Standard Operating Procedures

*Glass**Wrap***® External Coating

Focus on Safety and Quality

CLS® COMPOSITE LINING SYSTEMS

Running Procedures for GlassWrap Externally Coated Tubing and Casing

CL Systems recommends the presence of a CLS Service Technician whenever GlassWrap externally coated tubing or casing is to be run, pulled, or repaired on location. The purpose of the CLS Technician is to advise proper handling procedures and to ensure proper repair of the GlassWrap coating system (if required).

1. Mix the touch up kit according to the manufacturer's recommended procedure in a clean, graduated measuring container. It is not recommended to mix the entire kit at once, as the epoxy will dry quickly on warm days. The mix ratio is 4 parts A to 1 part B.
2. Whenever possible, place backup tong on the coupling of T&C connections. If the coupling turns on the mill side, the installation process should be stopped to inspect if the external coating barrier is broken. If the coating barrier is broken:
    a. Cut away the membrane around the face of the coupling. Apply a generous amount of epoxy with a brush or roller to the exposed steel.
    b. Wrap the repair membrane around the face of the coupling as described in Step 7, taking care to leave a defined face around the coupling where elevators will contact the pipe.
3. When using power tongs, make up in low speed when approaching shoulder engagement. High-speed makeup can damage the coating.
4. As the connection is being made up, use a brush to coat the last 3 to four threads of the field pin with epoxy. Take care not to contaminate the epoxy with dope. Finish the connection with a single wrap of membrane over the field makeup and another layer of epoxy to blend it to the pipe surface.
5. After the connection is made up, raise the joint and inspect where the slips were in contact with the pipe. As the pipe is lowered by the operator, also take care to inspect areas contacted by a lay-down machine or elevator. Finally, inspect the connection area *(mill end and field end)* for damage.
6. Repair any parts of the coating system that are thin, torn, or scarred by using a brush or roller to distribute epoxy in a layer 20 to 30 mils thick over an area larger than the damage.
7. If the membrane has been torn away, repair the pipe by first placing a layer of epoxy over an area larger than the damage and then wrap the area with the extra membrane provided in the repair kit. Coat the membrane each revolution around the pipe with epoxy in order to create a solid layer of epoxy and membrane.
8. Lower the joint and repeat the process on the next pipe until completion.

Make-up

Repair

Removing GlassWrap Externally Coated Tubing and Casing

CL Systems recommends the presence of a CLS Service Technician whenever GlassWrap externally coated tubing and casing is to be run, pulled, or repaired on location.

These general guidelines should be followed when removing and reinstalling GlassWrap:

1. Whenever possible, place a backup tong on the coupling of T&C connections. If the coupling turns on the mill side, the coating could be compromised.
2. Lay tubing down on racks for inspection of coating.
3. Cleaning of the coating may be necessary for full visual inspection.
4. Inspect each joint for damage.
5. Repair any parts of the coating system that are thin, torn, or scarred by using a brush or roller to distribute epoxy in a layer 20 to 30 mils thick over an area larger than the damage.
6. If the membrane has been torn away, make the repair by first placing a layer of epoxy over an area larger than the damage and then wrapping the area with the extra membrane provided in the repair kit. Coat the membrane each revolution around the pipe with epoxy in order to create a solid layer of epoxy and membrane. It is good practice to abrade the coating around the repair area with sandpaper before applying the touch up epoxy in order to ensure a proper bond.
7. Consult CLS Engineering if the coating appears to have lost adhesion with the pipe.
8. Re-dope all threads if the pipe is not to be re-run immediately to prevent corrosion.

Storage and Handling of GlassWrap Coated Tubulars Supplement

1. Pipe shall be handled, loaded and stacked in a manner to prevent damage to pipe wall, threads and couplings, and both internal and external coating.
2. All thread protectors shall be in place and proper dope applied to the threads of pipe to prevent corrosion and damage.
3. GlassWrap coated pipe shall be stored on solid wood timbers. Timbers shall be free of any gravel, nails, grit, or other material which could damage the pipe or coating.
4. Padding of lift equipment forks is required before movement of GlassWrap tubulars. Padding of equipment forks used in handling coated pipe shall be dense rubber or carpet padding at least 3/16 inch thick.
5. When using lift equipment to move GlassWrap coated tubulars, take care to lift the pipe in a single layer.
6. When laying GlassWrap coated tubulars on racks lay the joints in a single layer or place solid wood dunnage between layers to prevent contact between joints.

Truck Loading/Unloading Requirements

No product shall be dispatched from CLS until the Company specified requirements and quality system requirements have been completed, and the associated data and documentation are available and authorized.

1. Pipe shall be handled, loaded and stacked in a manner to prevent damage to pipe wall, threads and couplings, and both internal and external coating.
2. All thread protectors shall be in place and proper dope applied to the threads of pipe to prevent corrosion and damage.
3. Dunnage shall be made from hardwood. No nails shall be in the pipe contact area.
4. Loading equipment forks shall be equipped with dense rubber or carpet padding.

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