siplast®

Monarflex Enclosure System

Installer's Guide

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I. General

Monarflex Enclosure Products
Monarflex enclosure sheeting products are comprised of virgin low density polyethylene (LDPE) sheeting encapsulating a high strength polyester reinforcement grid. Monarflex sheeting is designed to cover and weatherproof construction & surface treatment projects from environmental conditions. Monarflex applications are designed as temporary treatments and should not be considered for permanent or long term use.

Weather Restrictions
Do not apply Monarflex enclosure products if there is a threat of high winds. High winds pose a safety concern and can also damage a partially installed Monarflex enclosure and components.

Monarflex Enclosure Products Attached to Cable Suspended Structures
When Monarflex is to be applied to cable suspended structures, Super T-Plus should be the only sheeting type used. See Section VIII for details or contact Siplast at 1-800-922-8800 for more information.

II. Personal Protection and Safety

Ensure that proper personal protective equipment is used to protect the applicators against health and safety risks. These can include, but are not limited to: hardhats, gloves, eye protection, high visibility clothing, safety footwear, and harnesses. Always follow OSHA safety guidelines when applying Monarflex products.

Refer to OSHA requirements for information regarding competent and/or Qualified Person on your specific scaffold enclosure project.

III. Storage & Handling

Storage
Rolls of Monarflex sheeting material are individually wrapped and labeled. Wrapped rolls are stacked on pallets. Materials stored on the job site during application should be kept on a pallet in a location that will protect the materials from rain or construction damage. Attachment accessories should be stored in original packaging.

Monobond Tape & Self-Adhesive Grommet storage: Blue Monobond Tape, White Monobond Tape, and Self-Adhesive Grommets should be stored away from moisture, protected from heat, and in a clean location to protect adhesive properties.

IV. Installation Materials, Tools, and Equipment

Application
- Tape (masking and duct tape)
- Box or razor knife
- Tape measure
- Come-along

Miscellaneous
- Steel cable and connectors
- Drill for cable anchors
- C-Clamps
- Caution tape
- Plastic garbage bags
- Chalk line
- Socket set

V. Products

Super T-Plus
Super T-Plus is a reinforced scaffold enclosure sheeting that is offered in clear and flame-safe versions. The sheeting is comprised of 8-mil low density polyethylene (LDPE), and an interlayer of polyester multi-filament mesh. Molded plastic disks are fused to the sheeting with a hole for fastener insertion to anchor the sheeting. Super T-Plus is offered in the following configurations:

- Super T-Plus Clear 7 ft 4 in x 137 ft
- Super T-Plus Flamesafe 7 ft 4 in x 137 ft
- Super T-Plus Flamesafe 8 ft 6 in x 118 ft
- Super T-Plus Flamesafe 13 ft x 157 ft

Scaffband
Scaffband is a reinforced scaffold enclosure sheeting that is offered in clear or flame-safe versions. The sheeting is comprised of 5 mil low density polyethylene (LDPE), and an interlayer of polyester multi filament mesh. White 210g/m2 HDPE stripes are fused to the sheeting with holes that act as attachment points to anchor the sheeting. Scaffband is offered in the following configurations:

- Scaffband Clear 7 ft 4 in x 118 ft
- Scaffband Flamesafe 7 ft 4 in x 118 ft
- Scaffband Flamesafe 13 ft x 118 ft

SuperWarm T-Plus Flamesafe
SuperWarm T-Plus is a reinforced, flame retardant scaffold sheeting bonded to a high density foam insulation sheet. Molded plastic disks are fused to the sheeting with a hole for fastener insertion to anchor the sheeting. SuperWarm T-Plus is offered in the following configurations:

- SuperWarm T-Plus Flamesafe 7 ft 4 in x 33 ft 4 in

Accessories
Anchor & Strap: Heavy duty EPDM rubber strap and high strength plastic fastener used for high performance situations.

Flexitie: Flexible bungee-type fastener used to attach sheeting in medium duty situations.

Mono Stud & Cable Tie: Used to attach Super T-Plus where high performance situations are not required, and to seal the grommet on Super T-Plus.

Monobond Tape: Double-sided tape used to seal joints and voids in Monarflex sheeting. Monobond is offered in the following:

- 1 in x 78 ft - Blue butyl tape
- 2 in x 75 ft - White cloth reinforced tape

Flamesafe Door Panels: Doors made from the Super T-Plus Flamesafe sheet. They have a double sided, heavy duty zipper stitched into the sheet for creating an entry point on enclosure applications. Panels are 39 inches x 84 inches and the door opening is 23 inches x 67 inches.

VI. Structure and Scaffold Preparation

General Scaffold Structure Preparation
Ensure the structure is evaluated by a qualified designer/engineer to determine wind loads and the maximum design load for an enclosed structure. This includes responsibility for anchoring scaffold components and rigging to the permanent structure.

Monarflex can be applied to tubular welded, system, and tube and coupler-type scaffolding. For applications to platforms, please contact the specific platform manufacturer for approval.

Scaffold should be tagged for approved use by a person competent in scaffold use as recommended by OSHA before work is performed. Ensure all scaffold components including guardrails, midrails, cross braces, platforms, planks, etc. are secure. The sheeting is not intended as a replacement for guardrails on the structure. Scaffold connections should have sharp edges covered to protect sheeting.

Monarflex can also be applied to aircraft cable or wire rope when using anchor straps and Super T-plus sheeting. It is important to ensure all cables are secured and tensioned per design recommendations. All structural and cable connectors require sharp edges to be covered to prevent tearing of the sheeting.

VII. Monarflex Application to Scaffolding

Install Monarflex scaffold sheeting in accordance with the current standards and codes. Care should be taken to reduce unnecessary wear and mechanical damage to sheeting when dragging over rough surfaces and contact with sharp edges. Installation of Monarflex scaffold sheeting is designed for application on the outside of the scaffolding, with the eyelets on Super T-Plus or reinforced bands on Scaffband or stripe facing outward. This will allow the sheeting to detach in high winds, as per its design, alleviating the build-up of pressure on the structure.

The sheeting should be in direct contact with and fixed firmly to the open edges of platforms, handrails, etc. leaving no gaps where possible. The sheeting overlap should be determined according to containment type. Debris containment should be lapped with the bottom horizontal sheet overlapping the upper sheet to contain debris inside containment. Weatherproofing containments should be applied in a shingle fashion, with each horizontal sheet overlapping the lower horizontal sheets. Neither of these apply to vertical run sheeting applications.

Containments are typically applied horizontally from the ground level upward.

Overlap Sheeting should be overlapped 5 to 8 inches. Double-sided tape can be applied to weatherproof juncture.

End laps on both horizontal and vertical applications should overlap a minimum of 5 to 8 inches. It is good practice to have end laps near a structural component to secure joints in the sheeting. Double-sided tape can be applied to weatherproof juncture.

Roof Tie-In:
When extending Monarflex over the top of a scaffold to weatherproof the juncture of the scaffold and structure, either install a scaffold truss or, alternatively, install cables as roof supports to attach the Monarflex. Always install near the grommet line to ensure attachments can reach for securing. For weather-tight attachment fastening use the Cable Tie and Mono-Stud.

Attachments and Fastening Frequency

Scaffband
Scaffband sheeting is not wind tested, so the project engineer should review the attachment fastening frequency. Only Flexities should be used to attach Scaffband sheeting. At a minimum, there should be one Flexitie per 100 square feet or every 38 inches. Do not over-stretch attachment straps/ties. Attachment straps/ties should not be placed within two inches of the edge of the sheet.

Super T-Plus
Attachment spacing for Super T-plus is listed on page six of this guide. The spacing and attachment type is determined by the desired or specified wind load. In some cases, fewer attachments may be required to ensure that the sheeting breaks away from structures in weather events to prevent damage to the structure.

VIII. Monarflex Application to Cable Structures

Cable installations should be evaluated by a qualified designer/engineer. Cables can be installed horizontally, vertically, or ideally in both directions. Scaffband is not recommended for cable structure applications. To ease application of the Super T-Plus the cable should be run parallel to the planned grommet lines.

Steel outriggers or fabricated brackets may be required to extend the cable structure beyond the building. This ensures that the sheeting can be installed free from contact with uneven building surfaces.

If you are planning to apply the Monarflex 13 ft roll horizontally, it is recommended that vertical cables be run every 7 feet for a higher wind resistant application, every 9 ft 4 in for a medium grade application, or 11 ft 8 in for a lower wind resistance. Then install horizontal base cables at ground level, a horizontal cable at each seam of 13 ft height and an additional horizontal cable at the top of the containment or the termination. These horizontal cables should be tensioned and connected to the vertical cables. Anchor all vertical cables to steel brackets or structure to withstand the pressure of the Monarflex attached to them. To gauge which cable spacing should be used, please review the wind load chart. This chart shows the max recommended spacing per rubber strap or the coverage a strap covers to achieve a desired mph wind speed to distribute load on the sheeting.

C-clamps or similar can be used to terminate Monarflex at steel I-beams or similar conditions.

Wall Terminations:
For both scaffold and cable applications at wall terminations utilize a board or steel bracket to fasten the sheeting to the wall. Tape or neoprene gasket material may be required for weather-tightness.

Always follow OSHA safety guidelines when applying

Monarflex products. Damage to sheeting & components during construction should be repaired and/or replaced.

Rips, large holes, or temporary windows should be patched with the same Monarflex material used on the project. These patches can be taped in place with Monobond tape. For a more robust repair, apply the Self-Adhesive Grommet along with Anchor Straps to splice the sheets together. Larger repairs may require full replacement of damaged areas. It is important to repair damage as soon as possible as these holes allow wind infiltration, which can damage other parts of the enclosure or structure.

Contact Siplast at 1-800-922-8800 for more information.

IX. Removal and Disposal

Always ensure weather conditions permit the safe removal of Monarflex. Working in an upward fashion, the intermediate attachment straps and upper straps should be removed, allowing the top half of the horizontal sheeting run to fold over on itself. It is best to have a minimum of two people for removal of sheeting. One person can cut the attachment straps and loose sheeting while the other is gathering and rolling the loose sheet. With the Monarflex horizontally folded on itself, cut the lower straps while simultaneously rolling the sheet. Sections of removed Monarflex should be bundled with rope and marked by size and condition if re-usable or disposed of.

Dispose used Monarflex by taking used material to an appropriate treatment and disposal facility in accordance with applicable laws and regulations at the time of disposal. In cases where the sheeting may have been in contact with suspect contaminants, seek advice from the appropriate environmental agency for disposal requirements.

X. Wind Chart

Monarflex®

Wind Chart: Fastening Frequency Estimates, Safety Factor 2

Based on the Modified Bernoulli Equation
as defined at http://gdjinc.com/pdf/WTLessonPlans.pdf

					 **Anchor & Strap** 165 lb / 75 kg		 **Flexitie** 99 lb / 45 kg		 **Monostud/Cable Tie** 77 lb / 35 kg	
mph	lb/sq ft	PSI	Safety Factor	Design PSI	Max sq ft per unit	Max distance (in) between units	Max sq ft per unit	Max distance (in) between units	Max sq ft per unit	Max distance (in) between units
2	0.01	0.000	2	0.000	8063.55	1077.57	4838.13	834.68	3762.99	736.12
4	0.04	0.000	2	0.001	2015.89	538.78	1209.53	417.34	940.75	368.06
6	0.09	0.001	2	0.001	895.95	359.19	537.57	278.23	418.11	245.37
8	0.16	0.001	2	0.002	503.97	269.39	302.38	208.67	235.19	184.03
10	0.26	0.002	2	0.004	322.54	215.51	193.53	166.94	150.52	147.22
12	0.37	0.003	2	0.005	223.99	179.59	134.39	139.11	104.53	122.69
14	0.50	0.003	2	0.007	164.56	153.94	98.74	119.24	76.80	105.16
16	0.65	0.005	2	0.009	125.99	134.70	75.60	104.33	58.80	92.01
18	0.83	0.006	2	0.012	99.55	119.73	59.73	92.74	46.46	81.79
20	1.02	0.007	2	0.014	80.64	107.76	48.38	83.47	37.63	73.61
22	1.24	0.009	2	0.017	66.64	97.96	39.98	75.88	31.10	66.92
24	1.47	0.010	2	0.020	56.00	89.80	33.60	69.56	26.13	61.34
26	1.73	0.012	2	0.024	47.71	82.89	28.63	64.21	22.27	56.62
28	2.01	0.014	2	0.028	41.14	76.97	24.68	59.62	19.20	52.58
30	2.30	0.016	2	0.032	35.84	71.84	21.50	55.65	16.72	49.07
32	2.62	0.018	2	0.036	31.50	67.35	18.90	52.17	14.70	46.01
34	2.96	0.021	2	0.041	27.90	63.39	16.74	49.10	13.02	43.30
36	3.31	0.023	2	0.046	24.89	59.86	14.93	46.37	11.61	40.90
38	3.69	0.026	2	0.051	22.34	56.71	13.40	43.93	10.42	38.74
40	4.09	0.028	2	0.057	20.16	53.88	12.10	41.73	9.41	36.81
42	4.51	0.031	2	0.063	18.28	51.31	10.97	39.75	8.53	35.05
44	4.95	0.034	2	0.069	16.66	48.98	10.00	37.94	7.77	33.46
46	5.41	0.038	2	0.075	15.24	46.85	9.15	36.29	7.11	32.01
48	5.89	0.041	2	0.082	14.00	44.90	8.40	34.78	6.53	30.67
50	6.39	0.044	2	0.089	12.90	43.10	7.74	33.39	6.02	29.44
52	6.92	0.048	2	0.096	11.93	41.44	7.16	32.10	5.57	28.31
54	7.46	0.052	2	0.104	11.06	39.91	6.64	30.91	5.16	27.26
56	8.02	0.056	2	0.111	10.29	38.48	6.17	29.81	4.80	26.29
58	8.60	0.060	2	0.120	9.59	37.16	5.75	28.78	4.47	25.38
60	9.21	0.064	2	0.128	8.96	35.92	5.38	27.82	4.18	24.54
62	9.83	0.068	2	0.137	8.39	34.76	5.03	26.93	3.92	23.75
64	10.48	0.073	2	0.146	7.87	33.67	4.72	26.08	3.67	23.00
66	11.14	0.077	2	0.155	7.40	32.65	4.44	25.29	3.46	22.31
68	11.83	0.082	2	0.164	6.98	31.69	4.19	24.55	3.26	21.65
70	12.53	0.087	2	0.174	6.58	30.79	3.95	23.85	3.07	21.03
72	13.26	0.092	2	0.184	6.22	29.93	3.73	23.19	2.90	20.45
74	14.01	0.097	2	0.195	5.89	29.12	3.53	22.56	2.75	19.90
76	14.77	0.103	2	0.205	5.58	28.36	3.35	21.97	2.61	19.37
78	15.56	0.108	2	0.216	5.30	27.63	3.18	21.40	2.47	18.87
80	16.37	0.114	2	0.227	5.04	26.94	3.02	20.87	2.35	18.40
82	17.20	0.119	2	0.239	4.80	26.28	2.88	20.36	2.24	17.95
84	18.05	0.125	2	0.251	4.57	25.66	2.74	19.87	2.13	17.53
86	18.92	0.131	2	0.263	4.36	25.06	2.62	19.41	2.04	17.12
88	19.81	0.138	2	0.275	4.17	24.49	2.50	18.97	1.94	16.73
90	20.72	0.144	2	0.288	3.98	23.95	2.39	18.55	1.86	16.36

Hurricane Wind Not recommended for these wind exposures Safety factor cannot be obtained with this fastener

The Monarflex Wind Chart is an estimation of the approximation of pressure defferences between the two sides of the sheeting created by air movements, and is based on the Modified Bernoulli Equation as defined at http://gdjinc.com/pdf/WTLessonPlans.pdf. A safety factor of two has been included in the design pressure by multiplying the calculated pressure by two. It is recommended that the data be independently verified using actual project conditions.

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