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Emergency Underwater Repairs and Bonding Underwater:

The Following ThistleBond section is concerned with emergency underwater repairs and should be read in conjunction with the Technical Data sheets of the following ThistleBond Products: Super Metal Rebuilding System, Flexiblised Ceramic Carbide Paste.

COMMON DEFECTS

Splits or fractures and impact damage allowing escape of fluids or ingress of water.

PREPARATION

All work should be carried out in strict accordance with the relevant ThistleBond Technical Data Sheet. Product selection should be made on the basis of the location of the problem, the severity of the damage, the ambient temperature and chosen application method. Where possible and practical, a steel plate should be fabricated, and clearance holes should be drilled and spaced equidistantly around the periphery of the plate. The damaged hull section should also be drilled and tapped. These tapped holes must match the positions of the clearance holes in the prefabricated plate.

SURFACE PREPARATION

Where possible, any cracks should be treated as follows:

- a). Terminate the crack by drilling holes at each end.
- b). Vee out the crack between the termination holes.

All surfaces to be treated, should then be made as rough as possible, ensuring that any surface contamination is removed and where possible, bright clean metal is exposed.

APPLICATION TECHNIQUE

a. Minor Damage

Where minor damage has occurred, a temporary solution may be achieved solely by the use of the ThistleBond Super Metal Rebuilding System. Mix the product in accordance with the Technical Data Sheet and place inside a small polyethylene bag, in order to minimise its contact with water. Transport material to the site of repair, release the neck of the bag and force material into the damaged area, in order to plug any cracks or holes. Alternatively, apply the mixed material onto a sheet of polyethylene before taking below water and pressing onto the damaged area.

b. Major Damage

Mix an appropriate amount of material and apply a thin, even film over the entire surface of a pre fabricated steel plate or patch, ensuring that the material is pushed well into the roughened surface profile. Mix further material and apply to the plate forming a central peak. Transport the plate to the site of the damage where it is forced against the damaged

area, until excess material is exuded around the periphery of the plate. Remember to ensure that trapped water is kept to a minimum. The plate may be held in a position if required by using set bolts which are pushed through the clearance holes in the platen and screwed in to tapped holes in the damaged substrate. Any exuded material may then be used to fair down the edges of the plate and bolt heads.

When using either of these methods it is always best to minimise the distance between the point of mixing and the point of application. In order to achieve this, it may be advantageous to consider the use of a suitable diving bell or other similar equipment.

NOTE: ThistleBond Super Metal Rebuilding System should be allowed to cure approximately half its working life before taking it underwater.

TECHNICAL SUMMARY

PRODUCT	CONSISTENCY	COMPRESSIVE STRENGTH	WORKING LIFE	FULL CURE
SUPER METAL REBUILDING SYSTEM	PASTE	15,500psi	25 MINUTES	72 HOUR
FLEXIBLISED CERAMIC CARBIDE PASTE	PASTE	2800 psi	20 MINUTES	7 DAYS