

Reax[®] 80D

Dispersant

Revised: 08/11/2015

Description and Typical Applications

Reax 80D is the sodium salt of sulfonated modified kraft lignin. It is used in a broad range of dye applications where grinding efficiency and low fiber stain are required. It is also used in dry and water-based agricultural formulations.

Typical Properties

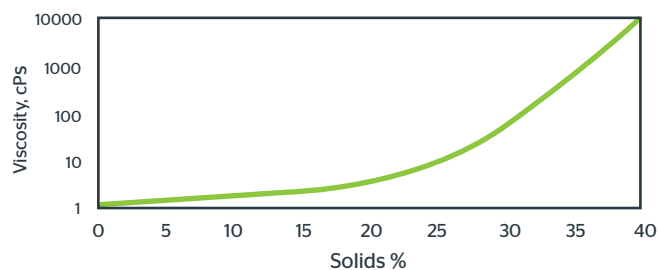
Physical Form	Free-flowing brown powder
Bulk density, lb/ft ³	Loose 30 Packed 36
Degree of Sulfonation*	2.3
Insolubles (5% aqueous, 70°C), %	<0.05
Moisture, %	7.0
Na ₂ SO ₃ , %	8.0
Na ₂ SO ₄ , %	12.0
pH (15% aqueous, 25°C)	7.0
Reducing sugars %	0
Total sulfur, %	11.5
Weight average molecular weight	10,000

* Moles of sulfonic acid groups per 1,000 unit weight of lignin

Shipping

Freight classification	Lignin pitch
Availability	1,102 lb (500 kg) net bags 50 lb (25 kg) net bags
Production site	Charleston, South Carolina, USA

Viscosity of Aqueous Solutions at 25°C



Regulatory Status

Reax 80D is exempt under 40 CFR 180.910 and 180.930.

CAS Registry No. 105859-97-0

Safety: Always refer to the Safety Data Sheet for detailed information on shipping, handling, storage, and use.

Important: The information provided herein is believed to be accurate and reliable, but is presented without guarantee on the part of Ingevity. Further, nothing contained herein shall be taken as an inducement to violate any patent rights.



Reax[®] 83A

Ag Dispersant

Revised: 08/11/2015

Description and Typical Applications

Kraft lignin is a natural, renewable product derived from wood. Reax 83A is the sodium salt of sulfonated modified kraft lignin. Reax 83A is an effective milling aid when used in wet grinding processes. Reax 83A functions as an effective primary dispersant in both dry and water-based agricultural chemical formulations.

Typical Properties

Physical Form	Free-flowing brown powder
Bulk density, lb/ft ³ (kg/L)	Loose 31 (0.496) Packed 36 (0.576)
Conductivity (5% aqueous), mmhos	11,400
Degree of sulfonation*	1.8
Insolubles (5% aqueous, 70°C), %	<0.05
Moisture, %	7.0
Na ₂ SO ₃ , %	2.3
Na ₂ SO ₄ , %	2.0
pH (15% aqueous, 25°C)	10.5
Surface tension (1% aqueous), mN/m	61.5
Total sodium, %	9.5
Total sulfur, %	7.4
Weight average molecular weight	9,000

* Moles of sulfonic acid groups per 1,000 unit weight of lignin

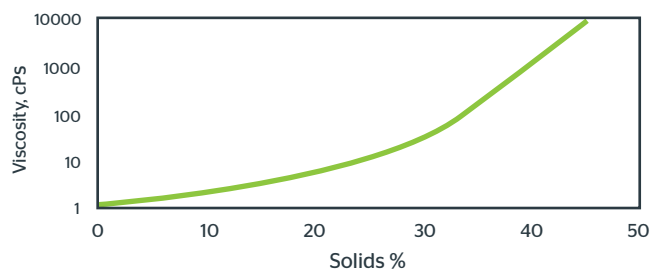
Solubility in Organic Solvents

Sulfonated lignins have virtually no solubility in most organic solvents. In water-miscible solvents (such as DMF, ethylene glycol, or methyl alcohol), the addition of water (in some cases as little as 5%) will greatly increase solubility.

Shipping

Freight classification	Lignin pitch
Availability	1,102 lb (500 kg) net bulk bags and 55 lb (25 kg) net bags
Production site	Charleston, South Carolina, USA

Viscosity of Aqueous Solutions at 25°C



Regulatory Status

Reax 83A is exempt under 40 CFR 180.910 and 180.930.

CAS Registry No. 105859-97-0

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Reax[®] 88A

Dispersant and Complexing Agent

Revised: 08/11/2015

Description and Typical Applications

Kraft lignin is a natural, renewable product derived from wood. Reax 88A is the sodium salt of a chemically modified low molecular weight kraft lignin polymer. It is recommended as a primary dispersant for water-based and dry formulations of organometallic and alkali-sensitive active ingredients. Reax 88A is particularly effective as a dispersant when coformulated with naphthalene sulfonate-based dispersants. Reax 88A is also used as a complexing agent of trace metals in micronutrient formulations.

Typical Properties

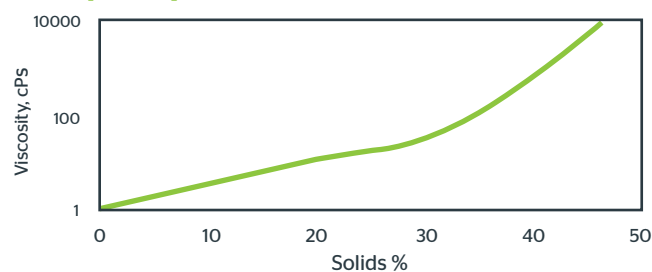
Physical Form	Free-flowing brown powder
Bulk density, lb/ft ³ (kg/L)	Loose 28 (0.450) Packed 35 (0.562)
Cation	Sodium
Degree of sulfonation*	2.9
Moisture, %	7.0
Na ₂ SO ₃ , %	3.0
pH (15% aqueous, 25°C)	4.3
Reducing sugars, %	0
Solubility in water	Complete
Surface tension (1% aqueous), mN/m	52.2
Total sulfur, %	10.4
Weight average molecular weight	3,100

* Moles of sulfonic acid groups per 1,000 unit weight of lignin

Shipping

Freight Classification	Lignin Pitch
Availability	1102 lb (500kg) net bags 55 lb (25 kg) net bags
Production Site	Charleston, South Carolina, USA

Viscosity of Aqueous Solutions at 25°C



Regulatory Status

Reax 88A is exempt under 40 CFR 180.910 and 180.930.

CAS Registry No. 68512-34-5

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Reax[®] 88B

Dispersant and Complexing Agent

Revised: 08/11/2015

Description and Typical Applications

Reax 88B is the sodium salt of a low molecular weight, highly sulfonated kraft lignin polymer. It is used in specialized applications where specific properties such as high metal complexing capacity, acid solubility, or superior viscosity reduction are required. It is recommended for use with organometallic active ingredients and as a primary dispersant in water dispersible granules made by extrusion, spray drying, and fluid-bed agglomeration or in ultra small particle suspension concentrates. Reax 88B is particularly effective as a dispersant when coformulated with naphthalene sulfonate-based dispersants.

Typical Properties

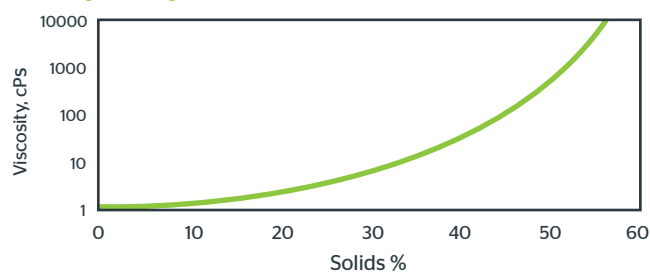
Physical Form	Free-flowing brown powder
Bulk density, lb/ft ³ (kg/L)	Loose 28 (0.450) Packed 35 (0.560)
Cation	Sodium
Degree of sulfonation*	2.9
Moisture, %	7.0
Na ₂ SO ₃ , %	2.5
pH, (15% aqueous, 25°C)	11.0
Reducing sugars, %	0
Solubility in water	Complete
Surface tension	48.9
(1% aqueous), mN/m	48.7
Total sulfur, %	10.5
Weight average molecular weight	3,100

* Moles of sulfonic acid groups per 1,000 unit weight of lignin

Shipping

Freight classification	Lignin pitch
Availability	55 lb (25 kg) net bags
Production site	Charleston, South Carolina, USA

Viscosity of Aqueous Solutions at 25°C



Regulatory Status

Reax 88B is exempt under 40 CFR 180.910 and 180.930.

CAS Registry No. 68512-34-5

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Reax[®] 100M

Dispersant and Complexing Agent

Revised: 08/11/2015

Description and Typical Applications

Reax 100M is a modified kraft lignin with a high degree of sulfonation. It is used as a complexing agent of trace metals in micronutrient formulations and as a dispersant in dry and water-based formulations of agricultural chemicals. It is recommended for use in water dispersible granules made by extrusion, spray drying or fluid bed agglomeration. Reax 100M is also recommended for use in aqueous suspensions with high ionic strength.

Typical Properties

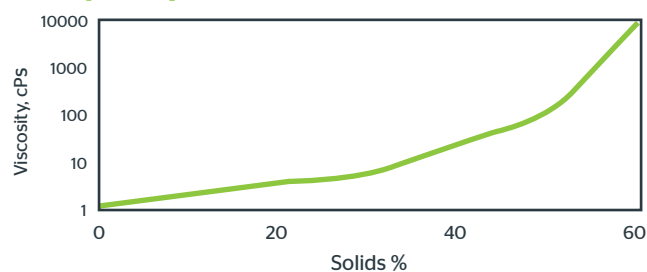
Physical Form	Free-flowing brown powder
Bulk density, lb/ft ³ (kg/L)	Loose 24 (0.386) Packed 30 (0.482)
Cation	Sodium
Degree of sulfonation*	3.4
Moisture, %	7.0
Na ₂ SO ₃ , %	3.0
pH (15% aqueous, 25°C)	8.8
Solubility in water	Complete
Stability	Stable under ordinary conditions
Surface tension (1% aqueous), mN/m	48.9
Total sulfur, %	12.3
Weight average molecular weight	2,000

* Moles of sulfonic acid groups per 1,000 unit weight of lignin

Shipping

Freight classification	Lignin pitch
Availability	55 lb (25 kg) net bags
Production site	Charleston, South Carolina, USA

Viscosity of Aqueous Solutions at 25°C



Regulatory Status

Reax 100M is exempt under 40 CFR 180.910 and 180.930.

CAS Registry No. 68512-34-5

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Reax[®] 907

Dispersant

Revised: 08/11/2015

Description and Typical Applications

Reax 907 is the sodium salt of a low molecular weight, highly sulfonated kraft lignin polymer. It is used in specialized applications where specific properties such as high metal complexing capacity, acid solubility, or superior viscosity reduction are required. It is recommended for use with organometallic active ingredients and as a primary dispersant in water dispersible granules made by extrusion, spray drying, and fluid-bed agglomeration or in ultra small particle suspension concentrates. Reax 907 is particularly effective as a dispersant when coformulated with naphthalene sulfonate-based dispersants.

Typical Properties

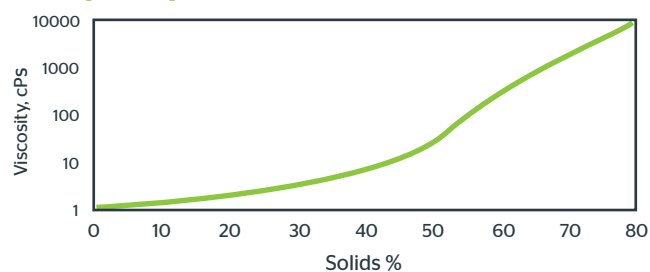
Physical Form	Free-flowing brown powder
Bulk density, lb/ft ³ (kg/L)	Loose 27 (0.434) Packed 32 (0.514)
Cation	Sodium
Degree of sulfonation*	1.2
Moisture, %	7.0
Na ₂ SO ₃ , %	0.5
pH (15% aqueous, 25°C)	7.2
Reducing sugars, %	0
Solubility in water	Complete
Stability	Stable under ordinary conditions
Surface tension (1% aqueous), mN/m	50
Total sulfur, %	5.0
Weight average molecular weight	13,400

* Moles of sulfonic acid groups per 1,000 unit weight of lignin

Shipping

Freight classification	Lignin pitch
Availability	55 lb (25 kg) net bags
Production site	Charleston, South Carolina, USA

Viscosity of Aqueous Solutions at 25°C



Regulatory Status

Reax 907 is exempt under 40 CFR 180.910 and 180.930.

CAS Registry No. 68512-35-6

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Reax[®] 910

Dispersant and Complexing Agent

Revised: 08/11/2015

Description and Typical Applications

Reax 910 is a medium-sulfonated kraft lignin dispersant featuring low free electrolyte content, low conductivity and near neutral pH. This combination of properties makes Reax 910 suitable in liquid dispersion systems where free electrolytes tend to promote gelation and agglomeration of the suspended material. Reax 910 is also recommended for wettable powders and water dispersible granules produced by extrusion and fluid bed agglomeration.

Typical Properties

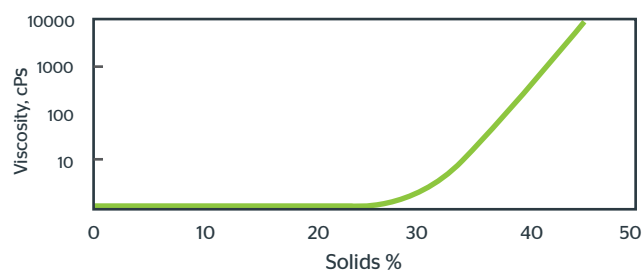
Physical Form	Free-flowing brown powder
Bulk density, lb/ft ³ (kg/L)	Loose 28 (0.450) Packed 33 (0.530)
Cation	Sodium
Degree of sulfonation*	1.5
Moisture, %	7.0
Na ₂ SO ₃ , %	1.2
pH (15% aqueous, 25°C)	7.2
Reducing sugars, %	0
Solubility in water	Complete
Stability	Stable under ordinary conditions
Surface tension (1% aqueous), mN/m	51
Total sulfur, %	6.0
Weight average molecular weight	10,200

* Moles of sulfonic acid groups per 1,000 unit weight of lignin

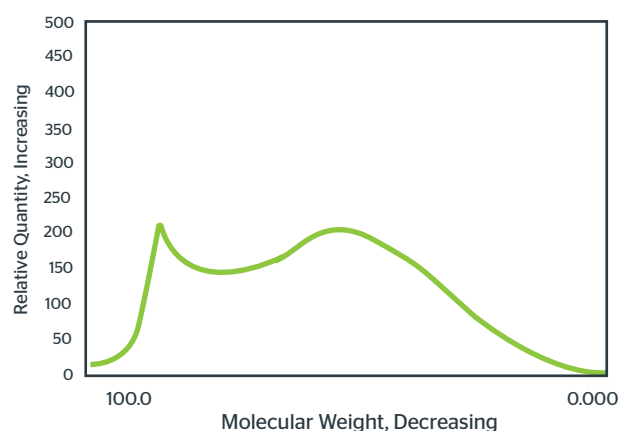
Shipping

Freight classification	Lignin pitch
Availability	55 lb (25 kg) net bags
Production site	Charleston, South Carolina, USA

Viscosity of Aqueous Solutions at 25°C



Molecular Weight Distribution Gel Filtration (0.1M NaOH Solution)



Regulatory Status

Reax 910 is exempt under 40 CFR 180.910 and 180.930.

CAS Registry No. 68512-35-6

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