

Test Institute:	Type of Box tested:	Tests standards:	Purpose of tests:	Actual tests done:	Passed
South African Bureau of standards	1200x1000x900mm incl. Load of 1000kg.		Rough handling vertical pressure	Drop tests,(diagonal) impact, compression	Passed
South African Department of Manpower		Fact.,Mach.and Building Work Act, 1941	Safe stacking		Passed
US Army Packaging, Storage & Cont.Centre	1200x1015x1100 mm including dummy load	F.T.M.S 101c and the Amer. Society of Testing and Materials,St. D880	Rough handling	Road test.,vibration, drop tests,incline-impact,compression	Passed
University of Dortmund – Germany	2240 x 1460 x 146w2 mm incl. Automotive parts up to a total of 525 kg		Testing for use at customer	Horizontal impact at different accelaration	Passed
South African Bureau of standards	Liquid Box 1100x1100x1100mm	SABS 601-1974 Clause 4.28	Fitness for use	Impact and drop test,Rough handling	Passed
South African Bureau of standards	Liquid Box 1100x1100x1100mm incl. 1000 litres of water		Stacking	Top-to-bottom compression	Passed
SIGNODE Packaging Research Centre / USA	Liquid Box with size 1220 x 1110 x 1140 mm	N / I.S.T.A.	Rough handling with STRAPPING	Vibration, impact tests with STRAPPING	Passed
Laboratoire Nat.d'Essais France	1280 x 970 x 754 mm	NF H 00-060	Rough handling, Testing for use at customer	Stacking, drop tests, horizontal shock, vibration,impact	Passed
Laboratoire Nat.d'Essais France	2220 x 1710 x 1400 mm	NF H 00-050 of Dec 09.92	Rough handling, Testing for use at customer	Stacking, drop tests, horizontal shock, vibration,impact	Passed
Ministry of Defence UK Def. Research Agency		Defence Standard 1991 81 – 41 /v 3 req.,to level J	Heavy duty,robust shipping storage	Drop tests,leakproofness, stacking, cooperage	Passed
Verpack. Dienstleistungs-Zentrum,Dortmund	1198 x 998 720 mm Without top, all 12 mm		Stacking ability	Compression test up to a load of 12 tonnes	Passed
BelgiumPack.Institute Brussels	719 x 583 x 582 mm 24 clips	UN-part9, IMDGannex1, ICAO-part 7,ADR – RID Appendix V (A5)	UN qualification for carrying airbags	Drop test,stacking test	Passed
BelgiumPack.Institute Brussels	725 x 499 x 569 mm 24 clips	UN-part9, IMDGannex1, ICAO-part 7,ADR – RID Appendix V (A5)	UN qualification for carrying airbags	Drop test,stacking test	Passed

Wehrtechnische Dienststelle für Waffen und Munition – German Army	805x606x658 806x606x655 806x606x656 805x605x657 805x607x657 1201x802x723 1200x800x720 1200x802x722 1202x801x723 1200x800x722 1452x1122x722 1455x1125x720 1454x1122x718 1455x1124x725 1452x1124x720	DIN ISO 2872	Qualification of transport for the Germany Army	Compression test, drop tests, horizontal impact tests, vibration tests.	Passed
Belgium Pack. Institute Brussels	966 x 871 x 967 mm 28 clips	UN-part9, IMDG-annex1 par.8 ICAO-part 7, chap.4 ADR – RID appendix V	UN qualification for carrying ammunition	Drop test, stacking test	Passed
Danish Test Institute	250 L Liquid box ED 800 x 600 x 725 mm ID 776 x 576 x 587 mm 24 clips 12 mm	ISO	Qualification for transport by road of 250 L IBC's with Non-Hazardous Goods	Stacking test: ISA 2872 Vibration test: ISO 2247 Hor. Impact test: ISO 2244 Drop test: ISO 2248	Passed Passed Passed Passed
US Army Defence Ammunition Centre	1255 x 1022 x 1276 mm 28 clips 18 mm	MIL-STD-1660	MIL-STD-1660 Qualification	Stacking/compression Vibration Drop Test Incline-impact	Passed Passed Passed Passed
Israeli Military Research and Development Centre	1124 x 754 x 1153 mm	MIL – STD – 810D (proc.514.3 cat.1)	MIL-STD-810D Qualification	Stacking/compression Vibration Drop Test Incline-impact	Passed Passed Passed Passed

Tests Overview

VIRLAB, S.A Tolosa, Spain	External Dimensions: 1210 x 1017 x 1014 mm 1525 x 1210 x 676 mm 1525 x 1210 x 1352 mm 2034 x 1210 x 1014 mm 2340 x 660 x 1247 mm 2340 x 660 x 947 mm	ISO 8318 ('86) ISO 2244 ('85) ISO 248 ('85)	Qualification for transport by road and train	Vibration 3 0 100 Hz in 10 min Hor. Impact up to 8 G's Drop test from 100 mm height	Passed
SABS – South Africa	Fruit Bins – 1210x1050x720mm			Compression test, Drop test, Incline impact test	Passed
Virlab SA - Spain	Auto boxes – various sizes	ISO8318		Vibration test, horizontal impact test, vertical impact test	Passed
Virlab SA - Spain	Coin boxes – 12mm	ISO2244		Vibration test, horizontal impact test, vertical impact test	Passed
SABS – South Africa	Panel Hinges		To determine the maximum tensile load the sample could withstand		
NAMAS - The Netherlands	One black clip			Load and fatigue tests at room temperature and -40°C	Passed
Belgian Packaging Institute	800 x 600 x 705 – 18 mm 250 L plastic box – 24 clips PP-CoPo-15%CaCo3	ISO-4180/2	Qualification for transport 250L liquid nonhazardous	Stacking test ISO 2234 Vibration test ISO 2247 Vertical Impact ISO 2248 Horizontal Impact ISO 2244 Inclined Impact NF H00-0050	Passed

Tests Overview

Laboratoire National d'Essais – Unite LNE Sud Montpellier – France	12mm OSB Box – External dimensions: 864x724x1423mm	CH 1-9711-005	To determine if packaging designed will protect IBM product during shipment	Sine Vibration test, Random Vibration test, Horizontal Impact test and end panels submitted to impact + one vertical edge – Vertical impact test (2 drop tests at 200 mm & 10 drop tests at 50 mm)	Passed
Agricultural Research Council – South Africa	Safbin – Bulk bins	Evaluation in accordance with UNIFRICO's method “DFB Procedures and Techniques No. 55 – Taste Trials”	Determine difference between the flavour of apple stored in cardboard box or in SAFBIN bulk bins	The containers were set up and placed in a cold room (0 °C, 90%RH)	Passed
Gerotek Product Testing South Africa	Re-usable Collapsible bins		Qualification from Transport by road	Random vibration, mechanical shock test, formaldehyde test	Passed
SABS	Stillage Boxes 1.1 - 3300x1120x1440mm 1.2 – 2240x1450x1440mm 1.3 – 1450x1120x720mm		Rough handling, safe stacking	Resistance to vibration Stacking Test, Top deck impact test Drop test	Passed
Pira - UK	1000 x 1200 x 1540 mm 1000 x 1200 x 1340 mm			Vibration, Drop test Vibration	Passed
IBE-BVI – Ministry of transport & Infrastructure Tests performed by Clip-Lok Foresco – Belgium	1200 x 800 x 917 18 mm phenolcoated plyw. 32 clips (3-2-3) hinged lid allowed	UN – Part 9 IMDG – Annex 1 ICAO – part 7 ADR-RID Appendix A5(V)	Qualification for Transport by road, rail & air For waste transport	The IMDGCode, Annex 1 The European ADR-Agreement The International RID Regulation The ICAO Technical Instructions	Passed Passed Passed Passed
Virginia Tech – US	2573mmx998mmx735mm – 3/8” baton style	ASTMD4169		Vibration, handling & compression	Passed

Tests Overview

Belgian Packaging Institute	800 x 600 x 515 mm 12 mm OSB – 20 clips	Transport simulations	Return of coins (changover operation) bef/euro Belgium/Luxembourg	Stacking test ISO 2234 Vibration test ISO 2247 Vertical Impact ISO 2248 Horizontal Impact ISO 2244 Inclined Impact NF H00-0050 Tip-over test	Passed Passed Passed Passed Passed
Virlab	C.M.R1: UN 4D/Y(250)/S/04 C.M.R2: UN 4D/Y(300)/S/04 C.M.R3: UN 4D/Y(400)/S/04	Stanag 2828 (ED4) Annex D Unit Load Test Stanag 2829 (ED3) Ratification Draft 1 Materials Handling Equipment	Military Handling	Compatability with mechanical handling Stacking test Stability test Impact test High Frequency Low Frequency Overturning test	Passed Passed Passed Passed Passed Passed Passed Passed
Virlab	CL1 – CL2 – CL3	Disposiciones sobre mercancías peligrosas en el transporte aereo (MOPT) – Capitulo 4 – Ensayos de Idoneidad de los Embalajes	Packaging to contain articles from Group Packing II (e.g. lithium batteries, electrolyte acid for cells)	Stacking Test Free Fall Test (1,2 m – 5 drops)	Passed Passed
Naval PHST Center	1638 x 1381 x 733 mm	MIL-STD-648D as directed by NAVICP Philadelphia	MIL-STD-648D Qualification	Form and fit test Free fall drop test Edgewise drop test Cornerwise drop test Incline impact test Loading test (stacking) Forklift/pallet truck entry capability	Passed Passed Passed Passed Passed Passed Passed
Rheinmetall Denel Munition South Africa	External dimensions: 411 x 411 x 214 mm Internal dimensions: 375 x 375 x 160 mm		Airpack test of 75 fuzes packed in 3 layers of 25 each	Explosive test	Passed
Belgian Packaging Institute	1033 x 840 x 813 mm	UN-regulations - part 6 IMDG - part 6 ICAO - part 6 ADR - RID part 6	Transport of dangerous goods of the packing groups II & III	Drop test Stacking test	Passed Passed

Tests Overview



Rheinmetall Denel Munition South Africa	843 kg plywood box Large packaging 1100 x 1100 x 630mm	UN Packaging Certification Design Qualification	Packaging group II & III	Bottom lift Stack Drop	Passed Passed Passed
Package & Product Testing and Consulting, Inc Fairfield Ohio, USA	Hemi Packing Concept External dimensions: 27.32" x 27.32" x 20.25" Internal dimensions: 26.0" x 26.0" x 15.75"	CFR 49 §178.601 - 78.60 A.S.T.M. D4919	Hazardous materials packaging group II	Vibration test Drop test Stacking test	Passed Passed Passed