GYPSUM ASSOCIATION

6525 Belcrest Road, Suite 480, Hyattsville MD 20782

JOINT TREATMENT UNDER EXTREME WEATHER CONDITIONS (GA-236-13)

Although extreme environmental conditions have little effect on the process of applying gypsum panel products, proper procedures must be observed during the application and drying of joint compounds and adhesives to ensure compliance with GA-216, *Application and Finishing of Gypsum Panel Products*. When weather conditions are extreme; either hot, cold, humid, or dry; the drying times of joint treatment materials are affected. Hot, dry weather accelerates drying; cold weather slows drying and increases the risk of freezing; wet or humid weather slows drying. Weather shifts from one extreme to another can cause movement in wood framing (moisture related) or in steel framing (temperature related) which can have an effect on the final appearance of any given project.

Preventive measures designed to compensate for or minimize the effects of weather extremes can avert a potential problem from occurring. Preventive measures amount to little more than the conscientious observance of some common sense practices. Special attention to the use and placement of control joints and maintaining recommended environmental conditions before, during, and after application are all important factors in minimizing the effects of extreme weather conditions. Extreme weather conditions are simply less forgiving when good practices are not followed.

In Hot, Dry Weather, work the shortest practical lengths of joint at a time to compensate for evaporation and the shorter workability time. Indoor humidity can be maintained by reducing ventilation and by keeping doors and windows closed; this can also help to eliminate drafts that can accelerate drying. Keep tools and the inner walls of joint compound buckets and containers wiped clean to prevent dislodging pieces of crusted compound thereby contaminating fresh materials. Use setting-type joint compounds with shorter setting times to minimize the effect of the "too-fast" drying conditions. Use setting-type compounds for embedding tape because these materials have higher resistance to edge cracking caused by hot, dry weather. Rotate stocks of both powder and ready-mixed joint compounds to minimize the accelerated aging effect of hot weather.

Avoid adding excess water to compounds to extend their working times. The excess water will only increase shrinkage. Protect wet joints from rapid air movement which accelerates drying and causes fissures, checking, and edge cracks. Store bags of powder compounds out of direct sunlight; store containers of ready-mixed compounds indoors.

In Wet, Humid Weather, allow each coat of joint compound to thoroughly dry before the application of subsequent coats. Refer to Table 1 for specific drying rates rather than relying on moisture meters or visual observations to check for joint dryness. Select setting-type compounds, especially when conditions are cold and wet. Store joint tape and powder compounds in a dry area.

In Cold Weather, provide heat. Joint treatment should not be applied to cold or damp surfaces. Where materials are being mixed and used for joint treatment or the laminating of one layer of board to another, the interior temperature of the room should be maintained at not less than 50°F (10°C) for 48 hours before and continuously until applied materials are thoroughly dry. When a temporary heat source is used, the temperature should not exceed 95°F (35°C) in any given room or area. Heaters should not be allowed to blow directly on wall surfaces. Excessive localized heating can cause joint compound to dry too rapidly resulting in cracking and localized delamination. Provide sufficient ventilation to ensure normal drying conditions. Certain temporary heaters introduce large amounts of water vapor into the air causing high humidity conditions, if not properly ventilated.

Protect ready mixed joint compounds against freezing in storage. Use setting-type compounds to avoid many cold weather related problems.

TABLE 1

DRYING TIME - JOINT COMPOUND UNDER TAPE[1]

Relative Humidity	Temperature, ^{0}F (^{0}C)							
	32 (0)	40 (4)	50 (10)	60 (16)	70 (21)	80 (27)	90 (32)	100 (38)
98%	53D	38D	26D	18D	12D	9D	6D	4 1/2D
97%	37D	26D	18D	12D	9D	6D	4½D	3 1/4D
96%	28D	21D	14D	10D	7D	5D	3½D	2½D
95%	25D	17D	12D	8D	6D	4D	2 3/4D	2D
94%	20D	14D	10D	7D	5D	3 1/4D	2 1/4D	41H
93%	18D	12½D	9D	6D	4D	2 3/4D	2D	36H
92%	15D	11D	8D	5D	3½D	2½D	44H	32H
91%	14D	10D	7D	4 3/4D	3 1/4D	2 1/4D	40H	29H
90%	13D	9D	6D	4½D	3D	49H	36H	26H
85%	10D	6D	4D	3D	2D	34H	25H	18H
80%	7D	4 3/4D	3 1/4D	2 1/4D	38H	27H	19H	14H
70%	4½D	3½D	2 1/4D	38H	26H	19H	14H	10H
60%	3½D	2½D	42H	29H	20H	14H	10H	8H
50%	3D	2D	36H	24H	17H	12H	9H	6H
40%	2½D	44H	29H	20H	14H	10H	7H	5H
30%	2 1/4D	38H	26H	18H	12H	9H	6H	4½H
20%	2D	34H	23H	16H	11H	8H	5½H	4H
10%	42H	30H	21H	14H	10H	7H	5H	3½H
0 %	38H	28H	19H	13H	9H	6H	4½H	3H

[1] For evaporation of 10 lbs (45.37 kg) of water per 250 ft (76.2 m) of tape, corresponding to 1/16" to 5/64" (1.6 to 2.0 mm) wet compound thickness under the tape. Thicker or thinner coats of compound will affect drying times in proportion to the wet compound thickness. These drying times apply when the exposed surface of the tape is bare or nearly bare, and when adequate ventilation is provided. A heavy coat of compound over the tape will lengthen the drying time.

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GYPSUM ASSOCIATION
6525 Belcrest Road, #480
Hyattsville, MD 20782
Phone: 301-277-8686 Fax: 301-277-8747
www.gypsum.org