IS 13360 (Part 5/Sec 4) : 2013
ISO 180 : 2000

Indian Standard

PLASTICS — METHODS OF TESTING

PART 5 MECHANICAL PROPERTIES

Section 4 Determination of Izod Impact Strength

(First Revision)

1 Scope

1.1 ThisInternational Standardspecifiesamethodfor determiningtheIzodimpact strengthof plasticsunder definedconditions. Anumber of different typesof specimenandtest configurationsaredefined. Different test parametersarespecifiedaccordingtothetypeofmaterial,thetypeoftestspecimenandthetypeofnotch.

1.2 Themethodisusedtoinvestigatethebehaviourofspecifiedtypesofspecimenundertheimpactconditions definedandfor estimatingthebrittlenessor toughnessof specimenswithinthelimitationsinherent inthetest conditions.

1.3 Themethodissuitablefor usewiththefollowingrangeofmaterials:

¾ rigidthermoplasticmouldingandextrusionmaterials, includingfilledandreinforcedcompoundsinadditionto unfilledtypes;rigidthermoplasticssheets;

¾ rigidthermosettingmouldingmaterials, includingfilledandreinforcedcompounds; rigidthermosettingsheets, includinglaminates;

¾ fibre-reinforcedthermosettingandthermoplasticcompositesincorporatingunidirectional ornon-unidirectional reinforcementssuchasmat, wovenfabrics, wovenrovings, choppedstrands, combinationandhybrid reinforcements,rovingsandmilledfibresandsheetmadefrompre-impregnatedmaterials(prepregs);

¾ thermotropicliquid-crystalpolymers.

1.4 Themethodisnot normallysuitableforusewithrigidcellularmaterialsandsandwichstructurescontaining cellular material. Also, notched specimens are not normally used for long-fibre-reinforced composites or thermotropicliquid-crystalpolymers.

1.5 Themethodissuitedtotheuseof specimenswhichmaybeeither mouldedtothechosendimensions, machinedfromthecentral portionof astandardmultipurposetest specimen(seeISO3167) or machinedfrom finishedorsemifinishedproductssuchasmouldings,laminatesandextrudedorcastsheet.

1.6 Themethodspecifiespreferreddimensionsforthetestspecimen.Testswhicharecarriedoutonspecimens ofdifferentdimensionsorwithdifferentnotches,orspecimenswhicharepreparedunderdifferentconditions,may produceresultswhicharenotcomparable.Otherfactors,suchastheenergycapacityoftheapparatus,itsimpact velocityandtheconditioningof thespecimenscanalsoinfluencetheresults. Consequently, whencomparative dataarerequired,thesefactorsmustbecarefullycontrolledandrecorded.

1.7 Themethodshouldnot beusedasasourceof datafor designcalculations. Informationonthetypical behaviourofamaterial canbeobtained,however,bytestingatdifferenttemperatures,byvaryingthenotchradius and/orthethicknessandbytestingspecimenspreparedunderdifferentconditions.

2 Normativereferences

Thefollowingnormativedocumentscontainprovisionswhich,throughreferenceinthistext,constituteprovisionsof thisInternational Standard. For datedreferences, subsequent amendmentsto, or revisionsof, anyof these publicationsdonotapply.However,partiestoagreementsbasedonthisInternational Standardareencouragedto investigatethepossibilityof applyingthemost recent editionsof thenormativedocumentsindicatedbelow. For undatedreferences, thelatest editionof thenormativedocument referredtoapplies. Membersof ISOandIEC maintainregistersofcurrentlyvalidInternationalStandards.

ISO291 : 1997,Plastics¾ Standardatmospheresforconditioningandtesting.

ISO293:1986,Plastics ¾ Compressionmouldingtestspecimensofthermoplasticmaterials.

ISO294-1:1996, Plastics¾ Injectionmouldingoftest specimensof thermoplasticmaterials¾ Part1: General principles,andmouldingofmultipurposeandbartestspecimens.

ISO295 :1991,Plastics ¾ Compressionmouldingoftestspecimensofthermosettingmaterials.

ISO1268:1974 [1)],Plastics ¾ Preparationofglassfibrereinforced,resinbonded,lowpressurelaminatedplatesor panelsfortestpurposes.

ISO2602 :1980,Statisticalinterpretationoftestresults¾ Estimationofthemean¾ Confidenceinterval.

ISO2818 :1994,Plastics ¾ Preparationoftestspecimensbymachining.

ISO3167 :— [2)],Plastics ¾ Multipurposetestspecimens.

ISO10724-1 :1998,Plastics ¾ Injectionmouldingoftestspecimensofthermosettingpowdermouldingcompounds (PMCs) ¾ Part1:General principlesandmouldingofmultipurposetestspecimens.

ISO13802:1999,Plastics ¾ Verificationofpendulumimpact-testingmachines¾ Charpy,Izodandtensileimpact-testing.