

2103 - SEEDS

SECTION 2103

SEEDS

2103.1 DESCRIPTION

This specification covers the material requirements for seeds.

2103.2 REQUIREMENTS

a. General. Provide seeds which comply with the seed and noxious weed laws of the State of Kansas and applicable Kansas Department of Agriculture Rules and Regulations except as specifically noted in this Section.

Do not provide *Sericea Lespedeza* and *Multiflora Rose* with any seed.

b. Seed Quality and Definitions. Conduct all seed analyses in accordance with rules and regulations as prescribed by the Association of Official Seed Analysts (AOSA) and Kansas Seed Law. The Kansas Seed Law specifies the kind and amount of weed seed permitted; the requirement for a current analysis report; and labeling of all seed to show its purity, germination, date of last germination test, and weed seed content.

Cleaning and conditioning of seed must result in a product that meets or exceeds minimum standards. The product must also be clean enough to plant using existing drilling equipment without further processing.

(1) Kansas Seed Law. The germination test is valid for 9 months after the end of the month the test was made, so long as the seed remains in Kansas.

(2) Federal Seed Law. For seed shipped across state lines, the germination test is valid for 5 months after the end of the month the test was made.

(3) Interpretation of Current Analysis Report. For seed purchased during the valid period of the germination test, the analysis report may be considered current for the full seeding period in effect at the time of purchase. (If seed is purchased March 1, and the valid date expires March 31, the analysis report may be considered current if the seed is planted by April 30, which is the end of the spring seeding period. If the seed is to be planted during a later seeding season, a new germination test is required.) This interpretation may be amended by the Engineer for those projects in which KDOT delayed seeding to a later seeding season. In these situations the seed need not be retested only for the next season.

c. Pure Live Seed (PLS) Requirements and Determination. Compute percent pure live seed (%PLS) by adding percent germination to percent firm or hard seed. Divide the sum by 100. Multiply this product by the percent purity.

$$\% \text{ PLS} = \frac{(\% \text{ Germ.} + \% \text{ Firm or Hard Seed}) \times \% \text{ Purity}}{100}$$

Minimum PLS requirements are shown in **TABLES 2103-1** and **2103-2**. The Engineer may grant permission to use seeds that fail to comply with the required PLS provided the following conditions are met.

(1) The Contractor can provide suitable evidence to the Engineer that seeds comply with **TABLE 2103-1** or **2103-2** are not readily available.

(2) The Contractor is willing to increase the quantity of seeds, at no additional cost to KDOT, to provide the minimum quantity of PLS required.

d. Origin of Seed. Where named or numbered strains are not available, use of seed from native stands is permitted if the seed is harvested within range of its planting location not to exceed:

(1) 300 miles south, 150 miles north or west and 1500 feet in higher elevation.

(2) Native seed sources must be identified as to state and county where seed was harvested in order to certify location and elevation.

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e. Buffalo Grass Seed (Buchloe dactyloides). Buffalo grass seed may be an improved strain, hybrid or named variety as specified on the Contract Documents. Stain with a dye. Treat all buffalo grass seed to enhance germination.

f. Bulk Seed Determination. Determine the amount of bulk seed needed for each bid item based on PLS requirements and the following formula:

$$\text{Total Bulk Mass} = \frac{\text{Bid Item PLS Plan Quantity}}{\% \text{ PLS}}$$

2103.3 TEST METHODS

As prescribed by the AOSA and The Kansas Seed Law.

2103.4 PREQUALIFICATION

None Required. Seed supplier must follow all registration and licensing requirements stated in The Kansas Seed Law.

2103.5 BASIS OF ACCEPTANCE

The Engineer will accept each seed shipment to a project work site based on the following:

- a. Receipt of a copy of the seed supplier's "Kansas Seed Law Business Registration" certificate.
- b. Receipt and approval of a certification from the seed supplier stating the compliance of the supplied seed with this specification and The Kansas Seed Law.
- c. Verification that each seed container is labeled as required by The Kansas Seed Law.
- d. Verification of compliance with the minimum required % PLS as stated in **TABLE 2103-1** and **2103-2**.

TABLE 2103-1: GRASS SEED	
Bid Item	Minimum % PLS
Bluegrass, Kentucky	64.0
Bluestem, Big (Kaw)	35.0
Bluestem, Little (Aldous)	28.0
Bluestem, Sand (Garden)	35.0
Bromegrass, Smooth	72.0
Buffalograss (Sharp's Improved)	72.0
Canarygrass,(Reed)	63.0
Dropseed, Sand	57.0
Fescue, Tall, (K-31), (Rebel II)	80.0
Foxtail, Creeping (Garrison)	60.0
Grama, Blue (Lovington)	21.0
Grama, Sideoats (El Reno)	35.0
Indiangrass (Osage)	42.0
Lovegrass, Sand (Bend)	58.0
Millet, Foxtail	77.0
Ryegrass, Perennial	83.0
Sacaton, Alkali (Salado)	57.0
Sandreed, Big	15.0
Sandreed, Prairie	28.0

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TABLE 2103-1: GRASS SEED	
Bid Item	Minimum % PLS
Sudangrass	76.0
Switchgrass (Blackwell)(Kanlow)	81.0
Timothy	76.0
Wheatgrass, Intermediate	72.0
Wheatgrass, Streambank (Sodar)	63.0
Wheatgrass, Western (Barton)	60.0
Wheat x Wheatgrass Hybrid (Regreen)(TM)	85.0
Wild-rye, Canada	**
Ryegrass, Common	83.0
Ryegrass, Italian	83.0

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TABLE 2103-2: WILDFLOWER SEED		
Common Name	Bid Item	Minimum % PLS
Golden yarrow	Achillea filipendulina	**
Yarrow	Achillea millefolium	68.0
Red yarrow	Achillea millefolium f. rubra	**
Lead-plant	Amorpha canescens*	**
False-indigo	Amorpha fruticosa*	**
Swamp milkweed	Asclepias incarnata	**
Common milkweed	Asclepias syriaca	**
Butterfly milkweed	Asclepias tuberosa	**
Drummond's aster	Aster drummondii	**
Fendler's aster	Aster fendleri	**
New England aster	Aster novae-angliae	**
Aromatic aster	Aster oblongifolius	**
Azure aster	Aster oolentangiensis	**
Single-stemmed bog aster	Aster paludosus subsp. hemisphericus	**
	Aster patens var. patentissimus	**
Willowleaf aster	Aster praealtus var. praealtus	**
Silky aster	Aster sericeus	**
Blue false-indigo	Baptisia australis var. minor*	**
Plains wild-indigo	Baptisia bracteata var. glabrescens	**
Purple poppy-mallow	Callirhoe involucrata	**
Showy partridge-pea	Cassia chamaecrista*	**
Indian paintbrush	Castilleja coccinea	**
Citron paintbrush	Castilleja purpurea var. citrina	**
Downy paintbrush	Castilleja sessiliflora	**
Cornflower	Centaurea cyanus	80.0
Ox-eye daisy	Chrysanthemum leucanthemum	78.0
Chicory	Cichorium intybus	83.0
Bigflower coreopsis	Coreopsis grandiflora	**
Lance-leaved coreopsis	Coreopsis lanceolata	71.0
Plains coreopsis	Coreopsis tinctoria	83.0
Rough-leaf dogwood	Cornus drummondii	**
Gray dogwood	Cornus foemina	**
Crownvetch	Coronilla varia*	**
Cosmos	Cosmos bipinnatus	76.0
Golden prairie-clover	Dalea aurea*	**
White prairie-clover	Dalea candida*	**

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TABLE 2103-2: WILDFLOWER SEED		
Common Name	Bid Item	Minimum % PLS
Nine-anther prairie-clover	<i>Dalea enneandra</i> *	**
Round-head prairie-clover	<i>Dalea multiflora</i> *	**
Kaneb purple prairie-clover	<i>Dalea purpurea</i> 'Kaneb'*	58.0
Silky prairie-clover	<i>Dalea villosa</i> *	**
Illinois bundleflower	<i>Desmanthus illinoensis</i> *	**
Shooting star	<i>Dodecatheon meadia</i>	**
Purple coneflower	<i>Echinacea angustifolia</i>	**
Pale coneflower	<i>Echinacea pallida</i>	**
Englemann's daisy	<i>Engelmannia pinnatifida</i>	**
Button snakeroot	<i>Eryngium yuccifolium</i>	**
Tall joe-pye weed	<i>Eupatorium altissimum</i>	**
Joe-pye weed	<i>Eupatorium maculatum</i> var. <i>bruneri</i>	**
Boneset	<i>Eupatorium perfoliatum</i>	**
Sweet joe-pye weed	<i>Eupatorium purpureum</i>	**
Indian blanket flower	<i>Gaillardia pulchella</i>	63.0
Prairie gentian	<i>Gentiana puberulenta</i>	**
Snakeweed	<i>Gutierrezia sarothrae</i>	**
Maximilian sunflower	<i>Helianthus maximilianii</i>	**
Dame's rocket	<i>Hesperis matronalis</i>	83.0
Bush morning-glory	<i>Ipomoea leptophylla</i>	**
Perennial Sweetpea	<i>Lathyrus latifolius</i> *	**
Round-head lespedeza	<i>Lespedeza capitata</i> *	**
Rough gayfeather	<i>Liatris aspera</i>	**
Dotted gayfeather	<i>Liatris punctata</i>	**
Eureka thickspike gayfeather	<i>Liatris pycnostachya</i> 'Eureka'	**
Cardinal flower	<i>Lobelia cardinalis</i>	**
Indian-tobacco	<i>Lobelia inflata</i>	**
Blue cardinal flower	<i>Lobelia siphilitica</i>	**
Palespike lobelia	<i>Lobelia spicata</i>	**
Bird's foot trefoil	<i>Lotus corniculatus</i> *	80.0
Tahoka daisy	<i>Machaeranthera tanacetifolia</i>	**
Black-foot daisy	<i>Melampodium leucanthum</i>	**
Wild bergamot	<i>Monarda fistulosa</i> var. <i>fistulosa</i>	**
Missouri eveningprimrose	<i>Oenothera macrocarpa</i>	73.0
White eveningprimrose	<i>Oenothera speciosa</i>	58.0
White beardtongue	<i>Penstemon albidus</i>	**
Buckley's penstemon	<i>Penstemon buckleyi</i>	**
Cobaea penstemon	<i>Penstemon cobaea</i>	**
Large beardtongue	<i>Penstemon grandiflorus</i>	**
Tube penstemon	<i>Penstemon tubaeformis</i>	**
Blue phlox	<i>Phlox divaricata</i> subsp. <i>laphamii</i>	**
Prairie phlox	<i>Phlox pilosa</i> subsp. <i>fulgida</i>	**
Prairie phlox	<i>Phlox pilosa</i> subsp. <i>pilosa</i>	**
White milkwort	<i>Polygala alba</i>	**
Blood polygala	<i>Polygala sanguinea</i>	**
Sand cherry	<i>Prunus pumila</i> var. <i>besseyi</i>	**
Upright prairieconeflower	<i>Ratibida columnifera</i>	76.0
Mexican hat prairieconeflower	<i>Ratibida columnifera</i> f. <i>pulcherrima</i>	76.0
Grayhead prairieconeflower	<i>Ratibida pinnata</i>	76.0
Sunglow prairieconeflower	<i>Ratibida pinnata</i> 'Sunglow'	**

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TABLE 2103-2: WILDFLOWER SEED		
Common Name	Bid Item	Minimum % PLS
Black-eyed susan	Rudbeckia hirta	78.0
Brown-eyed susan	Rudbeckia triloba var. triloba	**
Nekan blue sage	Salvia azurea 'Nekan'	**
Lance-leaved sage	Salvia reflexa	**
Catclaw sensitive brier	Schrankia nuttallii	**
Compass plant	Silphium laciniatum	**
Cup plant	Silphium perfoliatum	**
Prairie goldenrod	Solidago missouriensis var. fasciculata	**
Rigid goldenrod	Solidago rigida var. rigida	**
Red false-mallow	Sphaeralcea coccinea	**
Prince's plume	Stanleya pinnata var. pinnata	**
Rockpink flameflower	Talinum calycinum	**
Prairie flameflower	Talinum parviflorum	**
Bracted spiderwort	Tradescantia bracteata	**
Prairie spiderwort	Tradescantia occidentalis	**
Ohio spiderwort	Tradescantia ohiensis	**
Shortstem spiderwort	Tradescantia tharpaii	**
White clover	Trifolium repens*	**
Venus'looking glass	Triodanis perfoliata	**
Moth mullein	Verbascum blattaria	**
Dakota vervain	Verbena bipinnatifida	**
Rose vervain	Verbena canadensis	**
Hoary vervain	Verbena stricta	**
Arkansas ironweed	Vernonia arkansana	**
Western ironweed	Vernonia baldwinii subsp. interior	**
Western ironweed	Vernonia fasciculata subsp. fasciculata	**
Rocky Mountain zinnia	Zinnia grandiflora	**

*Inoculate legume seeds with their specific nitrogen fixing bacteria listed in TABLE 2103-3 and in accordance with SECTION 2106.

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TABLE 2103-3: NITROGEN FIXING BACTERIA			
Genus	Inoculant	Genus	Inoculant
Amorpha	Amorpha Spec 1	Desmanthus	Desmanthus Spec 1
Baptisia	Baptisia Spec 1	Lathyrus	Type C
Cassia	Type EL	Lespedeza	Type EL
Dalea	UMR6815		