

Appendix 8B

Universal Soil Loss Equation C Factors

Table 8B.1 Typical C Factor Values Reported in the Literature for Construction Sites and Disturbed Lands (after Israelson *et al.*, 1980)

Condition	C factor
1. Bare soil conditions	
Freshly disked to 6–8 in.	1.00
After one rain	0.89
Loose to 12 in. smooth	0.90
Loose to 12 in. rough	0.80
Compacted root raked	1.20
Compacted bulldozer scraped across slope	1.20
Same except root raked across	0.90
Rough irregular tracked all directions	0.90
Seed and fertilize, fresh, unprepared seedbed	0.64
Same except after 6 months	0.54
Seed, fertilize after 12 months	0.38
Undisturbed except scraped	0.66–1.30
Scarified only	0.76–1.31
Sawdust 2 in. deep, disked in	0.61
2. Asphalt emulsion	
1210 gal/acre	0.01–0.019
605 gal/acre	0.14–0.57
302 gal/acre	0.28–0.60
3. Dust binder	
605 gal/acre	1.05
1210 gal/acre	0.29–0.78
4. Other chemicals	
Aquatain	0.68
Aerospray 70, 10% cover	0.94
PVA	0.71–0.90
Terra-Tack	0.66
5. Seedings ^a	
Temporary, 0 to 60 days ^b	0.40
Temporary, after 60 days	0.05
Permanent, 2 to 12 months	0.05
6. Brush	
	0.35

^aIf plantings are used with mulches, use the minimum C values.

^bIf dry weather occurs at planting and emergence is a problem, extend the 0–60 days to a period when rainfall normally occurs.

Table 8B.2 C Factors for Permanent Pasture, Rangeland, Idle Land, and Grazed Woodlands (after Wischmeier and Smith, 1978)^a

Vegetal canopy			Cover that contacts the surface Percentage ground cover					
Type and height of raised canopy ^b	Canopy cover (%)	Type ^d	0	20	40	60	80	95-100
No appreciable canopy		G	0.45	0.20	0.10	0.042	0.013	0.003
		W	0.45	0.24	0.13	0.090	0.043	0.011
Canopy of tall weeds or short brush (0.5-m fall height)	25	G	0.36	0.17	0.09	0.038	0.012	0.003
		W	0.36	0.20	0.13	0.082	0.041	0.011
	50	G	0.26	0.13	0.07	0.035	0.012	0.003
		W	0.26	0.16	0.11	0.075	0.039	0.011
	75	G	0.17	0.10	0.06	0.031	0.011	0.003
		W	0.17	0.12	0.09	0.067	0.038	0.011
Appreciable brush or bushes (2-m fall height)	25	G	0.40	0.18	0.09	0.040	0.013	0.003
		W	0.40	0.22	0.14	0.085	0.042	0.011
	50	G	0.34	0.16	0.085	0.038	0.012	0.003
		W	0.34	0.19	0.13	0.081	0.041	0.011
	75	G	0.28	0.14	0.08	0.036	0.012	0.003
		W	0.28	0.17	0.12	0.077	0.040	0.011
Trees, but no appreciable low brush (4-m fall height)	25	G	0.42	0.19	0.10	0.041	0.013	0.003
		W	0.42	0.23	0.14	0.087	0.042	0.011
	50	G	0.39	0.18	0.09	0.040	0.013	0.003
		W	0.39	0.21	0.14	0.085	0.042	0.011
	75	G	0.36	0.17	0.09	0.039	0.012	0.003
		W	0.36	0.20	0.13	0.083	0.041	0.011

^aAll values shown assume: (1) random distribution of mulch or vegetation and (2) mulch of appreciable depth where it exists. Idle land refers to land with undisturbed profiles for at least a period of 3 consecutive years. Also to be used for burned forest land and forest land that has been harvested less than 3 years ago.

^bAverage fall height of waterdrops from canopy to soil surface in meters.

^cPortion of total surface area that would be hidden from view by canopy in a vertical projection (a bird's-eye view).

^dG, cover at surface is grass, grasslike plants, decaying compacted duff, or litter at least 2 in. deep. W, cover at surface is mostly broadleaf herbaceous plants (as weeds with little lateral root network near the surface) and/or undecayed residue.

Table 8B.4 C Factors for Undisturbed Woodlands (after Wischmeier and Smith, 1978)

Effective canopy ^a (% of area)	Forest litter ^b (% of area)	C factor ^c
100-75	100-90	0.0001-0.001
75-40	85-70	0.002-0.004
35-20	70-40	0.003-0.009

^aWhen effective canopy is less than 20%, the area will be considered as grassland or idle land for estimating soil loss. Where woodlands are being harvested or grazed, use Table 8B.2.

^bForest litter is assumed to be at least 2 in. deep over the percentage ground surface area covered.

^cThe range in C values is due in part to the range in the percentage area covered. In addition, the percentage of effective canopy and its height has an effect. Low canopy is effective in reducing raindrop impact and in lowering the C factor. High canopy, over 13 m, is not effective in reducing raindrop impact and will have no effect on the C value.

Table 8B.5 USLE Mulch Factors and Length Limits for Construction Sites (after Wischmeier and Smith, 1978)^a

Type of mulch	Mulch rate (ton/acre)	Land slope (%)	Factor C	Length limit ^b (ft)
Straw or hay, tied down by anchoring and tacking equipment ^c	1.0	1-5	0.20	200
	1.0	6-10	0.20	100
	1.5	1-5	0.12	300
	1.5	6-10	0.12	150
	2.0	1-5	0.06	400
	2.0	6-10	0.06	200
	2.0	11-15	0.07	150
	2.0	16-20	0.11	100
	2.0	21-25	0.14	75
	2.0	26-33	0.17	50
Wood chips	2.0	34-50	0.20	35
	7.0	<16	0.08	75
	7.0	16-20	0.08	50
	12.0	<16	0.05	150
	12.0	16-20	0.05	100
	12.0	21-33	0.05	75
	25.0	<16	0.02	200
	25.0	16-20	0.02	150
	25.0	21-33	0.02	100
25.0	34-50	0.02	75	

^aDeveloped by an interagency workshop group on the basis of field experience and limited research data.

^bMaximum slope length for which the specified mulch rate is considered effective. When this limit is exceeded, either a higher application rate or mechanical shortening of the effective slope length is required.

^cWhen the straw or hay mulch is not anchored to the soil, C values on moderate or steep slopes having K values greater than 0.30 should be taken at double the values given in this table.