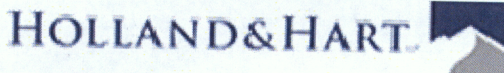


Goetze, Phillip, EMNRD

From: Michael Feldewert <MFeldewert@hollandhart.com>
Sent: Monday, May 21, 2018 10:11 AM
To: Goetze, Phillip, EMNRD
Cc: Brooks, David K, EMNRD; McMillan, Michael, EMNRD; Dawson, Scott, EMNRD; Justin_Morris@oxy.com; Guest, Lauren B; Sarah_Mitchell@oxy.com
Subject: Case 16159: Oxy's Pressure Maintenance Project (Smokey Bits State Com No. 2H well)
Attachments: TK-15.pdf

Mr. Goetze: Attached please find the specifications on the tubing identified in the wellbore diagram presented and discussed at the May 17th Division hearing on Case 16159. Thank you for your attention to this matter and let me know if you need anything else.

Michael H. Feldewert
Santa Fe Office
505-988-4421
505-983-6043 (fax)
mfeldewert@hollandhart.com



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TK™-15

TK™-15 is a thick film, high performance modified Novolac coating formulated for critical environments containing high water cuts, including CO₂ where improved mechanical properties would be advantageous. The modified Novolac resin system, utilized in the TK-15 produces a material with significantly improved flexibility and impact resistance over standard 300°F novolac resin systems without sacrificing chemical resistance. In addition, TK-15 maintains the inherent abrasion and acids resistance normally found in materials of the same type. By providing a wider range of chemical resistance and improved performance, relative to damage resistance and field handling, TK-15 is the best choice for a wide variety of downhole and flow line applications.

Specifications

Type	Modified Novolac (Powder)
Color	Dark Green
Temperature	300°F (149°C)
Pressure	To yield strength of pipe
Applied Thickness	10–18 mils (254–457 µm)
Primary Applications	Production tubing, water and CO ₂ injection, disposal wells and flow lines.
Primary Service	Oil, natural gas, fresh and salt water, sweet corrosion (CO ₂), mild H ₂ S and alkaline service to pH 12.
Limited Service	Maximum operating temperature and H ₂ S level will be dependent on total operating environment.

Stimulation Fluids:

When stimulation fluids are charged through coated tubing, there is generally little effect if the fluids are flushed completely through the tubular. However, some organic acids, caustic and solvents may have a detrimental effect on certain organic coating systems and should be evaluated prior to use. If stimulation fluids are left in the tubing, they can reach formation temperature and cause accelerated attack on the coating. A Tuboscope representative should be consulted when stimulation is contemplated.

Sample of Testing Capabilities:

Thermal Analysis

- Differential Scanning Calorimeter (DSC)
- Thermomechanical Analysis (TMA)
- Thermogravimetric Analysis (TGA)

Spectroscopy

- Fourier Transform Infrared Spectrophotometer
- Electrochemical Impedance Spectroscopy (EIS)
- Contact Angle

Chromatography

- Gel Permeation Chromatograph (SEC)
- High Performance Liquid Chromatograph
- Gas Chromatograph

Additional Physical/Chemical Testing

- High Pressure Autoclaves
- Microscope Analysis
- Immersion Testing
- Flow Loop Analysis

Product Development

- Lab Compounding Capabilities

