

Ecotoxicity

Toxic to aquatic life with long lasting effects

50.64003 % of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia
P-CHLOROBENZOTRIFLUORIDE 98-56-6		11.5 - 15.8: 48 h Lepomis macrochirus mg/L LC50 static	3.68: 48 h Daphnia magna mg/L EC50
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER 822-06-0		26.1: 96 h Brachydanio rerio mg/L LC50 static	

Persistence and degradability
No information available.

Bioaccumulation
No information available.

Mobility in Environmental Media

Chemical name	log Pow
P-CHLOROBENZOTRIFLUORIDE 98-56-6	3.7

Other Adverse Effects No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal Methods Keep container tightly closed. If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

US EPA Waste Number No data available

California Hazardous Waste Status
Not applicable

14. TRANSPORT INFORMATION

DOT

Proper Shipping Name paint in oil Not regulated

Additional information Call TNEMEC Traffic Department - 816-474-3400 for additional information or other modes of Transportation.

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Complies
IECSC	Complies
KECL	Complies
PICCS	Complies
AICS	Complies

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

Chemical name	HAPS Data
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER	

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and and Title 40n of the Code of Federal Regulations, Part 372:

Chemical name	SARA 313 - Threshold Values
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER - 822-06-0	1.0

SARA 311/312 Hazardous Categorization

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act No information available

Chemical name	Hazardous Substances RQs	CERCLA EHS RQs	RQ
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER 822-06-0	100 lb		RQ 100 lb final RQ RQ 45.4 kg final RQ

California Prop. 65

None of the ingredients are listed with California Proposition 65.

California SCAQMD Rule 443

Contains Photochemically Reactive Solvent

State Right-to-Know

Chemical name	New Jersey	Massachusetts	Pennsylvania
P-CHLOROBENZOTRIFLUORIDE 98-56-6	X		
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER 822-06-0	X	X	

16. OTHER INFORMATION

NFPA	**Health** 2	**Flammability** 2	**Instability** 1	**Physical hazard** -
HMIS (Hazardous Material Information System)	**Health** 2	**Flammability** 2	**Reactivity** 1	

Prepared By Tnemec Regulatory Dept: 816-474-3400
Revision Date 11-Jan-2017
Revision Summary
4 5 7 10 11 14 6 9 8 1 15
Disclaimer

For specific information regarding occupational safety and health standards, please refer to the Code of Federal Regulations, Title 29, Part 1910.
To the best of our knowledge, the information contained herein is accurate. However, neither the Tnemec Company or any of its subsidiaries assume any liability whatsoever for the accuracy of completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.

End of SDS

TNEME-ZINC SERIES 90-97

PRODUCT PROFILE

GENERIC DESCRIPTION Aromatic Urethane, Zinc-Rich

COMMON USAGE An advanced technology, two-component, moisture-cured, zinc-rich primer providing extraordinary performance. It's user friendly and rapid curing so chemical- and corrosion-resistant topcoats can be applied the "same-day." Also used for field touch-up of inorganic zinc coating. Application methods include "dry-fall" under certain conditions (see Application).

COLORS 90-97 Reddish-gray

ZINC PIGMENT 83% by weight in dried film

SPECIAL QUALIFICATIONS Series 90-97 meets **AISC** requirements of Class B surface with a mean slip coefficient no less than 0.50 and a tension creep not in excess of .005 inches (.13mm).
Tneme-Zinc uses a zinc pigment which meets the requirements of **ASTM D 520 Type III** and contains less than .002% lead. This level qualifies it to be classed as "non-lead" (less than 0.009% lead by weight) as defined in 16 CFR Part 1303 of the Consumer Product Safety Commission regulations. Conforms to **SSPC Paint 20, Type II.**

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

COATING SYSTEM

TOPCOATS Series 1, 6, 27, 27WB, 46H-413, 66, L69, L69F, N69, N69F, V69, V69F, 73, 104, 113, 114, 115, 135, 161, 394, 1028, 1029, 1074, 1074U, 1075, 1075U
Note: Certain topcoat colors may not provide one-coat hiding depending on method of application. Contact your Tnemec representative. **Note:** Series 90-97 must be exterior exposed for three days prior to topcoating with Series 1028 or 1029. **Note:** Series 90-97 must be exterior exposed for one day prior to topcoating with Series 27WB.

SURFACE PREPARATION

Severe Exposure: SSPC-SP10/NACE 2 Near-White Blast Cleaning with a minimum angular anchor profile of 1.5 mils.
Moderate Exposure: SSPC-SP6/NACE 3 Commercial Blast Cleaning with a minimum angular anchor profile of 1.5 mils.

TECHNICAL DATA

VOLUME SOLIDS 63.0 ± 2.0% (mixed)

RECOMMENDED DFT 2.5 to 3.5 mils (65 to 90 microns) per coat.

CURING TIME Without 44-710

Temperature †	To Handle	To Recoat
75°F (24°C)	1 hour	4 hours
65°F (18°C)	1 1/2 hours	5 hours
55°F (13°C)	2 hours	6 hours
45°F (7°C)	2 1/2 hours	7 hours
35°F (2°C)	3 hours	8 hours

† 50% relative humidity. Curing time will vary with surface temperature, humidity and film thickness.
Note: For faster curing, low humidity and low-temperature applications, add No. 44-710 Urethane Accelerator (see separate product data sheet).

VOLATILE ORGANIC COMPOUNDS **Unthinned:** 2.68 lbs/gallon (321 grams/litre)
Thinned 2.5% (No. 2 or No. 3 Thinner): 2.79 lbs/gallon (334 grams/litre)
Thinned 10% (No. 2 or No. 3 Thinner): 3.10 lbs/gallon (371 grams/litre)

HAPS **Unthinned:** 5.12 lbs/gal solids
Thinned 2.5%: 5.41 lbs/gal solids (No. 2 Thinner); 5.13 lbs/gal solids (No. 3 Thinner)
Thinned 10%: 6.27 lbs/gal solids (No. 2 Thinner); 5.16 lbs/gal solids (No. 3 Thinner)

THEORETICAL COVERAGE 1,011 mil sq ft/gal (24.8 m²/L at 25 microns). See APPLICATION for coverage rates.

NUMBER OF COMPONENTS Two: Part A and Part B

PACKAGING Four-Gallon and One-Gallon Kits: Consist of one premeasured container of liquid (Part A) and one premeasured container of powder (Part B). When mixed, yields four gallons (15.1L) or one gallon (3.79L).

NET WEIGHT PER GALLON 23.94 ± 0.60 lbs (10.86 ± .27 kg)

STORAGE TEMPERATURE Minimum 20°F (-7°C) Maximum 110°F (43°C)

TEMPERATURE RESISTANCE Dry (Continuous) 250°F (121°C) Intermittent 300°F (149°C)

SHELF LIFE Part A: 12 months at recommended storage temperature.
Part B: 24 months at recommended storage temperature.

FLASH POINT - SETA Part A: 78°F (26°C) Part B: N/A

HEALTH & SAFETY Paint products contain 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.

TNEME-ZINC | SERIES 90-97

APPLICATION

COVERAGE RATES

	Dry Mils (Microns)	Wet Mils (Microns)	Sq Ft/Gal (m²/Gal)
Suggested	3.0 (75)	5.0 (125)	337 (31.3)
Minimum	2.5 (65)	4.0 (100)	404 (37.5)
Maximum	3.5 (90)	5.5 (140)	289 (26.9)

Allow for overspray and surface irregularities. 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.

MIXING

Always use the entire contents of A and B components. Use an air-driven power mixer and keep material under constant agitation while mixing. Slowly sift powder (Part B) into liquid (Part A).
–Do Not Reverse This Procedure– Adjust mixer speed to break up lumps and mix until the two components are thoroughly blended. Strain through a 35 to 50 mesh (300 to 600 microns) screen before using. For spray application, keep under low RPM agitation to prevent settling. For brush or roller application, stir frequently to prevent settling. Do not use mixed material beyond pot life limits.

THINNING

For spray, thin up to 10% or 3/4 pint (380 mL) per gallon with No. 2 Thinner if temperatures are below 80°F (27°C). Thin up to 10% or 3/4 pint (380 mL) per gallon with No. 3 Thinner if temperatures are above 80°F (27°C). For brush or roller, thin up to 10% or 3/4 pint (380 mL) with No. 3 Thinner.

POT LIFE

8 hours at 77°F (25°C) and 50% R.H.
Caution: This product cures with moisture acting as a catalyst. Incorporation of moisture or moisture laden air (humidity) during use will shorten pot life. Avoid continual agitation at high RPM. When feasible keep containers of mixed material covered during use.

APPLICATION EQUIPMENT

Note: When finish coats are white or light colors, best hiding of this dark color primer can be achieved by spray application.

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)	40-50 psi (2.8-3.4 bar)	10-20 psi (0.7-1.4 bar)

† (with heavy mastic spring) Low temperatures or longer hoses will require additional pressure. Use pressure pot equipped with an agitator and keep pressure pot at same level or higher than the spray gun. Compressed air must be dry.

Airless Spray

Tip Orifice	Atomizing Pressure	Mat'l Hose ID	Manifold Filter
0.017"-0.021" (430-535 microns) Reversible Tip	2400-3000 psi (165-207 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.
Keep material agitated to prevent settling.
Roller: Use 1/4" or 3/8" (6.4 mm or 9.5 mm) synthetic woven nap roller covers. Stir material frequently or keep under agitation to prevent settling.
Brush: Use high quality natural or synthetic bristle brushes.

SURFACE TEMPERATURE

Minimum 35°F (2°C) Maximum 140°F (60°C) Maximum for Brush & Roller 120°F (49°C)
The surface should be dry and at least 5°F (3°C) above the dew point. **Note:** Series 44-710 Accelerator must be used if the surface temperature is 35°F to 60°F (2°C to 16°C) and 20% to 40% relative humidity.

AMBIENT HUMIDITY

Minimum 20% Maximum 90%

CLEANUP

Flush and clean all equipment immediately after use with the recommended thinner or xylene.

CAUTION

Dry overspray can be wiped or washed from most surfaces. Satisfactory dry-fall performance depends upon height of work, weather conditions and equipment adjustment. Low temperature is of particular concern. Test for each application as follows: Spray from 15 to 25 feet towards paint container. The material then should readily wipe off. **Note:** Heat can fuse-dry overspray to surfaces. Always clean dry overspray from hot surfaces before fusing occurs. Be aware that surface temperatures can be higher than air temperatures.

Safety Data Sheet

Issue Date 22-Jun-2015 **Revision Date** 22-Jun-2015 **Revision Number** 8

1. IDENTIFICATION

Product identifier

Product Code F090-0097A
Product Name TNEME-ZINC REDDISH GRAY

Other means of identification

Common Name SERIES 90-97 PART A
UN/ID no. 1263

Recommended use of the chemical and restrictions on use

Recommended Use industrial paint.
Uses advised against Consumer use, For professional use only. Not for residential use.

Details of the supplier of the safety data sheet

Manufacturer Address
Tnemec Company, Inc. 6800 Corporate Drive, Kansas City, MO 64120-1372

Emergency telephone number

Company Phone Number Tnemec Regulatory Dept: 816-474-3400
24 Hour Emergency Phone Number 800-535-5053 (Infotrac)

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Inhalation (Vapors)	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1
Respiratory sensitization	Category 1
Skin sensitization	Category 1
Carcinogenicity	Category 1A
Specific target organ toxicity (single exposure)	Category 1
Specific target organ toxicity (repeated exposure)	Category 1
Aspiration toxicity	Category 1
Flammable Liquids	Category 2

Label elements

EMERGENCY OVERVIEW

Danger

Hazard statements
Harmful if inhaled
Causes skin irritation
Causes serious eye damage
May cause allergy or asthma symptoms or breathing difficulties if inhaled
May cause an allergic skin reaction
May cause cancer
Causes damage to organs
Causes damage to organs through prolonged or repeated exposure
May be fatal if swallowed and enters airways
Highly flammable liquid and vapor

Appearance opaque **Physical state** liquid **Odor** aromatic

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Use only outdoors or in a well-ventilated area
Wash face, hands and any exposed skin thoroughly after handling
In case of inadequate ventilation wear respiratory protection
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves
Do not breathe dust/fume/gas/mist/vapors/spray
Do not eat, drink or smoke when using this product
Keep away from heat/sparks/open flames/hot surfaces. – No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/mixing/equipment
Use only non-sparking tools
Take precautionary measures against static discharge

Response
IF exposed: Call a POISON CENTER or doctor/physician
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a POISON CENTER or doctor/physician
If skin irritation or rash occurs: Get medical advice/attention
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Do NOT induce vomiting
In case of fire: Use CO2, dry chemical, or foam for extinction

Storage
Store locked up
Store in a well-ventilated place. Keep cool
Keep away from children

Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Other information

Toxic to aquatic life with long lasting effects
Cancer hazard. Contains crystalline silica which can cause cancer. (Risk of cancer depends on duration and level of exposure).
Respirable crystalline silica (quartz) can cause silicosis, a fibrosis (scarring) of the lungs
SEE SAFETY DATA SHEET
Acute Toxicity 4.65729 % of the mixture consists of ingredient(s) of unknown toxicity.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No	Weight-%
XYLENE	1330-20-7	30 - 60%
DIPHENYLMETHANE DIISOCYANATE (MDI) REACTIVE MONOMER	101-68-8	1 - 10%
ETHYL BENZENE	100-41-4	1 - 10%
IRON OXIDE FUME	1309-37-1	1 - 10%
CRYSTALLINE SILICA (QUARTZ)	14808-60-7	1 - 10%
TREATED MICA (RESPIRABLE DUST)	12001-26-2	1 - 10%
DIPHENYLMETHANE-2,2-DIISOCYANATE MONOMER	26447-40-5	1 - 10%
CRYSTALLINE SILICA (QUARTZ)	14808-60-7	0.1 - 1%

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of first aid measures

General advice If symptoms persist, call a physician.

Eye contact Rinse thoroughly with plenty of water for at least 15 minutes. If eye irritation persists, consult a specialist.

Skin contact Wash off immediately with soap and plenty of water. If symptoms persist, call a physician.

Inhalation Remove to fresh air. Oxygen or artificial respiration if needed. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion If swallowed, do not induce vomiting. Get medical attention immediately.

Self-protection of the first aider Use personal protective equipment. Avoid contact with eyes, skin and clothing.

Most important symptoms and effects, both acute and delayed

Notes to physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Carbon dioxide. Foam. Dry chemical.

Unsuitable extinguishing media Water.

Specific hazards arising from the chemical

Thermal decomposition can lead to release of irritating gases and vapours In the event of fire and/or explosion do not breathe fumes

Hazardous combustion products Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds. Carbon oxides. Hydrocarbons. Nitrogen oxides (NOx). Sulfur oxides. Hydrogen cyanide.

Protective equipment and precautions for firefighters

Use water spray to cool unopened containers. In the event of fire, wear self-contained breathing apparatus. Keep away from heat/sparks/open flames/hot surfaces. MAY CAUSE HEAT AND PRESSURE BUILD-UP IN CLOSED CONTAINERS. Solvent vapors are heavier than air and may spread along floors. Flash back possible over considerable distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with eyes, skin and clothing. Use personal protective equipment. Remove all sources of ignition.

Environmental Precautions

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system.

Methods and material for containment and cleaning up

Methods for containment Remove all sources of ignition. Spills may be collected with inert, absorbent material for proper disposal. Use non-sparking tools, protective gloves, goggles and clothing, adequate ventilation, avoid the breathing of vapors and use respiratory protective devices. Transfer absorbent material to suitable containers for proper disposal.

Methods for cleaning up If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling **Use only with adequate ventilation.**Avoid contact with eyes, skin and clothing. Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Do not eat, drink or smoke when using this product. When used in a mixture, read the labels and safety data sheets of all components. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Storage Keep container tightly closed in a dry and well-ventilated place. Keep out of the reach of children.

Incompatible products Strong oxidizing agents. Alkaline. Amines. Acids. Nitrates. Hypochlorites. Boric acid.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure guidelines .

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
XYLENE 1330-20-7	TWA: 100 ppm STEL: 150 ppm	TWA: 100 ppm TWA: 435 mg/m^3 STEL: 150 ppm STEL: 655 mg/m^3	

DIPHENYLMETHANE DIISOCYANATE (MDI) REACTIVE MONOMER 101-68-8	TWA: 0.005 ppm	Ceiling: 0.02 ppm Ceiling: 0.2 mg/m³	75 mg/m³
ETHYL BENZENE 100-41-4	TWA: 20 ppm	TWA: 100 ppm TWA: 435 mg/m³ STEL: 125 ppm STEL: 545 mg/m³	800 ppm
IRON OXIDE FUME 1309-37-1	TWA: 5 mg/m³	TWA: 10 mg/m³ TWA: 5 mg/m³ TWA: 15 mg/m³	2500 mg/m³
CRYSTALLINE SILICA (QUARTZ) 14808-60-7	TWA: 0.025 mg/m³	TWA: 0.1 mg/m³	50 mg/m³
TREATED MICA (RESPIRABLE DUST) 12001-26-2	TWA: 3 mg/m³	TWA: 3 mg/m³	1500 mg/m³
DIPHENYLMETHANE-2,2-DIISOCYANATE MONOMER 26447-40-5	-	Ceiling: 0.02 ppm Ceiling: 0.2 mg/m³	
CRYSTALLINE SILICA (QUARTZ) 14808-60-7	TWA: 0.025 mg/m³	TWA: 0.1 mg/m³	50 mg/m³

Appropriate engineering controls

Engineering measures Sufficient ventilation, in volume and pattern, should be provided through both local and general exhaust to keep the air contaminant concentration below current applicable OSHA Permissible Exposure Limits (PEL) and ACGIH"s Threshold Limit Values (TLV). Appropriate ventilation should be employed to remove hazardous decomposition products formed during welding or flame cutting operations of surfaces coated with this product.

Individual protection measures, such as personal protective equipment

Eye/face protection Use chemical resistant splash type goggles. If splashes are likely to occur, wear face-shield.

Skin and body protection Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Respiratory protection INDIVIDUALS WITH LUNG OR BREATHING PROBLEMS OR PRIOR REACTION TO ISOCYANATES MUST NOT BE EXPOSED TO VAPOR OR SPRAY MIST. Do not breathe vapor or spray mist. Wear an appropriate, properly fitted respirator (NIOSH/MSHA approved) during and after application unless air monitoring demonstrates vapor/mist levels are below applicable limits. An airline respirator (TC 19C NIOSH/MSHA) is recommended. A vapor-particulate respirator (TC 23C NIOSH/MSHA) may be appropriate where air monitoring demonstrates vapors are less than ten times the applicable exposure limits and the isocyanate concentration is less than its applicable exposure limit. The use of an air-supplied respirator is mandatory whenever the airborne concentration of isocyanate monomer is unknown.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. Avoid breathing dust created by cutting, sanding, or grinding.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	liquid		
Appearance	opaque	**Odor**	aromatic
Color	No information available	**Odor threshold**	No information available

Property	**Values**	**Remarks**

pH		No data available
Melting point / freezing point		No data available
Boiling point / boiling range	64 °C / 147.0 °F	
Flash point	12 °C / 53.0 °F	Pensky Martens - Closed Cup
Evaporation rate		No data available
Flammability (solid, gas)		Not applicable
Flammability Limit in Air		No data available
Upper flammability limit	N/A	
Lower flammability limit	2.2	
Vapor pressure		No data available
Vapor density		No data available
Specific gravity	1.06902	g/cm3
Water solubility	Insoluble in cold water	
Solubility in other solvents		No data available
Partition coefficient: n-octanol/water		No data available
Autoignition temperature		No data available
Decomposition temperature		Not applicable
Kinematic viscosity		Not applicable
Dynamic viscosity	225 centipoises	

Other Information

Density	8.91565 lbs/gal
Volatile organic compounds (VOC) content	3.8266 lbs/gal
Total volatiles weight percent	42.92 %
Total volatiles volume percent	52.76 %

10. STABILITY AND REACTIVITY

Reactivity
No data available

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
None under normal processing.

Conditions to avoid
Heat, flames and sparks.

Incompatible materials
Strong oxidizing agents, Alkaline, Amines, Acids, Nitrates, Hypochlorites, Boric acid

Hazardous decomposition products
Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds. Carbon oxides. Nitrogen oxides (NOx). Hydrocarbons. Hydrogen cyanide. Sulfur oxides.

11. TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation	HARMFUL BY INHALATION. Symptoms of overexposure are dizziness, headache, tiredness, nausea, unconsciousness, cessation of breathing. May cause sensitization of susceptible persons. Contains isocyanate monomer. If subject to spray application, engineering and administrative controls must be instituted to maintain an exposure level below .005ppm. If these controls are not adequate, the use of an air-supplied respirator is mandatory.
Eye contact	Causes serious eye damage.

Skin contact Irritating to skin. May cause sensitization by skin contact.

Ingestion Harmful if swallowed.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
XYLENE 1330-20-7	= 3500 mg/kg (Rat)	> 1700 mg/kg (Rabbit) > 4350 mg/kg (Rabbit)	= 29.08 mg/L (Rat) 4 h = 5000 ppm (Rat) 4 h
DIPHENYLMETHANE DIISOCYANATE (MDI) REACTIVE MONOMER 101-68-8	= 31600 mg/kg (Rat) = 9200 mg/kg (Rat)		= 369 mg/m³ (Rat) 4 h
ETHYL BENZENE 100-41-4	= 3500 mg/kg (Rat)	= 15400 mg/kg (Rabbit)	= 17.2 mg/L (Rat) 4 h
IRON OXIDE FUME 1309-37-1	> 10000 mg/kg (Rat)		
CRYSTALLINE SILICA (QUARTZ) 14808-60-7	= 500 mg/kg (Rat)		
DIPHENYLMETHANE-2,2-DIISOCYANATE MONOMER 26447-40-5	> 7400 mg/kg (Rat)	> 6200 mg/kg (Rabbit)	= 0.369 mg/L (Rat) 4 h
CRYSTALLINE SILICA (QUARTZ) 14808-60-7	= 500 mg/kg (Rat)		

Information on toxicological effects

Symptoms Symptoms of overexposure are dizziness, headache, tiredness, nausea, unconsciousness, cessation of breathing. Skin disorders. Eye Damage. Respiratory disorders.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity Avoid repeated exposure. Contains isocyanates. May produce an allergic reaction.
Sensitization May cause sensitization of susceptible persons.
Mutagenicity May cause genetic defects.
Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	ACGIH	IARC	NTP	OSHA
XYLENE 1330-20-7		Group 3		
DIPHENYLMETHANE DIISOCYANATE (MDI) REACTIVE MONOMER 101-68-8		Group 3		
ETHYL BENZENE 100-41-4	A3	Group 2B		X
IRON OXIDE FUME 1309-37-1		Group 3		
CRYSTALLINE SILICA (QUARTZ) 14808-60-7	A2	Group 1	Known	X
DIPHENYLMETHANE-2,2-DIISOCYANATE MONOMER 26447-40-5		Group 3		
CRYSTALLINE SILICA (QUARTZ) 14808-60-7	A2	Group 1	Known	X

Reproductive effects No information available.
STOT - single exposure Eyes, Skin, Respiratory system, Central Nervous System (CNS)
STOT - repeated exposure Causes damage to organs through prolonged or repeated exposure
Target organ effects blood, Central nervous system, Gastrointestinal tract, Eyes, kidney, liver, respiratory system, Skin.
Aspiration hazard Not applicable.

Acute Toxicity 4.65729 % of the mixture consists of ingredient(s) of unknown toxicity.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Toxic to aquatic life with long lasting effects

53.7997877 % of the mixture consists of components(s) of unknown hazards to the aquatic environment

Component	Toxicity to algae	Toxicity to fish	Toxicity to daphnia
XYLENE 1330-20-7		LC50= 13.4 mg/L Pimephales promelas 96 h LC50 2.661 - 4.093 mg/L Oncorhynchus mykiss 96 h LC50 13.5 - 17.3 mg/L Oncorhynchus mykiss 96 h LC50 13.1 - 16.5 mg/L Lepomis macrochirus 96 h LC50= 19 mg/L Lepomis macrochirus 96 h LC50 7.711 - 9.591 mg/L Lepomis macrochirus 96 h LC50 23.53 - 29.97 mg/L Pimephales promelas 96 h LC50= 780 mg/L Cyprinus carpio 96 h LC50> 780 mg/L Cyprinus carpio 96 h LC50 30.26 - 40.75 mg/L Poecilia reticulata 96 h	EC50 = 3.82 mg/L 48 h LC50 = 0.6 mg/L 48 h
ETHYL BENZENE 100-41-4	4.6: 72 h Pseudokirchneriella subcapitata mg/L EC50 438: 96 h Pseudokirchneriella subcapitata mg/L EC50 2.6 - 11.3: 72 h Pseudokirchneriella subcapitata mg/L EC50 static 1.7 - 7.6: 96 h Pseudokirchneriella subcapitata mg/L EC50 static	11.0 - 18.0: 96 h Oncorhynchus mykiss mg/L LC50 static 32: 96 h Lepomis macrochirus mg/L LC50 static 4.2: 96 h Oncorhynchus mykiss mg/L LC50 semi-static 7.55 - 11: 96 h Pimephales promelas mg/L LC50 flow-through 9.6: 96 h Poecilia reticulata mg/L LC50 static 9.1 - 15.6: 96 h Pimephales promelas mg/L LC50 static	1.8 - 2.4: 48 h Daphnia magna mg/L EC50
DIPHENYLMETHANE-2,2-DIISOCYANATE MONOMER 26447-40-5	3230: 96 h Skeletonema costatum mg/L EC50		1000: 24 h Daphnia magna mg/L EC50

Persistence and degradability
No information available.

Bioaccumulation
No information available.

Mobility in Environmental Media

Component	log Pow
XYLENE 1330-20-7	2.77
ETHYL BENZENE 100-41-4	3.118
DIPHENYLMETHANE-2,2-DIISOCYANATE MONOMER 26447-40-5	4.5

Other Adverse Effects No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal Methods Keep container tightly closed. If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

Component	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes

XYLENE 1330-20-7		Included in waste stream: F039		U239
ETHYL BENZENE 100-41-4		Included in waste stream: F039		

Component	CAWAST
XYLENE 1330-20-7	Toxic Ignitable
ETHYL BENZENE 100-41-4	Toxic Ignitable

14. TRANSPORT INFORMATION

DOT

UN/ID no.	1263
Proper Shipping Name	paint
Hazard Class	3
Packing Group	III
Emergency Response Guide Number	128

IATA

UN/ID no.	1263
Proper Shipping Name	paint
Hazard Class	3
Packing Group	III
ERG Code	366

Additional information Call TNEMEC Traffic Department - 816-474-3400 for additional information or other modes of Transportation.

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Does not comply
ENCS	Does not comply
IECSC	Complies
KECL	Complies
PICCS	Does not comply
AICS	Complies

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

Component	**HAPS Data**
XYLENE	
DIPHENYLMETHANE DIISOCYANATE (MDI) REACTIVE MONOMER	
ETHYL BENZENE	

United States of America

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and and Title 40n of the Code of Federal Regulations, Part 372:

Component	SARA 313 - Threshold Values
XYLENE - 1330-20-7	1.0
DIPHENYLMETHANE DIISOCYANATE (MDI) REACTIVE MONOMER - 101-68-8	1.0
ETHYL BENZENE - 100-41-4	0.1
DIPHENYLMETHANE-2,2-DIISOCYANATE MONOMER - 26447-40-5	1.0

SARA 311/312 Hazardous Categorization

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
XYLENE 1330-20-7	100 lb			X
ETHYL BENZENE 100-41-4	1000 lb	X	X	X

CERCLA

Component	Hazardous Substances RQs	CERCLA EHS RQs	RQ
XYLENE 1330-20-7	100 lb		RQ 100 lb final RQ RQ 45.4 kg final RQ
DIPHENYLMETHANE DIISOCYANATE (MDI) REACTIVE MONOMER 101-68-8	5000 lb		RQ 5000 lb final RQ RQ 2270 kg final RQ
ETHYL BENZENE 100-41-4	1000 lb		RQ 1000 lb final RQ RQ 454 kg final RQ

United States of America

California Prop. 65

WARNING! This product contains a chemical known in the State of California to cause cancer

Component	California Prop. 65
ETHYL BENZENE - 100-41-4	Carcinogen
CRYSTALLINE SILICA (QUARTZ) - 14808-60-7	Carcinogen
CRYSTALLINE SILICA (QUARTZ) - 14808-60-7	Carcinogen

California SCAQMD Rule 443

Contains Photochemically Reactive Solvent

State Right-to-Know

Component	New Jersey	Massachusetts	Pennsylvania
XYLENE 1330-20-7	X	X	X
DIPHENYLMETHANE DIISOCYANATE (MDI) REACTIVE MONOMER 101-68-8	X	X	X
ETHYL BENZENE 100-41-4	X	X	X
IRON OXIDE FUME 1309-37-1	X	X	X
CRYSTALLINE SILICA (QUARTZ) 14808-60-7	X	X	X

TREATED MICA (RESPIRABLE DUST) 12001-26-2	X	X	X
DIPHENYLMETHANE-2,2-DIISOCYANATE MONOMER 26447-40-5	X	X	
CRYSTALLINE SILICA (QUARTZ) 14808-60-7	X	X	X

16. OTHER INFORMATION

NFPA	**Health** 2	**Flammability** 3	**Instability** 1	**Physical hazard** *
HMIS (Hazardous Material Information System)	**Health** 2*	**Flammability** 3	**Reactivity** 1	

Prepared By Tnemec Regulatory Dept: 816-474-3400
Revision Date 22-Jun-2015
Revision Summary
9 4 5 7 10 8 11 14 1

Disclaimer

For specific information regarding occupational safety and health standards, please refer to the Code of Federal Regulations, Title 29, Part 1910.
To the best of our knowledge, the information contained herein is accurate. However, neither the Tnemec Company or any of its subsidiaries assume any liability whatsoever for the accuracy of completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.

End of MSDS

Safety Data Sheet

Issue Date No data available **Revision Date** 06-Apr-2015 **Revision Number** 4

1. IDENTIFICATION

Product identifier
Product Code F090-0097B
Product Name TNEME-ZINC ZINC PIGMENT

Other means of identification
Common Name SERIES 90-97 PART B

Recommended use of the chemical and restrictions on use
Recommended Use industrial paint.
Uses advised against Consumer use, For professional use only. Not for residential use.

Details of the supplier of the safety data sheet
Manufacturer Address
Tnemec Company, Inc. 6800 Corporate Drive, Kansas City, MO 64120-1372

Emergency telephone number
Company Phone Number Tnemec Regulatory Dept: 816-474-3400
24 Hour Emergency Phone Number 800-535-5053 (Infotrac)

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status
This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Label elements

EMERGENCY OVERVIEW

Hazard statements
This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Appearance dark grey **Physical state** powder **Odor** odorless

Precautionary Statements
Response
Get medical advice/attention if you feel unwell

Storage
Keep away from children

Hazards not otherwise classified (HNOC)

May cause respiratory irritation
May cause skin and eye irritation
May form combustible dust concentrations in air

Other information

Very toxic to aquatic life with long lasting effects
Inhalation of metallic zinc dust may result in symptoms known as metal fume fever. Symptoms include chills, fever, muscular pain, nausea and vomiting
SEE SAFETY DATA SHEET

Acute Toxicity 0 % of the mixture consists of ingredient(s) of unknown toxicity.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No	Weight-%
ZINC (TOTAL DUST)	7440-66-6	60 - 100%
ZINC OXIDE (TOTAL DUST)	1314-13-2	1 - 10%

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of first aid measures

General advice If symptoms persist, call a physician.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If symptoms persist, call a physician.

Skin contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. If symptoms persist, call a physician.

Inhalation Remove to fresh air. Oxygen or artificial respiration if needed.

Ingestion If swallowed, do not induce vomiting. Get medical attention immediately.

Self-protection of the first aider Use personal protective equipment. Avoid contact with eyes, skin and clothing.

Most important symptoms and effects, both acute and delayed

Notes to physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Carbon dioxide (CO2). Foam. Dry chemical.

Unsuitable extinguishing media Water.

Specific hazards arising from the chemical

Thermal decomposition can lead to release of irritating gases and vapours In the event of fire and/or explosion do not breathe fumes Dusts or fumes may form explosive mixtures in air

Hazardous combustion products Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds. Zinc oxide fume.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with eyes, skin and clothing. Use personal protective equipment. Remove all sources of ignition.

Environmental Precautions

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system.

Methods and material for containment and cleaning up

Methods for containment Remove all sources of ignition. Spills may be collected with inert, absorbent material for proper disposal. Use non-sparking tools, protective gloves, goggles and clothing, adequate ventilation, avoid the breathing of vapors and use respiratory protective devices. Transfer absorbent material to suitable containers for proper disposal.

Methods for cleaning up Shovel or sweep up.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling Close container after each use. Avoid contact with eyes, skin and clothing. Do not eat, drink or smoke when using this product. Tightly fitting safety goggles. Wear protective gloves/clothing. When used in a mixture, read the labels and safety data sheets of all components. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Storage Keep away from heat, sparks and flame. Keep container tightly closed in a dry and well-ventilated place.

Incompatible products Water. Strong oxidizing agents. Acids. Bases.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure guidelines .

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
ZINC OXIDE (TOTAL DUST) 1314-13-2	TWA: 2 mg/m³ STEL: 10 mg/m³	TWA: 5 mg/m³ TWA: 10 mg/m³ STEL: 10 mg/m³ TWA: 15 mg/m³	500 mg/m³

NIOSH IDLH: Immediately Dangerous to Life or Health

Appropriate engineering controls

Engineering measures Sufficient ventilation, in volume and pattern, should be provided through both local and general exhaust to keep the air contaminant concentration below current applicable OSHA Permissible Exposure Limits (PEL) and ACGIH"s Threshold Limit Values (TLV). Appropriate ventilation should be employed to remove hazardous decomposition products formed during welding or flame cutting operations of surfaces coated with this product.

Individual protection measures, such as personal protective equipment

Eye/face protection Tightly fitting safety goggles

Skin and body protection	Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
Respiratory protection	Use only with adequate ventilation. Do not breathe vapors, spray mist, or dust. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates vapor/mist or dust levels are above applicable limits, wear an appropriate, properly fitted respirator (NIOSH/MSHA approved) during and after application. Follow respirator manufacturer's directions for respirator use.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice. Avoid breathing dust created by cutting, sanding, or grinding.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	powder		
Appearance	dark grey	**Odor**	odorless
Color	No information available	**Odor threshold**	No information available

Property	**Values**	**Remarks**
pH		No data available
Melting point / freezing point		No data available
Boiling point / boiling range	72 °C / 162 °F	No information available
Flash point	No information available	
Evaporation rate		No data available
Flammability (solid, gas)		No information available
Flammability Limit in Air		No data available
Upper flammability limit	N/A	
Lower flammability limit	N/A	
Vapor pressure		No data available
Vapor density		No data available
Specific gravity	7.05028	g/cm3
Water solubility	Insoluble in cold water	
Solubility in other solvents		No data available
Partition coefficient: n-octanol/water		No data available
Autoignition temperature		No data available
Decomposition temperature		No data available
Kinematic viscosity		No data available
Dynamic viscosity		No data available

Other Information

Density	58.79932 lbs/gal
Volatile organic compounds (VOC) content	0 lbs/gal
Total volatiles weight percent	0 %
Total volatiles volume percent	0 %

10. STABILITY AND REACTIVITY

Reactivity
No data available

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
None under normal processing.

Conditions to avoid
Heat, flames and sparks.

Incompatible materials
Water, Strong oxidizing agents, Acids, Bases

Hazardous decomposition products
Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds. Zinc oxide fume.

11. TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation May cause irritation of respiratory tract.

Eye contact Irritating to eyes.

Skin contact Irritating to skin.

Ingestion Harmful if swallowed.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
ZINC OXIDE (TOTAL DUST) 1314-13-2	> 5000 mg/kg (Rat)		

Information on toxicological effects

Symptoms Inhalation of metallic zinc dust may result in symptoms known as metal fume fever. Symptoms include chills, fever, muscular pain, nausea and vomiting.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity Avoid repeated exposure.
Sensitization No information available.
Mutagenicity No information available.
Carcinogenicity There are no known carcinogenic chemicals in this product.
Reproductive effects No information available.
STOT - single exposure No information available
STOT - repeated exposure No information available
Aspiration hazard No information available.

Acute Toxicity 0 % of the mixture consists of ingredient(s) of unknown toxicity.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life with long lasting effects

0 % of the mixture consists of components(s) of unknown hazards to the aquatic environment

Component	Toxicity to algae	Toxicity to fish	Toxicity to daphnia

ZINC (TOTAL DUST) 7440-66-6	0.11 - 0.271: 96 h Pseudokirchneriella subcapitata mg/L EC50 static 0.09 - 0.125: 72 h Pseudokirchneriella subcapitata mg/L EC50 static	30: 96 h Cyprinus carpio mg/L LC50 7.8: 96 h Cyprinus carpio mg/L LC50 static 0.24: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 0.59: 96 h Oncorhynchus mykiss mg/L LC50 semi-static 2.66: 96 h Pimephales promelas mg/L LC50 static 3.5: 96 h Lepomis macrochirus mg/L LC50 static 0.45: 96 h Cyprinus carpio mg/L LC50 semi-static 0.41: 96 h Oncorhynchus mykiss mg/L LC50 static 2.16 - 3.05: 96 h Pimephales promelas mg/L LC50 flow-through 0.211 - 0.269: 96 h Pimephales promelas mg/L LC50 semi-static	0.139 - 0.908: 48 h Daphnia magna mg/L EC50 Static

Persistence and degradability
No information available.

Bioaccumulation
No information available.

Mobility in Environmental Media

Other Adverse Effects No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal Methods Keep container tightly closed. If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

California Hazardous Waste Status
This product contains one or more substances that are listed with the State of California as a hazardous waste

Component	CAWAST
ZINC (TOTAL DUST) 7440-66-6	Ignitable Toxic
ZINC OXIDE (TOTAL DUST) 1314-13-2	Toxic

14. TRANSPORT INFORMATION

DOT
Proper Shipping Name zinc dust Not regulated

IATA
Proper Shipping Name Not regulated

Additional information Call TNEMEC Traffic Department - 816-474-3400 for additional information or other modes of Transportation.

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Does not comply
IECSC	Complies
KECL	Complies
PICCS	Complies
AICS	Complies

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

United States of America

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and and Title 40n of the Code of Federal Regulations, Part 372:

Component	SARA 313 - Threshold Values
ZINC (TOTAL DUST) - 7440-66-6	1.0
ZINC OXIDE (TOTAL DUST) - 1314-13-2	1.0

SARA 311/312 Hazardous Categorization

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
ZINC (TOTAL DUST) 7440-66-6		X	X	
ZINC OXIDE (TOTAL DUST) 1314-13-2		X		

CERCLA

Component	Hazardous Substances RQs	CERCLA EHS RQs	RQ
ZINC (TOTAL DUST) 7440-66-6	1000 lb		RQ 454 kg final RQ RQ 1000 lb final RQ

United States of America

California Prop. 65

This product does not contain any Proposition 65 chemicals

California SCAQMD Rule 443

Does Not Contain Photochemically Reactive Solvent

State Right-to-Know

Component	New Jersey	Massachusetts	Pennsylvania

ZINC (TOTAL DUST) 7440-66-6	X	X	X
ZINC OXIDE (TOTAL DUST) 1314-13-2	X	X	X

16. OTHER INFORMATION

NFPA	**Health** 2	**Flammability** 1	**Instability** 1	**Physical hazard** -
HMIS (Hazardous Material Information System)	**Health** 2	**Flammability** 1	**Reactivity** 1	

Prepared By Tnemec Regulatory Dept: 816-474-3400
Revision Date 06-Apr-2015
Revision Summary
9 4 5 7 10 8 11 14 15

Disclaimer

For specific information regarding occupational safety and health standards, please refer to the Code of Federal Regulations, Title 29, Part 1910.
To the best of our knowledge, the information contained herein is accurate. However, neither the Tnemec Company or any of its subsidiaries assume any liability whatsoever for the accuracy of completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.

End of MSDS

Safety Data Sheet

Issue Date 19-Jun-2015 **Revision Date** 19-Jun-2015 **Revision Number** 3

1. IDENTIFICATION

Product identifier

Product Code 1071V-00WHA
Product Name LOW VOC FLUORONAR TNEMEC WHITE

Other means of identification

Common Name SERIES 1071V PART A
UN/ID no. 1263

Recommended use of the chemical and restrictions on use

Recommended Use industrial paint.
Uses advised against Consumer use, For professional use only. Not for residential use.

Details of the supplier of the safety data sheet

Manufacturer Address
Tnemec Company, Inc. 6800 Corporate Drive, Kansas City, MO 64120-1372

Emergency telephone number

Company Phone Number Tnemec Regulatory Dept: 816-474-3400
24 Hour Emergency Phone Number 800-535-5053 (Infotrac)

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2B
Skin sensitization	Category 1
Germ cell mutagenicity	Category 1B
Carcinogenicity	Category 1B
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 1
Flammable Liquids	Category 3

Label elements

EMERGENCY OVERVIEW

Danger

Hazard statements
Causes skin irritation
Causes eye irritation
May cause an allergic skin reaction
May cause genetic defects
May cause cancer
May cause respiratory irritation. May cause drowsiness or dizziness
Causes damage to organs through prolonged or repeated exposure
Flammable liquid and vapor

Appearance opaque **Physical state** liquid **Odor** Slight

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves
Use only outdoors or in a well-ventilated area
Do not breathe dust/fume/gas/mist/vapors/spray
Do not eat, drink or smoke when using this product
Keep away from heat/sparks/open flames/hot surfaces. – No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/mixing/equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Keep cool

Response
IF exposed or concerned: Get medical advice/attention
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
If skin irritation or rash occurs: Get medical advice/attention
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
In case of fire: Use CO2, dry chemical, or foam for extinction

Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Keep away from children

Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)
Other information
Acute Toxicity 61.32531622 % of the mixture consists of ingredient(s) of unknown toxicity.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No	Weight-%
P-CHLOROBENZOTRIFLUORIDE	98-56-6	10 - 30%
FLUOROPOLYMER	88795-12-4	10 - 30%
TITANIUM DIOXIDE (TOTAL DUST)	13463-67-7	10 - 30%

tert-BUTYL ACETATE	540-88-5	1 - 10%
AMORPHOUS SILICA	7631-86-9	1 - 10%
ETHYL 3-ETHOXYPROPIONATE	763-69-9	1 - 10%
ALUMINUM HYDROXIDE	21645-51-2	1 - 10%
AMORPH. SILICON DIOXIDE	112926-00-8	1 - 10%
DIETHYLENE GLYCOL MONOBUTYL ETHER ACETATE	124-17-4	1 - 10%

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of first aid measures

General advice If symptoms persist, call a physician.

Eye contact Rinse thoroughly with plenty of water for at least 15 minutes. If eye irritation persists, consult a specialist.

Skin contact Wash off immediately with soap and plenty of water. If symptoms persist, call a physician.

Inhalation Remove to fresh air. Oxygen or artificial respiration if needed.

Ingestion If swallowed, do not induce vomiting. Get medical attention immediately.

Self-protection of the first aider Use personal protective equipment. Avoid contact with eyes, skin and clothing.

Most important symptoms and effects, both acute and delayed

Notes to physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Carbon dioxide. Foam. Dry chemical.

Unsuitable extinguishing media Water.

Specific hazards arising from the chemical
Thermal decomposition can lead to release of irritating gases and vapours In the event of fire and/or explosion do not breathe fumes

Hazardous combustion products Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds. Carbon oxides. Hydrocarbons. Oxides of nitrogen. Chlorine. Fluorine.

Protective equipment and precautions for firefighters
Use water spray to cool unopened containers. In the event of fire, wear self-contained breathing apparatus. Keep away from heat/sparks/open flames/hot surfaces. MAY CAUSE HEAT AND PRESSURE BUILD-UP IN CLOSED CONTAINERS. Solvent vapors are heavier than air and may spread along floors. Flash back possible over considerable distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with eyes, skin and clothing. Use personal protective equipment. Remove all sources of ignition.

Environmental Precautions

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system.

Methods and material for containment and cleaning up

Methods for containment Remove all sources of ignition. Spills may be collected with inert, absorbent material for proper disposal. Use non-sparking tools, protective gloves, goggles and clothing, adequate ventilation, avoid the breathing of vapors and use respiratory protective devices. Transfer absorbent material to suitable containers for proper disposal.

Methods for cleaning up If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling Close container after each use. Avoid contact with eyes, skin and clothing. Do not eat, drink or smoke when using this product. If splashes are likely to occur, wear goggles. Wear protective gloves/clothing. Do not burn, or use a cutting torch on, the empty drum. When used in a mixture, read the labels and safety data sheets of all components. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Storage Keep container tightly closed in a dry and well-ventilated place. Keep out of the reach of children.

Incompatible products Strong oxidizing agents. Alkaline. Acids. Bases.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure guidelines .

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
P-CHLOROBENZOTRIFLUORIDE 98-56-6	TWA: 2.5 mg/m³	-	
TITANIUM DIOXIDE (TOTAL DUST) 13463-67-7	TWA: 10 mg/m³	TWA: 10 mg/m³ TWA: 15 mg/m³	5000 mg/m³
tert-BUTYL ACETATE 540-88-5	TWA: 200 ppm	TWA: 200 ppm TWA: 950 mg/m³	1500 ppm
AMORPHOUS SILICA 7631-86-9	-	TWA: 6 mg/m³	3000 mg/m³
ALUMINUM HYDROXIDE 21645-51-2	TWA: 1 mg/m³	-	
AMORPH. SILICON DIOXIDE 112926-00-8	-	TWA: 6 mg/m³	

Appropriate engineering controls

Engineering measures Sufficient ventilation, in volume and pattern, should be provided through both local and general exhaust to keep the air contaminant concentration below current applicable OSHA Permissible Exposure Limits (PEL) and ACGIH"s Threshold Limit Values (TLV). Appropriate ventilation should be employed to remove hazardous decomposition products formed during welding or flame cutting operations of surfaces coated with this product.

Individual protection measures, such as personal protective equipment

Eye/face protection	Use chemical resistant splash type goggles. If splashes are likely to occur, wear face-shield.
Skin and body protection	Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
Respiratory protection	Use only with adequate ventilation. Do not breathe vapors, spray mist, or dust. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates vapor/mist or dust levels are above applicable limits, wear an appropriate, properly fitted respirator (NIOSH/MSHA approved) during and after application. Follow respirator manufacturer's directions for respirator use.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice. Avoid breathing dust created by cutting, sanding, or grinding.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	liquid		
Appearance	opaque	**Odor**	Slight
Color	No information available	**Odor threshold**	No information available

Property	**Values**	**Remarks**
pH		No data available
Melting point / freezing point		No data available
Boiling point / boiling range	98 °C / 208.0 °F	
Flash point	27 °C / 81.0 °F	Pensky Martens - Closed Cup
Evaporation rate		No data available
Flammability (solid, gas)		Not applicable
Flammability Limit in Air		No data available
Upper flammability limit	N/A	
Lower flammability limit	.8	
Vapor pressure		No data available
Vapor density		No data available
Specific gravity	1.54022	g/cm3
Water solubility	Insoluble in cold water	
Solubility in other solvents		No data available
Partition coefficient: n-octanol/water		No data available
Autoignition temperature		No data available
Decomposition temperature		No data available
Kinematic viscosity		No data available
Dynamic viscosity	1900 centipoises	approx

Other Information

Density	12.84541 lbs/gal
Volatile organic compounds (VOC) content	0.98793 lbs/gal
Total volatiles weight percent	39.22 %
Total volatiles volume percent	50.61 %

10. STABILITY AND REACTIVITY

Reactivity
No data available

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
None under normal processing.

Conditions to avoid
Heat, flames and sparks. Reacts with air to form peroxides.

Incompatible materials
Strong oxidizing agents, Alkaline, Acids, Bases

Hazardous decomposition products
Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds. Oxides of nitrogen. Carbon oxides. Hydrocarbons. Chlorine. Fluorine.

11. TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination.

Eye contact Causes serious eye irritation.

Skin contact Irritating to skin. May cause sensitization by skin contact.

Ingestion Harmful if swallowed.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
P-CHLOROBENZOTRIFLUORIDE 98-56-6	= 13 g/kg (Rat)	> 2 mL/kg (Rabbit)	= 33 mg/L (Rat) 4 h
TITANIUM DIOXIDE (TOTAL DUST) 13463-67-7	> 10000 mg/kg (Rat)		
tert-BUTYL ACETATE 540-88-5	= 4100 mg/kg (Rat)	> 2 g/kg (Rabbit)	> 2230 mg/m^3 (Rat) 4 h
AMORPHOUS SILICA 7631-86-9	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 2.2 mg/L (Rat) 1 h
ETHYL 3-ETHOXYPROPIONATE 763-69-9	= 3200 mg/kg (Rat)	= 10 mL/kg (Rabbit)	
ALUMINUM HYDROXIDE 21645-51-2	> 5000 mg/kg (Rat)		
DIETHYLENE GLYCOL MONOBUTYL ETHER ACETATE 124-17-4	= 6500 mg/kg (Rat)	= 14500 mg/kg (Rabbit)	= 72500 mg/m^3 (Rat) 4 h

Information on toxicological effects

Symptoms Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Skin disorders. Irritating to eyes and skin.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization May cause sensitization of susceptible persons.
Mutagenicity May cause genetic defects.
Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	ACGIH	IARC	NTP	OSHA
TITANIUM DIOXIDE (TOTAL DUST) 13463-67-7		Group 2B		X
AMORPHOUS SILICA 7631-86-9		Group 3		

AMORPH. SILICON DIOXIDE 112926-00-8		Group 3		

Reproductive effects No information available.
STOT - single exposure Eyes, Central Nervous System (CNS), Skin
STOT - repeated exposure Causes damage to organs through prolonged or repeated exposure
Target organ effects Central nervous system, Eyes, Lungs, respiratory system, Skin.
Aspiration hazard No information available.

Acute Toxicity 61.32531622 % of the mixture consists of ingredient(s) of unknown toxicity.

12. ECOLOGICAL INFORMATION

Ecotoxicity

63.43568 % of the mixture consists of components(s) of unknown hazards to the aquatic environment

Component	Toxicity to algae	Toxicity to fish	Toxicity to daphnia
P-CHLOROBENZOTRIFLUORIDE 98-56-6		11.5 - 15.8: 48 h Lepomis macrochirus mg/L LC50 static	3.68: 48 h Daphnia magna mg/L EC50
tert-BUTYL ACETATE 540-88-5		296 - 362: 96 h Pimephales promelas mg/L LC50 flow-through	
AMORPHOUS SILICA 7631-86-9	440: 72 h Pseudokirchneriella subcapitata mg/L EC50	5000: 96 h Brachydanio rerio mg/L LC50 static	7600: 48 h Ceriodaphnia dubia mg/L EC50
ETHYL 3-ETHOXYPROPIONATE 763-69-9		62: 96 h Pimephales promelas mg/L LC50 static	970: 48 h Daphnia magna mg/L EC50
DIETHYLENE GLYCOL MONOBUTYL ETHER ACETATE 124-17-4		77: 96 h Pimephales promelas mg/L LC50 static 50 - 70: 96 h Brachydanio rerio mg/L LC50 static	665: 48 h Daphnia magna mg/L LC50

Persistence and degradability
No information available.

Bioaccumulation
No information available.

Mobility in Environmental Media

Component	log Pow
P-CHLOROBENZOTRIFLUORIDE 98-56-6	3.7
tert-BUTYL ACETATE 540-88-5	1.38
ETHYL 3-ETHOXYPROPIONATE 763-69-9	1.35
DIETHYLENE GLYCOL MONOBUTYL ETHER ACETATE 124-17-4	1.77

Other Adverse Effects No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal Methods Keep container tightly closed. If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

DOT

UN/ID no.	1263
Proper Shipping Name	paint
Hazard Class	3
Packing Group	III
Emergency Response Guide Number	128

IATA

UN/ID no.	1263
Proper Shipping Name	paint
Hazard Class	3
Packing Group	III
ERG Code	366

Additional information Call TNEMEC Traffic Department - 816-474-3400 for additional information or other modes of Transportation.

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Complies
IECSC	Complies
KECL	Does not comply
PICCS	Does not comply
AICS	Does not comply

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

Component	**HAPS Data**
DIETHYLENE GLYCOL MONOBUTYL ETHER ACETATE	

United States of America

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and and Title 40n of the Code of Federal Regulations, Part 372:

Component	SARA 313 - Threshold Values
DIETHYLENE GLYCOL MONOBUTYL ETHER ACETATE - 124-17-4	1.0

SARA 311/312 Hazardous Categorization

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No

Reactive Hazard No

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
tert-BUTYL ACETATE 540-88-5				X

CERCLA

Component	Hazardous Substances RQs	CERCLA EHS RQs	RQ
tert-BUTYL ACETATE 540-88-5	5000 lb		RQ 5000 lb final RQ RQ 2270 kg final RQ

United States of America

California Prop. 65

WARNING! This product contains a chemical known in the State of California to cause cancer

Component	California Prop. 65
TITANIUM DIOXIDE (TOTAL DUST) - 13463-67-7	Carcinogen

California SCAQMD Rule 443

Contains Photochemically Reactive Solvent

State Right-to-Know

Component	New Jersey	Massachusetts	Pennsylvania
P-CHLOROBENZOTRIFLUORIDE 98-56-6	X		X
TITANIUM DIOXIDE (TOTAL DUST) 13463-67-7	X	X	X
tert-BUTYL ACETATE 540-88-5	X	X	X
AMORPHOUS SILICA 7631-86-9	X	X	X
AMORPH. SILICON DIOXIDE 112926-00-8	X	X	X
DIETHYLENE GLYCOL MONOBUTYL ETHER ACETATE 124-17-4	X		X

16. OTHER INFORMATION

NFPA	**Health** 2	**Flammability** 3	**Instability** 1	**Physical hazard** *
HMIS (Hazardous Material Information System)	**Health** 2*	**Flammability** 3	**Reactivity** 1	

Prepared By Tnemec Regulatory Dept: 816-474-3400
Revision Date 19-Jun-2015
Revision Summary
9 4 5 7 10 8 11 14

Disclaimer

For specific information regarding occupational safety and health standards, please refer to the Code of Federal Regulations, Title 29, Part 1910.
To the best of our knowledge, the information contained herein is accurate. However, neither the Tnemec Company or any of its subsidiaries assume any liability whatsoever for the accuracy of completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.

End of MSDS

Safety Data Sheet

Issue Date 28-Jul-2015 **Revision Date** 28-Jul-2015 **Revision Number** 12

1. IDENTIFICATION

Product identifier

Product Code V700-1070B
Product Name HYDROFLON CONVERTER

Other means of identification

Common Name SERIES V700/V701/1070V/1071V/1072V/1078V, PART B

Recommended use of the chemical and restrictions on use

Recommended Use industrial paint.
Uses advised against Consumer use, For professional use only. Not for residential use.

Details of the supplier of the safety data sheet

Manufacturer Address
Tnemec Company, Inc. 6800 Corporate Drive, Kansas City, MO 64120-1372

Distributor
Tnemec Company, Inc. 86 Boul, des Entreprises, Ste. 203 Boisbriand, Quebec Canada J7G 2T3

Emergency telephone number

Company Phone Number Tnemec Regulatory Dept: 816-474-3400
24 Hour Emergency Phone Number 800-535-5053 (Infotrac)

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Inhalation (Vapors)	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Respiratory sensitization	Category 1
Skin sensitization	Category 1

Label elements

EMERGENCY OVERVIEW

Danger

Hazard statements
Harmful if inhaled
Causes skin irritation
Causes serious eye irritation
May cause allergy or asthma symptoms or breathing difficulties if inhaled
May cause an allergic skin reaction

Appearance clear **Physical state** liquid **Odor** odorless

Precautionary Statements
Prevention
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
In case of inadequate ventilation wear respiratory protection
Contaminated work clothing should not be allowed out of the workplace

Response
Get medical advice/attention if you feel unwell
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
IF ON SKIN: Wash with plenty of soap and water
Take off contaminated clothing and wash before reuse
If skin irritation or rash occurs: Get medical advice/attention
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician

Storage
Keep away from children

Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)
Other information
SEE SAFETY DATA SHEET
Acute Toxicity 0 % of the mixture consists of ingredient(s) of unknown toxicity.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No	Weight-%
HEXAMETHYLENE DIISOCYANATE (HDI) POLYMER	28182-81-2	60 - 100%
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER	822-06-0	0.1 - 1%

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of first aid measures

General advice If symptoms persist, call a physician.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If symptoms persist, call a physician.

Skin contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. If symptoms persist, call a physician.

Inhalation If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion If swallowed, do not induce vomiting. Get medical attention immediately.

Self-protection of the first aider Use personal protective equipment. Avoid contact with eyes, skin and clothing.

Most important symptoms and effects, both acute and delayed

Notes to physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Foam. Dry chemical. Carbon dioxide.

Unsuitable extinguishing media Water.

Specific hazards arising from the chemical
Thermal decomposition can lead to release of irritating gases and vapours In the event of fire and/or explosion do not breathe fumes

Hazardous combustion products Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds. Carbon dioxide. Nitrogen oxides (NOx). Hydrocarbons.

Protective equipment and precautions for firefighters
Use water spray to cool unopened containers. In the event of fire, wear self-contained breathing apparatus. Keep away from heat/sparks/open flames/hot surfaces. MAY CAUSE HEAT AND PRESSURE BUILD-UP IN CLOSED CONTAINERS.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with eyes, skin and clothing. Use personal protective equipment. Remove all sources of ignition. Keep people away from and upwind of spill/leak.

Environmental Precautions

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system.

Methods and material for containment and cleaning up

Methods for containment Remove all sources of ignition. Spills may be collected with inert, absorbent material for proper disposal. Use non-sparking tools, protective gloves, goggles and clothing, adequate ventilation, avoid the breathing of vapors and use respiratory protective devices. Transfer absorbent material to suitable containers for proper disposal.

Methods for cleaning up If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling **Use only with adequate ventilation.**Avoid contact with eyes, skin and clothing. Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Do not eat, drink or smoke when using this product. When used in a mixture, read the labels and safety data sheets of all components. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Storage Keep container tightly closed in a dry and well-ventilated place. Keep out of the reach of children.

Incompatible products Water. Alcohols. Bases. Amines.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure guidelines .

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER 822-06-0	TWA: 0.005 ppm	-	

Appropriate engineering controls

Engineering measures Sufficient ventilation, in volume and pattern, should be provided through both local and general exhaust to keep the air contaminant concentration below current applicable OSHA Permissible Exposure Limits (PEL) and ACGIH"s Threshold Limit Values (TLV). Appropriate ventilation should be employed to remove hazardous decomposition products formed during welding or flame cutting operations of surfaces coated with this product.

Individual protection measures, such as personal protective equipment

Eye/face protection Use chemical resistant splash type goggles. If splashes are likely to occur, wear face-shield.

Skin and body protection Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Respiratory protection INDIVIDUALS WITH LUNG OR BREATHING PROBLEMS OR PRIOR REACTION TO ISOCYANATES MUST NOT BE EXPOSED TO VAPOR OR SPRAY MIST. Do not breathe vapor or spray mist. Wear an appropriate, properly fitted respirator (NIOSH/MSHA approved) during and after application unless air monitoring demonstrates vapor/mist levels are below applicable limits. An airline respirator (TC 19C NIOSH/MSHA) is recommended. A vapor-particulate respirator (TC 23C NIOSH/MSHA) may be appropriate where air monitoring demonstrates vapors are less than ten times the applicable exposure limits and the isocyanate concentration is less than its applicable exposure limit. The use of an air-supplied respirator is mandatory whenever the airborne concentration of isocyanate monomer is unknown.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. Avoid breathing dust created by cutting, sanding, or grinding.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	liquid		
Appearance	clear	**Odor**	odorless
Color	No information available	**Odor threshold**	No information available

Property	Values	Remarks
pH		No data available

Melting point / freezing point		Literary Reference
Boiling point / boiling range	72 °C / 162 °F	
Flash point	No information available	
Evaporation rate		No data available
Flammability (solid, gas)		No information available
Flammability Limit in Air		No data available
Upper flammability limit	N/A	
Lower flammability limit	N/A	
Vapor pressure		No data available
Vapor density		No data available
Specific gravity	1.13187	g/cm3
Water solubility	Insoluble in cold water	
Solubility in other solvents		No data available
Partition coefficient: n-octanol/water		No data available
Autoignition temperature		No data available
Decomposition temperature		No data available
Kinematic viscosity		No data available
Dynamic viscosity	700 centipoises	

Other Information

Density	9.41886 lbs/gal
Volatile organic compounds (VOC) content	.000 lbs/gal
Total volatiles weight percent	.0000 %
Total volatiles volume percent	.0000 %

10. STABILITY AND REACTIVITY

Reactivity
No data available

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
May occur if in contact with moisture, other materials which react with isocyanates, or temperatures above 400 F.

Conditions to avoid
Heat, flames and sparks.

Incompatible materials
Water, Alcohols, Bases, Amines

Hazardous decomposition products
Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds. Carbon dioxide. Hydrocarbons. Nitrogen oxides (NOx).

11. TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation	May cause sensitization by inhalation. Contains isocyanate monomer. If subject to spray application, engineering and administrative controls must be instituted to maintain an exposure level below .005ppm. If these controls are not adequate, the use of an air-supplied respirator is mandatory.
Eye contact	Severely irritating to eyes.
Skin contact	Irritating to skin.
Ingestion	Harmful if swallowed.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
HEXAMETHYLENE DIISOCYANATE (HDI) POLYMER 28182-81-2			= 18500 mg/m³ (Rat) 1 h
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER 822-06-0	= 738 mg/kg (Rat)	= 593 mg/kg (Rabbit)	= 0.06 mg/L (Rat) 4 h

Information on toxicological effects

Symptoms Skin disorders. Respiratory disorders.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity Avoid repeated exposure. Contains isocyanates. May produce an allergic reaction.
Sensitization May cause sensitization of susceptible persons.
Mutagenicity No information available.
Carcinogenicity There are no known carcinogenic chemicals in this product.
Reproductive effects No information available.
STOT - single exposure No information available
STOT - repeated exposure No information available
Aspiration hazard No information available.

Acute Toxicity 0 % of the mixture consists of ingredient(s) of unknown toxicity.

12. ECOLOGICAL INFORMATION

Ecotoxicity

99.5 % of the mixture consists of components(s) of unknown hazards to the aquatic environment

Component	Toxicity to algae	Toxicity to fish	Toxicity to daphnia
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER 822-06-0		26.1: 96 h Brachydanio rerio mg/L LC50 static	

Persistence and degradability
No information available.

Bioaccumulation
No information available.

Mobility in Environmental Media

Other Adverse Effects No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal Methods Keep container tightly closed. If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

DOT

Proper Shipping Name paint in oil Not regulated

IATA

Proper Shipping Name Not regulated

Additional information Call TNEMEC Traffic Department - 816-474-3400 for additional information or other modes of Transportation.

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Complies
IECSC	Complies
KECL	Complies
PICCS	Complies
AICS	Complies

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

Component	**HAPS Data**
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER	

United States of America

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and and Title 40n of the Code of Federal Regulations, Part 372:

Component	SARA 313 - Threshold Values
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER - 822-06-0	1.0

SARA 311/312 Hazardous Categorization

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

CERCLA

Component	Hazardous Substances RQs	CERCLA EHS RQs	RQ
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER 822-06-0	100 lb		RQ 100 lb final RQ RQ 45.4 kg final RQ

United States of America

California Prop. 65
This product does not contain any Proposition 65 chemicals

California SCAQMD Rule 443
Does Not Contain Photochemically Reactive Solvent

State Right-to-Know

Component	New Jersey	Massachusetts	Pennsylvania
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER 822-06-0	X	X	

16. OTHER INFORMATION

NFPA	**Health** 3	**Flammability** 0	**Instability** 1	**Physical hazard** *
HMIS (Hazardous Material Information System)	**Health** 3*	**Flammability** 0	**Reactivity** 1	

Prepared By Tnemec Regulatory Dept: 816-474-3400
Revision Date 28-Jul-2015
Revision Summary
9 4 5 6 7 10 8 11 14 1 15
Disclaimer
For specific information regarding occupational safety and health standards, please refer to the Code of Federal Regulations, Title 29, Part 1910.
To the best of our knowledge, the information contained herein is accurate. However, neither the Tnemec Company or any of its subsidiaries assume any liability whatsoever for the accuracy of completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.

End of MSDS

TNEMEC

PRODUCT DATA SHEET

FLUORONAR® SERIES 1071V

PRODUCT PROFILE

GENERIC DESCRIPTION Advanced Thermoset Solution Fluoropolymer

COMMON USAGE A low VOC, fluoropolymer coating that provides an ultra-durable finish with user friendly brush, roll and conventional spray application. It has outstanding color and gloss retention even in the most severe exposures. Under certain conditions, it may be used to restore aged fluoropolymer coil applied coatings or for OEM applications. Contact Tnemec Technical Services or your local Tnemec representative for details.

COLORS Refer to Tnemec Color Guide. **Note:** Certain colors may require multiple coats depending on method of application and finish coat color. The preceding coat should be in the same color family, but noticeably different. Upon selection of the finish coat color, the intermediate coat color may be selected by Tnemec Company.

FINISH Semi-Gloss

PERFORMANCE CRITERIA Contact your Tnemec representative for specific test results.

COATING SYSTEM

PRIMERS Series 1, 27, 27WB, 66, L69, L69F, N69, N69F, V69, V69F, 90-75, 90-97, H90-97, 91-H_2O, 94-H_2O, 115, 118, 135, 161, 394, 1224. **Note:** Series 1 and 394 require an intermediate coat prior to topcoating with Series 1071V. **Note:** Series 118 is typically used to overcoat, sound, existing coating systems. See product data sheet for more information.

INTERMEDIATE Series 73, 750, 1075, 1075U, 1095 (Intermediate coat may be required for some applications, please contact your Tnemec coating consultant.)

Note: When topcoating with Series 1071V, the following maximum recoat times apply: Over 27, 66, L69, L69F, N69, N69F, V69, V69F, 135, 161, 14 days; over itself and 90-75, 30 days; over 750, 1075, 1075U, 1095, 45 days; over 1, 394, 60 days; over 27WB, 73, 90-97, H90-97, 91-H_2O, 94-H_2O, 1224, 90 days.

SURFACE PREPARATION

EXTERIOR EXPOSURE See primer product data sheet for surface preparation recommendation.

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

TECHNICAL DATA

VOLUME SOLIDS 61.0 ± 2.0% (mixed) †

RECOMMENDED DFT 2.0 to 3.0 mils (50 to 75 microns) per coat. **Note:** Number of coats and thickness requirements will vary with substrate, application method and exposure. Contact your Tnemec representative.

CURING TIME

Temperature	To Touch	To Handle	Minimum Recoat ‡
90°F (32°C)	30 minutes	4-6 hours	6-8 hours
70°F (21°C)	30 minutes	6-8 hours	10-12 hours
50°F (10°C)	1 hour	12-15 hours	16-24 hours

‡ Maximum recoat: 30 days. Curing time varies with surface temperature, air movement, humidity and film thickness.
Note: For faster curing and low-temperature applications, add No. 44-710 Urethane Accelerator; see separate product data sheet.

VOLATILE ORGANIC COMPOUNDS
Unthinned: 1.05 lbs/gallon (125 grams/litre)
Unthinned: 0.51 lbs/gallon (61 grams/litre) (TBAc Exempt)
Thinned 10% (No. 65 Thinner): 1.05 lbs/gallon (125 grams/litre)
Thinned 10% (No. 65 Thinner): 0.51 lbs/gallon (61 grams/litre) (TBAc Exempt)
Thinned 10% (No. 63 Thinner): 1.71 lbs/gallon (205 grams/litre)
Thinned 10% (No. 63 Thinner): 1.29 lbs/gallon (154 grams/litre) (TBAc Exempt) †

HAPS
Unthinned: 0.01 lbs/gal solids
Thinned 10% (No. 65 Thinner): 0.01 lbs/gal solids
Thinned 10% (No. 63 Thinner): 0.07 lbs/gal solids †

THEORETICAL COVERAGE 878 mil sq ft/gal (24.0 m²/L at 25 microns) †

NUMBER OF COMPONENTS Two: Part A and Part B

MIXING RATIO By volume: Eight (Part A) to one (Part B)

PACKAGING

	PART A (partially filled)	PART B (partially filled)	Yield (mixed)
Medium Kit	5 gallon pail	1/2 gallon can	3 gallons (11.35L)
Small Kit	1 gallon can	1 pint can	1 gallon (3.79L)

NET WEIGHT PER GALLON 13.31 ± 0.25 lbs (6.03 ± .11 kg) (mixed) †

STORAGE TEMPERATURE Minimum 20°F (-7°C) Maximum 110°F (43°C)

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: 86°F (28°C) Part B: >200°F (93°C)

HEALTH & SAFETY Paint products contain 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.

FLUORONAR® | SERIES 1071V

APPLICATION

COVERAGE RATES

	Dry Mils (Microns)	Wet Mils (Microns)	Sq Ft/Gal (m²/Gal)
Suggested	2.5 (65)	4.0 (101)	385 (35.8)
Minimum	2.0 (50)	3.5 (90)	481 (44.7)
Maximum	3.0 (75)	5.0 (127)	321 (29.8)

Allow for overspray and surface irregularities. 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. †

MIXING

Stir contents of the container marked Part A, making sure no pigment remains on the bottom. Add the contents of the can marked Part B to Part A while under agitation. Continue agitation until the two components are thoroughly mixed. Do not use mixed material beyond pot life limits. **Caution: Part B is moisture-sensitive and will react with atmospheric moisture. Keep unused material tightly closed at all times.**

THINNING

Thinning is required for proper application. For brush, roller, and air spray, thin up to 10% (82 mL) per gallon with No. 63 Thinner. **Note:** In areas that require lower VOC, use No. 65 Thinner. **Caution: Do not add thinner if more than thirty (30) minutes have elapsed after mixing.**

POT LIFE

2 hours at 50°F (10°C) 2 hours at 70°F (21°C) 1 hour at 90°F (32°C)

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)	70-90 psi (4.9-6.2 bar)	10-20 psi (0.7-1.4 bar)

Low temperatures or longer hoses require higher pot pressure.
Use appropriate tip/atomizing pressure for equipment, applicator technique and weather conditions.
Roller: Use 1/4" (6.4 mm) synthetic woven nap cover. Do not use medium or long nap roller covers.
Brush: Recommended for small areas only. Use high quality natural or synthetic bristle brushes.

SURFACE TEMPERATURE

Minimum 40°F (4°C) Maximum 120°F (49°C)
The surface should be dry and at least 5°F (3°C) above the dew point.
Cure time necessary to resist direct contact with moisture at surface temperature:

Temperature	To Resist Moisture
100°F (38°C)	2 hours
90°F (32°C)	3 1/2 hours
80°F (27°C)	5 hours
70°F (21°C)	7 hours
60°F (16°C)	11 hours
50°F (10°C)	21 1/2 hours
40°F (4°C)	44 hours

If the coating is exposed to moisture before the preceding cure parameters are met, dull, flat or spotty-appearing areas may develop. Actual times will vary with air movement, film thickness and humidity.

CLEANUP

Flush and clean all equipment immediately after use with the recommended thinner or MEK.

† Values may vary with color.

TNEMEC COMPANY INCORPORATED
6800 CORPORATE DRIVE KANSAS CITY, MO 64120-1372 TEL: 816-483-3400 FAX: 816-483-3969 WWW.TNEMEC.COM

SAMPLE FLUORONAR COLOR & GLOSS WARRANTY

PROJECT NAME

LIMITED WARRANTY NO. _____ - ADVANCE DRAFT

Tnemec Company, Inc. (Tnemec) hereby warrants to _____ (Owner) the Tnemec coating system (Coatings) used in conjunction with the painting of the structure identified herein under the following terms and conditions:

1.0 WARRANTY COVERAGE

Tnemec hereby warrants that the Coatings identified in Section 9.0 of this warranty shall not:

1.1 Check, crack, blister or delaminate from the substrate.

1.2 Allow the substrate to corrode in excess of 1% of the surface area being coated as measured in accordance with ASTM D 610-95 "Standard Test Method for Evaluating Degree of Rusting on Painted Surfaces" for a period of five (5) years from substantial completion date or corrode in excess of an additional 0.5% per year for balance of the warranty coverage period.

1.3 Change color in excess of 5 DE Hunter units as determined in accordance with ASTM D 2244 by comparing the affected exposed coating cleaned with water and a soft cloth with unexposed Original Project Color Standards (see Item 3.7 below) to be maintained by Tnemec and the Owner.

1.4 Exhibit loss of gloss in excess of 24 units as measured by a gloss meter in accordance with ASTM D523-89 with 60 degree geometry.

1.5 Chalk in excess of a rating of 8 as measured in accordance with ASTM D4214, Method A.

2.0 LENGTH OF COVERAGE

Warranty coverage shall be effective for a period of **fifteen (15) years** beginning on the substantial completion date identified in Section 8.0 of this warranty or beginning six (6) months following commencement of painting, whichever comes first.

3.0 CONDITIONS

This warranty is contingent upon the following conditions:

3.1 Coverage under this warranty is contingent upon formal Owner acceptance by signature on an advance draft of the warranty prior to commencement of painting.

3.2 The coatings applicator shall be experienced in the application of coatings of similar generic type and whose qualifications shall be acceptable to Tnemec.

3.3 The Tnemec products shall be applied to properly prepared substrates in conformance with Tnemec Company's most recent product data sheet instructions and label directions.

3.4 Substitution of finish colors not listed in Section 9.0 of this warranty will require prior written consent of Tnemec.

3.5 Only Tnemec products, including thinners, are to be used. Use of any non-Tnemec product in whole or in part without prior written consent of Tnemec shall invalidate this warranty.

3.6 A Tnemec Representative shall be permitted to observe any and all aspects of the surface preparation and Coatings application work at any and all such times as may be requested by Tnemec.

3.7 The Owner or Owner's designated representative shall arrange to have the coatings applicator prepare and field apply the complete specified coating system to a minimum of six (6) sample panels (to be supplied by Tnemec - size 3" x 6" or larger) of each finish color identified in Section 9.0 of this warranty. The six (6) field applied sample panels of each finish color shall be air dried for a minimum of seven (7) days and shipped to Tnemec Company prior to final acceptance of the Work for verification of color accuracy and storage as the Original Project Color and Gloss Standards for the duration of the warranty coverage. Upon completion of the project, Tnemec shall forward the signed Warranty document along with two (2) panels of each finish color to the Owner for retention by the Owner and shall return two (2) panels of each finish color to the coatings applicator. These procedures are required in order to validate the color and gloss coverage (Items 1.3 and 1.4 above) under this warranty.

LIMITED WARRANTY No. _____

SAMPLE

3.0 CONDITIONS (continued)

3.8 In the event of a claim against this warranty, Tnemec shall have the right to perform such inspections and/or tests of the coated structure as Tnemec deems necessary to determine whether a Coatings failure is covered by the warranty described above.

3.9 The results of all tests identified in Section 1.0 above shall be the average of three (3) readings taken from each affected area.

3.10 Tnemec must receive full and timely payment of all Tnemec invoices related to this project.

4.0 EXCLUSIONS

This warranty does not cover any failure resulting from or related to:

4.1 Improper or incomplete surface preparation, inadequate or excessive film thickness, or defects due to faulty construction, design or materials (other than the Tnemec coating system itself).

4.2 Substrate deterioration or paint film failure due to skips, misses, pinholes or other holidays in the paint film.

4.3 Application of Tnemec products over preexisting primers, coatings or surfacing materials of another manufacturer without the prior written consent of Tnemec.

4.4 Application of Tnemec products during inclement weather conditions.

4.5 Crevice corrosion and resultant rust staining of adjacent painted surfaces from areas inaccessible for proper surface preparation and coating application through normal field painting practices including, but not limited to uncaulked back-to-back angles, substrate overlaps, bolted and/or riveted connections, seams, skip-welds, etc.

4.6 Exposure to heat in excess of normal ambient exterior temperatures.

4.7 Harmful chemicals, fumes or vapors, unless specifically agreed upon by Tnemec in writing.

4.8 Vandalism or physical abuse.

4.9 Negligence or lack of proper maintenance and repair of the coated structure.

4.10 Any acts or omissions of contractor.

4.11 Significant change in the use of the coated structure.

5.0 SITUATIONS NOT WARRANTED

In addition to the exclusions above, this warranty is subject to force majeure and is contingent upon acts which are beyond the reasonable control of the party from which performance is required, including, but not limited to fire, flood, earthquake, hurricane, tornado, damaging hail, lightning strike or other Acts of God; acts of war, riot, explosion, terrorist activity or other catastrophic events.

6.0 REPORTING OF CLAIM

Any claim under this warranty must be presented to and received by Tnemec during the respective warranty period set forth above. Any such claim must be made in writing within sixty (60) days from the date whereupon the Owner first becomes aware that the Coatings have failed to conform to the warranty set forth herein.

Written notice of the claim should be sent to: Tnemec Company, Inc., 6800 Corporate Drive, Kansas City, Missouri 64120-1372; Attention: Warranty Administrator.

7.0 LIMITATION OF LIABILITY

THE WARRANTY AS DESCRIBED HEREIN SHALL BE IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.

THE OWNER'S SOLE AND EXCLUSIVE REMEDY AGAINST TNEMEC COMPANY AND THE SOLE PURPOSE FOR THIS WARRANTY SHALL BE FOR REPLACEMENT OF THE COATING MATERIALS IN THE EVENT THE MATERIALS FAIL TO CONFORM TO THIS WARRANTY AND THE EXCLUSIVE REMEDY SHALL NOT HAVE FAILED ITS ESSENTIAL PURPOSE AS LONG AS TNEMEC IS WILLING TO PROVIDE COMPARABLE REPLACEMENT COATING MATERIALS TO THE OWNER. TNEMEC'S LIABILITY UNDER THIS WARRANTY SHALL UNDER NO CIRCUMSTANCES EXTEND BEYOND FURNISHING TO THE OWNER, AT THE PROJECT ADDRESS SET FORTH, SUFFICIENT COMPARABLE TNEMEC PRODUCTS FOR REPAIR OF THE AFFECTED AREA(S). THIS WARRANTY SHALL NOT INCLUDE THE INSTALLATION OF REPLACEMENT COATING MATERIAL OR REPAIR LABOR. TNEMEC SHALL NOT BE LIABLE FOR ANY OTHER DAMAGES OF ANY KIND, INCLUDING, BUT NOT LIMITED TO INCIDENTAL OR CONSEQUENTIAL DAMAGE FOR LOST PROFITS, LOST SALES, INJURY TO PERSON OR PROPERTY (INCLUDING DAMAGE TO THE STRUCTURE OR ITS CONTENTS), ENVIRONMENTAL INJURIES, OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES. NO REMEDY FOR SUCH DAMAGES SHALL BE AVAILABLE TO THE OWNER.

LIMITED WARRANTY No. _____

SAMPLE

8.0 PROJECT IDENTIFICATION

PROJECT: _____
_____
_____

OWNER: _____
_____
_____

ARCHITECT/ENGINEER: _____
_____
_____

COATINGS APPLICATOR: _____
_____
_____

TNEMEC SALES REPRESENTATIVE: _____
_____
_____
_____

WARRANTY FEE: Not Applicable

SUBSTANTIAL COMPLETION DATE: *(to be determined)*

WARRANTY EXPIRATION DATE: *(to be determined)*

9.0 COATING SYSTEMS

Substrate: Steel

Surface Preparation: SSPC SP-6 Commercial Blast Cleaning

First Coat: Series 90-97 Tneme-Zinc
@ 2.5 to 3.5 dry mils

Second Coat: Series 73 Endura-Shield *(or 1075 Endura-Shield II)*
(color name & number) [Note: color to be specified by Tnemec]
@ 2.0 to 3.0 dry mils

Third Coat: Series 1070, 1070V, 1071, 1071V and 1072, 1072V Fluoronar
(color name & number) [Note: color must be approved by Tnemec in advance]
@ 2.0 to 3.0* dry mils

*Note: Number of coats shown above are based on spray application. If applied by roller or brush, additional coats may be necessary to achieve the required film thicknesses and satisfactory hiding with the finish color.

10.0 GEOGRAPHIC SCOPE

The foregoing warranty shall apply only with respect to structures located within the United States and Canada.

11.0 LIMITATION ON ASSIGNMENT OR TRANSFER

This warranty is made to the Owner only and is not assignable or transferable by the Owner, whether or not such transfer or assignment is made in connection with the transfer or sale of the structure without the prior written consent of Tnemec, which shall not be unreasonably withheld.