



**Cargill
Industrial
Specialties**



**Collaboration.
Innovation. Solutions.**

We call it chemistry for the real world.



Cargill Industrial Specialties (CIS)

Innovation is what we do.

1. Expert

Our specialized expertise in agriculture-based chemistry allows us to create better performing industrial solutions for our customers.

WHO WE ARE

For over 60 years, Cargill Industrial Specialties (CIS) has focused solely on the application needs of targeted industrial customers around the world. Our proprietary technologies are found in an ever-widening range of categories such as dielectric fluids, asphalt, oilfield, construction, flooring, flexible foams, consumer goods, paints, coatings, lubricants and crop protection.

2. Value

Our performance-first approach has inherent functional and financial advantages delivering lower total cost of ownership benefits.

REAL WORLD SOLUTIONS EQUAL BOTTOM-LINE VALUE

We understand agriculture-based chemistry. Since the 1950's, we have been reliably selecting, modifying and reacting various materials to create specific, innovative industrial technologies that meet the performance requirements our customers demand and the total cost savings they need.

Innovative solutions. High-performing products.

Anova™ Asphalt and Oilfield solutions • BiOH® Polyols and Polymers • Envirotemp™ FR3™ dielectric fluid • Oxi-Cure® coalescing agents
Agri-Pure® and Agri-Pure Gold® oils • ChemCure® epoxy curing agents • ChemMod® reactive diluents • ChemRes® specialty epoxy resins

3. Global

Our core Cargill DNA brings world-wide reach and supply chain expertise to provide consistent, reliable supply and enhanced price stability.

WHY CARGILL?

For 150 years and operating in nearly 70 countries, Cargill has leveraged its global supply chain and logistics expertise to provide solutions in 4 segments: agriculture, food, financial and industrial. As part of Cargill, CIS uses that unique experience to benefit its industrial customers.

4. Partner

Our fundamental belief is that mutual bottom-line business success is made possible by strong customer collaboration and partnership.

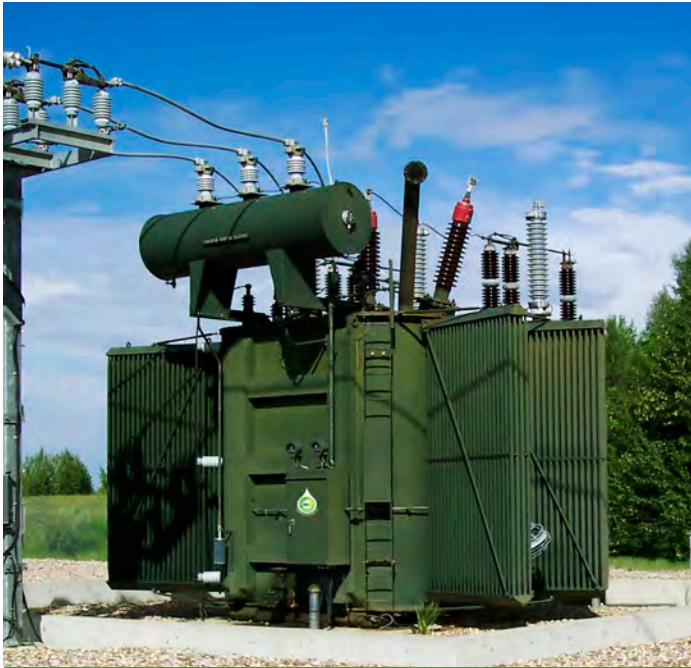
THE WIN-WIN APPROACH

Our customers count on CIS to provide the expertise and chemistries required to meet their toughest challenges, whatever they may be: process, technology or supply chain. We believe by involving our customers in the process and embracing truly entrepreneurial thinking, we create innovative, new-to-the-market solutions.

Diverse markets. Game-changing results.

Asphalt • Oilfield • Paints, Coating & Inks • Dielectric fluids • Lubricants • Flexible foams & polyurethane
Industrial renewables • Flooring • Consumer goods • Construction • Crop protection • Home care

Cargill Industrial Specialties (CIS) Solutions are what we make.



ENVIROTEMP™ FR3™ DIELECTRIC FLUID

- FR3™ fluid has unique insulation life extension and high temperature capabilities enabling transformers to increase load capacity by up to 20% without sacrificing asset life or reliability.
- These features offer cost efficiencies and performance enhancements for our customers. They have the flexibility to increase their load capability with existing assets or reduce their footprint with the same load capability. This renewable, biodegradable fluid also has a 360°C fire point helping to reduce fire and environmental risks.



CHEMCURE® EPOXY CURING AGENTS

- Our broad offering of epoxy curing agents, when used along with our reactive modifiers, create epoxy coatings to satisfy a wide range of applications. Whether it is chemical resistance, custom cure times or outstanding adhesion, the ChemCure® product line is ready for your industrial coating, civil engineering or composite applications.



ANOVA™ ASPHALT SOLUTIONS

- Our portfolio of Anova™ asphalt products help build and maintain better roads. For example, our rheology modifiers improve low temperature performance while expanding the useful grade temperature interval. Our rejuvenators restore properties of asphalt lost to aging, enabling increased use of recycled asphalt and shingles in pavements.

Our long history of problem-solving has created more than just innovative products, but winning results for our customers. What challenge can we solve for you?



AGRI-PURE® LUBRICANTS

- Our processing fluids have a lower coefficient of friction requiring fewer additives. And lower VOCs to help meet regulatory requirements.



OXI-CURE™ COALESCING AGENTS

- Our low VOC Oxi-Cure coalescing agents have been specially designed to help our paint and coatings customers achieve low VOC levels in their coating formulations and provide superior film forming.



BIOH® POLYOLS

- Our BiOH® polyols for memory foam mattresses reduce heat transfer in foams by as much as 25% while enabling manufacturers to incorporate as much as 50% renewable content*.

*of finished foam weight

Products at a Glance



Our technologies are found in a broad range of industrial categories. The products listed represent the foundation of our offering, not the full scope of our capabilities. Please talk to your Cargill Industrial Specialties (CIS) representative to find out how we can work with you on creating solutions that best fit your business needs.

Base Vegetable Oils Products

We offer a full range of base vegetable oils that provide many advantages over mineral oils including low volatile organic compound (VOC) content and low toxicity.

Product Name	Description
ASTM Raw Linseed Oil	Non refined
Supreme Linseed Oil	Refined, bleached, deodorized (RBD)
Crude Soybean Oil	Technical grade crude soybean oil
Crude Degummed Soybean Oil	Degummed but not refined
Soybean Oil	Refined, bleached, deodorized (RBD)
Methyl Soyate	Soybean oil methyl ester
Sunflower Oil	Refined, bleached, winterized, deodorized (RBWD)
Coconut Oil	Refined, bleached, deodorized (RBD)
Palm Oil	Refined, bleached, deodorized (RBD)
Agri-Pure Gold® 45 Oil	Technical grade vegetable oil, 20 AV
Agri-Pure Gold® 414 Oil	Technical grade vegetable oil, <5 AV

High Oleic Vegetable Oils

Processed from renewable agricultural sources, Agri-Pure® high oleic oils are environmentally friendly and can be formulated to function with the characteristics typically found only in more expensive synthetic-based fluids. Agri-Pure® oils can be used in a variety of applications within the lubricants category.

Product Name	Description	Oleic Acid
Agri-Pure® 60 Oil	Refined canola oil	60%
Agri-Pure® 65 Oil	High oleic canola oil	65%
Agri-Pure® 75 Oil	High oleic vegetable oil	75%
Agri-Pure® 80 Oil	High oleic sunflower oil	80%
Agri-Pure® 85 Oil	High oleic canola oil	80%
Agri-Pure® 82 Oil	High oleic soybean oil	82%

Reactive Modified Vegetable Oils

Reactive modified oils serve a variety of purposes within the paints, inks and coatings category.

Product Name	Description
Boiled Linseed Oil	Linseed oil modified for fast drying
Double Boiled Linseed Oil	Linseed oil modified for fast drying
Special Aged Linseed Oil	Viscosity modified linseed oil
Falkowood 51 Y-Z Linseed Oil	Modified cross-linking oil
Falkowood 51 Z1-Z2 Linseed Oil	Modified cross-linking oil
Bonding Linseed Oil	Reactive, modified linseed oil formulated for fast drying
Integral Linseed Oil	Reactive, modified linseed oil formulated for fast drying
Tempering Linseed Oil	Reactive, modified linseed oil formulated for fast drying
Special Conjugated Linseed Oil	Conjugated vegetable oil
Regular Litho Linseed Oil	Oil for lithographic printing
White Refined Linseed Oil	Linseed oil with specified acid content for dispersions
Dilulin® Reactive Diluent	DCPD modified linseed oil; reactive diluent with hard drying properties

Polymerized Vegetable Oils

Many of our vegetable oils are modified to create oils with increased viscosity and functionality.

Product Name	Description	Viscosity @ 25°C (Gardner)
KC G Soybean Oil	Polymerized oil	G to I
KC X Linseed Oil	Polymerized oil	W+ to X+
KC Y Linseed Oil	Polymerized oil	Y
KC Z1 Linseed Oil	Polymerized oil	Z+ to Z1+
KC Z2/3 Linseed Oil	Polymerized oil	Z2 to Z3
KC Z4 Linseed Oil	Polymerized oil	Z4
KC Z5 Linseed Oil	Polymerized oil	Z5
KC Z5/6 Linseed Oil	Polymerized oil	Z4+ to Z6+
VOS 70 Linseed Oil	Low acid polymerized oil	
VOM 25 Linseed Oil	Low acid polymerized oil	

Product Name	Description	Viscosity cSt @ 40°C	Flash Point Cleveland Open Cup, °C
Agri-Pure Gold® 53 Oil	Technical grade modified vegetable oil	55-65	240
Agri-Pure Gold® 55 Oil	Technical grade modified vegetable oil	55-65	240
Agri-Pure Gold® 63s Oil	Low acid technical grade modified vegetable oil	58-68	260
Agri-Pure Gold® 67 Oil	Low acid technical grade modified vegetable oil	58-68	260
Agri-Pure Gold® 135 Oil	Technical grade modified vegetable oil	130-140	240
Agri-Pure Gold® 200 Oil	Technical grade modified vegetable oil	180-220	240
Agri-Pure Gold® 500 Oil	Technical grade modified vegetable oil	450-550	230
Agri-Pure Gold® 750S Oil	Low acid technical grade modified vegetable oil	500-600	300
Agri-Pure Gold® 2000 Oil	Technical grade modified vegetable oil	1500-2500	240
Agri-Pure® 680 Oil	Technical grade modified vegetable oil	1500-2500	

Glycerin, Polyols & Polymers

Glycerin is a versatile molecule that is available in both refined and crude forms. Refined USP glycerin offers moisturizing and emulsifying functionalities; these properties make it an effective additive in various personal care and home care formulations. Crude glycerin can reduce freezing point and raise viscosity in a variety of industrial formulations. Polyglycerols offer higher hydroxyl functionality than can be achieved with glycerin. This functionality can be utilized in developing novel ester derivatives or to replace higher cost polyols.

BiOH[®] polyols are soy-based, industrial ingredients for polyurethane products such as flexible foam used in upholstered furniture, mattresses, pillows, carpet, cushion and automotive seats.

BiOH[®] polymers are cost-effective, plant-based resins developed for carpet and flooring manufacturers with binding, adhesive and foaming applications.

Product Name	Description
USP Grade Kosher Glycerin	Excipient grade, food grade, non-pharmaceutical
Technical Grade Glycerin	Technical grade, for industrial purposes only (non-food, non-feed, non-kosher)
Crude Glycerin	Biodiesel based, 80% minimum glycerin assay

Product Name	Description	Viscosity @ 40°C	OH Functionality
Oxi-Cure [®] 500 Polyol	Polyglycerol	789cP	3.5
Oxi-Cure [®] 510 Polyol	Polyglycerol	2620cP	4.0

Product Name	Description	Viscosity cP @ 25°C	OH Number	OH Functionality
BiOH [®] 2100 Polyol	Hydroxyl functionalized vegetable oil	10,000	230	4.87
BiOH [®] 2300 Polyol	Hydroxyl functionalized vegetable oil	4000	160	3.7
BiOH [®] 2828 Polyol	Hydroxyl functionalized vegetable oil	502	29	0.6
BiOH [®] 3800 Polyol	Hydroxyl functionalized vegetable oil	3200	56	4
BiOH [®] 5000 Polyol	Hydroxyl functionalized vegetable oil	3200	56	2
BiOH [®] 5100 Polyol	Hydroxyl functionalized vegetable oil	820	40	3.1
BiOH [®] 5300 Polyol	Hydroxyl functionalized vegetable oil	5500	117	3.1
BiOH [®] 5450 Polyol	Hydroxyl functionalized vegetable oil	3300	158	3.0

Product Name	Description
BiOH [®] Polymers C series	SB latex replacement for action back carpet products
BiOH [®] Polymers R series	Natural rubber latex replacement for anti-skid flooring products
BiOH [®] Polymers P series	Fully formulated binder systems with filler for a variety of pre-coat carpet applications
BiOH [®] Polymers N series	Bio-based resins designed for non-woven applications containing glass and PET substrates

Fatty Acids

Cargill offers a variety of vegetable based fatty acids. These acids can be used in lubricant applications as well as an acid source in ester manufacturing.

Product	Description	Appearance	Acid Value
Agri-Pure® 136 Fatty Acid	Vegetable based fatty acid	Paste	150-160
Agri-Pure® 138 Fatty Acid	Vegetable based fatty acid	Solid	180-190
Agri-Pure Gold® 190 Fatty Acid	Vegetable based fatty acid	Solid	>185

Ester Low VOC Solutions

Our esters can be used to create low VOC solutions. These products are highly reactive and have relatively low viscosity. This unique chemistry has been developed to span a variety of different coating applications including oil-modified urethanes, exterior wood finishes and alkyd resins.

Product Name	Description	Viscosity cP @ 40°C	Acid Value
Oxi-Cure® 100 Reactive Diluent	Rapid dry ester	0.7	<2
Oxi-Cure® 210 Reactive Diluent	A rapid drying oil that resists yellowing		<3
Oxi-Cure® 575 Fluid	Proprietary ester	380	<10

Product Name	Description
Oxi-Cure® 2000 Biobased Coalescent	Improves coalescence of latex paint films; incorporated into the coating for no VOCs. Virtually no odor compared to other commonly used higher VOC coalescents.

High Stability Esters

Agri-Pure® esters are made from a variety of vegetable oils and can be used in hydraulic fluids and metalworking lubrication applications such as drilling, cutting, and rolling. The unique composition of these fluids offers high flash and fire points, providing necessary safety characteristics for lubrication formulations.

Product Name	Description	cSt @ 40°C	Acid Value
Agri-Pure® 315 Fluids	High stability ester with low pour point		<0.2
Agri-Pure® 456 Fluids	Higher stability ester with a low pour point	41.1-50.6	<1

Polyamides

Unmodified polyamides produce coating layers that are much more open in terms of their chemical structure due to large distances between amine groups in the chemical chain. Consequently they are more flexible. This open structure also results in coatings with low resistance to chemicals, solvents and acids. However, their resistance to water and corrosion are enhanced because of their surface wetting and adhesion properties. Good color and chemical resistance can also be achieved. They generally produce coatings with excellent adhesion, water resistance and flexibility.

Product	Description	Viscosity cP @ 25°C	Amine H ⁺ Eq. Weight	PHR	Gel Time (minutes)	Density	Color Typical Gardner
ChemCure® 100	Low viscosity, faster curing polyamide	1,000 ~ 2,500	82	43	35 ~ 60	8.2	6
ChemCure® 115	Semi-solid, slow reacting polyamide	50,000 ~ 75,000 (40°C)	200	108	>240	8.1	6
ChemCure® 115 F70	ChemCure® 115 cut in 30% Oxsol 100	Z ~ Z4 (Bubble)	280	150	> 240	8.7	8
ChemCure® 115 I73	ChemCure® 115 cut in 27% Isopropanol	U ~ Z (Bubble)	270	145	> 240	7.7	6
ChemCure® 115X70	ChemCure® 115 cut in 30% Xylene	U ~ Z (Bubble)	280	150	>240	7.8	6
ChemCure® 125	Mid-range polyamide for speed and viscosity	8,000 ~ 12,000 (40°C)	108	54	130	8.1	8
ChemCure® 140	2:1 polyamide when used with ChemRes™ 628	8,000 ~ 16,000	95	50	120	8.1	5
ChemCure® 145	Lower viscosity for higher solids applications	3,000 ~ 6,000	130	70	60 ~ 150	8.3	6
ChemCure® 148	Higher performance low viscosity material	4,000 ~ 8,000	143	77	90 ~ 120	8.2	6
ChemCure® 150	Alternative for ChemCure® 125	2,000 ~ 4,000	100	54	100 ~ 300	8.2	8

Amidoamines

Amidoamines are formed when an aliphatic polyamine is reacted with a fatty acid. These curing agents are less volatile and have less irritation potential than polyamines. In general they offer lower viscosities allowing for higher pigment loading and low VOC formulas. Amidoamines also have good adhesion to concrete, yet can be adapted to offer a wide range of working times while maintaining good cure properties.

Product	Description	Viscosity cP @ 25°C	Amine H ⁺ Eq. Weight	PHR	Gel Time (minutes)	Density	Color Typical Gardner
ChemCure® 135	Use to improve corrosion resistance	100 ~ 400	95	51	240 ~ 360	8	7
ChemCure® 147	Low viscosity polyamidoamine with better chemical resistance	400 ~ 700	89	48	60 ~ 125	7.9	5
ChemCure® 149	Modified amidoamine with fast gel time	200 ~ 300	65	35	35 ~ 70	8.2	6
ChemCure® 151	Use for general purpose adhesives	300 ~ 600	93	50	90 ~ 200	8	4
ChemCure® 151 HRC	65% renewable version of ChemCure® 151	300 ~ 600	93	50	90 ~ 200	8	8
ChemCure® 152	Higher imidazoline version of ChemCure® 151	250 ~ 500	93	50	90 ~ 500	7.9	5
ChemCure® 153 LVZ	ChemCure® 153 with improved adhesion	300 ~ 500	115	62	20 ~ 80	8.5	4
ChemCure® 153 M	Good chemical resistance	2,000 ~ 3,500	106	57	40 ~ 80	8.6	4
ChemCure® 183	Good flexibility and high gloss, no induction	2,500 ~ 5,000	178	95	60 ~ 80	8.4	4
ChemCure® 184	Good adhesion and flexibility	500 ~ 2,000	160	80	40 ~ 150	8.3	3
ChemCure® 185	ChemCure® 184 with higher chemical resistance	900 ~ 1,500	177	95	10 ~ 20	8.3	4

Amidoamines (continued)

Product	Description	Viscosity cP @ 25°C	Amine H ⁺ Eq. Weight	PHR	Gel Time (minutes)	Density	Color Typical Gardner
ChemCure® 190	Very high imidazoline content amidoamine	100 ~ 500	93	50	350 ~ 550	7.8	4
ChemCure® 191	Adhesion to concrete and chemical resistance.	500 ~ 900	65	35	30 ~ 60	8.1	4
ChemCure® 192	Use for river rock, primers and under layments	250 ~ 400	90	50	100 ~ 150	7.9	6
ChemCure® 193	Fast set version of ChemCure® 151 or 152	200 ~ 700	93	50	50 ~ 120	8	5

Note: Due to the nature of the chemistry, amidoamines do not yield discrete Amine Hydrogen Equivalent Weights. In all cases this number would be represented as a range. The values provided in the table above represent a theoretical calculation from the PHR provided. The PHR would also be best represented by a range and should be determined by the customer based on their formulation and desired properties. The PHR values above are utilized by Cargill for the determination of the gel times reported in the table and on actual product specifications.

Cycloaliphatic Amines

Modified cycloaliphatic amines from IPDA are one of the most commonly used curing agents. Because of their low viscosity, they can be used for low VOC coatings. They produce coatings with a fast cure rate, short pot life and are also suitable for low temperature cure. They have good water/moisture and chemical resistance, weatherability, low blush, water spotting. The ring structure also provides slightly more structural “stretch” than aliphatic curing agents, imparting better impact resistance.

Product	Description	Viscosity cP @ 25°C	Amine H ⁺ Eq. Weight	PHR	Gel Time (minutes)	Density	Color Typical Gardner
ChemCure® 286	Modified decoupage type material	35 ~ 90	90	48	25 ~ 55	8.4	2
ChemCure® 310	Very standard product material for epoxy floors	300 ~ 600	111	60	30 ~ 50	8.6	1
ChemCure® 310M	Very standard product material for epoxy floors	400 ~ 600	111	60	25 ~ 50	8.6	1
ChemCure® 311	Designed for aggregate / slurry flooring	300 ~ 400	78	42	25 ~ 40	8.1	5
ChemCure® 315	Modified version of ChemCure® 310	25 ~ 50	86	46	25 ~ 35	8.5	1
ChemCure® 319	Faster flooring material for improved water spot	250 ~ 350	104	56	18 ~ 30	8.6	1
ChemCure® 319 S	Modified version of ChemCure® 319	250 ~ 700	108	58	15 ~ 30	8.5	2
ChemCure® 329	2:1 Low blush amine for flooring	100 ~ 300	94	50	20 ~ 30	8.8	1
ChemCure® 331	Good cosmetics for flooring	60 ~ 200	86	46	30 ~ 55	8.3	2
ChemCure® 337	Low color curative for chemical resistant floors	90 ~ 150	71	38	20 ~ 35	8.7	1
ChemCure® 353	Lower temperature applications	4,500 ~ 6,500	61	32	10 ~ 16	8.6	2
ChemCure® 365	Fast through cure, good cosmetics	100 ~ 300	94	51	15 ~ 30	8.7	1
ChemCure® 368	High chemical resistance cycloaliphatic amine	100 ~ 400	99	53	25 ~ 35	8.6	2
ChemCure® 374	Lower yellowing floor coatings	40 ~ 180	92	49	18 ~ 38	8.2	1
ChemCure® 378	Lower yellowing floor coatings	600 ~ 800	114	61	30 ~ 50	8.8	1
ChemCure® 390	Fast cure 3:1 with ChemRes™ 618	250 ~ 550	74	37	20 ~ 40	8.4	2
ChemCure® 399	Unique cure cycloaliphatic	0 ~ 20	29	16	135 ~ 155	7.8	0
ChemCure® 400	Part B of lower cost low yellowing floor system	75 ~ 130	89	44	20 ~ 50	8.4	1
ChemCure® 401	Part B of our best low yellowing floor system	75 ~ 130	89	44	20 ~ 50	8.4	<1

Mannich Bases

Mannich bases are highly reactive curing agents because the accelerator is built in. They are good for low temperature cure, in some cases down to 10°F, and other challenging applications. We offer a wide range of Mannich bases to meet the most demanding application requirements for epoxy use in damp, cold and even under water applications.

Product	Description	Viscosity cP @ 25°C	Amine H ⁺ Eq. Weight	PHR	Gel Time (minutes)	Density	Color Typical Gardner
ChemCure® 220	High chemical resistance	2,000 ~ 5,500	50	27	10 ~ 14	8.9	5
ChemCure® 220LVH	Lower viscosity version of ChemCure® 220	500 ~ 1,800	46	25	10 ~ 16	9	5
ChemCure® 254	Flexible, high performing for harsh conditions	700 ~ 1,000	152	80	45 ~ 60	7.8	3
ChemCure® 265	Phenol-free material for coatings	400 ~ 700	48	25	12 ~ 18	8.8	4
ChemCure® 265N	Plasticizer free version of ChemCure® 265	1,000 ~ 1,600	39	21	12 ~ 18	8.5	4
ChemCure® 341	Cycloaliphatic Mannich-base high humidity and low temp cure	100 ~ 250	101	55	20 ~ 30	8.5	2
ChemCure® 350	Direct to wet damp, poorly prepared metal	2,000 ~ 3,500	73	40	8 ~ 14	9.3	5
ChemCure® 351	Phenol-free, fast setting with good cosmetics	125 ~ 500	76	40	12 ~ 19	8.6	2

Modified Aliphatic Amines

Modified aliphatic amines are typically higher molecular weight polyamines that produce coatings with low vapor pressure and more practical mixing ratios. These products are specifically engineered for targeted applications such as chemical resistance, blush resistance, water spot resistance, adhesion, low color or combinations of these properties. Properties can be customized to your specific needs.

Product	Description	Viscosity cP @ 25°C	Amine H ⁺ Eq. Weight	PHR	Gel Time (minutes)	Density	Color Typical Gardner
ChemCure® 202	Low temperature and coal tar applications	3,000 ~ 4,500	44	24	13 ~ 16	8.9	2
ChemCure® 206	Good all-purpose curing agent	290 ~ 500	47	25	20 ~ 40	8.3	1
ChemCure® 211	Rapid cure amine	5,500 ~ 8,000	180	97	6 ~ 9	8.1	<1
ChemCure® 223	Fast cure with superior cosmetics	1,000 ~ 1,400	115	62	16 ~ 25	8.5	2
ChemCure® 228	Fast through cure modified aliphatic	1,800 ~ 2,200	84	45	10 ~ 12	8.3	2
ChemCure® 230	Extended pot life aliphatic	200 ~ 460	86	46	35 ~ 50	8.2	1
ChemCure® 232	Improved chemical resistance and properties	200 ~ 360	86	46	17 ~ 35	8.9	2
ChemCure® 237	Low color with good balance of properties	3,000 ~ 5,000	69	37	16 ~ 25	8.3	2
ChemCure® 238	Highly blush resistant amine	2,900 ~ 4,900	38	20	14 ~ 24	8.8	2
ChemCure® 239	Good adhesion and extremely flexible	1,000 ~ 2,000	204	110	18 ~ 35	8.5	1
ChemCure® 243	Use to greatly extend pot life	20 ~ 80	86	46	120 ~ 250	8.1	5
ChemCure® 245	Low color, fast return to service	80 ~ 180	93	50	12 ~ 36	8	2
ChemCure® 250 F	For high quality chemical resistant flooring, cures at cold temperatures	80 ~ 150	72	39	10 ~ 20	8.3	1
ChemCure® 250M	High chemical resistant flooring with lower cost	100 ~ 300	71	38	10 ~ 20	8.5	1
ChemCure® 253	Excellent high-gloss film formation with no induction time	2,000 ~ 4,000	106	57	40 ~ 80	8.6	7
ChemCure® 258	Low cost and low color fast curing amine	100 ~ 200	34	18	11 ~ 14	8.6	2
ChemCure® 260	Low viscosity cycloaliphatic amine that provides good cost-performance balance	200-600	95	51	20 - 35	8.7	7
ChemCure® 267	Classic decoupage curing agent	950 ~ 1,350	157	84	12 ~ 18	8.1	2

Modified Aliphatic Amines (continued)

Product	Description	Viscosity cP @ 25°C	Amine H ⁺ Eq. Weight	PHR	Gel Time (minutes)	Density	Color Typical Gardner
ChemCure® 270	Modifier for amidoamines and polyamides	200 ~ 400	95	51	6 ~ 9	8.1	2
ChemCure® 272	Long pot life curing agent for high gloss coatings	40 ~ 100	86	40	90 ~ 150	7.9	2
ChemCure® 273	High quality aliphatic flooring	100 ~ 150	91	48	15 ~ 25	8.5	1
ChemCure® 280	Superior chemical resistance properties	200 ~ 400	112	60	30 ~ 40	8.5	4
ChemCure® 284	Low temperature and damp concrete coatings	200 - 350	86	46	30 ~ 60	8.7	2
ChemCure® 289	Good cosmetics and chemical resistance	75 ~ 175	83	45	15 ~ 44	8.7	1
ChemCure® 295	Fast cure material for with good Tg properties	500 ~ 3,500	91	49	3 ~ 4.5	8.6	2
ChemCure® 396	Low blush with good chemical resistance	700 ~ 1,200	92.8	50	50 ~ 100	8.1	4

Tertiary Amines

Tertiary amines can be used to speed cure times in epoxy systems.

Product	Description	Viscosity cP @ 25°C	Density	Color Typical Gardner
ChemCure® A-39	Provides good acceleration at low use levels	900 ~ 1,100	11	2
ChemCure® A-40	Tertiary amine mixture	980 ~ 1,450	9	4
ChemCure® 240	Tertiary amine accelerator	120 ~ 250	8.2	2

Aliphatic Amines and Plasticizers

We offer a full palette of products to the epoxy formulator. Additional materials are also available upon request or in special circumstances.

Product	Description	Amine H Eq. Weight	Density	Color Typical Gardner	Assay (GC)
ChemCure® 1,3 BAC	1,3-Bis(aminomethyl)cyclohexane	35.5	7.8	<1	99% Min.
ChemCure® DETA	Diethylenetriamine	20.6	7.9	<1	99% Min.
ChemCure® TETA	Triethylenetetramine (1,400 ~ 1,500 Amine Value)	24.4	8.1	<1	N/A
ChemCure® TEPA	Tetraethylenepentamine (1,200 ~ 1,400 Amine Value)	27	8.3	<1	N/A
ChemCure® N-AEP	N-aminoethylenepiperazine	43	8.2	<1	98% Min.
ChemCure® MXDA	Meta-xylenediamine	34	8.6	<1	99% Min.
ChemCure® PPDA	Polyoxypropylene diamine	58	7.9	<1	97% Min.
ChemCure® IPDA	Isophoronediamine	42.5	7.7	<1	99% Min.
ChemCure® BA	Benzyl Alcohol	N/A	8.7	<1	99% Min.
ChemCure® NP	Para Nonylphenol	N/A	7.9	<1	90% Min.
ChemCure® Hyd MDA	Hydrogenated MDA	52.5	7.7	<1	99% Min.

Reactive Diluents

We are one of the leading domestic producers of reactive diluents. All materials produced utilize our state of the art facilities. This includes the use of our new Allen Bradley process control to automate our operations ensuring reliable supply and consistent quality.

Product	Description		Viscosity cPs @ 25°C	Epoxide Equivalent Weight	Gardner Color	Density
ChemMod® 8	C ₁₂ -C ₁₄ aliphatic glycidyl ether	Mono	7 ~ 12	275 ~ 295	1 Max.	7.7
ChemMod® 9	C ₁₂ -C ₁₃ aliphatic glycidyl ether	Mono	7 ~ 12	275 ~ 295	1 Max.	7.5
ChemMod® 32	Polypropylene glycol diglycidyl ether	Di	30 ~ 100	310 ~ 350	2 Max.	8.9
ChemMod® 36	Dipropylene glycol diglycidyl ether	Di	30 ~ 60	175 ~ 205	1 Max.	9.4
ChemMod® 44	Trimethylol ethane triglycidyl ether	Tri	200 ~ 300	130 ~ 170	2 Max.	10.0
ChemMod® 48	Trimethylol propane triglycidyl ether	Tri	100 ~ 250	125 ~ 150	3 Max.	9.6
ChemMod® 61	Butyl glycidyl ether	Mono	1 ~ 2	140 ~ 155	1 Max.	7.7
ChemMod® 62	O-Cresyl glycidyl ether	Mono	5 ~ 15	165 ~ 195	2 Max.	9.0
ChemMod® 65	Para tertiary butyl phenyl glycidyl ether	Mono	10 ~ 30	210 ~ 240	2 Max.	8.5
ChemMod® 67	1,4-Butanediol diglycidyl ether	Di	25 Max.	115 ~ 145	75 Max. (APHA)	9.3
ChemMod® 68	Neopentylglycol diglycidyl ether	Di	10 ~ 25	130 ~ 149	1 Max.	8.9
ChemMod® 107	Cyclohexanedimethanol diglycidyl ether	Di	50 ~ 100	154 ~ 168	2 Max.	9.2
ChemMod® 116	2-Ethylhexanol glycidyl ether	Mono	1 ~ 4	202 ~ 235	100 Max. (APHA)	7.6

Epoxy Resins

We do not manufacturer basic epoxy resin. Instead, we specialize in modifications of various types of resins to improve handling, improve performance or to craft products for specific customer applications. Not all products are listed.

Product	Description	Viscosity cPs @ 25°C	WPE	Gardner Color	Density
ChemRes™ 601 X75	Type 1 epoxy resin cut to 75% in xylene	Z4 ~ Z6	450 ~ 530	NV	9.1
ChemRes™ 610	Fast and flexible resin	1,000 ~ 2,000*	220 ~ 230*	2 Max.*	9.6
ChemRes™ 611	Acrylate Modified resin	850 ~ 1,150	290 ~ 320	3 Max.	9.5
ChemRes™ 612	Acrylate Modified resin	80 ~ 120	300 ~ 320	2 Max.	9.3
ChemRes™ 618	ChemRes™ 628 cut with ChemMod® 8	500 ~ 700	195 ~ 215	1 Max.	9.3
ChemRes™ 618 LC	Lower crystallization version of ChemRes™ 618	500 ~ 700	195 ~ 215	1 Max.	9.4
ChemRes™ 619	ChemRes™ 628 cut with ChemMod® 8	1,600 ~ 2,500	190 ~ 205	3 Max.	9.5
ChemRes™ 626	ChemRes™ 628 cut with ChemMod® 65	7,500 ~ 9,500	182 ~ 196	1 Max.	9.7
ChemRes™ 628	Bisphenol-A epoxy resin (standard grade)	11,000 ~ 15,000	180 ~ 192	1 Max.	9.7
ChemRes™ 634	Higher viscosity version of ChemRes™ 628	2,500 ~ 3,500**	220 ~ 250	2 Max.	9.8
ChemRes™ 635	Epoxy with better flow and leveling properties	500 ~ 650	200 ~ 300	Hazy	9.4
ChemRes™ 640	Bisphenol-F epoxy resin	3,000 ~ 7,000	160 ~ 175	1 Max.	9.8
ChemRes™ 661	ChemRes™ 628 cut with ChemMod® 61	500 ~ 700	175 ~ 195	3 Max.	9.5
ChemRes™ 662	ChemRes™ 628 cut with ChemMod® 62	700 ~ 1,100	175 ~ 195	3 Max.	9.3
ChemRes™ 664	Designed for flexible resin systems	1,500 ~ 2,500	200 ~ 220	2 Max.	9.3
ChemRes™ 695	Former XR 21-0295 Diluted Epoxy Novolac Resin	1,360 ~ 2,400	190 ~ 205	6 Max.	8.3
ChemRes™ 800	Designed to be used only with ChemCure® 400	1,600 ~ 2,600	190 ~ 210	Hazy	9.5
ChemRes™ 802	Designed to be used only with ChemCure® 401	1,600 ~ 2,600	190 ~ 220	Hazy	9.5

Note: Provisional specifications denoted by *
Viscosity for ChemRes™ 634 run at 60°C **

Polyaspartic Ester Resins

Our polyaspartic ester resin products are solvent-free, amine-functional reactive materials for polyisocyanates. They feature outstanding abrasion resistance and are UV stable. When used on direct to metal applications, it is highly recommended to use an epoxy primer base. An additional benefit is high build, which can improved return to service times. Materials can be used alone or blended to achieve specific cure times.

Product	Description	Viscosity cPs @ 25°C	APHA Color	Moisture %	Min. Gel Time	Density
ChemPoly™ 200	Fast reacting aspartic ester	50 ~ 200	250 Max.	0.05 Max.	< 2	8.9
ChemPoly™ 201	Medium reacting aspartic ester	700 ~ 2,000	100 Max.	0.11 Max.	20 ~ 30	8.8
ChemPoly™ 202	Slow reacting aspartic ester	200 ~ 2,000	250 Max.	0.05 Max.	> 240	8.8

Note: Values in gray are theoretical and do not represent actual specifications.

Surfactants

IsoDOSS products are anionic surfactants based on dioctyl sulfosuccinate chemistry. With a variety of concentrations and solvent modifiers, the IsoDoss products add wetting as well as emulsifying and dispersing properties for diverse conditions.

Product Name	Description
IsoDOSS 70 DG	Cost effective, highly efficient wetting agent
IsoDOSS 75E	Higher active propylene glycol version
IsoDOSS 70 DG	Cost effective, highly efficient wetting agent
IsoDOSS 75DG	Higher active diethylene glycol version
IsoDOSS 70E	Cost effective, highly efficient wetting agent
IsoDOSS 60IP	A highly effective wetting and penetrating agent; an efficient surface tension reducer

Dielectric Ester Fluids

Envirotemp™ dielectric ester fluids are used in power and distribution transformers. These fluids have a high flash and fire point which improves fire safety and can protect the insulation paper to extend transformer life. With their high temperature capability, Envirotemp™ ester fluids provide the flexibility for organizations to either increase load capability (up to 20%) with the same size transformer or maintain the same load capability through a smaller sized transformer.

Product	Description
Envirotemp™ FR3™ natural ester fluid	Made from renewable vegetable oils. 360°C fire point. Biodegradable. Non-toxic and non-hazardous in soil and water, carbon neutral.* Ideally suited for power and distribution transformers through 420kV
Envirotemp™ 200 synthetic ester fluid	Excellent thermal and lubricity properties. Ideally suited for free-breathing transformers and traction transformers. Biodegradable

*According to BEES 4.0 lifecycle analysis

Asphalt and Oilfield Solutions

Anova™ Asphalt Solutions is a full line of modifiers, rejuvenators, anti-strip additives, and emulsifiers. We not only have unique renewable chemistries to create new-to-the-world products, we have a fully functional asphalt binder analysis and applications lab to simulate real-life conditions such as aging, traffic loading, and environmental conditions. In addition, we provide technical support and formulation services. Anova Oilfield Solutions are used in crude oil drilling, production and transport.

Asphalt Solutions

Product	Description	Viscosity cSt @ 40°C	Flash Point Cleveland Open Cup, °C
Anova™ 1002 Modifier	Modifier with long-term, high-temperature stability and increased polymer compatibility	53	240
Anova™ 1003 Modifier	Polymer enhancing modifier with long-term, high-temperature stability	210	270
Anova™ 1055 Modifier	Rheology modifier for improving asphalt low-temperature performance grade and increasing penetration	60	240
Anova™ 1067 Modifier	Rheology modifier for improving asphalt low-temperature performance grade and increasing penetration	62	260
Anova™ 1210 Diluent	Cutback replacement	4 to 8	>100 (closed cup)
Anova™ 1220 Diluent	Cutback replacement	4 to 8	>100 (closed cup)

Product	Description	Viscosity cSt @ 25°C
Anova™ 1815 Rejuvenator	Rejuvenator for recycled bituminous material and aged pavement surfaces	90-110
Anova™ 1845 Rejuvenator	Rejuvenator for recycled bituminous material and aged pavement surfaces	400-500

Product	Description	Viscosity cSt @ 25°C
Anova™ 1400 Anti-Strip	Non-amine based, non-toxic antistrip additive	8,000-10,000
Anova™ 1410 Anti-Strip	Non-amine based, non-toxic antistrip additive	1,000-3,000
Anova™ 1620 Emulsifier	Liquid emulsifier for quick setting slurry seal and micro-surfacing applications	13,000-17,000
Anova™ 1630 Emulsifier	Liquid emulsifier for quick setting slurry seal and micro-surfacing applications, extended mix time and longer break time	6,000-13,000

Oilfield Solutions

Product	Description
Anova™ 9250 Imidazoline	Imidazoline for use in oilfield applications
Anova™ 9700 Foamer	A highly effective acid foamer used in cleaning products as a detergent and wetting agent, or in oilfield applications to produce foam in high brine and temperature conditions.

Product	Description	Viscosity
Anova™ 9575 Lubricant	Proprietary ester	380cP @ 25°C
Anova™ 9510 Lubricant	Proprietary ester	2,180cSt @40°C

Acme Mortar and Block Admixtures

For quality masonry construction, Cargill's ACME admixtures deliver a range of performance enhancements to mortar and concrete masonry units (CMUs). Acme admixtures help maintain the construction and design integrity of your building projects by repelling water, controlling efflorescence, reducing color bleeding and fading and increasing block and paver strength.

Product Name	Description
Acme Shield® Block and Mortar Admixture	A 100% active, integral water repellent, formulated from a proprietary blend of naturally occurring materials without the use of water or fillers. Helps control efflorescence; improves color distribution, reduces color bleeding and exhibits less fading
Acme Shield® Plus Admixture	A liquid combination water-repellent and plasticizer used in the production of CMUs, SRWs and pavers. Improves color distribution, reduces color bleeding and exhibits less fading; improves green strength and surface texture; reduces cycle times
Acme Shield® STO Admixture	A liquid combination water-repellent and plasticizer used in the production of CMUs, SRWs and pavers. Increases cement performance; improves color distribution, reduces color bleeding and exhibits less fading; improves green strength and surface texture; reduces cycle times
Acme Armor and Armor-S Admixtures	A silane-based admixture designed to provide water repellency and efflorescence control at a very low dosage. Armor-S is a swipe version of Acme Armor
Acme Hardscape Admixture	An integral, polymeric, liquid admixture designed for use in the manufacture of SRWs, pavers and block. Can be used for efflorescence control, water repellent or plasticizer. Improves color distribution, reduces color bleeding and exhibits less fading
Acme Hardscape Plus Admixture	An integral, polymeric, liquid admixture designed for use in the manufacture of SRWs, pavers and block for strength enhancement. Can be used for efflorescence control, water repellent or plasticizer. Improves color distribution, reduces color bleeding and exhibits less fading; better cement dispersion resulting in higher strengths
Acme Pave-Tite Admixture	A single-use admixture designed for more uniform quality concrete pavers and SRWs especially when finer sands are being utilized to make a tighter surface. Improves surface texture; increases strength and density; reduces the tearing and pulling associated with face-up block products and face and base pavers
Acme Ultra Mortar Admixture	Provides water repellency and efflorescence control; helps retard seepage through mortar joints and reduces efflorescence
Acme Plasticizer	Designed for more uniform quality concrete block, pipe, etc. Improves green strength and surface texture; reduces machine wear; reduces absorption; eliminates fine cracks; reduces culls and breakage in handling
Acme RTU and RTU-S Admixture	A ready-to-use plasticizer designed for the manufacture of concrete block, concrete pipe and other low to no slump concrete products. Acme RTU-S is a swipe variation of RTU. Improves green strength and surface texture; reduces machine wear; reduces absorption; eliminates fine cracks; reduces culls and chipping
Acme Aqua Plus Admixture	A ready-to-use strength and surface enhancing admixture designed to allow the addition of more water without increasing slump. It can be used in the manufacture of concrete block, pavers, concrete pipe and other low to no slump concrete products. Improves green strength and surface texture; reduces machine wear; reduces absorption; eliminates fine cracks; reduces culls and chipping; inhibits rust; provides uniform consistency and freeze-thaw stability
Acme Concrete Non-Stik Release Agent	A versatile release agent designed to provide easy release and mar-free surfaces for concrete batch mixers, precast and prestressed concrete forms, various pipe applications, septic tanks, burial vaults, etc. Reduces clean-up time; releases without discoloration; prevents concrete build up on forms
Pallet Slide Lubricant	A water soluble lubricant designed for automated block conveying systems. Reduces friction and wear on equipment; suppresses rust; minimizes staining of block in the kiln
Acme FT Durable 2 Admixture	An integral, polymeric, liquid admixture designed for use in the manufacture of SRWs; aids in the production of freeze/thaw resistant units. Improves color distribution, reduces color bleeding and exhibits less fading; acts as a water reducer and secondary plasticizer



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