

Wisconsin Department of Natural Resource Approved Drilling and Filling Sealing Products List including Heat Exchange Drillhole Products

Approval Date	Manufacturer or Distributor	Product Name	Materials(s)	Uses	Special Conditions
07/12/1994	Baroid Drilling Fluids, Inc.	"Aqua Guard Grout"	Granular bentonite (30-mesh) mixed with proprietary inorganic ingredients to delay swelling of granules &	High solids bentonite grout & annular space seal. For use where neat cement grout not required	May not be used where neat cement grout is the required seal
07/12/1994	Baroid Drilling Fluids, Inc.	"Quik Grout"	Granular bentonite (30-mesh) mixed with proprietary inorganic ingredients to delay swelling of granules &	High solids bentonite grout & annular space seal. For use where neat cement grout not required	May not be used where neat cement grout is the required seal (at least 18% solids)
04/27/2001	Baroid Industrial Drilling Products	"E-Z Mud Drilling Polymer"	Co-polymer viscosifying drilling fluid agent	Additive for well drilling fluids	May not be used in highly porous limestone or dolomite formations; nor as a replacement for bentonite drilling
04/04/2003	Baroid Industrial Drilling Products	"Mud-Gel"	Powdered drilling mud-type sodium bentonite (200-mesh) with 0.0125% polyacrylate polymer added	Rotary drilling mud clay; clay slurry ingredient	None
07/15/2003	Baroid Industrial Drilling Products	"Casing Seal"	Granular bentonite (8-14 mesh)	Clay slurry ingredient; lost circulation material for rotary-mud drilling; Seal for mounding around casing during driving	None
07/16/2003	Baroid Industrial Drilling Products	"Baroid Granular"	Granular bentonite (30-mesh)	Clay slurry ingredient; lost circulation material for rotary-mud drilling; Seal for mounding around casing during driving	None
01/26/2004	Baroid Industrial Drilling Products	"Barotherm"	High-solids, bentonite grout for heat-exchange drillholes	Grout, sealing or heat exchange material for closed- loop heat pump drillholes.	None – May also be used for water well
01/27/2004	Baroid Industrial Drilling Products	"N-Seal"	Extrusion spun mineral fiber	Lost circulation material	None
02/01/2004	Baroid Industrial Drilling Products	"Penetrol"	Non-ionic wetting agent	Drill fluid additive where air or air/foam drilling methods are used	None
04/08/2004	Baroid Industrial Drilling Products	"Aqua-Clear PFD"	Dry granular co-polymer viscosifying agent	Drilling fluid product to be added to mix water to improve drillhole stability for rotary mud-circulation drilling and to improve carrying capacity for air or air/foam drilling	May only be used as additive and <b>not</b> as complete replacement for rotary drilling mud. May <b>not</b> be used in highly porous limestone or dolomite
04/09/2004	Baroid Industrial Drilling Products	"E-Z Mud DP"	Dry granular co-polymer viscosifying agent	Drilling fluid product to be added to mix water to improve drillhole stability for rotary mud-circulation drilling and to improve carrying capacity for air or air/foam drilling	May only be used as additive and <b>not</b> as complete replacement for rotary drilling mud. May <b>not</b> be used in highly porous limestone or dolomite
07/09/2004	Baroid Industrial Drilling Products	"E-Z Seal"	High solids bentonite grout material (one-sack product)	High solids bentonite grout	Allowed only for low capacity private & non-community wells where neat cement grout not required.
09/12/2005	Baroid Industrial Drilling Products	"Quik-Trol"	Natural cellulosic polymer	Drilling fluid additive for water-based drilling fluids; And as an additive to be used for rotary-mud drilling fluid systems & for rotary air-foam drilling systems – to 'stiffen' the foam	None
09/13/2005	Baroid Industrial Drilling Products	"Quik-Trol LV"	Natural cellulosic polymer with a low molecular weight	Drilling fluid additive for water-based drilling fluid systems & as an additive for rotary-mud drilling fluid systems	None
09/20/2005	Baroid Industrial Drilling Products	"Poly-Bore"	100% dry granular polymer (PHPA)	Water based drilling fluid additive for reverse-rotary and horizontal directional drilling methods - designed to improve viscosity characteristics of drilling fluid & to help stabilize drillhole	None
08/19/2010	Baroid Industrial Drilling Products	"IDP-523" - Thermally Conductive Grout	High solids bentonite grout with silica sand added (One-sack grout)	Grout, sealing and heat exchange material for closed-loop heat pump drillholes.	None
08/20/2010	Baroid Industrial Drilling Products	"IDP-550" - Thermally Conductive Grout	High solids bentonite grout with silica sand added (One-sack grout)	Grout, sealing and heat exchange material for closed-loop heat pump drillholes.	None

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02/03/2009	Baroid Industrial Drilling Products (Halliburton)	"Quik-Trol Gold"	Natural cellulosic (PAC) polymer with a low molecular weight	Drilling fluid additive for water-based drilling fluid systems & as an additive for rotary-mud drilling fluid systems – for filtration control and	None
03/07/2011	Baroid Industrial Drilling Products (Halliburton)	"Quik Gel Gold"	Premium grade drilling mud-type sodium bentonite (200-mesh)	Rotary drilling mud clay; clay slurry ingredient	None
03/08/2011	Baroid Industrial Drilling Products (Halliburton)	"Quik-Trol Gold LV"	Natural cellulosic (PAC) polymer with a low molecular weight	Drilling fluid additive for water-based drilling fluid systems & as an additive for rotary-mud drilling fluid systems – for filtration control and	None
02/10/1994	Bentonite Corp.	"Opti Seal"	100% chipped sodium bentonite; 3/8" and 3/4" slow hydrating chips	Well, drillhole and pit abandonment	None
05/30/1989	Black Hills Bentonite Co.	"Tower Plug"	100% chipped bentonite - slow hydrating chips (both 3/8" and 3/4")	Well, drillhole and pit abandonment	None
11/07/2006	Black Hills Bentonite LLC	"Black Hills Bentonite Plug"	100 % Bentonite chips	Well, drillhole and pit abandonment	None
11/20/2009	Brenntag Great Lakes, LLC (Auer Steel, Distributor)	"Ethanol SDA-3C 200 Proof"	Ethanol alcohol antifreeze fluid with isopropyl alcohol as denaturing	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
06/28/1987	CETCO	"Volclay Grout" (see CETCO Grout) (Bentonite Grout)	Low yield bentonite single component bentonite grout - no additives (NSF Approved)	High solids bentonite grout for use where neat cement grout is not required	Allowed only where neat cement grout is not required - must be mixed according to product instructions
06/28/1987	CETCO	"CETCO Grout" (formerly "Volclay Grout") (Bentonite Grout)	Low yield bentonite single component bentonite grout - no additives	High solids bentonite grout for use where neat cement grout is not required	Allowed only where neat cement grout is not required - must be mixed according to product instructions
07/01/1987	CETCO	"Versafoam"	Anionic Surfactant composed of alkyl ether sulfate (ammonium salt)	For rotary drilling to help remove drill cuttings; but only in bedrock	None
05/17/1989	CETCO	"Volclay Chips" (See CETCO Chips")	100% chipped sodium bentonite-slow hydrating chips (medium 1/4-3/8") (coarse 3/8-3/4")	Well, drillhole and pit abandonment	None
05/17/1989	CETCO	"CETCO Chips" (Formerly	100% chipped sodium bentonite-slow hydrating chips (medium –1/4-3/8")	Well, drillhole and pit abandonment	None
05/19/1989	CETCO	"Volclay Crumbles" (see "CETCO Crumbles")	100% ground (8-20 mesh) granular sodium bentonite	Clay slurry ingredient & lost circulation material for rotary mud drilling	None
05/22/1989	CETCO	"Custom Seal Granular" (C/S Granular-Volclay)	100% ground (40-50 mesh) sodium bentonite (granular)	Clay slurry ingredient & lost circulation material for rotary-mud drilling; Seal for driving casing	None
07/13/1989	CETCO	"Super Gel-X"	High viscosity (200 bbl yield) powdered drilling mud-type sodium bentonite (200-mesh) with ½-1 lb./ton of sodium polyacrylate polymer added (NSF Approved)	Rotary drilling mud & clay slurry ingredient	See approval
07/17/1989	CETCO	"Premium Gel"	Powdered drilling mud-type sodium bentonite (200-mesh) with ½ -1 lb./ton of sodium polyacrylate polymer added; 90 bbl yield; API Drilling Fluid (NSF Approved)	Rotary drilling mud & clay slurry ingredient	None
07/16/1991	CETCO	"Pure Gold Grout"	Organic-free western sodium bentonite and proprietary mixture of sulfate (NSF Approved)	High solids bentonite grout for use where neat cement grout not required	None
07/18/1991	CETCO	"Pure Gold Gel"	Untreated powdered (200-mesh) drilling mud-type bentonite - additive free: 90 bbl yield - organic free (NSF	Rotary drilling mud clay; clay slurry ingredient esp. for environmental drilling	None
07/18/1991	CETCO	"Pure Gold Chips"	Sodium bentonite chips (Coarse 3/8-3/4" and medium 1/4-3/8")	Well, drillhole and pit abandonment	None

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05/19/1993	CETCO	"CETCO Crumbles" (Formerly "Crumbles" & "Volclay Crumbles")	100% ground (8-20 mesh) granular sodium bentonite (No additives) (NSF Approved)	Clay slurry ingredient; seal for driving casing and last circulation material for rotary mud drilling	None
05/19/1993	CETCO	"Crumbles" (Volclay) (see "CETCO Crumbles")	100% ground (8-20 mesh) granular sodium bentonite (No additives) (NSF Approved)	Clay slurry ingredient; seal for driving casing and last circulation material for rotary mud drilling	None
04/18/1996	CETCO	"BMR" (Bentonite Mud Remover)	Inorganic acid salt (NSF Approved)	Well Development - by breaking down bentonite mud & natural clays and by dispersing and suspending clay particles	None
05/23/1996	CETCO	"SC-200"	Non-ionic liquid surfactant wetting agent	Well rehabilitation; enhances dispersing efficiency of other well rehab products and for well	None
02/13/2012	CETCO	"CETCO Granular Grout"	Granular Bentonite with additives (NSF Approved)	Clay slurry ingredient; seal for driving casing and sealing material for geothermal drillholes.	None
03/28/2012	CETCO	"Clay Cutter Dry	Dry Polymer borehole stabilizer	Drilling mud additive to increase cuttings returns and reduce torque & drag when drilling reactive clay soils.	Mixed according to manufacturer's instructions
03/28/2012	CETCO	"Insta-Vis Dry"	Dry polymer viscosifying agent	Drilling fluid additive for both rotary mud and rotary air/foam drilling operations	May only be used as an additive and <b>not</b> as a complete replacement for rotary drilling mud
03/28/2012	CETCO	"Insta-Vis Plus"	Liquid polymer viscosifying agent	Drilling fluid additive for both rotary mud and rotary air/foam drilling operations	May only be used as an additive and <b>not</b> as a complete replacement for rotary drilling mud
02/07/2013	CETCO	"Shore Pac"	Dry polymer viscosifying agent	Drilling fluid additive for both rotary mud and rotary air/foam drilling operations	May only be used as an additive and <b>not</b> as a complete replacement for rotary drilling mud
08/05/2013	CETCO	"Velocity-Pro"	Powdered drilling mug-type sodium bentonite with polymer added. (NSF	Rotary drilling mud & clay slurry ingredient	None
06/07/2004	CETCO Drilling Products	"Geothermal Grout"	High-solids bentonite grout for heat exchange drillholes	Grout, sealing and heat exchange material for closed-loop heat pump drillholes.	None – May also be used for water well
02/13/2012	CETCO Drilling Products	"High TC Geothermal Grout"	High-solids bentonite grout for heat exchange drillholes	Grout, sealing and heat exchange material for closed-loop heat pump drillholes.	None
07/01/2019	CETCO	"TC Booster"	Graphite Flakes	Additive used to increase thermal conductivity in HEX grouts. Can also be used as a drilling mud additive to increase lubrication	None
08/12/2013	CETCO, Lost Circulation Specialists, MI SWACO	"Magma Fiber"	Extrusion spun mineral fiber	Lost circulation material	None
07/28/1993	CETCO; formerly Clear Well Sales, Inc.	"Clear Well Sediment and Mud Remover" (SR)	Phosphates	Dispersant for removing drilling mud, sediments and clays from wells during development	None
04/07/2020	CETCO	"Grounding Grout"	Conductive High Solids Bentonite	Low resistance grout for utility and telecommunication grounding	To be used only in Cathodic Protection or Grounding Drillholes.
06/09/2020	CETCO	CETCO Tablets, 1/4", 3/8", & 1/2"	High swelling sodium bentonite pellets	Chemically resilient, low permeability, bentonite pellets which create a flexible seal.	Approval required by the department on a case-by-case basis.
01/27/2014	Copeland®	"Copeland® Ultra 32-3MAF"	POE-32 Lubricant, >99% Plyol Ester with <1% additives	Lubricant for direct exchange heat pump systems	None
01/13/2018	Corey Oil	"Thermacool PG FG Heat Transfer Coolant" and "Thermacool PG FG Heat Transfer 50/50 Coolant"	Propylene Glycol with food grade additives	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	
06/11/2013	Covalent Laboratories	"ColdFLOW - PEG"	Propylene Glycol with inhibitors.	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None

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08/11/1998	Cowboy Mining Co.	"Cowboy Brand Bentonite Chips" (Fine, Medium and Coarse)	100% Bentonite Chips	Well, drillhole and pit abandonment	None
08/12/1998	Cowboy Mining Co.	"Cowboy Brand Granular Seal"	100% Granular Bentonite (8-mesh)	Clay slurry ingredient; casing sealing material for percussion drilling & lost circulation additive	None
08/13/1998	Cowboy Mining Co.	"Cowboy Brand Grout"	High Solids Bentonite Grout (100% Bentonite) (NSF-Approved)	High Solids Bentonite Grout – Allowed for low capacity wells when neat cement grout not	Mixed according to manufacturer's instructions
08/29/1989	Desert Drilling Fluids, Inc.	"Amfoam"	Anionic Surfactant	Foam for rotary drilling to help remove drill cuttings, but only for bedrock	See approval
01/30/1995	Desert Drilling Fluids, Inc.	"DDF Foamer"	Anionic Surfactant	Foam for rotary drilling to help remove cuttings, but only for bedrock	None
06/25/1990	Distributed by Economy Mud Products Co.	"Econoplug"	100% chipped sodium bentonite - slow hydrating chips; medium (1/4 - 3/8") & coarse (3/8 – 3/4")	Well, drillhole and pit abandonment	See instruction sheet
06/28/1990	Distributed by Economy Mud Products Co.	"Econoplug Grout"	High solids (30%) sodium bentonite grout material	High solids bentonite (clay) grout for use where neat cement grout is not required	Mud weight of 9.9 lbs/gal. - check for settling
06/29/1990	Distributed by Economy Mud Products Co.	"Poly-Gel"	Powdered, drilling mud-type bentonite (200-mesh) with ½ lb./ton	Rotary drilling mud clay; clay slurry ingredient	None
09/27/2012	Distributed by Industrial Solutions, Inc	"Eco-Smart HTF"	Propylene glycol based antifreeze fluid with corrosion inhibitor	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
06/29/1990	Distributed by International Drilling Fluids, Inc.	"Kwik-Ben"	Powdered, drilling mud-type bentonite (200-mesh) with ½ lb./ton proprietary polymer added (NSF)	Rotary drilling mud clay; clay slurry ingredient	None
11/20/2008	Dow Chemical Company	"DOWFROST"	Propylene glycol based antifreeze fluid with corrosion inhibitor	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
05/24/1996	Drilling Specialists Company	"Drispac"	Polyanionic cellulose	Drilling fluid additive to be added to clear water for drillhole stability	None
01/27/2014	DuPont™	"DuPont™ SUVA 410A"	R-410 Refrigerant - 50/50 mix of Pentafluoroethane (HFC-125) and Difluoroethane (R-32)	Liquid gas for direct exchange heat pump systems	Use of A1/B1 refrigerant for large systems may require registration with Dept. of Safety and Professional Services
01/23/1998	Federal Summit	"Hi-Yield Gel"	Powdered (200-mesh) drilling mud bentonite with proprietary additive @ 0.10-0.15%	Drilling mud; clay slurry ingredient	None
01/26/1998	Federal Summit	"Gel Supreme"	Untreated powdered (200-mesh) drilling	Drilling mud, clay slurry ingredient	None
01/26/1998	Federal Summit (Formerly M-1 Drilling Fluids)	"Kwik-Thik"	Powdered (200-mesh) bentonite for rotary drilling mud with proprietary ingredient at 0.10-0.15%	Drilling mud bentonite and clay slurry ingredient	None
01/26/1998	Federal Summit/MI SWACO	"Max-Gel"	Powered (200-mesh) drilling mud bentonite with proprietary additive @ 0.10-0.15%	Drilling mud; clay slurry ingredient	None
01/28/1998	Federal Summit/MI SWACO	"Kwik-Plug Coarse & Medium"	100% chipped sodium bentonite - coarse (3/4") medium (3/8")	Well, drillhole and pit abandonment	None
02/09/1998	Federal Summit/MI SWACO	"Kwik-Plug Fine"	Granular bentonite (8-mesh)	High Solids bentonite grout; Annular space seal for driving casing	None
02/09/1998	Federal Summit/MI SWACO	"Kwik-Plug Micro"	Granular bentonite (16-20 mesh)	High Solids bentonite grout; Annular space seal for driving casing	None

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05/26/1989	Fluidril Mud Systems (from Black Hills Bentonite)	"Well-Plug"	100% chipped bentonite - slow hydrating chips (both 3/8" & 3/4" chips)	Well, drillhole and pit abandonment	None
09/11/2009	Fremont Industries Water Management Solutions	"Fremont 9134FG; 9134FG-25D; 9134FG-30D; 9134FG-35D; 9134FG-40D; 9134FG-45D & EG9134-50G"	Propylene glycol-based antifreeze fluid with corrosion inhibitor	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
09/12/2001	Geo Pro, Inc. & Black Hills Bentonite, LLC	"BH <sup>20</sup> Grout"	High solids (20%) bentonite grout	Grout, sealing or heat exchange material for closed-loop heat pump drillholes.	None – May also be used for water well construction.
08/06/2002	Geo Pro, Inc. & Black Hills Bentonite, LLC	"BH Ultra"	High solids (20%) bentonite grout	Grout, sealing or heat exchange material for closed-loop heat pump drillholes.	None – May also be used for water well construction.
08/06/2002	Geo Pro, Inc. & Black Hills Bentonite, LLC	"Thermal Grout Lite"	High solids (20%) bentonite grout	Grout, sealing or heat exchange material for closed-loop heat pump drillholes.	None – May also be used for water well construction.
08/06/2002	Geo Pro, Inc. & Black Hills Bentonite, LLC	"Thermal Grout Select"	High solids (20%) bentonite grout	Grout, sealing or heat exchange material for closed-loop heat pump drillholes.	None – May also be used for water well construction.
10/06/2004	GeoPro, Inc.	"12/40 Granular"	Granular bentonite (100%)	Clay slurry ingredient; lost circulation material for rotary-mud drilling; Seal for mounding around casing during driving	None
10/06/2004	GeoPro, Inc.	"8/25 Granular"	Granular bentonite (100%)	Clay slurry ingredient; lost circulation material for rotary-mud drilling; Seal for mounding around casing during driving	None
10/11/2004	GeoPro, Inc.	"Bentonite Plug" (3/8-inch & 3/4-inch)	Bentonite chips (100%)	Well, drillhole and pit abandonment	None
10/21/2004	GeoPro, Inc.	"HYG 200 GEL"	Powdered, drilling mud-type bentonite (high yield) (200-mesh).	Rotary drilling mud clay; clay slurry ingredient	None
10/22/2004	GeoPro, Inc.	"Black Hills Gel"	Powdered, drilling mud-type bentonite (lower yield) (200-mesh).	Rotary drilling mud bentonite clay; clay slurry ingredient	None
12/03/2007	GeoPro, Inc.	"PowerTEC"	Graphite-based product	Additive for approved high solids bentonite grout, but only for closed-loop geothermal drillholes.	To be used only for geothermal drillholes, according to manufacturer's instructions.
03/21/2014	GeoPro, Inc.	"PowerTECx"	Graphite-based product	Additive for approved high solids bentonite grout, but only for closed-loop geothermal drillholes.	To be used only for geothermal drillholes, according to manufacturer's instructions.
01/30/2009	Halliburton (Baroid) Industrial Drilling Products	"AQF-2"	Anionic Surfactant	Foam for rotary drilling to help remove cuttings, but only for bedrock	None
02/02/2009	Halliburton (Baroid) Industrial Drilling Products	"Barotherm Plus"	High-solids thermally conductive bentonite grout for heat exchange drillholes.	Grout, sealing or heat exchange material for closed-loop heat pump drillholes.	None – May also be used for water well construction.
02/02/2009	Halliburton (Baroid) Industrial Drilling Products	"EZ Mud Gold"	Dry anionic polymer (beads) - viscosifying agent	Drilling fluid product to be added to mix water to improve drillhole stability for rotary mud-circulation drilling and to improve carrying capacity for air or air/foam drilling	May only be used as additive and <b>not</b> as complete replacement for rotary drilling mud. May <b>not</b> be used in highly porous limestone or dolomite
02/04/2009	Halliburton (Baroid) Industrial Drilling Products	"Quik Mud Gold"	Dry anionic polymer - viscosifying agent	Drilling fluid product to be added to mix water to improve drillhole stability for rotary mud-circulation drilling and to improve carrying capacity for air or air/foam drilling	May only be used as additive and <b>not</b> as complete replacement for rotary drilling mud. May <b>not</b> be used in highly porous limestone or dolomite
02/05/2009	Halliburton (Baroid) Industrial Drilling Products	"Quik Mud Gold"	Liquid copolymer – Partially hydrolyzed polyacrylamide-polyacrylate (PHPA) viscosifying agent	Drilling fluid product to be added to mix water to improve drillhole stability for rotary mud-circulation drilling and to improve carrying capacity for air or air/foam drilling	May only be used as additive and <b>not</b> as complete replacement for rotary drilling mud. May <b>not</b> be used in highly porous limestone or dolomite

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06/05/2009	Halliburton (Baroid) Industrial Drilling Products	"Barotherm Gold"	High-solids thermally conductive bentonite grout for heat exchange drillholes	Grout, sealing or heat exchange material for closed- loop heat pump drillholes.	None – May also be used for water well construction.
03/04/2011	Halliburton (Baroid) Industrial Drilling Products	"Barotherm Max"	High-solids thermally conductive bentonite grout for heat exchange drillholes. Contains carbonaceous additives, mainly graphite	Grout, sealing or heat exchange material for closed- loop heat pump drillholes.	May only be used for closed-loop geothermal drillholes
03/11/2011	Halliburton (Baroid) Industrial Drilling Products	"Bore-Grout"	High-solids thermally conductive bentonite grout for heat-exchange drillholes that are not vertical	Grout, sealing or heat exchange material for closed- loop heat pump geothermal drillholes.	May only be used for closed-loop geothermal drillholes that are not vertical.
08/01/2019	Halliburton (Baroid) Industrial Drilling Products	"BARAD-658"	Polymer Based Cement Additive	Cement Additive used to provide filtration control, friction reduction, and increased working time for cement grouts	Must obtain prior department approval before using. [NR 812.20(1)(a)]
07/26/2013	Hawkins, Inc.	"Chill Pro"	Propylene glycol-based antifreeze fluid with a sodium salt solution corrosion inhibitor and an organic acid additive for pH control	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
03/23/2011	Hercules Chemical Company	"Cryo-tek/AL"	Propylene glycol-based antifreeze fluid with a sodium salt solution corrosion inhibitor and an organic acid additive for pH control	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
03/01/2011	H-O-H Water Technology, Inc.	"PRO-KOOL 75M"	Propylene glycol based antifreeze fluid with a corrosion inhibitor, a buffering agent and a pH adjuster.	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
01/27/2014	Honeywell	"Honeywell Genetron® AZ-20"	R-410 Refrigerant - 50/50 mix of Pentafluoroethane (HFC-125) and Difluoroethane (R-32)	Liquid gas for direct exchange heat pump systems	Use of A1/B1 refrigerant for large systems may require registration with the Dept. of Safety and Professional Services
05/18/2007	Houghton Chemical Corporation	"Safe-T-Therm"	Propylene glycol based antifreeze fluid	Heat transfer fluid for closed-loop geothermal drillhole heat exchange systems	None
03/16/2011	Houghton Chemical Corporation	"GeoSafe 25"	Ethanol alcohol (ethyl alcohol) antifreeze fluid with denaturants and a phosphate additive for corrosion control (diluted form of "GeoSafe")	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
03/16/2011	Houghton Chemical Corporation	"GeoSafe"	Ethanol alcohol (ethyl alcohol) antifreeze fluid with denaturants and phosphate additive for corrosion control	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
04/09/1990	International Drilling Fluids, Inc.	"Interfoam"	Anionic surfactant	Foam for rotary drilling to help remove cuttings, but only in bedrock	None
10/15/2008	Interstate Chemical Co. Inc.	"Intercool P-323"	Propylene glycol based antifreeze fluid with corrosion inhibitor	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
07/01/2014	Interstate Chemical Co. Inc.	"Intercool Geotherm"	Propylene glycol based heat exchange fluid with corrosion inhibitors	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
07/01/2014	Interstate Chemical Co. Inc.	"Biogreen Geotherm"	Corn Sugar Derived Propylene glycol based heat exchange fluid with corrosion inhibitors	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
03/15/2011	Interstate Chemical Company	"PROCOOL"	Ethanol alcohol (ethyl alcohol) antifreeze fluid with a phosphate additive for corrosion control	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None

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02/02/2001	Loresco International, Inc.	"Loresco Type SC.3"	A base carbon material with a proprietary ingredient for reducing surface tension for compact settling under water	Conductive backfill material to surround anodes in a cathodic protection drillhole.	NR 812 requires prior department approval for a cathodic protection drillhole.
02/28/1990	Loresco. Distributed by Cathodic Engineering Equip. Co., Inc.	"Permaplug"	100% chipped sodium bentonite - slow hydrating chips; medium (1/4 - 3/8") & coarse (1/2 - 3/4")	Well, drillhole & pit abandonment	None
07/01/1992	Loresco; Distributed by Cathodic Engineering Equip. Co., Inc.	"EnviroCoke IV"	Conductive Carbon Grout; High temperature calcined petroleum coke	Grout for deep anode drillholes used for cathodic protection.	NR 812 requires prior department approval for a cathodic protection drillhole.
08/12/2013	Lost Circulation Specialists, CETCO, MI SWACO	"Magma Fiber"	Extrusion spun mineral fiber	Lost circulation material	None
01/27/2014	Lubrizol	"Lubrizol EMKARATE RL 32-3MAF"	POE-32 Lubricant, >99% Plyol Ester with <1% additives	Lubricant for direct exchance heat pump systems	None
07/18/1991	M-1 Drilling Fluids (Federal)	"Federal 200"; a.k.a. "Federal High Yield"	Powdered (200-mesh) drilling mud-type bentonite with proprietary ingredient additive @ 0.10-0.15%	Drilling mud bentonite; clay slurry ingredient	None
03/03/1993	M-1 Drilling Fluids (Federal)	"Federal Plug"	100% of chipped sodium bentonite - slow hydrating; medium (1/4" - 3/8") and coarse (3/8 - 3/4inch)	Well, drillhole and pit abandonment	See instruction sheet
03/03/1993	M-1 Drilling Fluids (Federal)	"Federal-BP-8"	100% Granular sodium Bentonite (8-20 mesh)	Clay slurry ingredient - sealant for driving casing; lost circulation material	None
03/05/1993	M-1 Drilling Fluids (Federal)	"Federal Granular"	100% Granular sodium Bentonite (~48-150 mesh)	Clay slurry ingredient - sealant for driving casing; lost circulation material	None
07/30/2013	MI SWACO	"Smooth Grout Thermal"	High-solids thermally conductive bentonite grout for heat-exchange drillholes.	Grout, sealing or heat exchange material for closed- loop heat pump geothermal drillholes.	May only be used for closed-loop geothermal drillholes.
08/15/2013	MI SWACO	"Platinum Pac"	Polyanionic cellulose	Water-based mud drilling fluid additive.	May only be used as an additive and <b>not</b> as a complete replacement for rotary drilling mud.
08/15/2013	MI SWACO	"Platinum Pac UL"	Carboxymethyl cellulose	Water-based mud drilling fluid additive.	May only be used as an additive and <b>not</b> as a complete replacement for rotary drilling mud.
08/15/2013	MI SWACO	"Platinum Foam Plus"	Foaming Agent	Drill fluid additive to help remove drill cuttings, <b>but only in bedrock drilling using air rotary</b>	None
08/15/2013	MI SWACO	"Poly Plus Liquid"	Synthetic Polymer	Drilling fluid additive to enhance the properties of mud-based drilling fluids.	May only be used as an additive and <b>not</b> as a complete replacement for rotary drilling mud.
08/15/2013	MI SWACO	"Poly Plus LV"	Acrylamide copolymer	Drilling fluid additive to enhance the properties of mud-based drilling fluids.	May only be used as an additive and <b>not</b> as a complete replacement for rotary drilling mud.
08/15/2013	MI SWACO	"Ringfree"	Acrylic Polymer	Drilling mud thinner.	May only be used as an additive and <b>not</b> as a complete replacement for rotary drilling mud.
05/06/2008	MI SWACO HDD Mining and Water Well Group	"Gopher Grout"	High solids bentonite grout (NSF Certified)	Bentonite grout. Allowed for low capacity wells where neat cement grout is not required.	Mud weight at least 9.4 lbs/gal.
05/06/2008	MI SWACO HDD Mining and Water Well Group	"Smooth Grout 20"	High solids bentonite grout (NSF Certified)	Bentonite grout. Allowed for low capacity wells where neat cement grout is not required.	Mud weight at least 9.4 lbs/gal.
05/06/2008	MI SWACO HDD Mining and Water Well Group	"Smooth Grout 30"	High solids bentonite grout (NSF Certified)	Bentonite grout. Allowed for low capacity wells where neat cement grout is not required.	Mud weight at least 10.0 lbs/gal.

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Approval Date	Manufacturer or Distributor	Product Name	Materials(s)	Uses	Special Conditions
08/12/2013	MI SWACO, CETCO, Lost Circulation	"Magma Fiber"	Extrusion spun mineral fiber	Lost circulation material	None
07/01/1973	N. L. Baroid	"Quik Foam"	Anionic surfactant composed of alkyl ether sulfate (ammonium salt)	For rotary drilling to help remove drill cutting, but only in bedrock	None
04/08/1988	N. L. Baroid	"Aquagel Gold Seal"	Untreated 100% drilling mud sodium bentonite (powder)(200-mesh)	Rotary drilling mud clay; clay slurry ingredient	None
04/08/1988	N. L. Baroid	"Drilfoam"	Anionic surfactant composed of alkyl ether sulfate (ammonium salt)	For rotary drilling to help remove drill cuttings, but only in bedrock	See approval
05/05/1988	N. L. Baroid	"Quik Gel"	Premium grade drilling mud-type sodium bentonite (200-mesh) with 0.11% sodium polyacrylate polymer	Rotary drilling mud clay; clay slurry ingredient	None
05/19/1988	N. L. Baroid	"Aquagel"	Powdered drilling mud-type sodium bentonite (200-mesh) with 0.0125% polyacrylate polymer added	Rotary drilling mud clay; Clay slurry ingredient	See approval
05/22/1988	N. L. Baroid	"Zeogel"	Ground attapulgitic clay - magnesium aluminum silicate ("Fuller's Earth") (a.k.a. sweeping compound)	Rotary drilling mud clay for drilling information with high salt content	None
12/12/1988	N. L. Baroid	"Benseal"	100% coarsely-ground (8-mesh) sodium bentonite	Clay slurry ingredient; lost circulation material for rotary-mud drilling; Seal for mounding around casing during driving	None
01/02/1989	N. L. Baroid	"Holeplug"	100% chipped sodium bentonite; 3/8" and 3/4" slow hydrating chips	Well, drillhole and pit abandonment	See instruction sheet
04/22/1989	N. L. Baroid	"Micatex"	Muscovite mica (fluorophlogopite) flakes (powder to small grain)	Restore circulation of rotary drilling fluid after last circulation occurs	To be used only as a last resort to restore circulation
07/08/1993	N.L. Baroid	"AquaGrout Catalyst" a.k.a. "Benseal-AquaGrout Catalyst"	Granular bentonite mixed with a catalyst composed of four inorganic ingredients	High solids bentonite grout. For use where neat cement grout is not required	Allowed only for low capacity private & non-community wells where neat cement grout not required.
04/16/2010	Noble Company	"NOBURST HD 100"	Monopropylene (Propylene glycol) - based antifreeze fluid with corrosion inhibitor and defoaming agent	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
04/19/2010	Noble Company	"NOBURST HD	Monopropylene (Propylene glycol) - based antifreeze fluid with corrosion inhibitor and defoaming agent	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
04/20/2010	Noble Company	"NOBURST HD 50%"	Monopropylene (Propylene glycol) - based antifreeze fluid with corrosion inhibitor and defoaming agent	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
03/02/2011	NU-Calgon	"Freez-kontr'l"	Propylene glycol-based antifreeze fluid with corrosion inhibitor	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
01/27/2014	Nu-Calgon	"Nu-Calgon EMKARATE RL 32-3MAF"	POE-32 Lubricant, >99% Plyol Ester with <1% additives	Lubricant for direct exchange heat pump systems	None
07/01/2019	nVent	"ERICO GEM"	Portland Cement with a proprietary blend of calcined petroleum coke and bentonite.	Cement based Grounding Material for Cathodic Protection Drillholes	none
05/02/2019	nVent	"Quickfill"	Calcined Petroleum Coke	Grounding Material for Cathodic Protection Drillholes	Must be used in conjunction with Neat cement or bentonite grout.
01/27/2014	Parker	"Parker EMKARATE RL 32-3MAF"	POE-32 Lubricant, >99% Plyol Ester with <1% additives	Lubricant for direct exchange heat pump systems	None
03/20/2012	Pharmco-aaper	"Exoendosol 101"	Ethanol alcohol antifreeze fluid with denaturing and lubricant additives	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None



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07/24/1989	Polymer Drilling System (PdsCo)	"PdsCo Granular"	100% ground (8-20 mesh) granular sodium bentonite	Clay slurry ingredient & lost circulation material for rotary mud drilling	None
07/23/1989	Polymer Drilling Systems (PdsCo)	"PdsCo Plug"	100% chipped sodium bentonite slow hydrating chips (coarse 3/4") (medium 3/8")	Well, drillhole & pit abandonment	None
07/24/1989	Polymer Drilling Systems (PdsCo)	"PdsCo High Yield"	Powdered drilling mud-type sodium bentonite (200-mesh) with 2-3 lbs/ton of sodium polyacrylate	Rotary drilling mud & clay slurry ingredient	See approval
03/13/1996	Polymer Drilling systems (PdsCo)	"PdsCo Grout"	High Solids Bentonite Grout (NSF Approved)	High solids bentonite grout-allowed for low capacity wells where neat cement grout not	Mixed according to manufacturer's instructions
01/30/2009	Rhomar Water Management, Inc.	"RhoGard Ultra DP"	Non-toxic propylene glycol based antifreeze fluid.	Heat transfer fluid for ground-coupled, closed-loop geothermal heat exchange systems	None
02/27/2009	Rhomar Water Management, Inc.	"EnviroGard"	Non-toxic propylene glycol based antifreeze fluid.	Heat transfer fluid for ground-coupled, closed-loop geothermal heat exchange systems	None
09/22/2014	SAE Inc	"Conducrete"	Portland Cement and Coke Breeze	Conductive backfill material to surround anodes in a cathodic protection drillhole.	NR 812 requires prior department approval for a cathodic protection drillhole.
12/22/1989	Several brands	"Detergent; liquid dishwashing-food grade"	Liquid surfactant	Cleaning wells contaminated with PCB oils from submersible pumps and capacitors	Food grade; no additives-like color or scent additives
11/08/2012	Shamrock Chicago Corp	"Rockfrost HD"	Propylene glycol based antifreeze fluid with corrosion inhibitor and coloring dye	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
11/08/2012	Shamrock Chicago Corp	"Shamrock Lo Tox Antifreeze"	Propylene glycol based antifreeze fluid with corrosion inhibitor and coloring dye	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
11/08/2012	Shamrock Chicago Corp	Champion RV Antifreeze Minus 100	Propylene glycol based antifreeze fluid with corrosion inhibitor and coloring dye	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
12/08/2009	SuperGrout Products, LLC	"Geo SuperGrout"	Cementitious grout containing Portland Cement and other cement	Grouting material for closed-loop, heat exchange drillholes.	None
04/30/2013	UTILITY Manufacturing Company	"No-Freez"	Propylene Glycol with inhibitors and dye	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
04/30/2013	UTILITY Manufacturing Company	"Polar Grade No-Freez"	Propylene Glycol with inhibitors and dye	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
04/30/2013	UTILITY Manufacturing Company	"Super Polar Grade No-Freez Concentrate"	Propylene Glycol with inhibitors and dye	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
01/27/2014	Virginia	"Virginia EMKARATE RL 32-3MAF"	POE-32 Lubricant, >99% Polyol Ester with <1% additives	Lubricant for direct exchange heat pump systems	None
09/18/2009	WaterFurnace International	"Environol"	Non-toxic ethanol (grain) alcohol-based antifreeze fluid with additives for lubrication, denaturing and coloring	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
11/25/2009	Wausau Chemical Corporation	"Heat Transfer Fluid- PG-ND"	Propylene glycol-based antifreeze fluid with corrosion inhibitor	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
02/09/2010	Wausau Chemical Corporation	"Heat Transfer Fluid HTF-PG-HD"	Propylene glycol-based antifreeze fluid with two corrosion inhibitors	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
04/28/2011	Wausau Chemical Corporation	"Geo Blend IP"	Ethanol alcohol (ethyl alcohol) antifreeze fluid containing isopropyl alcohol, an acetate denaturant and a green dye	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None

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05/11/2012	Wausau Chemical Corporation	"Geo Blend PG"	Propylene glycol antifreeze fluid containing a denaturant and dye.	Heat exchange transfer fluid for closed-loop geothermal heat exchange heating/cooling systems	None
09/18/1991	Wyo-Ben, Inc.	"Naturpel"	Chipped sodium bentonite	Well, drillhole & pit abandonment.	None
02/04/1997	Wyo-Ben, Inc.	"Grout-Well DF"	Same as above except grout uses granular.	Bentonite grout. Allowed for low capacity wells where neat cement grout is not required.	Mud weight at least 9.4 lbs/gal.
02/04/1997	Wyo-Ben, Inc.	"Grout-Well"	High solids bentonite grout (NSF Approved)	Bentonite grout. Allowed for low capacity wells where neat cement grout is not required.	Mud weight at least 9.4 lbs/gal.
04/30/2003	Wyo-Ben, Inc.	"Wyo-Vis"	Liquid polymer viscosifying agent	Drilling fluid additive for both rotary mud and rotary air/foam drilling operations	None
05/01/2003	Wyo-Ben, Inc.	"Dril-Sol"	Surfactant-based drilling fluid additive	For rotary drilling operations where air or air/foam drilling methods are allowed	None
05/02/2003	Wyo-Ben, Inc.	"Uni-Drill"	Liquid polymer drilling fluid additive	Drill fluid additive where air or air/foam drilling methods are used	None
05/15/2003	Wyo-Ben, Inc.	"TD-16"	Coated granular bentonite grouting material	High solids bentonite grouting for use where neat cement grout is not required; And for a sealing and heat exchange material for closed-loop heat pump	None
05/22/2003	Wyo-Ben, Inc.	"Plug-It"	Coated granular bentonite (8 to 40 mesh)	Clay slurry ingredient; casing sealing material for percussion drilling & a lost circulation additive for rotary drilling	None
05/23/2003	Wyo-Ben, Inc.	"Plug-It Max"	Coated granular bentonite (4 to 16 mesh)	Clay slurry ingredient; casing sealing material for percussion drilling & a lost circulation additive for rotary drilling	None
07/01/2004	Wyo-Ben, Inc.	"Thin-It"	Polymeric drilling fluid additive and well development dispersant.	Drilling fluid additive - to reduce viscosity; or Well development dispersant - to help remove clay and sediment from a well	As a drilling additive, may be used where air/foam drilling methods are allowed, or in drilling mud but only if drill mud slurry is replaced with neat cement grout at well completion
03/17/2010	Wyo-Ben, Inc.	"Therm-Ex Grout"	High solids geothermal bentonite grout	Grout, sealing or heat exchange material for closed- loop heat pump drillholes.	None
03/18/2010	Wyo-Ben, Inc.	"Therm-Ex Grout Plus"	High solids geothermal bentonite grout	Grout, sealing or heat exchange material for closed- loop heat pump drillholes.	None
05/18/1989	Wyo-Ben, Inc.	"Enviroplug"	100% chipped sodium bentonite, slow hydrating, chips (medium 1/4- 3/8" & coarse 3/8 - 3/4")	Well, drillhole & pit abandonment	See instruction sheet
08/29/1989	Wyo-Ben, Inc.	"Air Foam"	Anionic Surfactant-alkyl ether sulfate	For rotary drilling to help remove drill cuttings, but only for bedrock	None
06/29/1990	Wyo-Ben, Inc.	"Enviroplug Grout"	High solids (30%) sodium bentonite grout material	High solids bentonite (clay) grout for use where neat cement grout is not required	Mud weight of 9.9 lbs/gal. - check for settling
06/29/1990	Wyo-Ben, Inc.	"Enviroplug No. 8"	100% coarsely-ground (8-mesh) granular sodium bentonite	Clay slurry ingredient; lost circulation material for rotary-mud drilling	None
06/29/1990	Wyo-Ben, Inc.	"Hydrogel"	Powdered, drilling mud-type bentonite (200-mesh) with 1/4 - 1/3 lb/ton polyacrylate polymer	Rotary drilling mud clay; clay slurry ingredient	See approval
09/18/1991	Wyo-Ben, Inc.	"Enviroplug No. 16"	100% coarsely-ground (16-mesh) (granular) sodium bentonite	Clay slurry ingredient; bentonite grout ingredient; lost circulation material for rotary mud drilling	None
09/18/1991	Wyo-Ben, Inc.	"Extra High Yield"	Powdered drilling mud-type sodium bentonite (200-mesh) with 2-3	Rotary drilling mud & bentonite slurry ingredient	None
09/18/1991	Wyo-Ben, Inc.	"Naturalgel"	Powdered (200-mesh) western sodium bentonite (montmorillonite)	Rotary drilling mud clay; clay slurry ingredient	None