TS 31/16

DDS tamping compatibility

Application and Research Support

Explosives

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1.1 Introduction

Legislation according to the MINE HEALTH AND SAFETY ACT, 1998 (ACT N029 OF 1996) REGULATION AMENDMENTS CHAPTER 4 requires that blast holes be tamped after it is loaded with explosives. For pumpable explosives this means that the tamping material will be in direct contact with the emulsion.

Samples of tamping material from different suppliers were received and tested for compatibility with Sasol DDS emulsion.

1.2 Sample identification

Samples of different tamping material were received from Sasol Nitro Marketing for compatibility tests with DDS emulsion. Samples from Bintech Mining supplies, GT Tamping cc, Tamping South Africa and Sibambene Mining Supplies were received.

Tamping South Africa supplied two types of tamping, one named OGM tamp is a mixture of bentonite and crushed dolomite, and the other named Kgosi tamp is a mixture of high temperature fire clay and water.

Bintech also supplied two samples namely Bentamp which is bentonite clay only and S&T socket plugs which are made from paper pulp. Plastic tamping plugs were also supplied but were not tested as there are no chemical interactions between plastics and DDS emulsion.

GT Tamping cc supplied two samples without identification and was identified as Sample 1 and Sample 2. According the SDS of the product it is named Gundwane tamping and consists of a natural combination of different type clay materials, angular aggregate with a less than 5% used oil content and more than 20% moisture content.

Sibambene Mining Supplies supplied “Mining Tamping Foam” named Rock Filla. It is supplied in an aerosol can with a 200mm nozzle extender.

1.3 Investigation

The compatibility test consists of removing the different tamping material from their plastic sheaths and to place it on top of beakers filled with sensitised DDS emulsion. Water was added to each beaker. The tamping foam was sprayed on top of the column and allowed to expand with no water added to the top of the column. The beakers were allowed to stand for seven days.

After seven days the samples were inspected for emulsion crystallization or any other negative visual effects.

1.4 Conclusion / Recommendation

There were no reactions between the tamping materials and the DDS emulsions after a period of seven days. In day to day applications it can be said with certainty that the emulsions will not be in contact with the tamping materials for more than 24 hours. The tamping from the different suppliers can all be used with DDS emulsion.

A concern with the use of tamping plugs with DDS emulsion is that if the tamping plug is inserted before the gassing reaction has reached completion, possible dead-pressing can occur which will result in a misfire. The tamping plugs must be used with caution in this regard. The foam expands to three to four times its original volume, but only sets after the gassing reaction of the DDS emulsion has taken place. Dead-pressing should not be a concern with the use of the tamping foam.