



Confirmation of Type Approval

This is to certify that, pursuant to the Rules of American Bureau of Shipping (ABS), on 24/NOV/2006 the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) and a valid Product Design Assessment (PDA) for the below listed product, entitling the product to type approval. The validity of the Manufacturing Assessment is dependent on satisfactory audits as required by the Rules. The Product Design Assessment is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

For Date of ABS Rules used for evaluation; Please refer to the ABS Rules below.

This Confirmation of Product Type Approval is valid as of the date shown above for the below listed product.

ABS makes no representations regarding type approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that the Client has full responsibility for continued compliance with the evaluation standard, whether the standard is an ABS Rule or a non-ABS Rule. As specified in the ABS Rules, Unit Certification may be required in addition to Product Type Approval. Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product.

LS Cable Ltd.

Model Name(s): 1. Medium Wall Polyolefin Tubing Model :LS-PMWT-FR 2. Heavy Wall Polyolefin Tubing Model :LS-PHWT-FR For details, see Description and Maker's Product Catalogue-pdf File

Presented to:

LS Cable Ltd.
555, Hoge-Dong
Dongan-Ku
Anyang-Shi
Kyungki-Do 431-080
Korea, Republic of

Intended Service:

For protecting, insulating and sealing cable/wire splices, electrical connection, jacket repairs and terminations.

Description:

LS-PMWT-FR (=Adhesive-lined medium wall heat shrinkable polyolefin tubing-Flame Resistant); (Expanded Inside diameter)/(Recovered Inside diameter) (mm): 10/3, 16/5, 25/8, 27/8, 35/12, 40/15, 50/16, 63/19, 75/22, 85/25, 95/29, 115/34 and 140/42 LS-PHWT-FR (=Adhesive-lined heavy wall heat shrinkable polyolefin tubing-Flame Resistant); (Expanded Inside diameter)/(Recovered Inside diameter) (mm): 9/3, 13/4, 20/6, 33/8, 43/12, 51/16, 70/21, 85/25, 90/30 and 130/36

Ratings:

1. Voltage: Maximum 1,000V 2. Shrink ratio: 3:1 3. Dual layer tube (within melting liner) a) Jacket: Cross-linked Polyolefin "XZ-LV01(A)" b) Liner: EVA grade "Q3293" 4. Standard color: Black 5. Size(mm): 10~140 for LS-PMWT-FR and 9~130 for LS-PHWT-FR 6. Flame rating: IEEE 383 VTFT 7. Temperature class: -55~110 deg. C

Service Restrictions:

Unit Certification is not required for this product.

Comments:

Not Applicable

Notes / Documentation:

Term of Validity:	This product/model is covered under Product Design Assessment (PDA) Certificate # 06-BK155018-PDA, dated 04/Apr/2006. This PDA Certificate expires Apr of 2011. It will remain valid for the 5 years from date of issue or until the Rules or specifications used in the assessment are revised (whichever occurs first).
ABS Rules:	Not Applicable
National Standards:	ASTM D412, -2671, -149, -570 for Mechanical test ASTM D311 for Low-temperature flexibility at -5 deg. C
International Standards:	IEC Publication 60093 for measurement of Volume Resistivity ISO 846 (Method A) for Fungus and decay Resistance
Government Authority:	
EUMED:	
Others:	Manufacturer's Specifications: Specification No. LSC (29)-K-C-00000044 for LS-PMWT-FR, and LSC (29)-K-C-00000045 for LS-PHWT-FR dated 20 Jan. 2006 Test reports: LS QA Test Reports dated 06 March 2006 and Flame Test Report approved by KETI (Korea Electrical Testing Institute) dated 23 February 2006. Raw Data : LS QA test report dated 03 March 2006



Manager, ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.