



Proposed WFN12JHSM Hydraulic Fracturing Fluid Additives

Ingredients	Chemical Abstract Service Number (CAS #)	% of Total Usage (by Mass)
Water	7732-18-5	83.15095%
Crystalline Silica in the form of Quartz	14808-60-7	16.60940%
Hydrogen chloride	7647-01-0	0.03172%
Methyl alcohol	67-56-1	0.00039%
N,N-Dimethylformamide	68-12-2	0.00006%
Ethylene glycol	107-21-1	0.00011%
2-Butoxyethanol	111-76-2	0.00003%
Poly(oxy-1,2-ethanediyl), .alpha.-(4-nonylphenyl)-.omega.-hydroxy-, branched	127087-87-0	0.00003%
Tar Bases, quinoline derivs, benzyl chloride-quat	72480-70-7	0.00003%
Cinnamaldehyde	104-55-2	0.00003%
Citric acid	77-92-9	0.00040%
Glutaraldehyde	111-30-8	0.00205%
Didecyl dimethyl ammonium chloride	7173-51-5	0.00031%
Quaternary Ammonium Compounds	68424-85-1	0.00031%
Ethanol	64-17-5	0.00015%
AA/ATBS Co-polymer	9003-05-8	0.00149%
AA/Maleic Anhydride Co-polymer	9003-04-7	0.00149%
Acrylamide-Chloride Salt of Trimethylammonio-Ethyl Acrylate Copolymer	69418-26-4	0.04846%
Alkanes, C12-26-Branched and Linear	90622-53-0	0.04846%
Ethoxylated Alcohols (C12-16)	68551-12-2	0.00606%

Prepared: October 2025



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Water	7732-18-5	83.17609%
Crystalline Silica in the form of Quartz	14808-60-7	16.60940%
Hydrogen chloride	7647-01-0	0.03172%
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N,N-Dimethylformamide	68-12-2	0.00006%
Ethylene glycol	107-21-1	0.00011%
2-Butoxyethanol	111-76-2	0.00003%
Poly(oxy-1,2-ethanediyl), .alpha.-(4-nonylphenyl)-.omega.-hydroxy-, branched	127087-87-0	0.00003%
Tar Bases, quinoline derivs, benzyl chloride-quat	72480-70-7	0.00003%
Cinnamaldehyde	104-55-2	0.00003%
Citric acid	77-92-9	0.00040%
Glutaraldehyde	111-30-8	0.00205%
Didecyl dimethyl ammonium chloride	7173-51-5	0.00031%
Quaternary Ammonium Compounds	68424-85-1	0.00031%
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AA/Maleic Anhydride Co-polymer	9003-04-7	0.00149%
Acrylamide-Chloride Salt of Trimethylammonio-Ethyl Acrylate Copolymer	69418-26-4	0.04846%
Alkanes, C12-26-Branched and Linear	90622-53-0	0.04846%
Ethoxylated Alcohols (C12-16)	68551-12-2	0.00606%



Proposed WFN12GHSM Hydraulic Fracturing Fluid Additives

Ingredients	Chemical Abstract Service Number (CAS #)	% of Total Usage (by Mass)
Water	7732-18-5	83.17609%
Crystalline Silica in the form of Quartz	14808-60-7	16.60940%
Hydrogen chloride	7647-01-0	0.03172%
Methyl alcohol	67-56-1	0.00039%
N,N-Dimethylformamide	68-12-2	0.00006%
Ethylene glycol	107-21-1	0.00011%
2-Butoxyethanol	111-76-2	0.00003%
Poly(oxy-1,2-ethanediyl), .alpha.-(4-nonylphenyl)-.omega.-hydroxy-, branched	127087-87-0	0.00003%
Tar Bases, quinoline derivs, benzyl chloride-quat	72480-70-7	0.00003%
Cinnamaldehyde	104-55-2	0.00003%
Citric acid	77-92-9	0.00040%
Glutaraldehyde	111-30-8	0.00205%
Didecyl dimethyl ammonium chloride	7173-51-5	0.00031%
Quaternary Ammonium Compounds	68424-85-1	0.00031%
Ethanol	64-17-5	0.00015%
AA/ATBS Co-polymer	9003-05-8	0.00149%
AA/Maleic Anhydride Co-polymer	9003-04-7	0.00149%
Acrylamide-Chloride Salt of Trimethylammonio-Ethyl Acrylate Copolymer	69418-26-4	0.04846%
Alkanes, C12-26-Branched and Linear	90622-53-0	0.04846%
Ethoxylated Alcohols (C12-16)	68551-12-2	0.00606%



Proposed WFN12FHSM Hydraulic Fracturing Fluid Additives

Ingredients	Chemical Abstract Service Number (CAS #)	% of Total Usage (by Mass)
Water	7732-18-5	83.09811%
Crystalline Silica in the form of Quartz	14808-60-7	16.66217%
Hydrogen chloride	7647-01-0	0.03172%
Methyl alcohol	67-56-1	0.00039%
N,N-Dimethylformamide	68-12-2	0.00006%
Ethylene glycol	107-21-1	0.00011%
2-Butoxyethanol	111-76-2	0.00003%
Poly(oxy-1,2-ethanediyl), .alpha.-(4-nonylphenyl)-.omega.-hydroxy-, branched	127087-87-0	0.00003%
Tar Bases, quinoline derivs, benzyl chloride-quat	72480-70-7	0.00003%
Cinnamaldehyde	104-55-2	0.00003%
Citric acid	77-92-9	0.00040%
Glutaraldehyde	111-30-8	0.00205%
Didecyl dimethyl ammonium chloride	7173-51-5	0.00031%
Quaternary Ammonium Compounds	68424-85-1	0.00031%
Ethanol	64-17-5	0.00015%
AA/ATBS Co-polymer	9003-05-8	0.00149%
AA/Maleic Anhydride Co-polymer	9003-04-7	0.00149%
Acrylamide-Chloride Salt of Trimethylammonio-Ethyl Acrylate Copolymer	69418-26-4	0.04846%
Alkanes, C12-26-Branched and Linear	90622-53-0	0.04846%
Ethoxylated Alcohols (C12-16)	68551-12-2	0.00606%