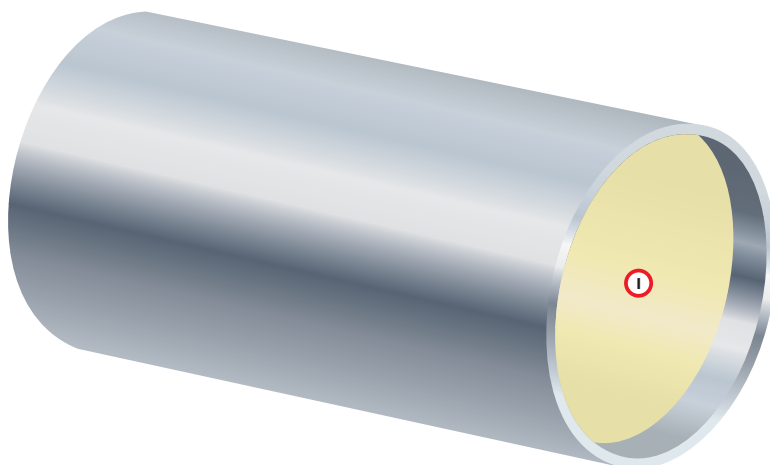


ARABIAN PIPECOATING COMPANY

Internal FBE

Internal FBE Lining



I FBE Coating

PRODUCT DESCRIPTION

Internal FBE is a plant applied internal lining designed for internal corrosion protection for steel pipelines or where a smooth steel surface is required to improve laminar flow to reduce friction and compression costs. Internal FBE has a track record of successful long term service in water injection, wet and disassociated sour and corrosive service.

FEATURES AND BENEFITS

- **High pressure service**
- **Corrosion protection**
- **Improves laminar flow**
- **Prevents carbon accumulation on pipe wall**
- **Suitable for custom coating application**

PARTIAL PROJECT LIST

PROJECT	LENGTH (')	DIAMETER (")	LOCATION	YEAR
Saudi Aramco Khurais - Project	401.5	16, 36, 56, 60	Saudi Arabia	2006-07
Saudi Aramco Khursaniyah Project	328.1	8, 10, 12, 16, 20, 24, 36	Saudi Arabia	2006-07
Saudi Aramco Maintain Potential	30.4	12	Saudi Arabia	2006
Saudi Aramco Maintain Potential	42.4	16	Saudi Arabia	2006
Saudi Aramco Sea Water Transfer Line to UWIPS-3	35.7	42	Saudi Arabia	2006 Ongoing
Saudi Aramco Drilling Dept.	200.2	--	Saudi Arabia	2005
Saudi Aramco Haradh Increment III	93.5	32, 60	Saudi Arabia	2004-05

PRODUCT DATA SHEET



Oil & Gas pipelines



Large diameter pipelines



Small diameter pipelines



Water injection pipelines





Internal FBE



APCO Offices

Khobar

P.O. Box 106, Al-Khobar 31952
Saudi Arabia
Telephone: +966-13-882-2933
Fax: +966-13-882-2487

Bahrain

Bldg. 1579, Flat 11, Road 80
Abu Saiba 473
Budaiya, Bahrain
Telephone: +973-17-592-162
Fax: +973-17-592-163

APCO Plants

Jubail

P.O. Box 834, Jubail 31951
Saudi Arabia
Telephone: +966-13-362-0543
Fax: +966-13-362-3815

www.apco-coating.com

APCO_PDS_IC_FBE_rev011

TYPICAL PLANT CAPABILITIES

PROPERTY	Internal FBE
Minimum Internal Pipe Diameter	51 mm (2")
Maximum Internal Pipe Diameter	1829 mm (72")
Minimum Pipe Length	10.5 m (34')
Maximum Pipe Length	15 m (49')
Residual Surface Chlorides	< 15 mg/m ²
Compressed Air Supply	No Moisture / No Oil
Surface Profile	> 85 microns
Surface Finish	Near White Metal Sa3

TYPICAL COATING PROPERTIES

PROPERTY	Test Standard	Internal FBE
Minimum Operating Temperature		-40°C (-40°F)
Maximum Operating Temperature		110°C (392°F)
Glass Transition Temperature	CAN/CSA.Z245.20	105°C
Impact	ASTM G14 M	Pass 160 in-lb
Hot Water Soak 48 hours @ 75°C	CAN/CSA.Z245.20	Rating I
Flexibility	09-SAMSS-09 I	5.4° / PD

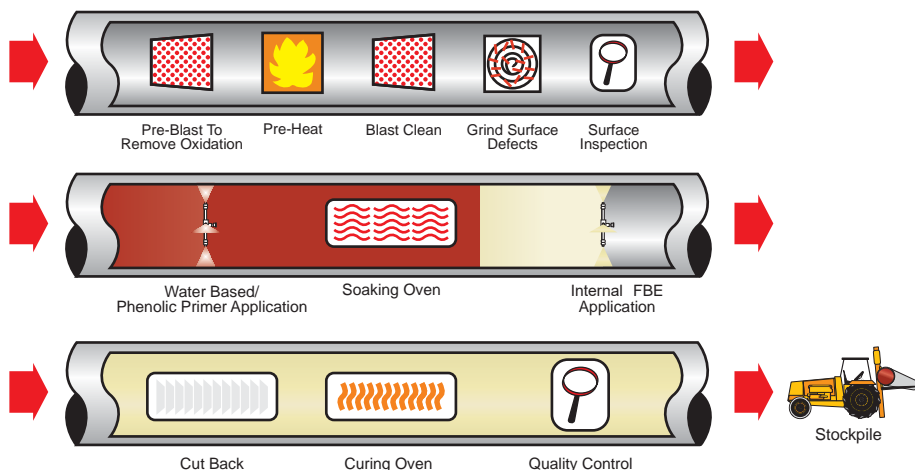
PROPERTY	Treated Seawater	Wet, Sour Gas Crude	Wasia Water (Phenolic Primer)
Pressure / Temperature	3000 psi	3000 psi	3000 psi
Duration	203°F (95°C) 24h	203°F (95°C) 24h	203°F (95°C) 24h
Gas Phase	N ₂	3% CO ₂ 3% H ₂ S 94% CH ₄	100% CO ₂
Liquid Phase	High Solids Brine as per ASDM D-1143	Formation Water as per 09-SAMMS-09 I	Wasia Water as per 09-SAMMS-09 I
Discharge	90°C, Max 3min release	90°C, Max 3min release	90°C, Max 3min release
Results	Pass	Pass	Pass

APPROVALS / INTERNATIONAL STANDARD



- Saudi Aramco APCS 102
- ADCO
- KOC

PRODUCT APPLICATION PROCESS



The information contained herein is indicative of the types of coatings provided by APCO, and is not intended to be a guarantee that a particular coating will be suitable for a given application. Since many unique environmental, operating, and design conditions must be considered, the user shall determine the suitability of the coating for the intended use and assume all the risks and liabilities in connection therewith. APCO's liability is stated in our standard conditions of sale.