

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.

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.

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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
Sudangrass	76.0
Switchgrass (Blackwell)(Kanlow)	81.0
Timothy	76.0
Wheatgrass, Intermediate	72.0
Wheatgrass, Streambank (Sodar)	63.0

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TABLE 2103-1: GRASS SEED	
Bid Item	Minimum % PLS
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*	**
Nine-anther prairie-clover	Dalea enneandra*	**
Round-head prairie-clover	Dalea multiflora*	**
Kaneb purple prairie-clover	Dalea purpurea 'Kaneb'*	58.0
Silky prairie-clover	Dalea villosa*	**
Illinois bundleflower	Desmanthus illinoensis*	**
Shooting star	Dodecatheon meadia	**

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

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TABLE 2103-2: WILDFLOWER SEED		
Common Name	Bid Item	Minimum % PLS
Prairie goldenrod	<i>Solidago missouriensis</i> var. <i>fasciculata</i>	**
Rigid goldenrod	<i>Solidago rigida</i> var. <i>rigida</i>	**
Red false-mallow	<i>Sphaeralcea coccinea</i>	**
Prince's plume	<i>Stanleya pinnata</i> var. <i>pinnata</i>	**
Rockpink flameflower	<i>Talinum calycinum</i>	**
Prairie flameflower	<i>Talinum parviflorum</i>	**
Bracted spiderwort	<i>Tradescantia bracteata</i>	**
Prairie spiderwort	<i>Tradescantia occidentalis</i>	**
Ohio spiderwort	<i>Tradescantia ohiensis</i>	**
Shortstem spiderwort	<i>Tradescantia tharpaii</i>	**
White clover	<i>Trifolium repens</i> *	**
Venus'looking glass	<i>Triodanis perfoliata</i>	**
Moth mullein	<i>Verbascum blattaria</i>	**
Dakota vervain	<i>Verbena bipinnatifida</i>	**
Rose vervain	<i>Verbena canadensis</i>	**
Hoary vervain	<i>Verbena stricta</i>	**
Arkansas ironweed	<i>Vernonia arkansana</i>	**
Western ironweed	<i>Vernonia baldwinii</i> subsp. <i>interior</i>	**
Western ironweed	<i>Vernonia fasciculata</i> subsp. <i>fasciculata</i>	**
Rocky Mountain zinnia	<i>Zinnia grandiflora</i>	**

*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		